Host Security Service

User Guide

Issue 25

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Contents

1 Using IAM to Grant Access to HSS

1.1 Creating a User and Granting Permissions

This section describes IAM's fine-grained permissions management for your HSS resources. With **IAM**, you can:

- Create IAM users for employees based on the organizational structure of your enterprise. Each IAM user has their own security credentials, providing access to HSS resources.
- Grant only the permissions required for users to perform a specific task.
- Entrust a Huawei cloud account or cloud service to perform professional and efficient O&M on your HSS resources.

If your Huawei Cloud account does not require individual IAM users, skip this chapter.

This section describes the procedure for granting permissions (see **Figure 1-1**).

Prerequisite

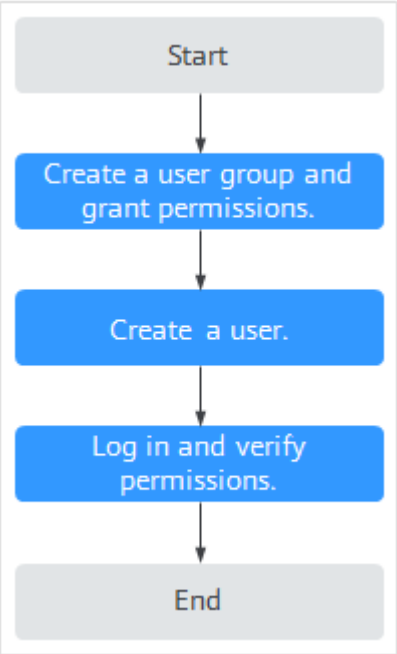
Before authorizing permissions to a user group, you need to know which HSS permissions can be added to the user group. **Table 1-1** describes the policy details.

Table 1-1 System-defined permissions supported by HSS

Role/Policy Name	Description	Type	Dependency
HSS Administrator	HSS administrator, who has all permissions of HSS	System-defined role	• It depends on the **Tenant Guest** role. Tenant Guest: A global role, which must be assigned in the global project. • To purchase HSS protection quotas, you must have the **ECS ReadOnlyAccess**, **BSS Administrator**, and **TMS ReadOnlyAccess** roles. – **ECS ReadOnlyAccess**: read-only access permission for the ECS. This is a system policy. – **BSS Administrator**: a system role, which is the administrator of the billing center (BSS) and has all permissions for the service. – **TMS ReadOnlyAccess**: a system-defined policy that grants read-only access to TMS.
HSS FullAccess	All HSS permissions	System-defined policy	To purchase HSS protection quotas, you must have the **BSS Administrator** role. **BSS Administrator**: a system role, which is the administrator of the billing center (BSS) and has all permissions for the service. **SMN ReadOnlyAccess**: a system-defined policy that grants read-only access to SMN.
HSS ReadOnlyAccess	Read-only permission for HSS	System-defined policy	**SMN ReadOnlyAccess**: a system-defined policy that grants read-only access to SMN.

Authorization Process

Figure 1-1 Process for granting permissions



The following procedure describes how to grant only the **HSS Administrator** permission to users, so that the users can only access and manage HSS and cannot access other cloud services.

1. **Create a user group and assign permissions**. On the IAM console, grant the **HSS Administrator** permission.
2. **Create a user and add it to the group**. On the IAM console, add the user to the group created in **1**.
3. **Log in** and verify permissions.

   Log in to the management console as the new user, switch to a region where the user has been granted permissions, and verify that the user only has the **HSS Administrator** permission.

   a. In the service list, choose HSS. The **Dashboard** page is displayed.
   b. Choose a service other than HSS from the service list. A message is displayed indicating that the user does not have the permission.

   The **HSS Administrator** permission has taken effect.

1.2 HSS Custom Policies

Custom policies can be created to supplement the system-defined policies of HSS. For details about the actions supported by custom policies, see **HSS Actions**.

You can create custom policies using one of the following methods:

- Visual editor: Select cloud services, actions, resources, and request conditions. You do not need to have knowledge of the policy syntax.

- JSON: Create a policy in JSON format or edit the JSON strings of an existing policy.

For details, see **Creating a Custom Policy**. The following section contains examples of common HSS custom policies.

Example Custom Policies

- Example 1: Allowing users to query the protected server list

```
{
    "Version": "1.1",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "hss:hosts:list"
                                ]
        }
    ]
}
```

- Example 2: Denying agent uninstallation

  A deny policy must be used together with other policies. If the policies assigned to a user contain both "Allow" and "Deny", the "Deny" permissions take precedence over the "Allow" permissions.

  The following method can be used if you need to assign permissions of the **HSS Administrator** policy to a user but also forbid the user from deleting key pairs (**hss:agent:uninstall**). Create a custom policy with the action to delete key pairs, set its **Effect** to **Deny**, and assign both this and the **HSS Administrator** policies to the group the user belongs to. Then the user can perform all operations on HSS except uninstalling it. The following is an example policy that denies agent uninstallation.

```
{
    "Version": "1.1",
    "Statement": [
        {
            "Effect": "Deny",
            "Action": [
                "hss:agent:uninstall"
            ]
        },
    ]
}
```

- Multi-action policies

  A custom policy can contain the actions of multiple services that are of the project-level type. The following is a policy with multiple statements:

```
{
    "Version": "1.1",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "hss:hosts:list"
            ]
        },
        {
            "Effect": "Allow",
            "Action": [
                "hss:hosts:switchVersion",
                "hss:hosts:manualDetect",
                "hss:manualDetectStatus:get"
            ]
```



```
            }
        ]
}
```

1.3 HSS Actions

This section describes fine-grained permissions management for your HSS instances. If your Huawei Cloud account does not need individual IAM users, then you may skip over this section.

By default, new IAM users do not have any permissions assigned. You need to add a user to one or more groups, and assign policies or roles to these groups. The user then inherits permissions from the groups it is a member of. This process is called authorization. After authorization, the user can perform specified operations on cloud services based on the permissions.

You can grant users permissions by using **roles** and **policies**. Roles are provided by IAM to define service-based permissions depending on user's job responsibilities. IAM uses policies to perform fine-grained authorization. A policy defines permissions required to perform operations on specific cloud resources under certain conditions.

Supported Actions

HSS provides system-defined policies that can be directly used in IAM. You can also create custom policies and use them to supplement system-defined policies, implementing more refined access control. The following are related concepts:

- Permissions: Allow or deny certain operations.
- Actions: Specific operations that are allowed or denied.
- Dependent actions: When assigning permissions for an action, you also need to assign permissions for the dependent actions.

HSS supports the following actions that can be defined in custom policies:

Actions describes the HSS actions, such as querying the HSS list, enabling or disabling HSS for a server, and manual detection.

Actions

Permission	Action	Related Action
Query asset information	hss:assets:list	-
Delete a cluster protection policy	hss:clusterProtect:delete	-
Configure a runtime application self-protection policy	hss:rasp:set	-
Configure asset importance	hss:hosts:set	-

Permission	Action	Related Action
Manage associated assets	hss:assets:set	-
Query image information	hss:images:list	-
Query runtime application self-protection details	hss:rasp:list	-
Configure a security check	hss:securitycheck:set	-
Query cluster protection status	hss:clusterProtect:list	-
Batch-scan images	hss:images:set	-
Configure a cluster protection policy	hss:clusterProtect:set	-
Check backup status	hss:antiransomware:list	-
Configure a backup policy	hss:antiransomware:set	-
Query security check results	hss:securitycheck:list	-
Display container assets	hss:containers:get	-
Configure the overview	hss:overview:set	-
Query the Application Recognition Service (ARS) list	hss:ars:list	-
Check the overview	hss:overview:list	-
Configure a report	hss:report:set	-
Querying a report	hss:report:list	-
Install the agent	hss:installAgent:set	-
Query the programs that have been automatically isolated and killed	hss:automaticKillMp:get	-
Query weak passwords	hss:weakPwds:get	-
Query the account list	hss:accounts:list	-

Permission	Action	Related Action
Configure WTP alarms	hss:wtpAlertConfig:set	-
Perform batch operations on web shells	hss:webshells:operate	-
Configure scheduled protection	hss:wtpScheduledProtections:set	-
Query common login IP addresses	hss:commonIPs:list	-
Configure server groups	hss:hostGroup:set	-
Perform batch operations on malicious programs	hss:maliciousPrograms:operate	-
Query web shell scan results	hss:webshells:list	-
Update container network information	hss:container-network:set	-
Query the protected file system list	hss:wtpFilesystems:list	-
Query the open port list	hss:ports:list	-
Query the process list	hss:processes:list	-
Configure protected directories	hss:wtpDirectorys:set	-
Query password complexity policy scan reports	hss:complexityPolicys:list	-
Query risky account scan reports	hss:riskyAccounts:list	-
Query the detected intrusion list	hss:event:get	-
Querying container assets	hss:containers:list	-
Query yearly/monthly quotas	hss:quotas:get	-
Query WTP alarms	hss:wtpAlertConfig:get	-
Configure backup servers	hss:wtpBackup:set	-

Permission	Action	Related Action
Unblock an IP address that was blocked during account cracking prevention	hss:accountCracks:unblock	-
Query the protection mode	hss:wtpProtectMode:get	-
Query the vulnerability list	hss:vuls:list	-
Configure a protected file system	hss:wtpFilesystems:set	-
Enable 2FA	hss:twofactorAuth:set	-
Query server groups	hss:hostGroup:get	-
Query the software list	hss:softwares:list	-
Perform operations on vulnerabilities	hss:vuls:set	-
Edit baseline data	hss:baselines:set	-
Perform batch operations on open ports	hss:ports:operate	-
Perform operations on intrusions	hss:event:set	-
Query the privileged process list	hss:wtpPrivilegedProcess-es:list	-
Query configuration scan reports	hss:configDetects:list	-
Query the login IP address whitelist	hss:whiteIps:list	-
Query HSS alarms	hss:alertConfig:get	-
Perform batch operations on vulnerabilities	hss:vuls:operate	-
Query backup servers	hss:wtpBackup:get	-
Obtain server risk statistics	hss:riskyDashboard:get	-
Subscribe to a security report	hss:safetyReport:set	-

Permission	Action	Related Action
Query the protected server list	hss:hosts:list	ecs:cloudServers:list vpc:ports:get vpc:publicIps:list
Manage container assets	hss:containers:set	-
Query security reports	hss:safetyReport:list	-
Configure weak passwords	hss:weakPwds:set	-
Query malicious program scan results	hss:maliciousPrograms:list	-
Query container network information	hss:container-network:read	-
Purchase a quota	hss:quotas:set	-
Enable or disable WTP	hss:wtpProtect:switch	-
Configure HSS alarms	hss:alertConfig:set	-
Perform operations on detected unsafe settings	hss:configDetects:operate	-
Configure web paths	hss:webDirs:set	-
Configure the login IP address whitelist	hss:whiteIps:set	-
Query web paths	hss:webDirs:get	-
Enable or disable protection on servers	hss:hosts:switchVersion	-
Uninstall an agent	hss:agent:uninstall	-
Configure ARS	hss:ars:set	-
Obtain the list of servers where 2FA is enabled	hss:twofactorAuth:list	-
Manual scan	hss:hosts:manualDetect	-
Query weak password scan reports	hss:weakPwds:list	-
Query Application Recognition Service (ARS)	hss:ars:get	-
Query WTP statistics	hss:wtpDashboard:get	-

Permission	Action	Related Action
Query the agent download address	hss:installAgent:get	-
Query important file change reports	hss:keyfiles:list	-
Query account cracking protection reports	hss:accountCracks:list	-
Query common login locations	hss:commonLocations:list	-
Query remote login scan results	hss:abnorLogins:list	-
Query policy group	hss:policy:get	-
Query the web path list	hss:webdirs:list	-
Query scheduled protection	hss:wtpScheduledProtec-tions:get	-
Query the WTP list	hss:wtpHosts:list	ecs:cloudServers:list vpc:ports:get vpc:publicIps:list
Query baseline data	hss:baselines:list	-
Query the protected directory list	hss:wtpDirectorys:list	-
Check the status of a manual scan	hss:manualDetectStatus:get	-
Configure common login IP addresses	hss:commonIPs:set	-
Query the container network list	hss:container-network:list	-
Configure a protection mode	hss:wtpProtectMode:set	-
Query the auto-startup list	hss:launch:list	-
Configure common login locations	hss:commonLocations:set	-
Configure privileged processes	hss:wtpPrivilegedProcess:set	-
Query WTP records	hss:wtpReports:list	-

Permission	Action	Related Action
File integrity check	hss:keyfiles:set	-
Configure a policy group	hss:policy:set	-
Enable or disable automatic isolation and killing of malicious programs	hss:automaticKillMp:set	-

2 Accessing HSS

2.1 Access Overview

Figure 2-1 shows the process of accessing and enabling HSS.

Figure 2-1 HSS access process

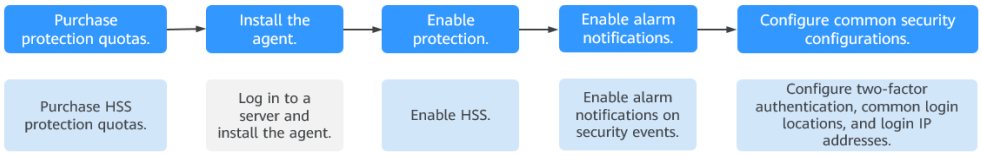


Table 2-1 Description of the HSS access process

No.	Step	Description
1	**Purchasing Protection Quotas**	HSS provides the basic, professional, enterprise, premium, web tamper protection, and container editions. Each edition supports different functions and features. You need to purchase the corresponding edition based on your protection requirements for servers or containers. For details about the differences between the editions of the HSS, see **Features**.
2	**Installing the Agent**	The HSS agent is a piece of software installed on cloud servers to exchange data between the servers and HSS, implementing security detection and protection. You can use only after installing the agent.
3	**Enabling Protection**	You need to enable protection for your ECSs.

No.	Step	Description
4	Enabling Alarm Notifications	By default, security risks detected by HSS are displayed on the management console. You need to log in to the console and view the risks. If you want to know the security risks of servers or containers in a timely manner, you can enable the alarm notification function. After the function is enabled, HSS will send security risks to you by SMS or email.
5	Common Security Configurations	To improve ECS security, you can configure the following ECS security protection items based on your service requirements: • Common login locations: HSS allows users to log in to ECSs in common login locations and generates alarms when users log in to ECSs in non-common login locations. • Common login IP address: HSS allows common login IP addresses to log in to ECSs and generates alarms for uncommon login IP addresses. • SSH login IP address whitelist: HSS only allows IP addresses in the whitelist to log in to ECSs using SSH. • Two-factor authentication: The two-factor authentication mechanism is used together with the SMS or email verification code to perform secondary authentication on ECS login. • Isolation and killing of malicious programs: HSS automatically isolates and kills identified malicious programs, such as backdoors, Trojans, and worms.

2.2 Purchasing an HSS Quota

You can purchase an HSS quota on the console.

Precautions

- The quota can be used only in the region where you bought it.
- A quota can be bound to a server to protect it, on condition that the agent on the server is online.
- Currently, HSS can only protect Docker and Containerd containers. Check your container type before purchasing the container edition.
- The **enterprise edition** is no longer sold. You are advised to purchase the **premium edition** to protect your servers.
- HSS should be deployed on all your servers so that if a virus infects one of them, it will not be able to spread to others and damage your entire network.
- After purchasing quota, go to the **Servers & Quota** page to enable HSS.

NOTICE

- You are advised to **deploy HSS on all your servers** so that if a virus infects one of them, it will not be able to spread to others and damage your entire network.
- The billing for a pay-per-use billing quota will stop if the protected ECS is shut down.

Regions

Table 2-2 Choosing a region to purchase HSS

Server	Server Region	Region
ECS BMS HECS Huawei Cloud Workspace	Regions where HSS is available	Regions where your ECSs/BMSs/HECSs/Workspaces are deployed HSS cannot be used across regions. If the server and your protection quota are in different regions, unsubscribe from the quota and purchase a quota in the region where the server is deployed.
Third-party cloud server	-	Currently, only some regions support access to non-Huawei Cloud servers. For details about the regions, see **Where Is HSS Available?** Purchase an HSS quota in the region that supports non-Huawei Cloud servers. Connect the server to the region by performing the installation procedure for non-Huawei Cloud servers.
On-premises IDCs	-	

Prerequisites

The account must have the **BSS Administrator** and **HSS Administrator** permissions. If the account does not have the permissions, use a master account to purchase quotas or authorize member accounts to purchase quotas. For details about how to grant permissions, see **Creating a User and Granting Permissions**.

Purchasing an HSS Quota

Step 1 **Log in to the management console.**

Step 2 Click ☰ in the upper left corner of the page, select a region, and choose **Security & Compliance** > **HSS** to go to the HSS management console.

Step 3 In the upper right corner of the **Dashboard** page, click **Buy HSS**.

Step 4 On the **Buy HSS** page, set the quota specifications.

Table 2-3 Parameters for purchasing HSS

Parameter	Description	Example Value
Billing Mode	Select **Yearly/Monthly** or **Pay-per-use** billing mode based on your requirements. • Yearly/Monthly: You can select the basic, professional, premium, WTP, or container edition. You can purchase the edition for a fixed period of time. The fee is 30% lower than that of pay-per-use. If you use the edition for a long time, you are advised to purchase yearly/monthly packages. • **Pay-per-use**: You can select the professional, premium, or container edition on the purchase page. Protection needs to be enabled on the server list page. You pay for the duration you use the resources. Prices are calculated by hour, and no minimum fee is required. **NOTE** Procedure for enabling pay-per-use quota: 1. On the purchase page, select **Pay-per-use**. In the lower right corner, click **Enable Now**. You will be redirected to the server list. 2. In the **Operation** column of a server, click **Enable**. Set **Billing Mode** to **Pay-per-use** and select an edition. 3. After confirming the information, select **I have read and agree to the Host Security Service Disclaimer**. 4. Click **OK**.	Yearly/ Monthly
Region	• To minimize connection issues, purchase quota in the region of your servers. • HSS cannot be used across regions. If you purchased a quota in a wrong region, unsubscribe from it and purchase a quota in the region of your servers. • Only some regions allow non-Huawei Cloud servers to access HSS through the Internet. For details, see **In What Regions Is HSS Available to Non-Huawei Cloud Servers?** Purchase HSS in the regions where non-Huawei Cloud servers can be connected.	CN-Hong Kong

Parameter	Description	Example Value
Edition	The **basic, professional, premium,WTP,** and **container editions** are supported. For details about the differences between editions, see **Editions**. **NOTICE** • If you enable the HSS basic edition for the first time, you can enjoy the free trial for 30 days and purchase it after the trial. • If you purchase the basic, enterprise, or premium edition, choose **Asset Management** > **Servers & Quota** and enable HSS on the **Servers** tab. • To enable the WTP edition, choose **Server Protection** > **Web Tamper Protection** and click the **Servers** tab. • If you purchased the container edition, choose **Asset Management** > **Containers & Quota** and enable protection on the **Container Nodes** tab.	Enterprise
Enterprise Project	This option is only available when you are logged in using an enterprise account, or when you have enabled enterprise projects. To enable this function, contact your customer manager. An enterprise project provides a cloud resource management mode, in which cloud resources and members are centrally managed by project. Select an enterprise project from the drop-down list. **NOTE** • Resources and incurred expenses are managed under the enterprise project you selected. • Value **default** indicates the default enterprise project. Resources that are not allocated to any enterprise projects under your account are displayed in the default enterprise project. • The **default** option is available in the **Enterprise Project** drop-down list only after you purchased HSS under your Huawei account.	default
Tag	Tags are used to identify cloud resources. When you have many cloud resources of the same type, you can use tags to classify cloud resources by dimension (for example, by usage, owner, or environment). To use this function, your account must have the **TMS administrator** permission. Without this permission, you cannot add tags to protection quotas, and the error message "permission error" will be displayed. You do not need to set this parameter in pay-per-use mode.	data

Parameter	Description	Example Value
Quota Management	After automatic quota binding is enabled, HSS automatically binds available quotas to new servers or container nodes after the agent is installed for the first time. Only the yearly/monthly quotas that you have purchased can be automatically bound. No new order or fee is generated. • Servers: Available yearly/monthly quotas are automatically bound in the following sequence: Premium Edition > Enterprise Edition > Professional Edition > Basic Edition. • Container nodes: Available yearly/monthly quotas are automatically bound in the following sequence: Container Edition > Premium Edition > Enterprise Edition > Professional Edition > Basic Edition. If you use enterprise projects, this configuration only enables automatic quota binding for the selected enterprise project.	Selected
Required Duration	• Select a duration based on your requirements. In **Pay-per-use** mode, you do not need to select a duration. • You are advised to select **Auto-renew** to ensure your servers are always protected. • If you select **Auto-renew**, the system will automatically renew your subscription as long as your account balance is sufficient. The renewal period is the same as the required duration. • If you do not select **Auto-renew**, manually renew the service before it expires.	1 year
Quantity	Enter the number of HSS quotas to be purchased. In **Pay-per-use** mode, you do not need to configure this option. **NOTICE** All your servers should be protected, so that if a virus (such as ransomware or a mining program) infects one of them, it will not be able to spread to others and damage your entire network.	20

Step 5 In the lower right corner of the page, click **Next**.

For details about pricing, see **Product Pricing Details**.

Step 6 After confirming that the order, select **I have read and agree to the Host Security Service Disclaimer** and click **Pay Now**.

Step 7 Click **Pay Now** and complete the payment.

----End

Follow-up Procedure

After purchasing the quota, you need to install the agent for server and enable it. For details, see **Installing the Agent on Servers** and **Enabling Protection**.

Related Operations

If you purchased HSS in the wrong edition or region, you can first unsubscribe from it and then purchase the correct quota.

2.3 Installing the Agent on Servers

2.3.1 Agent Overview

What Is an Agent?

The HSS agent is a piece of software installed on cloud servers to exchange data between the servers and HSS, implementing security detection and protection. If no agent is installed, the HSS is unavailable.

Scans all servers at 00:00 every day; monitors the security and monitors status of servers; and reports the collected server and monitors information (including non-compliant configurations, insecure configurations, intrusion traces, software list, port list, and process list) to the cloud protection center. In addition, the agent blocks attacks targeted at servers and containers based on the security policies you configured.

Supported OSs

Currently, some mainstream OSs are supported. For details, see **Supported OSs**. To obtain better HSS service experience, you are advised to install or upgrade to an OS version supported by the agent.

Processes When the Agent Is Running

- **Linux**

  The account of the agent is **root**. **Table 2-4** lists the running processes on a Linux server.

  Table 2-4 Agent running process on a Linux server

Agent Process Name	Function	Path
hostguard	Detects security issues, protects the system, and monitors the agent.	/usr/local/hostguard/bin/hostguard
hostwatch	Monitors the agent process.	/usr/local/hostguard/bin/hostwatch

Agent Process Name	Function	Path
upgrade	Upgrades the agent.	/usr/local/hostguard/bin/upgrade

- **Windows**

  The account of the agent is **system**. Table 2-5 lists the running processes on a Windows server.

  Table 2-5 Agent running process on a Windows server

Agent Process Name	Function	Path
hostguard.exe	Detects security issues, protects the system, and monitors the agent.	C:\Program Files\HostGuard\HostGuard.exe
hostwatch.exe	Monitors the agent process.	C:\Program Files\HostGuard\HostWatch.exe
upgrade.exe	Upgrades the agent.	C:\Program Files\HostGuard\upgrade.exe

Installing the Agent

1. Check the installation environment.

   Before installing the agent, perform the operations in **Checking the Installation Environment**.

2. Install the agent.

   The procedure for installing the agent varies according to the server type. For details, see:

   - **Installing the Agent on Huawei Cloud Servers**
   - **Installing the Agent on Third-party Servers**

2.3.2 Checking the Installation Environment

Agent installation has restrictions on security group outbound ports, DNS server addresses, and third-party security software. Before installing it, perform the operations in **Checking the Installation Environment** to ensure the installation requirements are met.

Checking the Installation Environment

Step 1 Ensure your server OS is supported by the agent. For more information, see the table in **Supported OSs**.

The agent cannot be installed on the OSs that are not in the list.

Step 2 Ensure the server is running properly.

The agent cannot be installed if the server is not running.

Step 3 Ensure the capacity of the disk where the agent is to be installed is greater than 300 MB.

If the available space is less than 300 MB, the agent will fail to be installed. The agent installation path cannot be customized. The following default paths are used:

- Linux: **/usr/local/hostguard/**
- Windows: **C:\Program Files\HostGuard**

Step 4 Check whether mandatory ports are enabled in the outbound direction of the server security group.

- Huawei Cloud servers

  For servers in regions other than **CN East 2** and **CN Southwest-Guiyang1**, ensure the outbound rule of your security group allows access to the port 10180 on the 100.125.0.0/16 network segment. (This is the default setting.) This port is used to communicate with the HSS server. For details about how to view and modify an outbound ECS security group rule, see **Modifying a Security Group**.

- Third-party servers

  When installing the agent on a Windows server, ensure that the inbound security group of the server allows access to port 5985. This port is used to communicate with the HSS server.

Step 5 Ensure the DNS address of the server is a private DNS server address on the Huawei Cloud.

The agent cannot be downloaded to a private DNS server address outside Huawei Cloud.

For details about how to view and change the DNS server address, see **Modifying the DNS (on the Server)** or **Modifying the DNS Server Address (on the Console)**.

Step 6 Uninstall third-party security software.

Third-party security software will probably be incompatible with the HSS agent and affects HSS protection. If third-party security software is installed on your servers, uninstall it before installing the HSS agent.

Step 7 (Optional) For a Linux server, disable the SELinux firewall.

The SELinux firewall may disrupt agent installation. You can enable it after the agent is successfully installed.

Step 8 (Optional) For Windows, ensure Microsoft Office has been installed on the server and can open the .xlsx file.

----End

Modifying a Security Group

For Huawei Cloud servers, in regions other than **CN East 2** and **CN Southwest-Guiyang1**, ensure the outbound rule of your security group allows access to the

port 10180 on the 100.125.0.0/16 network segment. (This is the default setting.) This port is used to communicate with the HSS server. This section describes how to view and modify ECS security group rules.

Step 1 Log in to the management console.

Step 2 In the upper left corner, select a region and a project.

Step 3 Click ☰ in the upper left corner of the management console and choose **Computing** > **Elastic Cloud Server**. The **Elastic Cloud Server** page is displayed.

Step 4 In the ECS list, click the name of an ECS.

Step 5 On the ECS details page, click the **Security Groups** tab and click **Manage Rule**.

Step 6 Click the **Outbound Rules** tab and add a rule, as shown in **Table 2-6**.

Table 2-6 Security group rules

Priority	Action	Type	Protocol & Port		Destination	Description
1	Allow	IPv4	TCP	10180	100.125.0.0/16	Communicates with the HSS server.

----End

Modifying the DNS (on the Server)

When installing the agent, ensure the DNS server address is the Huawei Cloud private DNS server address. This section describes how to view and change the DNS server address on the server.

- Linux server

  The following describes how to add the DNS server address to the **resolv.conf** file using Linux command lines.

  a. Log in to the server as user **root**.

  b. Run the following command to open the **resolv.conf** file:

  vi /etc/resolv.conf

  c. Run the following commands to add the DNS address:

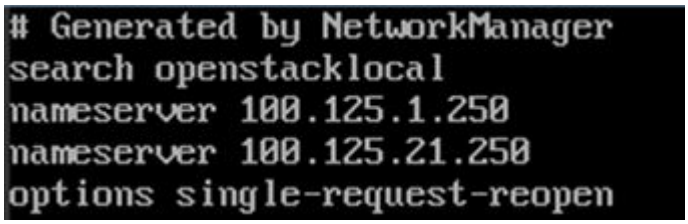
  nameserver *Huawei_Cloud_Private_DNS_server_address*

  NOTE

  The private DNS server addresses vary depending on regions. For details, see **Private DNS Server Address of Huawei Cloud**.

  Take **CN North-Beijing1** as an example. The complete commands are **nameserver 100.125.1.250** and **nameserver 100.125.21.250**.

Figure 2-2 Adding the DNS server address



d. Enter **wq** and press **Enter** to save the settings and exit.

- Windows server

  The following describes how to use the Windows GUI to add the DNS server address.

  a. Log in to the server as the administrator.
  b. Choose **Control Panel** > **Network and Sharing Center**, and click **Change adapter settings**.
  c. Right-click the network in use and choose **Properties** from the shortcut menu.
  d. Double-click **Internet Protocol Version 4 (TCP/IPv4)**.
  e. Select **Use the following DNS server addresses** and enter the Huawei Cloud private DNS server address.

  NOTE

  The private DNS server addresses vary depending on regions. For details, see **Private DNS Server Address of Huawei Cloud**.

Modifying the DNS Server Address (on the Console)

When installing the agent, ensure the DNS server address is the Huawei Cloud private DNS server address. This section uses an ECS as an example to describe how to log in to the console to view and modify DNS configurations.

1. Log in to the management console.
2. In the upper left corner, select a region and a project.
3. Click in the upper left corner of the management console and choose **Computing** > **Elastic Cloud Server**. The **Elastic Cloud Server** page is displayed.
4. In the ECS list, click the name of an ECS.
5. On the **Summary** tab of the ECS details page, click the VPC name. The **Virtual Private Cloud** page is displayed.
6. Locate the VPC and click the number in the **Subnets** column.
7. Click the name of the subnet.

   In the **Gateway and DNS Information** area, view the DNS server addresses used by the ECS.

8. In the **Gateway and DNS Information** area, click next to **DNS Server Address**.
9. Change the DNS server addresses to the Huawei Cloud private DNS server addresses.

NOTE

The private DNS server addresses vary depending on regions. For details, see **Private DNS Server Address of Huawei Cloud**.

2.3.3 Installing the Agent on Huawei Cloud Servers

Scenario

You can enable HSS for servers only after installing the agent. This section describes how to install the agent on Huawei Cloud servers.

If you use CBH, you can quickly install the agent on the server through CBH. For details, see **Installing the HSS Agent Using CBH**.

Prerequisites

- Perform the operations in **Checking the Installation Environment** to ensure agent installation is not affected by DNS server addresses, third-party security software, or the outbound port settings of security groups.
- Before installing the agent, grant the VPCOperatePolicy and VPCEPOperatePolicy permissions to HSS. For details, see **Authorization**.

Constraints

- The HSS agent will be automatically installed on Workspace 23.6.0 or later. If your Workspace version is earlier than 23.6.0, you can manually install the agent by referring to this section.
- When you install the agent for multiple servers in batches on the console, the system randomly selects a server in the same VPC as the executor.

Agent Installation Modes

HSS provides two installation modes. For details about their differences, see **Table 2-7**.

Table 2-7 Installation modes

Agent Installation Mode	Description
Installing the Agent on Huawei Cloud Servers on the HSS Console	This method is convenient and more efficient than installing the agent using commands. You need to provide HSS with the server account password or key for installing the agent. HSS does not save the password file you upload.
Using Commands to Install the Agent on Huawei Cloud Servers	You need to log in to the server and run commands or a script to install the agent. This method is more complex and slower than installation on the GUI.

Installing the Agent on Huawei Cloud Servers on the HSS Console

You can install the agent on the HSS console. Various installation methods are as follows.

Using the Account and Password to Install the Agent on a Single Huawei Cloud Server

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Server Install & Config**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Agents** tab.

Step 5 In the upper right corner of the page, click **Install HSS Agent**.

Step 6 Select **ECS** and click **Configure Now**.

Step 7 Select an installation method.

- **Install Mode**: **GUI**
- **Server Authentication Mode**: **Account and password**
- **Scale**: **Single**

Step 8 Select a server and click **Next**.

Step 9 Enter the account information and password as prompted.

- Linux

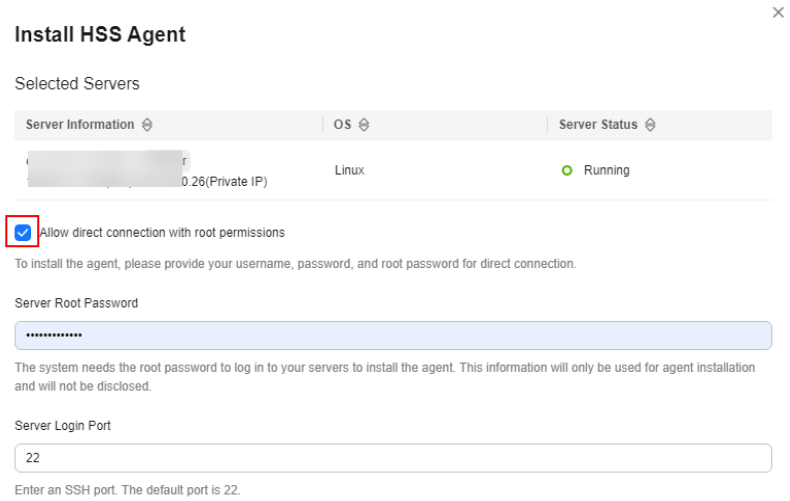
  Enter information based on whether the server can be logged in using the **root** account.

  - If **Allow direct connection with root permissions** is selected:

    The **root** account can be used to directly log in to the server. After you enter the **root** user password and login port, HSS will use your **root** account to install the agent for the server.
  - If **Allow direct connection with root permissions** is deselected:

    The **root** account cannot be used to directly log in to the server. You can enter another account for login. (The **root** user password is used for privilege escalation.) HSS will use the provided account information to install the agent for the server.

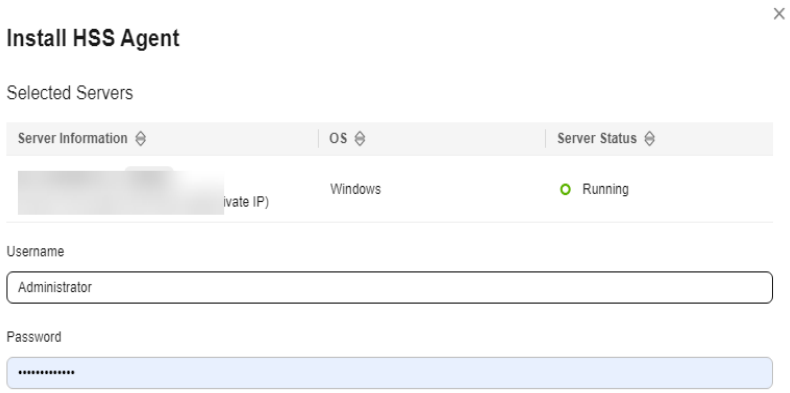
Figure 2-3 Entering the account and password (Linux)



- Windows

  Enter the username and password.

Figure 2-4 Entering the account and password (Windows)



Step 10 Confirm the information and click **OK**.

You can view the **Agent Status** column to check the agent installation progress. If the **Agent Status** is **Online**, the agent has been installed.

----End

Using the Account and Password to Install the Agent on Multiple Huawei Cloud Servers

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Server Install & Config**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Agents** tab.

Step 5 In the upper right corner of the page, click **Install HSS Agent**.

Step 6 Select **ECS** and click **Configure Now**.

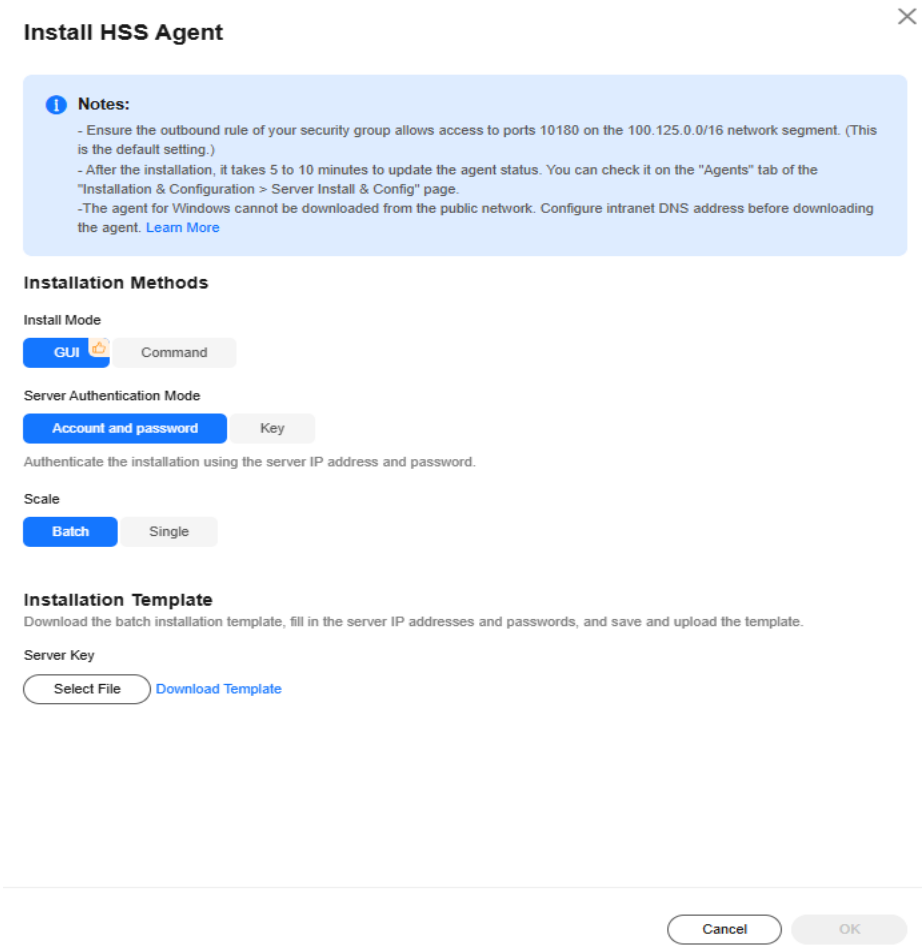
Step 7 Select an installation method.

- **Install Mode**: **GUI**
- **Server Authentication Mode**: **Account and password**
- **Scale**: **Batch**

Step 8 Upload the installation template.

1. Click **Download Template** to download the batch installation template to your local PC.

Figure 2-5 Downloading the batch installation template



2. Open the downloaded file, fill in server information as required, and save the file.

3. Click **Select File** and upload the file.

   HSS will automatically parse the file and identify the servers you entered. If the parsing fails, you can click **View Failed Servers** and check the failure cause.

Step 9 Confirm the information and click **OK**.

You can view the **Agent Status** column to check the agent installation progress. If the **Agent Status** is **Online**, the agent has been installed.

----End

Using DEW to Install the Agent on One or More Huawei Cloud Servers

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Server Install & Config**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Agents** tab.

Step 5 In the upper right corner of the page, click **Install HSS Agent**.

Step 6 Select **ECS** and click **Configure Now**.

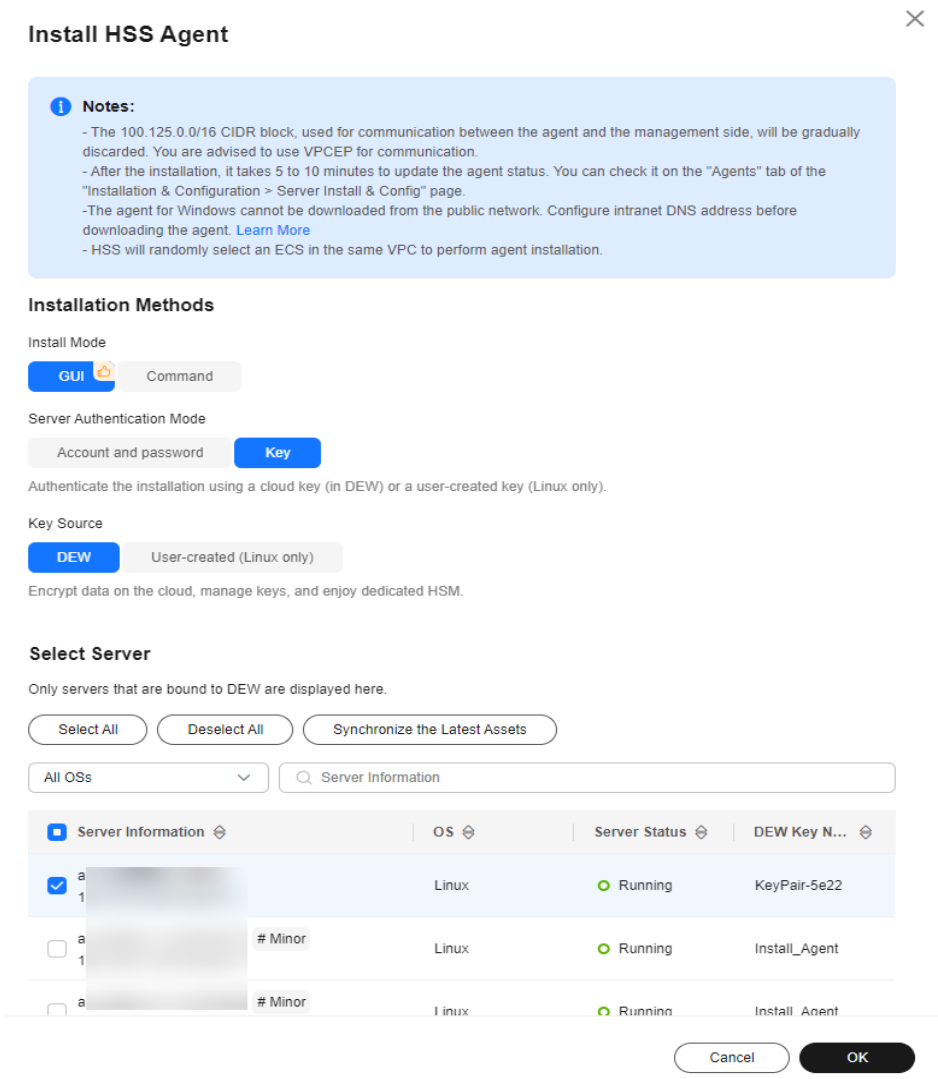
Step 7 Select an installation method.

- **Install Mode**: **GUI**
- **Server Authentication Mode**: **Key**
- **Key Source**: **DEW**

Step 8 Select servers and click **OK**.

In the server list, only the servers that are bound to DEW are displayed.

Figure 2-6 Selecting servers



Step 9 Locate the row that contains the target server and check the agent installation progress in the **Agent Status** column.

If the **Agent Status** is **Online**, the agent has been installed.

----End

Installing the Agent on One or More Huawei Cloud Servers Using a User-created Key (Linux Only)

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Server Install & Config**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Agents** tab.

Step 5 In the upper right corner of the page, click **Install HSS Agent**.

Step 6 Select **ECS** and click **Configure Now**.

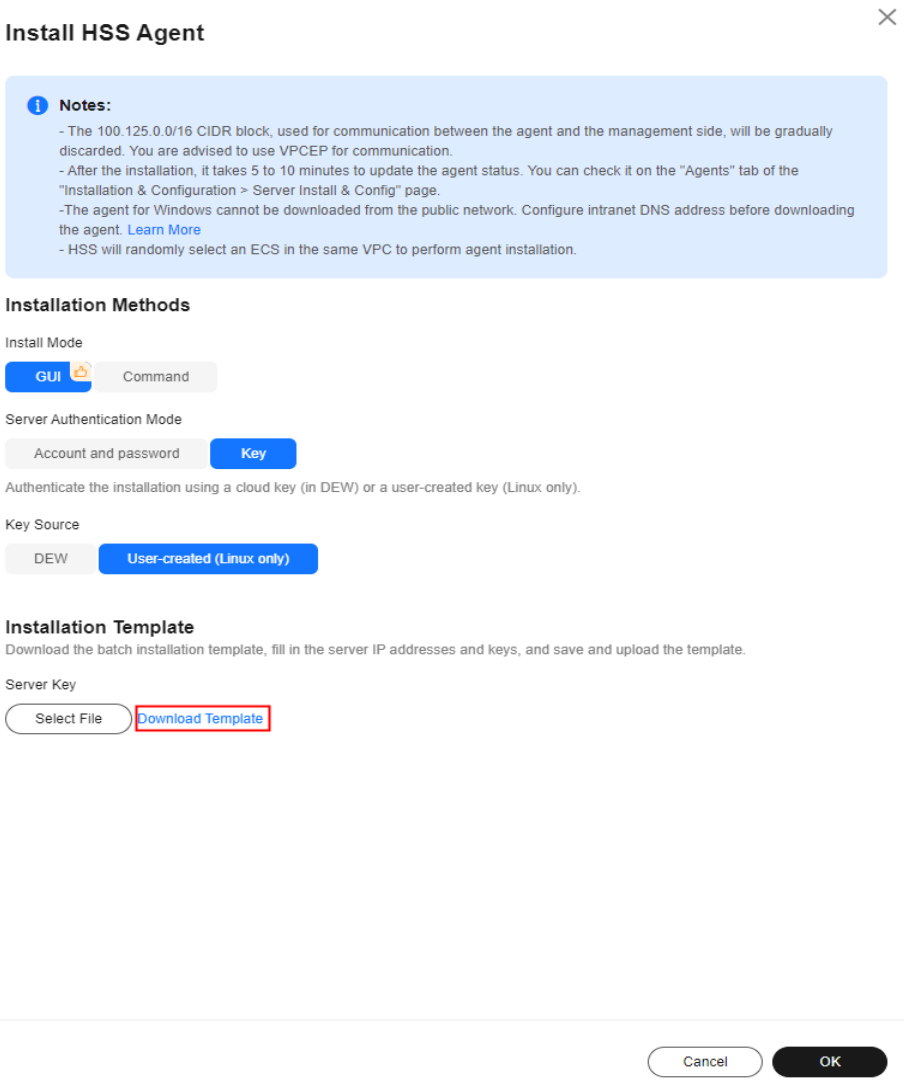
Step 7 Select an installation method.

- **Install Mode**: **GUI**
- **Server Authentication Mode**: **Key**
- **Key Source**: **User-created key (Linux only)**

Step 8 Upload the installation template.

1. Click **Download Template** to download the batch installation template to your local PC.

Figure 2-7 Downloading the batch installation template



2. Open the downloaded file, fill in server information as required, and save the file.
3. Click **Select File** and upload the file.

   HSS will automatically parse the file and identify the servers you entered. If the parsing fails, you can click **View Failed Servers** and check the failure cause.

Step 9 Confirm the information and click **OK**.

Step 10 Locate the row that contains the target server and check the agent installation progress in the **Agent Status** column.

If the **Agent Status** is **Online**, the agent has been installed.

----End

Using Commands to Install the Agent on Huawei Cloud Servers

The HSS agent can be installed using commands. You can install the agent on different OSs. Various installation methods are as follows.

Using Commands to Install the Agent on a Single Huawei Cloud Linux Server

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Server Install & Config**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Agents** tab.

Step 5 In the upper right corner of the page, click **Install HSS Agent**.

Step 6 Select **ECS** and click **Configure Now**.

Step 7 Select an installation method.

- **Install Mode**: **Commands**
- **Server OS**: **Linux**
- **Scale**: **Single**

Step 8 (Optional) Select the servers that need to be connected to the current HSS region and click **Next**.

- Perform this operation only in the **CN East 2** and **CN Southwest-Guiyang 1** regions. HSS will automatically create a VPC endpoint, which occupies an IP address of your VPC subnet. Only one VPC endpoint will be created for each of your VPCs to ensure the communication between your servers and HSS.

- In other regions, ensure the security groups of your servers allow outbound traffic through port 10180 of the 100.125.0.0/16 CIDR block. This port is used to communicate with HSS.

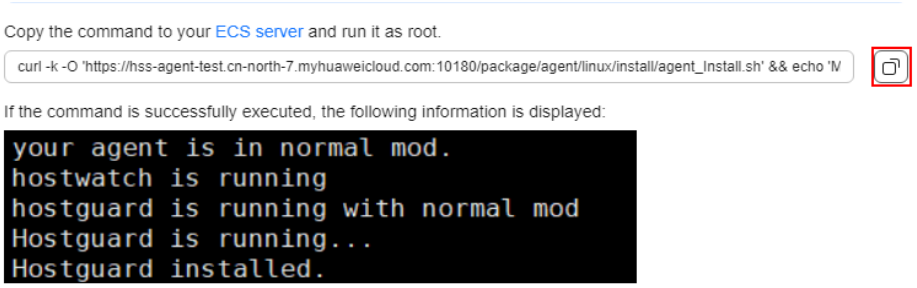
Step 9 Install the agent as prompted.

NOTE

For **CN East 2** and **CN Southwest-Guiyang 1** regions, wait until the network communication succeeds (that is, the VPC endpoint is created) before performing the following operations.

1. On the console page, click  in the **Install HSS Agent** dialog box to copy the installation command.

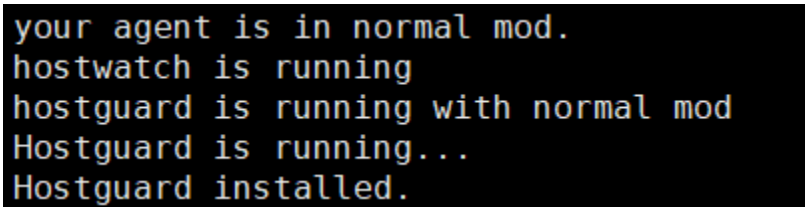
Figure 2-8 Copying the installation command



2. Log in to the server as the **root** user and paste the installation command.

   If the command output shown in **Figure 2-9** is displayed, the agent has been installed.

Figure 2-9 Agent installed



----End

Using Commands to Install the Agent on Multiple Huawei Cloud Linux Servers

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Server Install & Config**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Agents** tab.

Step 5 In the upper right corner of the page, click **Install HSS Agent**.

Step 6 Select **ECS** and click **Configure Now**.

Step 7 Select an installation method.

- **Install Mode**: **Commands**
- **Server OS**: **Linux**
- **Scale**: **Batch**
- **Server Authentication Mode**: Select **Account and password** or **Key** as needed.

Step 8 (Optional) Select the servers that need to be connected to the current HSS region and click **Next**.

- Perform this operation only in the **CN East 2** and **CN Southwest-Guiyang 1** regions. HSS will automatically create a VPC endpoint, which occupies an IP address of your VPC subnet. Only one VPC endpoint will be created for each of your VPCs to ensure the communication between your servers and HSS.
- In other regions, ensure the security groups of your servers allow outbound traffic through port 10180 of the 100.125.0.0/16 CIDR block. This port is used to communicate with HSS.

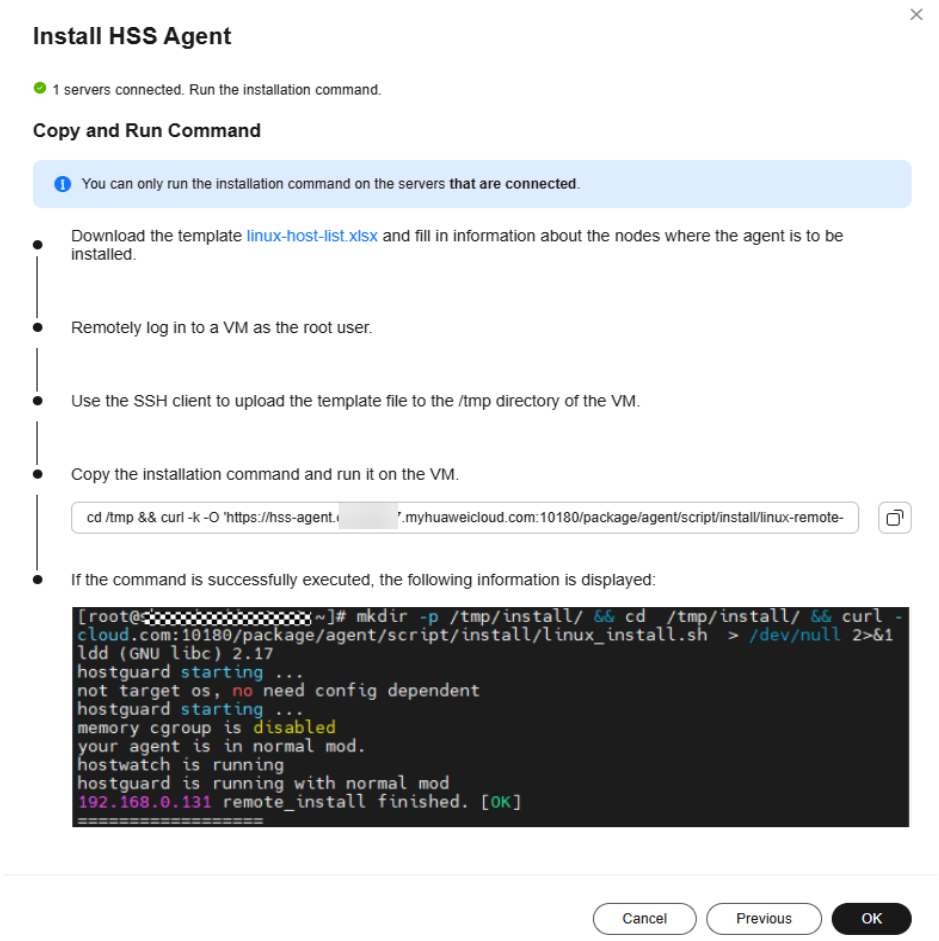
Step 9 Install the agent as prompted.

NOTE

- For **CN East 2** and **CN Southwest-Guiyang 1** regions, wait until the network communication succeeds (that is, the VPC endpoint is created) before performing the following operations.
- Perform the following operations on any server.

1. On the console, click **linux-host-list.csv** in the **Install HSS Agent** dialog box to download the template.

Figure 2-10 Downloading linux-host-list.csv

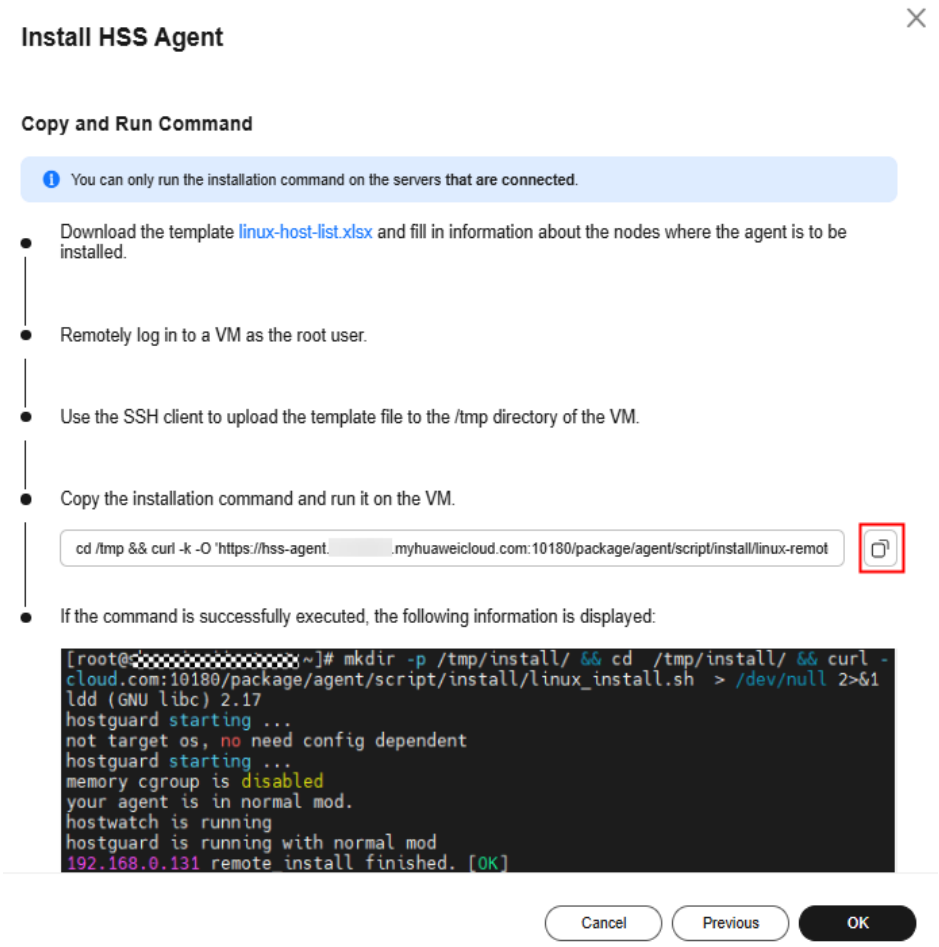


2. Enter the server information based on the requirements in the **linux-host-list.csv** template and save the template.

   Ensure that the entered server verification information is consistent with the verification mode selected in **Step 7**.

3. Use the **root** account to remotely log in to any target server.
4. Use the SSH client to upload the template file **linux-host-list.csv** to the **/tmp** directory on the server.
5. Return to the HSS console and click to copy the installation command.

Figure 2-11 Copying the installation command



6. Paste and run the installation command on the server to install the agent.
   If the information shown in **Figure 2-12** is displayed, the installation is complete.

Figure 2-12 Agent installed

----End

Using the Script to Install the Agent on a Single Huawei Cloud Windows Server

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Server Install & Config**.

> **NOTE**
>
> If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Agents** tab.

Step 5 In the upper right corner of the page, click **Install HSS Agent**.

Step 6 Select **ECS** and click **Configure Now**.

Step 7 Select an installation method.

- **Install Mode**: **Commands**
- **Server OS**: **Windows**
- **Scale**: **Single**

Step 8 (Optional) Select the servers that need to be connected to the current HSS region and click **Next**.

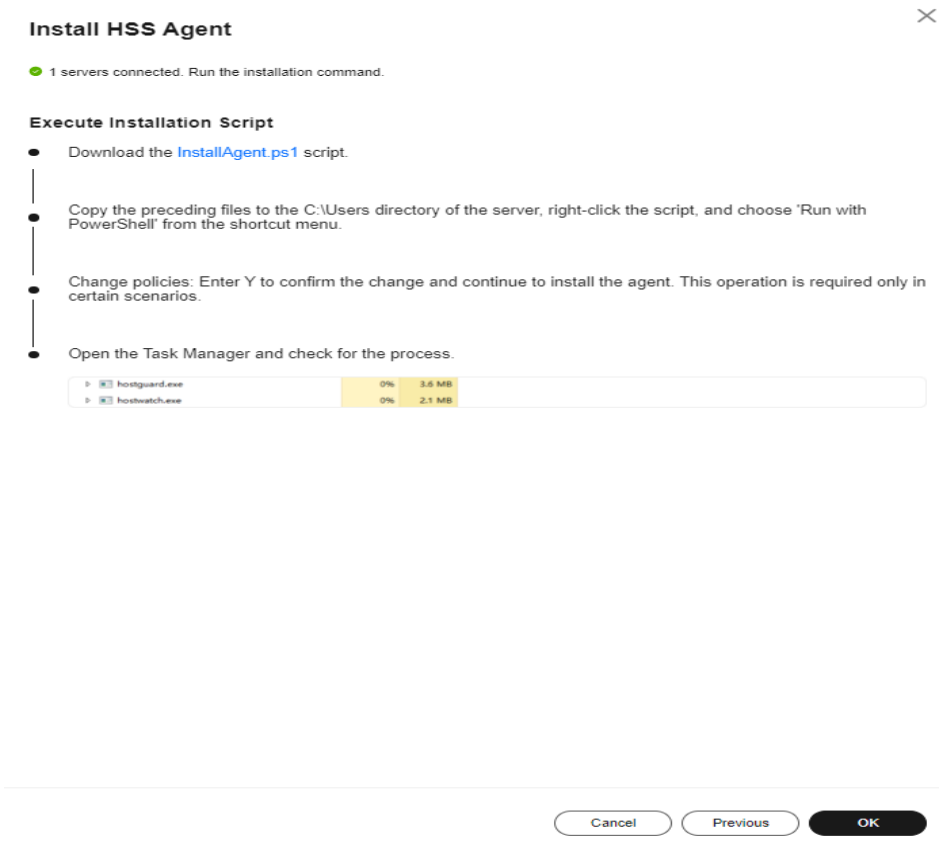
- Perform this operation only in the **CN East 2** and **CN Southwest-Guiyang 1** regions. HSS will automatically create a VPC endpoint, which occupies an IP address of your VPC subnet. Only one VPC endpoint will be created for each of your VPCs to ensure the communication between your servers and HSS.
- In other regions, ensure the security groups of your servers allow outbound traffic through port 10180 of the 100.125.0.0/16 CIDR block. This port is used to communicate with HSS.

Step 9 Install the agent as prompted.

> **NOTE**
>
> For **CN East 2** and **CN Southwest-Guiyang 1** regions, wait until the network communication succeeds (that is, the VPC endpoint is created) before performing the following operations.

1. On the console, click **installAgent.ps1** in the **Install HSS Agent** dialog box to download the installation script.

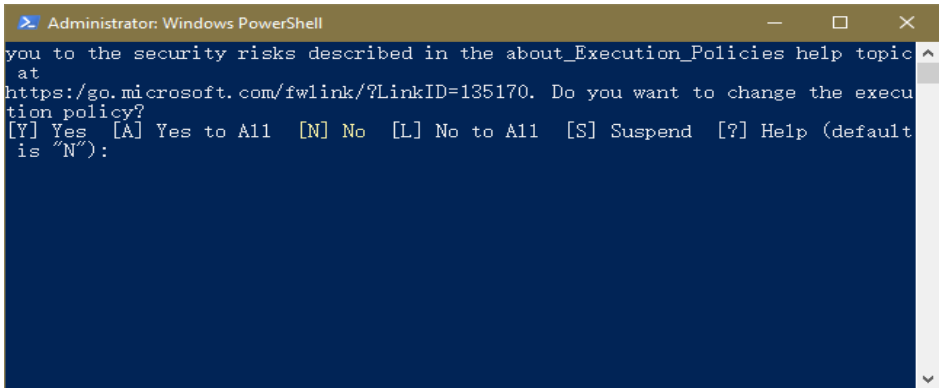
Figure 2-13 Downloading installAgent.ps1



2. Copy the **installAgent.ps1** file to the **C:\Users** directory of the server where the agent is to be installed.
3. Right-click **installAgent.ps1** and choose **Run with PowerShell**.
4. (Optional) In the dialog box that is displayed, enter **Y** to run the script to install the agent.

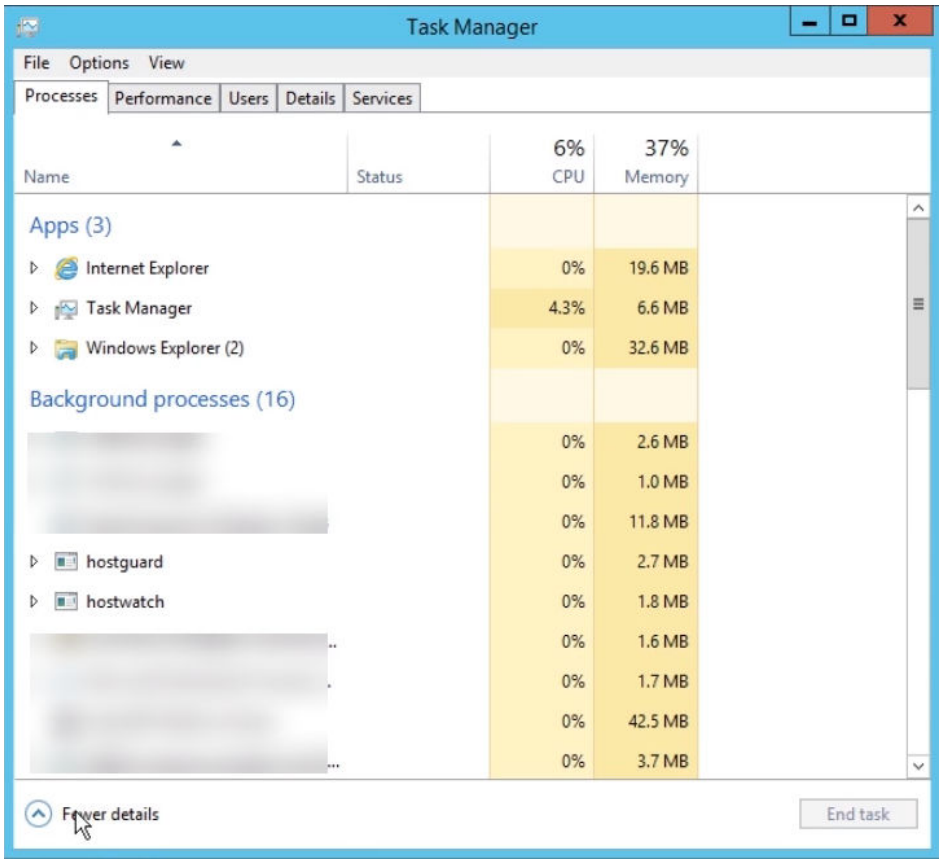
   If no dialog box is displayed, skip this step.

Figure 2-14 Changing the execution policy



5. After the execution, open the Task Manager and check whether **hostguard.exe** and **hostwatch.exe** exist. If they do, the agent has been installed.

Figure 2-15 Agent installed



----End

Using the Script to Install the Agent on Multiple Huawei Cloud Windows Servers

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Server Install & Config**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Agents** tab.

Step 5 In the upper right corner of the page, click **Install HSS Agent**.

Step 6 Select **ECS** and click **Configure Now**.

Step 7 Select an installation method.

- **Install Mode**: **Commands**
- **Server OS**: **Windows**

- **Scale**: **Batch**

Step 8 (Optional) Select the servers that need to be connected to the current HSS region and click **Next**.

- Perform this operation only in the **CN East 2** and **CN Southwest-Guiyang 1** regions. HSS will automatically create a VPC endpoint, which occupies an IP address of your VPC subnet. Only one VPC endpoint will be created for each of your VPCs to ensure the communication between your servers and HSS.
- In other regions, ensure the security groups of your servers allow outbound traffic through port 10180 of the 100.125.0.0/16 CIDR block. This port is used to communicate with HSS.

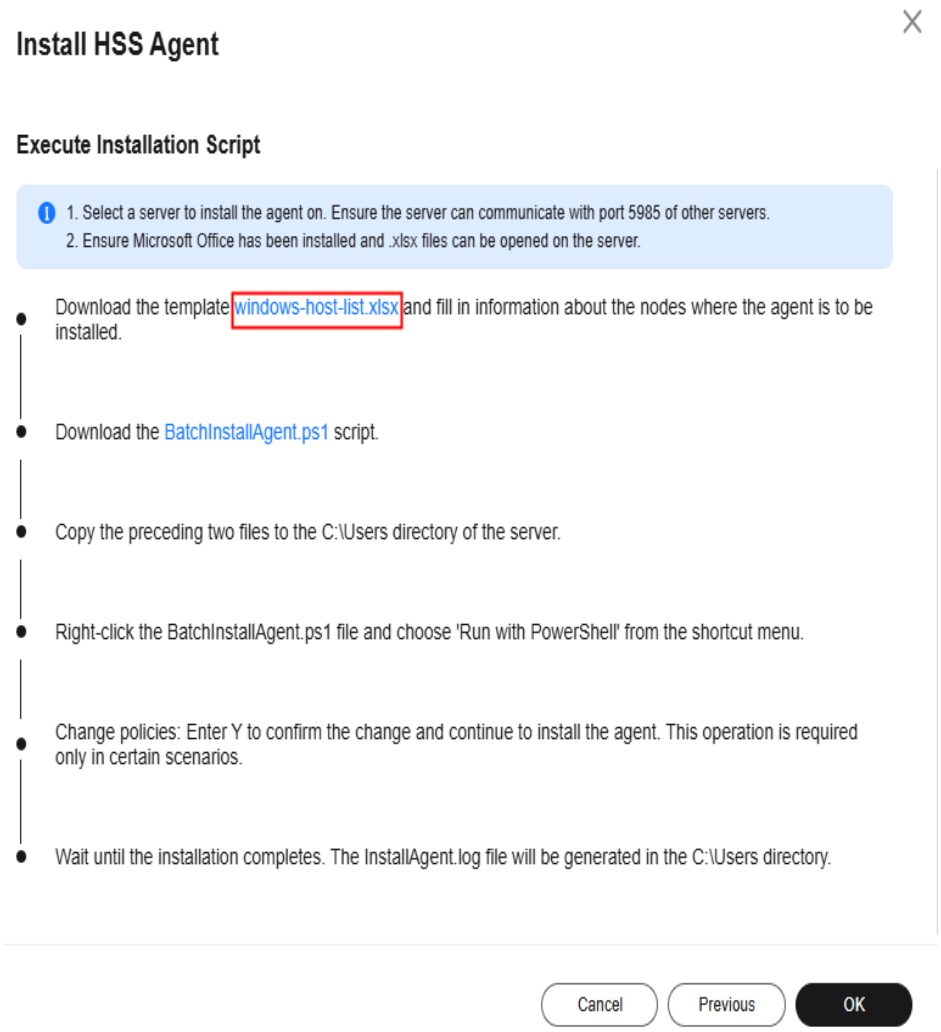
Step 9 Install the agent as prompted.

NOTICE

- For **CN East 2** and **CN Southwest-Guiyang 1** regions, wait until the network communication succeeds (that is, the VPC endpoint is created) before performing the following operations.
- Perform the following operations on any server.
- To install the agent, the server where the script is executed needs to access the port 5985 on other servers. Modify the inbound rules of the security groups on those servers to allow such access, or HSS will temporarily modify their security group rules while installing the agent. After the agent is installed, the modified settings will be deleted.

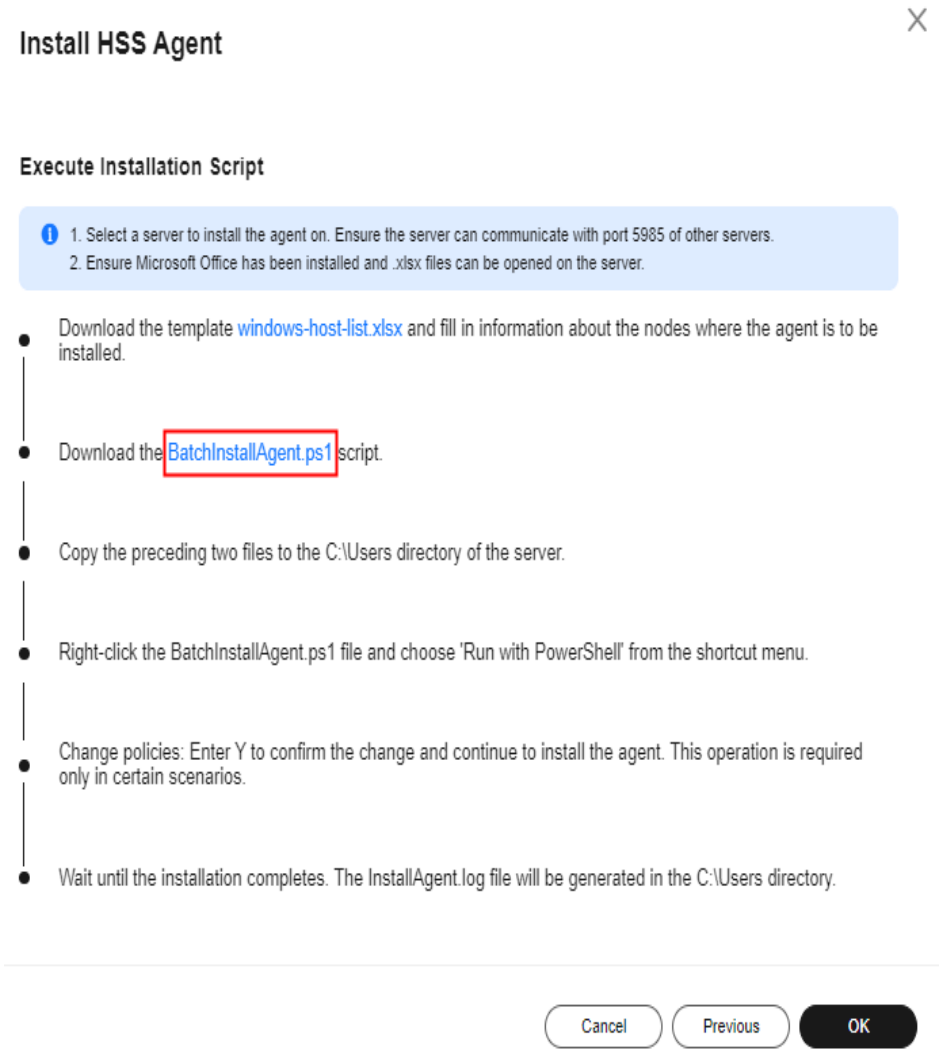
1. On the console, click **windows-host-list.xlsx** in the **Install HSS Agent** dialog box to download the template to the local PC.

Figure 2-16 Downloading windows-host-list.xlsx



2. Enter server information based on the requirements in the **windows-host-list.xlsx** template and save it.
3. Return to the HSS console and click **BatchInstallAgent.ps1** to download the installation script.

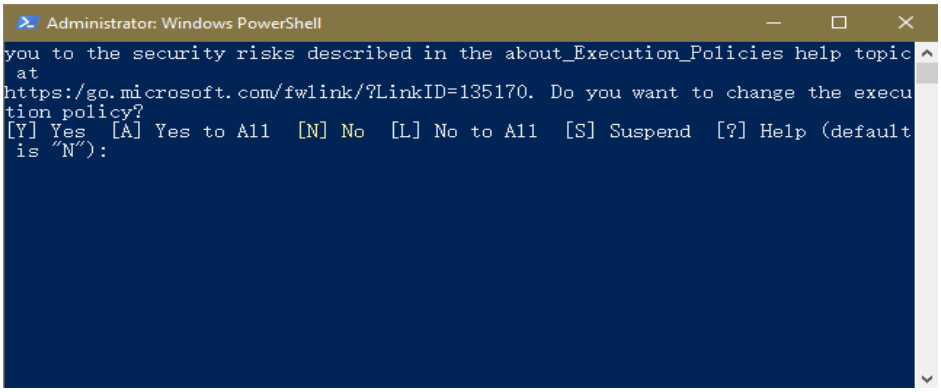
Figure 2-17 Downloading BatchInstallAgent.ps1



4. Copy the **windows-host-list.xlsx** and **BatchInstallAgent.ps1** files to the **C:\Users** directory of the server where the agent is to be installed.
5. Right-click **BatchInstallAgent.ps1** and choose **Run with PowerShell**.
6. (Optional) In the dialog box that is displayed, enter **Y** to run the script to install the agent.

   If no dialog box is displayed, skip this step.

Figure 2-18 Changing the execution policy



7. After the script is executed successfully, check whether the **BatchInstallAgent.log** file exists in **C:\Users\Administrator**.

   If the **BatchInstallAgent.log** file exists, the agent has been installed.

----End

FAQ

For details about how to troubleshoot the agent installation failure, see **What Should I Do If Agent Installation Failed?**

2.3.4 Installing the Agent on Third-party Servers

Scenario

You can enable HSS for servers only after installing the agent. For third-party cloud servers and on-premises data centers (IDCs) that can access the Internet, you can download and install the HSS agent through the Internet and connect the servers to the HSS console for protection management.

This section describes how to install the agent on a third-party server through the Internet.

Prerequisites

Perform the operations in **Checking the Installation Environment** to ensure agent installation is not affected by DNS server addresses, third-party security software, or the outbound port settings of security groups.

Constraints and Limitations

- Third-party cloud servers and on-premises IDC can be connected to HSS through the Internet in the following regions: **CN North-Beijing1**, **CN North-Beijing4**, **CN East-Shanghai1**, **CN East-Shanghai2**, **CN South-Guangzhou**, **CN Southwest-Guiyang1**, **CN-Hong Kong**, **AP-Singapore**, **AP-Jakarta**, and **ME-Riyadh**.
- If your server cannot access the Internet and needs to be connected to HSS for protection, refer to the following solutions:
  - For **CN East2** and **Southwest-Guiyang1** regions: **Connecting Third-party Servers to HSS Through Direct Connect and VPC Endpoints**

- For regions other than **CN East2** and **Southwest-Guiyang1**: **Third-Party Servers Accessing HSS Through Direct Connect and Proxy Servers**.

Installing the Agent on Third-party Linux Servers Using Commands

The following describes how to install the agent on the Linux server. You can select a method as required.

Installing the Agent on a Single Third-party Linux Server Using Commands

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click  , and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Server Install & Config**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Agents** tab.

Step 5 In the upper right corner of the page, click **Install HSS Agent**.

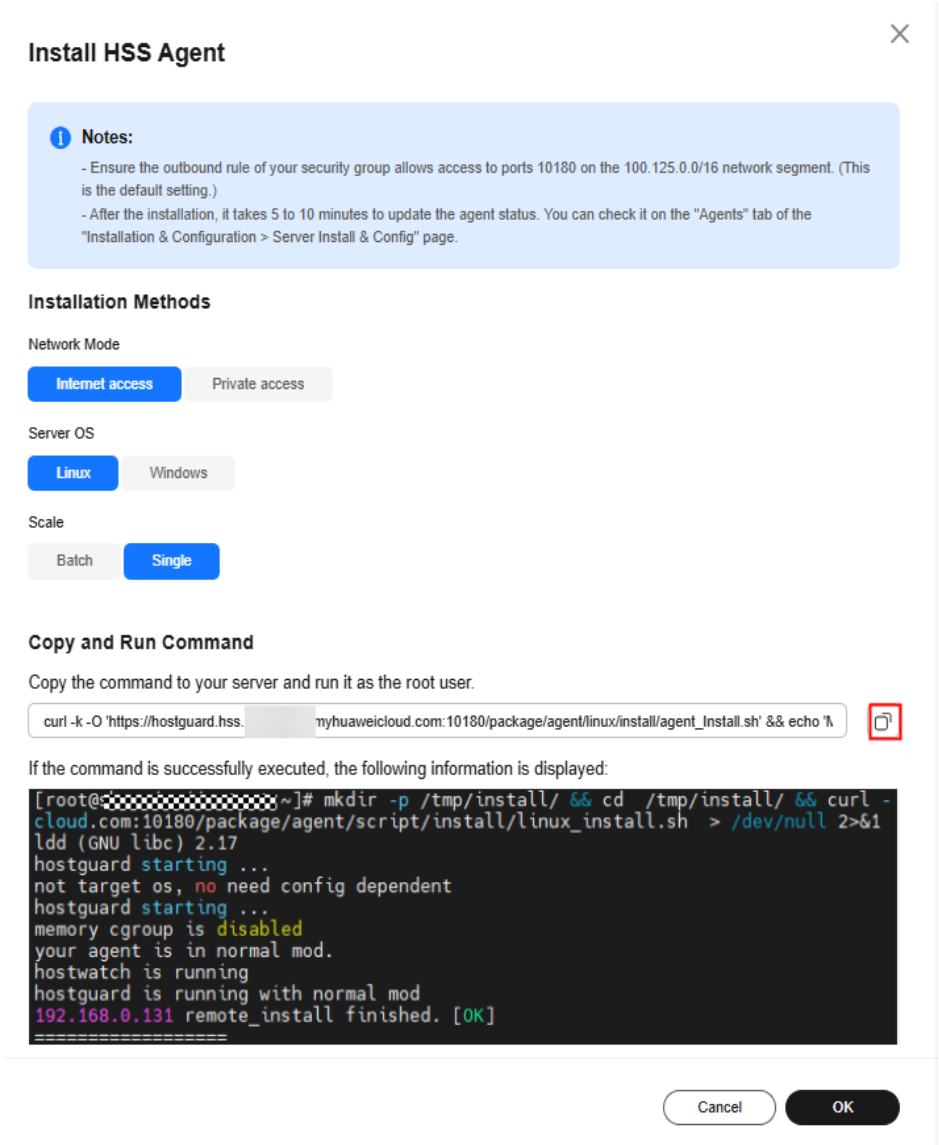
Step 6 Select **Third-party Cloud or Data Center Server** and click **Configure Now**.

Step 7 Select an installation method.

- **Network Mode**: **Internet access**
- **Server OS**: **Linux**
- **Scale**: **Single**

Step 8 Click  to copy the installation command.

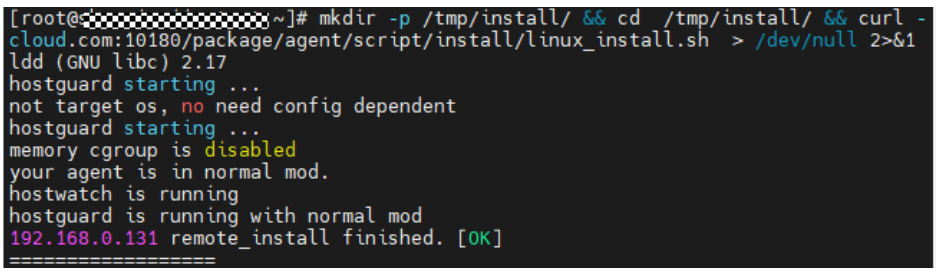
Figure 2-19 Copying the installation command



Step 9 Log in to the server as user **root**, and paste and run the installation command.

If the command output shown in **Figure 2-20** is displayed, the agent has been installed.

Figure 2-20 Agent installed



----End

Installing the Agent on Multiple Third-party Linux Servers Using Commands

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Server Install & Config**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Agents** tab.

Step 5 In the upper right corner of the page, click **Install HSS Agent**.

Step 6 Select **Third-party Cloud or Data Center Server** and click **Configure Now**.

Step 7 Select an installation method.

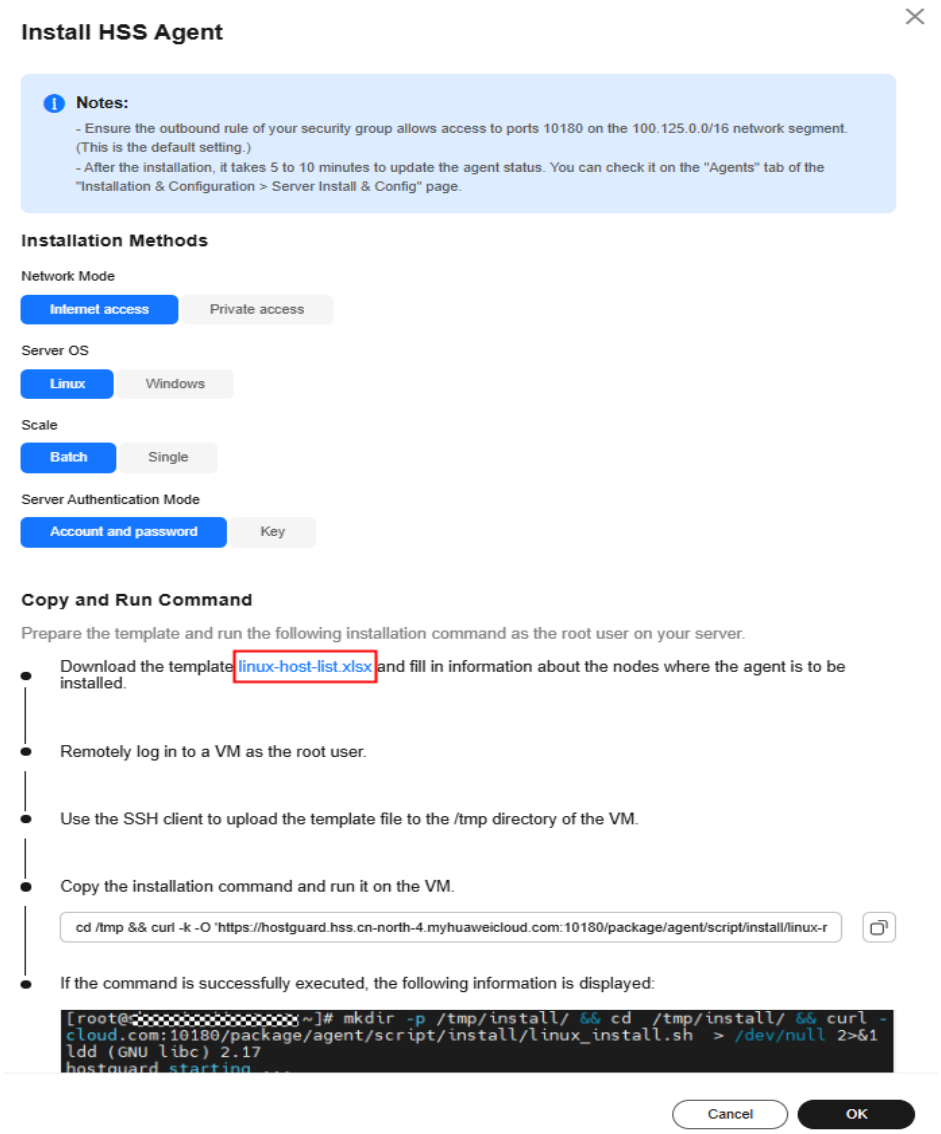
- **Network Mode**: **Internet access**
- **Server OS**: **Linux**
- **Scale**: **Batch**
- **Server Authentication Mode**: Select **Account and password** or **Key** as needed.

Step 8 Install the agent as prompted.

Perform the following operations on any server.

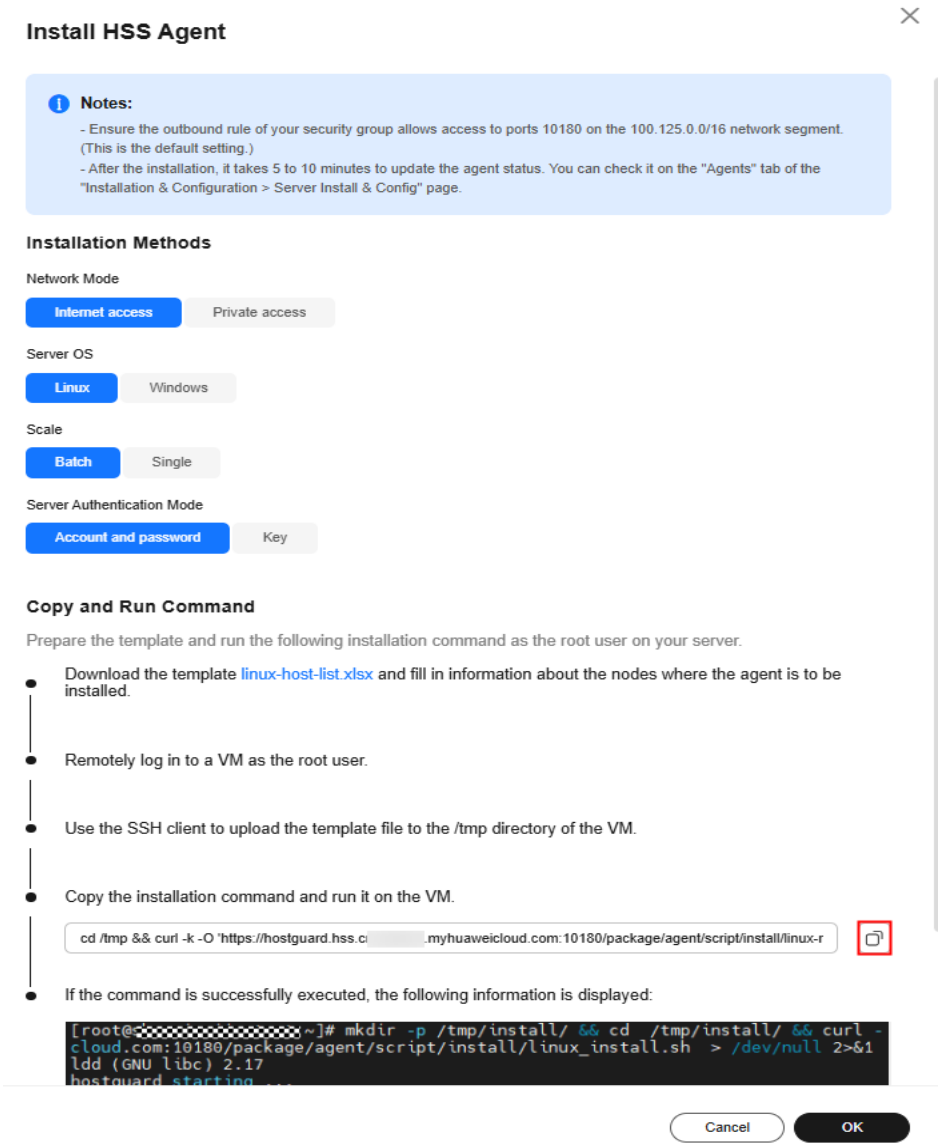
1. On the console, click **linux-host-list.csv** in the **Install HSS Agent** dialog box to download the template.

Figure 2-21 Downloading linux-host-list.csv



2. Fill in the server information based on the requirements in the **linux-host-list.csv** template and save it.
3. Use the **root** account to remotely log in to any target server.
4. Use the SSH client to upload the template file **linux-host-list.csv** to the **/tmp** directory on the server.
5. Return to the HSS console and click to copy the installation command.

Figure 2-22 Copying the installation command



6. Paste and run the installation command on the server to install the agent.

   If the command output shown in **Figure 2-23** is displayed, the agent has been installed.

Figure 2-23 Agent installed

```
[root@s ~]# mkdir -p /tmp/install/ && cd /tmp/install/ && curl -
cloud.com:10180/package/agent/script/install/linux_install.sh > /dev/null 2>&1
ldd (GNU libc) 2.17
hostguard starting ...
not target os, no need config dependent
hostguard starting ...
memory cgroup is disabled
your agent is in normal mod.
hostwatch is running
hostguard is running with normal mod
192.168.0.131 remote_install finished. [OK]
==================
```

----End

Installing the Agent on Third-party Windows Servers Using a Script

The following describes how to install the agent on a Windows server. You can select a method as required.

Installing the Agent on a Single Third-party Windows Server Using a Script

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Server Install & Config**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Agents** tab.

Step 5 In the upper right corner of the page, click **Install HSS Agent**.

Step 6 Select **Third-party Cloud or Data Center Server** and click **Configure Now**.

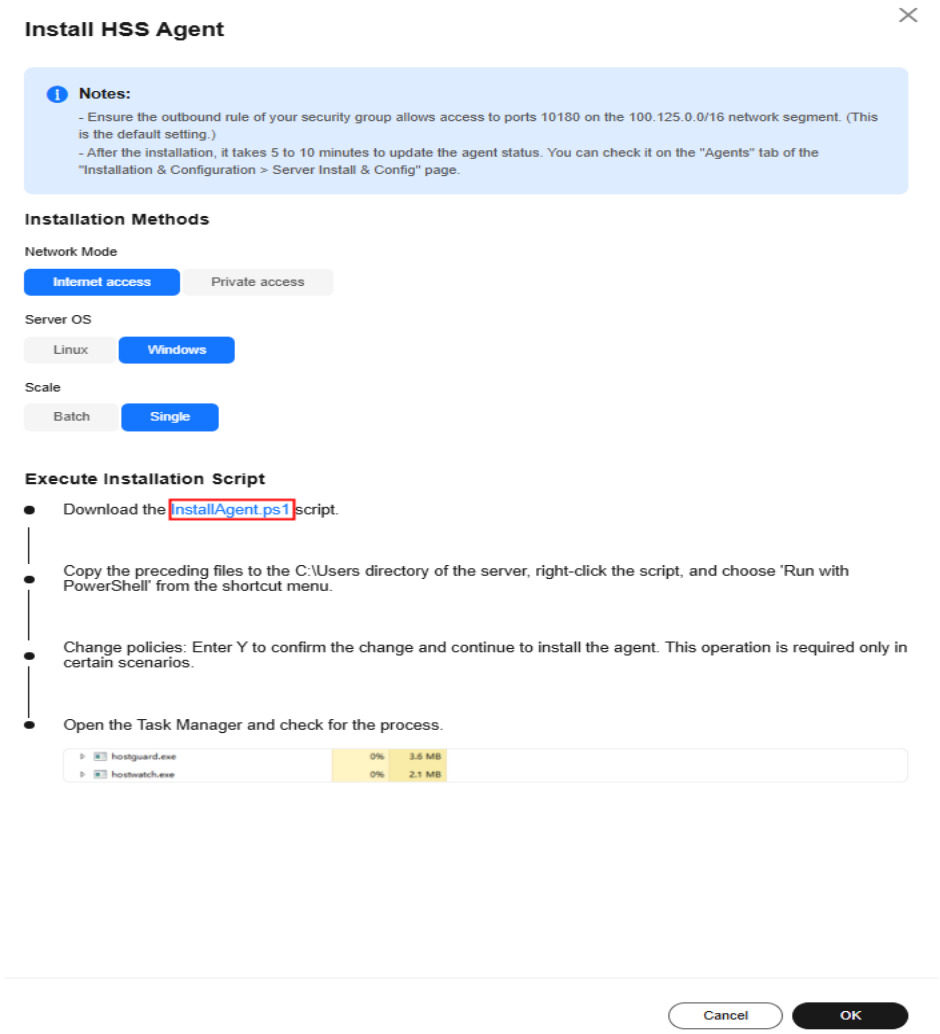
Step 7 Select an installation method.

- **Network Mode**: **Internet access**
- **Server OS**: **Windows**
- **Scale**: **Single**

Step 8 Install the agent as prompted.

1. On the console, click **installAgent.ps1** in the **Install HSS Agent** dialog box to download the installation script.

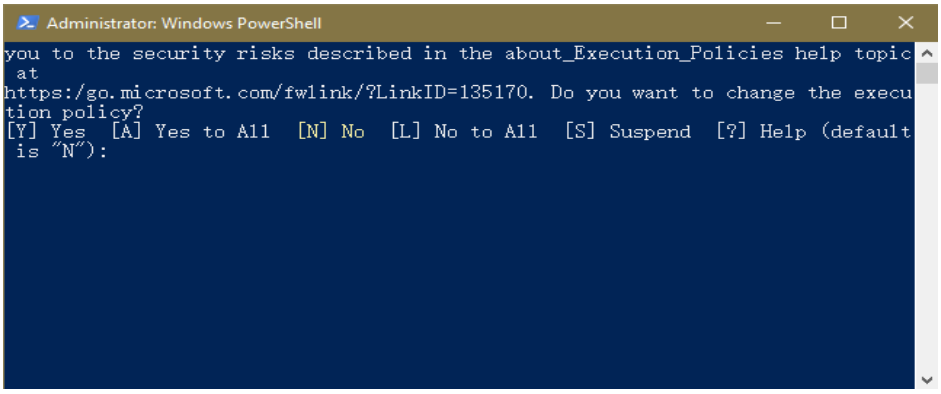
Figure 2-24 Downloading installAgent.ps1



2. Copy the **installAgent.ps1** file to the **C:\Users** directory of the server where the agent is to be installed.
3. Right-click **installAgent.ps1** and choose **Run with PowerShell**.
4. (Optional) In the dialog box that is displayed, enter **Y** to run the script to install the agent.

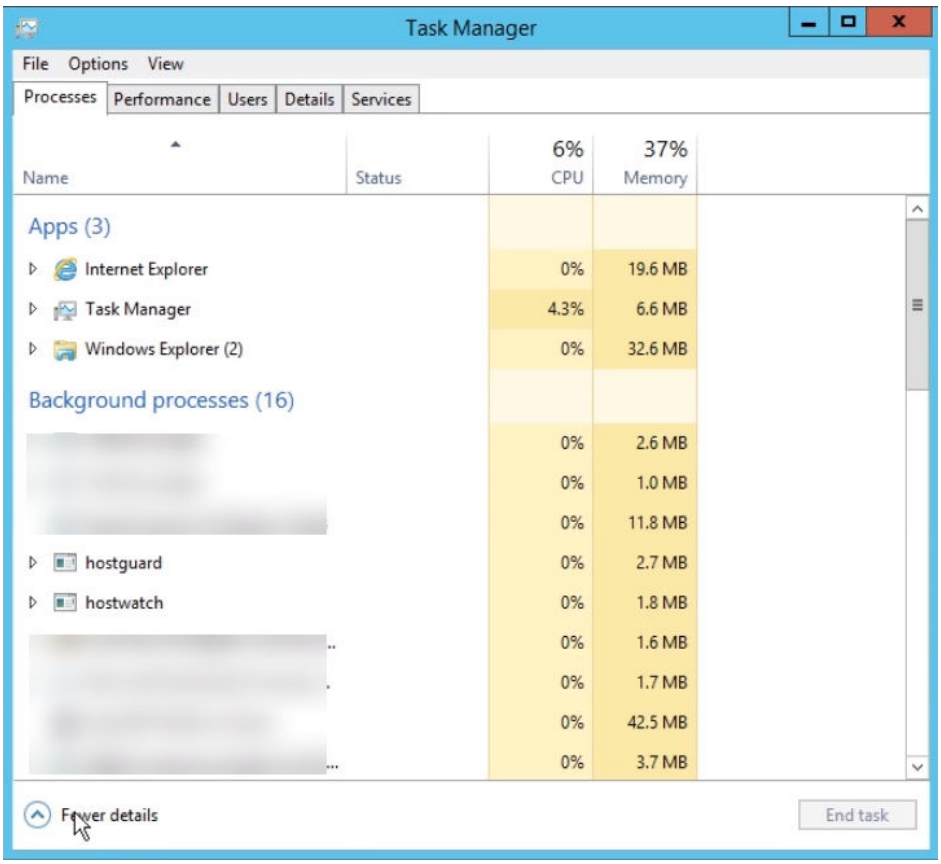
   If no dialog box is displayed, skip this step.

Figure 2-25 Changing the execution policy



5. After the execution, open the Task Manager and check whether **hostguard.exe** and **hostwatch.exe** exist. If they do, the agent has been installed.

Figure 2-26 Agent installed



----End

Installing the Agent on Multiple Third-party Windows Servers Using a Script

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Server Install & Config**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Agents** tab.

Step 5 In the upper right corner of the page, click **Install HSS Agent**.

Step 6 Select **Third-party Cloud or Data Center Server** and click **Configure Now**.

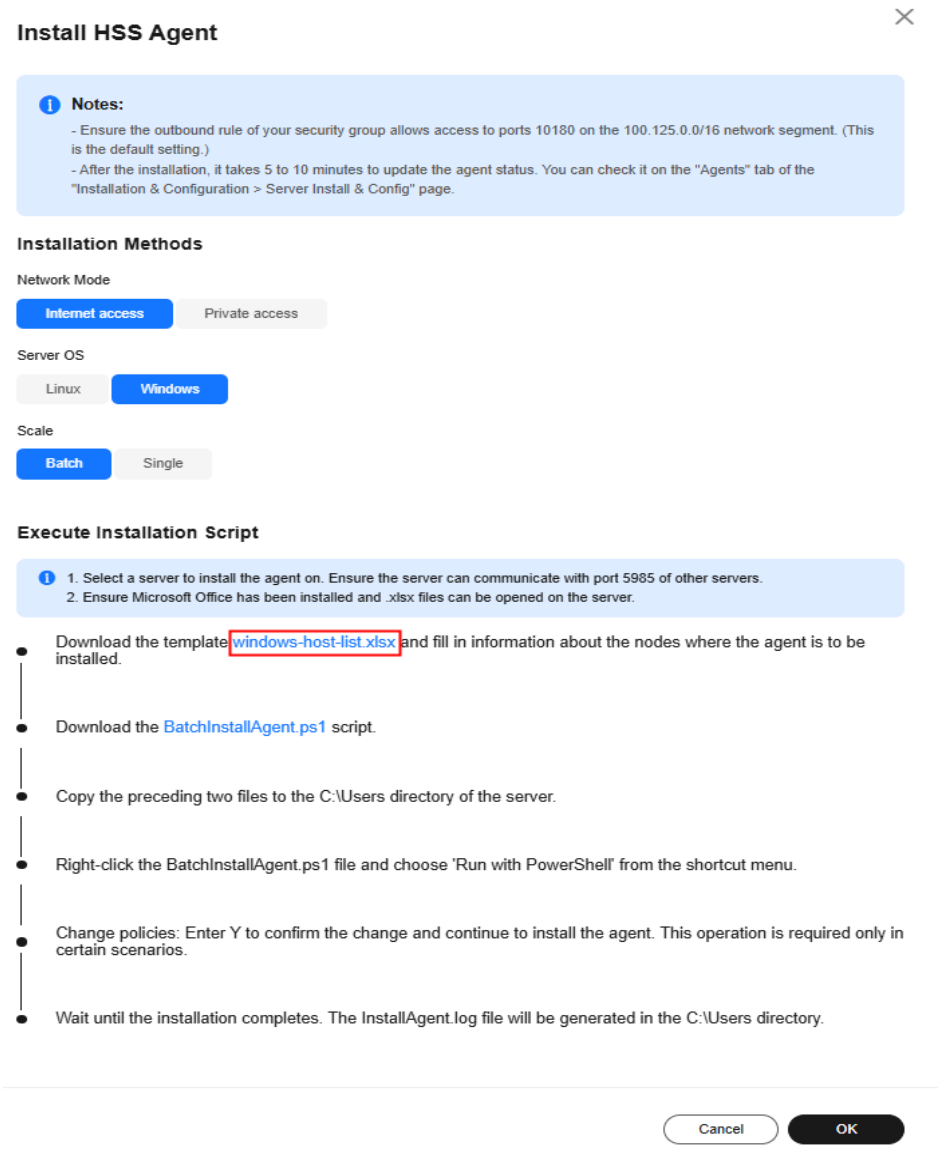
Step 7 Select an installation method.

- **Network Mode**: **Internet access**
- **Server OS**: **Windows**
- **Scale**: **Batch**

Step 8 Install the agent as prompted.

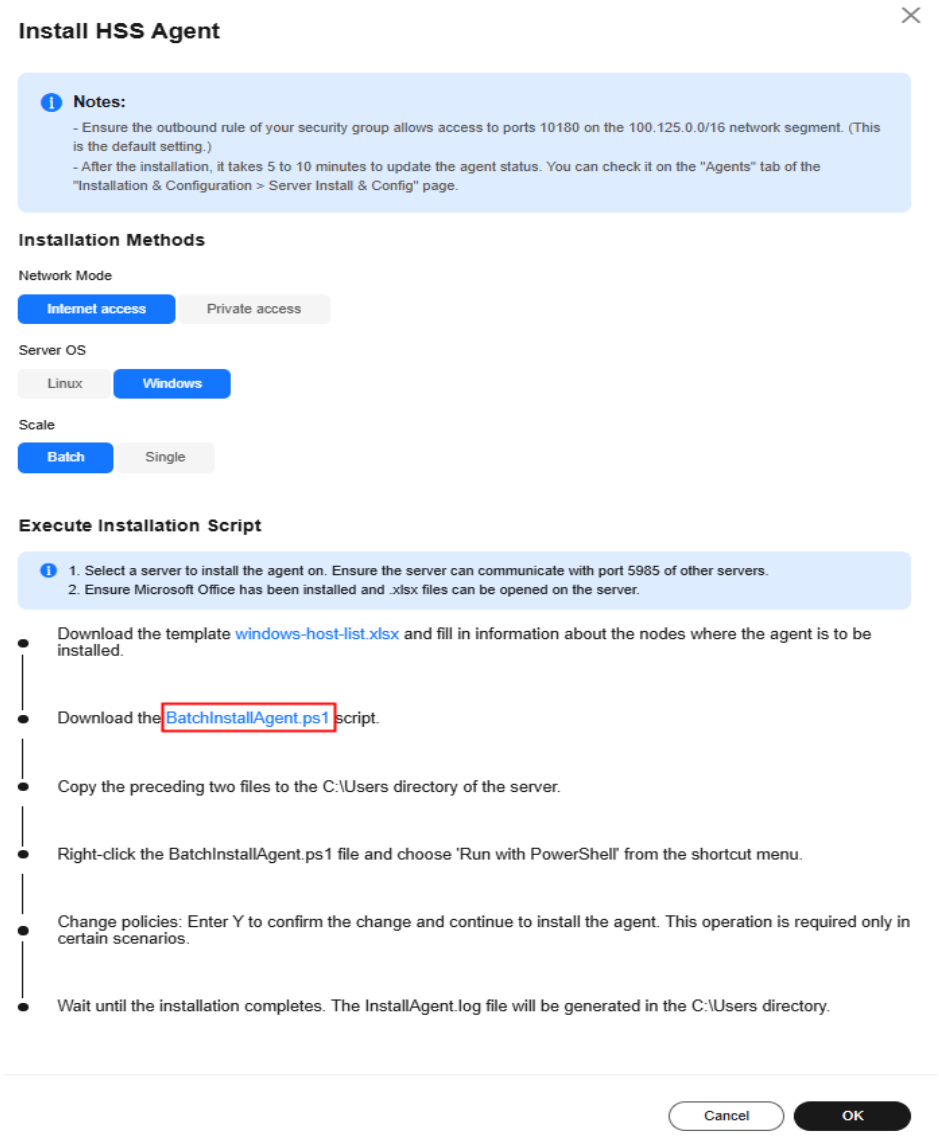
1. On the console, click **windows-host-list.xlsx** in the **Install HSS Agent** dialog box to download the template to the local PC.

Figure 2-27 Downloading windows-host-list.xlsx



2. Enter server information based on the requirements in the **windows-host-list.xlsx** template and save it.
3. Return to the HSS console and click **BatchInstallAgent.ps1** to download the installation script.

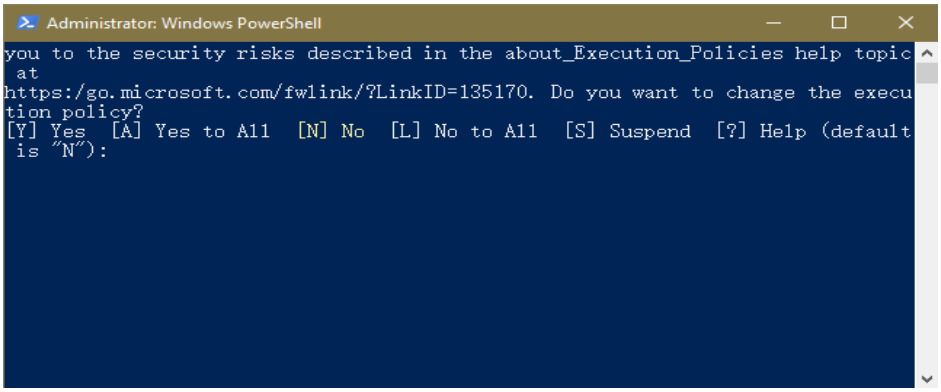
Figure 2-28 Downloading BatchInstallAgent.ps1



4. Copy the **windows-host-list.xlsx** and **BatchInstallAgent.ps1** files to the **C:\Users\Administrator** directory of the server where the agent is to be installed.
5. Right-click **BatchInstallAgent.ps1** and choose **Run with PowerShell**.
6. (Optional) In the dialog box that is displayed, enter **Y** to run the script to install the agent.

   If no dialog box is displayed, skip this step.

Figure 2-29 Changing the execution policy



7. After the script is executed successfully, check whether the **BatchInstallAgent.log** file exists in **C:\Users\Administrator**.

   If the **BatchInstallAgent.log** file exists, the agent has been installed.

----End

FAQ

For details about how to troubleshoot the agent installation failure, see **What Should I Do If Agent Installation Failed?**

2.4 Enabling Protection

To enable protection, allocate a quota to a server or a container. After protection is disabled or the protected server or container is removed, the quota can be allocated to another server or container.

Prerequisites

- Server
  - Choose **Asset Management** > **Servers & Quota**. The **Agent Status** of a server is **Online**, and the **Protection Status** of the server is **Unprotected**.
  - You have purchased required edition quotas in your region. For details, see **How Do I Check My Quotas?**
- Container
  - Choose **Asset Management** > **Containers & Quota**. The **Agent Status** of the node is **Online** and the **Protection Status** is **Unprotected**.
  - You have purchased required edition quotas in your region. For details, see **How Do I Check My Quotas?**

Constraints and Limitations

- Server

  Authorize the Windows firewall when you enable protection for a Windows server. Do not disable the Windows firewall while you use HSS. If the Windows firewall is disabled, HSS cannot block the source IP addresses of brute-force attacks. This problem may persist even if the Windows firewall is enabled after being disabled.

- Container

  Currently, HSS can only protect running Docker and Containerd containers.

Enabling Protection

Perform the following operations to enable protection based on the edition you need.

Enabling the Basic/Professional/Enterprise/Premium Edition

Step 1 Log in to the management console.

Step 2 Click ☰ in the upper left corner of the page, select a region, and choose **Security & Compliance** > **HSS** to go to the HSS management console.

Step 3 In the navigation pane on the left, choose **Asset Management** > **Servers & Quota**.

NOTE

The server list displays the protection status of only the following servers:

- Huawei Cloud servers purchased in the selected region
- Non-Huawei Cloud servers that have been added to the selected region

Step 4 Click **Enable** in the **Operation** column of a server.

Step 5 Confirm the server information and select a billing mode.

You can buy HSS in the pay-per-use or yearly/monthly mode.

- **Yearly/Monthly**
  - **Billing Mode**: Select **Yearly/Monthly**.
  - **Edition**: Select an edition.
  - **Select Quota**: Select a quota allocation mode.
    - **Select a quota randomly**: Let the system allocate the quota with the longest remaining validity to the server.
    - Select a quota ID and allocate it to a server.
- **Pay-per-use**
  - **Billing Mode**: Select **Pay-per-use**.
  - **Edition**: Select an edition.
  - **Tags**: Select a tag if you want to use it to identify multiple types of cloud resources.

NOTE

- If the quota is insufficient when you select the yearly/monthly mode, you need to purchase HSS quotas.
- If the version of the agent installed on the Linux server is 3.2.10 or later or the version of the agent installed on the Windows server is 4.0.22 or later, ransomware prevention is automatically enabled with the premium edition. Deploy honeypot files on servers and automatically isolate suspicious encryption processes (there is a low probability that processes are incorrectly isolated). You are also advised to enable backup so that you can restore data in the case of a ransomware attack to minimize losses. For details, see **Enabling Ransomware Backup**.

Step 6 Read the *Host Security Service Disclaimer* and select **I have read and agree to the Host Security Service Disclaimer**.

Step 7 Click **OK**. If the **Protection Status** of the target server is **Enabled**, the basic, professional, enterprise or premium edition has been enabled.

NOTE

- Alternatively, on the **Quotas** tab of the **Servers & Quota** page, click **Bind Server** in the **Operation** column to bind a quota to a server. HSS will automatically enable protection for the server.
- A quota can be bound to a server to protect it, on condition that the agent on the server is online.
- After HSS is enabled, it will scan your servers for security issues. Check items vary according to the edition you enabled.

  For details about the differences between the editions, see **Features**.

----End

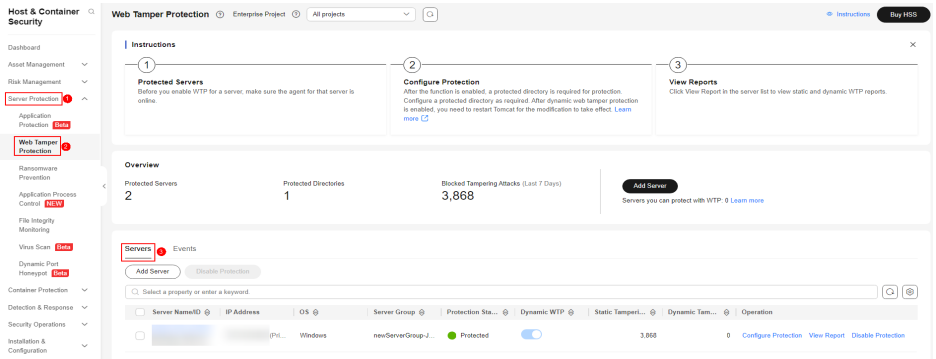
Enabling Web Tamper Protection

Step 1 **Log in to the management console**.

Step 2 Click ☰ in the upper left corner of the page, select a region, and choose **Security & Compliance** > **HSS** to go to the HSS management console.

Step 3 In the navigation pane, choose **Server Protection** > **Web Tamper Protection**. On the **Web Tamper Protection** page, click **Add Server**.

Figure 2-30 Adding protected servers



Step 4 On the **Add Server** page, click the **Available Servers** tab. Select the target server, select a quota from the drop-down list or retain the default value, and click **Add and Enable Protection**.

Step 5 You can check the server protection status on the **Web Tamper Protection** page.

- Choose **Server Protection** > **Web Tamper Protection**. If the **Protection Status** of the server is **Protected**, WTP has been enabled.
- Choose **Asset Management** > **Servers & Quota** and click the **Servers** tab. If the protection status of the target server is **Enabled** and the **Edition/Expiration Date** of it is **Web Tamper Protection**, the WTP edition is enabled.

NOTE

- To enable WTP protection for a server, you can also choose **Asset Management** > **Servers & Quota**, click the **Quotas** tab, and click **Bind Server**.
- The web tamper protection provided by the HSS WTP edition takes effect only after you specify the directories to be protected. For more information, see **Adding a Protected Directory**.
- If the version of the agent installed on the Linux server is 3.2.10 or later or the version of the agent installed on the Windows server is 4.0.22 or later, ransomware prevention is automatically enabled with the WTP edition. Deploy bait files on servers and automatically isolate suspicious encryption processes (there is a low probability that processes are incorrectly isolated). You are also advised to enable backup so that you can restore data in the case of a ransomware attack to minimize losses. For details, see **Enabling Ransomware Backup**.
- After WTP is enabled for a website, if you need to update the website, add a privileged process or temporarily disable WTP. Enable WTP after the update is complete. Otherwise, the website will fail to be updated. Your website is not protected while WTP is disabled. Enable it immediately after updating your website.

----End

Enabling Container Protection

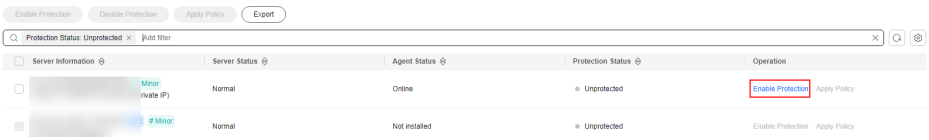
Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Containers & Quota**.

Step 4 In the row containing the desired server, click **Enable Protection** in the **Operation** column. The confirmation dialog box is displayed.

Figure 2-31 Enabling container protection



Step 5 Confirm the node information and select a billing mode.

You can buy quota in pay-per-use or yearly/monthly mode.

- **Yearly/Monthly**
  - **Billing Mode**: Select **Yearly/Monthly**.
  - **Select Quota**: Select a quota allocation mode.

    - **Select a quota randomly**: Let the system allocate the quota with the longest remaining validity to the server.
    - Select a quota ID and allocate it to a server.
- **Pay-per-use**
  - **Billing Mode**: Select **Pay-per-use**.
  - **Tags**: Select a tag if you want to use it to identify multiple types of cloud resources.

NOTE

- A container security quota protects one cluster node.
- If the version of the agent installed on the Linux server is 3.2.10 or later or the version of the agent installed on the Windows server is 4.0.22 or later, ransomware prevention is automatically enabled with the container edition. Deploy bait files on servers and automatically isolate suspicious encryption processes (there is a low probability that processes are incorrectly isolated). You are also advised to enable backup so that you can restore data in the case of a ransomware attack to minimize losses. For details, see **Enabling Ransomware Backup**.

Step 6 Read the *Host Security Service Disclaimer* and select **I have read and agree to the Container Guard Service Disclaimer**.

Step 7 Click **OK**. If the **Protection Status** of the node changes to **Protected**, protection has been enabled.

----End

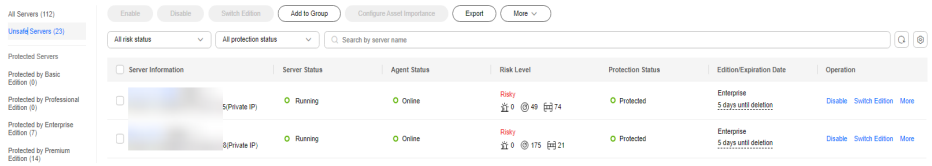
Viewing Detection Details

After server protection is enabled, HSS will immediately perform comprehensive detection on the server. The detection may take a long time.

Step 1 In the navigation tree on the left, choose **Asset Management** > **Servers & Quota**.

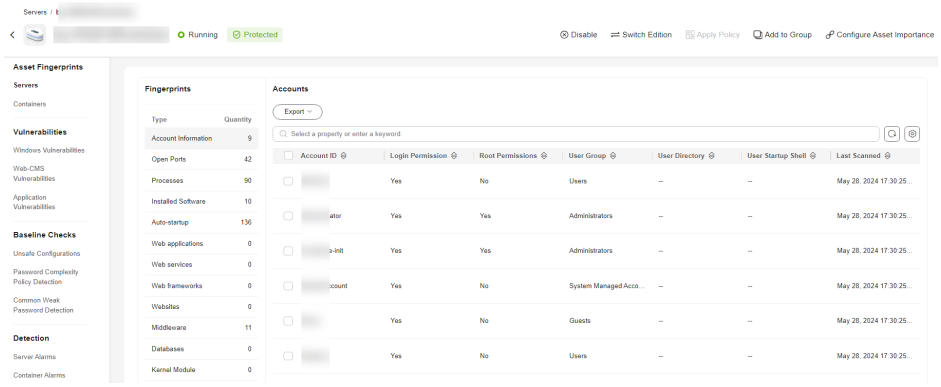
Step 2 On the left of the protection list, click **Unsafe Servers**.

Figure 2-32 Viewing risky items



Step 3 Click a server name to go to the details page. On this page, you can quickly check the detected information and risks of the server.

Figure 2-33 Viewing the detection result



----End

Follow-up Procedure

HSS provides server and container defense functions for you to enable as needed. For more information, see **Manual configurations**.

Table 2-8 Manual configurations

Category	Function	Reference
Security Configurations	• Common login location/IP address • SSH login IP address whitelist • Isolate and kill malicious programs	**Common Security Configuration**
Server Protection	• Application protection • Ransomware prevention • Application process control • File Integrity Monitoring (FIM) • Virus scan • Dynamic port honeypot	**Server Protection**

Category	Function	Reference
Container Protection	• Container firewall • Container cluster protection	Container Protection

2.5 Enabling Alarm Notifications

After alarm notification is enabled, you can receive alarm notifications sent by HSS to learn about security risks facing your servers and web pages. Without this function, you have to log in to the management console to view alarms.

- Alarm notification settings are effective only for the current region. To receive notifications from another region, switch to that region and configure alarm notification.
- Alarm notifications may be mistakenly blocked. If you have enabled notifications but not received any, check whether they have been blocked as spam.
- The Simple Message Notification (SMN) service is a paid service. For details about the price, see **Product Pricing Details**.

Enabling Alarm Notifications

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Alarm Notifications**. For more information, see **Table 2-9**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to configure alarm notifications.

- If you select a single enterprise project, the alarm notification information takes effect only in the corresponding enterprise project.
- If you select **All projects**, the alarm notification information takes effect in all enterprise projects.

Figure 2-34 Alarm configurations

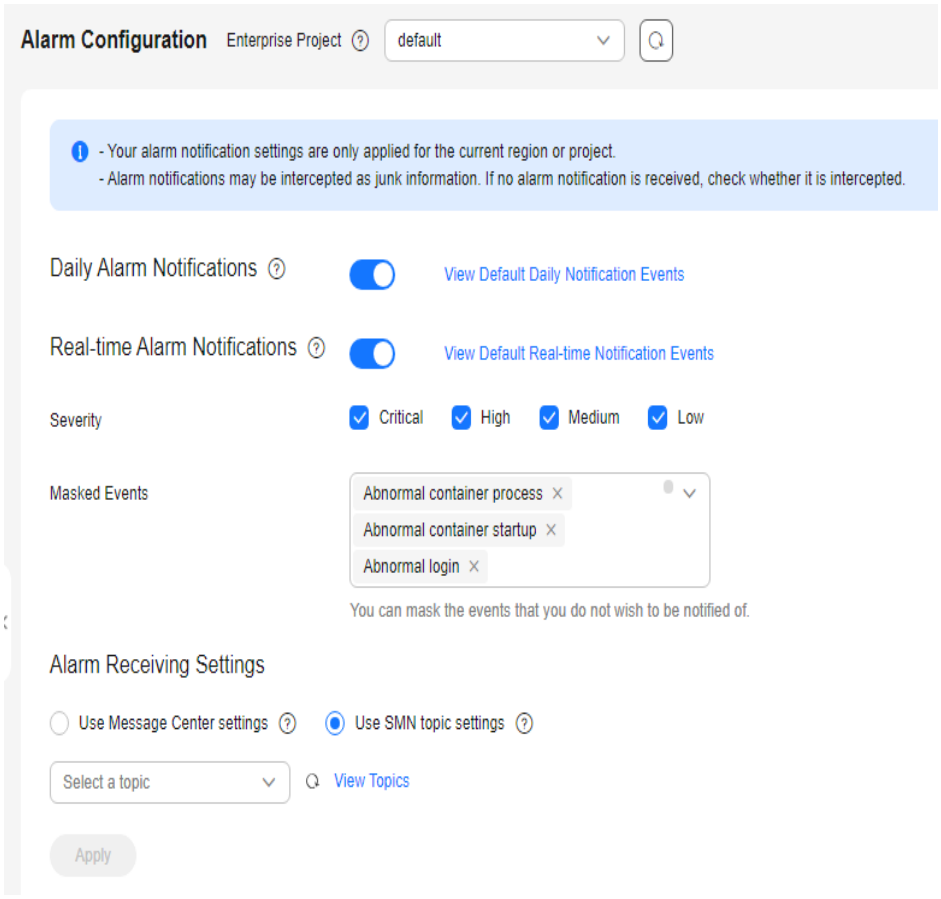


Table 2-9 Alarm configurations

Notification Item	Description	Suggestion
Daily alarm notification	HSS scans the accounts, web directories, vulnerabilities, malicious programs, and key configurations in the server system at 00:00 every day, and sends the summarized detection results to the recipients you set in the Message Center or SMN, depending on which one you chose. To view notification items, click **View Default Daily Notification Events**.	• It is recommended that you receive and periodically check all the content in the daily alarm notification to eliminate risks in a timely manner. • Daily alarm notifications contain a lot of check items. If you want to send the notifications to recipients set in an SMN topic, you are advised to set the topic protocol to **Email**.

Notification Item	Description	Suggestion
Real-time alarm notification	When an attacker intrudes a server, alarms are sent to the recipients you set in the Message Center or SMN, depending on which one you chose. To view notification items, click **View Default Real-time Notification Events**.	• It is recommended that you receive all the content in the real-time alarm notification and view them in time. The HSS system monitors the security of servers in real time, detects the attacker's intrusion, and sends real-time alarm notifications for you to quickly handle the problem. • Real-time alarm notifications are about urgent issues. If you want to send the notifications to recipients set in an SMN topic, you are advised to set the topic protocol to **SMS**.
Severity	Select the severities of alarms that you want to be notified of.	All
Masked Events	Select the events that you do not wish to be notified of. Select events to be masked from the drop-down list box.	Determine the events to be masked based on the description in **Alarm Notifications**.

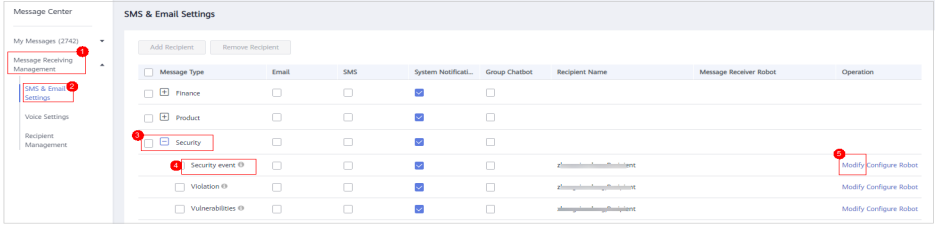
Step 4 Select the alarm notification mode.

- **Use Message Center settings**

  By default, alarm notifications are sent to the recipients specified in your message center. You can log in to your account to check your recipient settings.

  To configure recipients, choose **Message Receive Management** > **SMS & Email Settings**. In the **Security** area, click **Modify** in the row where **Security event** resides.

  Figure 2-35 Editing message recipients



- **Use SMN topic settings**

  Select an available topic from the drop-down list or click **View Topics** and create a topic.

To create a topic, that is, to configure a mobile phone number or email address for receiving alarm notifications, perform the following steps:

a. Create a topic. For details, see **Creating a Topic**.

b. Configure the mobile phone number or email address for receiving alarm notifications, that is, add one or more subscriptions for the created topic. For details, see **Adding a Subscription**..

c. Confirm the subscription. After the subscription is added, confirm the subscription as prompted by the received SMS message or email.

   The confirmation message about topic subscription may be regarded as spam. If you do not receive the message, check whether it is intercepted as spam.

You can create multiple notification topics based on the O&M plan and alarm notification type to receive different types of alarm notifications. For details about topics and subscriptions, see the *Simple Message Notification User Guide*.

Step 5 Click **Apply**. A message will be displayed indicating that the alarm notification is set successfully.

----End

Alarm Notifications

- **Daily Alarm Notifications**

  The service checks risks in your servers in the early morning every day, summarizes and collects detection results, and sends the results to your mobile phone or email box at 10:00 every day.

  Table 2-10 Daily alarm notification

Type	Item	Description
Assets	Dangerous ports	Check for high-risk open ports and unnecessary ports.
	Agent not installed	Check for servers with no HSS agent installed, and remind you to install the agent on these servers in a timely manner.
	Protection interrupted	Check for servers whose agent protection is interrupted, and remind you to rectify faults in a timely manner.
Vulnerabilities	Critical vulnerabilities	Detect critical vulnerabilities and fix them in a timely manner.
Unsafe settings	Unsafe configurations	Detect unsafe settings of key applications that will probably be exploited by hackers to intrude servers.

Type	Item	Description
	Common weak passwords	Detect weak passwords in MySQL, FTP, and system accounts.
Intrusions	Unclassified malware	Check and handle detected malicious programs all in one place, including web shells, Trojan, mining software, worms, and viruses.
	Rootkits	Detect server assets and report alarms for suspicious kernel modules, files, and folders.
	Ransomware	Check for ransomware in media such as web pages, software, emails, and storage media. Ransomware can encrypt and control your data assets, such as documents, emails, databases, source code, images, and compressed files, to leverage victim extortion.
	Web shells	Check whether the files (often PHP and JSP files) detected by HSS in your web directories are web shells. • Web shell information includes the Trojan file path, status, first discovery time, and last discovery time. You can choose to ignore warning on trusted files. • You can use the manual detection function to detect web shells on servers.
	Reverse shells	Monitor user process behaviors in real time to detect reverse shells caused by invalid connections. Reverse shells can be detected for protocols including TCP, UDP, and ICMP.
	Redis vulnerability exploits	Detect the modifications made by the Redis process on key directories in real time and report alarms.
	Hadoop vulnerability exploits	Detect the modifications made by the Hadoop process on key directories in real time and report alarms.
	MySQL vulnerability exploits	Detect the modifications made by the MySQL process on key directories in real time and report alarms.
	File privilege escalations	Check the file privilege escalations in your system.

Type	Item	Description
	Process privilege escalations	The following process privilege escalation operations can be detected: • Root privilege escalation by exploiting SUID program vulnerabilities • Root privilege escalation by exploiting kernel vulnerabilities
	Important file changes	Receive alarms when critical system files are modified.
	File/ Directory changes	System files and directories are monitored. If a file or directory is modified, an alarm is generated, indicating that the file or directory may be tampered with.
	Abnormal process behaviors	Check the processes on servers, including their IDs, command lines, process paths, and behavior. Send alarms on unauthorized process operations and intrusions. The following abnormal process behavior can be detected: • Abnormal CPU usage • Processes accessing malicious IP addresses • Abnormal increase in concurrent process connections
	High-risk command executions	Check executed commands in real time and generate alarms if high-risk commands are detected.
	Abnormal shells	Detect actions on abnormal shells, including moving, copying, and deleting shell files, and modifying the access permissions and hard links of the files.
	Suspicious crontab tasks	Check and list auto-started services, scheduled tasks, pre-loaded dynamic libraries, run registry keys, and startup folders. You can get notified immediately when abnormal automatic auto-start items are detected and quickly locate Trojans.
	Container image blocking	If a container contains insecure images specified in suspicious image behaviors, an alarm will be generated and the insecure images will be blocked before a container is started in Docker.

Type	Item	Description
	Brute-force attacks	Check for brute-force attack attempts and successful brute-force attacks. • Detect password cracking attacks on accounts and block attacking IP addresses to prevent server intrusion. • Trigger an alarm if a user logs in to the server by a brute-force attack.
	Abnormal logins	Check and handle remote logins. If a user's login location is not any common login location you set, an alarm will be triggered.
	Invalid accounts	Scan accounts on servers and list suspicious accounts in a timely manner.
	Vulnerability escapes	The service reports an alarm if it detects container process behavior that matches the behavior of known vulnerabilities (such as Dirty COW, brute-force attack, runC, and shocker).
	File escapes	The service reports an alarm if it detects that a container process accesses a key file directory (for example, **/etc/shadow** or **/etc/crontab**). Directories that meet the container directory mapping rules can also trigger such alarms.
	Abnormal container processes	Container services are usually simple. If you are sure that only specific processes run in a container, you can add the processes to the whitelist of a policy, and associate the policy with the container. The service reports an alarm if it detects that a process not in the whitelist is running in the container.
	Abnormal container startups	Check for unsafe parameter settings used during container startup. Certain startup parameters specify container permissions. If their settings are inappropriate, they may be exploited by attackers to intrude containers.
	High-risk system calls	Users can run tasks in kernels by Linux system calls. The service reports an alarm if it detects a high-risk call, such as **open_by_handle_at**, **ptrace**, **setns**, and **reboot**.

Type	Item	Description
	Sensitive file access	Detect suspicious access behaviors (such as privilege escalation and persistence) on important files.
	Web page tampering prevention for Windows servers	Protect the static web page files on your Windows website servers from malicious modification.
	Web page tampering prevention for Linux servers	Protect the static web page files on your Linux website servers from malicious modification.
	Dynamic WTP	Protect the static web page files on your Windows and Linux website servers from malicious modification.
	Application protection	Protect running applications. You simply need to add probes to applications, without having to modify application files. Currently, only Linux servers are supported, and only Java applications can be connected.
	Virus scan	Generates alarms for detected virus-infected files.
	Suspicious process executions	Detect and report alarms on unauthenticated or unauthorized application processes.
	Suspicious process file access	Detect and report alarms on the unauthenticated or unauthorized application processes accessing specific directories.

- **Real-Time Alarm Notifications**

  When an event occurs, an alarm notification is immediately sent.

  Table 2-11 Real-time alarm notification

Notification Item	Item	Description
Assets	Dangerous ports	Check for high-risk open ports and unnecessary ports.
	Agent not installed	Check for servers with no HSS agent installed, and remind you to install the agent on these servers in a timely manner.

Notification Item	Item	Description
	Protection interrupted	Check for servers whose agent protection is interrupted, and remind you to rectify faults in a timely manner.
Intrusions	Unclassified malware	Check and handle detected malicious programs all in one place, including web shells, Trojans, mining software, worms, and viruses.
	Rootkits	Detect server assets and report alarms for suspicious kernel modules, files, and folders.
	Ransomware	Check for ransomware in media such as web pages, software, emails, and storage media. Ransomware can encrypt and control your data assets, such as documents, emails, databases, source code, images, and compressed files, to leverage victim extortion.
	Web shells	Check whether the files (often PHP and JSP files) detected by HSS in your web directories are web shells. • Web shell information includes the Trojan file path, status, first discovery time, and last discovery time. You can choose to ignore warning on trusted files. • You can use the manual detection function to detect web shells on servers.
	Reverse shells	Monitor user process behaviors in real time to detect reverse shells caused by invalid connections. Reverse shells can be detected for protocols including TCP, UDP, and ICMP.
	Redis vulnerability exploits	Detect the modifications made by the Redis process on key directories in real time and report alarms.
	Hadoop vulnerability exploits	Detect the modifications made by the Hadoop process on key directories in real time and report alarms.
	MySQL vulnerability exploits	Detect the modifications made by the MySQL process on key directories in real time and report alarms.
	File privilege escalations	Check the file privilege escalations in your system.

Notification Item	Item	Description
	Process privilege escalations	The following process privilege escalation operations can be detected: • Root privilege escalation by exploiting SUID program vulnerabilities • Root privilege escalation by exploiting kernel vulnerabilities
	Important file changes	Receive alarms when critical system files are modified.
	File/ Directory changes	System files and directories are monitored. When a file or directory is modified, an alarm is generated, indicating that the file or directory may be tampered with.
	Abnormal process behavior detection	Check the processes on servers, including their IDs, command lines, process paths, and behavior. Send alarms on unauthorized process operations and intrusions. The following abnormal process behavior can be detected: • Abnormal CPU usage • Processes accessing malicious IP addresses • Abnormal increase in concurrent process connections
	High-risk command executions	Check executed commands in real time and generate alarms if high-risk commands are detected.
	Abnormal shells	Detect actions on abnormal shells, including moving, copying, and deleting shell files, and modifying the access permissions and hard links of the files.
	Suspicious crontab tasks	Check and list auto-started services, scheduled tasks, pre-loaded dynamic libraries, run registry keys, and startup folders. You can get notified immediately when abnormal automatic auto-start items are detected and quickly locate Trojans.
	Container image blocking	If a container contains insecure images specified in suspicious image behaviors, an alarm will be generated and the insecure images will be blocked before a container is started in Docker.

Notification Item	Item	Description
	Abnormal logins	Check and handle remote logins. If a user's login location is not any common login location you set, an alarm will be triggered.
	Invalid accounts	Scan accounts on servers and list suspicious accounts in a timely manner.
	Vulnerability escapes	The service reports an alarm if it detects container process behavior that matches the behavior of known vulnerabilities (such as Dirty COW, brute-force attack, runC, and shocker).
	File escapes	The service reports an alarm if it detects that a container process accesses a key file directory (for example, **/etc/shadow** or **/etc/crontab**). Directories that meet the container directory mapping rules can also trigger such alarms.
	Abnormal container processes	Container services are usually simple. If you are sure that only specific processes run in a container, you can add the processes to the whitelist of a policy, and associate the policy with the container. The service reports an alarm if it detects that a process not in the whitelist is running in the container.
	Abnormal container startups	Check for unsafe parameter settings used during container startup. Certain startup parameters specify container permissions. If their settings are inappropriate, they may be exploited by attackers to intrude containers.
	High-risk system calls	Users can run tasks in kernels by Linux system calls. The service reports an alarm if it detects a high-risk call, such as **open_by_handle_at**, **ptrace**, **setns**, and **reboot**.
	Sensitive file access	Detect suspicious access behaviors (such as privilege escalation and persistence) on important files.
	Web page tampering prevention for Windows servers	Protect the static web page files on your Windows website servers from malicious modification.

Notification Item	Item	Description
	Web page tampering prevention for Linux servers	Protect the static web page files on your Linux website servers from malicious modification.
	Dynamic WTP	Protect the static web page files on your Windows and Linux website servers from malicious modification.
	Application protection	Protect running applications. You simply need to add probes to applications, without having to modify application files. Currently, only Linux servers are supported, and only Java applications can be connected.
	Auto Blocking	Notify users of successful automatic isolation and killing of malicious programs, automatic blocking of ransomware, and automatic blocking of WTP.
	Suspicious process executions	Detect and report alarms on unauthenticated or unauthorized application processes.
	Suspicious process file access	Detect and report alarms on the unauthenticated or unauthorized application processes accessing specific directories.
Login	Success login	Notifications are sent to accounts that have successfully logged in.
Server protection	Ransomware protection disabled	An alarm is reported if ransomware prevention is disabled manually or abnormally.

2.6 Common Security Configuration

2.6.1 Configuring Server Login Protection

You can configure common login locations, common login IP addresses, and an SSH login IP address whitelist.

Configuring Common Login Locations

After you configure common login locations, HSS will generate alarms on the logins from other login locations. A server can be added to multiple login locations.

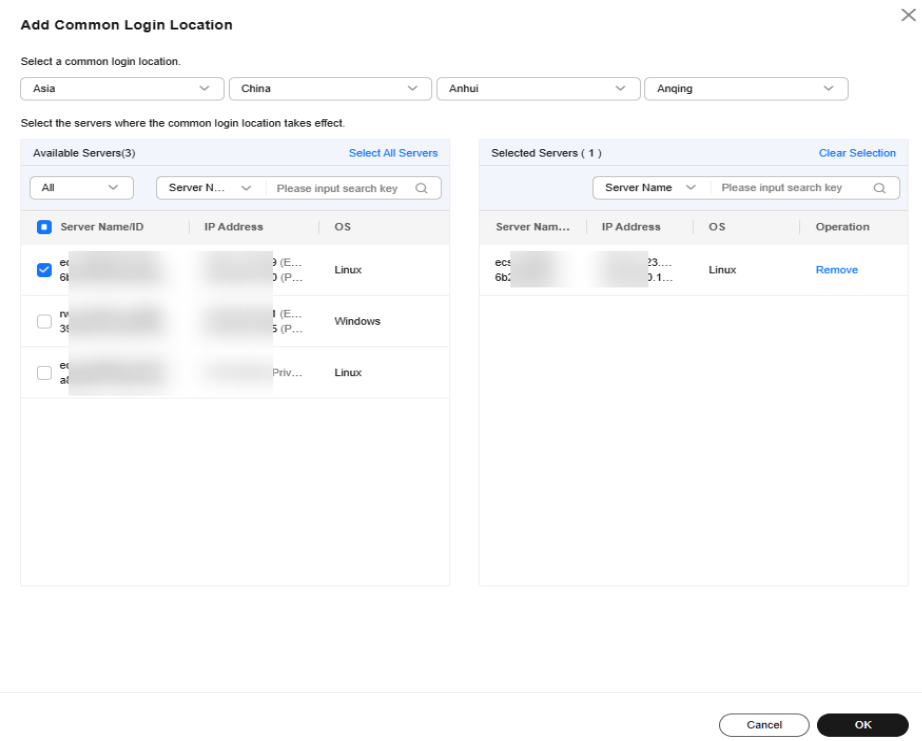
Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Installation & Configuration** > **Server Install & Config** and click the **Security Configuration** tab. Click **Common Login Locations** and click **Add Common Login Location**.

Step 4 In the dialog box that is displayed, select a geographical location and select servers. Confirm the information and click **OK**.

Figure 2-36 Configuring common login locations



Step 5 Return to the **Security Configuration** tab of the **Installation & Configuration** page. Check whether the added locations are displayed on the **Common Login Locations** subtab.

NOTE

HSS has a learning process for remote login alarms. Therefore, after common login locations are added, the first three login locations are regarded as common login locations, and alarms are generated only for the fourth and subsequent non-common login locations.

----End

Configuring Common Login IP Addresses

After you configure common IP addresses, HSS will generate alarms on the logins from other IP addresses.

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

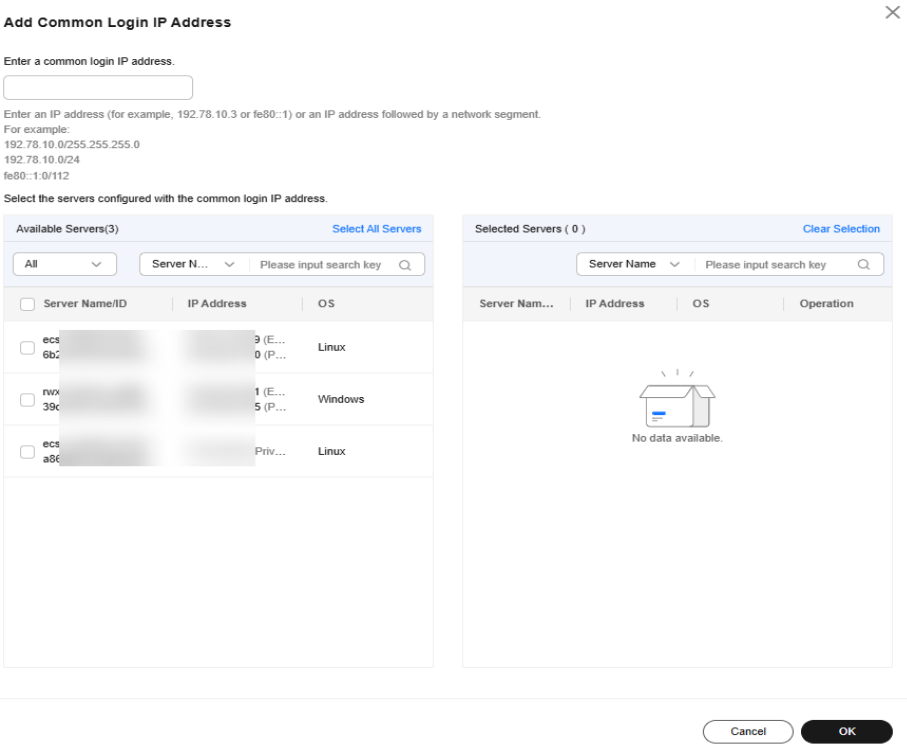
Step 3 Choose **Installation & Configuration** > **Server Install & Config** and click the **Security Configuration** tab. Click **Common Login IP Addresses** and click **Add Common Login IP Address**.

Step 4 In the dialog box that is displayed, enter an IP address and select servers. Confirm the information and click **OK**.

NOTE

- A common login IP address must be a public IP address or IP address segment.
- Only one IP address can be added at a time. To add multiple IP addresses, repeat the operations until all IP addresses are added. Up to 20 IP addresses can be added.

Figure 2-37 Entering a common login IP address



Step 5 Return to the **Security Configuration** tab of the **Installation & Configuration** page. Check whether the added locations are displayed on the **Common Login IP Addresses** subtab.

----End

Configuring an SSH Login IP Address Whitelist

The SSH login whitelist controls SSH access to servers to prevent account cracking.

NOTE

- An account can have up to 10 SSH login IP addresses in the whitelist.
- After you configure an SSH login IP address whitelist, SSH logins will be allowed only from whitelisted IP addresses.
  - Before enabling this function, ensure that all IP addresses that need to initiate SSH logins are added to the whitelist. Otherwise, you cannot remotely log in to your server using SSH.

    If your service needs to access a server, but not necessarily via SSH, you do not need to add its IP address to the whitelist.
  - Exercise caution when adding an IP address to the whitelist. This will make HSS no longer restrict access from this IP address to your servers.

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

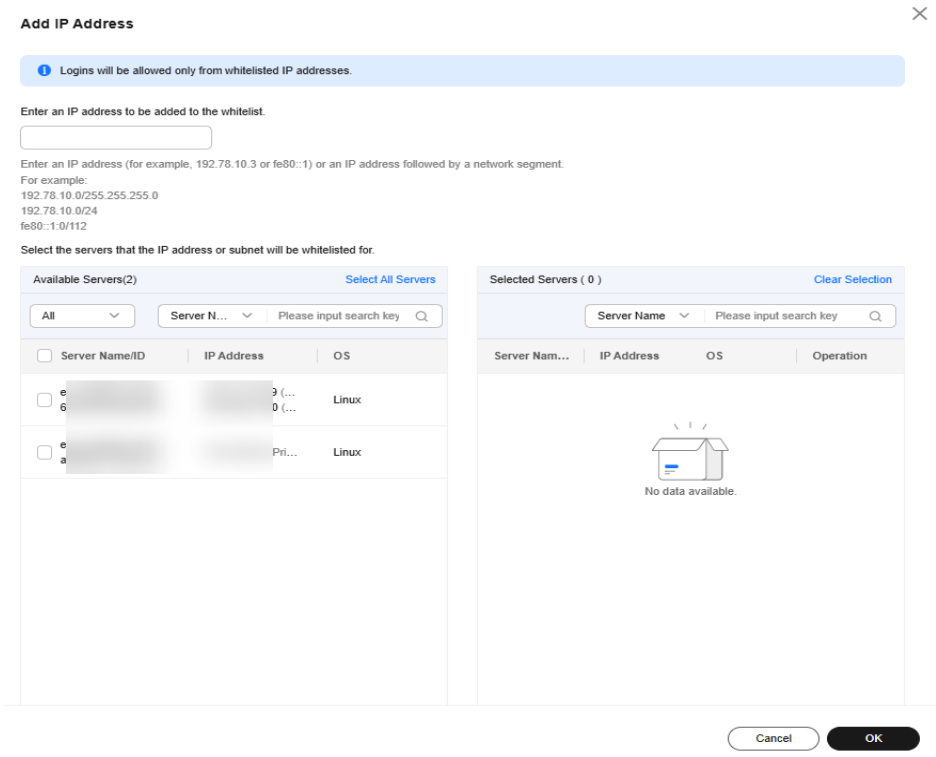
Step 3 Choose **Installation & Configuration** > **Server Install & Config** and click the **Security Configuration** tab. Click **SSH IP Whitelist** and click **Add IP Address**.

Step 4 In the dialog box that is displayed, enter an IP address and select servers. Confirm the information and click **OK**.

NOTE

- A common login IP address must be a public IP address or IP address segment. Otherwise, you cannot remotely log in to the server in SSH mode.
- Only one IP address can be added at a time. To add multiple IP addresses, repeat the operations until all IP addresses are added.

Figure 2-38 Entering an IP address



Step 5 Return to the **Security Configuration** tab of the **Installation & Configuration** page. Check whether the added locations are displayed on the **Common Login IP Addresses** subtab.

----End

2.6.2 Isolating and Killing Malicious Programs

HSS automatically isolates and kills identified malicious programs, such as web shells, Trojans, and worms, removing security risks.

Programs are isolated and killed based on their confidence ratings. High confidence indicates a high probability that the detected program is a malicious program. To avoid mistakenly stopping trustworthy programs and affecting services, only the suspicious programs with high confidence are automatically isolated and killed. You can manually isolate and kill programs with low confidence. For details, see **Handling Server Alarms**.

NOTE

To check the confidence rating of a suspicious program, choose **Detection & Response** > **Alarms** on the HSS console, and click **Server Alarms**. Click a malicious program alarm name to view details.

Isolating and Killing Malicious Programs

Step 1 **Log in to the management console**.

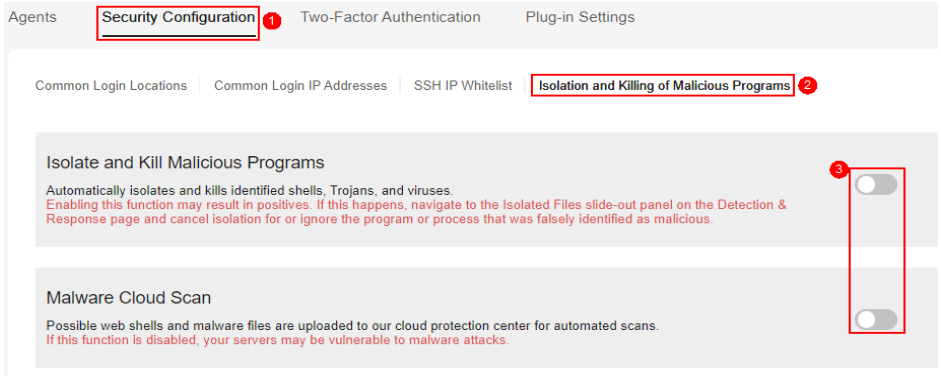
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Installation & Configuration** > **Server Install and Config** and click the **Security Configuration** tab. Click the **Isolation and Killing of Malicious Programs** tab and enable **Isolate and Kill Malicious Programs** and **Malware Cloud Scan**.

NOTE

After the cloud scan function is enabled, all HSS servers will be scanned. Some HSS quota editions can support only limited scanning capabilities. Therefore, you are advised to enable the enterprise edition or higher to enjoy all capabilities of the isolation and killing function.

Figure 2-39 Enabling isolation and killing



Step 4 In the confirmation dialog box, click **OK** to enable the isolation and killing of malicious programs and malware cloud scan.

Automatic isolation and killing may cause false positives. You can choose **Detection & Response** > **Events** to view isolated malicious programs. You can cancel the isolation or ignore misreported malicious programs. For details, see **Viewing Server Alarms**.

NOTICE

- When a program is isolated and killed, the process of the program is terminated immediately. To avoid impact on services, check the detection result, and cancel the isolation of or unignore misreported malicious programs (if any).
- If **Isolate and Kill Malicious Programs** is set to **Disable** on the **Isolation and Killing of Malicious Programs** tab, HSS will generate an alarm when it detects a malicious program.

  To isolate and kill the malicious programs that triggered alarms, choose **Detection & Response** > **Events** and click **Malicious program**.

----End

2.6.3 Enabling 2FA

Two-factor authentication (2FA) requires users to provide verification codes before they log in. The codes will be sent to their mobile phones or email boxes. You have to choose an SMN topic for servers where 2FA is enabled. The topic specifies the recipients of login verification codes, and HSS will authenticate login users accordingly.

Prerequisites

- You have created a message topic and added a subscription. For details, see **Simple Message Notification Getting Started**.
- Server protection has been enabled. For details, see **Enabling Protection**.
- To enable 2FA, you need to disable the SELinux firewall.
- On a Windows server, 2FA may conflict with G01 and 360 Guard (server edition). You are advised to stop them.

Constraints and Limitations

- If 2FA is enabled, it can be used only in following scenarios:
  - Linux: The SSH password is used to log in to an ECS, and the OpenSSH version is earlier than 8.
  - Windows: The RDP file is used to log in to a Windows ECS.
- When two-factor authentication is enabled for Windows ECSs, the **User must change password at next logon** function is not allowed. To use this function, disable two-factor authentication.

Enabling 2FA

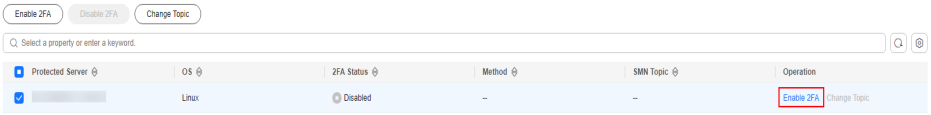
Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Installation & Configuration** > **Server Install & Config** and click **Two-Factor Authentication**.

Step 4 Select servers and click **Enable 2FA** above the list, or select a server and click **Enable 2FA** in the **Operation** column.

Figure 2-40 Enabling 2FA



Step 5 In the displayed **Enable 2FA** dialog box, select an authentication mode.

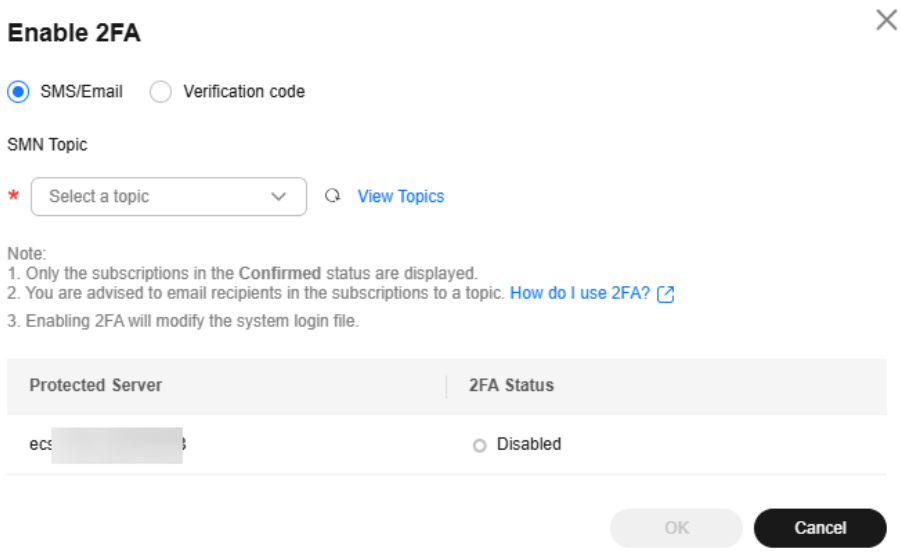
- **SMS/Email**

  You need to select an SMN topic for SMS and email verification.

  - The drop-down list displays only notification topics that have been confirmed.
  - If there is no topic, click **View** to create one. For details, see **Creating a Topic**.
  - If your topic contains multiple mobile numbers or email addresses, during two-factor authentication,
    - If you use a mobile phone number for verification, all the endpoints (mobile numbers and email addresses) in the topic will receive a verification code.
    - If you use an email address for verification, only this address will receive a verification code.

  You can delete the mobile numbers and email addresses that do not need to receive verification messages.

Figure 2-41 SMS/Email verification



- **Verification code**

  Use the verification code you receive in real time for verification.

Step 6 Click **OK**. After 2FA is enabled, it takes about 5 minutes for the configuration to take effect.

NOTICE

When you log in to a remote Windows server from another Windows server where 2FA is enabled, you need to manually add credentials on the latter. Otherwise, the login will fail.

To add credentials, choose **Start** > **Control Panel**, and click **User Accounts**. Click **Manage your credentials** and then click **Add a Windows credential**. Add the username and password of the remote server that you want to access.

----End

3 Checking the Dashboard

On the HSS dashboard, you can check the security score, risks, and protection overview of all your assets in real time, including servers and containers.

Checking the Dashboard

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Dashboard** and check the security overview. For more information, see **Table 3-1**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Figure 3-1 Dashboard

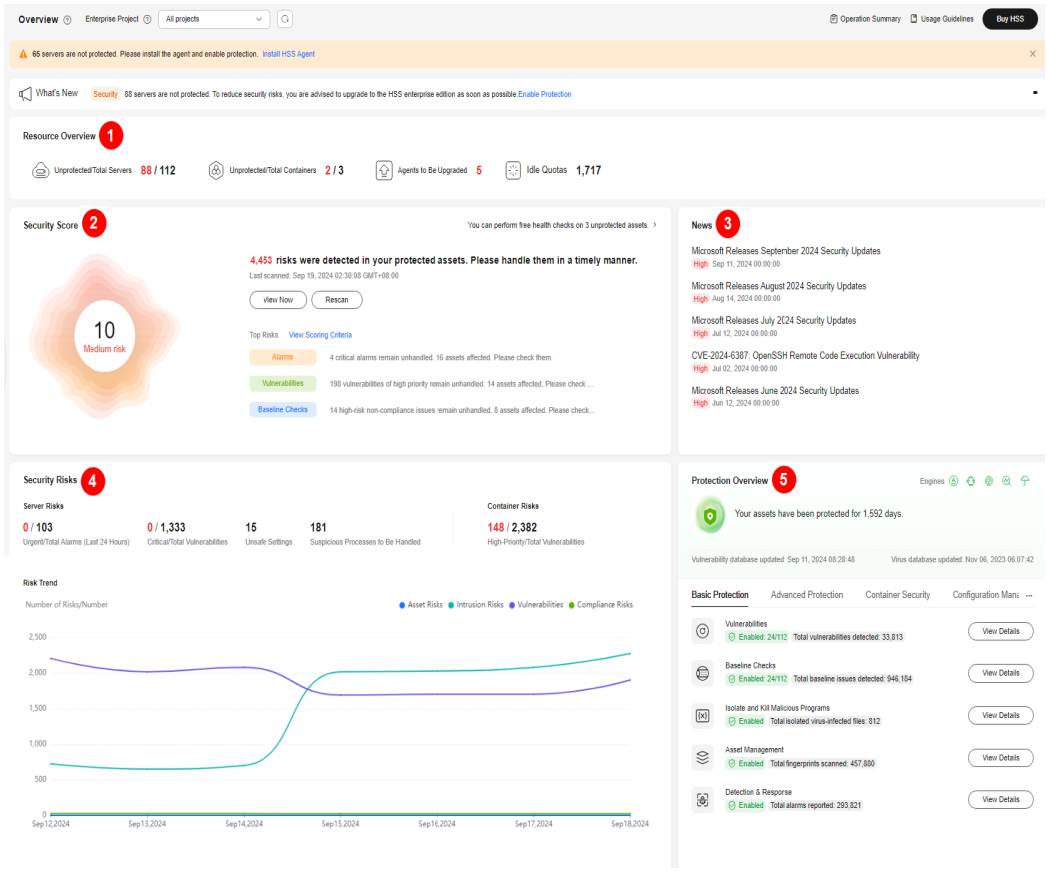


Table 3-1 Dashboard components

Component	Description
Resource Overview (Component 1 in **Dashboard**)	Check the percentage of unprotected servers or containers, idle quotas, and agents to be upgraded. • Click the number of unprotected resources to go to the server or container management page and view the unprotected resource list. • Click the number of agents to be upgraded to go to the agent list and upgrade agents. • Click the number of idle quotas to go to the protection quota list. **NOTE** HSS will be continuously upgraded to provide new features and fix bugs. To enjoy better HSS features, upgrade the agent to the latest version in a timely manner. For details, see **Upgrading the agent**.

Component	Description
Secure score (Component 2 in **Dashboard**)	The security score is in the range 0 to 100. The default score for risk-free assets is 100. Points are deducted based on baseline risks, vulnerability risks, intrusion risks, and asset risks. A low score indicates high security risks in assets. To ensure the security of your assets, you are advised to handle security risks in a timely manner and improve the security score. 1. In the **Security Score** area, click **View Now**. 2. In the **Handle Now** dialog box, view the deduction items and click to expand the details. 3. Click **Handle** on the right of deduction items to go to the corresponding risk list. You can rectify the fault based on the risk details and handling suggestions. For details about the score deduction items and how to increase the score, see **Security Scores Criteria and Methods for Improving Scores**. 4. After the risk is fixed, click **Rescan** to update the score.
News (Component 3 in **Dashboard**)	Latest vulnerability information.

Component	Description
Security risk (Component 4 in **Dashboard**)	Security risks detected by HSS in your assets. • **Server Risks** – **Urgent/Total Alarms**: Number of alarms that need to be handled immediately and the total number of alarms. You can click the number of urgent alarms to go to the **Alarms** page and handle alarms. For details, see **Handling Server Alarms**. – Critical/Total Vulnerabilities: Number of critical vulnerabilities and the total number of vulnerabilities. You can click the number of critical vulnerabilities to go to the **Vulnerabilities** page and handle vulnerabilities. For details, see **Handling Vulnerabilities**. – **Unsafe Settings**: Number of baseline risks to be handled. You can click the number to go to the **Baseline Checks** page and fix baseline risks. For details, see **Viewing and Processing Baseline Check Results**. – **Suspicious Processes to Be Handled**: Total number of suspicious processes to be handled. You can click the number of suspicious processes to be handled to go to the **Application Process Control** page and handle suspicious processes. For details, see **Checking and Handling Suspicious Processes**. • **Container Risks** **High-Priority/Total Vulnerabilities**: Number of high-risk vulnerabilities and the total number of vulnerabilities. You can click the number of high-priority vulnerabilities to go to the **Image Vulnerabilities** tab and check vulnerability fixing suggestions. For details, see **Viewing SWR Image Repository Vulnerabilities**. • **Risk Trend** Trends of asset risks, intrusion risks, vulnerability risks, and compliance risks in the last seven days.

Component	Description
Protection overview (Component 5 in **Dashboard**)	Asset protection overview. • **Assets**: Total number of assets in the current region. You can click the total number of assets to go to the **Assets** page to view asset distribution and protection status. • **Unprotected/Total Servers**: Number of unprotected servers and the total number of servers. You can click the number of unprotected servers to go to the **Servers & Quota** page to view servers and enable protection. For details, see **Enabling Protection**. • **Unprotected/Total Containers**: Number of unprotected containers and the total number of containers. You can click the number of unprotected containers to go to the **Containers & Quota** page to view containers and enable protection. For details, see **Enabling Protection**. • Vulnerability or virus database update time: The latest update time of the vulnerability or virus database. • Security feature status: The number of servers protected by each feature and the number of items detected by each feature. You can click **View Details** to go to corresponding feature page.
Best Practices	HSS best practices. Click a title to view details.
FAQ	HSS best FAQ. Click a title to view details.
Related Services	Security services related to HSS. Click a service name to go to its console.

----End

Security Scores Criteria and Methods for Improving Scores

The security score for risk-free assets is 100. A low score indicates high security risks in assets. HSS calculates your security score based on detected security items (vulnerabilities, compliance, intrusions, assets, and images) and unprotected assets. Scores are deducted every time a risk is detected in a category until all scores in that category are deducted. The full score of each category is as follows:

- No vulnerabilities detected: 20. For details about the score deduction criteria and improvement methods, see **Table 3-2**.
- No compliance risks detected: 20. For details about the score deduction criteria and improvement methods, see **Table 3-3**.

- No intrusion risks detected: 30. For details about the score deduction criteria and improvement methods, see **Table 3-4**.
- No asset risks detected: 10. For details about the score deduction criteria and improvement methods, see **Table 3-5**.
- No image risks detected: 10. For details about the score deduction criteria and improvement methods, see **Table 3-6**.
- No unprotected assets detected: 10. For details about the score deduction criteria and improvement methods, see **Table 3-7**.

Table 3-2 Vulnerability risks score deduction criteria and improvement methods

Category	Score Deduction Item	Affected HSS Edition	Points Deducted	Multiply Deducted Score by Risk Quantity	Methods for Improving Scores
Unhandled vulnerabilities	Unhandled critical vulnerabilities	All	10	√	Fix vulnerabilities based on the suggestions provided, scan for vulnerabilities again, and update the score. • For details about how to fix vulnerabilities, see **Handling Vulnerabilities**. • For details about how to scan for vulnerabilities, see **Vulnerability Scan**.
	Unhandled high-risk vulnerabilities	All	3	√	
	Unhandled medium-risk vulnerabilities	All	1	√	
	Unhandled low-risk vulnerabilities	All	0.1	√	

Category	Score Deduction Item	Affected HSS Edition	Points Deducted	Multiply Deducted Score by Risk Quantity	Methods for Improving Scores
No vulnerability scan	No vulnerability scans were performed in the past month.	All	15	×	• The basic edition HSS does not provide vulnerability scan. To use this feature, upgrade HSS to the enterprise or premium edition. For details, see **Upgrading Protection Quotas**. • In HSS professional, enterprise, premium, and WTP editions, you are advised to perform vulnerability scans. For details, see **Scanning Vulnerabilities**.

Table 3-3 Compliance risks score deduction criteria and improvement methods

Category	Score Deduction Item	Affected HSS Edition	Points Deducted	Multiply Deducted Score by Risk Quantity	Methods for Improving Scores
Unhandled non-compliance items	Unhandled high-risk non-compliance items	All	10	√	Rectify non-compliance items, perform a baseline check again, and update the score. • For details about how to fix baseline risks, see **Viewing and Processing Baseline Check Results**. • For details about how to perform baseline check, see **Performing Baseline Check**.
	Unhandled medium-risk non-compliance items	All	3	√	

Category	Score Deduction Item	Affected HSS Edition	Points Deducted	Multiply Deducted Score by Risk Quantity	Methods for Improving Scores
	Unhandled low-risk non-compliance items	All	1	√	
Weak passwords	Weak passwords	All	10	√	Use strong passwords. For details, see **How Do I Set a Secure Password?**
Weak password check not enabled	Weak password check policy not enabled	All	10	×	Enable the **Weak Password Detection** policy to check for weak passwords on servers. For details, see **Policy Management Overview**.
Baseline check not performed	No baseline checks were performed in the past month.	All	10	×	• The HSS basic and professional editions do not provide baseline check. To use this feature, you are advised to upgrade HSS to the enterprise or premium edition. For details, see **Upgrading Protection Quotas**. • In HSS professional, enterprise, premium, and WTP editions, you are advised to perform baseline checks. For details, see **Viewing and Editing a Policy**.

Table 3-4 Intrusion risks score deduction criteria and improvement methods

Category	Score Deduction Item	Affected HSS Edition	Points Deducted	Multiply Deducted Score by Risk Quantity	Methods for Improving Scores
Unhandled alarms	Critical alarms not fixed	All	10	√	Handle alarms based on the suggestions provided. After alarms are handled, HSS will automatically update the score. For details, see **Handling Server Alarms** and **Handling Container Alarms**.
	Unhandled high-risk alarms	All	3	√	
	Unhandled medium-risk alarms	All	1	√	
	Unhandled low-risk alarms	All	0.1	√	

Category	Score Deduction Item	Affected HSS Edition	Points Deducted	Multiply Deducted Score by Risk Quantity	Methods for Improving Scores
Protection not enabled	No security policies enabled	All	30	×	In the HSS professional, enterprise, premium, WTP, and container editions, you need to enable protection policies. For details, see **Policy Management Overview**. The intrusion detection policies that need to be enabled for each edition are as follows: • Professional/Enterprise edition – Linux: web shell detection, file protection, HIPS detection, login security check, malicious file detection, abnormal process behaviors, root privilege escalation, real-time process, and rootkit detection – Windows: AV detection, web shell detection, HIPS detection, login security check, and real-time process • Premium/WTP edition – Linux: cluster intrusion detection, web shell detection, file protection, HIPS detection, login security check, malicious file detection, port scan detection, abnormal process behaviors, root

Category	Score Deduction Item	Affected HSS Edition	Points Deducted	Multiply Deducted Score by Risk Quantity	Methods for Improving Scores
					privilege escalation, real-time process, and rootkit detection – Windows: AV detection, web shell detection, HIPS detection, login security check, and real-time process • Container edition Cluster intrusion detection, container escape detection, web shell detection, container file monitoring, container process whitelist, and suspicious image behaviors
	Login security policy not enabled	All	10	×	In HSS professional, enterprise, premium, WTP, and container editions, you need to enable the **Login Security Check** policy for servers. For details, see **Policy Management Overview**.
	Ransomware prevention policy not enabled	Premium edition	15	×	The HSS premium, WTP, and container editions support ransomware prevention. In these editions, you need to enable the ransomware prevention policy and the backup policy. (10 points will be deducted if backup is not enabled.) For details, see **Enabling Ransomware Prevention**.
	WTP policy is not enabled	WTP edition	20	×	In the HSS WTP edition, you need to enable WTP policy for servers. For details, see **Enabling Protection**.

Category	Score Deduction Item	Affected HSS Edition	Points Deducted	Multiply Deducted Score by Risk Quantity	Methods for Improving Scores
	Container runtime detection policy not enabled	Container edition	20	×	In the HSS container edition, you need to enable container escape, container process whitelist, container file monitoring, and container information collection policies and apply them to servers. For details, see **Overview**.

Table 3-5 Asset risks score deduction criteria and improvement methods

Category	Score Deduction Item	Affected HSS Edition	Points Deducted	Multiply Deducted Score by Risk Quantity	Methods for Improving Scores
Open ports	Open TCP/UDP high-risk ports	All	1	√	You are advised to disable unnecessary ports. To enable a port, choose **Asset Management** > **Server Fingerprints**, click **Open Ports**, and ignore the port.

Category	Score Deduction Item	Affected HSS Edition	Points Deducted	Multiply Deducted Score by Risk Quantity	Methods for Improving Scores
Asset discovery not enabled	Asset discovery policy not enabled	All	5	×	• The HSS basic, professional, and enterprise editions do not provide asset discovery. To use this feature, upgrade HSS to the premium edition. For details, see **Upgrading Protection Quotas**. • In the HSS premium and WTP editions, you are advised to enable the **Asset Discovery** policy. For details, see **Policy Management Overview**.

Table 3-6 Image risks score deduction criteria and improvement methods

Category	Score Deduction Item	Affected HSS Edition	Points Deducted	Multiply Deducted Score by Risk Quantity	Methods for Improving Scores
Unsafe images	High-risk images	Container edition	3	√	Re-create an image, scan the image, and update the score.
	Medium-risk images	Container edition	1	√	
	Medium-risk images	Container edition	0.1	√	

Category	Score Deduction Item	Affected HSS Edition	Points Deducted	Multiply Deducted Score by Risk Quantity	Methods for Improving Scores
Image security scan not performed	No image security scans were performed in the past month.	Container edition	5	×	In the HSS container edition, you are advised to perform image security scans. For details, see: • **Managing Local Images** • **Managing Repository Images**

Table 3-7 Unprotected assets risks score deduction criteria and improvement methods

Category	Score Deduction Item	Affected HSS Edition	Points Deducted	Multiply Deducted Score by Risk Quantity	Methods for Improving Scores
Server protection not enabled	Unprotected servers	All	0.1–1	√	The points deducted for an unprotected server vary depending on its asset importance: • Important asset: 1 • General asset: 0.5 • Test asset: 0.1 You are advised to enable protection for your server as soon as possible. For details, see **Enabling Protection**.

4 Asset Management

4.1 Asset Management

You can count all your assets and check their statistics, including the agent status, protection status, quota, account, port, process, software, and auto-started items.

Constraints

Servers that are not protected by HSS do not support the asset overview function.

Checking the Asset Overview

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Asset Management** > **Assets**. Check your assets and their statistics.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

- **Asset Types**: Displays the number of server and container nodes. You can click an asset type in the ring chart to go to the corresponding asset list page.
- **Agent Status**: Displays the number of servers in the **Online**, **Offline**, and **Not installed** states. You can click an agent status in the ring chart to go to the corresponding server list page.
- **Servers**: Displays the number of unprotected and protected servers. You can click a server type in the ring chart to go to the corresponding server list page.
- **Containers**: Displays the number of unprotected and protected container nodes. You can click a container type in the ring chart to go to the corresponding container node list page.
- **Quotas**: Displays the protected quota types and their usage status. You can click **Protected Servers** or **Protected Containers** to go to the corresponding protected quota list page.

- **OS Types**: Displays the number and proportion of OS types. You can click an OS type in the ring chart to go to the corresponding server list page.
- **Asset Counting**: Displays asset information, including account information, open ports, processes, installed software, auto-startup items, web applications, web services, web frameworks, websites, middleware, databases, and kernel modules. You can click the value of each asset item to go to the corresponding asset list page.

----End

4.2 Server Fingerprints

4.2.1 Collecting Server Asset Fingerprints

HSS can collect server asset fingerprints, including information about ports, processes, web applications, web services, web frameworks, and auto-started items. You can centrally check server asset information and detect risky assets in a timely manner based on the server fingerprints. This section describes server asset fingerprints and their collection method.

Constraints and Limitations

The server fingerprint function is available in HSS enterprise, premium, WTP, and container editions. For details about how to purchase and upgrade HSS, see **Purchasing an HSS Quota** and **Upgrading Protection Quotas**.

Server Asset Fingerprint Collection Items

Table 4-1 lists the collection items of server asset fingerprints. Each asset fingerprint is automatically collected periodically. If you are using HSS premium edition or later, you can customize the asset fingerprint collection period. For details, see **Asset Discovery**.

Table 4-1 Asset fingerprints

Item	Description	Supported OS	Automatic Detection Period
Account Information	Check and manage all accounts on your servers to keep them secure. You can check real-time and historical account information to find suspicious accounts. • Real-time account information includes the account name, number of servers, server name/IP address, login permission, root permission, user group, user directory, shell started by the user, and the last scan time. • Historical account change records include the server name/IP address, change status, login permission, root permission, user group, user directory, shell started by the user, and the last scan time.	Linux and Windows	Automatic check every hour
Open Ports	Check open ports on your servers, including risky and unknown ports. You can easily identify high-risk ports by checking local ports, protocol types, server names, IP addresses, statuses, PIDs, and program files. • Manually disabling high-risk ports If dangerous or unnecessary ports are found enabled, check whether they are mandatory for services, and disable them if they are not. For dangerous ports, you are advised to further check their program files, and delete or isolate their source files if necessary. It is recommended that you handle the ports at the **Dangerous** risk level promptly and handle the ports at the **Unknown** risk level based on the actual service conditions. • Ignore risks: If a detected high-risk port is actually a normal port used for services, you can ignore it. The port will no longer be regarded risky or generate alarms.	Linux and Windows	Automated check every 30 seconds

Item	Description	Supported OS	Automatic Detection Period
Processes	Check processes on your servers and find abnormal processes. You can easily identify abnormal processes based process paths, server names, IP addresses, startup parameters, startup time, users who run the processes, file permissions, PIDs, and file hashes. If a suspicious process has not been detected in the last 30 days, its information will be automatically deleted from the process list.	Linux and Windows	Automatic check every hour
Installed Software	Check and manage all software installed on your containers, and identify insecure versions. You can check real-time and historical software information to determine whether the software is risky. ● Real-time software information includes the software name, number of servers, server names, IP addresses, software versions, software update time, and the last scan time. ● Historical software change records include the server names, IP addresses, change statuses, software versions, software update time, and the last scan time.	Linux and Windows	Automatic check every day
Auto-startup	Check for auto-startup items and quickly locate Trojans. ● Real-time information about auto-started items includes their names, types (auto-started service, startup folder, pre-loaded dynamic library, Run registry key, or scheduled task), number of servers, server names, IP addresses, paths, file hashes, users, and the last scan time. ● The historical change records of auto-started items include server names, IP addresses, change statuses, paths, file hashes, users, and the last scan time.	Linux and Windows	Automatic check every hour

Item	Description	Supported OS	Automatic Detection Period
Websites	You can check statistics about web directories and sites that can be accessed from the Internet. You can view the directories and permissions, access paths, external ports, certificate information (to be provided later), and key processes of websites.	Linux	Once a week (04:10 a.m. every Monday)
Web Frameworks	You can check statistics about frameworks used for web content presentation, including their versions, paths, and associated processes.	Linux	Once a week (04:10 a.m. every Monday)
Middleware	You can check information about servers, versions, paths, and processes associated with middleware.	Linux and Windows	Once a week (04:10 a.m. every Monday)
Kernel Module	You can check information about all the program module files running in kernels, including associated servers, version numbers, module descriptions, driver file paths, file permissions, and file hashes.	Linux	Once a week (04:10 a.m. every Monday)
Web Services	You can check details about the software used for web content access, including versions, paths, configuration files, and associated processes of all software.	Linux	Once a week (04:10 a.m. every Monday)
Web Applications	You can check details about software used for web content push and release, including versions, paths, configuration files, and associated processes of all software.	Linux and Windows (only Tomcat is supported)	Once a week (04:10 a.m. every Monday)

Item	Description	Supported OS	Automatic Detection Period
Databases	You can check details about software that provides data storage, including versions, paths, configuration files, and associated processes of all software.	Linux and Windows (only MySQL is supported)	Once a week (04:10 a.m. every Monday)

Manually Collecting the Latest Asset Fingerprints of a Single Server

If you want to obtain the latest data of assets such as web applications, web services, web frameworks, websites, middleware, kernel modules, and databases in real time, you can manually collect fingerprint information.

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Servers & Quota**. Click the **Servers** tab.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

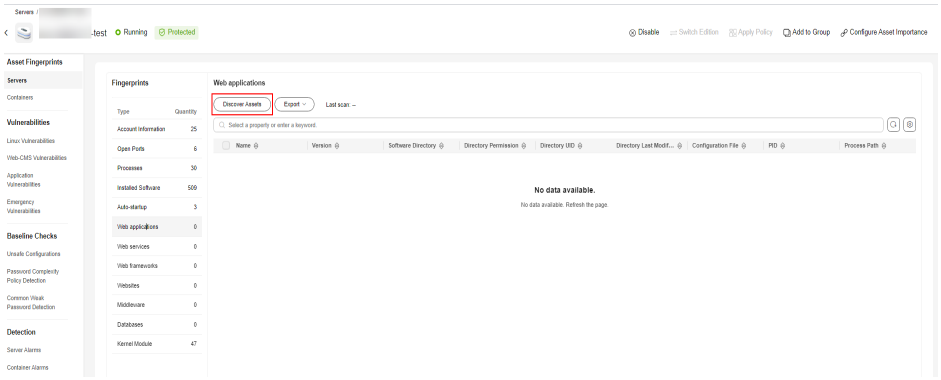
Step 4 Click the name of the target server. On the server details page that is displayed, choose **Asset Fingerprints** > **Servers**.

Step 5 Click a fingerprint in the fingerprint list, and click **Discover Assets** on the upper area of the list on the right.

NOTE

Currently, only the information about web applications, web services, web frameworks, websites, middleware, kernel modules, and databases can be manually collected and updated in real time. Information about other types is automatically collected and updated every day.

Figure 4-1 Collecting data now



Step 6 After the automatic execution is complete, the last scan time is updated and the latest server asset information is displayed.

----End

Manually Collecting the Latest Asset Fingerprints of All Servers

To view the latest fingerprints of all server assets in real time, you can manually collect fingerprints.

Step 1 **Log in to the management console**.

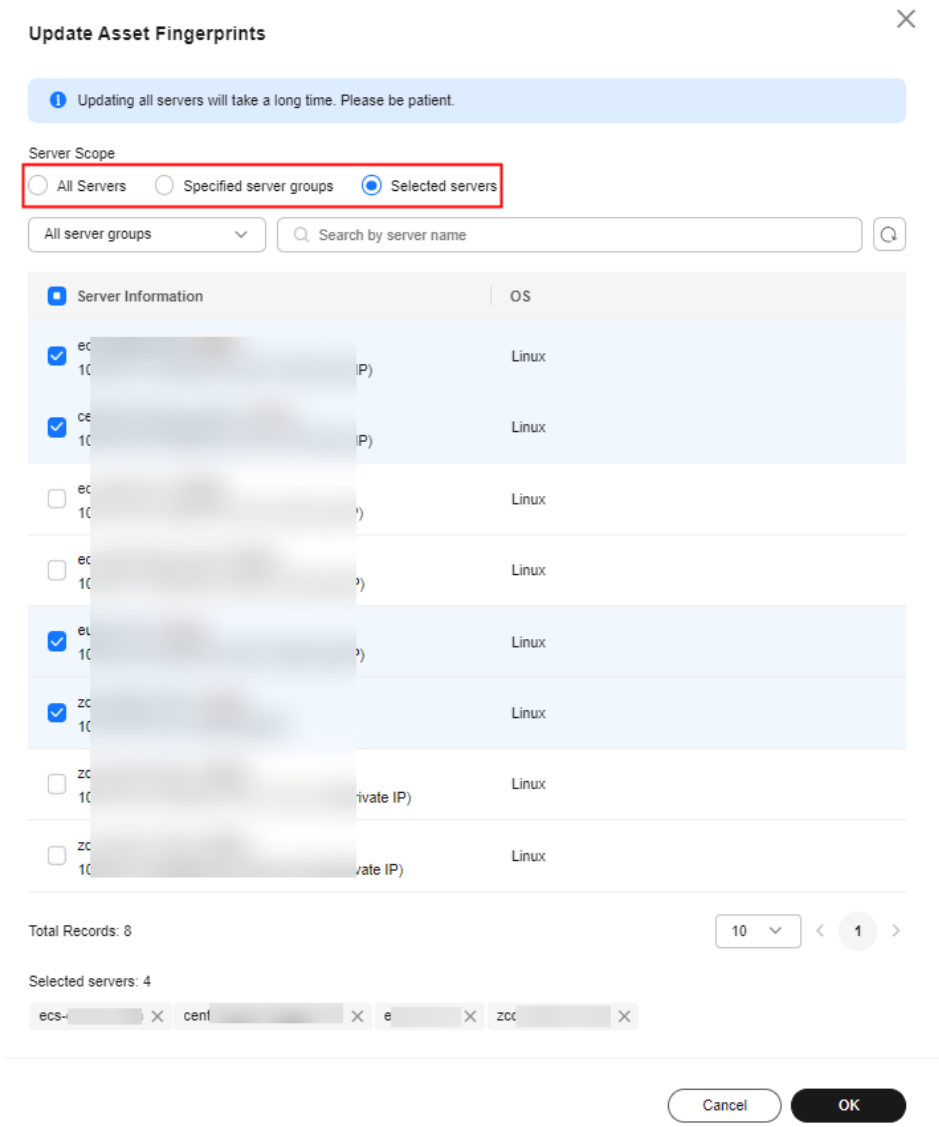
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Asset Management** > **Server Fingerprints**.

Step 4 In the upper right corner of the page, click **Update Asset Fingerprints**.

Step 5 Select the server update scope and click **OK**.

Figure 4-2 Updating asset fingerprints



Step 6 After the update is complete, view the latest asset fingerprints.

----End

4.2.2 Viewing Server Asset Fingerprints

HSS can collect server asset fingerprints, including information about ports, processes, web applications, web services, web frameworks, and auto-started items. You can centrally check server asset information and detect risky assets in a timely manner based on the server fingerprints.

This section describes how to view the collected server asset fingerprints on the console. For more information, see **Collecting Server Asset Fingerprints**.

Constraints and Limitations

The server fingerprint function is available in HSS enterprise, premium, WTP, and container editions. For details about how to purchase and upgrade HSS, see **Purchasing an HSS Quota** and **Upgrading Protection Quotas**.

Viewing Asset Information of All Servers

Step 1 **Log in to the management console**.

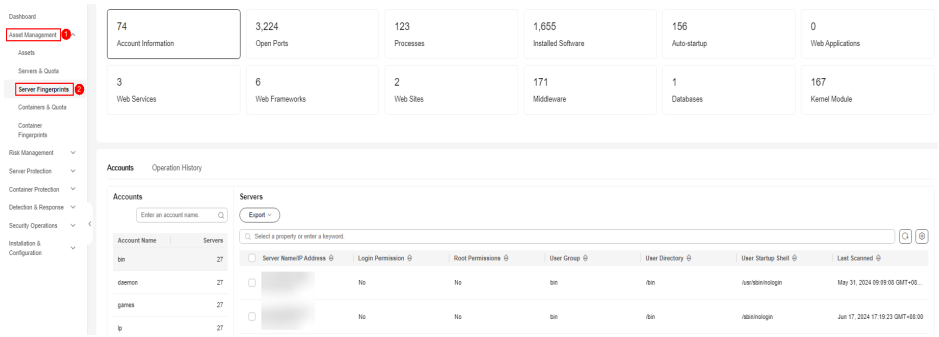
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Asset Management** > **Server Fingerprints** to view all server assets.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Figure 4-3 Viewing server asset information



Step 4 Click a fingerprint type in the list to view the asset information.

Step 5 (Optional) Remove risky assets.

If you find unsafe assets after counting, remove them in a timely manner.

If you receive port alarms, you can set **Dangerous Port** to **Yes** in the search box of the **Open Ports** area to filter dangerous ports. You are advised to handle unsafe ports as follows:

- If HSS detects open high-risk ports or unused ports, check whether they are really used by your services. If they are not, disable them. For dangerous ports, you are advised to further check their program files, and delete or isolate their source files if necessary.
- If a detected high-risk port is actually a normal port used for services, you can ignore it. Ignored alarms will neither be recorded as unsafe items and nor trigger alarms.

For more information, see **High-risk port list**.

----End

Viewing Asset Information of a Single Server

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

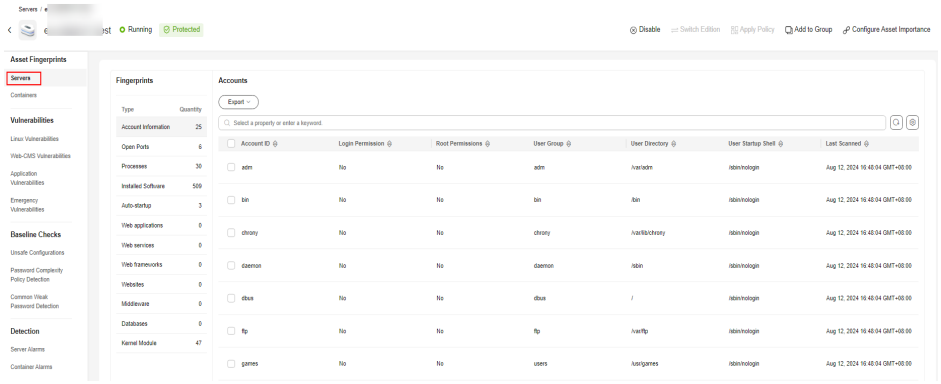
Step 3 In the navigation pane, choose **Asset Management** > **Servers & Quota**. Click the **Servers** tab.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 4 Click the name of the target server. On the server details page that is displayed, choose **Asset Fingerprints** > **Servers**.

Figure 4-4 Viewing asset fingerprints of a single server



Step 5 Click a fingerprint type in the list to view the asset information.

Step 6 (Optional) Remove risky assets.

If you find unsafe assets after counting, remove them in a timely manner.

If you receive port alarms, you can set **Dangerous Port** to **Yes** in the search box of the **Open Ports** area to filter dangerous ports. You are advised to handle unsafe ports as follows:

- If HSS detects open high-risk ports or unused ports, check whether they are really used by your services. If they are not, disable them. For dangerous ports, you are advised to further check their program files, and delete or isolate their source files if necessary.
- If a detected high-risk port is actually a normal port used for services, you can ignore it. Ignored alarms will neither be recorded as unsafe items and nor trigger alarms.

For more information, see **High-risk port list**.

----End

High-risk port list

Table 4-2 lists the high-risk ports are identified by the asset fingerprint function of HSS. If a high-risk port is enabled in your asset, check whether they are really used by your services.

Table 4-2 High-risk port list

Port	Description	Protocol
31	Trojan horses Master Paradise and Hackers Paradise	TCP and UDP
456	Trojan horses HACKERSPARADISE	TCP and UDP
555	Trojan horses PhAse1.0 Stealth Spy and IniKiller	TCP and UDP
666	Trojan horses Attack FTP and Satanz Backdoor	TCP and UDP
1001	Trojan horses Silencer and WebEx	TCP and UDP
1011	Doly Trojan	TCP and UDP
1025	Trojan netspy	TCP and UDP
1033	Trojan netspy	TCP and UDP
1070	Trojan horses Streaming Audio Trojan, Psyber Stream Server, and Voice	TCP and UDP
1234	Trojan horses SubSeven2.0 and Ultors Trojan	TCP and UDP
1243	Trojan SubSeven 1.0/1.9	TCP and UDP
1245	Trojan Vodoo	TCP and UDP
1270	MOM-Encrypted Microsoft Operations Manager (MOM) 2000	TCP
1492	Trojan FTP99CMP	TCP and UDP
1600	Trojan Shivka-Burka	TCP and UDP
1807	Trojan SpySender	TCP and UDP
1981	Trojan ShockRave	TCP and UDP
1999	Trojan BackDoor	TCP and UDP
2000	Trojans GirlFriend 1.3 and Millenium 1.0	TCP and UDP
2001	Trojan Millenium 1.0 and Trojan Cow	TCP and UDP
2023	Trojan Pass Ripper	TCP and UDP

Port	Description	Protocol
2115	Trojan Bugs	TCP and UDP
2140	Trojan Deep Throat 1.0/3.0	TCP and UDP
3150	Trojan Deep Throat 1.0/3.0	TCP and UDP
6711	Trojan SubSeven1.0/1.9	TCP and UDP
6776	Trojan horses SubSeven2.0 and Ultors Trojan and SubSeven1.0/1.9	TCP and UDP

4.2.3 Viewing the Operation History of Server Assets

HSS proactively records the changes on account information, software information, and auto-started items. You can check the change details according to different dimensions and time ranges.

Constraints and Limitations

The server fingerprint function is available in HSS enterprise, premium, WTP, and container editions. For details about how to purchase and upgrade HSS, see **Purchasing an HSS Quota** and **Upgrading Protection Quotas**.

Checking Change Records

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Asset Management** > **Server Fingerprints** and click **Operation History**. On the displayed **Operation History** page, select a dimension and time period to view the change history of accounts, software, and auto-started items. For details about the changes in accounts, software, and auto-started items, see **Table 4-3**.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 4-5 Operation history of server assets

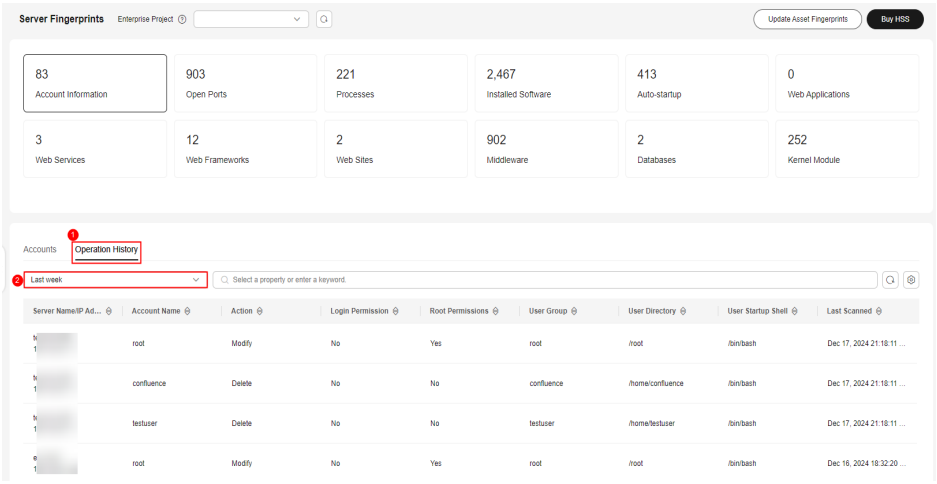


Table 4-3 Description of change history

Asset Type	Change History
Account	Records changes such as account creation and deletion; and modification of account names, administrator rights, and user groups.
Software	Records added and deleted software.
Auto-started item	Records new auto-started items and changes in their running periods, attributes, hashes, and paths.

----End

4.3 Container Fingerprints

4.3.1 Collecting Container Asset Fingerprints

HSS can collect container asset fingerprints, including container clusters, services, workloads, accounts, ports, and processes. You can centrally check container asset information and detect risky assets in a timely manner based on the container fingerprints. This section describes how to collect container asset fingerprints.

Constraints and Limitations

The container fingerprint function is supported only by the HSS enterprise edition. For details about how to purchase HSS, see **Purchasing an HSS Quota**.

Container Asset Fingerprint Collection Items

Table 4-4 lists the collection items of container asset fingerprints. The fingerprint items except clusters, services, workloads, and container instances are

automatically collected periodically. You can customize the asset fingerprint collection period. For details, see **Asset Discovery**.

Table 4-4 Container asset fingerprints

Item	Description	Automatic Detection Period
Account Information	Check and manage all accounts on your containers to keep them secure. Real-time account information includes the account name, number of servers, server name, IP address, login permission, root permission, user group, user directory, shell started by the user, container name, container ID, and the last scan time.	Automatic check every hour
Open Ports	Check open ports on your containers, including risky and unknown ports. You can easily find high-risk ports on containers by checking local ports, protocol types, server names, IP addresses, statuses, PIDs, and program files. • Manually disabling high-risk ports If dangerous or unnecessary ports are found enabled, check whether they are mandatory for services, and disable them if they are not. For dangerous ports, you are advised to further check their program files, and delete or isolate their source files if necessary. It is recommended that you handle the ports with the **Dangerous** risk level promptly and handle the ports with the **Unknown** risk level based on the actual service conditions. • Ignore risks: If a detected high-risk port is actually a normal port used for services, you can ignore it. The port will no longer be regarded risky or generate alarms.	Automated check every 30 seconds
Processes	Check processes on your containers and find abnormal processes. You can easily identify abnormal processes on your containers based process paths, server names, IP addresses, startup parameters, startup time, users who run the processes, file permissions, PIDs, and file hashes. If a suspicious process has not been detected in the last 30 days, its information will be automatically deleted from the process list.	Automatic check every hour

Item	Description	Automatic Detection Period
Installed Software	Check and manage all software installed on your containers, and identify insecure versions. You can check real-time and historical software information to determine whether the software is risky. ● Real-time software information includes the software name, number of servers, server names, IP addresses, software versions, software update time, and the last scan time. ● Historical software change records include the server names, IP addresses, change statuses, software versions, software update time, and the last scan time.	Automatic check every day
Auto-startup	Check for auto-started items and quickly locate Trojans. Real-time information about auto-started items includes their names, types (auto-started service, startup folder, pre-loaded dynamic library, Run registry key, or scheduled task), number of servers, server names, IP addresses, paths, file hashes, users, container name, container ID, and the last scan time.	Automatic check every hour
Websites	You can check statistics about web directories and sites that can be accessed from the Internet. You can view the directories and permissions, access paths, external ports, certificate information (to be provided later), and key processes of websites.	Once a week (04:10 a.m. every Monday)
Web Framework	You can check statistics about frameworks used for web content presentation, including their versions, paths, and associated processes.	Once a week (04:10 a.m. every Monday)
Middleware	You can also check information about servers, versions, paths, and processes associated with middleware.	Once a week (04:10 a.m. every Monday)
Web Services	You can check details about the software used for web content access, including versions, paths, configuration files, and associated processes of all software.	Once a week (04:10 a.m. every Monday)
Web Applications	You can check details about software used for web content push and release, including versions, paths, configuration files, and associated processes of all software.	Once a week (04:10 a.m. every Monday)

Item	Description	Automatic Detection Period
Databases	You can check details about software that provides data storage, including versions, paths, configuration files, and associated processes of all software.	Once a week (04:10 a.m. every Monday)
Clusters	Collect statistics on and display cluster details. You can view the type, node, version, and status of all clusters.	-
Services	Collect statistics on and display details about services and breakpoints. You can view information about all services, such as namespaces and clusters to which the services belong.	-
Workloads	Collect statistics on and display details about workloads (StatefulSets, deployments, DaemonSets, normal jobs, cron jobs, and container groups). You can view the status, number of instances, and namespace of all workloads.	-
Pods	Collect statistics on and display container instance details. You can view the status, pod, and cluster of all container instances.	-

Collecting the Latest Asset Fingerprints of a Single Container

To view the latest data of web applications, web services, web frameworks, websites, middleware, and databases in real time, you can manually collect their fingerprints.

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Servers & Quota**. Click the **Servers** tab.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

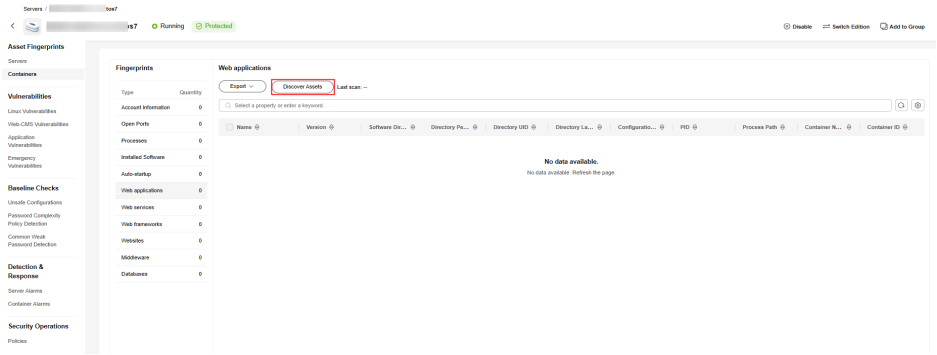
Step 4 Click the name of the target server. On the server details page that is displayed, choose **Asset Fingerprints** > **Containers**.

Step 5 Click a fingerprint in the fingerprint list, and click **Discover Assets** on the upper area of the list on the right.

NOTE

Currently, only **Web Applications**, **Web Services**, **Web Frameworks**, **Websites**, **Middleware**, and **Databases** support real-time manual collection and update. Information about other types is automatically collected and updated every day.

Figure 4-6 Collecting data now



Step 6 After the automatic execution is complete, the last scan time is updated and the latest container asset information is displayed.

----End

Manually Collecting the Latest Asset Fingerprints of All Containers

To view the latest data of accounts, open ports, processes, software, auto-started items, websites, web frameworks, middleware, web services, web applications, and databases in real time, you can manually collect their fingerprints.

Step 1 **Log in to the management console**.

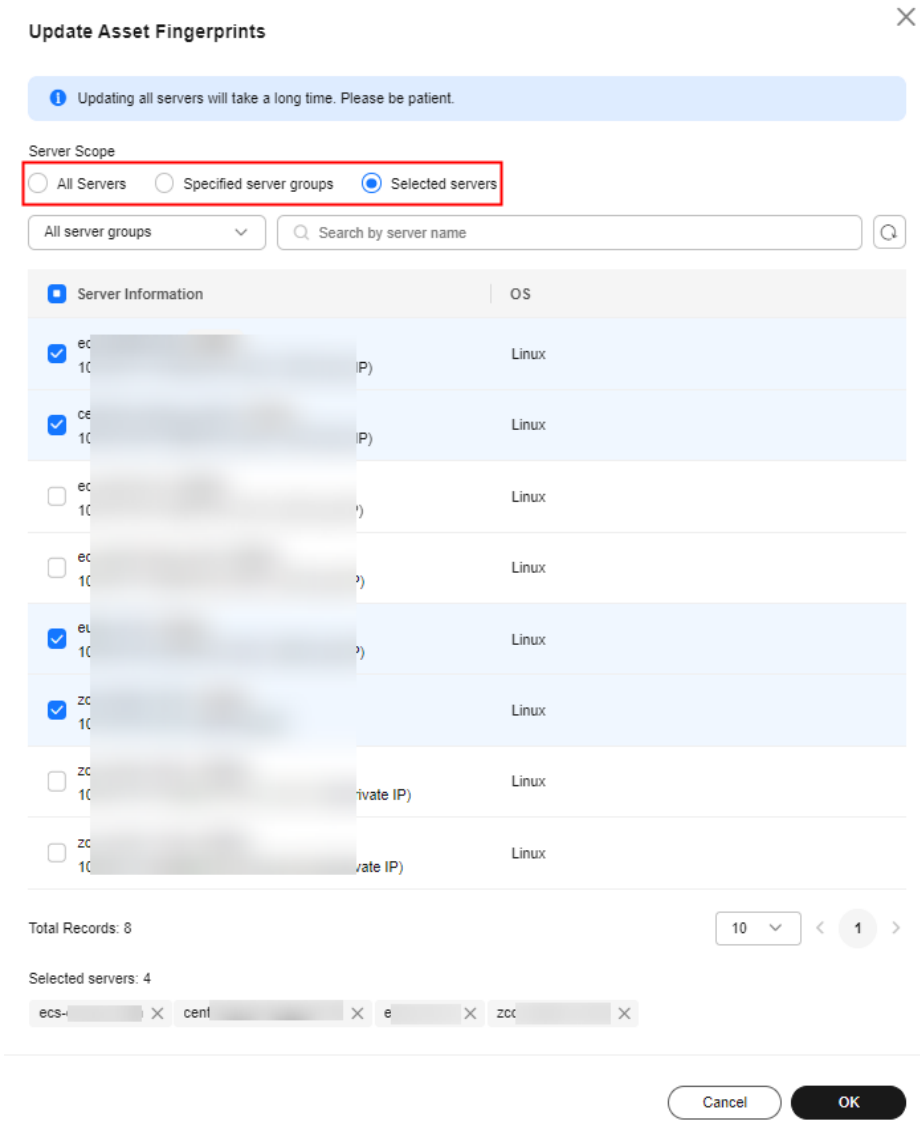
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Assets** > **Container Fingerprints**.

Step 4 In the upper right corner of the page, click **Update Asset Fingerprints**.

Step 5 Select the server update scope and click **OK**.

Figure 4-7 Updating asset fingerprints



Step 6 After the update is complete, view the latest asset fingerprints.

----End

Collecting Clusters, Services, Workloads, and Containers Information

The information about clusters, services, workloads, and containers is not collected automatically. If your assets change, manually collect the latest data referring to this section.

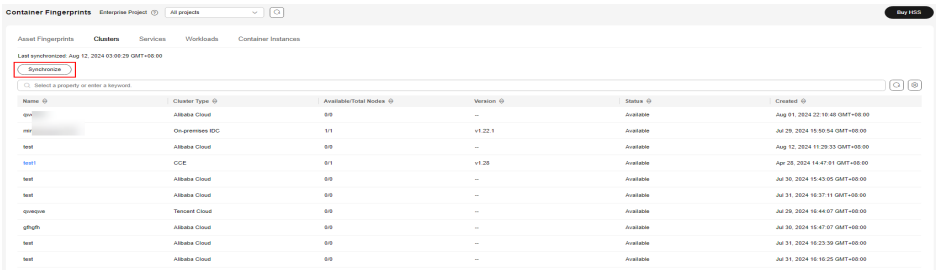
Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Container Fingerprints**.

Step 4 Choose **Clusters** and click **Synchronize** in the upper left corner.

Figure 4-8 Manually synchronizing cluster assets



Step 5 **Last Synchronized** indicates the CCE cluster, service, workload, and container data is synchronized successfully.

----End

4.3.2 Viewing Container Asset Fingerprints

HSS can collect container asset fingerprints, including container clusters, services, workloads, accounts, ports, and processes. You can centrally check container asset information and detect risky assets in a timely manner based on the container fingerprints.

This section describes how to view collected container asset information. For more information, see **Collecting Container Asset Fingerprints**.

Constraints

- Only the HSS container edition supports the container fingerprint function.
- Only Linux is supported.

Viewing Asset Fingerprints Data of All Containers

Step 1 **Log in to the management console**.

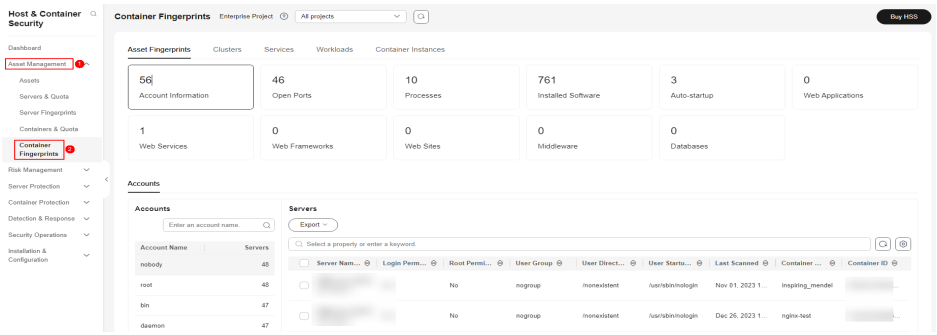
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Asset Management** > **Container Fingerprints** > **Asset Fingerprints**. On the **Asset Fingerprints** page that is displayed, view the fingerprint data of all containers.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Figure 4-9 Viewing container assets



Step 4 Click a fingerprint type in the list to view the asset information.

Step 5 (Optional) Remove risky assets.

If you find unsafe assets after counting, remove them in a timely manner.

If you receive port alarms, you can set **Dangerous Port** to **Yes** in the search box of the **Open Ports** area to filter dangerous ports. You are advised to handle unsafe ports as follows:

- If HSS detects open high-risk ports or unused ports, check whether they are really used by your services. If they are not, disable them. For dangerous ports, you are advised to further check their program files, and delete or isolate their source files if necessary.
- If a detected high-risk port is actually a normal port used for services, you can ignore it. Ignored alarms will neither be recorded as unsafe items and nor trigger alarms.

High-risk port list describes the common dangerous ports.

----End

Viewing Asset Fingerprint Data of a Single Container

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

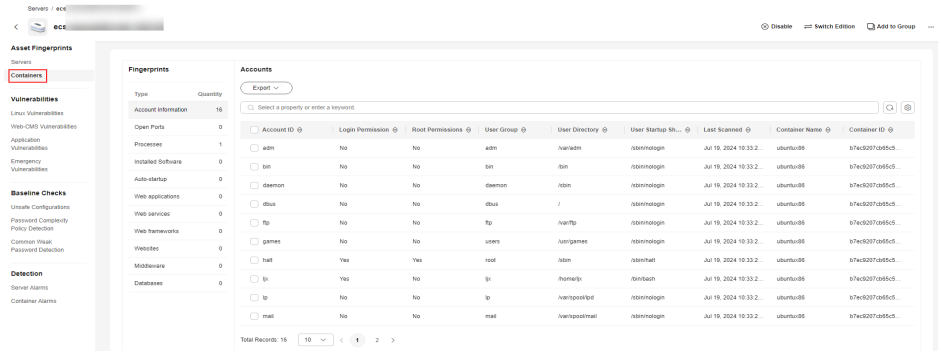
Step 3 In the navigation pane, choose **Asset Management** > **Servers & Quota**. Click the **Servers** tab.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 4 Click the name of the target server. On the server details page that is displayed, choose **Asset Fingerprints** > **Containers**.

Figure 4-10 Viewing the asset fingerprints of a container



Step 5 Click a fingerprint type in the list to view the asset information.

Step 6 (Optional) Remove risky assets.

If you find unsafe assets after counting, remove them in a timely manner.

If you receive port alarms, you can set **Dangerous Port** to **Yes** in the search box of the **Open Ports** area to filter dangerous ports. You are advised to handle unsafe ports as follows:

- If HSS detects open high-risk ports or unused ports, check whether they are really used by your services. If they are not, disable them. For dangerous ports, you are advised to further check their program files, and delete or isolate their source files if necessary.
- If a detected high-risk port is actually a normal port used for services, you can ignore it. Ignored alarms will neither be recorded as unsafe items and nor trigger alarms.

For more information, see **High-risk port list**.

----End

Viewing Cluster Information

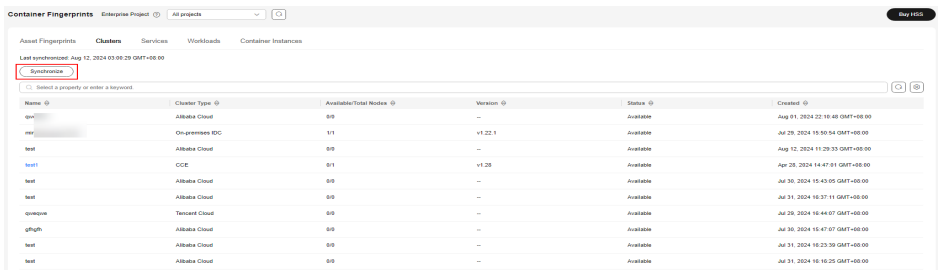
Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Container Fingerprints**.

Step 4 Choose **Clusters** and click **Synchronize** in the upper left corner.

Figure 4-11 Manually synchronizing cluster assets



Step 5 **Last Synchronized** indicates the CCE cluster, service, workload, and container data is synchronized successfully.

Step 6 On the **Clusters** page, view cluster information.

The **Clusters** page displays the cluster name, type, node, version, creation time, and status.

- Searching for the target cluster

  You can enter information such as the cluster name and status in the search box to search for the target cluster.

- Viewing details about the target cluster

  a. Click the name of the target cluster to go to the CCE console.

  b. On the CCE console, view basic cluster information and network information.

----End

Viewing Services

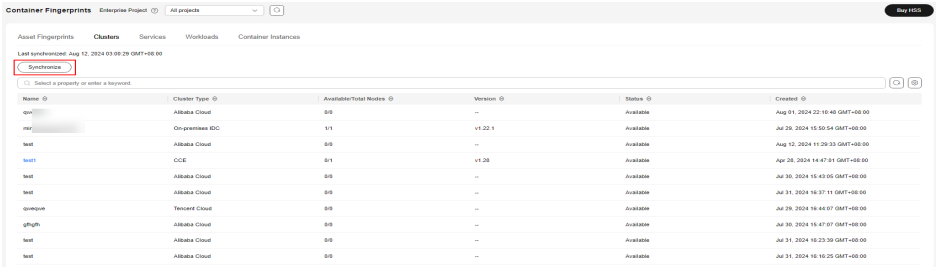
Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Container Fingerprints**.

Step 4 Choose **Clusters** and click **Synchronize** in the upper left corner.

Figure 4-12 Manually synchronizing cluster assets



Step 5 **Last Synchronized** indicates the CCE cluster, service, workload, and container data is synchronized successfully.

Step 6 On the **Services** tab page, view the information.

The page displays the service name, endpoint name, access mode, service IP address, namespace, cluster name, cluster type, and creation time.

- Searching for a service

  You can enter information such as the service name and access mode in the search box to search for the service.

- Viewing details about a service

Click the name of a service. On the service details page that is displayed, you can view the selector, tag, and port of the service.

----End

Viewing Endpoints

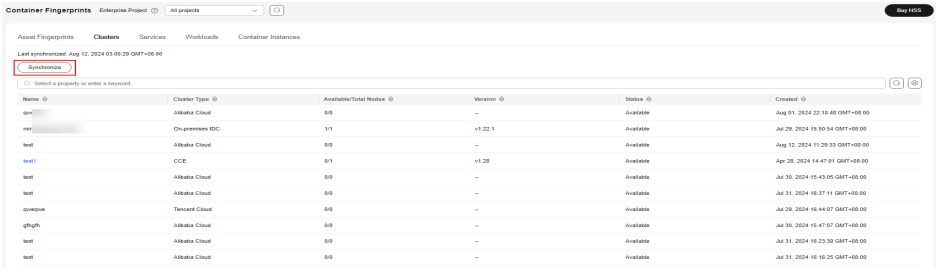
Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Container Fingerprints**.

Step 4 Choose **Clusters** and click **Synchronize** in the upper left corner.

Figure 4-13 Manually synchronizing cluster assets



Step 5 **Last Synchronized** indicates the CCE cluster, service, workload, and container data is synchronized successfully.

Step 6 Choose **Services** > **Endpoints**. View endpoints information.

The page displays the endpoint name, namespace, cluster associated with service, cluster type, service name, and creation time.

- Searching for an endpoint

  You can enter information such as the endpoint name and namespace in the search box to search for the endpoint.

- Viewing details about an endpoint

  Click the name of an endpoint. On the endpoint details page that is displayed, you can view the pod mapping and port information.

----End

Viewing a Workload

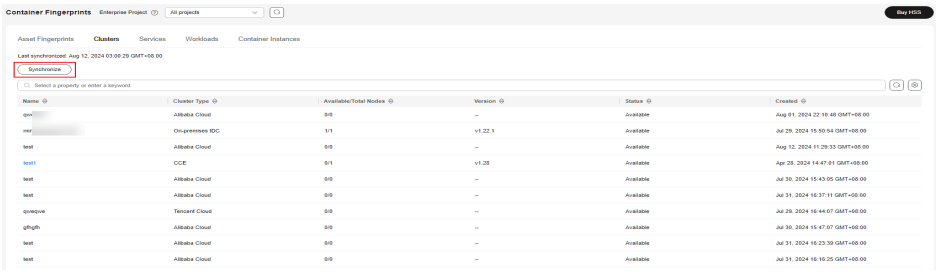
Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Container Fingerprints**.

Step 4 Choose **Clusters** and click **Synchronize** in the upper left corner.

Figure 4-14 Manually synchronizing cluster assets



Step 5 **Last Synchronized** indicates the CCE cluster, service, workload, and container data is synchronized successfully.

Step 6 Click the **Workloads** tab.

Step 7 Select different workloads and view information.

You can view information about **Deployment**, **StatefulSets**, **DaemonSets**, **Jobs**, **Cron Jobs**, and **Pods**. For details about the information items, see **Workload information Items**.

You can enter information such as the workload name and cluster in the search box to search for the target workload.

Table 4-5 Workload information

Workload Type	Item
Deployment	• Workload name • Status • Instances • Namespaces • Created • Image name • Cluster • Cluster Type
StatefulSets	• Workload name • Status • Instances • Namespace • Created • Image name • Cluster • Cluster Type

Workload Type	Item
DaemonSets	• Workload name • Status • Instances • Namespace • Created • Image name • Cluster • Cluster Type
Jobs	• Workload name • Status • Instances • Namespace • Created • Image name • Cluster • Cluster Type
Cron Jobs	• Workload name • Status • Trigger • Running jobs • Namespace • Latest scheduled • Created • Image name • Cluster • Cluster Type
Pods	• Name • Namespace • Cluster • Cluster Type • Node • Pod IP address • POD IP • Status • Created

----End

Viewing Container Instances

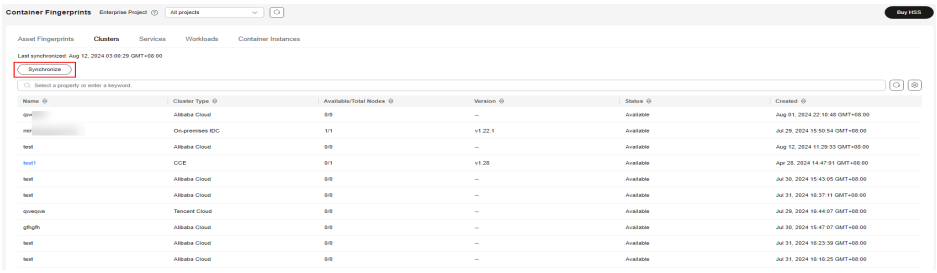
Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Container Fingerprints**.

Step 4 Choose **Clusters** and click **Synchronize** in the upper left corner.

Figure 4-15 Manually synchronizing cluster assets



Step 5 **Last Synchronized** indicates the CCE cluster, service, workload, and container data is synchronized successfully.

Step 6 Click the **Container Instances** tab.

The container name, status, pod, cluster name, cluster type, creation time, and image name are displayed.

- Searching for a container

  You can enter information such as the container name and status in the search box to search for the container.

- Viewing details about a container

  Click the name of a container. On the container details page that is displayed, you can view the process, port, and mount path.

----End

4.4 Server Management

4.4.1 Viewing Server Protection Status

You are advised to periodically check the server protection status and handle security risks in a timely manner to prevent asset loss.

The server list on the **Servers & Quota** page displays the protection status of only the following servers:

- Huawei Cloud servers purchased in the selected region
- Non-Huawei Cloud servers that have been added to the selected region

Viewing Server Protection Status

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

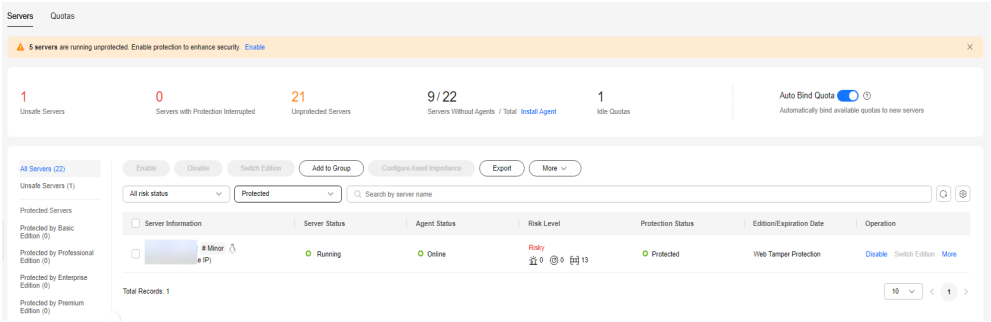
Step 3 In the navigation pane on the left, choose **Asset Management** > **Servers & Quota**. On the **Servers** tab, view the protection status of the server. For details, see **Table 4-6**.

You can also view the server name, ID, IP address, OS, status, and enterprise project on the **Servers** tab. To select the items to be displayed in the server protection list, click ⚙ in the upper right corner of the list.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

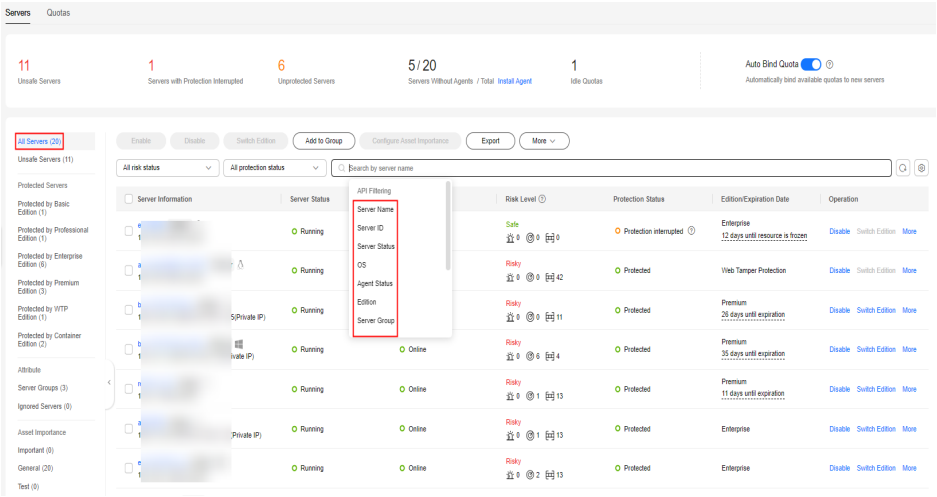
Figure 4-16 Server protection status



- **Searching for a server**

  To check the protection status of a server, enter a server name, server ID, or IP address in the search box above the server protection list.

  Figure 4-17 Searching for a protected server



- **Viewing servers of a certain type**

  On the left of the server protection list, select a server protection edition or an asset importance category to view the protection status of each type of servers.

- **Viewing server details**

  Hover the cursor on a server name to view the server OS and more details.

- **Viewing server protection information**

  The **Protection Status** column indicates whether a server is protected. The protection status of a server is determined by **Agent Status** and **Server Status**. You can view the server risk detection status in the **Risk Level** column. For details about the preceding parameters, see **Table 4-6**.

  Table 4-6 Protection description

Parameter	Description
Server Status	HSS can only protect running servers. If the server is in the **Stopped** or other state, you cannot perform security checks or fix risks on the server.
Agent Status	– **Not installed**: The agent has not been installed or successfully started. Click **Install Agent** and install the agent as prompted. For details, see **Installing an Agent**. – **Online**: The agent is running properly. – **Offline**: The communication between the agent and the HSS server is abnormal, and HSS cannot protect your servers. **NOTE** For an IDC server, its information will be automatically deleted from the server management page after its agent goes offline for 30 days.
Protection Status	– **Enabled**: The server is fully protected by HSS. – **Unprotected**: HSS is disabled for the server. After the agent is installed, click **Enable** in the **Operation** column to enable protection. – **Protection interrupted**: The server is not protected, because the HSS protection server is interrupted. You can hover the cursor on (?) next to **Protection interrupted** to view the cause.
Risk Level	Risk status of a server. (Data is updated every 24 hours.) – **Risky**: The server has risks. Hover your cursor over a risk icon to view risk distribution details. Click a risk quantity to go to the risk details page. – **Safe**: No risks are found. – **Pending risk detection**: HSS is not enabled for the server.

----End

Viewing the WTP Status

Step 1 Log in to the management console and go to the HSS page.

Step 2 Choose **Server Protection** > **Web Tamper Protection** and click **Servers** to view the protection status of the servers.

To check the protection status of a target server, enter a server name, server ID, or IP address in the search box above the protection list, and click .

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 4-18 Servers protected by WTP

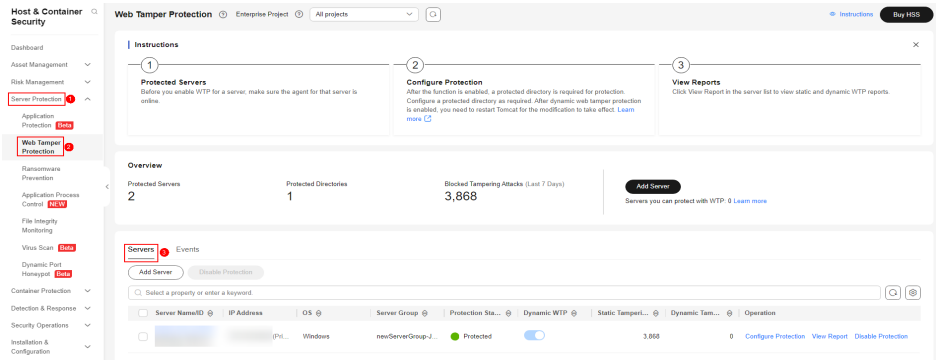


Table 4-7 Statuses

Parameter	Description
Protection Status	**Protected**: HSS provides static web tamper protection (WTP) for the server.
Dynamic WTP	Status of dynamic WTP, which can be: • : Dynamic WTP is enabled. • : Dynamic WTP is disabled. (After enabling dynamic WTP, restart Tomcat to make this setting take effect.)
Static Tampering Attacks	Number of times that static web page files are attacked and tampered with.
Dynamic Tampering Attacks	Number of web application vulnerability exploits and injection attacks.

----End

FAQ

Protection Interrupted

4.4.2 Viewing the Assets and Risks of a Server

Scenario

HSS can display asset fingerprints, vulnerability management, baseline inspection, detection and response, and policy management in the function or server dimension to facilitate risk handling.

- Function dimension: The assets or risks of all servers or containers are displayed on a single page for you to check and handle.
- Server dimension: The assets or risks of a single server or container node is displayed, so that you can handle the risks of an important asset first.

This section describes how to view assets and risks by server.

Viewing the Assets and Risks of a Server

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click  , and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree on the left, choose **Asset Management** > **Servers & Quota**.

Step 4 Click the name of a server to go to the server details page.

Step 5 On the server details page, view the asset fingerprints, vulnerability management, baseline inspection, detection and response, and policy management information.

The details are as follows.

----End

Asset Fingerprints

The asset fingerprint page displays server and container fingerprints. For more information, see **Server Fingerprints** and **Container Fingerprints**.

To view asset fingerprints, perform the following steps:

1. Choose a fingerprint page as needed.

   To check server fingerprints, choose the **Server Fingerprints** page. To check container fingerprints, choose the **Container Fingerprints** page.

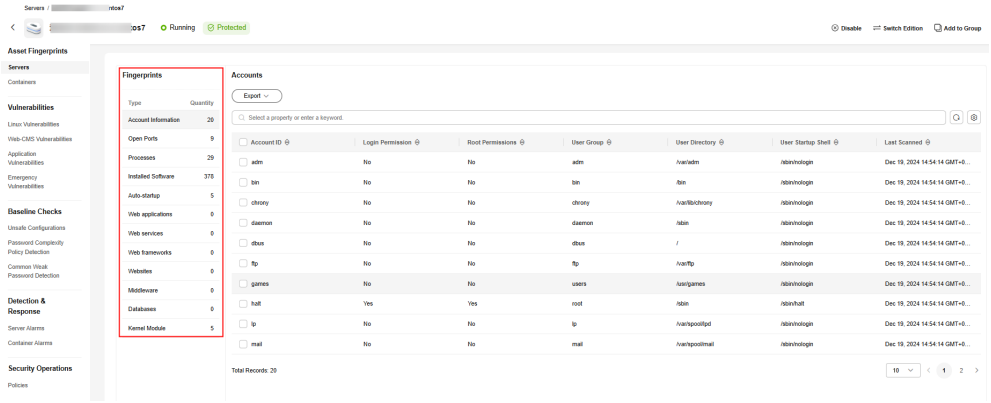
2. In the fingerprint list, select a fingerprint type to view its details.

   Server and container fingerprints include:

   – Server fingerprints: accounts, open ports, processes, software, auto-started items, web applications, web services, web frameworks, websites, middleware, databases, and kernel modules

– Container fingerprints: accounts, open ports, processes, software, auto-started items, web applications, web services, web frameworks, websites, middleware, and databases

Figure 4-19 Asset fingerprints



3. (Optional) If you find unsafe assets after counting, remove them in a timely manner.

   If you receive a dangerous port alarm, in the the search box above the list in the **Open Ports** area, set **Dangerous Port** to **Yes** to filter dangerous ports. You are advised to handle dangerous ports as follows:

   – If HSS detects open dangerous ports or unused ports, check whether they are really used by your services. If they are not, disable them. For dangerous ports, you are advised to further check their program files, and delete or isolate their source files if necessary.

   – If a detected dangerous port is actually a normal port used for services, you can ignore it. Ignored alarms will neither be recorded as unsafe items and nor trigger alarms.

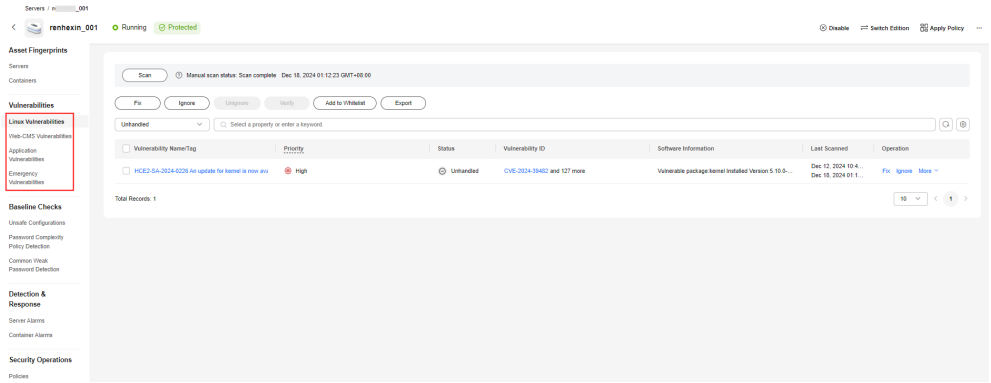
Vulnerability Management

The vulnerability management page displays Linux vulnerabilities, Windows vulnerabilities, Web-CMS vulnerabilities, application vulnerabilities, and emergency vulnerabilities. For more information, see **Vulnerability Management Overview**.

To view vulnerability information, perform the following steps:

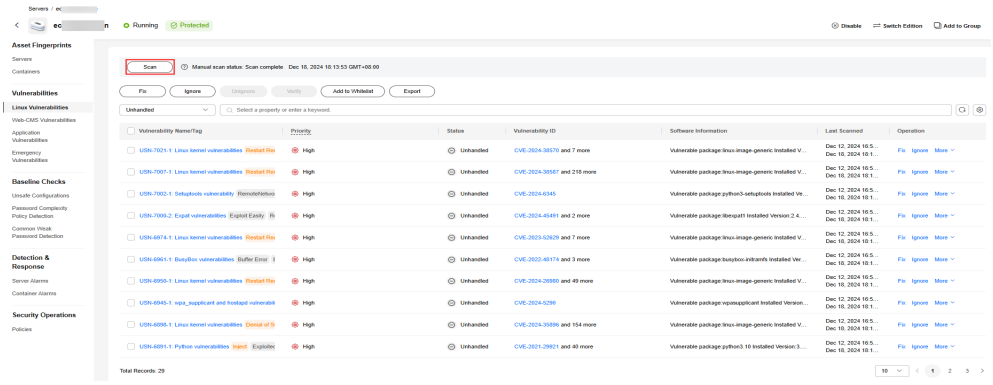
1. Select a vulnerability type to view corresponding vulnerabilities.

Figure 4-20 Vulnerability management



2. In the upper left corner of the page, click **Scan** to scan for vulnerabilities immediately.

Figure 4-21 Manual scan



3. For details about how to handle vulnerabilities (add to whitelist, fix, or ignore), see **Handling Vulnerabilities**.

   For details about how to fix a vulnerability, see "Automatically Fixing Vulnerabilities (Vulnerability View)" and "Manually Fixing Vulnerabilities" in "Handling Vulnerabilities".

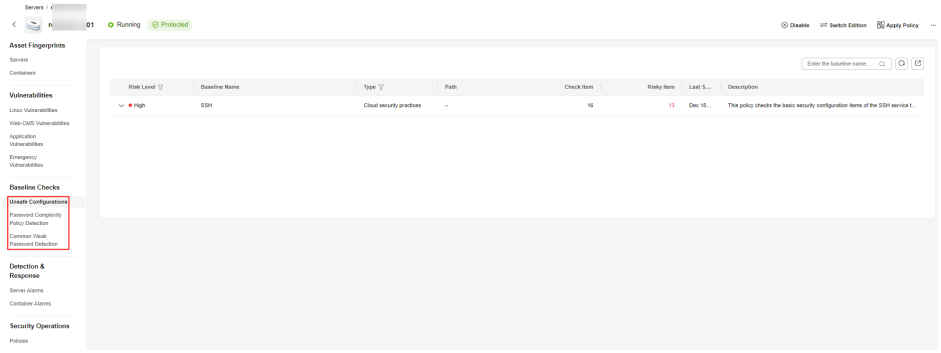
Baseline Checks

Baseline checks show the results of unsafe configuration checks, password complexity policy checks, and common weak password checks. For details about the baseline check function, see **Baseline Inspection Overview**.

To view baseline check information, perform the following steps:

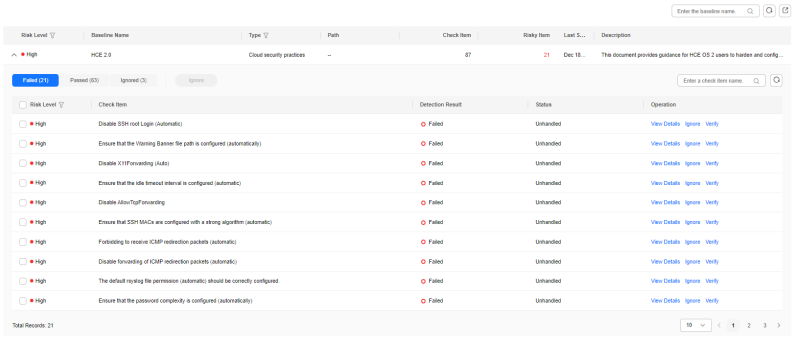
1. Select a check type.

Figure 4-22 Baseline checks



2. View check results.
   - **Configuration check**
     i. Click ⌄ in the **Risk Level** column to expand baseline details.

Figure 4-23 Unsafe configurations



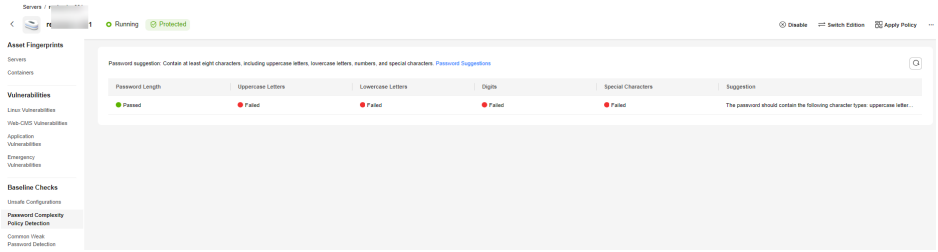
ii. On the **Failed** tab page, view the baseline items that failed the check.

iii. In the row of a baseline item, click **View Details** in the **Operation** column to view the check item description, audit description, and suggestions.

You can fix the baseline items that failed to pass the check based on the suggestions. For details, see **Viewing and Processing Configuration Check Results**.

- **Password complexity policy check**

Figure 4-24 Password complexity policy check



If the password complexity policy of a server does not meet related standards, log in to the server and modify the password complexity policy.

- To monitor the password complexity policy on a Linux server, install the Pluggable Authentication Modules (PAM) on the server. For details, see **How Do I Install a PAM in a Linux OS?**
- For details about how to modify the password complexity policy on a Linux server, see **How Do I Install a PAM and Set a Proper Password Complexity Policy in a Linux OS?**
- For details about how to modify the password complexity policy on a Windows server, see **How Do I Set a Secure Password Complexity Policy in a Windows OS?**

- **Common weak password check**

To view the latest weak password detection data, click **Scan** in the upper left corner of the page to scan for weak passwords on the server.

You are advised to log in to the server and change the weak passwords as soon as possible.

Detection & Response

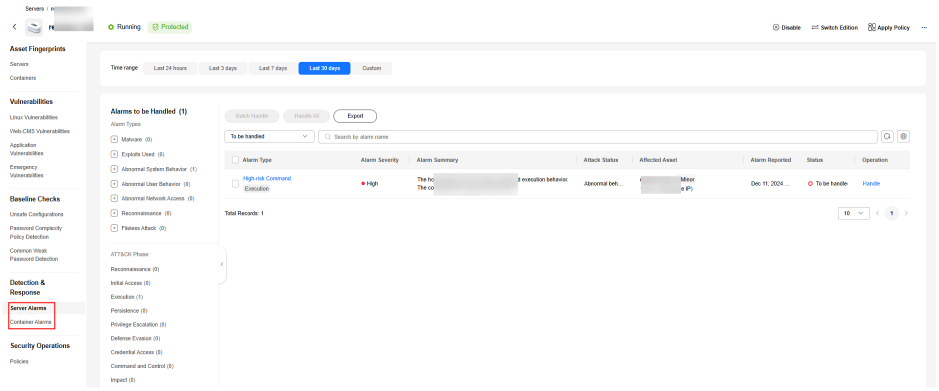
The detection and response page displays intrusion detection alarms, including server security alarms and container security alarms. For more information, see **Server Alarms** and **Container Alarm Events**.

To view intrusion detection information, perform the following steps:

Step 1 Select an alarm type and view the alarm event list.

To view server alarms, choose **Server Alarms**. To view container alarms, choose **Container Alarms**.

Figure 4-25 Server alarms



Step 2 Click an alarm name to view the alarm details, forensics, and similar alarms.

Step 3 In the **Operation** column of an alarm, click **Handle** to handle the alarm.

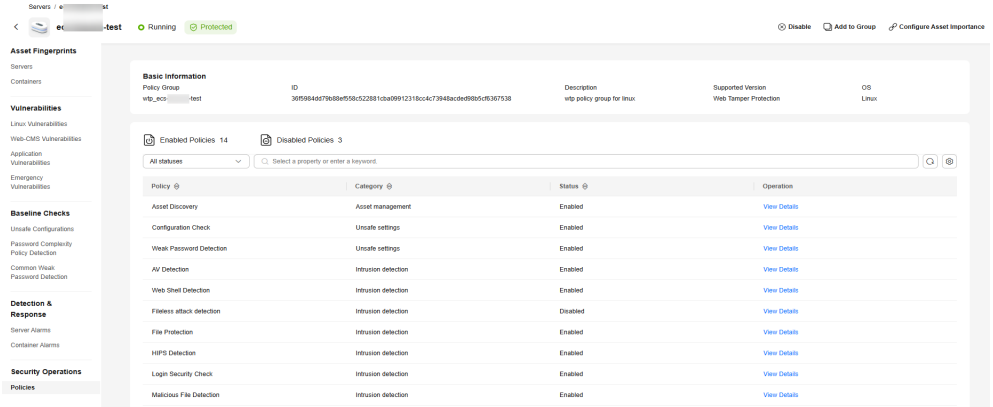
For details, see **Handling Server Alarms** and **Handling Container Alarms**.

----End

Security Operations

To view the application of all the policies in the policy group associated with the current server or container node, choose **Security Operations** > **Policies**. For more information, see **Policy Management Overview**.

Figure 4-26 Policy management



- **Basic Information**: In the **Basic Information** area, you can view basic information about the policy group.
- **Status**: In the row of a policy, view its status in the **Status** column.
  - **Disabled**: The policy is disabled.
  - **Enabled**: The policy is enabled.
  - **Enabling**: The policy is being enabled. This state lasts for 2 to 3 minutes.
  - **Enabling failed**: The protection capabilities of the agent are degraded due to some exceptions. As a result, some policies failed to be enabled. For details about the cause and solution of agent protection degradation, see **Protection Degradation**.

  To enable or disable a policy, perform the following steps:

  a. On the home page of the HSS console, choose **Security Operations** > **Policies**.

  b. Click the name of the target policy group. The policy list page is displayed.

  c. In the row containing the target self-protection policy, click **Enable** or **Disable** in the **Operation** column.
- **Policy Details**: In the row containing the target policy, click **View Details** in the **Operation** column to view the policy details.

4.4.3 Exporting the Server List

This section describes how to export the server protection list to your local PC.

Exporting the Server List to the Local PC

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Asset Management** > **Servers & Quota**. The **Servers** tab is displayed.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 4 In the upper right corner of the server list, click **Export** to export the server list details.

You can also select specified servers in the server list and click **Export**.

NOTE

The details of up to 1,000 servers can be exported at a time.

----End

4.4.4 Switching the HSS Quota Edition

You can switch the quota edition of a server to the basic, professional, enterprise, or premium edition as needed.

Precautions

You can switch to the basic, professional, enterprise or premium edition.

To use the WTP or container edition, purchase a quota of that edition and then enable it. For details, see **Purchasing an HSS Quota**.

Prerequisites

- Choose **Asset Management** > **Servers & Quota**. On the **Servers** tab, the protection status of a server is **Protected**.
- Before switching to a quota in yearly/monthly billing mode, ensure the quota has been purchased and is available. For details, see **Purchasing an HSS Quota**.
- Before switching to a lower edition, check the server, handle known risks, and record operation information to prevent O&M errors and attacks.

Switching the HSS Quota Edition

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree on the left, choose **Asset Management** > **Servers & Quota**. The **Servers** tab is displayed.

NOTE

The server list displays the protection status of only the following servers:

- Huawei Cloud servers purchased in the selected region
- Non-Huawei Cloud servers that have been added to the selected region

Step 4 You can switch the quota editions for one or multiple servers.

- Switching the quota edition for a single server
  a. In the **Operation** column of a server, click **Switch Edition**.
  b. In the **Configure Protection** area, select a billing mode, an edition, and a quota. For more information, see **Table 4-8**.

Table 4-8 Parameters for switching editions

Parameter	Description
Billing Mode	Billing mode of a quota. ▪ Yearly/Monthly ▪ Pay-per-use

Parameter	Description
Edition	Select a quota edition. ■ Basic edition: It protects test servers or individual users' servers. **It can protect any number of servers, but only part of the security scan capabilities are available**. **This edition does not provide protection capabilities, nor does it provide support for the DJCP Multi-level Protection Scheme (MLPS) certification**. The basic edition is free of charge for 30 days if it was enabled for the first time. ■ Professional edition: This edition is higher than the basic edition but lower than the enterprise edition. Its features include file directory change detection, abnormal shell detection, and policy management. ■ Enterprise edition: It provides assistance for the DJCP MLPS certification. Main features include asset fingerprint management, vulnerability management, malicious program detection, web shell detection, and abnormal process behavior detection. ■ Premium edition: It helps you with the DJCP MLPS certification and provides advanced features, including application protection, ransomware prevention, high-risk command detection, privilege escalation detection, and abnormal shell detection. For details about the differences between the editions, see **Features**.
Select Quota	If you select **Yearly/Monthly**, you need to select a protection quota for the server. ■ **Select a quota randomly**: A random quota is allocated to the server. ■ Quota ID: The specified quota is bound to the server. When you switch the edition for multiple servers at a time, the quota you select can only be bound to one of them. The rest of the servers will be randomly bound to the quotas of the target edition. **NOTE** If the system displays a message indicating that there are no available quotas, you need to purchase quotas first.
Tags (optional)	If you select the pay-per-use billing mode, you can add tags to pay-per-use quotas. Tags are used to identify cloud resources. When you have many cloud resources of the same type, you can use tags to classify cloud resources by dimension (for example, by usage, owner, or environment).

c. Read the *Host Security Service Disclaimer* and select **I have read and agree to the Host Security Service Disclaimer**.

- Switching the quota editions for multiple servers

a. Select multiple servers and click **Enable** above the server list.

b. In the dialog box that is displayed, confirm the server information and select a billing mode, an edition, and a quota. For more information, see **Table 4-8**.

c. Read the *Host Security Service Disclaimer* and select **I have read and agree to the Host Security Service Disclaimer**.

Step 5 Click **OK**.

The edition information in the **Edition** column will be updated. If the edition information in the **Edition** column is updated, the HSS edition switch succeeded.

----End

Follow-up Procedure

- After the edition is switched, you can allocate the idle edition quota to other servers.
- After switching to a lower edition, clear important data on the server, stop important applications on the server, and disconnect the server from the external network to avoid unnecessary loss caused by attacks.
- After switching to a higher edition, perform a security detection on the server, handle security risks on the server, and configure necessary functions in a timely manner.

4.4.5 Deploying a Protection Policy

You can quickly configure and start server scans by using policy groups. Simply create a group, add policies to it, and apply this group to servers. The agents deployed on your servers will scan everything specified in the policies.

Precautions

When the professional, enterprise, premium, WTP, or container edition is enabled, the protection policy group of the corresponding edition is deployed by default and applies to servers. You do not need to manually deploy policies. For premium and container editions, you can copy a policy group and customize it as required. To flexibly manage server protection policies, you can replace the default policy group with a custom policy group.

Creating a Policy Group

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree on the left, choose **Security Operations** > **Policies**

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

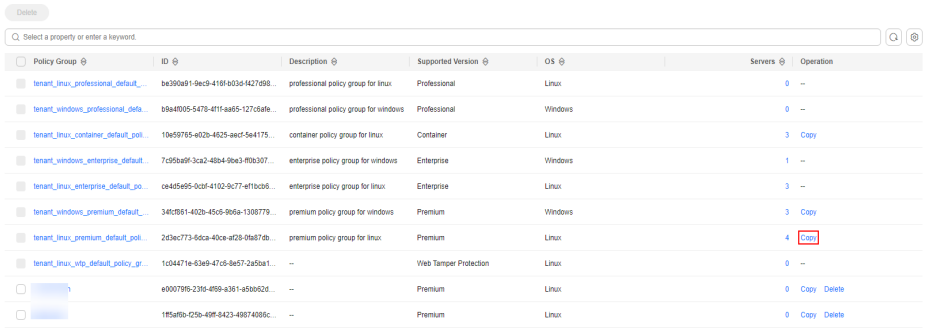
Step 4 Copy a policy group.

NOTE

Currently, only policies of premium and container editions can be copied.

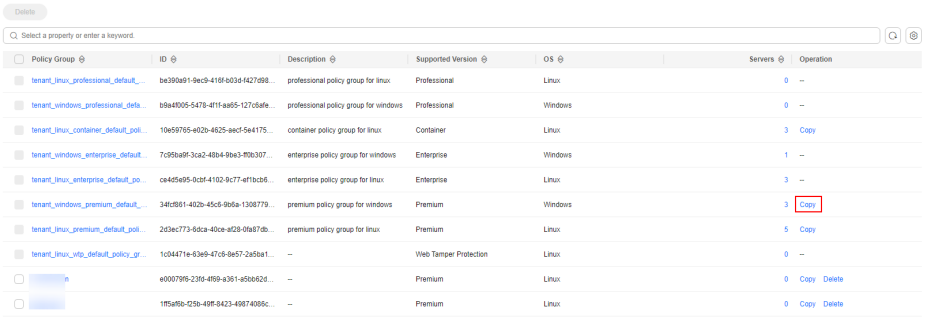
- Select the **tenant_linux_premium_default_policy_group** policy group. Locate the row that this policy group resides, click **Copy** in the **Operation** column.

Figure 4-27 Copying a Linux policy group



- Select the **tenant_windows_premium_default_policy_group** policy group. Click **Copy** in the **Operation** column.

Figure 4-28 Copying a Windows policy group



Step 5 In the dialog box displayed, enter a policy group name and description, and click **OK**.

NOTE

- The name of a policy group must be unique, or the group will fail to be created.
- The policy group name and its description can contain only letters, digits, underscores (_), hyphens (-), and spaces, and cannot start or end with a space.

Step 6 Click **OK**.

Step 7 Click the name of the policy group you just created. The policies in the group will be displayed.

Step 8 Click a policy name and modify its settings as required. For details, see **Configuring Policies**.

Step 9 Enable or disable the policy by clicking the corresponding button in the **Operation** column. You can click  to refresh the page.

----End

Applying a Policy Group

Step 1 Log in to the management console and go to the HSS page.

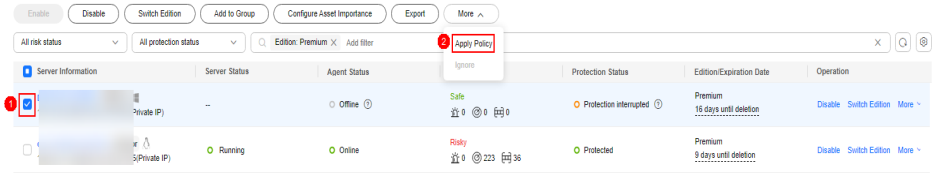
Step 2 In the navigation pane on the left, choose **Asset Management** > **Servers & Quota**. The **Servers** tab is displayed.

Step 3 Select one or more servers for which you want to deploy a policy, and click .

NOTE

After protection is enabled for a server, the protection policy of the corresponding protection edition is deployed by default. For servers that use the premium and container editions, you can create and deploy different protection policies.

Figure 4-29 Applying a policy



Step 4 In the dialog box that is displayed, select a policy group and click **OK**.

NOTE

- Old policies applied to a server will become invalid if you apply new policies to the server.
- Policies are applied to the servers within 1 minute.
- Policies applied to offline servers will not take effect until the servers are online.
- In a deployed policy group, you can enable, disable, or modify policies.
- A policy group that has been deployed cannot be deleted.

----End

4.4.6 Managing Server Groups

To manage servers by group, you can create a server group and add servers to it.

You can check the numbers of servers, unsafe servers, and unprotected servers in a group.

Creating a Server Group

After creating a server group, you can add servers to the group for unified management.

Step 1 **Log in to the management console**.

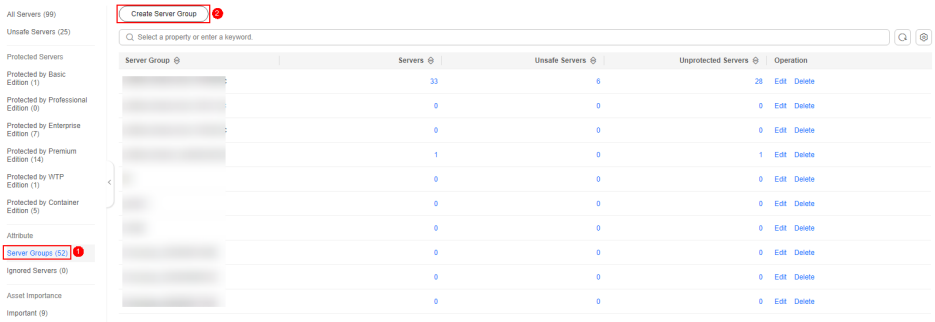
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Asset Management** > **Servers & Quota**. On the **Servers** tab, click **Server Groups**, and click **Create Server Group**.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 4-30 Accessing the page of server groups



Step 4 In the **Create Server Group** dialog box, enter a server group name and select the servers to be added to the group.

NOTE

- A server group name must be unique, or the group will fail to be created.
- A name cannot contain spaces. It contains only letters, digits, underscores (_), hyphens (-), dots (.), asterisks (*), and plus signs (+). The length cannot exceed 64 characters.

Step 5 Click **OK**.

----End

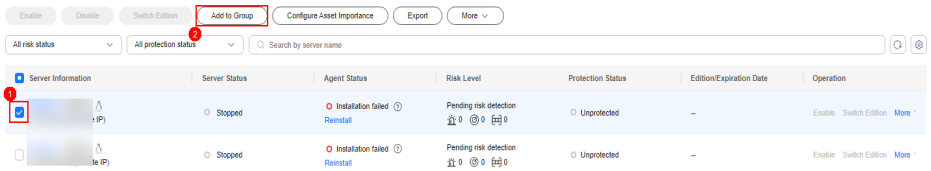
Adding Servers to Groups

You can add servers to an existing server group.

Step 1 Click the **Server** tab.

Step 2 Select one or more servers and click **Add to Group**.

Figure 4-31 Adding servers to a group



NOTE

To add a server to a group, you can also locate the row where the server resides, click **More** in the **Operation** column, and choose **Add to Group**.

Step 3 In the displayed dialog box, select a server group and click **OK**.

NOTE

A server can be added to only one server group.

----End

Related Operations

Editing a server group

Step 1 In the navigation pane on the left, choose **Asset Management** > **Servers & Quota**. On the **Servers** tab, click **Server Groups**.

Step 2 Locate the row where a server group resides and click **Edit** in the **Operation** column.

Step 3 In the displayed dialog box, change the server group name and add or remove servers in the group.

Step 4 Click **OK**.

----End

Deleting a server group

Step 1 In the navigation pane on the left, choose **Asset Management** > **Servers & Quota**. On the **Servers** tab, click **Server Groups**.

Step 2 Locate the row where a server group resides and click **Delete** in the **Operation** column.

NOTE

After the server group is deleted, the **Server Group** column of the servers that were in the group will be blank.

----End

4.4.7 Servers Importance Management

By default, HSS considers all servers as general assets. You can configure the asset importance levels of servers and manage servers accordingly.

Assets are classified into the following types:

- **Important**. Specify this level for servers that run important services or store important data.
- **General**. Specify this level for servers that run general services or store general data.
- **Test**. Specify this level for servers that run test services or store test data.

Checking Asset Importance

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Asset Management** > **Servers & Quota**. The **Servers** tab is displayed.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 4 In the lower part of the tab page, check the asset importance. You can click **Important**, **General**, or **Test** to view servers by importance level.

----End

Specifying Asset Importance

Step 1 Log in to the management console and go to the HSS page.

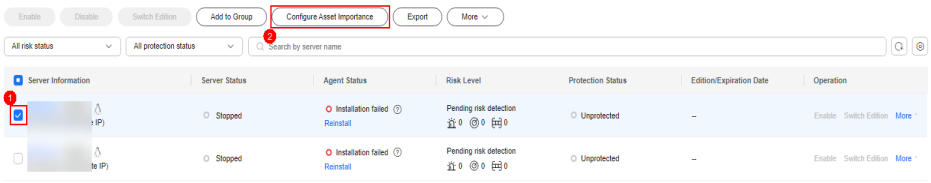
Step 2 In the navigation pane on the left, choose **Asset Management** > **Servers & Quota**. The **Servers** tab is displayed.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 3 Select the target servers and click **Configure Asset Importance** above the list.

Figure 4-32 Configure Asset Importance



Step 4 In the dialog box that is displayed, select an asset importance level.

Step 5 Confirm the information and click **OK**.

----End

4.4.8 Ignoring a Server

You can ignore the servers that do not need to be protected. HSS will neither protect the ignored servers nor synchronize the information changes of the ignored servers.

Ignoring a Server

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

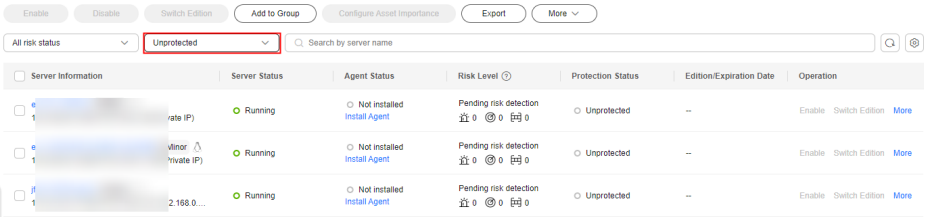
Step 3 In the navigation pane on the left, choose **Asset Management** > **Servers & Quota**.

> **NOTE**
>
> If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 4 Click the **Servers** tab.

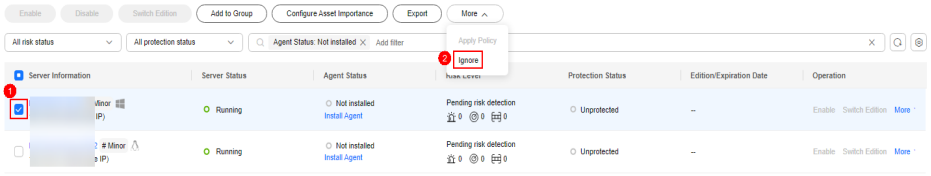
Step 5 Set filter criteria to filter unprotected servers.

Figure 4-33 Filtering unprotected servers



Step 6 Select the target server and click **More** > **Ignore** above the server list to ignore the server.

Figure 4-34 Ignoring a server



----End

Unignoring a Server

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Asset Management** > **Servers & Quota**.

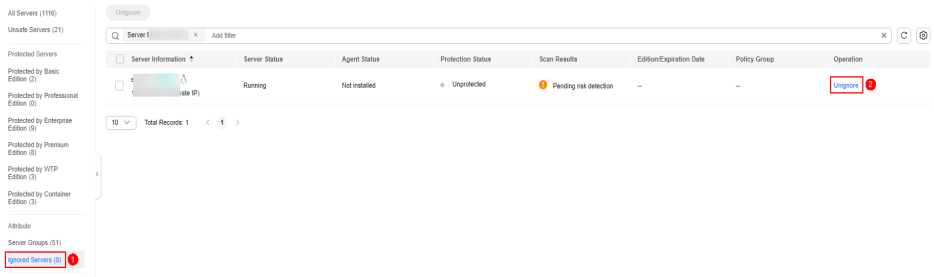
> **NOTE**
>
> If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 4 Click the **Servers** tab.

Step 5 In the **Attribute** area, choose **Ignored Servers** to view the list of ignored servers.

Step 6 In the row of the target server, click **Unignore** in the **Operation** column.

Figure 4-35 Unignoring a server



----End

4.4.9 Disabling HSS

You can disable protection for a server. A quota that has been unbound from a server can be bound to another one.

Before You Start

Disabling protection does not affect services, but will increase security risks. You are advised to keep your servers protected.

To unsubscribe from the pay-per-use quota of a server, you just need to disable the protection.

Disabling HSS

The procedure for disabling protection varies depending on edition.

Disabling the Basic/Professional/Enterprise/Premium Edition

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Servers & Quota**. Click the **Servers** tab.

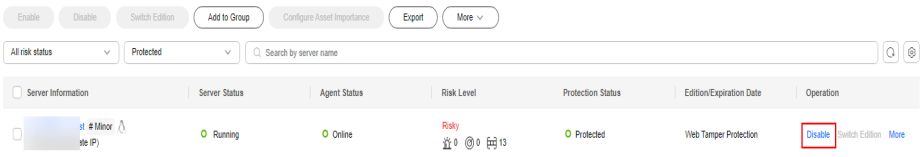
NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 4 Click **Disable** in the **Operation** column of a server.

You can also select multiple servers, and click **Disable** above the server list to disable protection in batches.

Figure 4-36 Disabling protection for a server



Step 5 In the dialog box that is displayed, confirm the information and click **OK**.

Step 6 Check the protection status in the server list. If it is **Unprotected**, the protection has been disabled.

> **CAUTION**
>
> Disabling protection does not affect services, but will increase security risks. You are advised to keep your servers protected.

----End

Disabling WTP

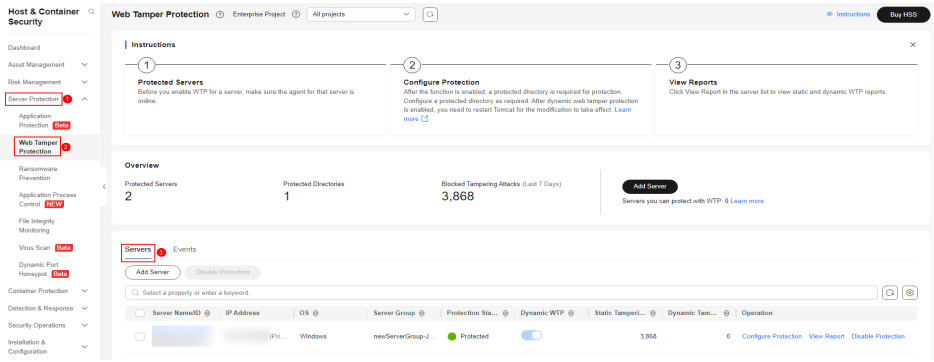
Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Server Protection** > **Web Tamper Protection**. On the **Web Tamper Protection** page, click the **Servers** tab.

> **NOTE**
>
> If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

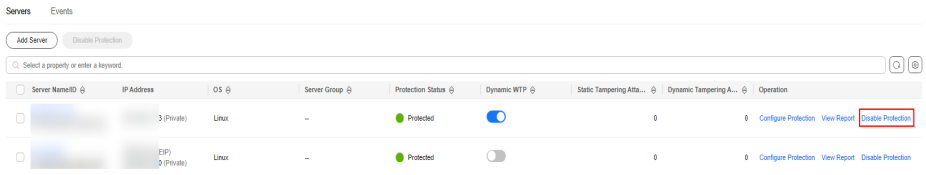
Figure 4-37 Entering the page of protection settings



Step 4 Click **Disable** in the **Operation** column of a server.

You can also select multiple servers, and click **Disable** above the server list to disable protection in batches.

Figure 4-38 Disabling WTP



Step 5 In the dialog box that is displayed, confirm the information and click **OK**.

Step 6 Choose **Asset Management** > **Servers & Quota** and click the **Servers** tab. Check the protection status in the server list. If it is **Unprotected**, the protection has been disabled.

CAUTION

Disabling protection does not affect services, but will increase security risks. You are advised to keep your servers protected.

----End

4.5 Container Management

4.5.1 Viewing the Container Node Protection Status

The **Container Nodes** page displays the protection, node, and agent status of containers, helping you learn the node security status in real time.

Constraints

- Only Linux servers are supported.
- Servers that are not protected by HSS enterprise, premium, WTP, or container editions cannot perform container-related operations.

Viewing the Container Node Protection Status

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Containers & Quota**. Click the **Container Nodes** tab.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 4 View the node protection status. You can obtain the details in Table 4-9.

NOTE

In the HSS container node list, you can view only the servers where the agent has been installed. To view the servers where the agent has not been installed, choose **Asset Management** > **Servers & Quota**.

Table 4-9 Parameter description

Parameter	Description
Server Information	Server name and IP address. Move the cursor over to the server name to view the server details, including the server ID, OS, system name, and system version.
Protection Status	Protection status of a node. The options are as follows: • **Unprotected**: HSS is disabled for the server. After the agent is installed, click **Enable** in the **Operation** column to enable protection. • **Enabled**: The server is fully protected by HSS. • **Protection interrupted**: The server is shut down, the agent is offline, or the agent is uninstalled.
Server Status	• Running • Unavailable • Normal
Agent Status	You can select a status to view the server. • **Online**: The agent is running properly. • **Offline**: The communication between the agent and the HSS server is abnormal, and HSS cannot protect your servers. **NOTE** For an IDC server, its information will be automatically deleted from the node management page after its agent goes offline for 30 days. • **Not installed**: The agent has not been installed or successfully started.

----End

4.5.2 Exporting the Container Node List

This section describes how to export the container node list to your local PC.

Exporting the Container Node List to the Local PC

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Containers & Quota**. The container management page is displayed.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 4 Choose the **Container Nodes** tab.

Step 5 In the upper part of the container list, click **Export** to export the list.

You can select multiple container nodes and click **Export** to export their container details in batches.

NOTE

The information about up to 1,000 container nodes can be exported at a time.

----End

4.5.3 Managing Local Images

Scenario

You can manually scan local images for vulnerabilities and software information and provides scan reports. This section describes how to perform security scans on local images and view scan reports.

Constraints

- Only the HSS container edition supports this function. For details about how to purchase and upgrade HSS, see **Purchasing an HSS Quota** and **Upgrading Your Edition**.
- Only the local images of Docker and Containerd runtimes can be connected to the HSS console.
- Security scans can be performed only on Linux images.
- Docker can only scan the nodes using the storage driver overlay or overlay2. Containerd can only scan the nodes using the storage driver OverlayFS.
- Images whose names or versions are **--** cannot be scanned.
- HSS only has the permission to access the default scan directory **/var/run**. If **Docker Root Dir** is not **/var/run/**, HSS cannot scan images. You are advised to perform image scanning on the Containerd server.
- To scan the image of the **cce-pause/pause** container, HSS needs to start the **sh/bash** process. If the **cce-pause/pause** container does not have the **sh/bash** process, the image scan task will fail.

  The **cce-pause/pause** container is a sandbox container. It has only one static compilation process and does not have vulnerabilities. Therefore, if the image scan task fails, there is no impact.

Viewing Local Images

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Asset Management** > **Containers & Quota**. The container management page is displayed.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 4 Click the **Container Images** tab and click **Local image**.

You can view the name, version, type, and security risks of an image.

- Viewing information about servers associated with an image

  Click the server name of an image. The associated server list page is displayed. You can view details about the servers associated with the image.
- Viewing information about containers associated with an image

  Locate the row that contains the target image and click the number in the **Associated Containers** column. The **Associated Containers** page is displayed. You can view details about the containers associated with the image.
- Viewing information about image components

  Locate the row that contains the target image and click the number in the **Components** column. The **Components** page is displayed. You can view details about image components.
- Viewing image security risks

  You can view the number of risky images and click the value to go to the risk details page.

----End

Scanning Local Images

You can choose all images, multiple images, or a single image and manually start a scan. The duration of a security scan depends on the scanned image size. Generally, scanning an image takes shorter than 3 minutes. After the scan is complete, click **View Report** to check the report.

The following security scan items are supported for local images:

Scan Item	Description
Vulnerability	Detects vulnerabilities in images. System vulnerability scan supports the following OSs: • EulerOS 2.2, 2.3, 2.5, 2.8, 2.9, 2.10, 2.11, 2.12 (64-bit) • CentOS 7.4, 7.5, 7.6, 7.7, 7.8 and 7.9 (64-bit) • Ubuntu 16.04, 18.04, 20.04, 22.04 (64-bit) • Debian 9, 10, and 11 (64-bit) • Kylin V10 SP1 and SP2 (64-bit) • HCE 1.1 and 2.0 (64-bit) • SUSE 12 SP5, 15 SP1, and 15 SP2 (64-bit) • UnionTech OS V20 server E and V20 server D (64-bit)

Scan Item	Description
Installed software	Collects software information in an image.

Step 1 Log in to the management console and go to the HSS page.

Step 2 In the navigation pane, choose **Asset Management** > **Containers & Quota**. The container management page is displayed.

Step 3 Click the **Container Images** tab and click **Local image**.

Step 4 Performs a security scan for a single image or multiple images.

- Single image security scan

  In the **Operation** column of the target image, click **Scan** to perform security scan.

- Batch image security scan

  Select all target images and click **Scan** above the image list to perform security scan for multiple target images.

- Full image security scan

  Click **Scan All** above the image list to perform a security scan for all images.

  NOTICE

  A full scan takes a long time and cannot be interrupted after it starts. Exercise caution when performing this operation.

Step 5 In the displayed dialog box, click **OK** to start the scan job.

After a full scan task is started, you can move the cursor over the gray **Scan All** button to view the scan progress.

Step 6 The image security scan is complete, when the **Scan Status** changes to **Completed** and the **Latest Scan Completed** shows the latest task execution time.

----End

Viewing Local Image Vulnerability Reports and Software Information

Step 1 Log in to the management console and go to the HSS page.

Step 2 In the navigation pane on the left, choose **Asset Management** > **Containers & Quota**. The container management page is displayed.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 3 Click the **Container Images** tab and click **Local image**.

Step 4 In the **Operation** column of the target image, click **View Report**. On the displayed page, view vulnerability reports and software information.

----End

Exporting Local Image Vulnerability Reports

Step 1 Log in to the management console and go to the HSS page.

Step 2 In the navigation pane, choose **Asset Management** > **Containers & Quota**. The container management page is displayed.

Step 3 Click the **Container Images** tab and click **Local image**.

Step 4 Click **Export Vulnerability** above the image list.

If you want to export the vulnerability report of a specified image, select the image type in the search box and click **Export Vulnerability**.

Step 5 View the export status in the upper part of the container management page. After the export is successful, obtain the exported information from the default file download address on the local host.

NOTICE

Do not close the browser page during the export. Otherwise, the export task will be interrupted.

----End

4.5.4 Managing Repository Images

Scenario

Repository images include SWR private images, SWR shared images, SWR enterprise images, and third-party images. SWR-related images are synchronized from SWR to HSS. For details about how to access third-party images, see **Connecting to a Third-party Image Repository**.

HSS scans these images for vulnerabilities, malicious files, software information, file information, baseline configuration, sensitive information, software compliance, and basic image information. For details about the scan items, see **Table 4-10**.

You can periodically scan images to detect and clear security risks in a timely manner, improving image security and keeping your assets away from security threats.

Table 4-10 Image scan items

Item	Description
Vulnerabilities	Detects system and application vulnerabilities in images. • System vulnerability scan supports the following OSs: – EulerOS 2.2, 2.3, 2.5, 2.8, 2.9, 2.10, 2.11, 2.12 (64-bit) – CentOS 7.4, 7.5, 7.6, 7.7, 7.8 and 7.9 (64-bit) – Ubuntu 16.04, 18.04, 20.04, 22.04 (64-bit) – Debian 9, 10, and 11 (64-bit) – Kylin V10 SP1 and SP2 (64-bit) – HCE 1.1 and 2.0 (64-bit) – SUSE 12 SP5, 15 SP1, and 15 SP2 (64-bit) – UnionTech OS V20 server E and V20 server D (64-bit) • Application vulnerability scanning supports the following applications: fastjson, log4j-core, log4j-api, spring-core, shiro-core, struts-core, tomcat-embed-el, tomcat-jdbc, tomcat-embed-websocket, tomcat-juli, tomcat-annotations-ap, tomcat-embed-core, spring-jdbc, druid, commons-lang, commons-logging, commons-configuration, commons-collections, spring-cloud-netflix-archaius, mysql-connector-java, tensorflow, bootstrap, json, spring-beans, spring-context, spring-aop and spring-webmvc.
Malicious Files	Detects malicious files in images.
Software Information	Collects software information in an image.
File Information	Collects file information in an image.
Unsafe Settings	• Configuration check: – Checks the images configurations of CentOS 7, Debian 10, EulerOS, and Ubuntu16. – Checks SSH configurations. • Weak password check: detects weak passwords of Linux (SSH) accounts. • Password complexity check: detects insecure password complexity policies in Linux.

Item	Description
Sensitive Information	Detects files that contain sensitive information in images. • The paths that are not checked by default are as follows: – /usr/* – /lib/* – /lib32/* – /bin/* – /sbin/* – /var/lib/* – /var/log/* – *AnyPath*/node_modules/*AnyPath*/*AnyName*.md – *AnyPath*/node_modules/*AnyPath*/test/*AnyPath* – */service/iam/examples_test.go – *AnyPath*/grafana/public/build/*AnyName*.js **NOTE** • *AnyPath*: indicates that the current path is a customized value and can be any path in the system. • *AnyName*: indicates that the file name in the current path is a customized value, which can be any name ended with .md or .js in the system. • On the **View Report** > **Sensitive Information** tab, click **Configure Sensitive File Path** to set the Linux paths of the file that do not need to be checked. A maximum of 20 paths can be added. • No checks are performed in the following scenarios: – The file size is greater than 20 MB. – The file type can be binary, common process, or auto generation.
Software Compliance	Detects software and tools that are not allowed to be used.
Base Images	Detects service images that are not created using base images.

Constraints and Limitations

- Only the HSS container edition supports this function. For details about how to purchase and upgrade HSS, see **Purchasing an HSS Quota** and **Upgrading Your Edition**.
- Security scans can be performed only on Linux images.

Viewing Repository Image Information

Step 1 **Log in to the management console**.

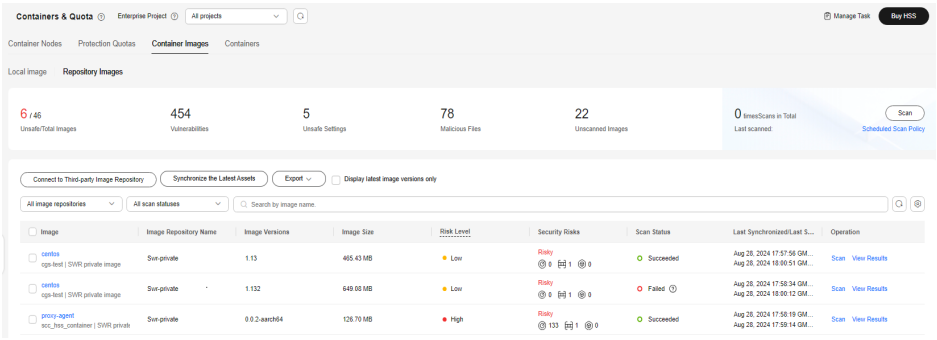
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Containers & Quota**.

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click **Container Images** and click **Repository Images**.

Figure 4-39 Repository images



Step 5 View the repository image information.

You can view the image version, size, and security risks in the image list.

In addition, you can perform the following operations:

- Synchronizing the latest assets

  You can synchronize the basic information about repository images. This operation will not download SWR images to HSS or download third-party repository images to the jump cluster.

  a. Click **Synchronize the Latest Assets**, set **Sync Type**, and click **OK**.

  b. In the upper right corner of the **Containers & Quota** page, click **Manage Task** and click **Image Synchronization** to view the progress of image synchronization tasks.

  NOTE

  Images can be synchronized only after being authorized by SWR. For details, see **SWR Authorization Methods**.

- Filtering images of the latest version

  If you select **Display latest image versions only**, you can filter the latest images of all images.

- Viewing image details

  Move the pointer over the target image in the **Image** column to view **Organization** and **Repository Type**. Click the image name to go to the image details page and view the image version, security scan status, and more information.

----End

Scanning Repository Images

You can manually scan images or set a scheduled scan policy to scan them periodically. The scan duration depends on the image size. Generally, a scan can complete within 3 minutes.

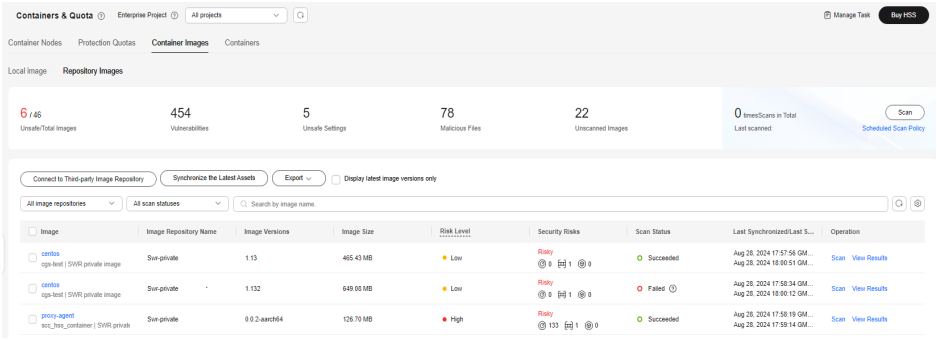
Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Containers & Quota**.

Step 4 Click **Container Images** and click **Repository Images**.

Figure 4-40 Repository images



Step 5 Scan images.

NOTE

- SWR shared images can be scanned only if they are valid.
- Multi-architecture images do not support manual or scheduled scan.

- **Scanning an image**
  a. In the **Operation** column of an image, click **Scan**.
  b. Confirm the image information and click **OK** to start the scan.
- **Manually scanning images**
  a. In the upper right corner of the page, click **Scan**.
  b. Set manual scan parameters. See **Manual Scan**. For more information, see **Table 4-11**.

Figure 4-41 Manual scan

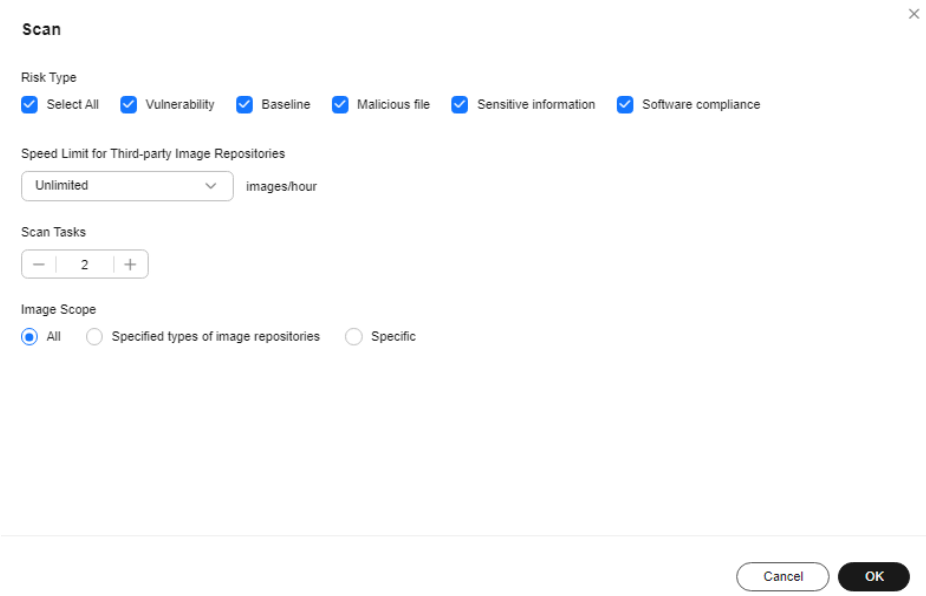


Table 4-11 Manual scan parameters

Parameter	Description	Example Value
Risk Type	Select the types of risks to be scanned. HSS scans for software information, file information, and base images by default.	Select all
Speed Limit for Third-party Image Repositories	If you have a large number of third-party images to be scanned, but you are worried that too much network bandwidth will be occupied if they are all scanned at once, you can click ⌄ to set the number of images to be scanned per hour.	Unlimited
Scan Tasks	A scan task occupies one pod. You can set the number of scan tasks running in the cluster. For example, if the number of scan tasks is set to 2, only two scan tasks can run in the cluster.	2
Image Scope	Select **All** or specify images. A full scan takes a long time and cannot be stopped after it starts. Exercise caution when performing this operation.	All

c. Click **OK**.

- **Scheduling image scans**

a. In the upper right corner of the page, click **Scheduled Scan Policy**.

b. Set the scheduled scan parameters, as shown in **Figure 4-42**. For details, see **Table 4-12**.

Figure 4-42 Scheduled scan policy

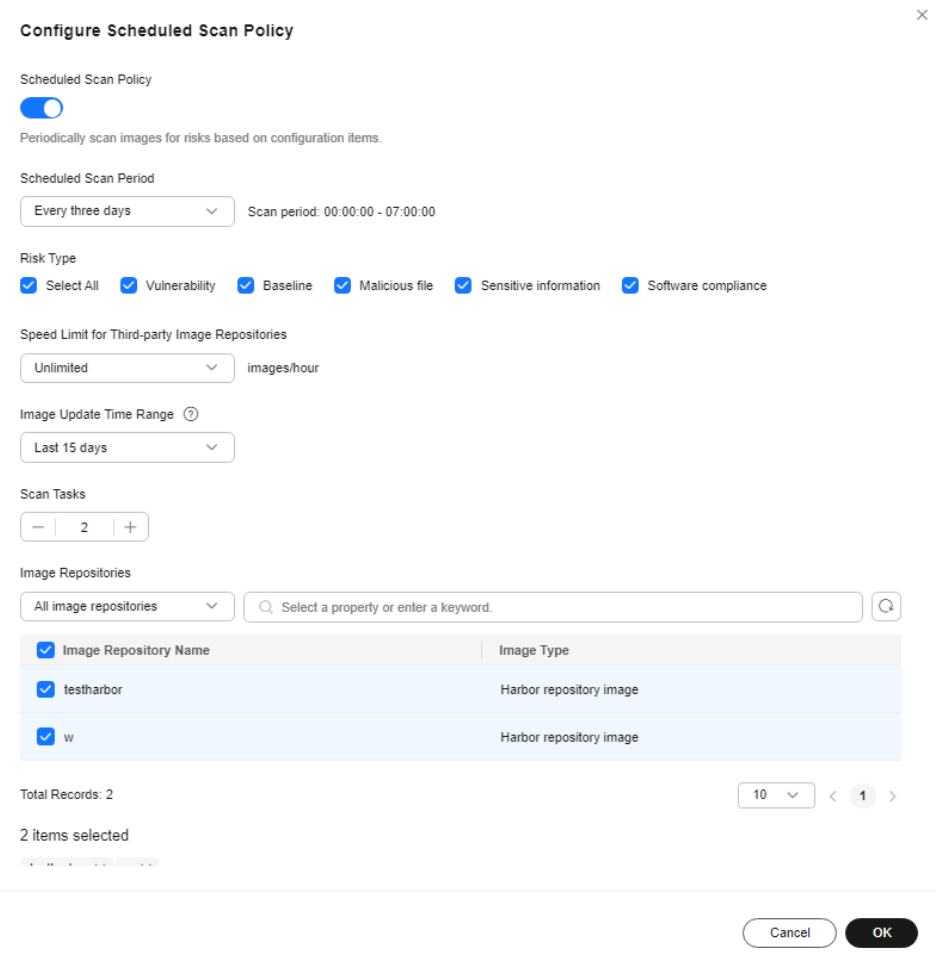


Table 4-12 Parameters of a scheduled scan policy

Parameter	Description	Example Value
Scheduled Scan Policy	Whether to enable scheduled scan. After this function is enabled, you can view and configure scheduled scan parameters. ■ : disabled ■ : enabled	
Scheduled Scan Period	Click to select the scan period. The scan time range is fixed to 00:00:00 - 07:00:00.	Every 3 days

Parameter	Description	Example Value
Risk Type	Select the types of risks to be scanned. HSS scans for software information, file information, and base images by default.	Select all
Speed Limit for Third-party Image Repositories	If you have a large number of images to be scanned, but you are worried that too much network bandwidth will be occupied if they are all scanned at once, you can click ⌄ to set the number of images to be scanned per hour.	Unlimited
Image Update Time Range	Select a range of image update time. It determines which images will be scanned. For example, if you set the scan time range to **Last 15 days**, HSS scans only the images updated in the last 15 days.	Last 15 days
Scan Tasks	A scan task occupies one pod. You can set the number of scan tasks running in the cluster. For example, if the number of scan tasks is set to 2, only two scan tasks can run in the cluster.	2
Image Repositories	Select the type of the images to be scanned.	Swr-private

c. Click **OK** to start the scan.

Step 6 In the upper right corner of the page, click **Manage Task** and click the **Image Scan** tab to view image scan task status.

----End

Viewing Image Scan Results

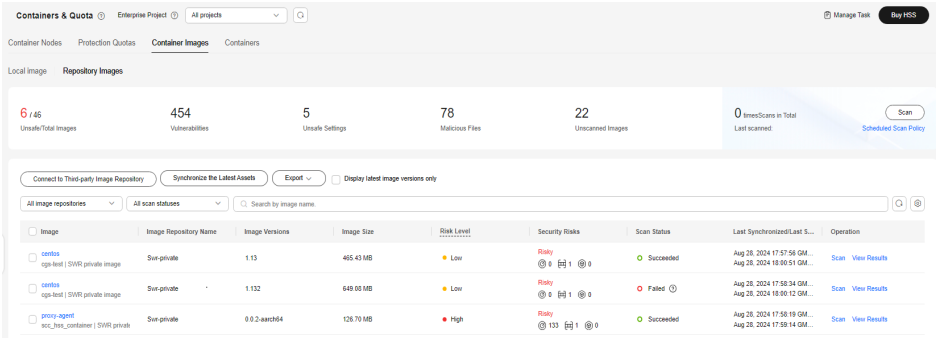
Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Containers & Quota**.

Step 4 Click **Container Images** and click **Repository Images**.

Figure 4-43 Repository images



Step 5 In the row containing the target image, click **View Results** in the **Operation** column to go to the image details page.

Step 6 View image security scan results. For more information, see **Table 4-13**.

Figure 4-44 Image security report

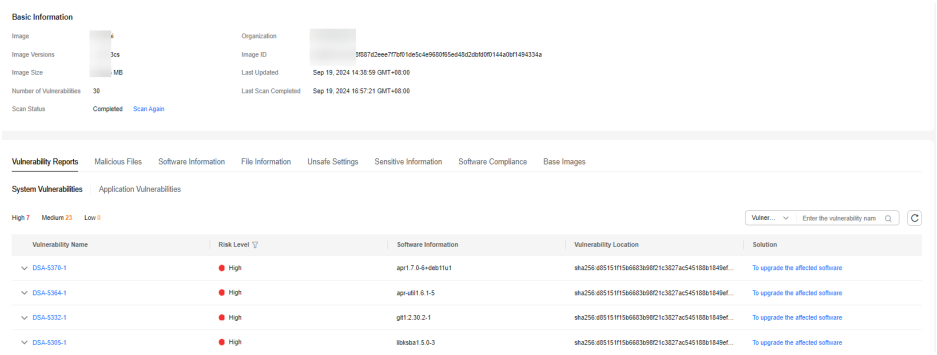


Table 4-13 Security report parameters

Parameter	Description
Basic Information	Displays basic image information, including the image names, organizations, image tags, image sizes, number of vulnerabilities, last update time of the image tags, and scan status. To rescan image security, click **Scan Again**.
Vulnerability Reports	Displays the scan results of image system vulnerabilities and application vulnerabilities. • Viewing vulnerability details Click a vulnerability name to go to the vulnerability details page and view the basic information and affected images. • Viewing the **CVE ID**, **CVSS Score**, and **Disclosed Time** of a vulnerability Click ⌄ in front of a vulnerability name to view its CVE ID, CVSS score, and the time when it was disclosed. • Viewing vulnerability solutions In the **Solution** column of a vulnerability, click the solution description to view the vulnerability solution details.

Parameter	Description
Malicious Files	Displays the scan results of malicious image files, including the malicious file names, paths, and file sizes.
Software Information	Displays the statistical results of image software information, including the software names, types, versions, and number of software vulnerabilities. Click ⌄ next to a software name to view the software vulnerability name, repair urgency, and solution.
File Information	Displays the statistical results of image file information, including the total number of files, total file size, and details about the top 50 files.
Unsafe Settings	Displays the image baseline check results, including the configuration check, password complexity policy check, and common weak password check results. • Viewing unsafe settings and suggestions 1. On the **Unsafe Configurations** tab page, select a baseline. 2. In the detection item column of a detection item, click **Description** to view the detection item description and modification suggestions. • Customizing common weak passwords 1. Click **Common Weak Password Detection**. 2. Configure weak passwords and click **OK**.
Sensitive Information	Displays the scan result of sensitive image information, including the risk levels, image paths, file paths, and sensitive information. To add the paths of sensitive files that are not detected, choose **Configure Sensitive File Path** and add the paths to be filtered. • Only Linux system file paths can be filtered. • A maximum of 20 paths can be added. Put each path on a separate line. • Example: **/usr/** or **/lib/test.txt**.
Software Compliance	Displays the scan results of non-compliant image software, including the non-compliant software name, software version, path, and image layer information.
Base Images	Displays the scan results of service images that are not built using basic images. The scan results include image names, versions, and image paths.

----End

Exporting an Image Vulnerability Report or Baseline Report

Vulnerability or baseline reports cannot be exported for multi-architecture images.

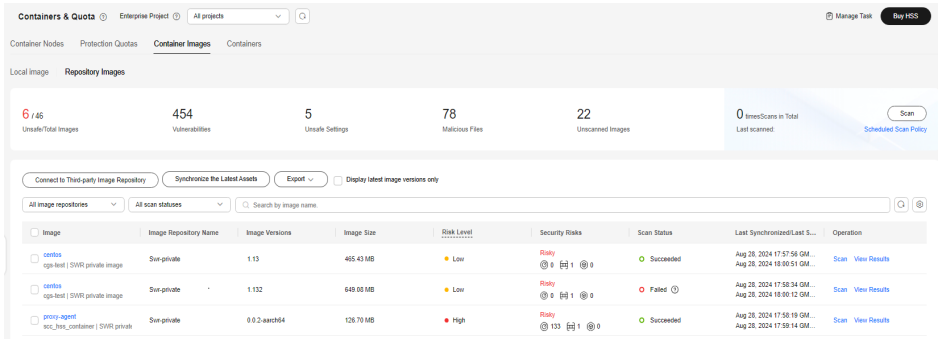
Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Container Management**.

Step 4 Click **Container Images** and click **Repository Images**.

Figure 4-45 Repository images



Step 5 Click **Export Vulnerability** above the image list and select a report type to export the vulnerability or baseline report.

If you want to export the vulnerability report of a specified image, select the image type in the search box and click **Export Vulnerability**.

Step 6 View the export status in the upper part of the container management page. After the export is successful, obtain the exported information from the default file download address on the local host.

NOTICE

Do not close the browser page during the export. Otherwise, the export task will be interrupted.

----End

4.5.5 Managing CI/CD Images

Scenario

For details about CI/CD image security scans, see **CI/CD Image Security Scan Overview**.

To perform CI/CD image security scans, you need to configure CI/CD access first. For details, see **Accessing CI/CD**.

After the CI/CD access configuration is complete, HSS performs an image security scan during project building in Jenkins Pipeline, and displays the scan results on the HSS console for you to check and eliminate image security risks in a timely manner.

This section describes how to view and export CI/CD image scan results.

Viewing CI/CD Image Scan Results

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

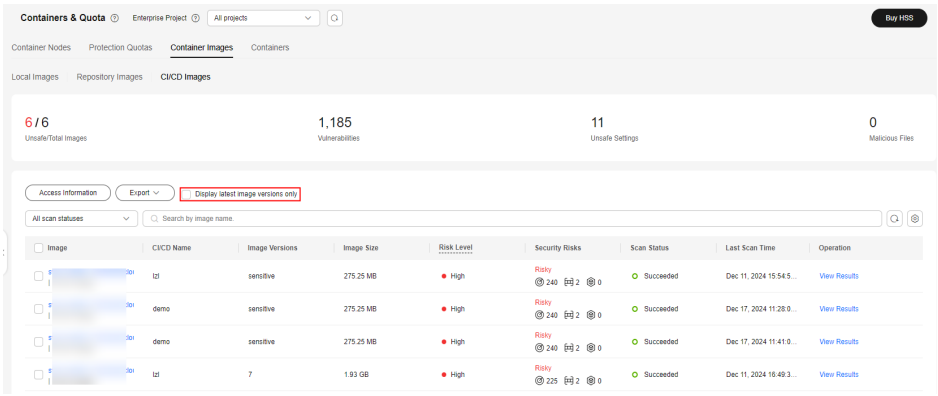
Step 3 In the navigation pane, choose **Installation & Configuration** > **Container Install & Config**.

Step 4 Click the **CI/CD Access Settings** tab.

Step 5 In the **Operation** column of a CI/CD identifier, click **View Details** to go to the CI/CD image scan result page.

Step 6 (Optional) Select **Display latest image versions only** to view images of the latest version.

Figure 4-46 Displaying latest image versions only



Step 7 In the **Security Risks** column of an image, view the risk status of the image.

Step 8 In the **Operation** column of the image, click **View Results**. On the displayed image scan result page, view the detailed results. For more information, see **Table 4-14**.

Figure 4-47 Image scan result

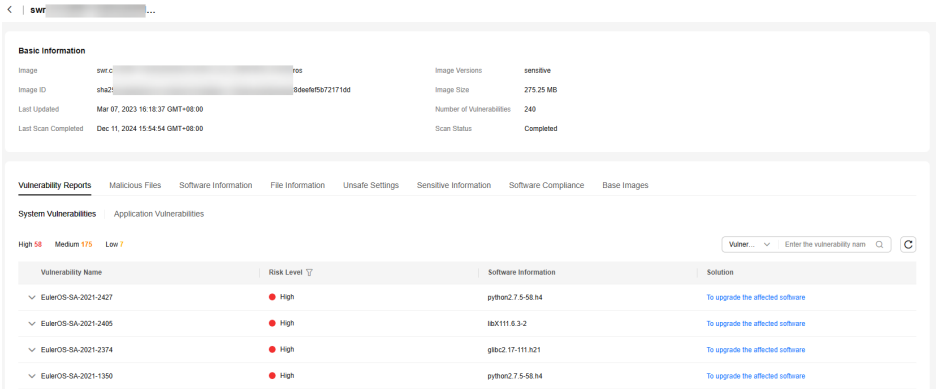


Table 4-14 Image scan result parameters

Parameter	Description
Basic Information	Displays basic information about an image, including the image name, image tag, image size, number of vulnerabilities, last update time of the image tag, and last scan completion time.
Vulnerability Reports	Displays the scan results of system vulnerabilities and application vulnerabilities. • Viewing vulnerability details Click a vulnerability name to go to the vulnerability details page and view the basic information and affected images. • Viewing the **CVE ID**, **CVSS Score**, and **Disclosed Time** of a vulnerability Click ⌄ in front of a vulnerability name to view its CVE ID, CVSS score, and the time when it was disclosed. • Viewing vulnerability solutions In the **Solution** column of a vulnerability, click the solution description to view the vulnerability solution details.
Malicious Files	Displays the scan results of malicious image files, including the malicious file names, paths, and file sizes.
Software Information	Displays the statistical results of image software information, including the software names, types, versions, and number of software vulnerabilities. Click ⌄ next to a software name to view the software vulnerability name, repair urgency, and solution.
File Information	Displays the statistical results of image file information, including the total number of files, total file size, and details about the top 50 files.
Unsafe Settings	Displays the image baseline check results, including the configuration check, password complexity policy check, and common weak password check results. • Viewing unsafe settings and suggestions 1. On the **Unsafe Configurations** tab page, select a baseline. 2. In the detection item column of a detection item, click **Description** to view the detection item description and modification suggestions. • Customizing common weak passwords 1. Click the **Common Weak Password Detection** tab and click **Manage Weak Password**. 2. Configure weak passwords and click **OK**.

Parameter	Description
Sensitive Information	Displays the scan result of sensitive image information, including the risk levels, image paths, file paths, and sensitive information. To add the paths of sensitive files that are not detected, choose **Configure Sensitive File Path** and add the paths to be filtered. • Only Linux system file paths can be filtered. • A maximum of 20 paths can be added. Put each path on a separate line. • Example: **/usr/** or **/lib/test.txt**.
Software Compliance	Displays the scan results of non-compliant image software, including the non-compliant software name, software version, path, and image layer information.
Base Images	Displays the scan results of service images that are not built using basic images. The scan results include image names, versions, and image paths.

----End

Exporting Image Vulnerability or Baseline Scan Results

Step 1 On the **Container Images** tab, click **CI/CD Images**. Click **Export** in the upper left corner of the image list.

To export the vulnerability or baseline scan result of a specified image, find the image using the search box above the image list and then click **Export**.

Step 2 Choose **Export Vulnerability** or **Export Baseline**.

Step 3 View the export status in the upper part of the container management page. After the export is successful, obtain the exported information from the default download address on the local server.

NOTE

Do not close the browser page during the export. Otherwise, the export task will be interrupted.

----End

4.5.6 Viewing Container Information

You can view container information on the **Containers** page to learn about the container status, cluster, and risks. This section describes how to view container information.

Constraints

Only the HSS container edition supports this function. For details about how to purchase and upgrade HSS, see **Purchasing an HSS Quota** and **Upgrading Your Edition**.

Viewing Container Information

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Containers & Quota**. The container management page is displayed.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Containers** tab. The container page is displayed.

Step 5 View the container information and security status.

In the container list, you can view the container name, status, risks, restart times, pod, and cluster name and type.

- View container details.

  Click the name of the target container. On the container details page that is displayed, view the container image, process, port, and mount path information.

- View the container risk distribution.

  View the number of low-risk, medium-risk, high-risk, and critical risks in the container.

- Export the container list.

  Click **Export** in the upper left corner of the list to export the container list to the local PC.

----End

4.5.7 Handling Unsafe Containers

Scenario

HSS can detect container security risks and classify them into the following types:

- Critical: malicious program
- High risk: ransomware attacks, malicious programs, reverse shells, escape attacks, and dangerous commands
- Medium risk: web shell, abnormal startup, process exception, and sensitive file access
- Low risk: brute-force attack

To prevent containers with medium or higher security risks from affecting other containers, you can isolate, suspend, or stop risky containers.

Constraints

- Only the HSS container edition supports this function. For details about how to purchase and upgrade HSS, see **Purchasing an HSS Quota** and **Upgrading Your Edition**.
- Only Linux containers are supported.
- Only containers with medium or higher security risks can be handled.

Handling Unsafe Containers

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Containers & Quota**. The container management page is displayed.

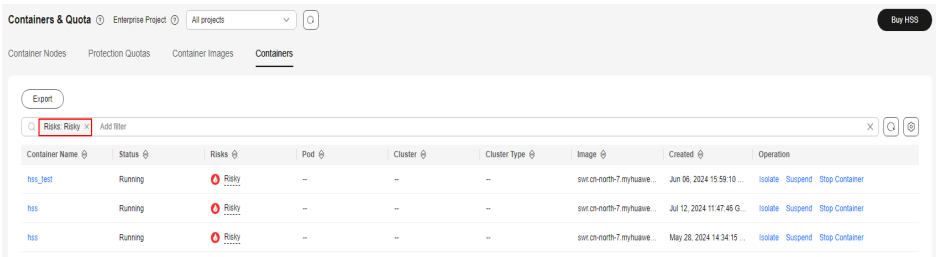
NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Containers** tab. The container page is displayed.

Step 5 In the search box above the container list, choose **Risks** > **Risky** to filter risky containers.

Figure 4-48 Filtering risky containers



Step 6 In the **Operation** column of the target risky container, select the operation to be performed.

Cluster containers can be stopped. Independent containers can be isolated, suspended, and stopped.

NOTE

Only containers with medium or higher risks can be handled. You can view the security risk distribution.

- **Isolate containers**: After a container is isolated, you cannot access the container when the container is running, and the container cannot access the mount directory of the host or the system file of the container.
  a. Click **Isolate**.
  b. In the dialog box that is displayed, click **OK**.
- **Suspend containers**: Freeze the processes running in the container.

a. Click **Suspend**.
b. In the dialog box that is displayed, click **OK**.

- **Stop containers**: Terminate a running container process. If **autoremove** is configured for the container, the container cannot be resumed.
  a. Click **Stop Container**.
  b. In the dialog box that is displayed, click **OK**.

----End

Related Operations

Restoring a container to the running state

Restores a container from the **Isolate**, **Waiting**, or **Terminated** state to the **Running** state.

NOTE

If **autoremove** is configured for a terminated container, the container cannot be resumed.

Step 1 In the row containing the target container, click **Restore** in the **Operation** column.

Step 2 In the dialog box that is displayed, click **OK**.

----End

4.5.8 Uninstalling the Agent from a Cluster

After the uninstallation, some container-related functions, such as container firewall and container cluster protection, will be unavailable for the cluster assets connected to HSS through agents. To continue using container security services, you are advised to uninstall the cluster agent by following the instructions provided in this section, and then refer to **Installing an Agent in a Cluster** to connect to container assets again.

Uninstalling an Agent from a CCE Cluster

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Containers** > **Cloud Container Engine**. The CCE console is displayed.

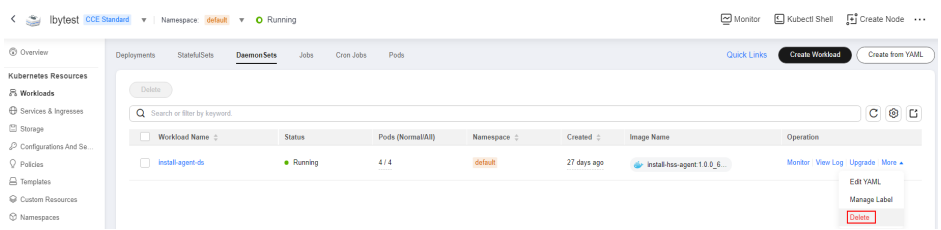
Step 3 Click the name of a cluster to enter its details page.

Step 4 In the navigation pane, choose **Workloads**.

Step 5 Click the **DaemonSets** tab. Delete the workload **install-agent-ds**.

In the **Operation** column of the workload, choose **More** > **Delete**.

Figure 4-49 Deleting install-agent-ds



Step 6 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 7 In the navigation tree on the left, choose **Installation & Configuration** > **Server Install & Config**.

Step 8 Click the **Agents** tab. Uninstall the agent from all container nodes in the CCE cluster.

For details, see **Uninstalling the Agent**.

----End

Uninstalling an Agent from an On-Premises Cluster

Step 1 Log in to the Kubernetes cluster.

Step 2 Run the following command to delete the workload **install-agent-ds**:

kubectl delete ds install-agent-ds -n default

Step 3 **Log in to the management console**.

Step 4 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 5 In the navigation tree on the left, choose **Installation & Configuration** > **Server Install & Config**.

Step 6 Click the **Agents** tab. Uninstall the agent from all container nodes in the cluster.

For details, see **Uninstalling the Agent**.

----End

4.5.9 Disabling Protection for Container Edition

You can disable the container edition for a server. A quota that has been unbound from a server can be bound to another one.

Before You Start

- Disabling protection does not affect services, but will increase security risks. You are advised to keep your servers protected.
- To unsubscribe from the pay-per-use quota of the container edition, you just need to disable the protection.

Disabling the Container Edition

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Containers & Quota**. Click the **Container Nodes** tab.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 4 In the **Operation** column of a server, click **Disable Protection**.

To disable protection in batches, select multiple target servers and click **Disable Protection**.

Step 5 In the dialog box that is displayed, confirm the information and click **OK**.

Step 6 After the function is disabled, choose **Asset Management** > **Containers & Quota**. On the **Container Nodes** tab, if the **Protection Status** of the server is **Unprotected**, it indicates protection has been disabled.

CAUTION

Disabling protection does not affect services, but will increase security risks. You are advised to keep your servers protected.

----End

4.6 Protection Quota Management

4.6.1 Viewing Protection Quotas

You can check, renew, and unsubscribe from your quota in the server list.

Only the quota purchased in the selected region is displayed. If your quota is not found, ensure you have switched to the correct region and search again.

Viewing Server Quotas

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Asset Management** > **Servers & Quota**. On the displayed page, click the **Quotas** tab. On the **Quotas** page, click the different option buttons to filter and view the target quota list.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 4 On the **Quotas** tab page, view HSS quotas. Table 4-15 lists the related parameters.

Table 4-15 Parameter description

Parameter	Description
Quota ID	Unique ID of a quota. Click the quota ID to go to the basic information page. On this page, you can view the quota creation time, expiration policy, and last transaction order. You can also add tags to the quota on this page.
Edition	• Basic • Professional Edition • Enterprise • Premium • Web Tamper Protection (WTP)
Usage Status	• **In use**: The quota is being used for a server. The name of the server is displayed below the status. • **Idle**: The quota is not in use.
Quota Status	• **Normal**: The quota has not expired and can be used properly. • **Expired**: The quota has expired. During this period, you can still use the quota. • **Frozen**: During the frozen period, the quota is unbound from the server and the server is no longer protected. After the frozen period expires, the quota is permanently deleted. If the quota expires and enters the frozen period, you can renew the quota in time, and the quota will be automatically bound to the original server (unless that server has been bound to another quota). If the quota is frozen due to public security reasons or violations, only after it is unbound by public security or violation management personnel, can it be automatically bound to the original server (unless that server has been bound to another quota).
Billing Mode	• Yearly/Monthly • Pay-per-use
Enterprise Project Name	Name of the enterprise project to which the target quota belongs
Tag	Resource category tag.

NOTE

- Binding quota to a server

  Alternatively, choose **Asset Management** > **Servers & Quota** from the left navigation pane, and click the **Quotas** tab. In the quota list displayed, click **Bind Server** in the **Operation** column to bind a quota to a server. HSS will automatically protect the server.

  A quota can be bound to a server to protect it, on condition that the agent on the server is online.

- Unbind

  On the **Quotas** tab of the **Servers & Quota** page, click **Unbind** in the **Operation** column of a quota. HSS will no longer protect the server and the quota status will change to **Idle**.

- Export the quota list.

  Click  in the upper right corner of the quota list to export the quota information on the current page.

----End

Viewing Container Quotas

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click  , and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Asset Management** > **Containers & Quota**. On the displayed page, click the **Protection Quotas** tab.

Step 4 On the **Protection Quotas** tab page, view HSS protection quotas. **Table 4-16** lists the related parameters.

Table 4-16 Parameter description

Parameter	Description
Quota ID	Quota ID Click the quota ID to go to the basic information page. On this page, you can view the quota creation time, expiration policy, and last transaction order. You can also add tags to the quota on this page.
Quota Version	Enterprise edition
Quota Status	• **Normal**: The quota is normal. • **Expired**: The quota has expired. During this period, you can still use the quota. • **Frozen**: During the frozen period, the quota is unbound from the container node and the container node is no longer protected. If you renew the quota in time, the quota will be automatically bound to the container after the renewal is complete. After the frozen period expires, the quota will be permanently deleted.

Parameter	Description
Usage Status	• **In use**: The quota is being used for a server. The name of the server is displayed below the status. • **Idle**: The quota is not in use.
Billing Mode	• Yearly/Monthly • Pay-per-use
Tag	Resource category tag.

NOTE

- Renewal

  You can click **Renew** in the **Operation** column of the quota to renew it.For details, see **How Do I Renew HSS?**
- Unsubscription

  You can click **Unsubscribe** in the **Operation** column of the quota to unsubscribe from it. For details, see **How Do I Unsubscribe from HSS Quotas?**

----End

4.6.2 Binding a Protection Quota

You can bind a quota you purchased to a server to protect it.

Prerequisites

- The agent has been installed on the server, and the agent status is **Online**. For details about how to install the agent, see **Installing the Agent on Servers**.
- The quota is in **Normal** state and its **Usage Status** is **Idle**.
- A quota can be bound to a server to protect it, on condition that the agent on the server is online.

Manually Binding Quotas to a Server

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Asset Management** > **Servers & Quota**. On the displayed page, click the **Quotas** tab. On the **Quotas** page, click the different option buttons to filter and view the target quota list.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

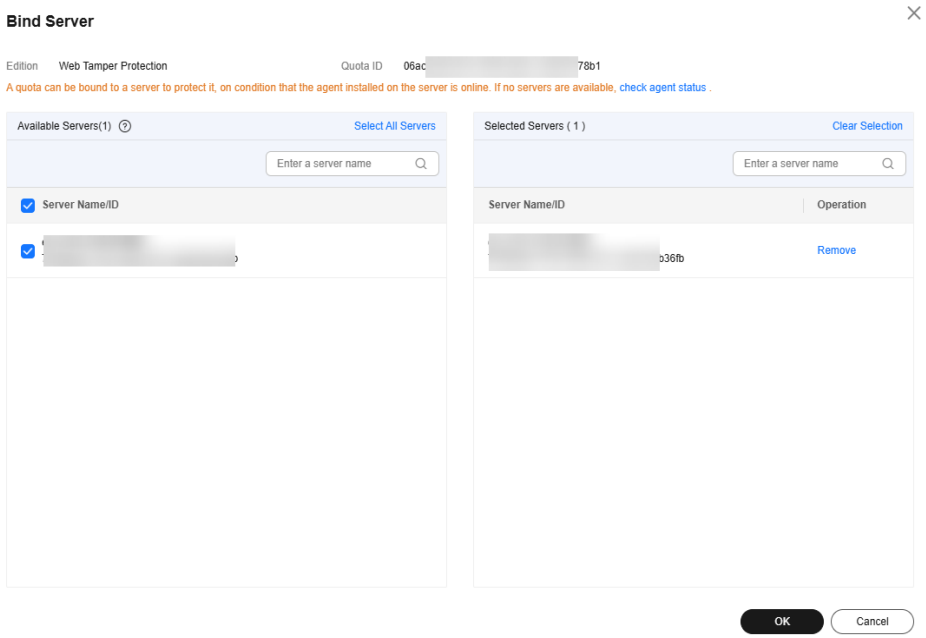
Step 4 On the **Quotas** tab page, locate the row that contains the target quota and click **Bind Server** in the **Operation** column.

NOTE

To bind a WTP quota to a server, choose **Server Protection** > **Web Tamper Protection** from the navigation pane on the left. On the **Servers** tab page displayed, locate the row containing your desired server and click **Enable Protection** in the **Operation** column. HSS automatically enables WTP for the server.

Step 5 Select a server.

Figure 4-50 Selecting a server to be bound



Step 6 Click **OK**. HSS will automatically enable protection for the server.

----End

Manually Binding Quotas to a Container

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Asset Management** > **Containers & Quota**. Click the **Protection Quotas** tab. The protection quota list page is displayed.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 On the **Quotas** tab page, locate the row that contains the target quota and click **Bind Server** in the **Operation** column.

Step 5 Select a server.

Step 6 Click **OK**. HSS will automatically enable protection.

----End

Automatically Binding Quotas

Automatic Binding Description

After automatic quota binding is enabled, HSS automatically binds available quotas to new servers or container nodes after the agent is installed for the first time. Only the yearly/monthly quotas that you have purchased can be automatically bound. No new order or fee is generated.

- Servers: Available yearly/monthly quotas are automatically bound in the following sequence: Premium Edition > Enterprise Edition > Professional Edition > Basic Edition.
- Container nodes: Available yearly/monthly quotas are automatically bound in the following sequence: Container Edition > Premium Edition > Enterprise Edition > Professional Edition > Basic Edition.
- If the version of the agent installed on the Linux server is 3.2.10 or later or the version of the agent installed on the Windows server is 4.0.22 or later, ransomware prevention is automatically enabled with the premium, WTP, or container edition. Deploy bait files on servers and automatically isolate suspicious encryption processes (there is a low probability that processes are incorrectly isolated). You are also advised to enable backup so that you can restore data in the case of a ransomware attack to minimize losses. For details, see **Enabling Ransomware Backup**.

Procedure

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree on the left, choose **Asset Management** > **Servers & Quota**.

NOTE

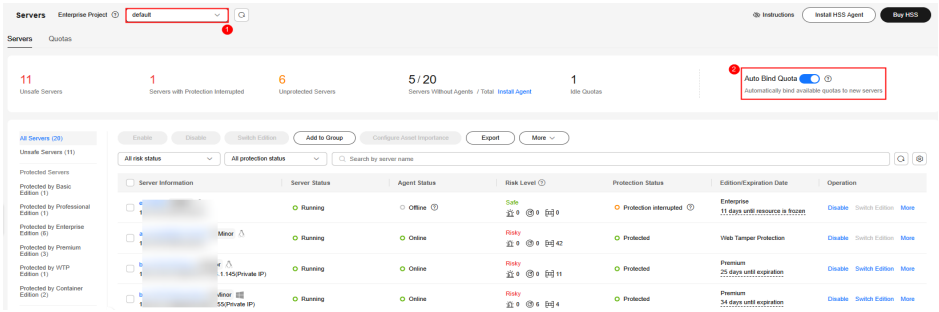
You can also configure the automatic quota binding function on either the protection quota purchasing page or the container management page.

Step 4 Perform the following operations based on whether enterprise projects are used:

- **Enterprise projects used**

  Select an enterprise project from the **Enterprise Project** drop-down list in the upper part of the page, and click ⬭ in the upper right corner of the **Servers** tab to enable automatic quota binding for the enterprise project.

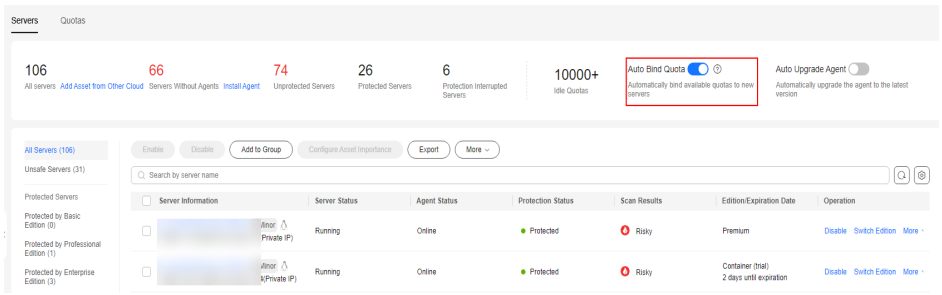
Figure 4-51 Enabling automatic quota binding



- **No enterprise projects used**

  Click  in the upper right corner of the **Servers** tab to enable automatic quota binding.

  Figure 4-52 Enabling automatic quota binding

----End

4.6.3 Unbinding a Protection Quota

You can unbind quotas from servers that no longer need to be protected. Exercise caution when performing this operation, because unprotected servers are exposed to security risks.

After unbinding a quota, you can bind it to another server or unsubscribe from it to reduce cost.

Prerequisites

The quotas to be unbound are in use.

Unbinding a Quota from a Server

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Asset Management** > **Servers & Quota**. On the displayed page, click the **Quotas** tab. On the **Quotas** page, click the different option buttons to filter and view the target quota list.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 4 On the **Quotas** page, click **Unbind** in the **Operation** column of a quota.

To unbind quotas in batches, select the servers they bind to, and click **Batch Unbind** above the quota list.

NOTE

Exercise caution when performing this operation, because unprotected servers are exposed to security risks.

Step 5 In the confirmation dialog box, click **OK**.

----End

Unbinding a Container Quota

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Asset Management** > **Containers & Quota**. On the displayed page, click the **Quotas** tab. On the **Quotas** page, click the different option buttons to filter and view the target quota list.

NOTE

If your servers are managed by enterprise projects, you can select a target enterprise project to view or operate the asset and detection information.

Step 4 On the **Quotas** page, click **Unbind** in the **Operation** column of a quota.

To unbind quotas in batches, select the servers they bind to, and click **Batch Unbind** above the quota list.

NOTE

Exercise caution when performing this operation, because unprotected servers are exposed to security risks.

Step 5 In the confirmation dialog box, click **OK**.

----End

4.6.4 Upgrading Protection Quotas

You can upgrade to a higher edition and enjoy stronger security features.

Precautions

- **Premium**, **Web Tamper Protection**, and **Container** are high-configuration editions and cannot be upgraded. You can purchase these quotas separately.
- **Basic**, **Professional**, and **Enterprise** can be upgraded to a higher quota edition.
  - **Basic**: can be upgraded to **Professional**, **Enterprise**, or **Premium**.
  - **Professional**: can be upgraded to **Enterprise** or **Premium**.
  - **Enterprise**: can be upgraded to **Premium**.

Prerequisites

- The **Usage Status** of a quota must be **Idle**.
- The **Quota Status** of a quota must be **Normal**.

Upgrading to the Professional/Enterprise/Premium Edition

To upgrade a quota that is being used to protect a server, unbind it from the server first.

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Asset Management** > **Servers & Quota**. On the displayed page, click the **Quotas** tab. On the **Quotas** page, click the different option buttons to filter and view the target quota list.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 In the quota list, filter the idle quotas of the basic or enterprise edition. Select a quota and click **Upgrade**.

NOTE

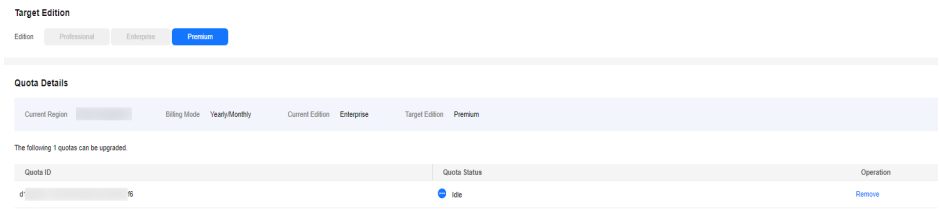
- Before upgrading a quota in use, **unbind it** from the server it protects.
- Unbinding does not affect services.

Step 5 Configure upgrade information.

NOTE

The basic edition can be upgraded to the enterprise or premium edition. The enterprise edition is upgraded to the premium edition by default.

Figure 4-53 Confirming upgrade information



Step 6 Confirm the upgrade version and click **Next**.

NOTE

When you pay for the upgrade, you only need to make up the difference.

Step 7 Confirm the purchase information, select **I have read and agree to the Host Security Service Disclaimer**, and click **Pay Now**.

Step 8 Wait until the payment is complete. Return to the **quota list**. Locate the quota by its ID and check its edition.

Step 9 **Bind the quota** to a server and enable protection.

----End

Upgrading to the WTP Edition

The WTP edition cannot be directly upgraded from a lower edition and needs to be purchased separately. Before protecting a server with WTP, ensure the server is not bound to any quota.

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the upper right corner of the **Dashboard** page, click **Buy HSS**.

Step 4 On the **Buy HSS** page, select the WTP edition. For more information, see **Table 4-17**.

Table 4-17 Parameters for purchasing HSS

Parameter	Description	Example Value
Billing Mode	Select **Yearly/Monthly** or **Pay-per-use** billing mode based on your requirements. • Yearly/Monthly: You can select the basic, professional, premium, WTP, or container edition. You can purchase the edition for a fixed period of time. The fee is 30% lower than that of pay-per-use. If you use the edition for a long time, you are advised to purchase yearly/monthly packages. • **Pay-per-use**: You can select the professional, premium, or container edition on the purchase page. Protection needs to be enabled on the server list page. You pay for the duration you use the resources. Prices are calculated by hour, and no minimum fee is required. **NOTE** Procedure for enabling pay-per-use quota: 1. On the purchase page, select **Pay-per-use**. In the lower right corner, click **Enable Now**. You will be redirected to the server list. 2. In the **Operation** column of a server, click **Enable**. Set **Billing Mode** to **Pay-per-use** and select an edition. 3. After confirming the information, select **I have read and agree to the Host Security Service Disclaimer**. 4. Click **OK**.	Yearly/ Monthly

Parameter	Description	Example Value
Region	• To minimize connection issues, purchase quota in the region of your servers. • HSS cannot be used across regions. If you purchased a quota in a wrong region, unsubscribe from it and purchase a quota in the region of your servers. • Only some regions allow non-Huawei Cloud servers to access HSS through the Internet. For details, see **In What Regions Is HSS Available to Non-Huawei Cloud Servers?** Purchase HSS in the regions where non-Huawei Cloud servers can be connected.	CN-Hong Kong
Edition	The **basic, professional, premium,WTP,** and **container editions** are supported. For details about the differences between editions, see **Editions**. **NOTICE** • If you enable the HSS basic edition for the first time, you can enjoy the free trial for 30 days and purchase it after the trial. • If you purchase the basic, enterprise, or premium edition, choose **Asset Management** > **Servers & Quota** and enable HSS on the **Servers** tab. • To enable the WTP edition, choose **Server Protection** > **Web Tamper Protection** and click the **Servers** tab. • If you purchased the container edition, choose **Asset Management** > **Containers & Quota** and enable protection on the **Container Nodes** tab.	Enterprise
Enterprise Project	This option is only available when you are logged in using an enterprise account, or when you have enabled enterprise projects. To enable this function, contact your customer manager. An enterprise project provides a cloud resource management mode, in which cloud resources and members are centrally managed by project. Select an enterprise project from the drop-down list. **NOTE** • Resources and incurred expenses are managed under the enterprise project you selected. • Value **default** indicates the default enterprise project. Resources that are not allocated to any enterprise projects under your account are displayed in the default enterprise project. • The **default** option is available in the **Enterprise Project** drop-down list only after you purchased HSS under your Huawei account.	default

Parameter	Description	Example Value
Tag	Tags are used to identify cloud resources. When you have many cloud resources of the same type, you can use tags to classify cloud resources by dimension (for example, by usage, owner, or environment). To use this function, your account must have the **TMS administrator** permission. Without this permission, you cannot add tags to protection quotas, and the error message "permission error" will be displayed. You do not need to set this parameter in pay-per-use mode.	data
Quota Management	After automatic quota binding is enabled, HSS automatically binds available quotas to new servers or container nodes after the agent is installed for the first time. Only the yearly/monthly quotas that you have purchased can be automatically bound. No new order or fee is generated. ● Servers: Available yearly/monthly quotas are automatically bound in the following sequence: Premium Edition > Enterprise Edition > Professional Edition > Basic Edition. ● Container nodes: Available yearly/monthly quotas are automatically bound in the following sequence: Container Edition > Premium Edition > Enterprise Edition > Professional Edition > Basic Edition. If you use enterprise projects, this configuration only enables automatic quota binding for the selected enterprise project.	Selected
Required Duration	● Select a duration based on your requirements. In **Pay-per-use** mode, you do not need to select a duration. ● You are advised to select **Auto-renew** to ensure your servers are always protected. ● If you select **Auto-renew**, the system will automatically renew your subscription as long as your account balance is sufficient. The renewal period is the same as the required duration. ● If you do not select **Auto-renew**, manually renew the service before it expires.	1 year
Quantity	Enter the number of HSS quotas to be purchased. In **Pay-per-use** mode, you do not need to configure this option. **NOTICE** All your servers should be protected, so that if a virus (such as ransomware or a mining program) infects one of them, it will not be able to spread to others and damage your entire network.	20

Step 5 In the lower right corner of the page, click **Next**.

For details about pricing, see **Product Pricing Details**.

Step 6 After confirming that the order, select **I have read and agree to the Host Security Service Disclaimer** and click **Pay Now**.

Step 7 In the dialog box that is displayed, select a verification mode, click **Send Code**, enter the verification code you receive, and click **OK**.

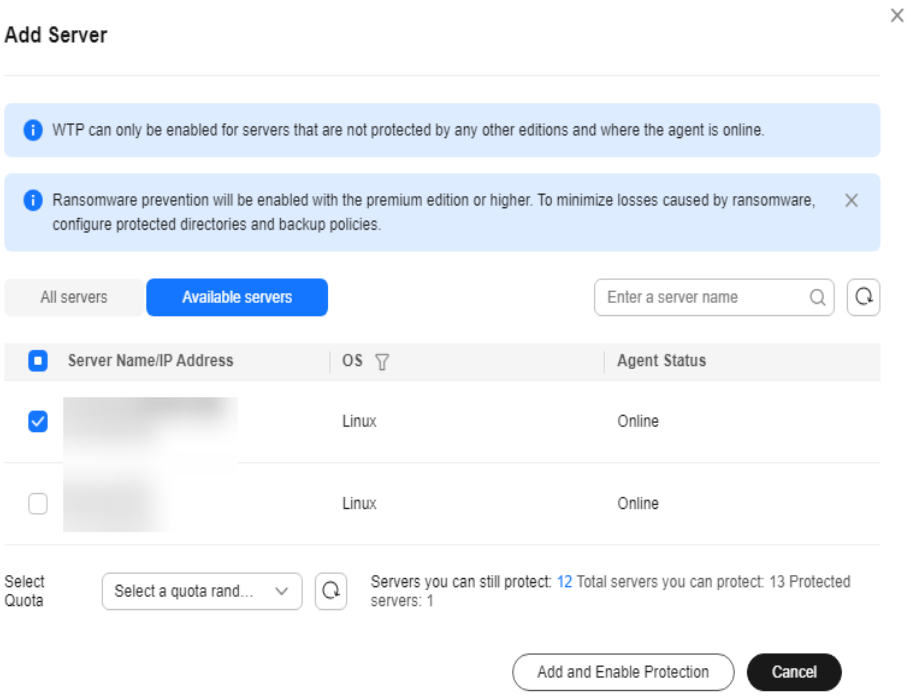
Step 8 In the navigation pane, choose **Server Protection** > **Web Tamper Protection**. On the **Servers** tab, click **Add Server**.

NOTICE

- Ensure the server to be protected by WTP is not bound to other quotas. Choose **Asset Management** > **Servers & Quota** and click the **Servers** tab. If the protection status of the server is **Protected**, it indicates the server is bound to another quota. In this case, click **Disable** in the **Operation** column.
- Unbinding a server from a quota does not affect services.

Step 9 Click **Add Server**, select a server, and click **Add and Enable Protection**.

Figure 4-54 Selecting a server



Step 10 Verify WTP configurations. Choose **Asset Management** > **Servers & Quota** and click the **Servers** tab. If **WTP** is displayed in the **Edition/Expiration Date** column, the WTP edition has been enabled.

NOTE

If you do not need the quota replaced by WTP, you can unsubscribe from it. Choose **Asset Management** > **Servers & Quota** and click the **Quotas** tab. In the **Operation** column of the quota, choose **More** > **Unsubscribe**.

----End

4.6.5 Exporting the Protection Quota List

This section describes how to export the server protection quota list to your local PC. Currently, the container protection quota list cannot be exported.

Exporting the Protection Quota List

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree on the left, choose **Asset Management** > **Servers & Quota**.

NOTE

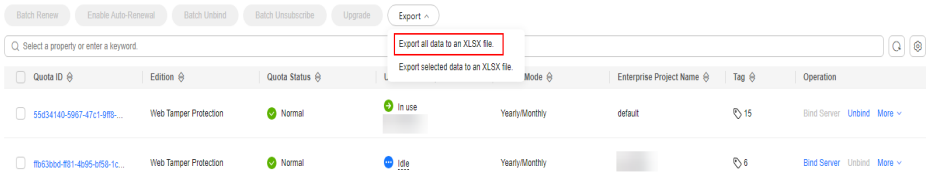
If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 4 Click the **Quotas** tab.

Step 5 Above the protection quota list, click **Export** > **Export all data to an XLSX file** to export the server protection quota list.

If you only need to export specified protection quota information, select the target quota and choose **Export** > **Export selected data to an XLSX file**.

Figure 4-55 Exporting all server protection quotas



Step 6 View the export status in the upper part of the page. After the export is successful, obtain the exported information from the default file download address on the local host.

NOTICE

Do not close the browser page during the export. Otherwise, the export task will be interrupted.

----End

5 Risk Management

5.1 Vulnerability Management

5.1.1 Vulnerability Management Overview

Vulnerability management can detect Linux, Windows, Web-CMS, application vulnerabilities, and emergency vulnerabilities and provide suggestions, helping you learn about server vulnerabilities in real time. Linux and Windows vulnerabilities can be fixed in one-click mode. This section describes how the vulnerabilities are detected and the vulnerabilities that can be scanned and fixed in each HSS edition.

NOTE

The vulnerability list displays vulnerabilities detected in the last seven days. After a vulnerability is detected for a server, if you change the server name and do not perform a vulnerability scan again, the vulnerability list still displays the original server name.

How Vulnerability Scan Works

Table 5-1 describes how different types of vulnerabilities are detected.

Table 5-1 How vulnerability scan works

Type	Mechanism
Linux vulnerability	Based on the vulnerability database, checks and handles vulnerabilities in the software (such as kernel, OpenSSL, vim, glibc) you obtained from official Linux sources and have not compiled, reports the results to the management console, and generates alarms.
Windows vulnerability	Synchronizes Microsoft official patches, checks whether the patches on the server have been updated, pushes Microsoft official patches, reports the results to the management console, and generates vulnerability alarms.

Type	Mechanism
Web-CMS vulnerability	Checks web directories and files for Web-CMS vulnerabilities, reports the results to the management console, and generates vulnerability alarms.
Application vulnerability	HSS detects the vulnerabilities in the software and dependency packages running on servers and container server machines, reports risky vulnerabilities to the console, and displays vulnerability alarms.
Emergency Vulnerabilities	Checks whether the software and any dependencies running on the server have vulnerabilities through version comparison and POC verification. Reports risky vulnerabilities to the console and provides vulnerability alarms for you.

Types of Vulnerabilities That Can Be Scanned and Fixed

For details about the types of vulnerabilities that can be scanned and fixed in different HSS editions, see **Types of vulnerabilities that can be scanned and fixed in each HSS edition**.

The meanings of the symbols in the table are as follows:

- √: supported
- ×: not supported

Table 5-2 Types of vulnerabilities that can be scanned and fixed in each HSS edition

Vulnerability Type	Function	Basic Edition	Professional Edition	Enterprise Edition	Premium Edition	Web Tamper Protection Edition	Container Edition
Linux vulnerability	Automatic vulnerability scan (daily by default)	√	√	√	√	√	√
	Scheduled vulnerability scan (once a week by default)	×	√	√	√	√	√
	Vulnerability whitelist	×	√	√	√	√	√

Vulnerability Type	Function	Basic Edition	Professional Edition	Enterprise Edition	Premium Edition	Web Tamper Protection Edition	Container Edition
	Manual vulnerability scan	×	√	√	√	√	√
	One-click vulnerability fix	×	√ (A maximum of 50 vulnerabilities can be fixed at a time.)	√ (A maximum of 50 vulnerabilities can be fixed at a time.)	√	√	√
Windows vulnerability	Automatic vulnerability scan (daily by default)	√	√	√	√	√	×
	Scheduled vulnerability scan (once a week by default)	×	√	√	√	√	×
	Vulnerability whitelist	×	√	√	√	√	×
	Manual vulnerability scan	×	√	√	√	√	×

Vulnerability Type	Function	Basic Edition	Professional Edition	Enterprise Edition	Premium Edition	Web Tamper Protection Edition	Container Edition
	One-click vulnerability fix	×	√ (A maximum of 50 vulnerabilities can be fixed at a time.)	√ (A maximum of 50 vulnerabilities can be fixed at a time.)	√	√	×
Web-CMS vulnerability	Automatic vulnerability scan (daily by default)	×	√	√	√	√	√
	Scheduled vulnerability scan (once a week by default)	×	√	√	√	√	√
	Vulnerability whitelist	×	√	√	√	√	√
	Manual vulnerability scan	×	√	√	√	√	√
	One-click vulnerability fix	×	×	×	×	×	×
Application vulnerability	Automatic vulnerability scan (weekly by default)	×	×	√	√	√	√
	Scheduled vulnerability scan (once a week by default)	×	×	√	√	√	√

Vulnerability Type	Function	Basic Edition	Professional Edition	Enterprise Edition	Premium Edition	Web Tamper Protection Edition	Container Edition
	Vulnerability whitelist	×	×	√	√	√	√
	Manual vulnerability scan	×	×	√	√	√	√
	One-click vulnerability fix	×	×	×	×	×	×
Emergency vulnerability	Automatic vulnerability scan	×	×	×	×	×	×
	Scheduled vulnerability scan (disabled by default)	×	√	√	√	√	√
	Vulnerability whitelist	×	×	×	×	×	×
	Manual vulnerability scan	×	√	√	√	√	√
	One-click vulnerability fix	×	×	×	×	×	×

NOTE

HSS can scan for Web-CMS vulnerabilities, emergency vulnerabilities, and application vulnerabilities but cannot fix them. You can log in to your server to manually fix the vulnerability by referring to the suggestions displayed on the vulnerability details page.

5.1.2 Vulnerability Scan

HSS can scan for Linux, Windows, Web-CMS, application, and emergency vulnerabilities. Automatic, scheduled, and manual scans are supported.

- Automatic scan

  By default, Linux, Windows, and Web-CMS vulnerabilities are automatically scanned every day. Application vulnerabilities are automatically scanned every

Monday. The time of an automatic application vulnerability scan changes with the middleware asset scan time. For details about how to view and set the latter, see **Asset Discovery**.

If a manual or scheduled vulnerability scan has been performed in a day, HSS will not automatically scan for vulnerabilities on that day.

- Scheduled scan

  By default, a full server vulnerability scan is performed once a week. To protect workloads, you are advised to set a proper scan period and scan server scope to periodically scan server vulnerabilities.

- Manual scan

  If you want to view the vulnerability fixing status or real-time vulnerabilities of a server, you are advised to manually scan for vulnerabilities.

This section describes how to manually scan for vulnerabilities and configure a scheduled scan policy.

Constraints

- If the agent version of the Windows OS is 4.0.18 or later, application vulnerability scan is supported. If the agent version of the Linux OS is 3.2.9 or later, emergency vulnerability scan is supported. For details about how to upgrade the agent, see **Upgrading the Agent**.
- The **Server Status** is **Running**, **Agent Status** is **Online**, and **Protection Status** is **Protected**. Otherwise, vulnerability scan cannot be performed.
- For details about the types of vulnerabilities that can be scanned by different HSS editions, see **Types of Vulnerabilities That Can Be Scanned and Fixed**.
- For details about the OSs supported by Linux and Windows vulnerability scan, see **Table 5-3**. Emergency vulnerability scan supports Ubuntu, CentOS, EulerOS, Debian, AlmaLinux, and Windows.

Table 5-3 OSs supporting vulnerability scan

OS Type	Supported OS
Windows	• Windows Server 2019 Datacenter 64-bit English (40 GB) • Windows Server 2019 Datacenter 64-bit Chinese (40 GB) • Windows Server 2016 Standard 64-bit English (40 GB) • Windows Server 2016 Standard 64-bit Chinese (40 GB) • Windows Server 2016 Datacenter 64-bit English (40 GB) • Windows Server 2016 Datacenter 64-bit Chinese (40 GB) • Windows Server 2012 R2 Standard 64-bit English (40 GB) • Windows Server 2012 R2 Standard 64-bit Chinese (40 GB) • Windows Server 2012 R2 Datacenter 64-bit English (40 GB) • Windows Server 2012 R2 Datacenter 64-bit Chinese (40 GB)

OS Type	Supported OS
Linux	• EulerOS 2.2, 2.3, 2.5, 2.8, 2.9, 2.10, 2.11, 2.12 (64-bit) • CentOS 7.4, 7.5, 7.6, 7.7, 7.8 and 7.9 (64-bit) • Ubuntu 16.04, 18.04, 20.04, 22.04 (64-bit) • Debian 9, 10, and 11 (64-bit) • Kylin V10 SP1 and SP2 (64-bit) • HCE 1.1 and 2.0 (64-bit) • SUSE 12 SP5, 15 SP1, and 15 SP2 (64-bit) • UnionTech OS V20 server E and V20 server D (64-bit)

Manual Vulnerability Scan

Step 1 Log in to the management console.

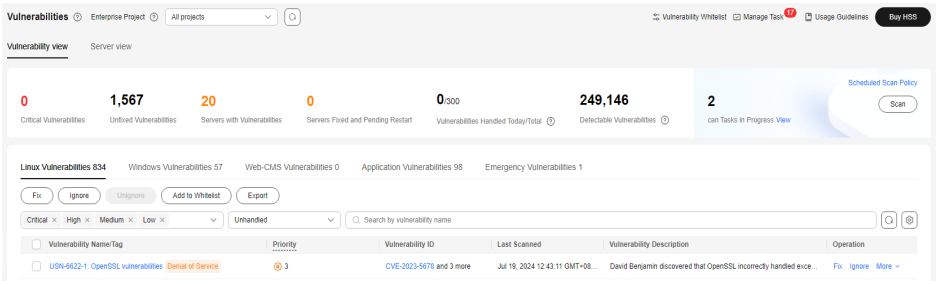
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Risk Management** > **Vulnerabilities**.

Step 4 Click **Scan** in the upper right corner of the **Vulnerabilities** page.

To scan for emergency vulnerabilities, locate the row of an emergency vulnerability, and click **Scan** in the **Operation** column.

Figure 5-1 Manual scan



Step 5 In the **Scan for Vulnerability** dialog box displayed, set the vulnerability types and scope to be scanned. For more information, see **Table 5-4**.

Figure 5-2 Configuring a scan

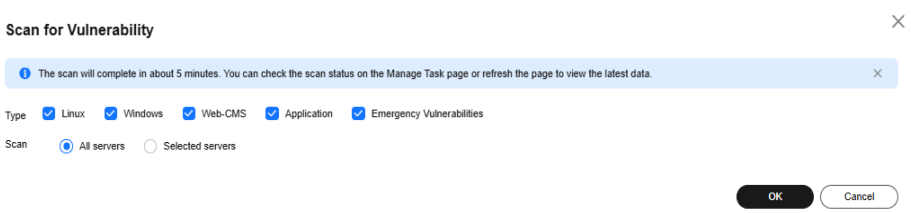


Table 5-4 Parameters for manual scan vulnerabilities

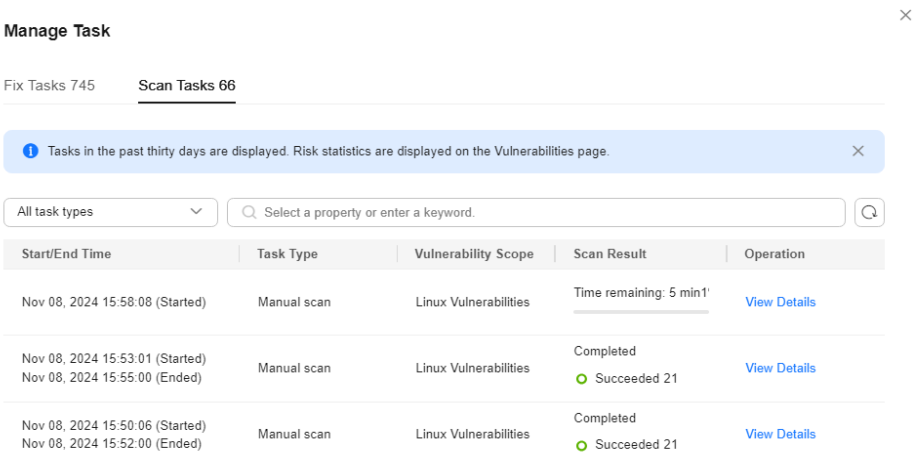
Parameter	Description	Example Value
Type	Select one or more types of vulnerabilities to be scanned. Possible values are as follows: • **Linux** • **Windows** • **Web-CMS** • **Application** • **Emergency**	Select all
Scan	Select the servers to be scanned. Possible values are as follows: • **All servers** • **Selected servers** You can select a server group or search for the target server by server name, ID, EIP, or private IP address. **NOTE** The following servers cannot be selected for vulnerability scan: • Servers are protected by basic edition HSS. • Servers that are not in the **Running** state • Servers whose agent status is **Offline**	**All servers**

Step 6 Click **OK**.

Step 7 In the upper right corner of the **Vulnerabilities** page, click **Manage Task**, and click the **Scan Tasks** tab. View the scan task execution status.

In the **Operation** column of the target scan task, click **View Details** to view the scan details of a specific server.

Figure 5-3 Viewing scan tasks



NOTE

You can also choose **Asset Management** > **Servers & Quota** and manually scan for vulnerabilities on a single server on the **Servers** tab page. The procedure is as follows:

1. Click a server name.
2. Choose **Vulnerabilities**.
3. Click the tab of a vulnerability type to be scanned and click **Scan**.

----End

Scheduled vulnerability scan

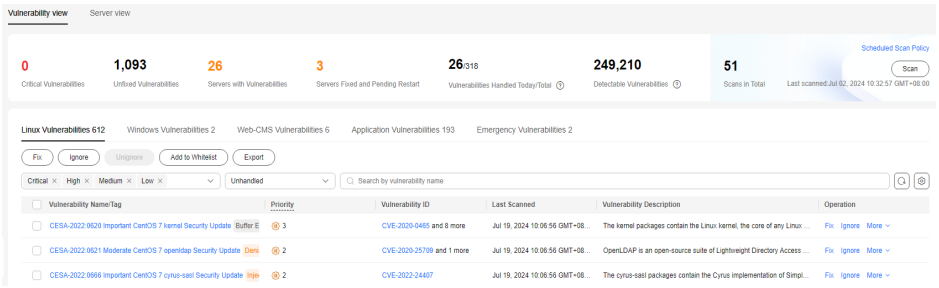
Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose Risk Management > **Vulnerabilities**.

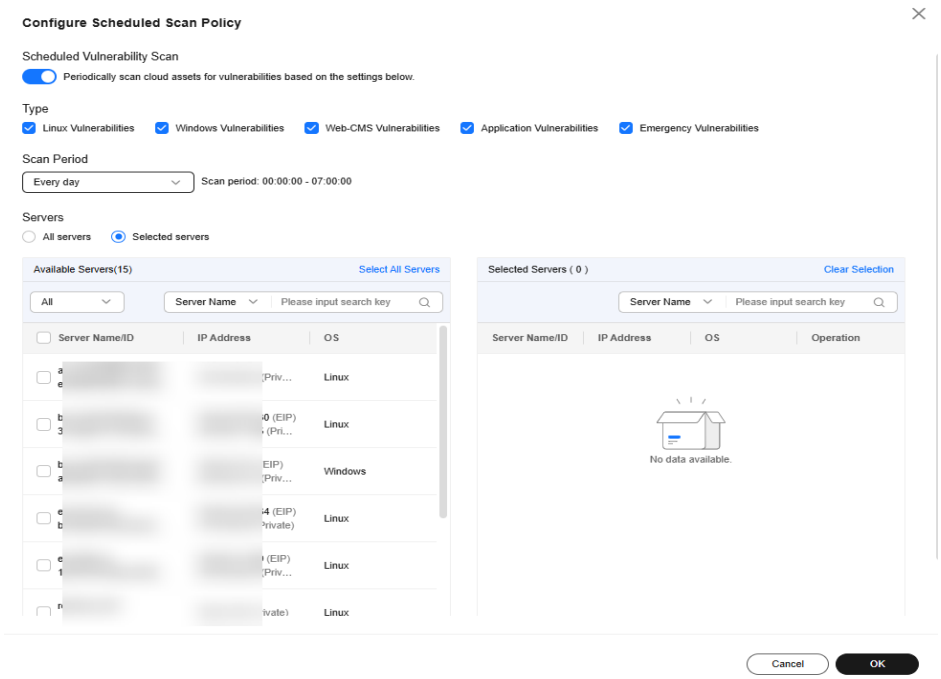
Step 4 In the upper right corner of the **Vulnerabilities** page, click **Scheduled Scan Policy**. The **Configure Scheduled Scan Policy** dialog box is displayed.

Figure 5-4 Scheduled scan policy



Step 5 In the dialog box, configure parameters such as the period and scope for scheduled vulnerability scanning.

Figure 5-5 Configuring scheduled scan policy



- **Scheduled Vulnerability Scan**: Select whether to enable scheduled vulnerability scan.  indicates it is enabled.
- **Type**: Select the type of vulnerabilities to be scanned.
- **Scan Period**: Select **Every day**, **Every three days**, or **Every week**. The default scan duration is **00:00:00 - 07:00:00** and cannot be changed.
- **Servers**: Select the server to be scanned.

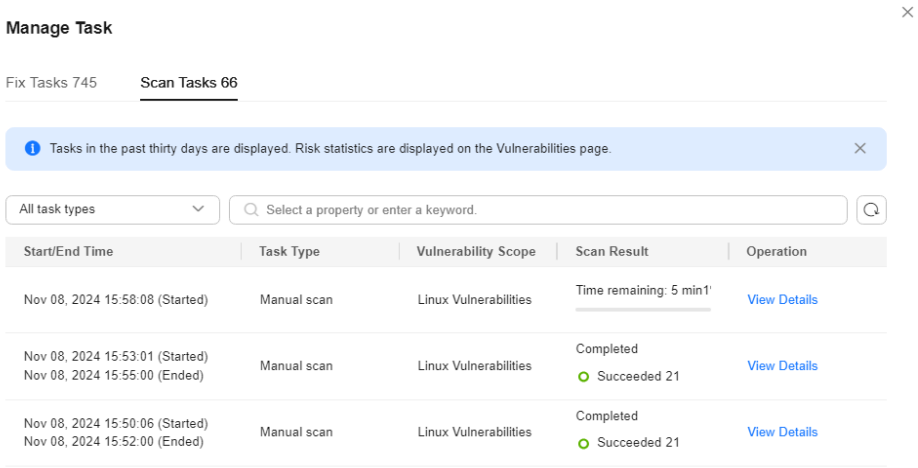
  NOTE

  The following servers cannot be selected for vulnerability scan:
  - Servers are protected by basic edition HSS.
  - Servers that are not in the **Running** state
  - Servers whose agent status is **Offline**

Step 6 In the upper right corner of the **Vulnerabilities** page, click **Manage Task**, and click the **Scan Tasks** tab. View the scan task execution status.

In the **Operation** column of the target scan task, click **View Details** to view the scan details of a specific server.

Figure 5-6 Viewing scan tasks



----End

5.1.3 Viewing Vulnerability Details

You can view vulnerabilities of your assets on the **Vulnerabilities** page. The **Vulnerabilities** page contains two tabs: **Vulnerabilities view** and **Server view**, helping you analyze vulnerabilities from the vulnerability and server perspectives.

Constraints

- Servers that are not protected by HSS do not support this function.
- The **Server Status** is **Running**, **Agent Status** is **Online**, and **Protection Status** is **Protected**. Otherwise, vulnerability scan cannot be performed.

Viewing Vulnerability Details (Vulnerability View)

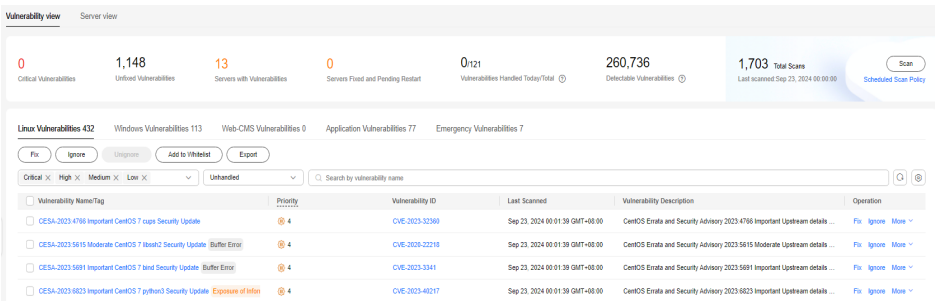
Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Risk Management** > **Vulnerabilities**.

Step 4 View vulnerability information on the **Vulnerabilities** page.

Figure 5-7 Viewing vulnerability details



- Viewing vulnerability scan results

  In the vulnerability statistics area in the upper part of the **Vulnerabilities** page, view vulnerability scan results. **Table 5-5** describes related parameters.

  Table 5-5 Vulnerability scan parameters

Parameter	Description
Critical Vulnerabilities	Click the number in **Critical vulnerabilities**. On the slide-out panel displayed, you can view all types of vulnerabilities to be urgently fixed.
Unfixed Vulnerabilities	Click the number in **Unfixed Vulnerabilities**. On the slide-out panel displayed, you can view all types of vulnerabilities that are not fixed.
Servers with Vulnerabilities	Click the number in **Servers with Vulnerabilities**. You can view the servers with vulnerabilities in the lower part of the **Vulnerabilities** page.
Servers Fixed and Pending Restart	After Linux kernel vulnerabilities and Windows vulnerabilities are fixed, you need to restart the fixed servers. Otherwise, HSS will probably continue to warn you of these vulnerabilities. Click the number in the **Servers Fixed and Pending Restart** area to view the servers to be restarted.
Vulnerabilities Handled Today/ Total	Number of vulnerabilities handled today and the total number of vulnerabilities handled. You can click the numbers to view details. The total number of vulnerabilities is just the vulnerabilities handled within one year.
Detectable Vulnerabilities	Displays the number of vulnerabilities that can be detected by HSS.
Total Scans	Displays the number of vulnerability scans. Click **Scan** to manually scan for vulnerabilities on servers.

- Viewing vulnerability details

  Click the name of a target vulnerability. On the vulnerability details slide-out panel displayed, you can view the repair suggestions, CVE details, affected servers, and historical handling records of the vulnerability.

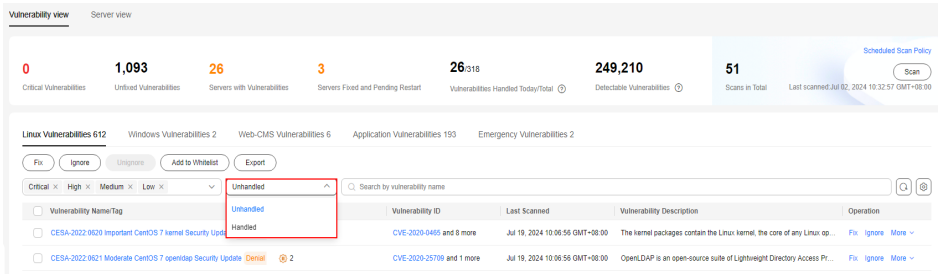
  To check affected servers,

  - Hover the cursor on the name of an affected server, and you can see the server status and OS version.
  - If a server has the associated process, click the server name and check process details in the **Associated Process** column.

- Viewing handled vulnerabilities or vulnerabilities to be handled

  Above the vulnerability list, select **Unhandled** or **Handled** from the vulnerability handling status drop-down list to filter vulnerabilities.

Figure 5-8 Filtering handled or unhandled vulnerabilities



----End

Viewing Vulnerability Details (Server View)

NOTE

The basic edition does not support this operation.

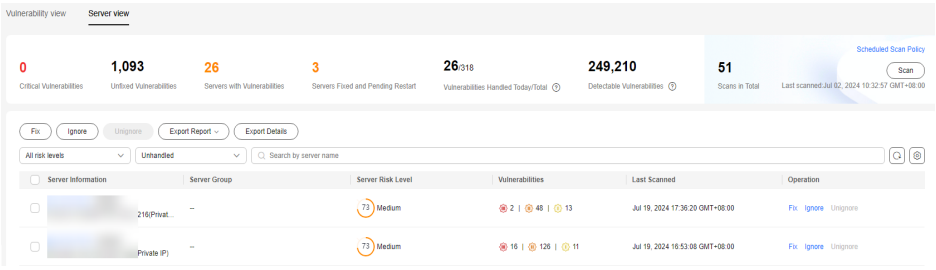
Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Risk Management** > **Vulnerabilities**.

Step 4 In the upper left corner of the **Vulnerabilities** page, click **Server view** to view vulnerability information.

Figure 5-9 Viewing vulnerability details



- Viewing vulnerability scan results

  In the vulnerability statistics area in the upper part of the **Vulnerabilities** page, view vulnerability scan results. **Table 5-6** describes related parameters.

Table 5-6 Vulnerability scan parameters

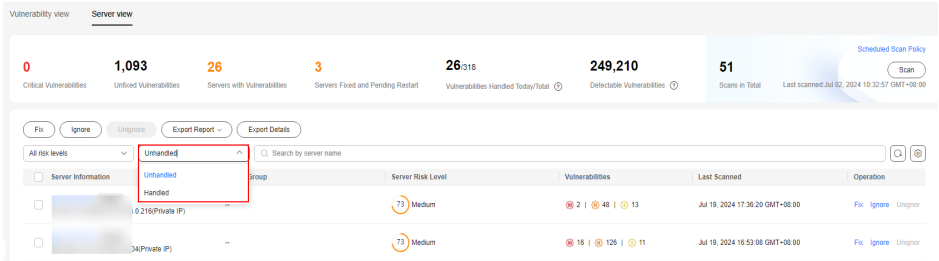
Parameter	Description
Critical Vulnerabilities	Click the number in **Critical vulnerabilities**. On the slide-out panel displayed, you can view all types of vulnerabilities to be urgently fixed.
Unfixed Vulnerabilities	Click the number in **Unfixed Vulnerabilities**. On the slide-out panel displayed, you can view all types of vulnerabilities that are not fixed.

Parameter	Description
Servers with Vulnerabilities	Click the number in **Servers with Vulnerabilities**. You can view the servers with vulnerabilities in the lower part of the **Vulnerabilities** page.
Servers Fixed and Pending Restart	After Linux kernel vulnerabilities and Windows vulnerabilities are fixed, you need to restart the fixed servers. Otherwise, HSS will probably continue to warn you of these vulnerabilities. Click the number in the **Servers Fixed and Pending Restart** area to view the servers to be restarted.
Vulnerabilities Handled Today/ Total	Number of vulnerabilities handled today and the total number of vulnerabilities handled. You can click the numbers to view details. The total number of vulnerabilities is just the vulnerabilities handled within one year.
Detectable Vulnerabilities	Displays the number of vulnerabilities that can be detected by HSS.
Total Scans	Displays the number of vulnerability scans. Click **Scan** to manually scan for vulnerabilities on servers.

- Viewing server details and vulnerabilities on servers
  a. Click the name of a target server. On the server details slide-out panel displayed, you can view details about the server and vulnerabilities on the server.
  b. Click the name of a target vulnerability. On the vulnerability details slide-out panel displayed, you can view the CVE details, affected servers, and historical handling records of the vulnerability.
- Viewing handled vulnerabilities or vulnerabilities to be handled

  Above the vulnerability list, select **Unhandled** or **Handled** from the vulnerability handling status drop-down list to filter vulnerabilities to be handled or that have been handled.

Figure 5-10 Filtering handled or unhandled vulnerabilities



----End

5.1.4 Exporting the Vulnerability List

You can refer to this section to export the vulnerability list.

Prerequisite

The **Server Status** is **Running**, **Agent Status** is **Online**, and **Protection Status** is **Protected**. For details, see **Viewing Server Protection Status**.

Constraints and Limitations

This function is available in HSS professional, enterprise, premium, WTP, and container editions.

Exporting the Vulnerability List (Vulnerability View)

Step 1 **Log in to the management console**.

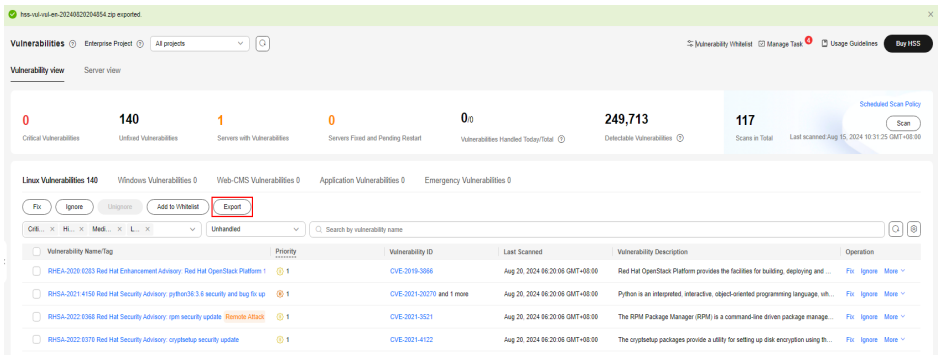
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Risk Management** > **Vulnerabilities**.

Step 4 In the upper left corner of the **Vulnerabilities** page, click the **Vulnerability view** tab.

Step 5 Click **Export** above the vulnerability list to export the vulnerability list.

Figure 5-11 Exporting the vulnerability list



Step 6 View the export status in the upper part of the **Vulnerabilities** page. After the export is successful, obtain the exported information from the default file download address on the local host.

NOTICE

Do not close the browser page during the export. Otherwise, the export task will be interrupted.

----End

Exporting the Vulnerability List (Server View)

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Risk Management** > **Vulnerabilities**.

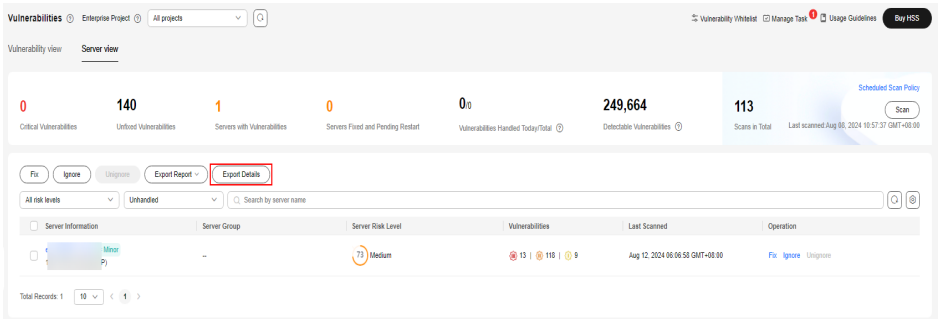
Step 4 In the upper left corner of the **Vulnerabilities** page, click the **Server view** tab.

Step 5 Export the vulnerability list.

- Export vulnerability details: In the upper part of the vulnerability list, click **Export Details** to export the vulnerability list.

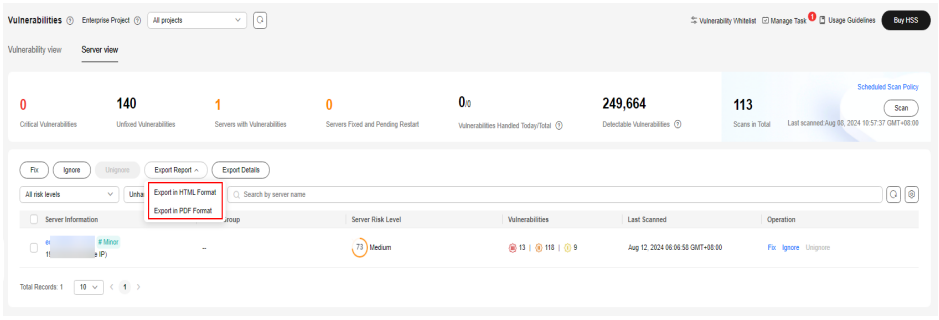
  You can select the risk level, vulnerability handling status, or search criteria to filter the vulnerability information of the target server, and click **Export Details** to export the vulnerability details.

  Figure 5-12 Exporting vulnerability details

- Export a vulnerability report: In the upper part of the vulnerability list, click **Export Report** and select a report format.
  - When exporting a vulnerability report in HTML format, the vulnerability information about up to 100 servers can be exported. In the exported HTML vulnerability report, you can view vulnerability details.
  - When exporting a vulnerability report in PDF format, the vulnerability information about up to 140 servers and vulnerabilities can be exported.
  - To export vulnerability reports of some servers, you can select the servers and click **Export**.

  Figure 5-13 Exporting a vulnerability report

Step 6 View the export status in the upper part of the **Vulnerabilities** page. After the export is successful, obtain the exported information from the default file download address on the local host.

NOTICE

Do not close the browser page during the export. Otherwise, the export task will be interrupted.

----End

5.1.5 Handling Vulnerabilities

If HSS detects a vulnerability on a server, you need to handle the vulnerability in a timely manner based on its severity and your business conditions to prevent the vulnerability from being exploited by intruders.

Vulnerabilities can be handled in the following ways. For details, see **Handling Vulnerabilities**.

- **Fixing vulnerabilities**

  If a vulnerability may harm your services, fix it as soon as possible. For Linux and Windows vulnerabilities, you can let HSS fix them in one-click. Web-CMS vulnerabilities, emergency vulnerabilities, and application vulnerabilities cannot be automatically fixed. Handle them by referring to the suggestions provided on the vulnerability details page.
- **Ignoring vulnerabilities**

  Some vulnerabilities are risky only in specific conditions. For example, if a vulnerability can be exploited only through an open port, but the target server does not open any ports, the vulnerability will not harm the server. If you can confirm that a vulnerability is harmless, you can ignore it.
- **Adding vulnerabilities to the whitelist**

  If you can confirm that a vulnerability does not affect your services and does not need to be fixed, you can add it to the whitelist. After a vulnerability is added to the whitelist, its status will change to **Ignored** in the vulnerability list, and it will not be reported in later scans.

Constraints

- For details about vulnerability handling operations supported by each HSS version, see **Types of Vulnerabilities That Can Be Scanned and Fixed**.
- CentOS 7, CentOS 8, Debian 9 and 10, Windows 2012 R2, and Ubuntu 14.04 and earlier have reached EOL and cannot be fixed because no official patches are available. You are advised to change to the OSs in active support.
- Ubuntu 16.04 to Ubuntu 22.04 do not support certain free patch updates. You need to subscribe to Ubuntu Pro to install upgrade packages. If Ubuntu Pro is not configured, vulnerabilities will fail to be fixed. For details about the vulnerabilities that need to be fixed by subscribing to Ubuntu Pro, see **Do I Need to Subscribe to Ubuntu Pro to Fix Ubuntu Vulnerabilities?**
- Fixing kernel vulnerabilities may cause servers to be unavailable. Therefore, HSS does not automatically fix the server kernel vulnerabilities of CCE, MRS,

or BMS. When batch fixing vulnerabilities, HSS filters out these types of vulnerabilities.

- To handle vulnerabilities on a server, ensure the server is in the **Running** state, its agent status is **Online**, and its protection status is **Protected**.
- A maximum of 2000 vulnerabilities can be added to the whitelist.

Precautions

- Vulnerability fixing operations cannot be rolled back. If a vulnerability fails to be fixed, services will probably be interrupted, and incompatibility issues will probably occur in middleware or upper layer applications. To prevent unexpected consequences, you are advised to use CBR to back up ECSs. For details, see **Purchasing a Server Backup Vault**. Then, use idle servers to simulate the production environment and test-fix the vulnerability. If the test-fix succeeds, fix the vulnerability on servers running in the production environment.
- Servers need to access the Internet and use external image sources to fix vulnerabilities.
  - Linux OS: If your servers cannot access the Internet, or the external image sources cannot provide stable services, you can use the image source provided by Huawei Cloud to fix vulnerabilities. Before fixing vulnerabilities online, configure the Huawei Cloud image sources that match your server OSs. For details, see **Image Source Management**.
  - Windows OS: If your servers cannot access the Internet, ensure you have set up a patch server.

Vulnerability Fix Priority

The vulnerability fix priority is weighted based on the CVSS score, release time, and the importance of the assets affected by the vulnerability. It reflects the urgency of the fix.

NOTE

By default, the importance of an asset is **General**. You can also change it. For details, see **Servers Importance Management**.

Vulnerabilities are classified into four priority levels: critical, high, medium, and low. You can refer to the priorities to fix the vulnerabilities that have significant impact on your server first.

- **Critical**: This vulnerability must be fixed immediately. Attackers may exploit this vulnerability to cause great damage to the server.
- **High**: This vulnerability must be fixed as soon as possible. Attackers may exploit this vulnerability to damage the server.
- **Medium**: You are advised to fix the vulnerability to enhance your server security.
- **Low**: This vulnerability has a small threat to server security. You can choose to fix or ignore it.

Vulnerability Display

Detected vulnerabilities will be displayed in the vulnerability list for seven days, regardless of whether you have handled them.

Handling Vulnerabilities

You can handle the vulnerability in following ways: After a vulnerability is handled, its status changes to **Handled**. You can select **Handled** or **Unhandled** above the list to view vulnerabilities or servers in the corresponding status.

Automatically Fixing Vulnerabilities (Vulnerability View)

You can only fix Linux and Windows vulnerabilities with one-click on the console.

NOTE

A maximum of 1,000 server vulnerabilities can be fixed at a time. If there are more than 1,000 vulnerabilities, fix them in batches.

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

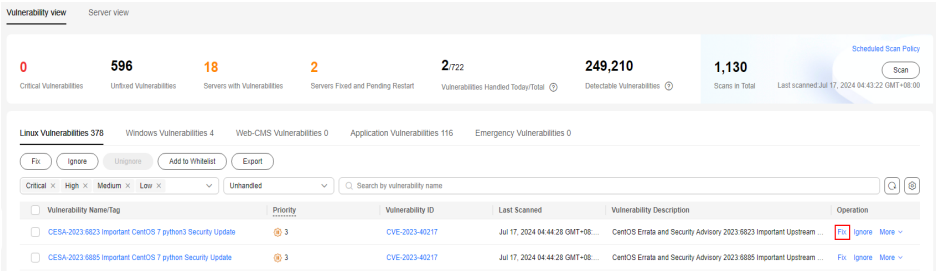
Step 3 In the navigation pane, choose **Risk Management** > **Vulnerabilities**.

Step 4 Fix Linux and Windows vulnerabilities.

- Fixing a single vulnerability

  Locate the row containing a target vulnerability and click **Fix** in the **Operation** column.

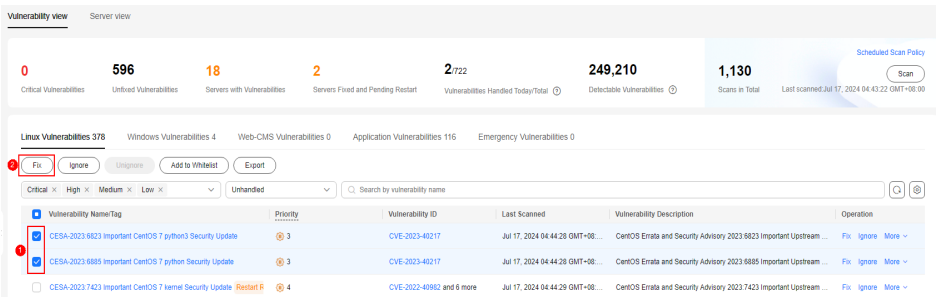
  Figure 5-14 Fixing a single vulnerability

- Fixing multiple vulnerabilities

  Select all target vulnerabilities and click **Fix** in the upper left corner of the vulnerability list to fix vulnerabilities in batches.

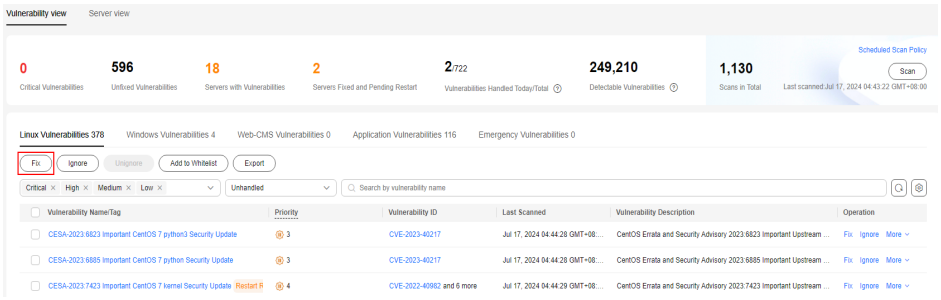
  Figure 5-15 Fixing multiple vulnerabilities

- Fix all vulnerabilities.

  Click **Fix** in the upper left corner of the vulnerability list to fix all vulnerabilities.

  Figure 5-16 Fixing all vulnerabilities



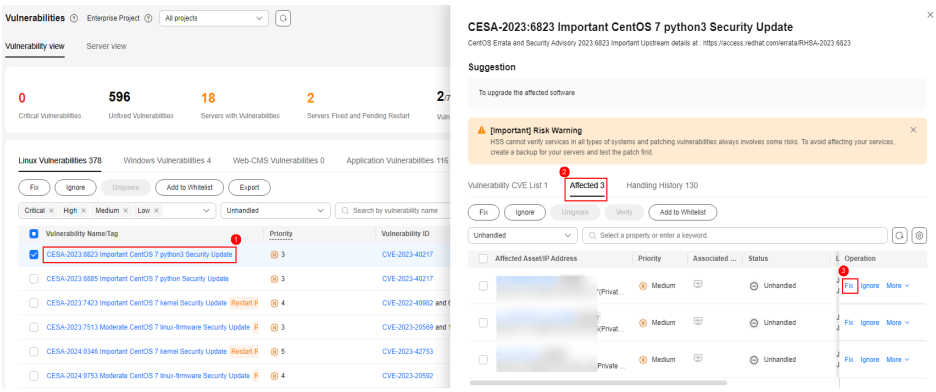
- Fix one or more servers affected by a vulnerability.

  a. Click a vulnerability name.

  b. On the vulnerability details slide-out panel displayed, click the **Affected** tab, locate the row containing the target server, and click **Fix** in the **Operation** column.

  You can also select all target servers and click **Fix** above the server list to fix vulnerabilities for the servers in batches.

  Figure 5-17 Fix a server affected by a vulnerability



Step 5 In the displayed dialog box, confirm the number of vulnerabilities to be fixed and the number of affected assets.

For Linux vulnerabilities, you can click **View details** in the **Fix** dialog box to view the name of the component to be fixed.

Step 6 (Optional) Back up servers.

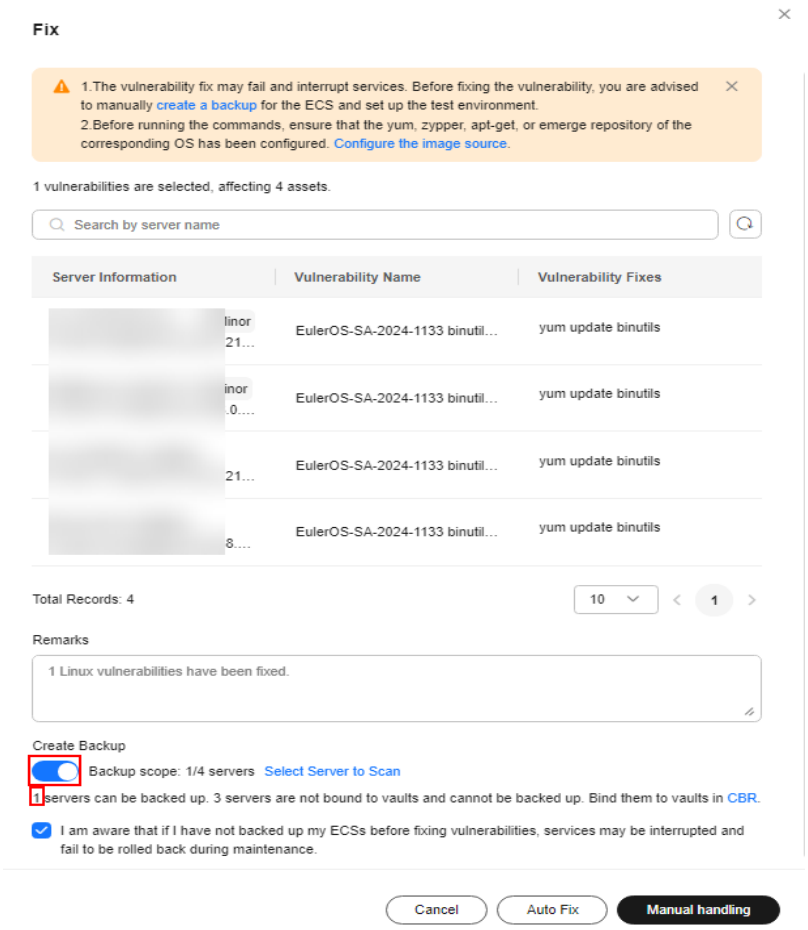
Before fixing vulnerabilities, use HSS to back up servers, so that you can restore their data if it is affected by the fix. If you do not need to back up data, skip this step.

1. In the **Fix** dialog box, click  to enable backup.

NOTE

- After backup is enabled, the number of servers that can be backed up will be displayed below the toggle switch. Only the servers associated with backup vaults can be backed up. For more information, see **Associating a Resource with the Vault**.
- If backup is enabled in a vulnerability fix task, vulnerabilities can be fixed only on the servers that can be backed up in this task. For servers that fail to be backed up, start another vulnerability fix task for them.

Figure 5-18 Creating a backup



2. Choose **Select Server to Scan**. The backup creation dialog box is displayed.
3. In the **Create Backup** dialog box, set a backup file name, and click **OK**.

Step 7 In the **Fix** dialog box displayed, select **I am aware that if I have not backed up my ECSs before fixing vulnerabilities, services may be interrupted and fail to be rolled back during maintenance.** and click **Auto Fix**.

Step 8 Click a vulnerability name.

Step 9 Click the **Handling History** tab to view the fix status of the target vulnerability in the **Status** column. **Table 5-7** describes vulnerability fix statuses.

Table 5-7 Vulnerability fix statuses

Status	Description
Unhandled	The vulnerability is not fixed.
Ignored	The vulnerability does not affect your services. You have ignored the vulnerability.
Verifying	HSS is verifying whether a fixed vulnerability is successfully fixed.
Fixing	HSS is fixing the vulnerability.
Fixed	The vulnerability has been successfully fixed.
Restart required	The vulnerability has been successfully fixed. You need to restart the server as soon as possible.
Failed	The vulnerability fails to be fixed. The possible cause is that the vulnerability does not exist or has been changed.
Restart the server and try again	This status is displayed only for vulnerabilities that exist on Windows servers. The vulnerability has not been fixed on the Windows server for a long time. As a result, the latest patch cannot be installed. You need to install an earlier patch, restart the server, and then install the latest patch.

----End

Automatically Fixing Vulnerabilities (Server View)

You can only fix Linux and Windows vulnerabilities with one-click on the console.

Step 1 **Log in to the management console**.

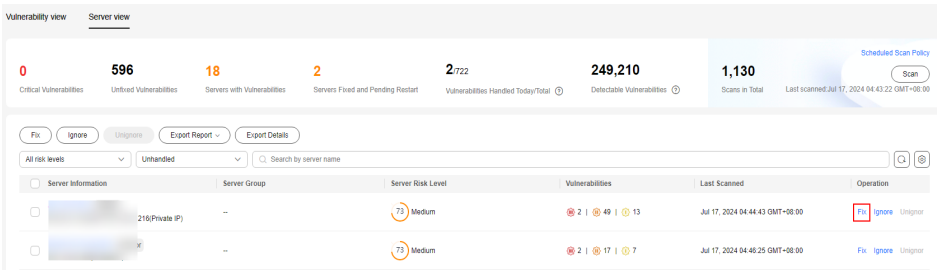
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Risk Management** > **Vulnerabilities**.

Step 4 Fix Linux and Windows vulnerabilities.

- Fixing all Linux or Windows vulnerabilities on a server
  a. Locate the row containing a target server and click **Fix** in the **Operation** column.
     You can also select multiple servers and click **Fix** in the upper part of the vulnerability list. To fix all server vulnerabilities, you just need to click **Fix** with no need of selecting servers.

Figure 5-19 Fixing all the Linux or Windows vulnerabilities on a server



b. In the displayed dialog box, confirm the number of vulnerabilities to be fixed and the number of affected assets.

   For Linux vulnerabilities, you can view fix commands in the dialog box to view the name of the component to be fixed.

c. (Optional) Back up servers.

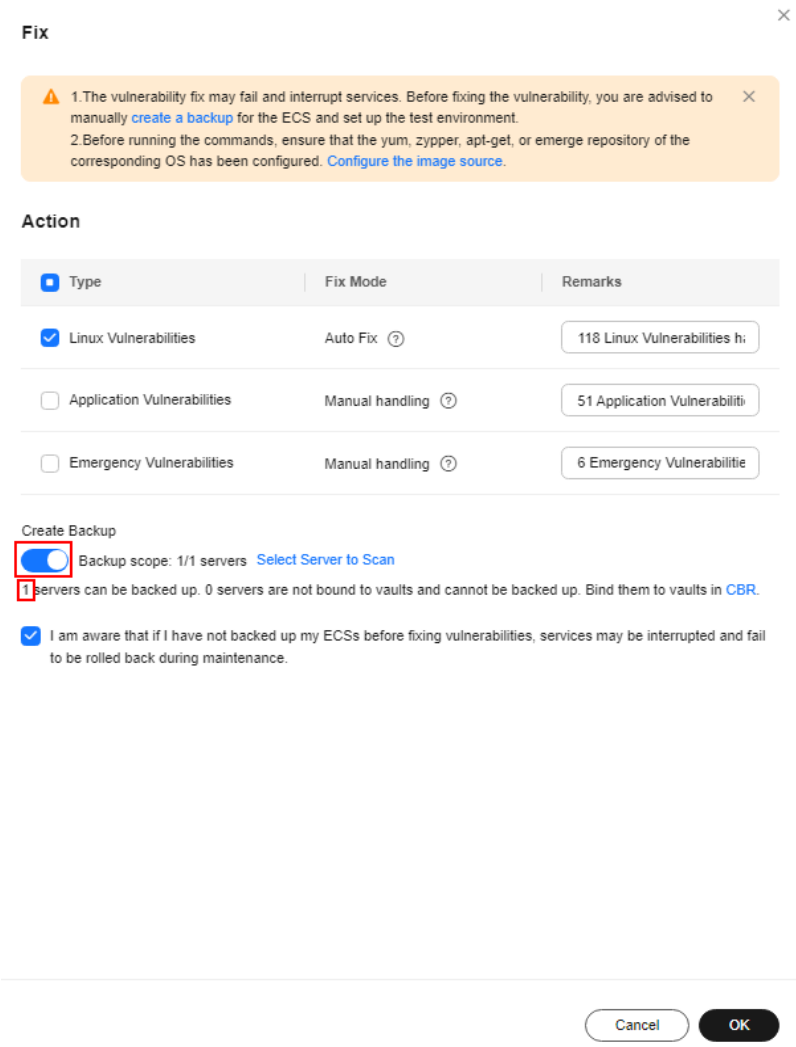
   Before fixing vulnerabilities, use HSS to back up servers, so that you can restore their data if it is affected by the fix. If you do not need to back up data, skip this step.

   i. In the **Fix** dialog box, click  to enable backup.

   NOTE

   - After backup is enabled, the number of servers that can be backed up will be displayed below the toggle switch. Only the servers associated with backup vaults can be backed up. For more information, see **Associating a Resource with the Vault**.
   - If backup is enabled in a vulnerability fix task, vulnerabilities can be fixed only on the servers that can be backed up in this task. For servers that fail to be backed up, start another vulnerability fix task for them.

Figure 5-20 Creating a configuration backup



ii. Choose **Select Server to Scan**. The backup creation dialog box is displayed.

iii. In the **Create Backup** dialog box, set a backup file name, and click **OK**.

d. In the **Fix** dialog box displayed, select the type of the vulnerability to be fixed, select **I am aware that if I have not backed up my ECSs before fixing vulnerabilities, services may be interrupted and fail to be rolled back during maintenance.**, and click **OK**.

Only Linux and Windows vulnerabilities can be automatically fixed with one-click. Web-CMS and application vulnerabilities need to be manually fixed by logging in to the server.

e. Click the server name. On the server details slide-out panel displayed, view the vulnerability fix status. **Table 5-8** describes vulnerability fix statuses.

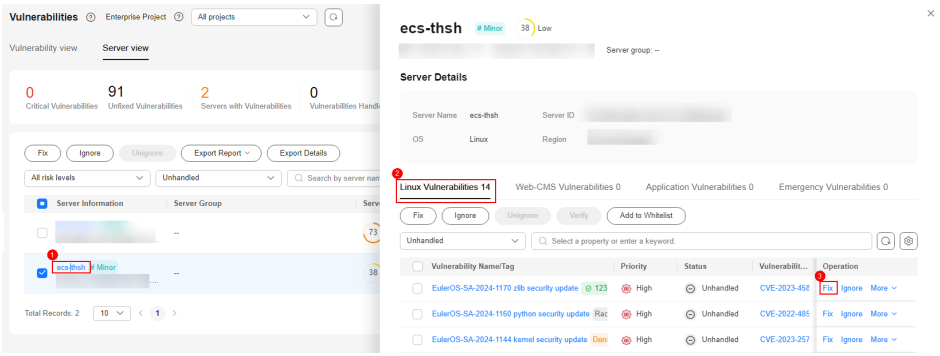
- Fixing one or more vulnerabilities on a server

a. Click the name of a target server. The server details slide-out panel is displayed.

b. Locate the row containing a target vulnerability and click **Fix** in the **Operation** column.

Alternatively, you can select all target vulnerabilities and click **Fix** above the vulnerability list to fix vulnerabilities in batches. To fix all vulnerabilities, click **Fix** with no need of selecting any servers.

Figure 5-21 Fixing a vulnerability on a server



c. In the displayed dialog box, confirm the number of vulnerabilities to be fixed and the number of affected assets.

For Linux vulnerabilities, you can view fix commands in the dialog box to view the name of the component to be fixed.

d. (Optional) Back up servers.

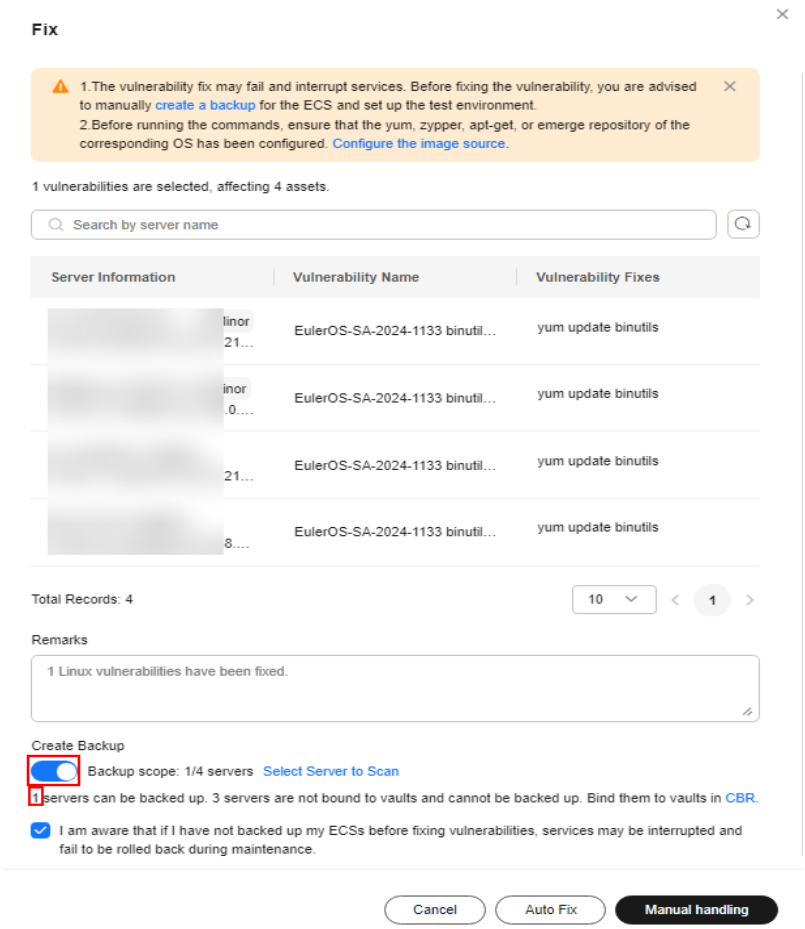
Before fixing vulnerabilities, you can use HSS to back up servers, so that you can restore their data if it is affected by the fix. If you do not need to back up data, skip this step.

i. In the **Fix** dialog box, click  to enable backup.

NOTE

- After backup is enabled, the number of servers that can be backed up will be displayed below the toggle switch. Only the servers associated with backup vaults can be backed up. For more information, see **Associating a Resource with the Vault**.
- If backup is enabled in a vulnerability fix task, vulnerabilities can be fixed only on the servers that can be backed up in this task. For servers that fail to be backed up, start another vulnerability fix task for them.

Figure 5-22 Creating a backup



ii. Choose **Select Server to Scan**. The backup creation dialog box is displayed.

iii. In the **Create Backup** dialog box, set a backup file name, and click **OK**.

e. In the **Fix** dialog box displayed, select **I am aware that if I have not backed up my ECSs before fixing vulnerabilities, services may be interrupted and fail to be rolled back during maintenance.**, and click **Auto Fix**.

f. In the **Status** column of the target vulnerability, view the fix status of the vulnerability. **Table 5-8** describes vulnerability fix statuses.

Table 5-8 Vulnerability fix statuses

Status	Description
Unhandled	The vulnerability is not fixed.
Ignored	The vulnerability does not affect your services. You have ignored the vulnerability.

Status	Description
Verifying	HSS is verifying whether a fixed vulnerability is successfully fixed.
Fixing	HSS is fixing the vulnerability.
Fixed	The vulnerability has been successfully fixed.
Restart required	The vulnerability has been successfully fixed. You need to restart the server as soon as possible.
Failed	The vulnerability fails to be fixed. The possible cause is that the vulnerability does not exist or has been changed.
Restart the server and try again	This status is displayed only for vulnerabilities that exist on Windows servers. The vulnerability has not been fixed on the Windows server for a long time. As a result, the latest patch cannot be installed. You need to install an earlier patch, restart the server, and then install the latest patch.

----End

Manually Fixing Vulnerabilities

HSS cannot automatically fix Web-CMS vulnerabilities, application vulnerabilities, and emergency vulnerabilities in one click. You can log in to the server to manually fix them by referring to the fix suggestions on the vulnerability details slide-out panel.

NOTE

- Restart the system after you fixed a Windows OS or Linux kernel vulnerability, or HSS will probably continue to warn you of this vulnerability.
- Fix the vulnerabilities in sequence based on the suggestions.
- If multiple software packages on the same server have the same vulnerability, you only need to fix the vulnerability once.

Viewing vulnerability fix suggestions

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Risk Management** > **Vulnerabilities**.

Step 4 Click the name of a target vulnerability to access the vulnerability details slide-out panel and view the fix suggestions.

----End

Fixing vulnerabilities by referring to vulnerability fix suggestions

Vulnerability fix may affect service stability. You are advised to use either of the following methods to avoid such impact:

- Method 1: Create a new VM to fix the vulnerability.
  a. Create an image for the ECS to be fixed. For details, see **Creating a Full-ECS Image Using an ECS**.
  b. Use the image to create an ECS. For details, see **Creating ECSs Using an Image**.
  c. Fix the vulnerability on the new ECS and verify the result.
  d. Switch services over to the new ECS and verify they are stably running.
  e. Release the original ECS. If a fault occurs after the service switchover and cannot be rectified, you can switch services back to the original ECS.
- Method 2: Fix the vulnerability on the target server.
  a. Create a backup for the ECS whose vulnerabilities need to be fixed. For details, see **Creating a CSBS Backup**.
  b. Fix vulnerabilities on the current server.
  c. If services become unavailable after the vulnerability is fixed and cannot be recovered in a timely manner, use the backup to restore the server. For details, see **Using Backups to Restore Servers**.

  NOTE

  - Use method 1 if you are fixing a vulnerability for the first time and cannot estimate impact on services. You are advised to choose the pay-per-use billing mode for the newly created ECS. After the service switchover, you can change the billing mode to yearly/monthly. In this way, you can release the ECS at any time to save costs if the vulnerability fails to be fixed.
  - Use method 2 if you have fixed the vulnerability on similar servers before.
  - After the vulnerability is manually fixed, you are advised to **Verify the Vulnerability Fix**.

Ignoring a Vulnerability

Some vulnerabilities are risky only in specific conditions. For example, if a vulnerability can be exploited only through an open port, but the target server does not open any ports, the vulnerability will not harm the server. Such vulnerabilities can be ignored. HSS will not generate alarms for ignored vulnerabilities.

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click  , and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Risk Management** > **Vulnerabilities**.

Step 4 Locate the row containing a target vulnerability and click **Ignore** in the **Operation** column.

Step 5 In the dialog box displayed, click **OK**.

----End

Adding a Vulnerability Whitelist Item

If you evaluate that some vulnerabilities do not affect your services and do not want to view the vulnerabilities in the vulnerability list, you can whitelist the vulnerabilities. After they are whitelisted, the vulnerabilities will be ignored in the vulnerability list and no alarms will be reported. The vulnerabilities will not be scanned and the vulnerability information will not be displayed when the next vulnerability scan task is executed.

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Risk Management** > **Vulnerabilities**.

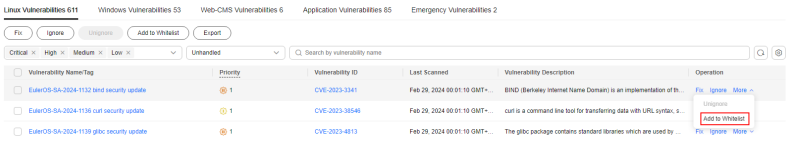
- Whitelisting all servers that are affected by a vulnerability

  HSS will ignore the vulnerability when scanning for vulnerabilities on all servers.

  a. In the **Operation** column of the row containing the target vulnerability, click **More** and select **Add to Whitelist**.

     You can also select multiple vulnerabilities and click **Add to Whitelist** above the vulnerability list.

     Figure 5-23 Whitelisting all servers that are affected by a vulnerability

  b. In the dialog box displayed, click **OK**.

- Whitelisting one or more servers that are affected by a vulnerability

  HSS will ignore the vulnerability when scanning for vulnerabilities on these servers.

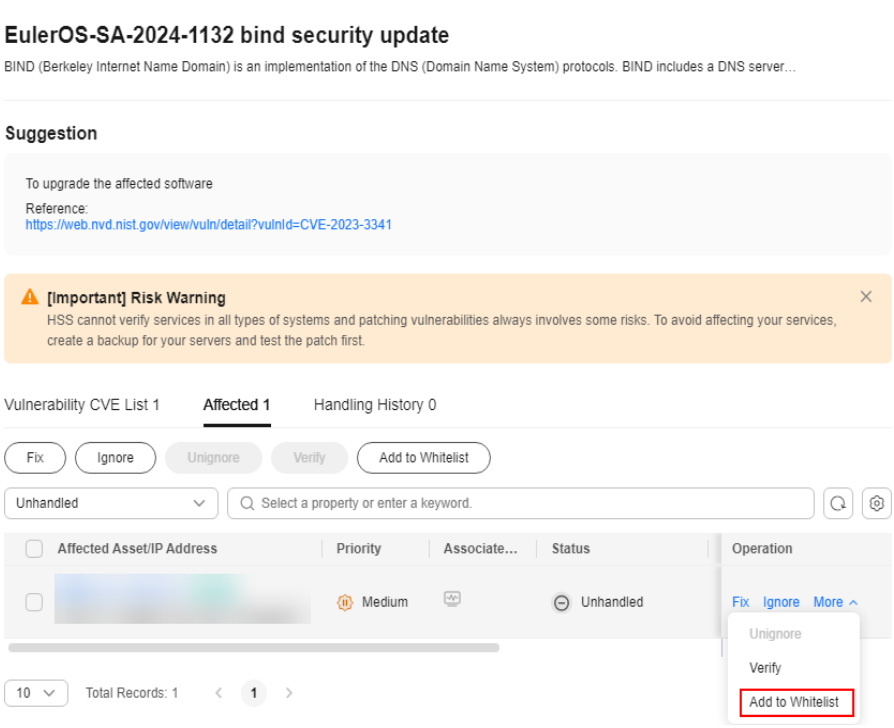
  a. Click a target vulnerability name.

  b. On the slide-out panel displayed, click the **Affected** tab.

  c. In the **Operation** column of the row containing the target server, click **More** and select **Add to Whitelist**.

     You can also select multiple servers and click **Add to Whitelist** above the server list.

Figure 5-24 Whitelisting a single server that is affected by a vulnerability



d. In the dialog box displayed, click **OK**.

- Whitelisting vulnerabilities using whitelist rules
  a. In the upper right corner of the **Vulnerabilities** page, click **Vulnerability Whitelist**.
  b. In the **Vulnerability Whitelist** area, click **Add Rule**.
  c. Configure a whitelist rule according to **Table 5-9**.

Figure 5-25 Configuring a whitelist rule

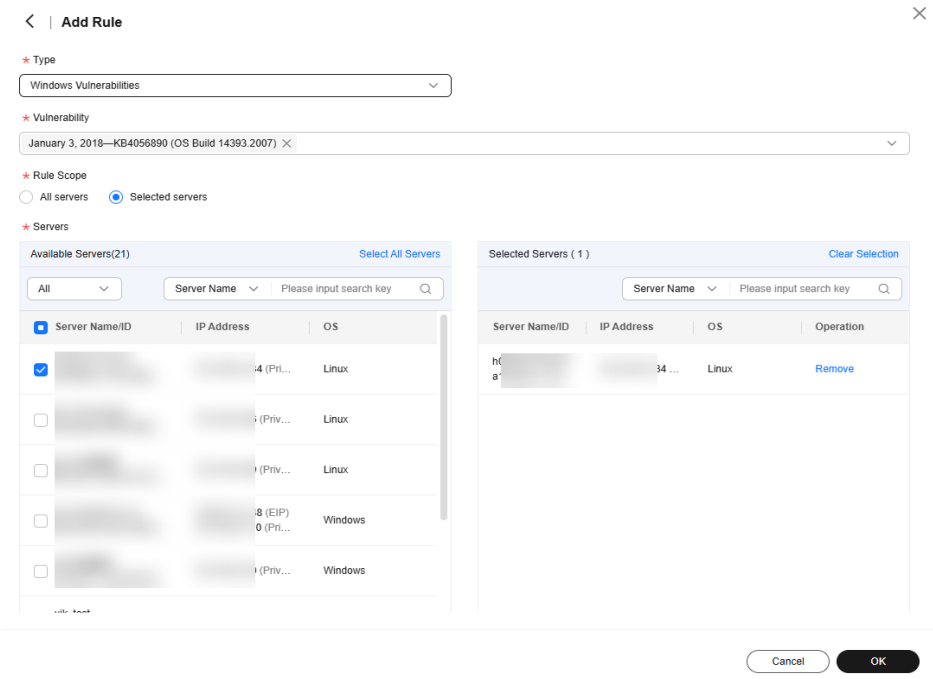


Table 5-9 Vulnerability whitelist rule parameters

Parameter	Description
Type	Select the type of vulnerabilities to be whitelisted. Possible values are as follows: ▪ **Linux Vulnerabilities** ▪ **Windows Vulnerabilities** ▪ **Web-CMS Vulnerabilities** ▪ **Application Vulnerabilities** ▪ **Emergency Vulnerabilities**
Vulnerability	Select one or more vulnerabilities to be whitelisted.
Rule Scope	Select the servers affected by the vulnerabilities. Possible values are as follows: ▪ **All servers** HSS will ignore the vulnerability when scanning for vulnerabilities on all servers. ▪ **Selected servers** Select one or more target servers. HSS will ignore the vulnerabilities when scanning for vulnerabilities on these servers. You can search for a target server by server name, ID, EIP, or private IP address.
Remarks (Optional)	Enter the remarks.

d. Click **OK**.

----End

Verifying the Vulnerability Fix

After you manually fix vulnerabilities, you are advised to verify the fixing result.

- **Method 1**: On the vulnerability details page, click **More** > **Verify** to perform one-click verification.

  NOTE

  - The fixing of emergency vulnerabilities cannot be verified.
  - Only application vulnerabilities of the JAR package can be verified. Application vulnerabilities of the non-JAR package are automatically filtered out and not verified.

- **Method 2**: Ensure the software has been upgraded to the latest version. The following table provides the commands to check the software upgrade result.

Table 5-10 Verification commands

OS	Verification Command
CentOS/Fedora /Euler/Red Hat/Oracle	rpm -qa | grep *Software_name*
Debian/Ubuntu	dpkg -l | grep *Software_name*
Gentoo	emerge --search *Software_name*

- **Method 3**: **Manually check for vulnerabilities** and view the vulnerability fixing results.

5.1.6 Managing the Vulnerability Whitelist

If you evaluate that some vulnerabilities do not affect your services and do not want to view the vulnerabilities in the vulnerability list, you can whitelist the vulnerabilities. After they are whitelisted, the vulnerabilities will be ignored in the vulnerability list and no alarms will be reported. The vulnerabilities will not be scanned and the vulnerability information will not be displayed when the next vulnerability scan task is executed.

This section describes how to modify and remove an item in the vulnerability whitelist.

Constraints

The basic edition does not support this function. For details about how to buy and upgrade HSS, see **Purchasing an HSS Quota** and **Upgrading Protection Quotas**.

Editing a Vulnerability Whitelist

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Risk Management** > **Vulnerabilities**.

Step 4 In the upper right corner of the **Vulnerabilities** page, click **Vulnerability Whitelist**.

Step 5 In the row containing the desired vulnerability whitelist rule, click **Edit** in the **Operation** column.

Step 6 On the editing page, modify the information and click **OK**.

----End

Removing a Vulnerability Whitelist Rule from the Vulnerability Whitelist

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Risk Management** > **Vulnerabilities**.

Step 4 In the upper right corner of the **Vulnerabilities** page, click **Vulnerability Whitelist**.

Step 5 In the row containing the desired vulnerability whitelist rule, click **Delete** in the **Operation** column.

Step 6 In the dialog box displayed, confirm the information and click **OK**.

----End

5.1.7 Viewing Vulnerability Handling History

For vulnerabilities that have been handled, you can refer to this section to view the vulnerability handling history (handler and handling time).

Constraints

- The basic edition does not support this function. For details about how to buy and upgrade HSS, see **Purchasing an HSS Quota** and **Upgrading Protection Quotas**.
- Handling history can be retained for a maximum of 180 days.

Viewing the Handling History of a Vulnerability

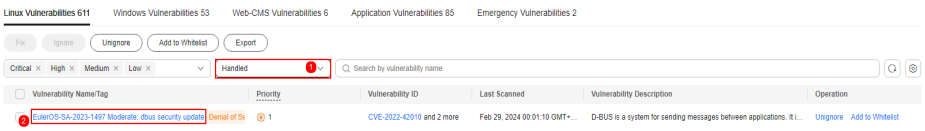
Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Risk Management** > **Vulnerabilities**.

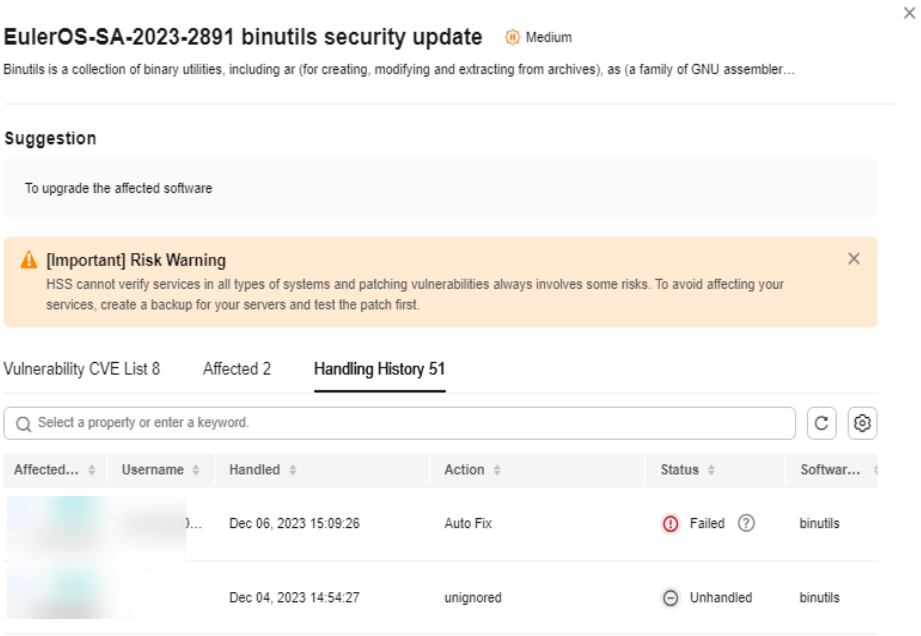
Step 4 In the list of handled vulnerabilities, click a vulnerability name. The vulnerability details slide-out panel is displayed.

Figure 5-26 Selecting Handled from the drop-down list



Step 5 Click the **Handling History** tab to view the handling history of the vulnerability.

Figure 5-27 Handling history



----End

Viewing the Handling History of All Vulnerabilities

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Security Operations** > **Handling History**. The **Handling History** page is displayed.

Step 4 On the **Vulnerabilities** tab page displayed, view the handling history of all vulnerabilities.

- Viewing the vulnerability handling history of a specified enterprise project

  In the upper left corner of the **Handling History** page, select an enterprise project for **Enterprise Project** to view the handling history of server vulnerabilities in the enterprise project.
- Viewing the vulnerability handling history of a specified property

  In the search box above the vulnerability handling history list, select an attribute or enter a keyword to search for the handling records of a specified attribute.

----End

5.2 Baseline Inspection

5.2.1 Baseline Inspection Overview

Baseline Inspection includes password complexity policy detection, common weak password detection, and configuration check. It can detect insecure password

configurations and risky configurations in key software on servers, and provide **rectification suggestions** for detected risks, helping you correctly handle risky configurations on servers.

Baseline Inspection Content

Item	Description	Supported Check Mode	Supported HSS Version
Unsafe configuration	Check the unsafe Tomcat, Nginx, SSH login, and system configurations found by HSS. Currently, the following check standards and types are supported: • For Linux, – Cloud security practices: Apache2, Docker, MongoDB, Redis, MySQL5, Nginx, Tomcat, SSH, vsftp, CentOS7, EulerOS, EulerOS_ext, Kubernetes-Node, Kubernetes-Master, HCE1.1, HCE2.0, and ZooKeeper 3.7. – DJCP MLPS compliance: Apache 2, MongoDB, MySQL 5, Nginx, Tomcat, CentOS 7, CentOS 8, Debian 9, Debian 10, Debian 11, Red Hat 6, Red Hat 7, Red Hat 8, Ubuntu 12, Ubuntu 14, Ubuntu 16, Ubuntu 18, Alma, SUSE 12, SUSE 15, and HCE 1.1 – General security standards: MySQL8-universal, HCE1.1-universal, Rocky8-universal, Rocky9-universal, AlmaLinux8-universal, OracleLinux6-universal, OracleLinux7-universal, Ubuntu22-universal, CentOS9-universal, SUSE15-universal, AliLinux2-universal, and AliLinux3-universal.	• Automated baseline checks • Manual baseline checks	Enterprise, premium, WTP, and container edition

Item	Description	Supported Check Mode	Supported HSS Version
	NOTE The MySQL baseline detection of Linux OS is based on the MySQL 5 security configuration specifications. If MySQL 8 is installed on your server, the following check items are not displayed in the detection results, because they are discarded in that version. The detection results are displayed only on the server whose MySQL version is 5. • Rule: Do not set **old_passwords** to **1**. • Rule: Set secure_auth to **1** or **ON**. • Rule: Do not set **skip_secure_auth**. • Rule: Set **log_warnings** to **2**. • Rule: Configure the MySQL binlog clearing policy. • Rule: The **sql_mode** parameter contains **NO_AUTO_CREATE_USER**. • Rule: Use the MySQL audit plug-in. • For Windows, – Cloud security practices: MongoDB, Apache2, MySQL, Nginx, Redis, Tomcat, Windows_2008, Windows_2012, Windows_2016, Windows_2019, and SQL Server. – General security standard: Windows_2022-universal.		
Password complexity policies	Check whether your password complexity policy of Linux system account is proper and modify it based on suggestions provided by HSS, improving password security.	Manual baseline checks	All versions
Common weak passwords	Weak passwords defined in the common weak password library. You can check for accounts and remind users to change them. Linux supports weak password detection for MySQL, FTP, Redis, and system accounts. Windows supports weak password detection for system accounts.	• Automated baseline checks • Manually Performing a Baseline Check	All

Usage Process

Table 5-11 Usage process

No.	Operation	Description
1	**Performing baseline inspection**	The baseline inspection supports automatic and manual baseline checks. • Automatic baseline check: HSS automatically performs a check for all server configurations and common weak passwords **at 01:00 every day**. Premium edition, web tamper protection edition, and container edition allow you to customize the automatic detection period for configurations. For details, see **Configuration Check**. Premium edition, web tamper protection edition, and container edition allow you to customize the automatic detection period for weak passwords. For details, see **Weak Password Scan**. • Manual baseline inspection: To view the real-time baseline risks of a specified server, you can manually perform a baseline inspection.
2	**Viewing and processing baseline inspection results**	After the baseline inspection is complete, you need to view and handle baseline configuration risks.

5.2.2 Performing Baseline Inspection

The baseline check supports automatic and manual baseline checks.

- Automatic baseline check: checks server configurations and common weak passwords.
- Manual baseline check: To view the real-time baseline risks of a specified server or detect the password complexity policy, you can manually perform a baseline check.

Automated Baseline Checks

HSS automatically performs a check for all server configurations and common weak passwords at **01:00 every day**.

Premium edition, web tamper protection edition, and container edition allow you to customize the automatic detection period for configurations. For details, see **Configuration Check**.

Premium edition, web tamper protection edition, and container edition allow you to customize the automatic detection period for weak passwords. For details, see **Weak Password Scan**.

Manually Performing a Baseline Check

Step 1 Log in to the management console.

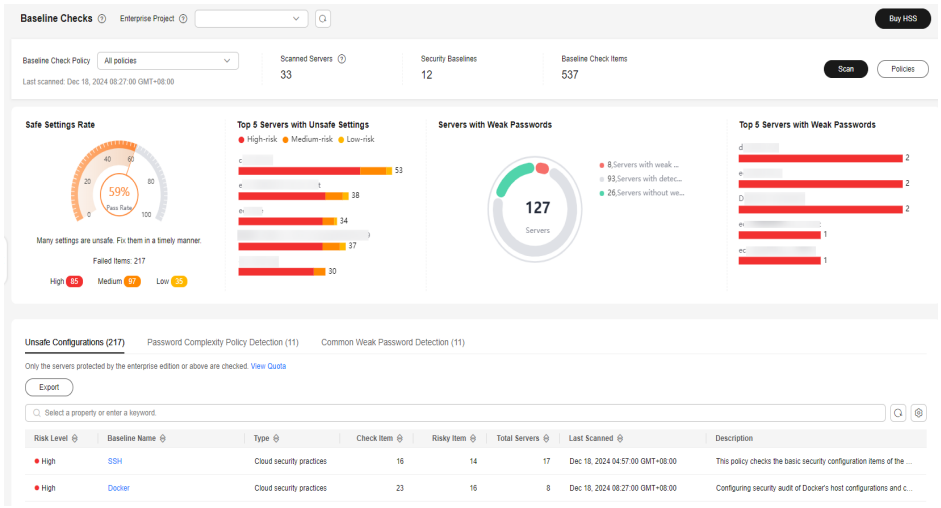
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Risk Management** > **Baseline Checks**.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 5-28 Baseline check overview



Step 4 (Optional) Create a manual baseline check policy.

Before manually checking the baseline policy, you need to create a manual baseline check policy for the target server. If you have created a policy for the target server, skip this step.

1. Click **Policies** in the upper right corner of the page.
2. Click **Create Policy** and configure the policy information by referring to **Table 5-12**.

   To check baseline details, click **Rule Details** on the right of a baseline name. You can select check items as required.

Figure 5-29 Creating a policy

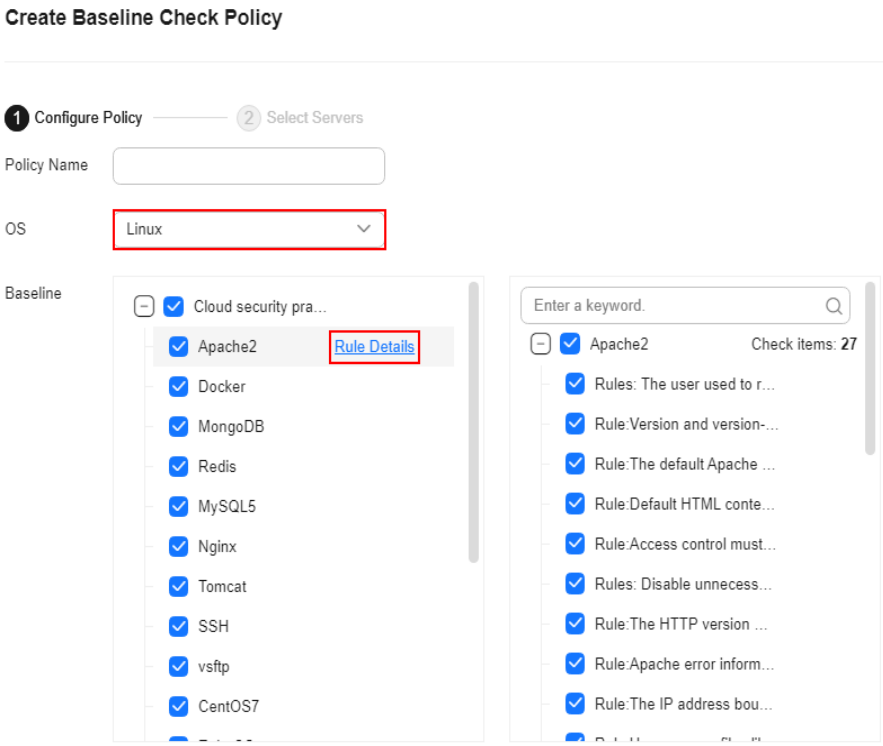


Table 5-12 Baseline policy parameters

Parameter	Description	Example Value
Policy	Policy name	default_linux_security_check_policy
OS	OS that will be checked. – Linux – Windows	Linux

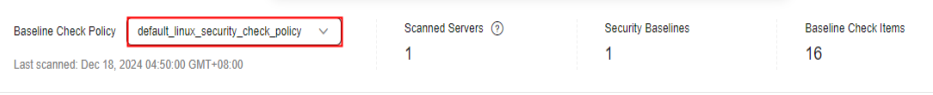
Parameter	Description	Example Value
Baseline	Baseline used for a check. Check items are as follows: – For Linux, ▪ Cloud security practices: Apache2, Docker, MongoDB, Redis, MySQL5, Nginx, Tomcat, SSH, vsftp, CentOS7, EulerOS, EulerOS_ext, Kubernetes-Node, Kubernetes-Master, HCE1.1, HCE2.0, and ZooKeeper 3.7. ▪ DJCP MLPS compliance: Apache 2, MongoDB, MySQL 5, Nginx, Tomcat, CentOS 7, CentOS 8, Debian 9, Debian 10, Debian 11, Red Hat 6, Red Hat 7, Red Hat 8, Ubuntu 12, Ubuntu 14, Ubuntu 16, Ubuntu 18, Alma, SUSE 12, SUSE 15, and HCE 1.1 ▪ General security standards: MySQL8-universal, HCE1.1-universal, Rocky8-universal, Rocky9-universal, AlmaLinux8-universal, OracleLinux6-universal, OracleLinux7-universal, Ubuntu22-universal, CentOS9-universal, SUSE15-universal, AliLinux2-universal, and AliLinux3-universal.	**Cloud security practices**: Select all. **DJCP MLPS**: Select all.

Parameter	Description	Example Value
	NOTE The MySQL baseline detection of Linux OS is based on the MySQL 5 security configuration specifications. If MySQL 8 is installed on your server, the following check items are not displayed in the detection results, because they are discarded in that version. The detection results are displayed only on the server whose MySQL version is 5. ▪ Rule: Do not set **old_passwords** to **1**. ▪ Rule: Set secure_auth to **1** or **ON**. ▪ Rule: Do not set **skip_secure_auth**. ▪ Rule: Set **log_warnings** to **2**. ▪ Rule: Configure the MySQL binlog clearing policy. ▪ Rule: The **sql_mode** parameter contains **NO_AUTO_CREATE_USER**. ▪ Rule: Use the MySQL audit plug-in. – For Windows, ▪ Cloud security practices: MongoDB, Apache2, MySQL, Nginx, Redis, Tomcat, Windows_2008, Windows_2012, Windows_2016, Windows_2019, and SQL Server. ▪ General security standard: Windows_2022-universal.	

3. Confirm the information, click **Next**, and select the server to be associated with the application based on the server name, server ID, EIP, or private IP address.
4. Confirm the information and click **OK**. The baseline policy will be displayed in the policy list.

Step 5 In the upper left corner of the **Baseline Inspection** page, select the target baseline inspection policy.

Figure 5-30 Selecting the target baseline policy



Step 6 Click **Scan** in the upper right corner of the page.

Step 7 If the time displayed in the **Last scanned** area under the **Baseline Check Policy** is the actual check time, the check is complete.

NOTE

- After a manual check is performed, the button will display **Scanning** and be disabled. If the check time exceeds 30 minutes, the button will be automatically enabled again. If the time displayed in the **Last scanned** area becomes the current check time, it indicates the check has completed.
- After the check is complete, you can view the check results and handling suggestions by referring to **Viewing and Processing Baseline Check Results**.

----End

5.2.3 Viewing and Processing Baseline Check Results

This topic provides suggestions on how to fix baseline configuration risks on the server.

Constraints

Only enterprise edition, premium edition, web tamper protection edition, and container edition are supported.

Detection Description

The MySQL baseline detection of Linux OS is based on the MySQL 5 security configuration specifications. If MySQL 8 is installed on your server, the following check items are not displayed in the detection results, because they are discarded in that version. The detection results are displayed only on the server whose MySQL version is 5.

- Rule: Do not set **old_passwords** to **1**.
- Rule: Set secure_auth to **1** or **ON**.
- Rule: Do not set **skip_secure_auth**.
- Rule: Set **log_warnings** to **2**.
- Rule: Configure the MySQL binlog clearing policy.
- Rule: The **sql_mode** parameter contains **NO_AUTO_CREATE_USER**.
- Rule: Use the MySQL audit plug-in.

Viewing Baseline Check Overview Information

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Risk Management** > **Baseline Checks**.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 4 Click different tabs on the displayed page to check detected unsafe configurations. **Figure 1** lists the corresponding parameters.

To view the check results of servers under different manual baseline check policies, you can switch between baseline check policies.

Figure 5-31 Baseline check overview

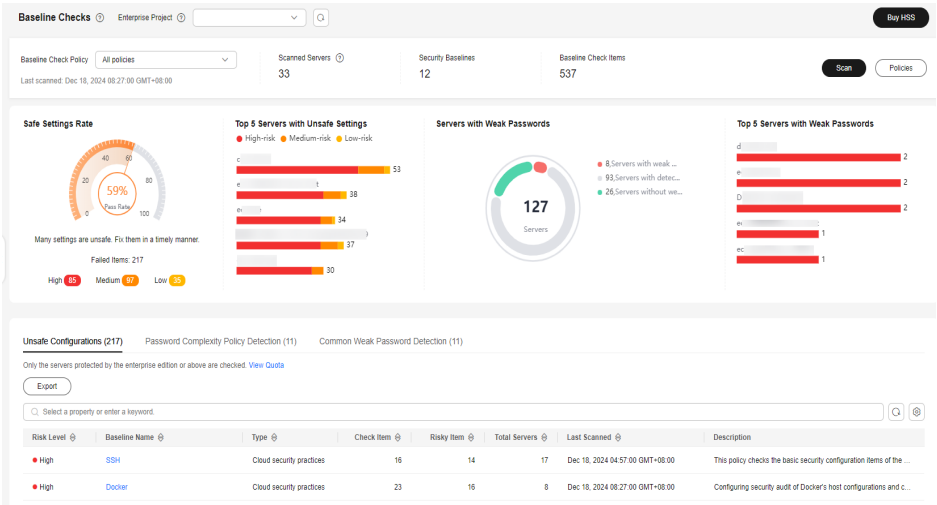


Table 5-13 Baseline check overview

Parameter	Description
Baseline check policy	Available baseline check policies that have been added. You can select, create, edit, and delete these policies.
Scanned servers	Total number of detected servers.
Security baselines	Number of baselines executed during the server detection.
Baseline check items	Total number of checked server configuration items.
Safe settings rate	Percentage of configuration items that passed the baseline check to the total number of check items. Failed items are displayed by risk level.
Top 5 servers with unsafe settings	Statistics on servers with server configuration risks. The top 5 servers with the highest risks are preferentially sorted. If no high-risk settings exist, the servers are sorted into medium-risk and low-risk ones in sequence.
Servers with weak passwords	Total number of detected servers, as well as the numbers of servers with weak passwords, those without weak passwords, and those with weak password detection disabled.
Top 5 servers with weak passwords	Statistics on the top 5 servers with most weak password risks.

Parameter	Description
Unsafe configuration	Alarms generated for servers with configuration risks and the risk statistics.
Password complexity policies	Statistics on servers with passwords that do not meet the complexity requirements in the baseline.
Common weak passwords	Statistics on servers with weak passwords and accounts.

----End

Viewing and Processing Configuration Check Results

Step 1 Click the **Unsafe Configurations** tab to view the risk items. For more information, see **Table 5-14**.

Figure 5-32 Viewing unsafe configuration details

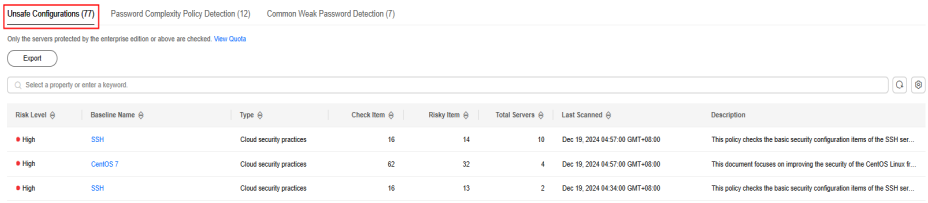


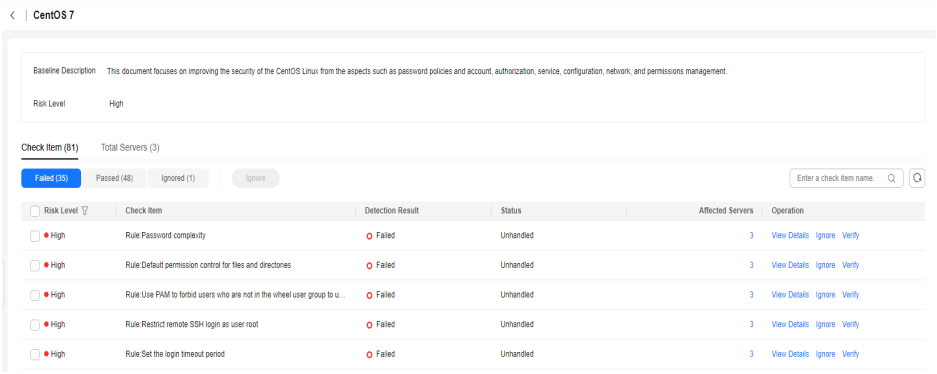
Table 5-14 Parameter description

Parameter	Description
Risk Level	Level of a detection result. • High • Low • Medium • Secure
Baseline Name	Name of the baseline that is checked.
Type	Policy type of the baseline that has been checked. • Cloud security practices • DJCP MLPS • General security standard
Check Item	Total number of configuration items that are checked.
Risky Item	Total number of the risky configurations.

Parameter	Description
Affected Servers	Total number of servers affected by the detected risks in a baseline.
Last Scanned	Time when the last detection was performed.
Description	Description of a baseline.

Step 2 Click the target baseline name in the list to view the baseline description, affected servers, and details about all check items.

Figure 5-33 Viewing baseline check details

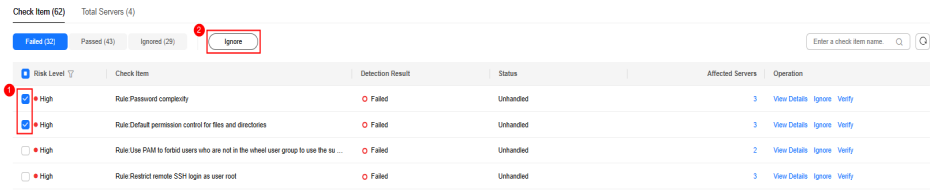


Step 3 Handle risk items.

- **Ignoring risks**

  Click **Ignore** in the **Operation** column of the target check item to ignore a check item. Select multiple check items and click **Ignore** to ignore them in batches.

  Figure 5-34 Ignoring risks



- **Fixing risks**

  a. Click **View Details** in the **Operation** column of the target risk item to view the check item details.

  b. View the content in the **Audit Description**, **Suggestion**, and **Affected Servers**. Rectify the unsafe configurations.

NOTE

- Currently, one-click fixing is supported for some EulerOS baseline configurations and CentOS 8 baseline configurations. You can simply click **Fix** in the **Operation** column of the target EulerOS or CentOS check item to fix the unsafe configurations. If some parameters need to be configured during restoration, retain the default values.
- You are advised to fix the settings with high severity immediately and fix those with medium or low severity.

c. After the repair is complete, click **Verify** on the **Affected Servers** tab page to verify the result.

If a failed check item has been fixed, you can update its status through verification.

NOTE

- Currently, baseline checks are not supported for Windows OSs.
- The agent status of the target server must be online.
- Only one risk item can be verified at a time. Other risk items can be verified only after the risk items are verified.
- Baseline checks are supported for the following Linux OSs: Apache 2, Docker, MongoDB, Redis, MySQL 5, Nginx, Tomcat, SSH, vsftp, CentOS 7, CentOS 8, EulerOS, Debian 9, Debian 10, Debian 11, Red Hat 6, Red Hat 7, Red Hat 8, Ubuntu 12, Ubuntu 14, Ubuntu 16, Ubuntu 18, SUSE 12, SUSE 15, HCE 1.1, and HCE 2.0.

d. Click **OK** to start the verification.

e. Return to the check item list page and view the status of the risk item.

The status changes to **Verifying**. The system starts automatic verification. After the verification is complete, check the status. If a check item failed to be fixed, click **View Cause** to view the cause. Then, fix it again.

----End

Viewing and Processing the Password Complexity Policy Detection Result

Step 1 Click the **Password Complexity Policy Detection** tab to view the risk statistical items and handling suggestions. For more information, see **Table 5-15**.

Figure 5-35 Viewing password complexity policy detection details

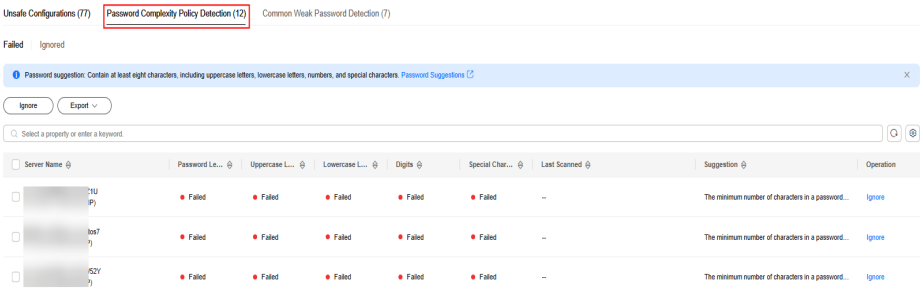


Table 5-15 Parameter description

Parameter	Description
Server Name	Name and public/private IP address of the detected server.
Password Length	Whether the password length policy of the target server meets the requirements. • Passed • Failed
Uppercase Letters	Whether the uppercase letter policy used for passwords on the target server meets the requirements. • Passed • Failed
Lowercase Letters	Whether the lowercase letter policy used for passwords on the target server meets the requirements. • Passed • Failed
Digits	Whether the numeric policy used for passwords on the target server meets the requirements. • Passed • Failed
Special Characters	Whether the special character policy used for passwords on the target server meets the requirements. • Passed • Failed
Last Scanned	Time when the last scan completed.
Suggestion	Suggestion for the password complexity policy of the target server.

Step 2 Handle password complexity policy check results.

- Modifying the password complexity policy
  a. Modify the password complexity policy on the server based on the **Suggestion** column in the check result.
     - To monitor the password complexity policy on a Linux server, install the Pluggable Authentication Modules (PAM) on the server. For details, see **How Do I Install a PAM in a Linux OS?**
     - For details about how to modify the password complexity policy on a Linux server, see **How Do I Install a PAM and Set a Proper Password Complexity Policy in a Linux OS?**

- For details about how to modify the password complexity policy on a Windows server, see **How Do I Set a Secure Password Complexity Policy in a Windows OS?**

b. Save the modification. Click **Scan** in the upper part of the **Baseline Checks** page to verify the modification.

If you do not perform a manual verification, HSS will automatically check the settings at 00:00:00 the next day.

- **Ignoring password complexity policy check results**

You can view the ignored detection results on the **Ignored** tab page.

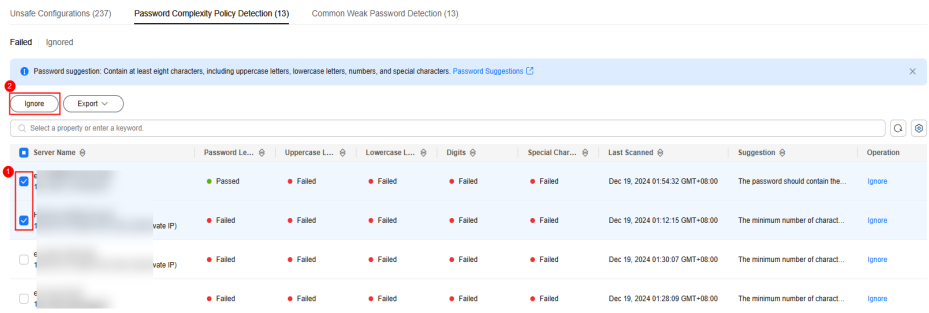
– Ignoring a single result

In the **Operation** column of a server scan result, click **Ignore**.

– Batch ignoring records

Select scan results and click **Ignore** in the upper left corner of the list. Up to 200 results can be ignored at a time.

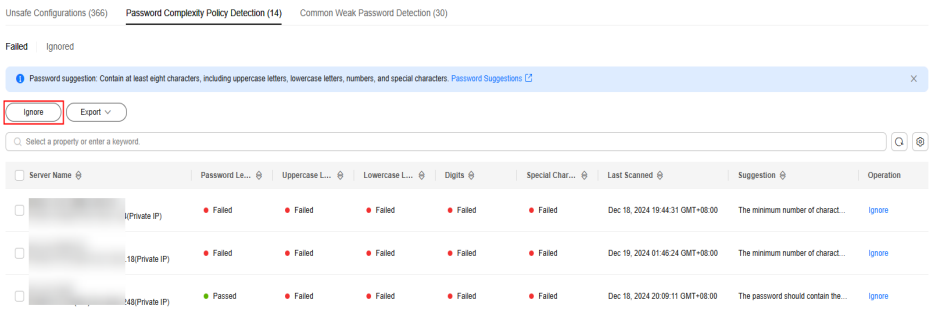
Figure 5-36 Ignoring multiple results



– Ignoring all results

Click **Ignore** in the upper left corner of the list. Up to 1000 password complexity policy check results can be ignored at a time.

Figure 5-37 Ignoring all results



----End

Viewing and Processing Common Weak Password Detection Results

Step 1 Click the Common Weak Password Detection tab to view the statistics of risky weak password accounts on the server. For more information, see **Viewing common weak password detection**.

Figure 5-38 Viewing common weak password detection

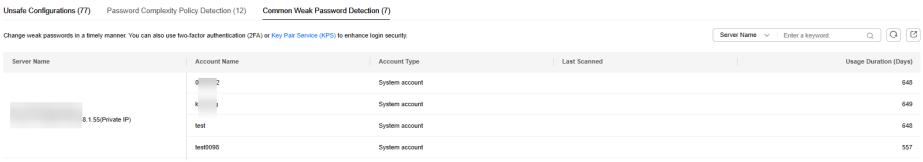


Table 5-16 Parameter description

Parameter	Description
Server Name	Name and public/private IP address of the scanned server.
Account Name	Accounts with weak passwords that are detected on the target server.
Account Type	Type of an account.
Last Scanned	Time when the last scan completed.
Usage Duration (Days)	Period for using a weak password.

Step 2 Log in to the server and change the weak password.

NOTE

- To enhance server security, you are advised to modify the accounts with weak passwords in a timely manner, such as SSH accounts.
- To protect internal data of your server, you are advised to modify software accounts that use weak passwords, such as MySQL accounts and FTP accounts.
- A password should contain more than eight characters, including uppercase letters, lowercase letters, digits, and special characters.

Step 3 After the weak password is changed, perform a manual check in the upper part of the **Baseline Checks** page to verify the result.

If you do not perform a manual verification, HSS will automatically check the settings at 00:00:00 the next day.

----End

5.2.4 Exporting the Baseline Check Report

This section describes how to export a baseline check report.

Constraints

Only enterprise edition, premium edition, web tamper protection edition, and container edition are supported.

Exporting the Baseline Check Report

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Risk Management** > **Baseline Checks**.

Step 4 Perform the following operations to export the detection result based on the baseline check type:

- Unsafe configurations

  Click the **Unsafe Configurations** tab, and click **Export** in the upper left corner of the list. In the displayed dialog box, set the export scope and click **OK** to export the configuration check results.

- Password complexity policies

  Click the **Password Complexity Policy Detection** tab. In the upper left corner of the list, click **Export** > **Export all data to an XLSX file** to export the result.

- Common weak passwords

  Click the **Common Weak Password Detection** tab. In the upper right corner of the list, click  to export the result.

  You can enter the server name, IP address, or account name in the upper right corner of the list, and click  to search for the target content and download it.

----End

5.2.5 Managing Manual Baseline Check Policies

This section describes how to modify a created manual baseline check policy.

Editing a Manual Baseline Check Policy

Step 1 Log in to the management console.

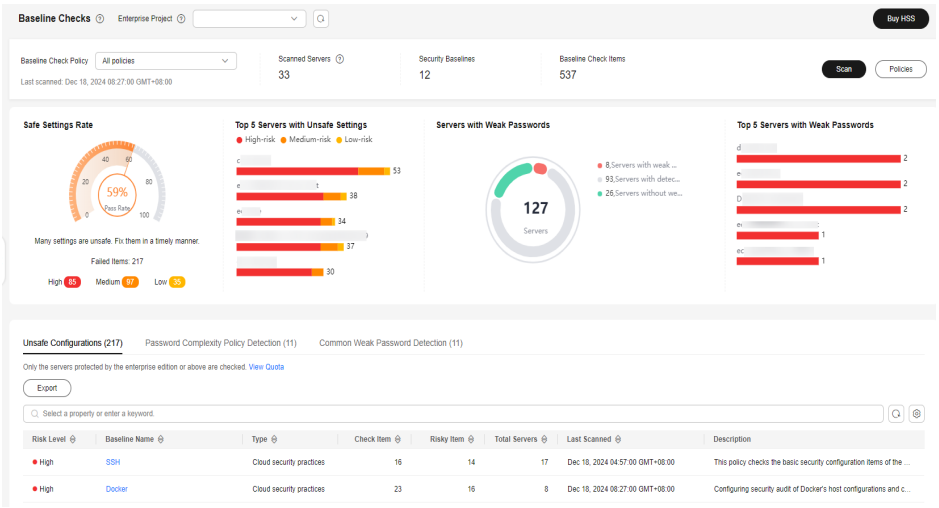
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Risk Management** > **Baseline Checks**.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 5-39 Baseline check overview



Step 4 Click **Policies** in the upper right corner of the page.

Step 5 Click **Edit** in the **Operation** column of a policy. On the policy details page that is displayed, configure the policy name and check items.

Step 6 Confirm the configuration, click **Next**, and select servers.

Step 7 Confirm the information and click **OK**. You can view the updated policy in the policy list.

----End

Deleting a Manual Baseline Check Policy

Step 1 **Log in to the management console**.

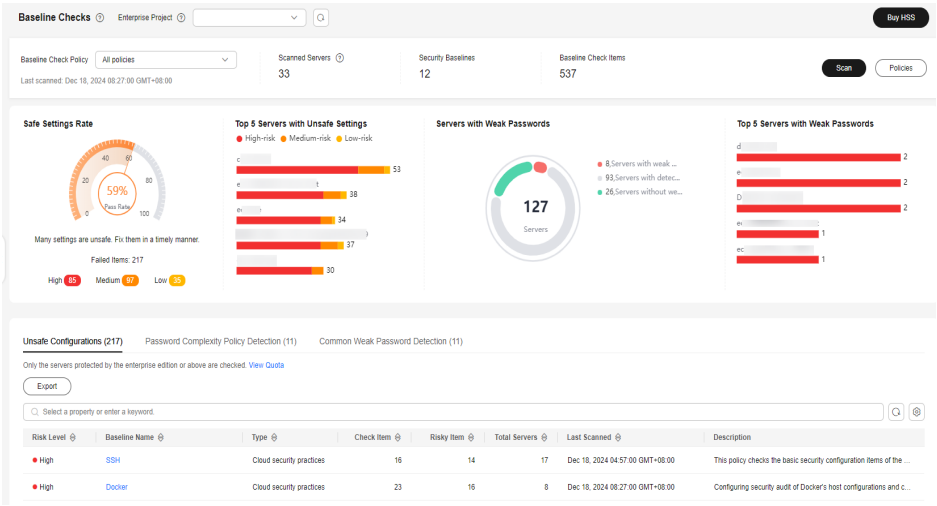
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Risk Management** > **Baseline Checks**.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 5-40 Baseline check overview



Step 4 Click **Policies** in the upper right corner of the page.

Step 5 Click **Delete** in the **Operation** column of a policy. In the dialog box that is displayed, confirm the information and click **OK**.

NOTE

Only user-defined policies can be deleted. Default policies **default_linux_security_check_policy** and **default_windows_security_check_policy** cannot be deleted.

----End

5.3 Container Image Security

5.3.1 Viewing SWR Image Repository Vulnerabilities

This section describes how to view SWR image repository vulnerabilities and fix the vulnerabilities as prompted.

Prerequisites

Container node protection has been enabled. For details, see **Enabling Container Protection**.

Constraints

Only vulnerabilities in Linux images can be checked.

Viewing Vulnerabilities in SWR Images

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree on the left, choose **Risk Management** > **Container Images**.

Step 4 Click the **SWR Image Repository Vulnerability** tab to view the system and application vulnerability lists. For details about the vulnerability list, see **SWR image repository vulnerability parameters**

Figure 5-41 Viewing vulnerabilities in SWR images

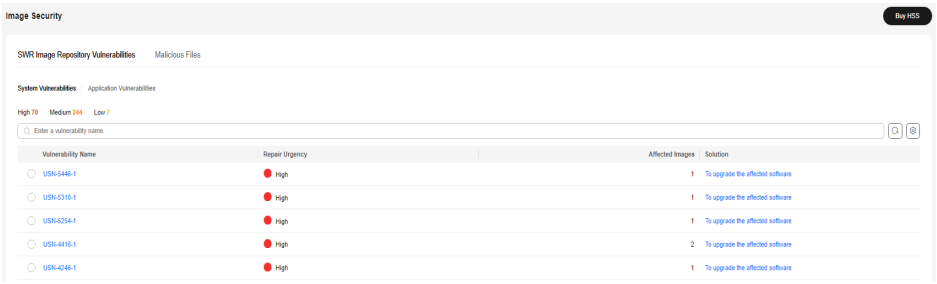


Table 5-17 SWR image repository vulnerability parameters

Parameter	Description
Vulnerability Name	You can click a vulnerability name to view basic information about a vulnerability and the images affected by the vulnerability.
Repair Urgency	You are advised to fix vulnerabilities of the high and medium levels.
Historically Affected Images	Images affected by the vulnerability.
Solution	HSS provides a recommended solution to the vulnerability. Click the solution description to go to the details page.

----End

5.3.2 Viewing Malicious File Detection Results in Images

Malicious files in the private images can be automatically detected, helping you discover and eliminate the security threats in your assets.

Check Frequency

A comprehensive check is automatically performed in the early morning every day.

Constraints

- This function is available only in the HSS container edition.
- Only malicious files in Linux images can be detected.

Viewing Malicious File Detection Results in Images

Step 1 **Log in to the management console**.

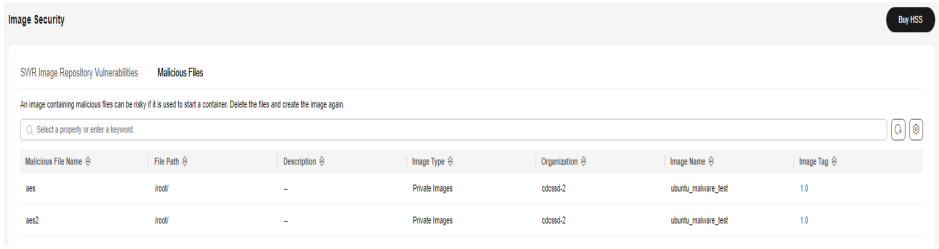
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree on the left, choose **Risk Management** > **Container Images**.

Step 4 Click the **Malicious Files** tab to view details about the malicious files in private images. Delete the malicious files or create images again as needed based on the scan result.

- Malicious files include Trojans, worms, viruses, and Adware.
- In the **Image Tag** column, click an image version to view its vulnerability report.

Figure 5-42 Viewing malicious file detection results in images



----End

6 Server Protection

6.1 Application Protection

6.1.1 Application Protection Overview

Based on runtime application self-protection (RASP), the application protection feature provides security check and protection for running applications. You do not need to modify application files. You simply need to inject probes to applications to enjoy powerful security protection capabilities.

Technical Principles

Probes (monitoring and protection code) are added to the checkpoints (key functions) of applications through dynamic code injection. The probes identify attacks based on predefined rules, data passing through the checkpoints, and contexts (application logic, configurations, data, and event flows).

Detection Capabilities

Table 6-1 describes the types of attacks that can be detected by application protection.

Table 6-1 Attack types detected by application protection

Attack Type	Description	Rule Name	Detection
SQL injection	SQL injection is an attack technology. Attackers exploit the vulnerabilities of dynamic SQL query in web applications to insert malicious code into user input fields and trick the database into executing SQL commands to steal, tamper with, or damage sensitive data, or run dangerous system-level commands on the database server. Most websites and web applications need to use SQL databases. Therefore, SQL injection attacks become one of the oldest and most widely launched network attacks.	SQLI	Detect and defend against SQL injection attacks, and check web applications for related vulnerabilities.
OS command injection	OS command injection is a web program vulnerability that is usually found in applications that require user input. If there is no effective filtering and verification mechanism for user input, this vulnerability may be exploited. It allows attackers to execute arbitrary OS commands on the server where an application is running.	CMDI	Detect and defend against remote OS command injection attacks and check web applications for related vulnerabilities.
XSS	Cross-site scripting (XSS) is a typical web program vulnerability exploit attack. Attackers can inject executable malicious scripts into websites or web applications where web programs do not check user input. When users access web pages, the malicious scripts are executed to steal users' personal data, display advertisements, or even tamper with web page content.	XSS	Detect and defend against stored XSS attacks.

Attack Type	Description	Rule Name	Detection
Log4j RCE vulnerability	Log4j RCE is a major security vulnerability in Apache Log4j 2.x. This vulnerability allows attackers to inject and execute remote code through Java Naming and Directory Interface (JNDI).	Log4jRCE	Detect and defend against remote code execution and intercept attacks.
Web shell upload	Uploading web shells is a network attack method. Attackers upload malicious code such as web shells to a server through vulnerability exploit or other methods to obtain the control permission for the server.	WebShellUpload	Detect and defend against attacks that upload dangerous files, change file names, or change file name extension types; and check web applications for related vulnerabilities.
Memory injection	Memory injection is an advanced network attack technology. Attackers inject malicious code into the memory, bypassing the traditional security defense mechanism and controlling the target system.	FilelessWebshell	Detect and defend against memory injection attacks.
XXE	XXE refers to the XML External Entity Injection vulnerability. If external entity reference is not disabled when an application parses XML files, attackers can construct malicious XML content to read arbitrary files and execute system commands.	XXE	Detect and defend against XXE injection attacks, and check web applications for related vulnerabilities.
Deserialization input	Deserialization is a process of restoring serialized data (such as strings and byte streams) to original objects. In the process of generating a deserialized object, an attacker may construct specific serialized data input to control the generated object and launch attacks.	UntrustedDeserialization	Detect deserialization attacks that exploit unsafe classes.

Attack Type	Description	Rule Name	Detection
File directory traversal	File directory traversal means that an attacker accesses or reads any file or folder on a server by modifying URLs or using special characters to bypass the security check of an application.	FileDirAccess	Check whether sensitive directories or files are accessed.
Struts2 OGNL	Struts2 OGNL refers to the Object-Graph Navigation Language (OGNL) in Struts2 in the Java web framework. If OGNL expressions are externally controllable, attackers can construct malicious OGNL expressions to make programs perform malicious operations.	Struts2OGNL	Detect OGNL code execution.
Command execution using JSP	Java Server Pages (JSP) is a technology for developing dynamic web pages. Attackers may exploit JSP security vulnerabilities to execute invalid OS commands, causing data leakage and service interruption.	SuspiciousBehavior	Detect command execution using JSP.
File deletion using JSP	Attackers may exploit JSP security vulnerabilities to delete files from a server.	SuspiciousBehavior	Detect file deletion using JSP.
Database connection exception	Database connection exceptions include but are not limited to network exceptions, configuration errors, and permission exceptions. These exceptions may indicate that applications are being attacked.	SuspiciousException	Detect authentication and communication exceptions thrown by database connections.

Attack Type	Description	Rule Name	Detection
0-day vulnerability	0-day vulnerabilities, also called zero-day attacks, usually refers to security vulnerabilities that have not been patched. If such vulnerabilities are detected, hackers can exploit these vulnerabilities to launch zero-day attacks.	• zeroDay • zeroDayDetect	• Check whether the stack hash of a command is in the whitelist of the web application. • Detect and defend against expression injection attacks, and check web applications for related vulnerabilities.
SecurityManager permission exception	SecurityManager is a Java security manager class that manages and controls the security of applications. When the SecurityManager detects that the code performs an operation that is not allowed, an exception is thrown.	SuspiciousException	Detect exceptions thrown by SecurityManager.
JNDI injection	When an application uses the lookup method of JNDI, if the queried URL can be controlled externally, an attacker can construct a malicious URL to make the server load malicious payloads and implement remote code execution.	JNDI	Detect and defend against JNDI injection attacks, and check web applications for related vulnerabilities.
Expression injection	Expression Language (EL) injection. If EL expressions are externally controllable, attackers can construct malicious EL expressions to make programs perform malicious operations.	ExpressionInject	Detect and defend against expression injection attacks, and check web applications for related vulnerabilities.

Application Scenarios and Advantages

- Context awareness: Application protection can provide accurate detection results based on application context.

- Complementary with WAF: Application protection can detect the data written in the memory and unauthorized database access when applications are running.
- 0-day vulnerability defense: Application protection can dynamically detect and defend against attacks in real time when applications are running, blocking 0-day vulnerability exploits.

Constraints and Limitations

- Application protection is available in HSS premium, WTP, and container editions. For details about how to purchase and upgrade HSS, see **Purchasing an HSS Quota** and **Upgrading Protection Quotas**.
- Application protection can only protect web applications that meet the following conditions:
  - JDK: JDK 8, JDK 11, JDK 17
  - Web applications:
    - Windows (64-bit): Tomcat
    - Linux (64-bit): Tomcat, WebLogic, Netty, and Jetty

    The version requirements are as follows:
    - Tomcat 7.0.55 or later
    - WebLogic 12C or later
    - Netty 4.1.0.Final or later
    - Jetty 9.3.19 or later

Process of Using Application Protection

Figure 6-1 Usage process

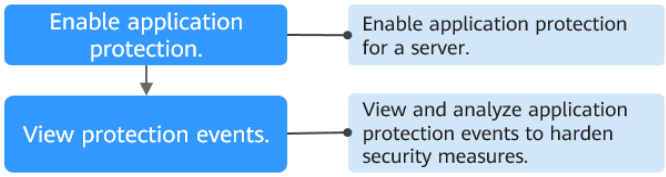


Table 6-2 Usage Procedure

Operation	Description
Enabling Application Protection	Enable application protection for a server to assess application security in real time.
Viewing Application Protection Events	Analyze triggered events, harden application protection measures, and improve application security.

6.1.2 Enabling Application Protection

Scenario

To protect web applications, enable application protection for servers. While protection is enabled, the microservice RASP plug-ins are installed on servers.

How to Enable

Application protection can be enabled automatically or manually. The differences are as follows:

How to Enable	Advantage	Restriction	Operation
Automatic	• You do not need to manually configure application protection startup parameters. • HSS automatically identifies and accesses web applications that have listening ports on the protected servers, and dynamically loads or unloads application protection as needed when web applications are running.	• This method depends on **automatic dynamic RASP**, which is in the OBT phase. To use this function, **submit a service ticket**. • If a web application is just started and runs for 5 minutes or less, RASP cannot be enabled using this method. When the running time of the application exceeds 5 minutes, RASP is automatically enabled. • Web applications of JRE 8, JRE 11, and JRE 17 are not supported. • For JDK 17, **--add-opens=java.base/java.lang=ALL-UNNAMED** needs to be added to the web application startup parameters.	**Automatically Enabling Application Protection**
Manual	• Web applications without listening ports can be accessed. • Web applications of JRE 8, JRE 11, and JRE 17 are supported.	You need to manually configure application protection startup parameters for applications.	**Manually Enabling Application Protection**

Automatically Enabling Application Protection

Step 1 Log in to the management console.

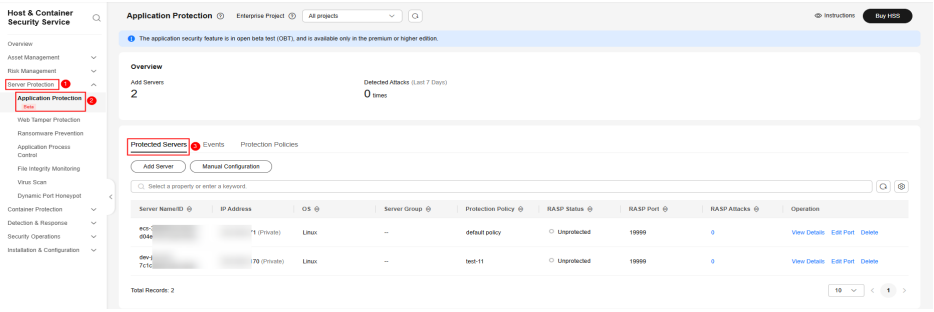
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Application Protection**. Click the **Protected Servers** tab.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Figure 6-2 Viewing protection settings



Step 4 Click **Add Server**. The **Add Server** slide-out panel is displayed.

Step 5 Select servers and a protection policy. Click **Add and Enable Protection**. For more information, see **Table 6-3**.

Figure 6-3 Adding protected servers

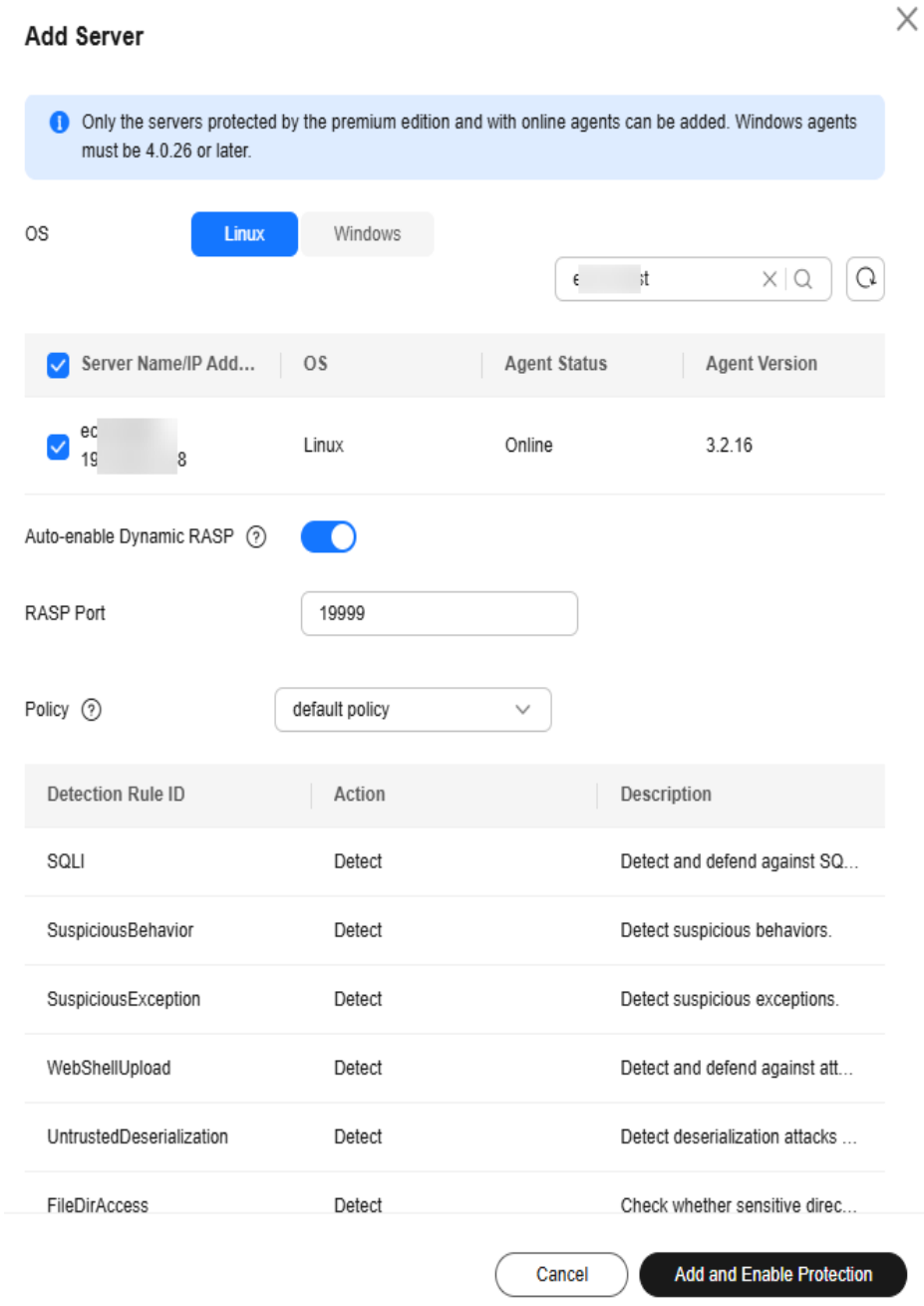


Table 6-3 Parameters for adding a protected server

Parameter	Description	Example Value
OS	Server OS type. It can be Linux or Windows.	**Linux**

Parameter	Description	Example Value
Auto-enable Dynamic RASP	Whether to automatically enable dynamic RASP. If this function is enabled, JVM Attach capabilities are used to automatically identify and access web applications (including container environments) that have listening ports on servers, and to integrate application protection into the web applications. In this way, application protection can be dynamically loaded and unloaded when web applications are running. The web applications do not need to be restarted, thereby ensuring service continuity. If a web application is just started and runs for 5 minutes or less, the function cannot be enabled using this method. When the running time of the application exceeds 5 minutes, the function is automatically enabled. **NOTE** This function is in the OBT phase. To use it, **submit a service ticket**.	**Enabled**
RASP Port	RASP listening port.	**19999**
Policy	Application protection policy. HSS provides a default policy, which contains all the detection rules of application protection. For details, see **Detection Capabilities**. If the default policy is not applicable to your workloads, you can create a custom policy. For details, see **Adding a Protection Policy**.	**default policy**

Step 6 On the **Protected Servers** page, check whether the **RASP Status** of the server is **Protected**. If yes, RASP has been enabled for all the web applications on the server.

- If the **RASP Status** of a server is **Enabling protection**, the system is installing the RASP plug-in and enabling RASP for the server. Wait for several minutes.
- If the **RASP Status** of a server is **Protection failed** or **Partially protected**, click **View Details** in the **Operation** column of the server to view the cause of the protection failure and rectify faults accordingly.

  If information similar to the following is displayed, go to **Step 7**.


```
11\u0502 27, 2024 11:15:26 \u024f\u03a7 com.huawei.hisec.secshield.main.AttachMain verify\r\n
\u044f\u0598: JDK 17 must contain parameter \"--add-opens=java.base/java.lang=ALL-UNNAMED\"\r
\n11\u0502 27, 2024 11:15:26 \u024f\u03a7 com.huawei.hisec.secshield.main.AttachMain verify\r\n
\u044f\u0598: JDK 17 must contain parameter \"--add-opens=java.base/java.lang=ALL-UNNAMED\"\r
\n
```

Step 7 (Optional) For a web application of JDK 17, add the **--add-opens=java.base/java.lang=ALL-UNNAMED** parameter to its startup script.

The configuration method varies depending on the application type and version. The following uses Apache Tomcat 11.0.0 as an example.

- Tomcat (Windows)

  Add the **--add-opens=java.base/java.lang=ALL-UNNAMED** parameter to the **catalina.bat** file in the bin directory of the Tomcat installation directory, as shown in **Figure 6-4**.

  Figure 6-4 catalina.bat

```
215
216 rem Configure module start-up parameters
217 set "JAVA_OPTS=%JAVA_OPTS% --add-opens=java.base/java.lang=ALL-UNNAMED"
218 set "JAVA_OPTS=%JAVA_OPTS% --add-opens=java.base/java.io=ALL-UNNAMED"
219 set "JAVA_OPTS=%JAVA_OPTS% --add-opens=java.base/java.util=ALL-UNNAMED"
220 set "JAVA_OPTS=%JAVA_OPTS% --add-opens=java.base/java.util.concurrent=ALL-UNNAMED"
221 set "JAVA_OPTS=%JAVA_OPTS% --add-opens=java.rmi/sun.rmi.transport=ALL-UNNAMED"
222 set "JAVA_OPTS=%JAVA_OPTS% --enable-native-access=ALL-UNNAMED"
223
```

- Tomcat (Linux)

  Add the **--add-opens=java.base/java.lang=ALL-UNNAMED** parameter to the **catalina.sh** file in the bin directory of the Tomcat installation directory, as shown in **Figure 6-5**.

  Figure 6-5 catalina.sh

```
289 # Add the module start-up parameters required by Tomcat
290 JAVA_OPTS="$JAVA_OPTS --add-opens=java.base/java.lang=ALL-UNNAMED"
291 JAVA_OPTS="$JAVA_OPTS --add-opens=java.base/java.io=ALL-UNNAMED"
292 JAVA_OPTS="$JAVA_OPTS --add-opens=java.base/java.util=ALL-UNNAMED"
293 JAVA_OPTS="$JAVA_OPTS --add-opens=java.base/java.util.concurrent=ALL-UNNAMED"
294 JAVA_OPTS="$JAVA_OPTS --add-opens=java.rmi/sun.rmi.transport=ALL-UNNAMED"
295 JAVA_OPTS="$JAVA_OPTS --enable-native-access=ALL-UNNAMED"
```

Wait for 5 to 10 minutes after the configuration is complete. If the **RASP Status** of the server is **Protected**, RASP has been enabled.

----End

Manually Enabling Application Protection

Step 1 **Log in to the management console**.

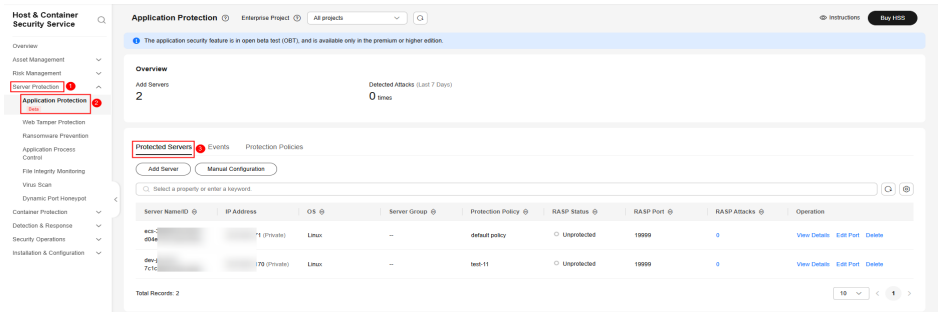
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Application Protection**. Click the **Protected Servers** tab.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Figure 6-6 Viewing protection settings



Step 4 Click **Add Server**. The **Add Server** slide-out panel is displayed.

Step 5 Select servers and a protection policy. Click **Add and Enable Protection**. For more information, see **Table 6-4**.

Figure 6-7 Adding protected servers

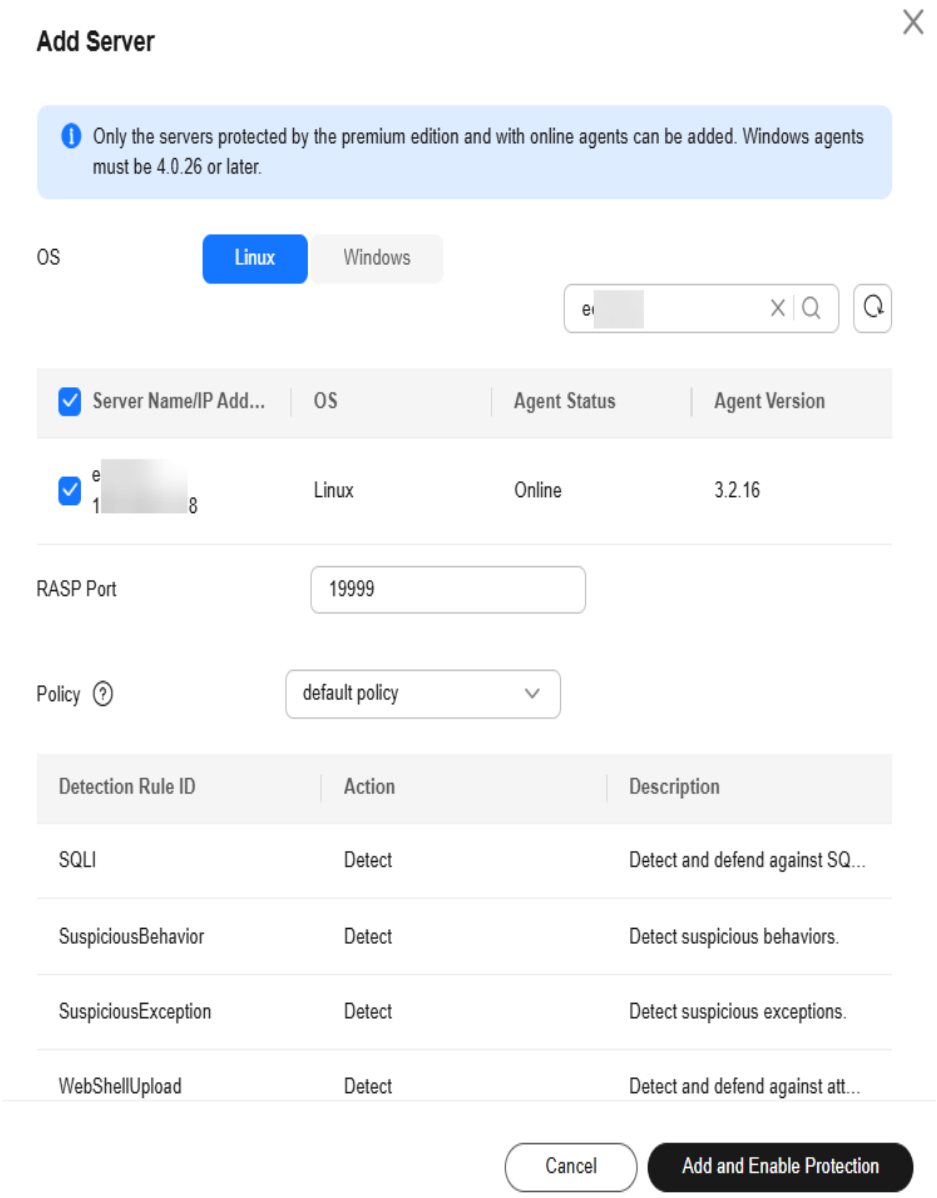


Table 6-4 Parameters for adding a protected server

Parameter	Description	Example Value
OS	Server OS type. It can be Linux or Windows.	**Linux**
RASP Port	RASP listening port.	**19999**

Parameter	Description	Example Value
Policy	Application protection policy. HSS provides the **default policy**, which contains 16 detection rules. If the default policy is not applicable to your workloads, you can create a custom policy. For details, see **Adding a Protection Policy**.	**default policy**

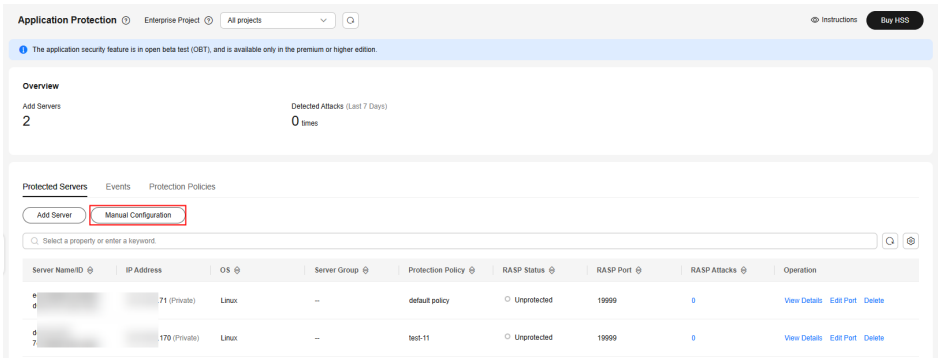
Step 6 On the **Protected Servers** tab page, check whether the **RASP Status** of the server is **Unprotected**.

If the **RASP Status** is **Enabling protection**, the system is installing the RASP plug-in on the server. Wait for several minutes.

Step 7 Manually configure startup parameters for web applications to enable RASP protection.

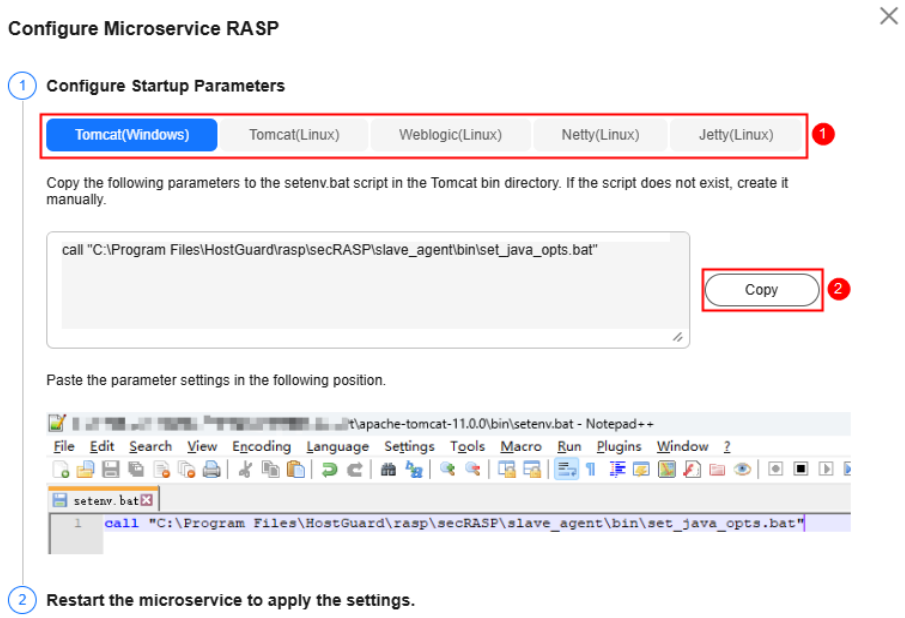
1. Click **Manual Configuration**. The **Configure Microservice RASP** slide-out panel is displayed.

   Figure 6-8 Manual configuration



2. Select a web application. Copy the startup parameters as instructed, and paste the startup parameters to the startup script of the web application.

Figure 6-9 Configuring startup parameters



3. After the startup parameters are set, restart the web application.
4. Wait for 5 to 10 minutes. In the **Operation** column of the server, click **View Details**. The **Application Protection Details** slide-out panel is displayed.
5. Check the RASP protection status of the web application. If the status is **Protected**, it indicates protection has been enabled.

   If a server has multiple web applications, perform the preceding operations for these web applications one by one. If you set startup parameters for only one web application, the protection status of the target server on the **Protected Servers** page will be **Partially protected**.

----End

Related Operations

To change a protected RASP port, click **Edit Port** in the **Operation** column of a server. After the port is changed, the system will restart the RASP plug-in. It will take several minutes.

6.1.3 Viewing Application Protection

Scenario

After application protection is enabled, you can view the protection status and events on the **Application Protection** page. You can analyze the events and harden your applications accordingly.

Viewing the Protection Status

Step 1 Log in to the management console.

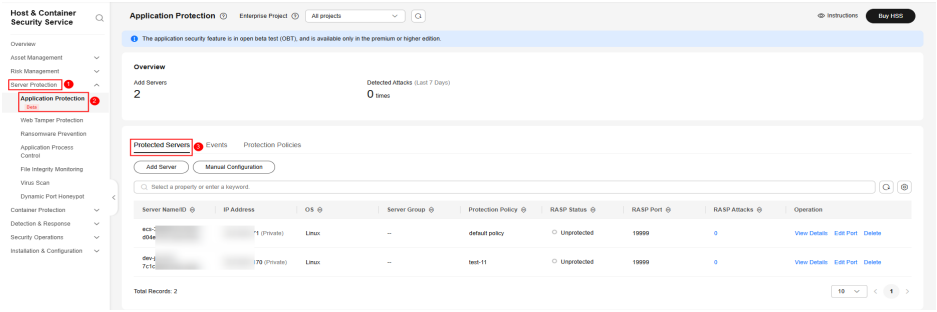
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Application Protection**. Click the **Protected Servers** tab.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 6-10 Viewing protection settings



Step 4 View the service protection status. For details, see **Table 6-5**.

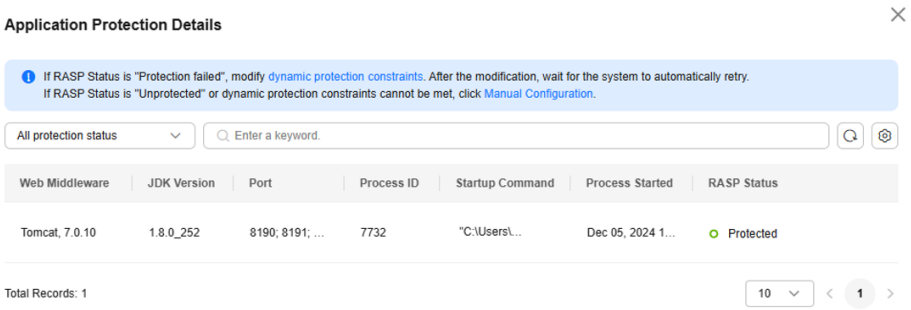
Table 6-5 Parameters for protection settings

Parameter	Description
Server Name/ID	Server name and ID
IP Address	Private IP address and EIP of the server
OS	Server OS
Server Group	Group that the server belongs to
Policy	Detection policies bound to the target server.
RASP Status	Web application protection status. • **Unprotected**: The server has been added for protection but RASP is not enabled. • **Protected**: RASP is enabled. • **Protection failed**: RASP fails to be enabled due to an exception. • **Partially protected**: RASP fails to be enabled for some middleware.
RASP Port	Port protected by RASP on a server.
RASP Attacks	Application protection events that occurred on the server.

Step 5 In the **Operation** column of the server, click **View Details** to view web protection details.

On the protection details page, you can check the RASP protection status of web applications.

Figure 6-11 Application protection details



----End

Viewing Events

Step 1 Log in to the management console and go to the HSS page.

Step 2 Choose **Server Protection** > **Application Protection** and click the **Events** tab. For more information, see **Table 6-6**.

To view the protection events of a server, click the number in the **Attacks** column of the server on the **Protected Servers** tab page.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Table 6-6 Event parameters

Parameter	Description
Severity	Alarm severity. You can search for servers by alarm severities. • **Critical** • **High** • **Medium** • **Low**
Server Name	Server that triggers an alarm
Alarm Name	Alarm name
Alarm Time	Time when an alarm is reported
Attack Source IP Address	IP address of the server that triggers the alarm
Attack Source URL	URL of the server that triggers the alarm

Step 3 You can click an alarm name to view the attack information (such as the request information and attack source IP address) and extended information (such as detection rule ID and description), and troubleshoot the problem accordingly.

----End

6.1.4 Managing Application Protection Policies

Scenario

Application protection policies can be added, edited, and deleted in the following scenarios:

- Addition: HSS provides a default policy, which contains all the detection rules for application protection. For details, see **Detection Capabilities**. If you need to customize the policy for a server, you can add a protection policy and customize the detection rules and configurations in the policy.
- Editing: You can edit a custom protection policy.
- Deletion: You can delete a custom protection policy that is not associated with any server.

Adding a Protection Policy

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server ProtectionApplication Protection** and click **Protection Policies**. For more information, see **Table 6-7**.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Table 6-7 Protection policy parameters

Parameter	Description
Policy Name	Protection policy name
Detection Rule	Detection rules supported by a policy.
Associated Servers	Number of servers bound to a policy.

Step 4 Click **Add Policy**. In the dialog box that is displayed, configure the parameters by referring to **Table 6-8**.

Figure 6-12 Adding a protection policy

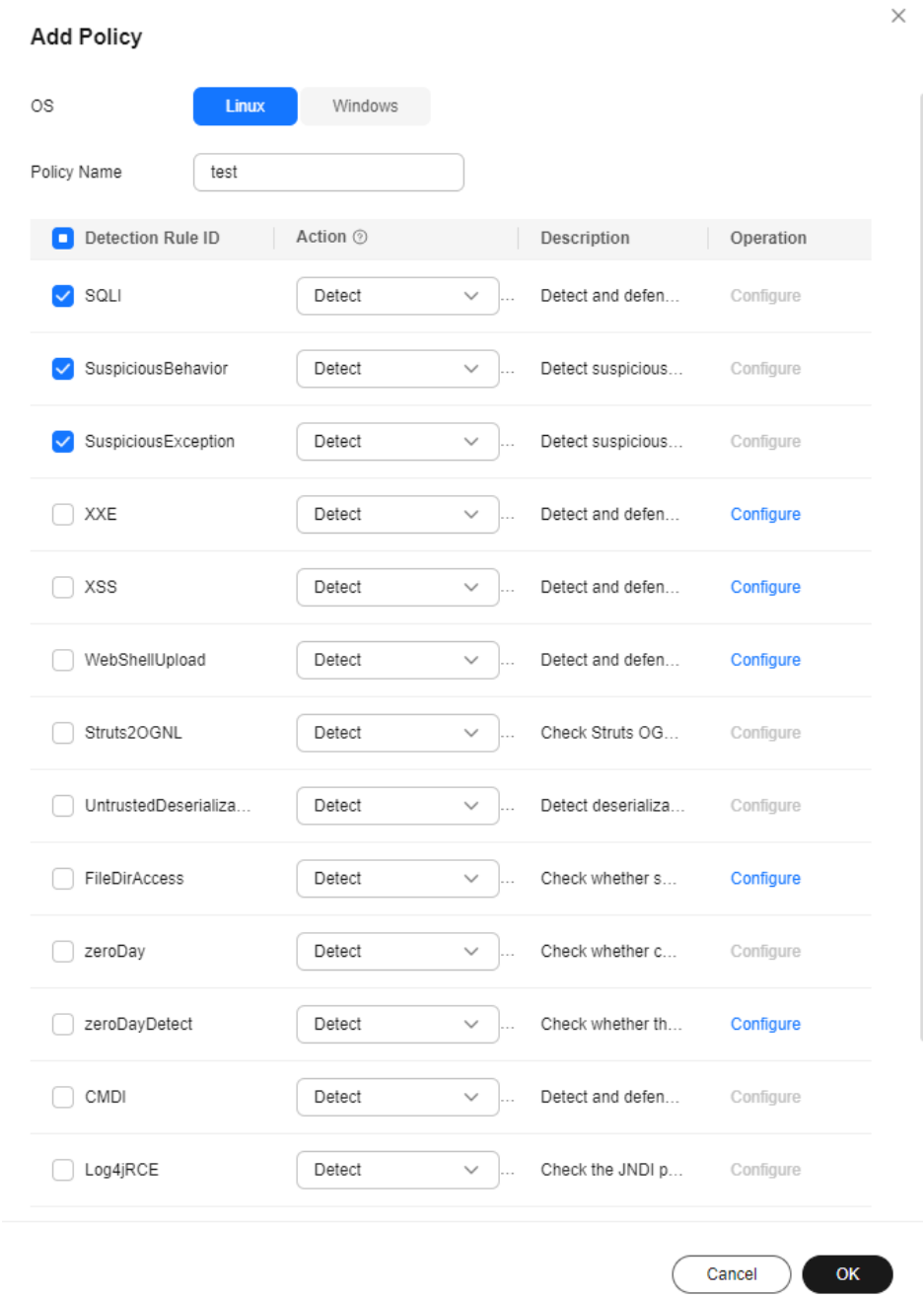


Table 6-8 Application protection policy parameters

Parameter	Description
OS	OS of the servers that the protection policy applies to.
Policy Name	User-defined policy name
Detection Rule ID	Unique ID of a detection rule. To enable a detection rule, select the check box next to the ID.

Parameter	Description
Action	Protection action of a detection rule. • **Detect**: Detects objects based on the target rule and reports alarms for detected risk events. • **Detect and block**: Detects objects based on the target rule, reports alarms for detected risk events, and directly blocks or intercepts detected risk items. **NOTICE** Blocking or interception may interrupt services. Exercise caution when enabling this function
Description	Description about the detected object and behavior of the target protection policy.

Step 5 Click **Configure** in the **Operation** column of a detection rule to modify the rule content. **Table 6-9** describes the supported detection rules.

Table 6-9 Detection rules that can be configured only

Rule	Description	Example
XXE	User-defined XXE blacklist protocol	.xml;.dtd;
XSS	User-defined XSS shielding rules	xml;doctype;xmlns;import;entity
WebShellUpload	User-defined suffix of files in the blacklist.	.jspx;.jsp;.jar;.phtml;.asp;.php;.ascx;.ashx;.cer
FileDirAccess	User-defined path of files in the blacklist.	/etc/passwd;/etc/shadow;/etc/gshadow;

Step 6 Confirm the configured policy and selected detection rules, and click **OK**. You can check whether the rule is added on the **Protection Policy** tab page.

----End

Editing a Protection Policy

Step 1 Log in to the management console and go to the HSS page.

Step 2 Choose **Server ProtectionApplication Protection** and click **Protection Policies**. For more information, see **Table 6-10**.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Table 6-10 Protection policy parameters

Parameter	Description
Policy Name	Protection policy name
Detection Rule	Detection rules supported by a policy.
Associated Servers	Number of servers bound to a policy.

Step 3 Click **Edit** in the **Operation** column of a policy to configure the policy name, supported detection rules, and rule content.

Table 6-11 Application protection policy parameters

Parameter	Description
Policy Name	User-defined policy name
Detection Rule ID	Unique ID of a detection rule. To enable a detection rule, select the check box next to the ID.
Action	Protection action of a detection rule. • **Detect**: Detects objects based on the target rule and reports alarms for detected risk events. • **Detect and block**: Detects objects based on the target rule, reports alarms for detected risk events, and directly blocks or intercepts detected risk items. **NOTICE** Blocking or interception may interrupt services. Exercise caution when enabling this function
Description	Description about the detected object and behavior of the target protection policy.

Step 4 Confirm the configured rule and selected detection items and click **OK**. You can check whether the target policy is modified on the **Protection Policy** tab page.

----End

Deleting a Policy

Step 1 Log in to the management console and go to the HSS page.

Step 2 Choose **Server ProtectionApplication Protection** and click **Protection Policies**. For more information, see **Table 6-12**.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Table 6-12 Protection policy parameters

Parameter	Description
Policy Name	Protection policy name
Detection Rule	Detection rules supported by a policy.
Associated Servers	Number of servers bound to a policy.

Step 3 Click **Delete** in the **Operation** column of the target policy. In the dialog box that is displayed, confirm the policy information and click **OK**.

NOTICE

Only the policies that are not associated with any server can be deleted.

----End

6.1.5 Disabling Application Protection

Scenario

You can disable application protection if it is no longer needed.

Disabling Application Protection

Step 1 Log in to the management console.

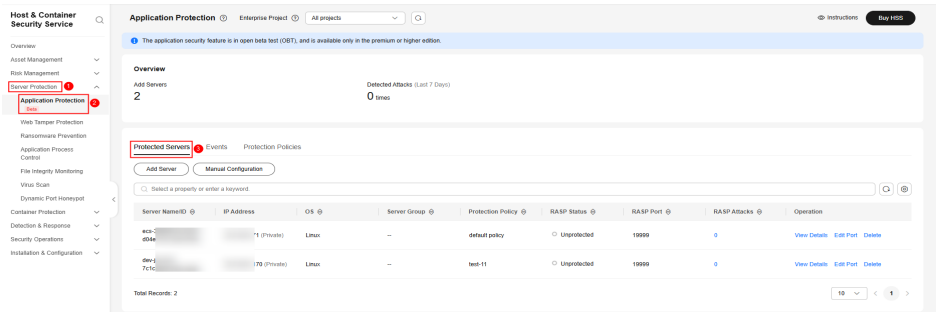
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Application Protection**. Click the **Protected Servers** tab.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 6-13 Viewing protection settings



Step 4 Click **Delete** in the **Operation** column of a server.

Step 5 In the **Delete** dialog box, confirm the information about the server where application protection is to be disabled, enter **DELETE**, and click **OK**.

----End

6.2 WTP

6.2.1 WTP Overview

Web Tamper Protection (WTP) can detect and prevent tampering of files in specified directories, including web pages, documents, and images, and quickly restore them using valid backup files.

Constraints and Limitations

Web tamper protection is available only in the HSS WTP edition. For details about how to purchase HSS and enable the WTP edition, see **Purchasing an HSS Quota** and **Enabling Web Tamper Protection**.

How WTP Prevents Web Page Tampering

WTP supports static and dynamic web page protection. **How WTP works** shows the protection mechanism.

Table 6-13 How WTP works

Protection Type	Mechanism
Static web page protection	1. Local directory lock WTP locks files in a web file directory in a drive to prevent attackers from modifying them. Website administrators can update the website content by using privileged processes. 2. Active backup and restoration If WTP detects that a file in the protection directory is tampered with, it immediately uses the backup file on the local host to restore the file. 3. Remote backup and restoration After a remote backup server is configured, if a file in a protected directory is changed, HSS will back up the updated file. If the file and backup directory on the local server become invalid, you can log in to the remote backup server, obtain backup files, and manually restore the tampered websites. You can view backup paths on the **Manage Remote Backup Server** page. For details, see **Changing a Remote Backup Server**.

Protection Type	Mechanism
Dynamic web page protection	The Huawei-proprietary RASP can detect application program behaviors, prevent attackers from tampering with web pages through application programs, and provide self-protection in Tomcat application runtime.

Process of Using WTP

Figure 6-14 Usage process

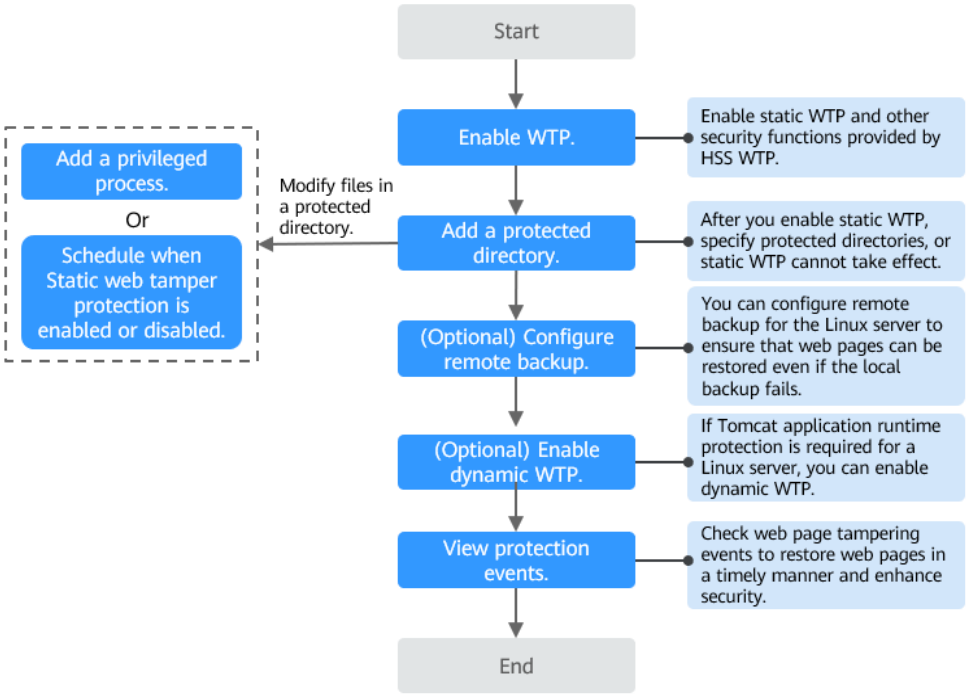


Table 6-14 Process of using WTP

Operation	Description
Enabling Web Tamper Protection	After the WTP edition is enabled, static WTP and other protection functions are enabled automatically. For details about the functions supported by the WTP edition, see **Features**.
Adding a Protected Directory	Static WTP protects specified directories. You need to configure static WTP directories.

Operation	Description
(Optional) **Configuring Remote Backup**	By default, for Linux servers, HSS backs up files in the protected directories to the local backup paths you specified when adding protected directories. To prevent the local backup from being damaged by attackers, you can configure remote backup to protect web page backup data.
(Optional) **Enabling Dynamic WTP**	For Linux servers, HSS provides runtime application self-protection (RASP) for Tomcat applications. You can enable dynamic WTP for Tomcat applications as required.
Viewing WTP Events	Tamper events that occur during web tamper protection are recorded and displayed in the event list.
Adding a Privileged Process	After static WTP is enabled, the content in the protected directory is read-only and cannot be modified. To modify a protected file, you can add a privileged process.
Enabling/ Disabling Scheduled Static WTP	Not all OS kernel versions support privileged processes and each server can add up to 10 privileged processes. For OSs that do not support privileged processes, you can set periodic static WTP and update websites while WTP is automatically disabled.

6.2.2 Adding a Protected Directory

WTP monitors website directories in real time, backs up files, and restores tampered files using the backup, protecting websites from Trojans, illegal links, and tampering.

Constraints and Limitations

- Only the servers that are protected by the HSS WTP edition support the operations described in this section.
- The constraints on protected directories are as follows:
  - For Linux,
    - A server can have up to 50 protected directories.
    - The complete path of a protected directory cannot exceed 256 characters.
    - The folder levels of a protected directory cannot exceed 100.
    - The total folders in protected directories cannot exceed 900,000.
  - For Windows,
    - A server can have up to 50 protected directories.
    - The complete path of a protected directory cannot exceed 256 characters.

- The constraints on local backup paths are as follows:
  - Local backup is supported only in Linux.
  - The local backup path must be valid, or web tamper protection will not take effect.
  - The local backup path cannot overlap with the added protected directory.
  - The available capacity of the disk where the local backup path is located is greater than the size of all protected directories.

Adding a Protected Directory

Step 1 Log in to the management console.

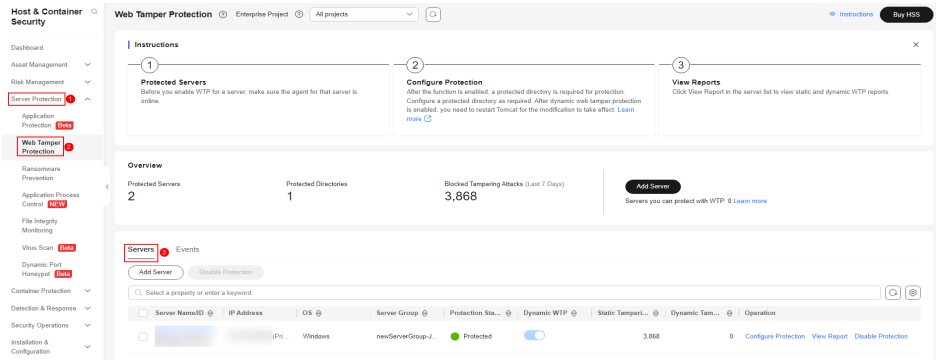
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Web Tamper Protection**. Click **Configure Protection** in the **Operation** column.

NOTE

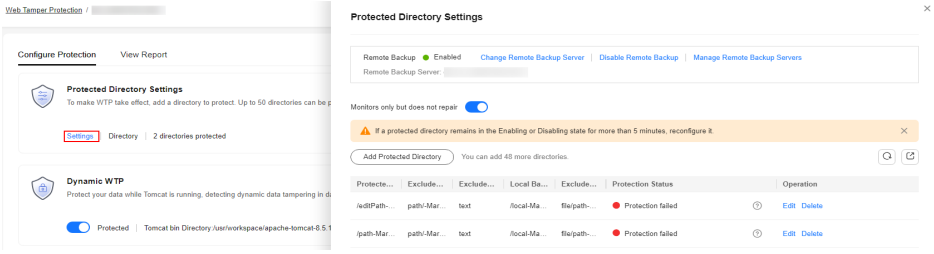
If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 6-15 Entering the page of protection settings



Step 4 Click **Settings** under **Protected Directory Settings**.

Figure 6-16 Page for setting a protected directory



Step 5 You can add a maximum of 50 protected directories.

1. Click **Add**. In the **Add Protected Directory** dialog box, set required parameters. For details, see **Table 6-15**.

Figure 6-17 Adding a protected directory

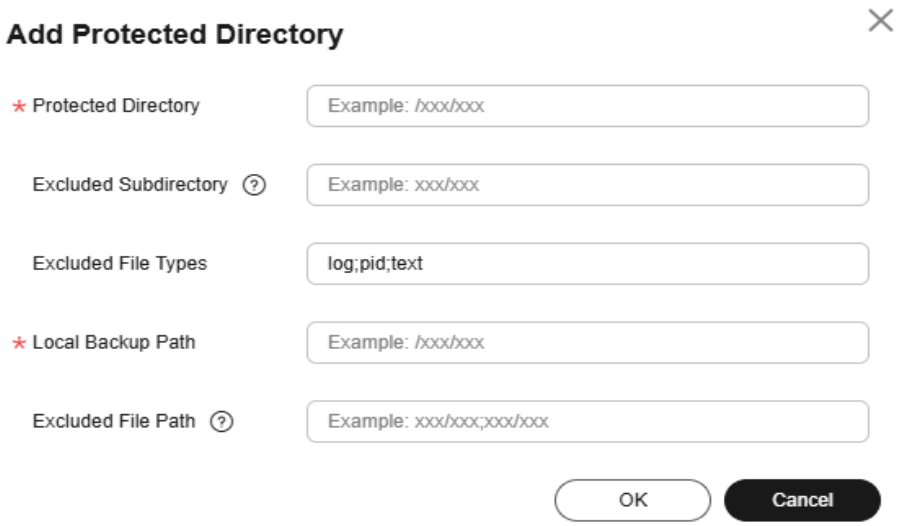


Table 6-15 Parameters for adding a protected directory

Parameter	Description	Example Value
Protected Directory	Directory to be protected. – Only one protected directory can be added. The directory length cannot exceed 256 characters. – Do not add an OS directory as a protected directory. – After a directory is added, the files and folders in the protected directory are read-only and cannot be modified directly.	– Linux: **/etc/lesuo** – Windows: **d:\web**
Excluded Subdirectory	Subdirectories that do not need to be protected in the protected directory, such as temporary file directories. A maximum of 10 subdirectories can be added. Separate multiple subdirectories with semicolons (;). Each subdirectory can contain a maximum of 256 characters.	– Linux: **lesuo/test** – Windows: **web\test**

Parameter	Description	Example Value
Excluded File Types	Types of files that do not need to be protected in the protected directory, such as log files. – The file type can contain only letters and numbers. A maximum of 10 file types can be added. Each file type can contain a maximum of 10 characters. Multiple file types are separated by semicolons (;). – To record the running status of the server in real time, exclude the log files in the protected directory. You can grant high read and write permissions for log files to prevent attackers from viewing or tampering with the log files.	log;pid;text
Local Backup Path	Set this parameter if your server runs the Linux OS. Set a local backup path for files in protected directories. After WTP is enabled, files in the protected directory are automatically backed up to the local backup path. The backup rules are described as follows: – The local backup path must be valid and cannot overlap with the protected directory path. – Excluded subdirectories and types of files are not backed up. – Generally, the backup completes within 10 minutes. The actual duration depends on the size of files in the protected directory. – If WTP detects that a file in a protected directory is tampered with, it immediately uses the backup file on the local server to restore the file.	/etc/backup

Parameter	Description	Example Value
Excluded File Path	Set this parameter if your server runs the Linux OS. Files that do not need to be protected in the protected directory. A maximum of 50 paths can be added. Separate multiple paths with semicolons (;). Each path can contain a maximum of 256 characters.	lesuo/data;lesuo/list

2. Click **OK**.

   If you need to modify files in the protected directory, stop protection for the protected directory first. After the files are modified, resume protection for the directory in a timely manner.

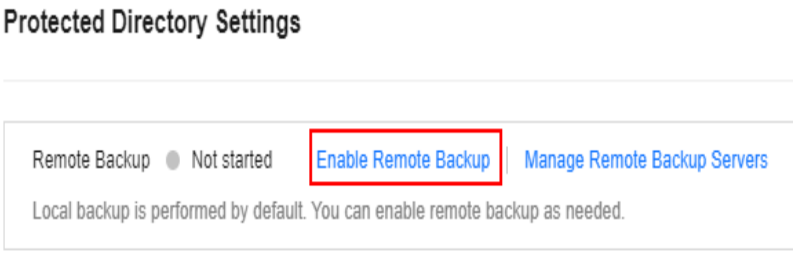
Step 6 Enable remote backup.

By default, HSS backs up the files from the protected directories (excluding specified subdirectories and file types) to the local backup directory you specified when adding protected directories. To protect the local backup files from tampering, you must enable the remote backup function.

For details about how to add a remote backup server, see **Configuring Remote Backup**.

1. On the **Protected Directory Settings** page, click **Enable Remote Backup**.

   Figure 6-18 Enabling remote backup



2. Select a backup server from the drop-down list box.
3. Click **OK**.

----End

Related Operations

- Export a protected directory: If you have configured a large number of protected directories, you can click  on the protected directory configuration page to export the configurations of all protected directories to your local PC.

- Suspend protection: You can suspend WTP for a directory if needed. It is recommended that you resume WTP in a timely manner to prevent the files in the directory from being tampered with.
- Edit a protected directory: You can modify the added protected directory as needed.
- Delete a protected directory: You can delete the directories that do not need to be protected.

NOTICE

- After you suspend protection for a protected directory, delete it, or modify its path, files in the directory will no longer be protected. Before performing these operations, ensure you have taken other measures to protect the files.
- After you suspend protection for a protected directory, delete it, or modify its path, if you find your files missing in the directory, search for them in the local or remote backup path.

6.2.3 Configuring Remote Backup

After a remote backup server is configured, if a file in a protected directory is changed, HSS will back up the updated file. By default, HSS backs up files in the protected directory to the local backup path configured in the **Add Protected Directory** dialog box. (Excluded subdirectories and file types will not be backed up). Enable remote backup to prevent local backup files from being damaged by attackers.

If the file and backup directory on the local server become invalid, you can log in to the remote backup server, obtain backup files, and manually restore the tampered websites. You can view backup paths on the **Manage Remote Backup Server** page. For details, see **Changing a Remote Backup Server**.

Constraints and Limitations

- Only Linux servers support remote backup.
- The server used for remote backup must meet the following requirements:
  - Huawei Cloud Linux servers
  - The server status is **Running**.
  - The HSS agent has been installed on the server and its **Agent Status** is **Online**.

NOTICE

- The remote backup function can be used when the Linux backup server is connected to the protected cloud server. To ensure proper backup, you are advised to select a backup server on the same intranet as your cloud server.
- You are advised to use intranet servers least exposed to attacks as the remote backup servers.

Adding a Remote Backup Server

Step 1 Log in to the management console.

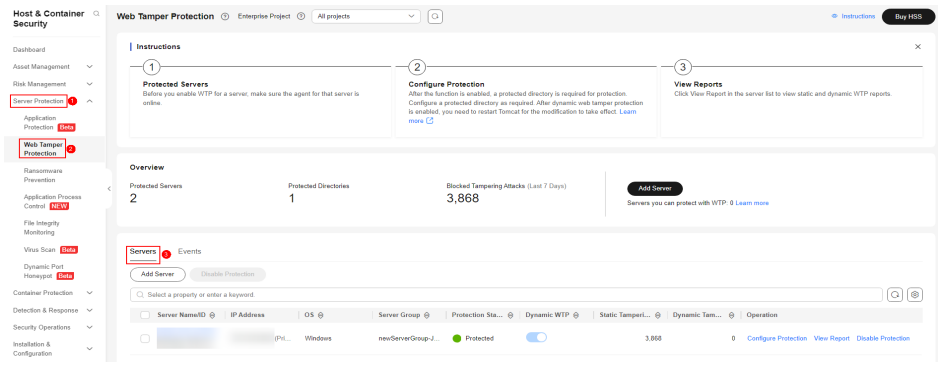
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Web Tamper Protection**. Click **Configure Protection** in the **Operation** column.

NOTE

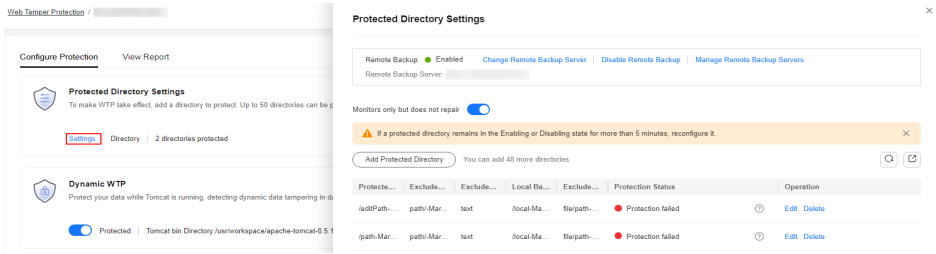
If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 6-19 Entering the page of protection settings



Step 4 Click **Settings** under **Protected Directory Settings**.

Figure 6-20 Page for setting a protected directory



Step 5 Click **Manage Remote Backup**. In the dialog box that is displayed, click **Add Backup Server**. For details, see **Table 6-16**.

Figure 6-21 Configuring the backup server

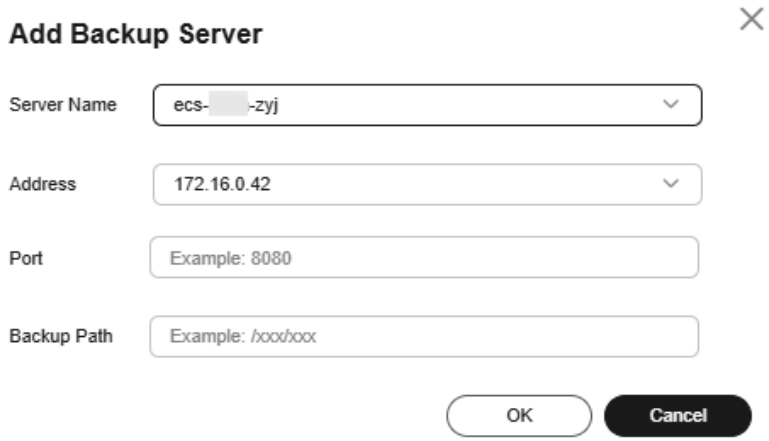


Table 6-16 Backup server parameters

Parameter	Description	Example Value
Address	This address is the private network address of the Huawei Cloud server.	192.168.0.249
Port	Ensure that the port is not blocked by any security group or firewall or occupied.	8080
Backup Path	Path of remote backup files. • If the protected directories of multiple servers are backed up to the same remote backup server, the data will be stored in separate folders named after agent IDs. Assume the protected directories of the two servers are **/hss01** and **hss02**, and the agent IDs of the two servers are **f1fdbabc-6cdc-43af-acab-e4e6f086625f** and **f2ddbabc-6cdc-43af-abcd-e4e6f086626f**, and the remote backup path is **/hss01**. The corresponding backup paths are **/hss01/f1fdbabc-6cdc-43af-acab-e4e6f086625f** and **/hss01/f2ddbabc-6cdc-43af-abcd-e4e6f086626f**. • If WTP is enabled for the remote backup server, do not set the remote backup path to any directories protected by WTP. Otherwise, remote backup will fail.	/hss01

Step 6 Click **OK**.

----End

Setting remote backup

Step 1 Log in to the management console.

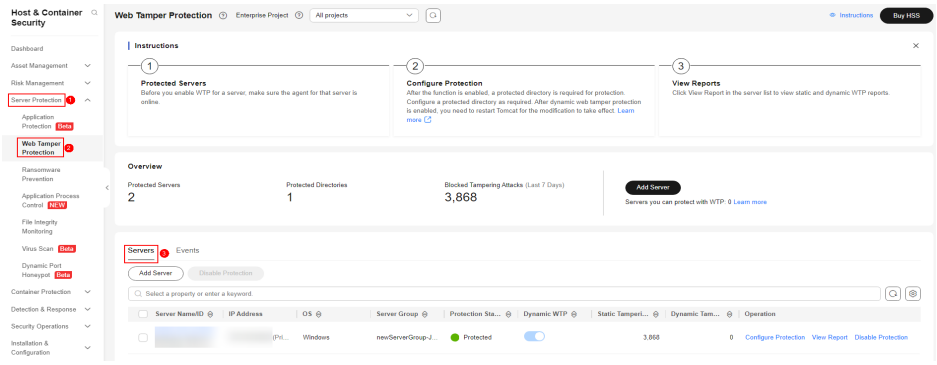
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Web Tamper Protection**. Click **Configure Protection** in the **Operation** column.

NOTE

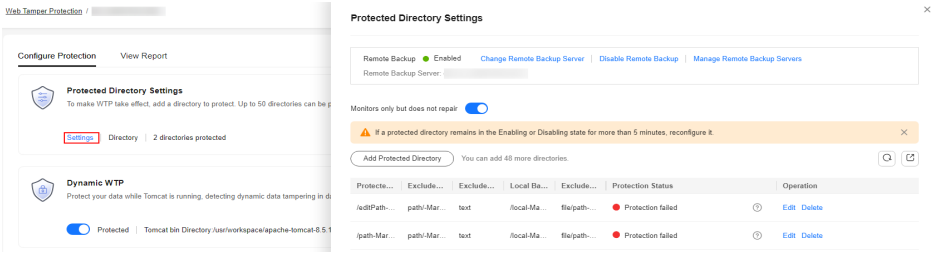
If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 6-22 Entering the page of protection settings



Step 4 Click **Settings** under **Protected Directory Settings**.

Figure 6-23 Page for setting a protected directory



Step 5 Click **Enable Remote Backup** and select a remote backup server.

Step 6 Click **OK** to start remote backup.

----End

Changing a Remote Backup Server

Step 1 Log in to the management console.

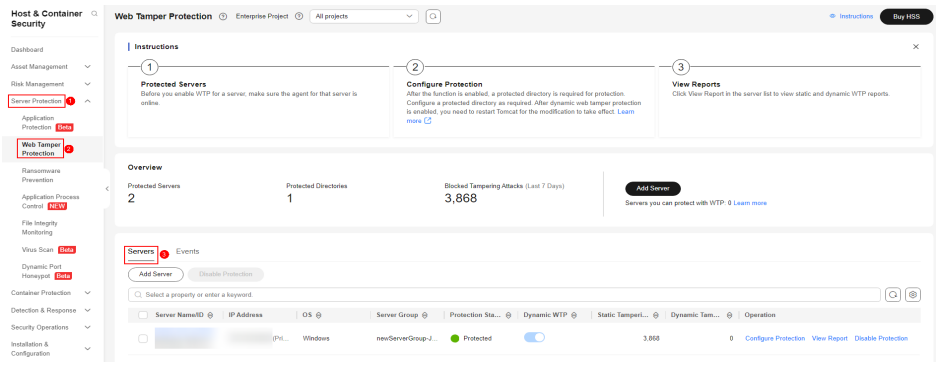
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Web Tamper Protection**. Click **Configure Protection** in the **Operation** column.

NOTE

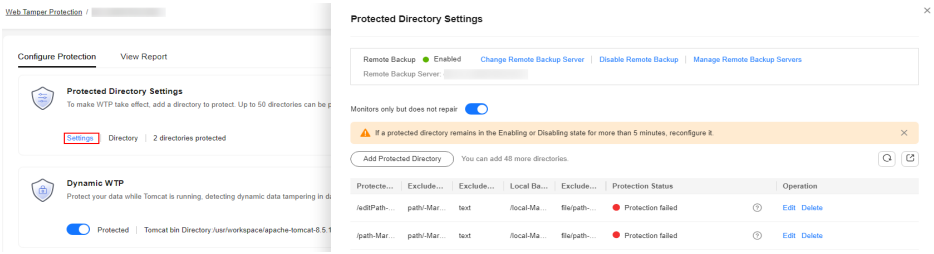
If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 6-24 Entering the page of protection settings



Step 4 Click **Settings** under **Protected Directory Settings**.

Figure 6-25 Page for setting a protected directory



Step 5 Click **Manage Remote Backup Servers**. The **Manage Remote Backup Servers** page is displayed. Click **Edit** in the **Operation** column to modify the information about the remote backup server.

Step 6 Click **OK**.

----End

Related Operations

Disabling remote backup

Exercise caution when performing this operation. If remote backup is disabled, HSS will no longer back up files in your protected directories.

6.2.4 Enabling Dynamic WTP

Dynamic WTP protects your web pages while Tomcat applications are running, and can detect tampering of dynamic data, such as database data. It can be enabled with static WTP or separately.

Constraints and Limitations

- Only the servers that are protected by the HSS WTP edition support the operations described in this section.

- Dynamic WTP can be provided only for Tomcat running JDK 8, JDK 11, or JDK 17.

Prerequisites

You are using a server running the Linux OS.

Enabling Dynamic WTP

Step 1 Log in to the management console.

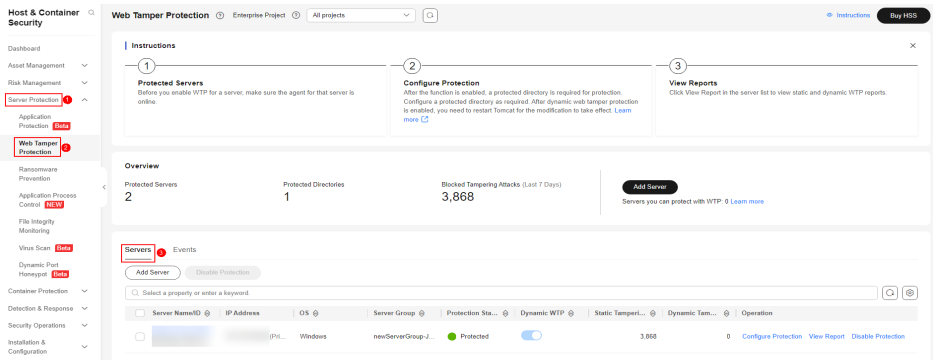
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Web Tamper Protection**. Click **Configure Protection** in the **Operation** column.

NOTE

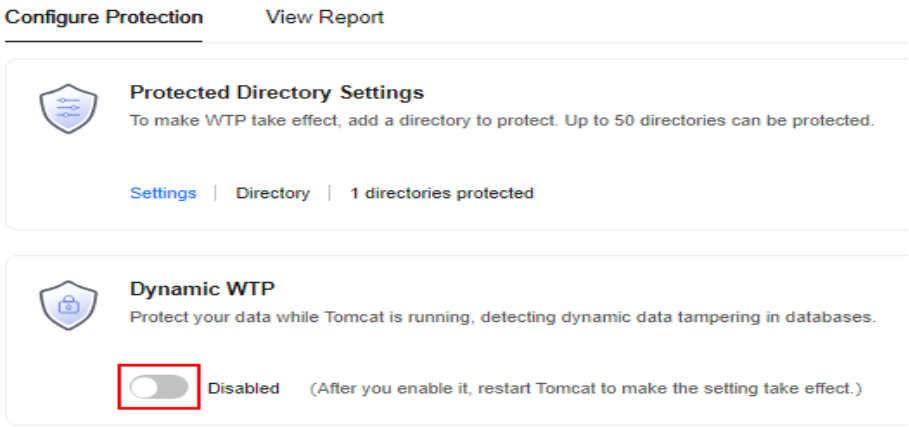
If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 6-26 Entering the page of protection settings



Step 4 On the **Configure Protection** tab, toggle on to enable **Dynamic WTP**.

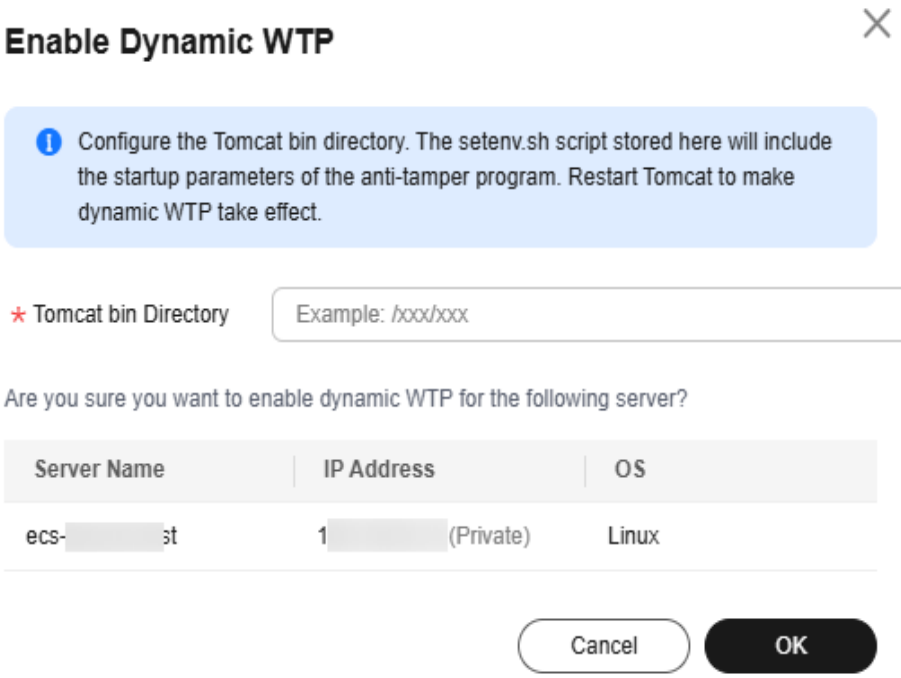
Figure 6-27 Enabling Dynamic WTP



Step 5 In the displayed dialog box, modify the **Tomcat bin Directory**.

To enable dynamic WTP, you need to modify the Tomcat bin directory first. The system presets the **setenv.sh** script in the bin directory for setting anti-tamper program startup parameters. After enabling dynamic WTP, restart Tomcat to make this setting take effect.

Figure 6-28 Configuring a Tomcat directory



Step 6 Click **OK** to enable dynamic WTP.

----End

6.2.5 Viewing WTP Events

Once static WTP is enabled, the HSS service will comprehensively check protected directories you specified. You can check records about detected tampering of host protection files.

Prerequisites

Agent Status of the server is **Online**, and its **WTP Status** is **Enabled**. For more information, see **Viewing Server Protection Status**.

Viewing WTP Events

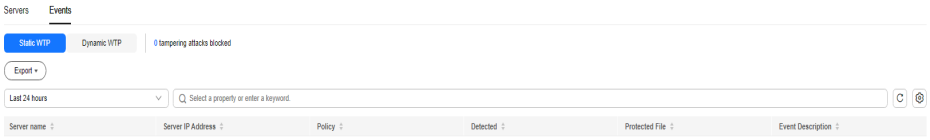
Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Web Tamper Protection** and click **Events** to view the tampering records of protected files on servers.

To view the events of a server, click **View Report** in the **Operation** column of the target server.

Figure 6-29 Events



----End

6.2.6 Adding a Privileged Process

If WTP is enabled, the content in the protected directories is read-only. To allow certain processes to modify files in the directories, add them to the privileged process list.

Only the modification made by privileged processes can take effect. Modifications made by other processes will be automatically rolled back.

Exercise caution when adding privileged processes. Do not let untrustworthy processes access your protected directories.

Constraints

- Only the servers that are protected by the HSS WTP edition support the operations described in this section.
- For Linux OSs, only x86 OSs with kernel 4.18 support this function.
- The privileged process takes effect only for Agent 3.2.4 or later.
- A maximum of 10 privileged processes can be added to each server.

Prerequisites

The **Protection Status** of the server must be **Protected**. To view the status, choose **Server Protection** > **Web Tamper Protection**. Click the **Servers** tab.

Adding a Privileged Process

Step 1 **Log in to the management console**.

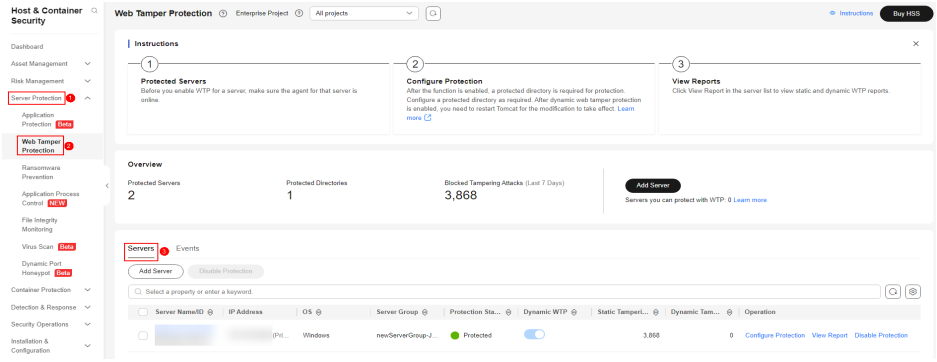
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Web Tamper Protection**. Click **Configure Protection** in the **Operation** column.

NOTE

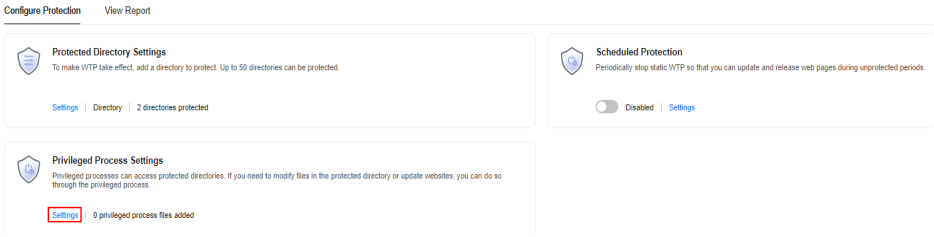
If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 6-30 Entering the page of protection settings



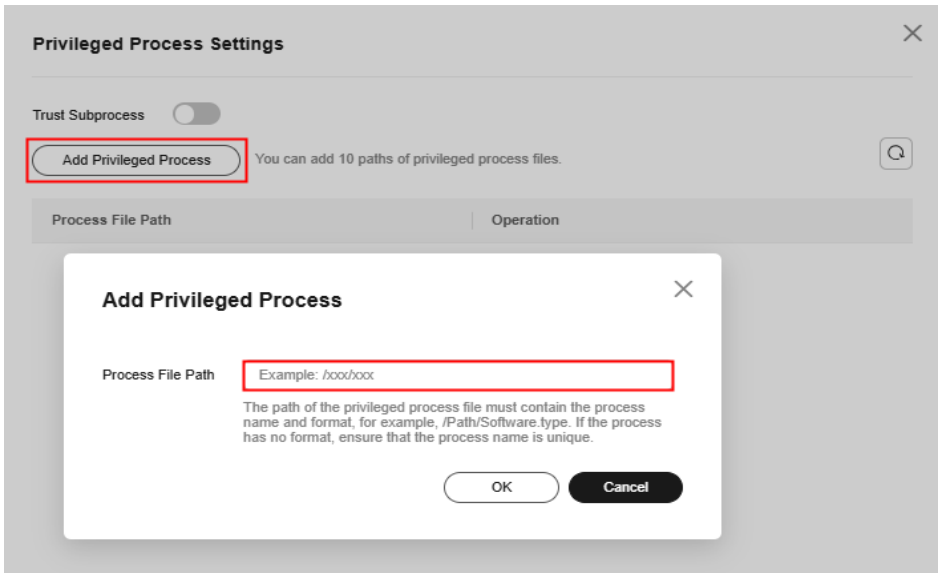
Step 4 Click **Privileged Process Settings** and then **Settings**.

Figure 6-31 Setting a privileged process



Step 5 On the **Privileged Process Settings** page, click **Add Privileged Process**.

Figure 6-32 Adding a Privileged Process



Step 6 In the **Add Privileged Process** dialog box, enter the path of the privileged process.

The process file path must contain the process name and extension, for example, **C:/Path/Software.type**. If the process has no extension, ensure the process name is unique.

Step 7 Click **OK**.

Step 8 Enable **Trust Subprocess** to trust the subprocess in the path of the added privileged file.

NOTE

When this function is enabled, subprocesses at the five levels under all privileged process files are trusted.

----End

Related Operations

Modifying or deleting existing privileged processes

In the **Operation** column of a process file path, click **Edit** to modify the privileged processes or click **Delete** to delete it if it is unnecessary.

NOTE

- After you edit or delete the process file path, the privileged process cannot modify the files in the protected directory. To avoid impact on services, exercise caution when performing these operations.
- Unnecessary privileged processes should be deleted in a timely manner as they may be exploited by attackers.

6.2.7 Enabling/Disabling Scheduled Static WTP

You can schedule WTP protection to allow website updates in specific periods.

NOTE

Exercise caution when you set the periods to disable WTP, because files will not be protected in those periods.

Rules for Setting an Unprotected Period

- Unprotected period >= 5 minutes
- Unprotected period < 24 hours
- Periods (except for those starting at 00:00 or ending at 23:59) cannot overlap and must have an at least 5-minute interval.
- A period cannot span two days.
- The server time is used as a local time base.

Enabling/Disabling Scheduled Static WTP

Step 1 Log in to the management console.

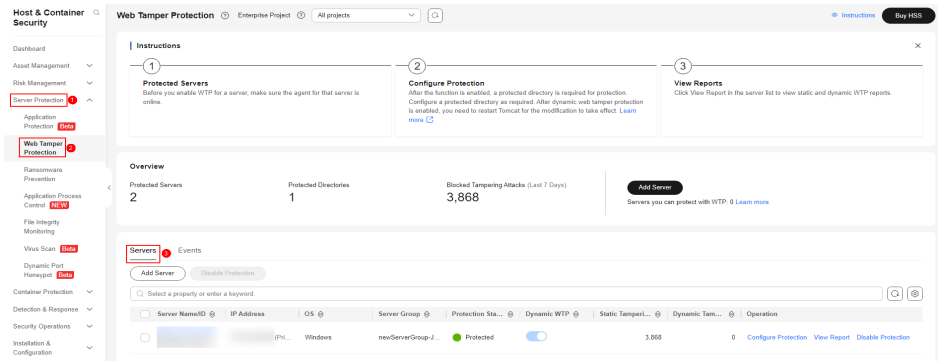
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Web Tamper Protection**. Click **Configure Protection** in the **Operation** column.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

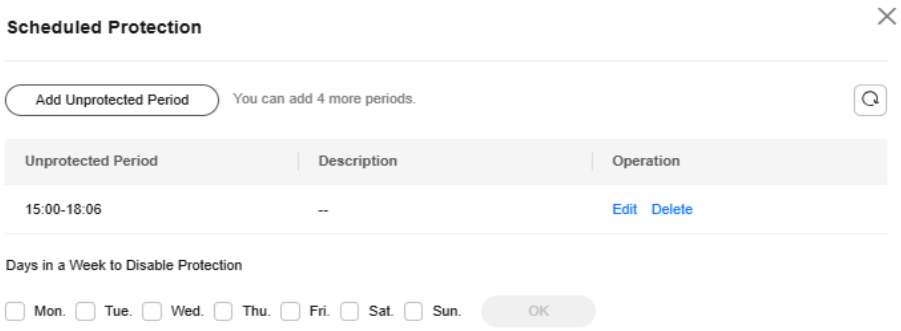
Figure 6-33 Entering the page of protection settings



Step 4 On the **Configure Protection** tab, click **Settings** under **Scheduled Protection**.

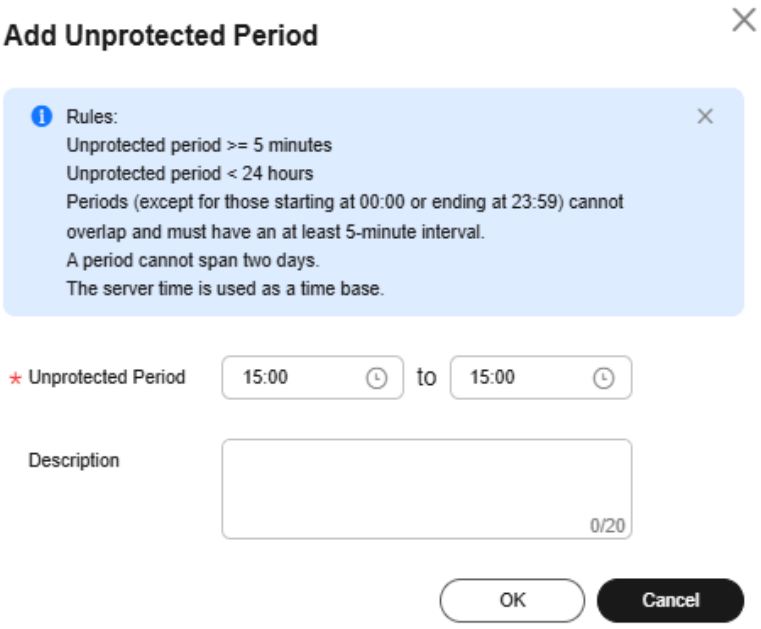
Step 5 Set the unprotected period and days in a week to automatically disable protection.

Figure 6-34 Setting scheduled protection parameters



1. Click **Add Unprotected Period**. Configure parameters in the dialog box that is displayed.

   Figure 6-35 Adding an unprotected period



NOTE

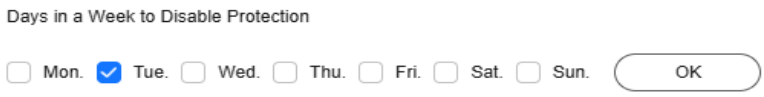
Configuration constraints:

- Unprotected period >= 5 minutes
- Unprotected period < 24 hours
- Periods (except for those starting at 00:00 or ending at 23:59) cannot overlap and must have an at least 5-minute interval.
- A period cannot span two days.
- The server time is used as a time base.

2. Click **OK**.
3. Select the days to disable protection.

   For example, if you select **Mon.**, **Thu.**, and **Sat.**, the server automatically disables the WTP function during the unprotected period on these days.

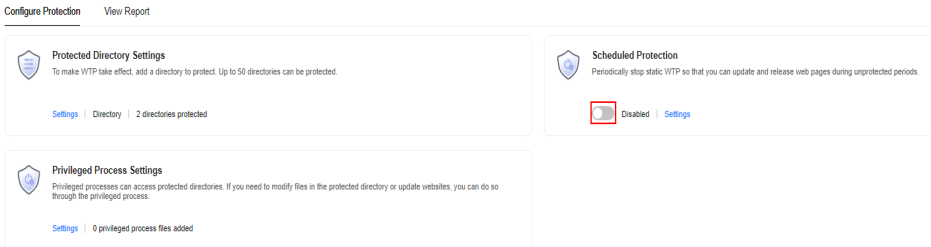
   Figure 6-36 Selecting days to disable protection

4. Click **OK**.

Step 6 Return to the **Configure Protection** tab and toggle on to enable **Scheduled Protection**.

Figure 6-37 Enabling scheduled protection



----End

6.3 Ransomware Prevention

6.3.1 Ransomware Prevention Overview

Ransomware can intrude a server, encrypt data, and ask for ransom, causing service interruption, data leakage, or data loss. Attackers may not unlock the data even after receiving the ransom. HSS provides static and dynamic ransomware prevention. You can periodically back up server data to reduce potential losses.

Constraints and Limitations

- Ransomware prevention is available only in HSS premium, WTP, and container editions. For details about how to purchase and upgrade HSS, see **Purchasing an HSS Quota** and **Upgrading Protection Quotas**.

- If the version of the agent installed on the Linux server is 3.2.10 or later or the version of the agent installed on the Windows server is 4.0.22 or later, **ransomware prevention is automatically enabled** with the premium, WTP, or container edition. For other agent versions, you need to manually enable ransomware prevention.

Process of Using Ransomware Prevention

Figure 6-38 Usage process

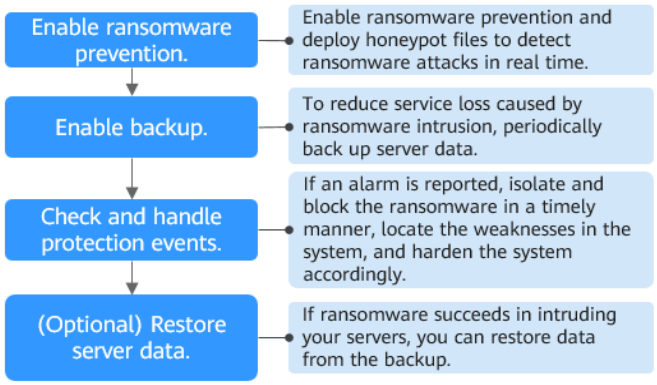


Table 6-17 Usage process

Operation	Description
Enabling Ransomware Prevention	Enable ransomware prevention on a server, deploy static and dynamic honeypots, detect ransomware attacks in real time, and automatically isolate suspicious processes. (There is a low probability that some normal processes are incorrectly isolated.) If the version of the agent installed on the Linux server is 3.2.10 or later or the version of the agent installed on the Windows server is 4.0.22 or later, **ransomware prevention is automatically enabled** with the premium, WTP, or container edition. For other agent versions, you need to manually enable ransomware prevention.
Enabling Backup	Currently, no tools can protect all ransomware. Servers need to be periodically backed up, so that data can be restored using the backup in a timely manner to reduce loss if a ransomware event occurs.
Viewing and Handling Ransomware Prevention Events	Once a ransomware attack is detected during ransomware protection, analyze and isolate the ransomware in a timely manner, and fix the security weaknesses of the system.
(Optional) Restoring Server Data	If ransomware intrusion succeeds and your service data is lost, you can use the backup to restore data and reduce loss.

6.3.2 Enabling Ransomware Prevention

If the version of the agent installed on the Linux server is 3.2.10 or later or the version of the agent installed on the Windows server is 4.0.22 or later, **ransomware prevention** is automatically enabled with the HSS premium, WTP, or container edition. Deploy honeypot files on servers and automatically isolate suspicious encryption processes (there is a low probability that processes are incorrectly isolated). You are also advised to enable backup so that you can restore data in the case of a ransomware attack to minimize losses. For details, see **Enabling Ransomware Backup**.

If the version of the agent installed on the server is not one of the preceding versions or the ransomware protection function is disabled, you can perform the operations in this section to enable ransomware protection.

Step 1: Creating a Protection Policy

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Ransomware Prevention**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Policies** tab and click **Add Policy**.

Step 5 Configure policy parameters. For more information, see **Table 6-18**.

Figure 6-39 Protection policy parameters

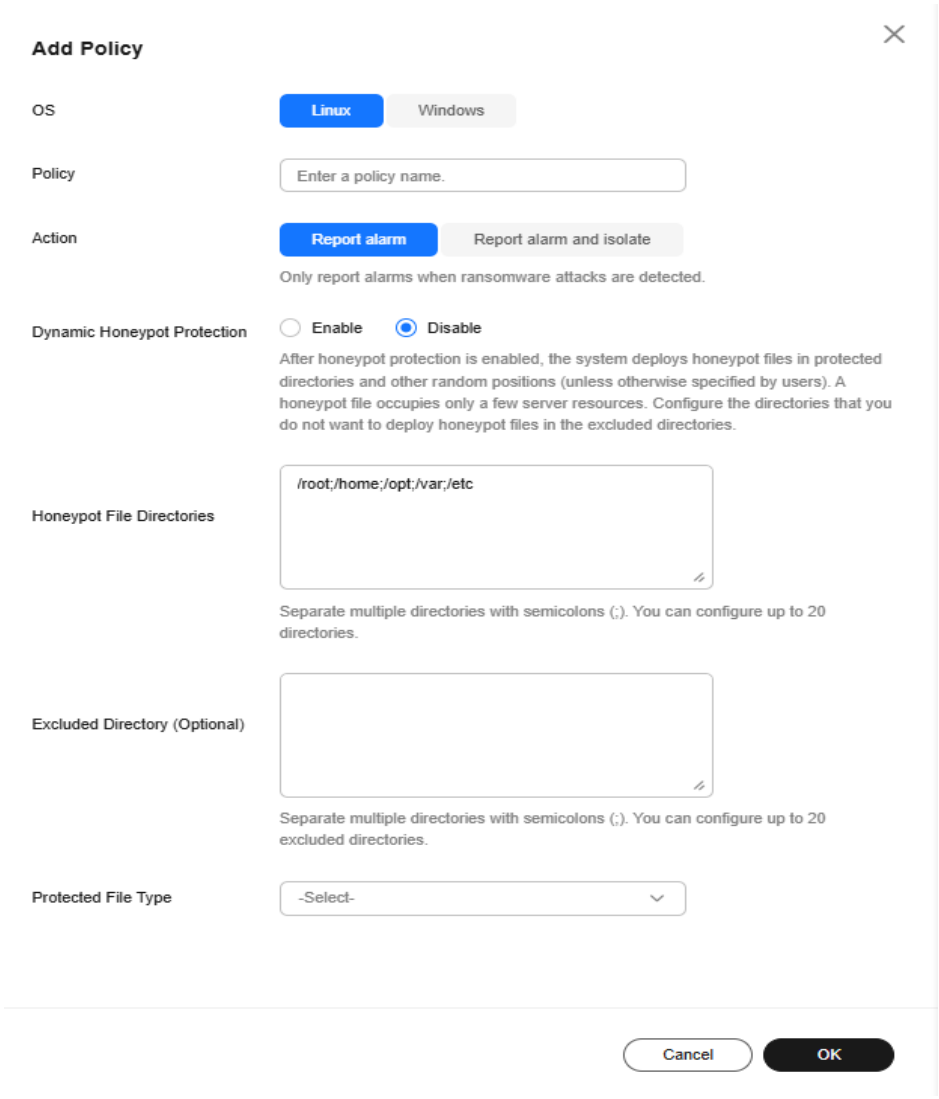


Table 6-18 Protection policy parameters

Parameter	Description	Example Value
OS	Server OS.	Linux
Policy	Policy name	test
Action	Indicates how an event is handled. • **Report alarm and isolate** • **Report alarm**	**Report alarm and isolate**

Parameter	Description	Example Value
Dynamic Honeypot Protection	After honeypot protection is enabled, the system deploys honeypot files in protected directories and other random locations (unless otherwise specified by users). The honeypot files deployed in random locations are automatically deleted every 12 hours and then randomly deployed again. A honeypot file occupies a few server resources. Therefore, configure the directories that you do not want to deploy the honeypot file in the excluded directories. **NOTE** Currently, Linux servers support dynamic generation and deployment of honeypot files. Windows servers support only static deployment of honeypot files.	Enable
Honeypot File Directories	Directory that needs to be protected by static honeypot (excluding subdirectories). You are advised to configure important service directories or data directories. Separate multiple directories with semicolons (;). You can configure up to 20 directories. This parameter is mandatory for Linux servers and optional for Windows servers.	Linux: **/etc** Windows: **C:\Test**
Excluded Directory (Optional)	Directory that does not need to be protected by honeypot files. Separate multiple directories with semicolons (;). You can configure up to 20 excluded directories.	Linux: **/etc/lesuo** Windows: **C:\Test\ProData**
File Type	Types of files to be protected. More than 70 file formats can be protected, including databases, containers, code, certificate keys, and backups. This parameter is mandatory for Linux servers only.	Select all

Parameter	Description	Example Value
(Optional) Process Whitelist	Paths of the process files that can be automatically ignored during the detection, which can be obtained from alarms. This parameter is mandatory only for Windows servers.	-

Step 6 Click **OK**.

----End

Step 2: Enabling Ransomware Prevention

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Ransomware Prevention**.

Step 4 Click the **Protected Servers** tab.

Step 5 In the **Ransomware Prevention Status** column of a server, click **Enable**.

You can also select multiple servers and click **Enable Ransomware Prevention** above the server list.

Step 6 In the **Enable Ransomware Prevention** dialog box, confirm the server information and select a protection policy.

Step 7 Click **OK**.

If the **Ransomware Prevention Status** of the server changes to **Enabled**, ransomware protection is enabled successfully.

----End

FAQ

Ransomware Protection Exception

6.3.3 Enabling Backup

To enhance defense and reduce service loss caused by ransomware attacks, you are advised to periodically back up data on servers.

Constraints and Limitations

Only Huawei Cloud servers support backup to defend against ransomware.

(Optional) Step 1: Purchasing a Backup Vault

You can purchase a backup vault on the HSS console by referring to this section, or on the CBR console by referring to **Creating a Cloud Server Backup**.

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Ransomware Prevention**.

Step 4 Click the **Protected Servers** tab.

Step 5 Toggle on ransomware backup. In the dialog box that is displayed, click **Next**.

Step 6 In the displayed dialog box, set the vault parameters.

Table 6-19 Parameters for purchasing backup capacity

Parameter	Description
Billing Mode	Select **Yearly/Monthly** or **On-demand** as required. • **Yearly/Monthly**: You are billed based on the purchase period specified in the order. • **On-demand**: You pay for the duration you use the resources. Prices are calculated by hour, and no minimum fee is required.
Region	Region of the backup vault you want to purchase
Capacity	Select the size of the backup vault as required.
Required Duration	Select the required duration if you selected **Yearly/Monthly** for **Billing Mode**.
Price	• **Yearly/Monthly**: You are billed based on the storage capacity and available duration you purchased. • **On-demand**: You are billed based on the storage capacity you used.

Step 7 Click **OK**.

- If **Yearly/Monthly** is selected:
  a. The order confirmation page is displayed.
  b. Confirm the order and click **Pay**.
- If **On-demand** is selected:
  The capacity is successfully purchased.

  NOTE

  The backup vault will be charged after the ransomware protection is enabled. Ensure that your account balance is sufficient.

----End

Step 2: Enabling Ransomware Backup

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Ransomware Prevention**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Protected Servers** tab.

Step 5 Select a server and click **Enable Backup**.

Step 6 In the **Enable Backup** dialog box, select a vault.

NOTE

A vault that meets the following conditions can be bound:

- The vault is in **Available** or **Locked** state.
- The backup policy is in **Enabled** state.
- The vault has backup capacity available.
- The vault is bound to fewer than 256 servers.

Step 7 Click **OK**.

----End

6.3.4 Viewing and Handling Ransomware Protection Events

After ransomware protection is enabled, if a ransomware attack event occurs on the server, the event will be recorded and displayed in the ransomware event list. You can handle the events based on your service requirements.

Constraints

After ransomware protection is enabled, you need to handle ransomware alarms and fix the vulnerabilities in your systems and middleware in a timely manner.

Viewing and Handling Ransomware Prevention Events

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Ransomware Prevention**.

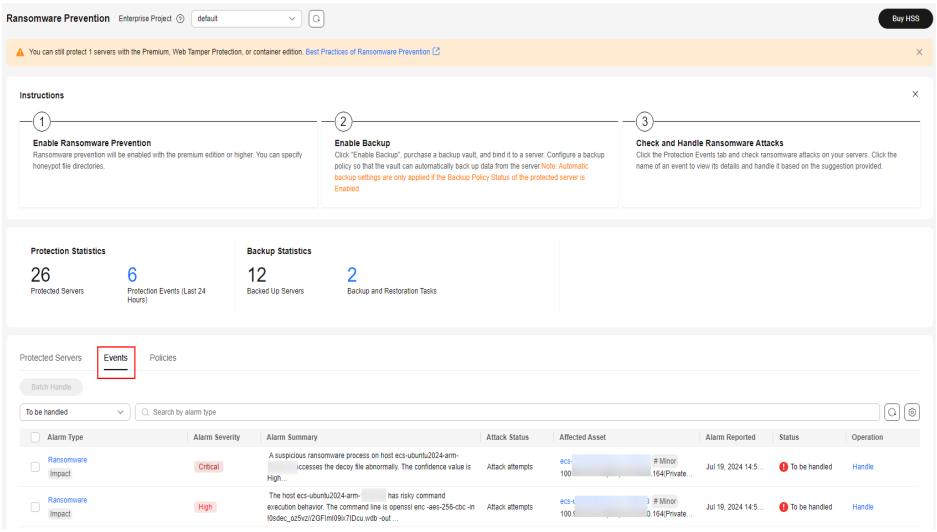
NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Events** tab and check events.

To check alarm details, click an alarm name.

Figure 6-40 Viewing protection events



Step 5 After confirming the severity of an event, click **Handle** in the **Operation** column of the target event to handle the event.

You can also select multiple events and click **Batch Handle** above the list to handle events in batches.

Step 6 In the **Handle Event** dialog box, select an action. For details, see **Table 6-20**.

Figure 6-41 Selecting an action

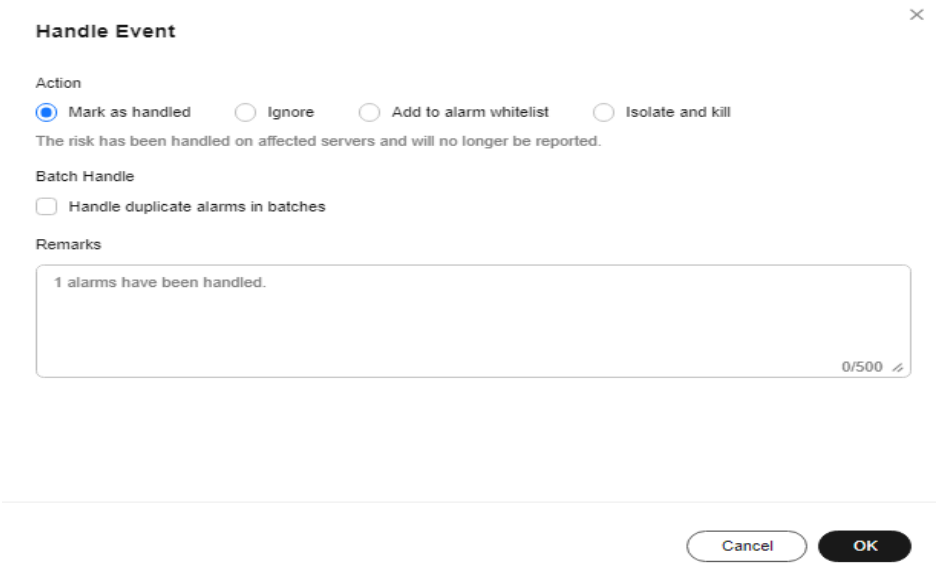


Table 6-20 Alarm handling methods

Parameter	Description
Action	• Mark as handled For a manually handled event, you can add remarks to record the details about the event. • Ignore Ignore the current alarm. Any new alarms of the same type will still be reported by HSS. • Add to Alarm Whitelist Add false alarmed items to the login whitelist. HSS will no longer report alarm on the whitelisted items. A whitelisted alarm will not trigger alarms. After adding an alarm to the alarm whitelist, you can customize a whitelist rule. The custom rule types vary depending on the alarm types, including the file path, process path, process command line, remote IP address, and user name. By default, HSS automatically fills in the rule based on the alarm summary. You can modify the rule as required. If a detected alarm event hit the rule you specified, HSS does not generate an alarm. • Isolate and kill If a program is isolated and killed, it will be terminated immediately and no longer able to perform read or write operations. Isolated source files of programs or processes are displayed on the **Isolated Files** slide-out panel and cannot harm your servers. You can click **Isolated Files** on the upper right corner to check the files. For details, see **Managing Isolated Files**. **NOTE** When a program is isolated and killed, the process of the program is terminated immediately. To avoid impact on services, check the detection result, and cancel the isolation of or unignore misreported malicious programs (if any).
Batch Handle	If this option is selected, the same alarms triggered at different time are handled in batches. If no duplicate alarm is displayed after you select it, it indicates no duplicate alarms have been generated.
Remarks	You can add remarks for convenient backtracking.

Step 7 Click **OK**.

----End

6.3.5 Managing Ransomware Prevention Policies

You can use predefined policies, modify ransomware prevention policies, or change the policy associated with a server.

Changing a Policy

You can change the protection policy associated with a server.

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Ransomware Prevention**.

Step 4 Click the **Protected Servers** tab.

Step 5 Select a server and click **Change Policy**.

You can also choose **More** > **Change Policy** in the **Operation** column of a server.

Step 6 In the **Change Policy** dialog box, select a protection policy.

Step 7 Click **OK**.

----End

Modifying a Policy

Step 1 Log in to the management console and go to the HSS page.

Step 2 In the navigation pane, choose **Server Protection** > **Ransomware Prevention**. Click the **Policies** tab.

Step 3 Click **Edit** in the **Operation** column of a policy. Edit the policy configurations and associated servers. For more information, see **Table 6-21**.

The following uses a Linux server as an example. On the **Protected Servers** tab, you can also click the name of the policy associated with the server to edit the policy.

Table 6-21 Protection policy parameters

Parameter	Description	Example Value
Policy	Policy name.	test
Action	How an event is handled. • **Report alarm and isolate** • **Report alarm**	Report alarm and isolate
Dynamic Honeypot Protection	After bait protection is enabled, the system deploys bait files in protected directories and other random positions (unless otherwise specified by users). A bait file occupies a few server resources. Therefore, configure the directories that you do not want to deploy the bait file in the excluded directories. **NOTE** Currently, Linux servers support dynamic generation and deployment of bait files. Windows servers support only static deployment of bait files.	Enabled

Parameter	Description	Example Value
Bait File Directories	Directory that needs to be protected by static bait (excluding subdirectories). You are advised to configure important service directories or data directories. Separate multiple directories with semicolons (;). You can configure up to 20 directories. This parameter is mandatory for Linux servers and optional for Windows servers.	Linux: **/etc** Windows: **C:\Test**
Excluded Directory (Optional)	Directory that does not need to be protected by bait files. Separate multiple directories with semicolons (;). You can configure up to 20 excluded directories.	Linux: **/etc/lesuo** Windows: C:\Test \ProData
Protected File Type	Types of files to be protected. More than 70 file formats can be protected, including databases, containers, code, certificate keys, and backups. This parameter is mandatory for Linux servers only.	Select all
(Optional) Process Whitelist	Paths of the process files that can be automatically ignored during the detection, which can be obtained from alarms. This parameter is mandatory only for Windows servers.	-
Associate Servers	Information about the server associated with the policy. If you want to disassociate the server (disable ransomware protection), you can delete the policy.	-

Step 4 Confirm the policy information and click **OK**.

----End

Deleting a Policy

Step 1 Log in to the management console and go to the HSS page.

Step 2 In the navigation pane, choose **Server Protection** > **Ransomware Prevention**. Click the **Policies** tab.

Step 3 Click **Delete** in the **Operation** column of the target policy.

NOTE

After a policy is deleted, the associated servers are no longer protected. Before deleting a policy, you are advised to bind its associated servers to other policies.

Step 4 Confirm the policy information and click **OK**.

----End

6.3.6 Restoring Server Data

If your server is attacked by ransomware, you can use the backup to restore the server data to minimize the loss. Before using the backup data to restore the service data of a server, check whether the backup is available. If the backup is available, restore the key service system first.

Prerequisites

The backup function has been enabled. For details, see **Enabling Backup**.

Restoring Server Data

Step 1 Log in to the management console and go to the HSS page.

Step 2 In the navigation pane, choose **Server Protection** > **Ransomware Prevention**. Click the **Protected Servers** tab. In the **Operation** column of the target server, click **More** > **Restore Data**.

Step 3 In the displayed dialog box, view the information about the target server. Search for the backup data source to be restored by backup status and backup name. For details about the parameters, see **Table 6-22**.

Table 6-22 Backup data source parameters

Parameter	Description	Example Value
Backup Name	Name of a backup file.	-
Status	Backup status. It can be: • **Available** • **Creating** • **Deleting** • **Restoring** • **Error** A backup in **Available** state can be used for restoration.	Available

Parameter	Description	Example Value
Purpose	Backup purpose. It can be: • **Periodic execution**: Data is backed up based on the backup period configured in the backup policy. • **Ransomware protection**: Data is backed up immediately when a server is attacked by ransomware.	Periodic execution
Execution Time	Time when the data source was backed up.	-

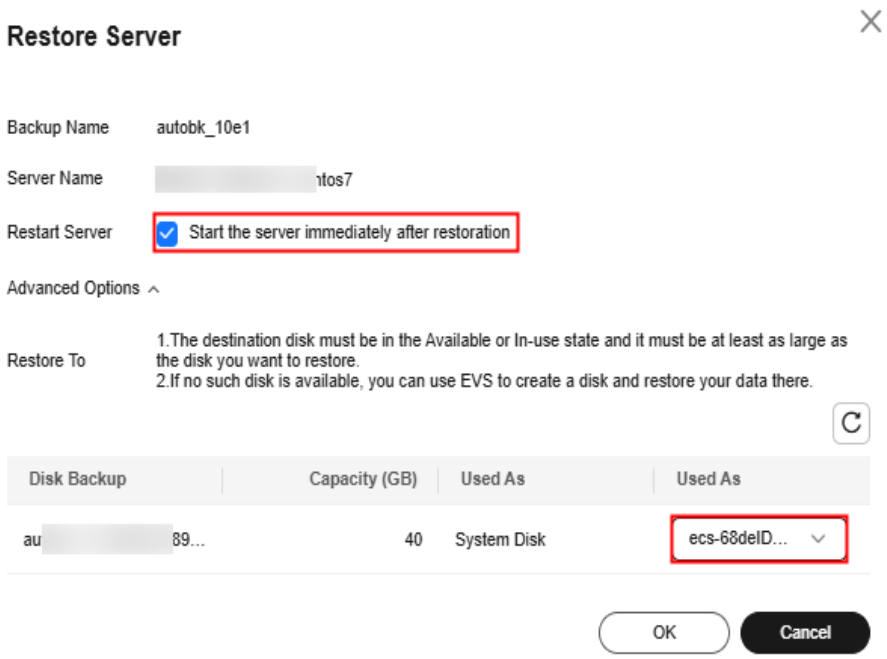
Step 4 In the **Operation** column of a backup, click **Restore Data**.

NOTE

Only a backup in the **Available** state can be restored.

Step 5 In the displayed dialog box, confirm the server information and click **OK**.

Figure 6-42 Restoring a server



Step 6 In the **Backup Statistics** column, click the value of **Backup and Restoration Task** to view the backup and restoration progress.

----End

6.3.7 Managing Server Backup

After ransomware backup is enabled, the backup vault periodically backs up your servers based on the backup policy. You can expand the vault capacity or modify the backup policy as required.

Prerequisites

Ransomware backup has been enabled. For details, see **Enabling Backup**.

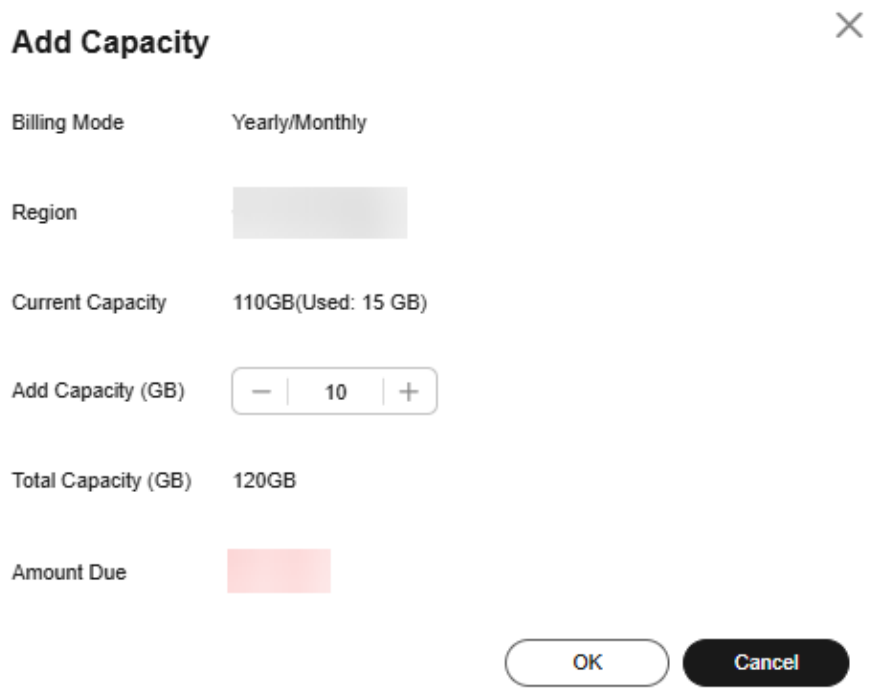
Increasing the Backup Capacity

Step 1 Log in to the management console and go to the HSS page.

Step 2 In the navigation pane, choose **Server Protection** > **Ransomware Prevention**. The protected server list is displayed. Click **Add Capacity** in the **Operation** column of the target server.

Step 3 In the displayed dialog box, configure the capacity.

Figure 6-43 Configuring the capacity



Step 4 If the information is correct, click **OK**. The payment page is displayed. After the payment is complete, return to the **Protected Server** tab page to view the storage capacity of the target server.

If the payment is not complete, the **Vault Status** of the target server is **Locked**. After the payment, the status becomes normal.

----End

Modifying a Backup Policy

Step 1 Log in to the management console and go to the HSS page.

Step 2 In the navigation pane, choose **Server Protection** > **Ransomware Prevention**. The protected server list is displayed. Click the policy name in the **Backup Policy Status** column of the target server.

Step 3 In the displayed dialog box, configure the policy. For details about the parameters, see **Policy parameters**.

Figure 6-44 Configuring a policy

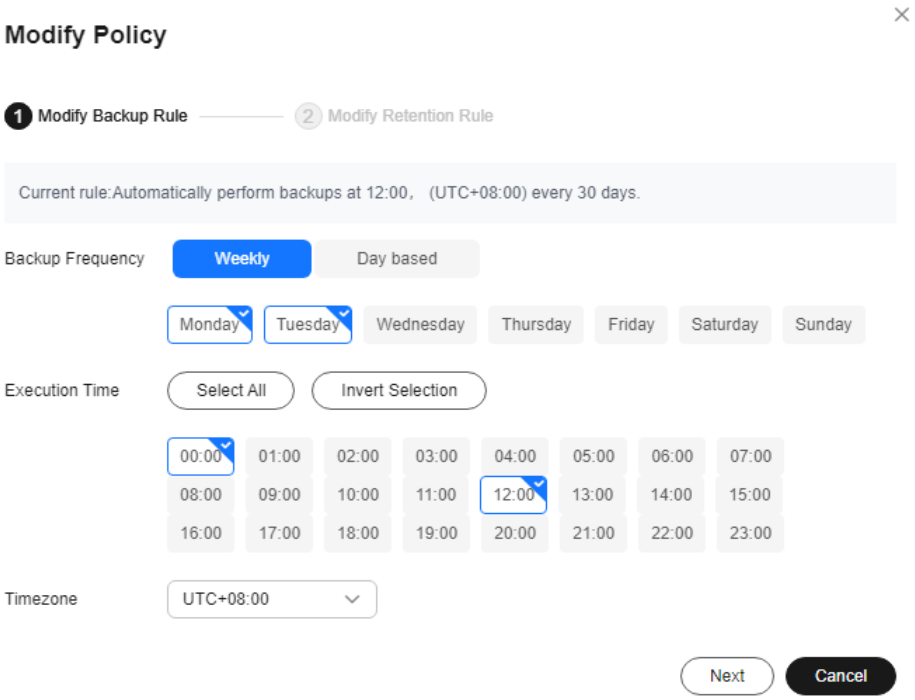


Table 6-23 Policy parameters

Parameter	Description	Example Value
Backup Frequency	Data can be automatically backed up on specific days in a week, or at a fixed interval. • **Weekly**: Select one or more days in a week to back up data. • **Day based**: The range of the backup interval is 1 to 30 days.	Weekly

Parameter	Description	Example Value
Execution Time	Time when automated backup is started. **NOTE** Example of policy configurations Policy 1: Set **Backup Frequency** to **Weekly**, select **Wednesday** and **Saturday**, and set **Execution Time** to **00:00** and **13:00**. Data will be automatically backed up at 00:00 and 13:00 every Wednesday and Saturday. Policy 2: Set **Backup Frequency** to **Day based** and set the interval to two days. Set **Execution Time** to **02:00** and **14:00**. Data will be automatically backed up at 02:00 and 14:00 at an interval of two days.	00:00, 07:00
Timezone	Select the time zone of the backup time.	UTC+08:00

Step 4 Confirm the settings and click **Next**. Configure the backup retention rule.

- **Type**: **Backup quantity**

  Table 6-24 describes the parameters for configuring a backup rule.

Figure 6-45 Configuring retention rules by quantity

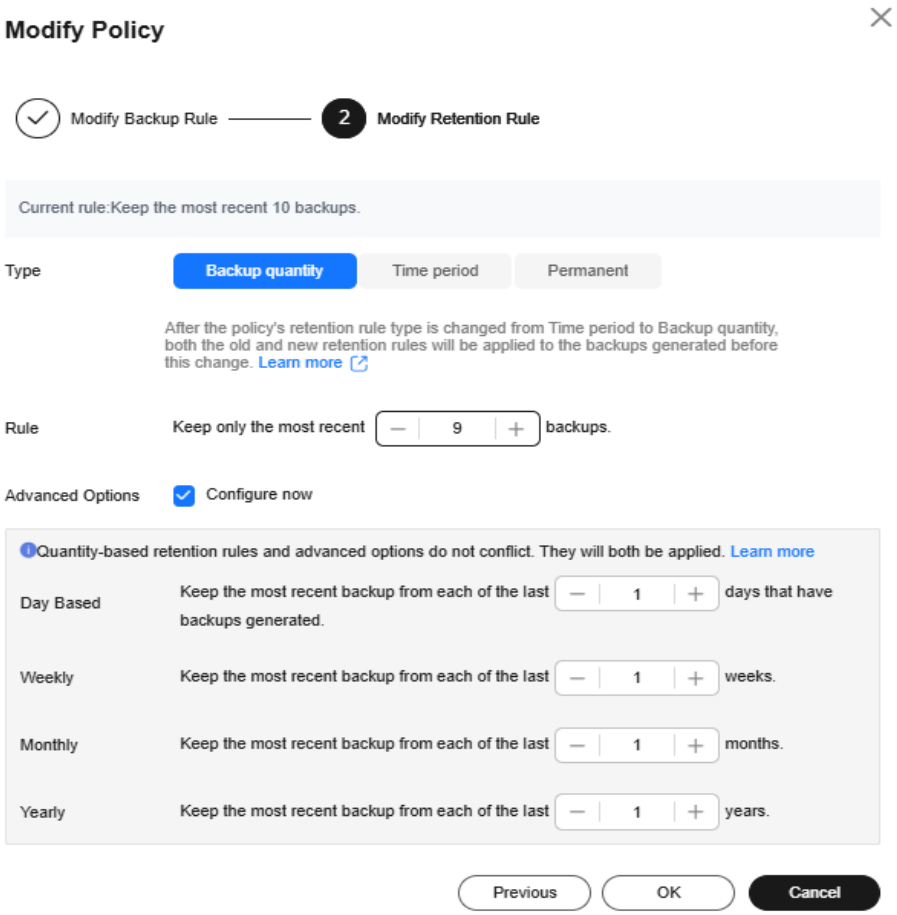


Table 6-24 Parameters for data retention by quantity

Parameter	Description	Example Value
Rule	Number of latest backups to be retained. **NOTICE** This setting takes effect no matter how you configure advanced options. For example, if the rule is configured to keep the most recent 30 backups, and **Advanced Options** are configured to keep the latest backup in the last 3 months (90 days), the latest 30 backups will be retained.	30

Parameter	Description	Example Value
(Optional) Advanced Options	You can retain the latest backup in a day, a week, a month, or a year. – Daily backup: The latest backup on each of the specified days is retained. – Weekly backup: The latest backup on each day of the specified weeks is retained. – Monthly backup: The latest backup on each day of the specified months is retained. – Yearly backup: The latest backup on each day of the specified years is retained. **NOTE** If multiple rules are configured, the rule with the longest retention period takes effect.	Keep the most recent backup from each of the last three months

- **Type**: **Time period**

  Table 6-25 describes the parameters for configuring a backup rule.

  Figure 6-46 Configuring retention rules by time period

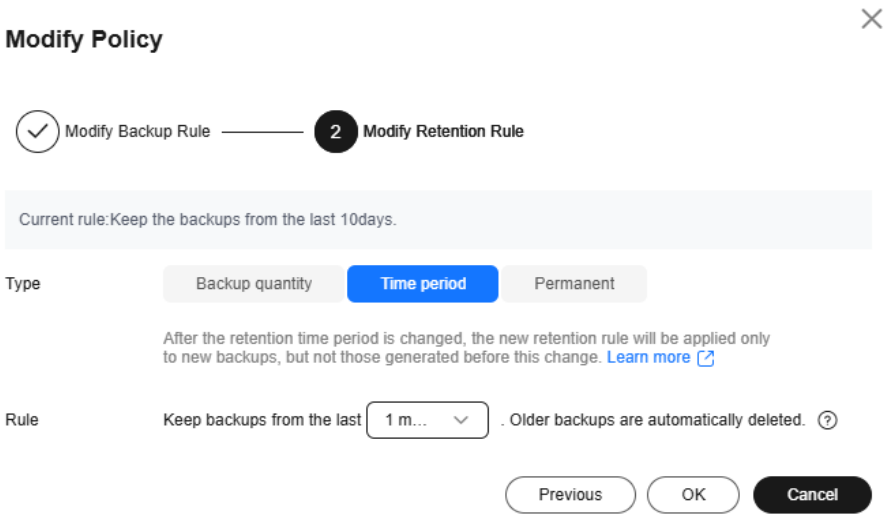


Table 6-25 Parameters for data retention by time period

Parameter	Description	Example Value
Rule	Select or customize a backup retention period. The system will automatically retain backups and delete old ones based on your settings. The retention period can be: – Days – 1 month – 3 months – 6 months – 1 year	3 months

- **Type**: **Permanent**

  Backup data will be permanently stored.

  NOTE

  If the **Retention Type** of a rule is changed from **Time period** to another, historical backups will still be deleted based on the **Time period** settings. For details, see **Why Does the Retention Rule Not Take Effect After Being Modified?**

Step 5 Click **OK**.

----End

6.3.8 Disabling Ransomware Prevention

Scenario

You can disable ransomware protection as needed. After protection is disabled, your server may be intruded by ransomware. Exercise caution when performing this operation.

Disabling Ransomware Prevention

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Server Protection** > **Ransomware Prevention**. Click the **Protected Servers** tab.

Step 4 Choose **More** > **Disable Protection** in the **Operation** column of the target server.

Step 5 Confirm the information and click **OK**.

----End

Follow-up Procedure

Disabling ransomware prevention does not stop data backup. If you no longer need backup, **disassociate your servers from CBR**. If you no longer need a backup vault, you can .

6.4 Application Process Control

6.4.1 Application Process Control Overview

HSS can learn the characteristics of application processes on servers and manage their running. Suspicious and trusted processes are allowed to run, and alarms are generated for malicious processes.

Constraints and Limitations

- Application process control is available only in HSS premium, WTP, and container editions. For details about how to purchase and upgrade HSS, see **Purchasing an HSS Quota** and **Upgrading Protection Quotas**.
- To use application process control, ensure the agent installed on the server falls within the following range. For details about how to upgrade the agent, see **Upgrading the Agent**.
  - Linux: 3.2.7 or later
  - Windows: 4.0.19 or later

Process of Using Application Process Control

Figure 6-47 Usage process

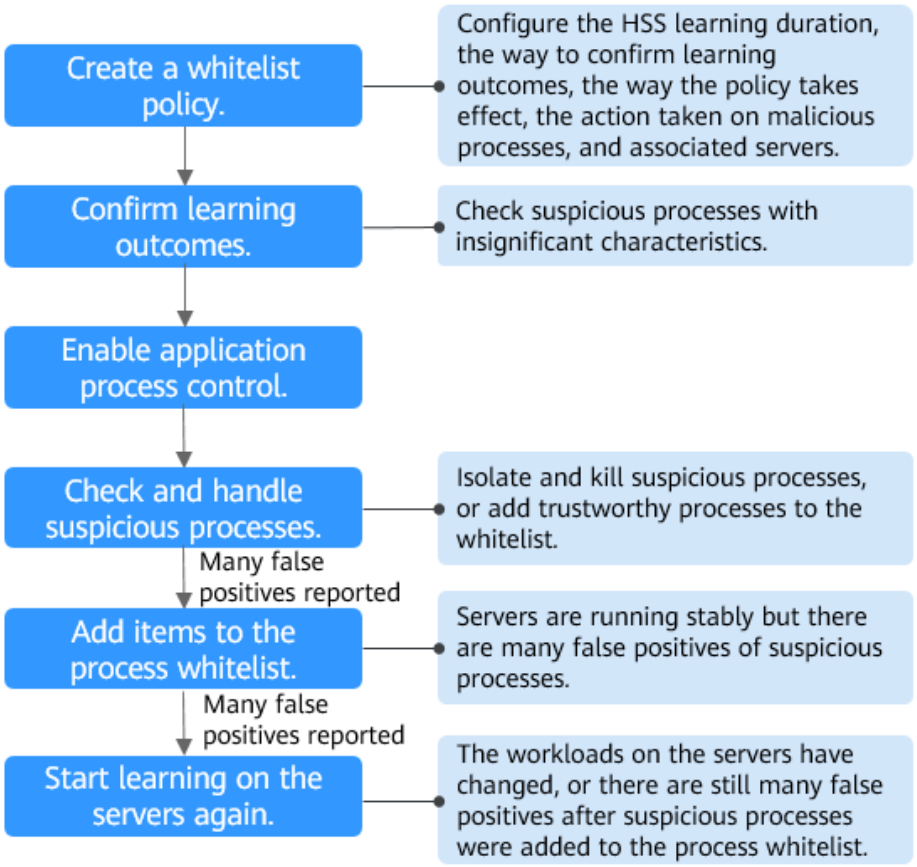


Table 6-26 Process of using application process control

Operation	Description
Create a whitelist policy.	A whitelist policy specifies how HSS learns server behaviors and protect application processes. Application process protection can be enabled only for servers associated with a whitelist policy.
Confirm learning outcomes.	After the HSS learns the application processes on servers, there may be some suspicious application processes with insignificant characteristics, and HSS cannot determine whether they are malicious or trustworthy. In this case, you need to confirm the learning outcomes.
Enable application process control.	Enable application process control on the servers associated with a policy.

Operation	Description
Check and handle suspicious processes.	HSS cannot determine whether some suspicious application processes with insignificant characteristics are trustworthy. You need to check their process details, determine whether they are trustworthy, and add them to the process whitelist.
(Optional) **Add items to the process whitelist.**	After HSS completes learning, if it regards many trustworthy application processes as suspicious, you can add these processes to the whitelist. HSS will extend the process whitelist after comparing the fingerprints of the processes it learned and those detected in asset fingerprint scans.
(Optional) **Start learning on the servers again.**	If you have added trustworthy processes to the whitelist but there are still many false positives reported, you can let HSS start learning again on the servers.

6.4.2 Creating a Whitelist Policy

Before enabling application process control, you need to create a whitelist policy and configure the HSS learning duration, the way to confirm learning outcomes, the way policy takes effect, and the action taken on suspicious or malicious processes. HSS will manage application processes based on your policies.

Creating a Whitelist Policy

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree, choose **Server Protection** > **Application Process Control**.

Step 4 Click the **Whitelist Policies** tab. Click **Create Policy**.

Step 5 In the **Create Policy** dialog box, configure policy parameters. For details about related parameters, see **Table 6-27**.

Figure 6-48 Creating a whitelist policy

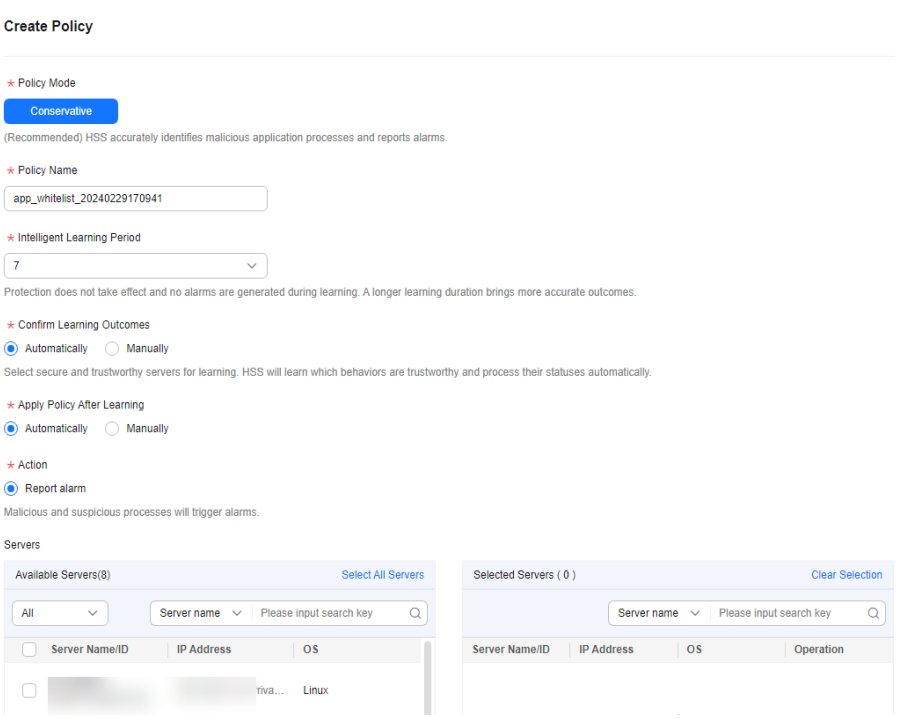


Table 6-27 Whitelist policy parameters

Parameter	Description	Example Value
Policy Mode	Mode of the application process control policy. The conservative mode is used by default. Trustworthy and suspicious processes are allowed to run. Alarms are generated only for malicious processes.	-
Policy Name	A whitelist policy name is generated by default. You are advised to set a custom name to facilitate management.	test
Intelligent Learning Period	Number of days that HSS learns the application processes on servers. A long learning period indicates accurate learning outcomes.	7

Parameter	Description	Example Value
Confirm Learning Outcomes	The way to confirm suspicious processes with insignificant characteristics after HSS completes learning on the servers associated with the policy. • **Automatically**: HSS automatically marks suspicious application processes with insignificant characteristics based on the application process signature database. • **Manually**: Choose **Application Process Control** > **Whitelist Policies**. Click a policy name. On the policy details page, click the **Process Files** tab and filter processes in the **To be confirmed** state. Manually mark suspicious processes with insignificant characteristics.	Automatically
Apply Policy After Learning	The way application process control is enabled after HSS completes learning on the servers associated with the policy. • **Automatically**: Application process control is automatically enabled after HSS completes learning on the servers associated with the policy. • **Manually**: Manually enable application process control as needed after HSS completes learning. For more information, see **Enabling Application Process Control**.	Automatically
Action	Action taken when a malicious process is detected. Alarms are generated for malicious processes.	Report alarm
Servers	Servers to be protected. The agent version falls within the following scope. For details about how to upgrade the agent, see **Viewing Server Protection Status**.	-

Step 6 Click **OK**.

You can view the created policy and its status in the policy list.

NOTE

After a whitelist policy is created, HSS automatically starts learning the application process characteristics of the servers associated with the policy. If the policy status changes to **Learning complete but not in effect**, you can **confirm learning outcomes**.

----End

Related Operations

Editing a whitelist policy

You can modify the policy mode, action, or protected servers in a whitelist policy.

Step 1 In the row of a policy, click **Edit** in the **Operation** column.

Step 2 In the **Edit Policy** dialog box, modify parameters and click **OK**.

----End

Deleting a whitelist policy

If you no longer need HSS to provide application process control for the servers associated with a policy and do not need to retain the application process information learned by HSS, you can delete the whitelist policy. If you need to enable application process control for the servers after the deletion, HSS will need to start learning again. Exercise caution when performing this operation.

Step 1 In the row of a policy, click **Delete** in the **Operation** column.

Step 2 In the displayed dialog box, click **OK**.

----End

6.4.3 Confirming Learning Outcomes

After HSS completes learning on the servers associated with a whitelist policy, there may be some suspicious processes with insignificant characteristics that need to be confirmed. You can manually or let HSS automatically mark them as suspicious, malicious, or trustworthy processes.

You can configure how to confirm learning outcomes when creating a whitelist policy. The value of **Confirm Learning Outcomes** can be:

- **Automatically**: Suspicious processes are automatically marked based on the application process intelligence.
- **Manually**: You need to manually check and mark suspicious processes. This section describes the detailed procedure.

Prerequisites

A policy has been created and its status is **Learning complete but not in effect**. For details, see **Creating a Whitelist Policy**.

Confirming Learning Outcomes

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree, choose **Server Protection** > **Application Process Control**.

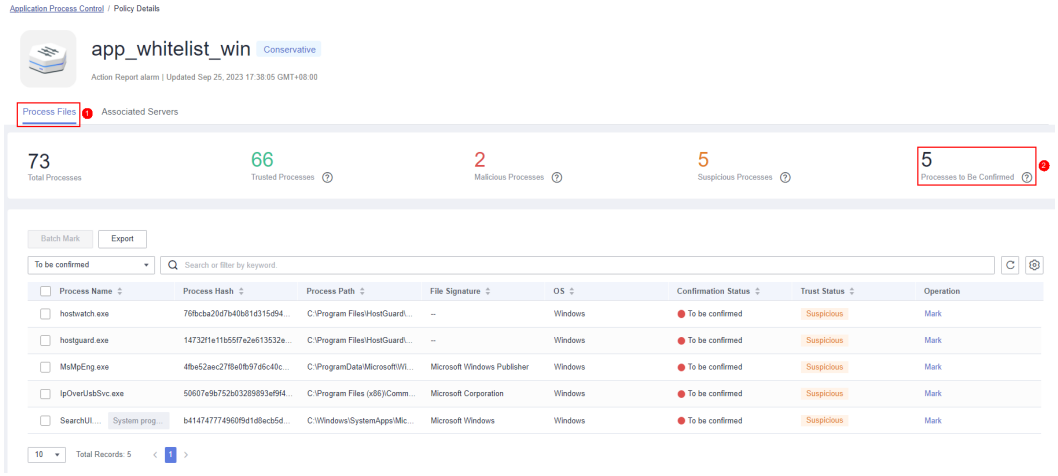
Step 4 Click the **Whitelist Policies** tab.

Step 5 Click the name of a policy whose **Policy Status** is **Learning complete but not in effect**. The **Policy Details** page is displayed.

Step 6 Click the **Process Files** tab.

Step 7 Click the number of processes to be confirmed.

Figure 6-49 Viewing processes to be confirmed



Step 8 Check whether the application processes are trustworthy based on their names and file paths.

Step 9 In the row of a process, click **Mark** in the **Operation** column.

You can also select all application processes and click **Batch Mark** above the process list.

Step 10 In the **Mark** dialog box, set **Trust Status**.

Select **Suspicious**, **Trusted**, or **Malicious**.

Step 11 Click **OK**.

----End

6.4.4 Enabling Application Process Control

HSS can control different types of application processes on servers. Suspicious and trusted processes are allowed to run, and alarms are generated for malicious processes.

You can configure how to enable application process control when creating a whitelist policy. The value of **Apply Policy After Learning** can be:

- **Automatically**: Application process control is automatically enabled after HSS completes learning on the servers associated with the policy.
- **Manually**: Manually enable application process control as needed after HSS completes learning. This section describes the detailed procedure.

Prerequisites

A whitelist policy has been created and the policy learning outcomes have been confirmed. For details, see **Creating a Whitelist Policy** and **Confirming Learning Outcomes**.

Enabling Application Process Control

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree, choose **Server Protection** > **Application Process Control**.

Step 4 Click the **Whitelist Policies** tab.

Step 5 In the **Operation** column of a policy, click **Enable Protection**.

You can also select multiple policies and click **Enable Protection** above the policy list.

Step 6 In the **Enable Protection** dialog box, click **OK**.

Step 7 Check the policy status. If **Policy Status** is **Learning complete and in effect**, application protection has been enabled.

----End

6.4.5 Checking and Handling Suspicious Processes

If HSS detects suspicious processes on servers, the processes will be displayed in the suspicious process list but will not trigger alarms. HSS cannot determine whether these processes are trustworthy based on the application process characteristics. To avoid affecting services, you need to check whether the processes can be trusted and add trustworthy ones to the process whitelist.

Checking and Handling Suspicious Processes

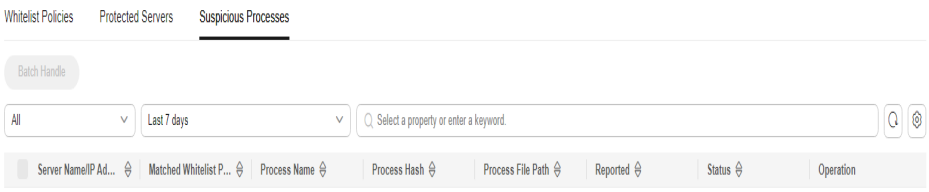
Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree, choose **Server Protection** > **Application Process Control**.

Step 4 Click the **Suspicious Processes** tab.

Figure 6-50 Viewing suspicious processes



Step 5 Determine whether a suspicious process is malicious based on its information, such as the hash value and file path.

Step 6 In the row of a process, click **Handle** in the **Operation** column.

You can also select multiple suspicious processes and click **Batch Handle** above the list.

Step 7 In the dialog box that is displayed, select an action.

Select **Add to process whitelist**.

Step 8 Click **OK**.

----End

6.4.6 Extending the Process Whitelist

After HSS completes learning on the servers associated a policy, if you find the learning outcomes are much fewer than the process fingerprints detected by HSS, or if too many suspicious processes are reported, you can extend the whitelist. HSS will compare the application processes it learned with and the asset fingerprints it detected, identify trustworthy processes, and add them to the process whitelist.

Extending the Process Whitelist

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree, choose **Server Protection** > **Application Process Control**.

Step 4 Click the **Whitelist Policies** tab.

Step 5 Click a policy name. The **Policy Details** page is displayed.

Step 6 Click the **Associated Servers** tab.

Step 7 In the row of a server, choose **More** > **Add to Whitelist** in the **Operation** column.

Step 8 Click **Compare** to compare the server process fingerprint with the application processes learned by HSS.

Step 9 Select trustworthy processes and click **OK**.

----End

6.4.7 Start Learning on Servers Again

If you have added trustworthy processes to the whitelist but there are still many false positives reported, you can let HSS start learning again on the servers.

Start Learning on Servers Again

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree, choose **Server Protection** > **Application Process Control**.

Step 4 Click the **Whitelist Policies** tab.

Step 5 Click a policy name. The **Policy Details** page is displayed.

Step 6 Click the **Associated Servers** tab.

Step 7 Select servers and click **Learn Again** above the list.

Step 8 In the dialog box that is displayed, click **OK**.

----End

6.4.8 Disabling Application Process Control

You can disable application process control for one or multiple servers at a time.

Disabling Protection for Servers Associated with a Policy

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree, choose **Server Protection** > **Application Process Control**.

Step 4 Click the **Whitelist Policies** tab.

Step 5 Disable application process control.

- Disable protection but retain the application process characteristics learned by HSS.
  a. In the **Operation** column of a policy, click **Disable Protection**. Alternatively, select multiple policies and click **Disable** above the policy list.
  b. Click **OK**.
- Disable protection and delete the application process characteristics learned by HSS.
  a. In the row of a policy, click **Delete** in the **Operation** column.
  b. Click **OK**.

Step 6 Check the policy list.

- Disable protection but retain the application process characteristics learned by HSS.
  If the **Policy Status** of the policy is **Learning complete but not in effect**, application process control has been disabled.
- Disable protection and delete the application process characteristics learned by HSS.
  If the policy is deleted from the policy list, application process control has been disabled.

----End

Disabling Protection for a Single Server

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree, choose **Server Protection** > **Application Process Control**.

Step 4 Click the **Whitelist Policies** tab.

Step 5 Click a policy name. The **Policy Details** page is displayed.

Step 6 Click the **Associated Servers** tab.

Step 7 Disable application process control.

- Disable protection but retain the association between the server and the policy.
  a. In the **Operation** column of a policy, click **Disable Protection**. Alternatively, select multiple policies and click **Disable** above the policy list.
  b. Click **OK**.
- Disable protection and disassociate the server from the policy.

  NOTE

  To change the protection policy associated with a server, remove the server from the policy settings, and then create or edit another protection policy to associate with the server.

  a. In the row containing the desired instance, click **Delete** in the **Operation** column.
  b. Click **OK**.

Step 8 Check the server list.

- Disable protection but retain the association between the server and the policy.

  If the **Policy Status** of the server is **Learning complete but not in effect**, application process control has been disabled.
- Disable protection and disassociate the server from the policy.

  If the server is deleted from the list, application process control has been disabled.

----End

6.5 File Integrity Monitoring

6.5.1 File Integrity Management Overview

File integrity management (FIM) monitors key files on Linux servers in real time; records file addition, modification, and deletion; and reports alarms, helping you detect suspicious changes in a timely manner.

File Integrity Monitoring Principles

HSS checks for suspicious changes by comparing the previous and current statuses of a file.

File Integrity Monitoring Scope

Some file monitoring paths are preconfigured in HSS. For details, see **Table 6-28**.

To add or remove monitored files, you can modify parameters in the **File Integrity** area in the **File Protection** policy. For details, see **Configuring Policies**.

Table 6-28 Default file monitoring paths

Type	File Path
bin	• /bin/ls • /bin/ps • /bin/bash • /bin/login
usr	• /usr/bin/ls • /usr/bin/ps • /usr/bin/bash • /usr/bin/login • /usr/bin/passwd • /usr/bin/top • /usr/bin/killall • /usr/bin/ssh • /usr/bin/wget • /usr/bin/curl

Constraints and Limitations

- File integrity management is available in HSS professional, enterprise, premium, WTP, and container editions. For details about how to purchase and upgrade HSS, see **Purchasing an HSS Quota** and **Upgrading Protection Quotas**.
- File integrity management applies only to Linux servers.

6.5.2 Viewing File Change Records

File integrity monitoring provides change statistics, change types, and file change records, helping you learn about file changes in real time and detect malicious changes in a timely manner.

Viewing File Change Overview

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Server Protection** > **File Integrity Monitoring**. Check the file change overview.

You can select an enterprise project for filtering.

Figure 6-51 File integrity monitoring page

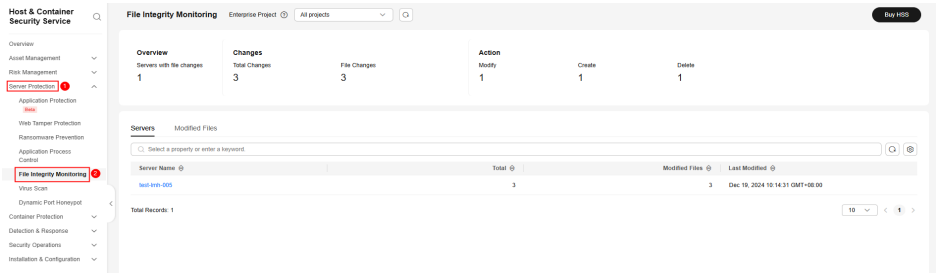


Table 6-29 File change overview parameters

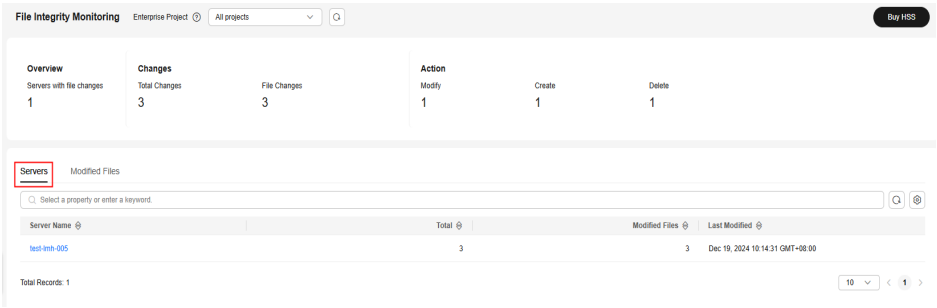
Parameter	Description
Overview	Number of servers where files are changed.
Changes	• **Total Changes**: total number of file changes. • **File Changes**: total number of file changes.
Action	• **Modify**: total number of file changes. • **Create**: total number of file creations. • **Delete**: total number of file deletions.

----End

Viewing the File Change Records of a Single Server

Step 1 In the server list, you can view the number of files and registry changes on a servers and the time when they were last changed.

Figure 6-52 Server list



Step 2 Click a server name to go to the server change details page. You can view the file change details of the server.

Figure 6-53 Viewing file change records on a server

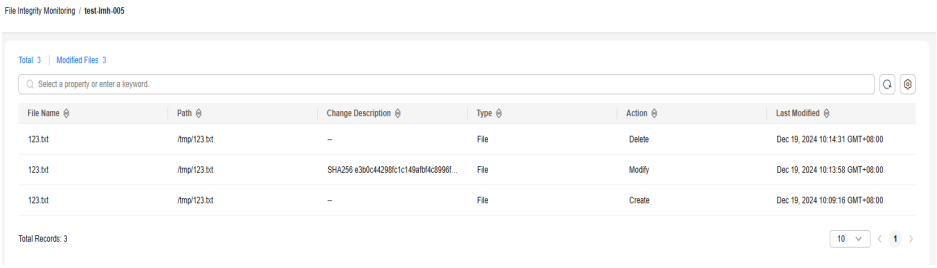


Table 6-30 Server file change parameters

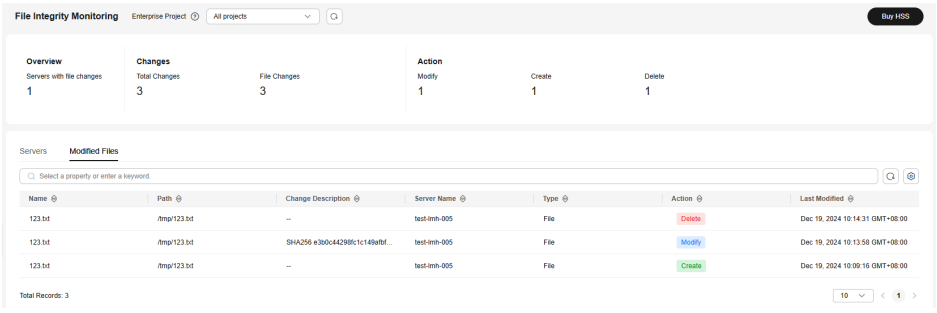
Parameter	Description	Example Value
File Name	Name of a modified file.	du
Path	Path of a modified file.	-
Change Description	Description of the change. To view the change details, hover the cursor over the change content.	-
Type	File	File
Action	How a file was modified. • Create • Modify • Delete	Modify
Last Modified	The last time when a file was modified.	-

----End

Viewing the File Change Records of All Servers

In the modified file list, you can view all file change records. For details, see **Table 6-30**.

Figure 6-54 Checking modified files



6.6 Virus Scan

6.6.1 Virus Scan Overview

The function uses the virus detection engine to scan virus files on the server. The scanned file types include executable files, compressed files, script files, documents, images, and audio and video files. You can perform quick scan and full-disk scan on the server as required. You can also customize scan tasks and handle detected virus files in a timely manner to enhance the virus defense capability of the service system.

Constraints and Limitations

- This function is available in HSS professional, enterprise, premium, WTP, and container editions. For details about how to purchase and upgrade HSS, see **Purchasing an HSS Quota** and **Upgrading Protection Quotas**.
  - Professional edition: quick scan and removal
  - Enterprise edition and other editions: quick, full-disk, and customized scan and removal
- To use virus scan and removal, ensure the agent installed on the server falls within the following ranges. For more information, see **Upgrading the Agent**.
  - Linux: 3.2.9 or later
  - Windows: 4.0.20 or later
- To use virus scan and removal, ensure the **AV Detection** policy is enabled. For details, see **Configuring Policies**.

Process of Virus Scan

1. **Scanning for Viruses**
2. **Viewing and Handling Viruses**

6.6.2 Scanning for Viruses

Once a static virus file is started, it may become a malicious process and become a security risk of servers. Therefore, scanning static virus files is important in server security protection. HSS virus scan function can scan virus files on servers and provides the following virus scan methods:

- **Quick Scan**: Quick virus scanning tasks can save time and costs. This function scans and removes preset key system files and directories.
- **Full-disk Scan**: A time-consuming full-disk virus scanning can be implemented on servers.
- **Custom Scan**: You can customize virus scanning tasks as required.

Constraints

- A virus scan uses a lot of memory, CPU, and I/O resources. Perform this operation during off-peak hours. For details about the resource usage, see

How Many CPU and Memory Resources Are Occupied by the Agent When It Performs Scans?

- The HSS professional edition only supports quick scan and removal.
- A full-disk scan does not check network directories.

Quick Scan

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Virus Scan**.

Step 4 Click **Quick Scan**. The dialog box is displayed.

Step 5 Set parameters related to the quick scan task as prompted.

- **Task Name**: You can customize a task name.
- **Select Server**: Select the server for which you want to perform quick scan.

  NOTE

  A server being scanned cannot be selected for another scan task.
- **Handling Policy**: Select the handling mode for the detected virus files.
  - **Automatic Handling**: Virus files that have been further confirmed are automatically isolated. Suspicious files are labeled with suspicious and need to be handled after manual confirmation.
  - **Manual Handling**: Alarms are generated only for detected infected files. You need to manually confirm the files before handling them.

Step 6 Click **Scan** and start the scan task.

----End

Full-disk Scan

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Virus Scan**.

Step 4 Click **Full-disk Scan**. The dialog box is displayed.

Step 5 Set parameters related to the full-disk scan task as prompted.

- **Task Name**: You can customize a task name.
- **Select Server**: Select the server for which you want to perform full-disk scan.

  NOTE

  A server being scanned cannot be selected for another scan task.
- **Handling Policy**: Select the handling mode for the detected virus files.

- **Automatic Handling**: Virus files that have been further confirmed are automatically isolated. Suspicious files are labeled with suspicious and need to be handled after manual confirmation.
- **Manual Handling**: Alarms are generated only for detected infected files. You need to manually confirm the files before handling them.

Step 6 Click **Scan** and start the scan task.

----End

Custom Scan

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Virus Scan**.

Step 4 Click **Custom Scan**.

Step 5 Set the parameters of the **Custom Scan** policy as prompted. For details about the parameters, see **Custom antivirus policy parameters**.

Table 6-31 Custom antivirus policy parameters

Parameter	Description
Task Name	Name of a custom antivirus task.
Startup Type	Scan task execution type. • **Scan Now**: Start a scan immediately. • **Scan Later**: Start a scan at the specified time. You can set the start time to a time within one month. • **Periodic Start**: Start a scan periodically based on your settings.
Start	If **Startup Type** is set to **Scan Later**, configure this parameter to set the start time of the scan.
Schedule	If **Startup Type** is set to **Periodic Start**, configure this parameter to set the scan period.
File Type	Type of the file to be scanned. Currently, the following types of files can be scanned: • **Executable**: executable files and dynamic link libraries (DLLs), such as .exe, .dll, and .so files. • **Compressed**: such as .zip, .rar, and .tar • **Script**: such as .bat, .py, and .ps1 • **Document**: such as TXT, DOC, and PDF • **Image**: such as BMP, JPG, and GIF • **Audio & Video**: such as MP3, MP4, and FLV files

Parameter	Description
(Optional) Directory Settings	Directory where virus-infected files need to be scanned. If this parameter is not set, full scan is performed by default. Full scan does not cover network directories.
(Optional) Exclude Specified Directories	Directories that do not require virus scan.
Select Server	Servers to be scanned. Servers using any of the following policies cannot be selected: • Policy whose **Startup Type** is **Scan Now**: A scan is in progress. • Policy whose **Startup Type** is **Scan Later**: A custom scan policy using the same startup time as the current policy is in effect. • Policy whose **Startup Type** is **Periodic Start**: A custom periodic scan has been scheduled.
Handling Policy	Select the processing mode for the detected virus files. • **Automatic Handling**: Virus files that have been further confirmed are automatically isolated. Suspicious files are labeled with suspicious and need to be handled after manual confirmation. • **Manual Handling**: Alarms are generated only for detected infected files. You need to manually confirm the files before handling them.

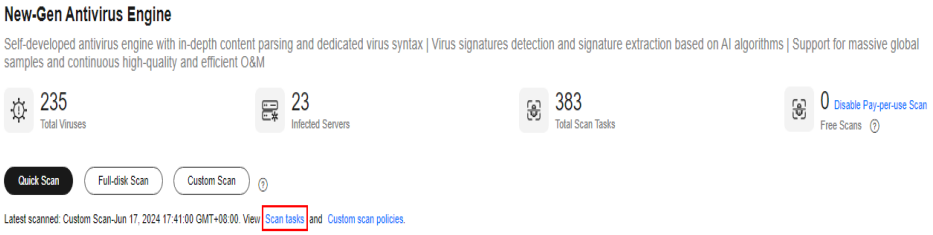
Step 6 Click **Scan** and start the scanning task.

----End

Viewing Scan Task Status

- Viewing task status
  a. On the **Virus Scan** page, click the **Scan tasks** to view the execution status of virus scan tasks.
     - To view information about specific scan tasks, configure search criteria in the search box above the scan task list.
     - To stop an ongoing scan task, click **Cancel** in the **Operation** column of the task.
     - To retry a failed scan task, click **Scan Again** in the **Operation** column of the task.

Figure 6-55 Viewing scan tasks



b. Click to view the scan status and number of scanned files of each server.

- To stop scanning a server, click **Cancel** in the **Operation** column of the server.
- To retry a failed scan on a server, click **Scan Again** in the **Operation** column of target server.

- Viewing and handling viruses

  After a virus scan task is complete, you can manually handle the detected virus files based on service requirements. For details, see **Viewing and Handling Viruses**.

6.6.3 Viewing and Handling Viruses

After the virus scanning is complete, the system handles the infected files based on the handling policy selected. The handling policies are as follows:

- **Automatic Handling**: Virus files that have been further confirmed are automatically isolated. Suspicious files are labeled with suspicious and need to be handled after manual confirmation.
- **Manual Handling**: Alarms are generated only for detected infected files. You need to manually confirm the files before handling them.

The section describes how to view and manually handle infected files.

Prerequisites

A virus scanning task has been executed. For details, see **Scanning for Viruses**.

Viewing and Handling Viruses

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click , and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Virus Scan**.

Step 4 View the scanned virus files.

Step 5 In the **Operation** column of a virus file, click **Handle**.

You can also select multiple virus files and click **Batch Handle** above the list to handle them in batches.

Step 6 In the **Handle Infected Files** dialog box, select a virus-infected file handling method. For details about the processing modes, see **Virus-infected file handling methods**.

Table 6-32 Virus-infected file handling methods

Parameter	Description
Mark as handled	Select this if you have manually handled the virus-infected file on the server.
Ignore	Ignore the virus-infected file alarm. If the virus-infected file alarm event occurs again, HSS generates an alarm.
Add to alarm whitelist	If you confirm that the virus file is falsely reported, you can add it to the alarm whitelist. After a file is added to whitelist, HSS will not generate alarms for the file.
Isolating files manually	After a file is isolated, the read/write operation cannot be performed on the virus-infected file. Isolated files are added to the **Isolated Files** and cannot harm your server. You can restore or delete isolated files as required. For details, see **Isolated Files**.

Step 7 Click **OK**.

After the alarm is handled, the status of the virus file alarm event changes to **Handled**. You can view the handling records on the historical handling records page. For details, see **Handling History**.

----End

Exporting Virus-infected File Alarms

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Virus Scan**.

Step 4 Above the virus-infected file alarm event list, click **Export** to export all virus-infected file alarm events to the local PC.

Step 5 View the export status in the upper part of the virus scan page. After the export is successful, obtain the exported information from the default file download address on the local host.

NOTICE

Do not close the browser page during the export. Otherwise, the export task will be interrupted.

----End

6.6.4 Managing Custom Antivirus Policies

A custom antivirus policy is generated for each custom antivirus task that starts periodically or at a specified time point. You can modify or delete such policies as needed.

The policy of a task scheduled to be executed at a specified time point will expire after execution, and will be marked with an expiration tag. You can change the startup time of the policy and enable it again.

Editing a Custom Scan Policy

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Virus Scan**.

Step 4 Choose **Custom scan policies** to view existing user-defined antivirus policies.

Step 5 In the **Operation** column of a policy, click **Edit**. Modify the policy on the edit page.

Step 6 Click **OK**.

----End

Delete a Custom Scan Policy

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Virus Scan**.

Step 4 Choose **Custom scan policies** to view existing user-defined antivirus policies.

Step 5 Click **Delete** in the **Operation** column of a policy.

To delete policies in batches, you can also select multiple policies and click **Delete** in the upper left corner of the list.

Step 6 Click **OK**.

----End

6.6.5 Managing Isolated Files

Isolated files are added to the **Isolated Files** and cannot harm your server. You can also refer to this section to restore or delete isolated files as required.

Restoring Isolated Files

If you want to de-isolate an isolated file, you can restore it by referring to the following steps.

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Virus Scan**.

Step 4 Click **Isolated Files** in the upper right corner of the page. The dialog box is displayed.

Step 5 Click **Restore** in the **Operation** column of the list. The dialog box is displayed.

Step 6 Click **OK**.

NOTE

Recovered files will no longer be isolated. Exercise caution when performing this operation.

----End

Deleting Isolated Files

If you want to permanently delete an isolated file, you can perform the deletion operation by referring to the following steps.

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Virus Scan**.

Step 4 Click **Isolated Files** in the upper right corner of the page. The dialog box is displayed.

Step 5 Click **Delete** in the **Operation** column of the list. The dialog box is displayed.

To delete isolated files in batches, select multiple isolated files and click **Delete** in the upper left corner of the list.

Step 6 Click **OK**.

NOTE

Deleted isolated files cannot be restored. Exercise caution when performing this operation.

----End

6.7 Dynamic Port Honeypot

6.7.1 Dynamic Port Honeypot Overview

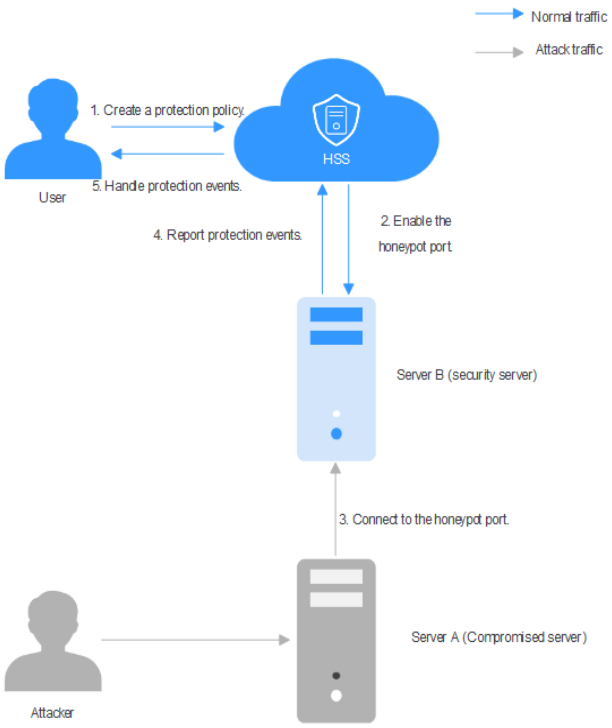
What is Dynamic Port Honeypot?

The dynamic port honeypot function is a deception trap. It uses a real port as a bait port to induce attackers to access the network. In the horizontal penetration

scenario, the function can effectively detect attackers' scanning, identify faulty servers, and protect real resources of the user.

You can enable the dynamic port honeypot using recommended ports or user-defined ports to deceive compromised servers and reduce the risk of resources intrusion. **Figure 6-56** shows how the dynamic port honeypot works.

Figure 6-56 Dynamic port honeypot protection



How Do I Use Dynamic Port Honeypot?

Figure 6-57 shows the process of using the dynamic port honeypot.

Figure 6-57 Process of using the dynamic port honeypot

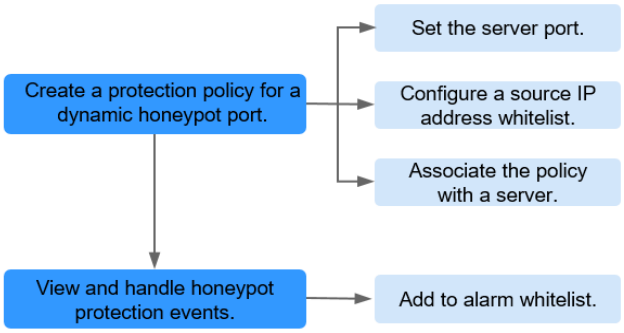


Table 6-33 Process of using the dynamic port honeypot

Operation	Description
Creating a Protection Policy for a Dynamic Honeypot Port	Enable the server port of dynamic port function, configure the source IP address whitelist, and bind the protected server.
Viewing and Handling Honeypot Protection Events	The dynamic port honeypot function reports an alarm when a potentially compromised server proactively connects to a honeypot port. You can handle the alarm based on service requirements.

Constraints and Limitations

- Dynamic port honeypots apply only to servers that are not bound to EIPs.
- Dynamic port honeypots are available only in HSS premium, web tamper protection, and container editions. For details about how to purchase and upgrade HSS, see **Purchasing an HSS Quota** and **Upgrading Protection Quotas**.
- To use the dynamic port honeypots, ensure that the agent installed on the server falls within the following ranges. For more information, see **Upgrading the Agent**.
  - Linux: 3.2.10 or later.
  - Windows: 4.0.22 or later.

6.7.2 Creating a Protection Policy for a Dynamic Honeypot Port

Scenario

The dynamic port honeypot function uses a real port as a honeypot port to induce attackers to access the network. Therefore, when enabling dynamic port honeypot protection, you need to create a protection policy to add a server port as a honeypot port and bind it to the server for protection.

This chapter describes how to create a dynamic port honeypot protection policy.

Constraints and Limitations

- A maximum of 10 honeypot ports can be added to a server.
- A honeypot port can be bound to only one protocol. Both TCP and TCP6 are supported.

Creating a Protection Policy for a Dynamic Honeypot Port

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Dynamic Port Honeypot**.

Step 4 (Optional) If you have enabled the enterprise project, select the enterprise project where the target server resides from the drop-down list.

Step 5 On the **Servers** tab, click **Create a Protection Policy**. The dialog box is displayed.

Step 6 Create a protection policy as prompted.

1. Configure the policy and click **Next**. For details about related parameters, see Table 6-34

Table 6-34 Parameters for creating a protection policy

Parameter	Description
Policy Name	You can retain the default name or enter a name that is easy to identify.
OS Type	Select an OS type of a server to which you want to add the dynamic port honeypot function.
Protected Port	Select a server port that implements the dynamic port honeypot function. – **Recommended Port**: For Linux, common Windows ports are recommended. For Windows, common Linux ports are recommended. – **Custom Port**: You can add custom ports or delete some recommended ports as required. **NOTE** Ensure that the port to be added is not occupied by other services. If the port is occupied, the dynamic port honeypot function fails to be enabled.
(Optional) Source IP address whitelist	By default, the servers that proactively connect to the dynamic honeypot port are compromised intranet servers. Once a suspicious connection behavior is detected, an alarm is reported. Therefore, if a trusted server may connect to the port, you are advised to add the IP address to the source IP address whitelist.

2. Select the target server and click **Save and Enable**.

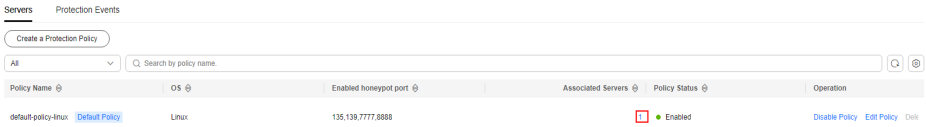
   Note that the dynamic port honeypot can be selected only for the servers that meet all the following conditions:

   – The HSS premium edition or higher has been enabled on the server.

- The server agent is online. The Windows agent version is 4.0.22 or later, and the Linux agent version is 3.2.10 or later.
- No dynamic port honeypot policies have been bound to the server.
- The OS type of the server is the same as that specified in **Step 6.1**.
- No EIPs have been bound to the server.

Step 7 In the **Associated Servers** column of the created target policy, click the value. The dialog box is displayed.

Figure 6-58 Associate servers



Step 8 In the **Port Status** column of the associated server, check the port status.

To enable the port again, click the **Edit Policy** to select server, and then bind the server. For details about how to edit a policy, see **Editing a Policy**.

----End

FAQs

What can I do if the port fails to be enabled?

- Possible cause 1: The port is occupied by other services.

  Solution: Add other idle ports by editing the policy.
- Possible cause 2: System resources are insufficient.

  Solution: Free up some system resources, click the **Edit Policy** to select server, and then bind the server. For details about how to edit a policy, see **Editing a Policy**.

6.7.3 Viewing and Handling Honeypot Protection Events

Scenario

By default, the servers that proactively connect to the dynamic honeypot port are compromised intranet servers. Once a suspicious connection behavior is detected, an alarm is reported.

This chapter describes how to view and handle these alarms and events.

Viewing and Handling Honeypot Protection Events

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

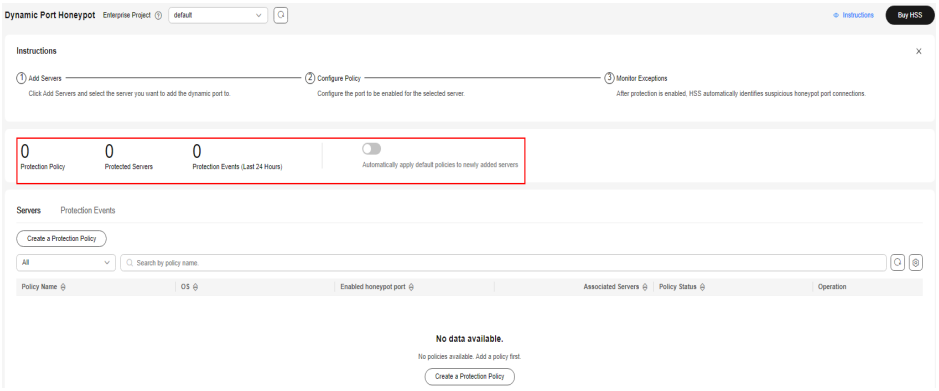
Step 3 Choose **Server Protection** > **Dynamic Port Honeypot**.

Step 4 (Optional) If you have enabled the enterprise project, select the enterprise project where the target server resides from the drop-down list.

Step 5 Under the introductions, view the protection overview.

- You can view the number of protection policies, protected servers, and protection events.
- You can enable the **Automatically apply default policies to newly add servers**. If  is displayed, the function is enabled.

Figure 6-59 Protection overview



Step 6 Click the **Protection Events** tab to view honeypot protection events. For details about the parameters in the event list, see **Table 6-35**.

Table 6-35 Parameters in the event list

Parameter	Description
Alarm Name	The name of an alarm event. Click an alarm name to view the details. For details, see **Table 6-37**.
Alert Severity	Alarm threat level. Honeypot protection events are classified into the following two levels: • High risk: The remote server connects to the honeypot port for multiple times. • Medium risk: The remote server is connected to the honeypot port.
Alarm Summary	Summary of alarm events. Based on the information, you can learn about the server that may be compromised and the connection between the server and the port.
Affected Asset	Dynamic port server connected to the compromised server.
Alarm Reported	Time when an alarm occurred.
Status	Alarm handling status, which can be **Handled** or **To be handled**.
Operation	You can handle alarm events.

Step 7 After confirming the alarm information, click **Handle** in the **Operation** column of the event whose **Status** is **To be handled**. The **Handle Alarm** dialog box is displayed.

If you need to handle multiple alarm events in batches, click **Batch Handle** in the upper left corner of the list.

Step 8 Select a solution. For details about the solution, see **Table 6-36**.

Table 6-36 Parameters for handling alarm events

Parameter	Description
Action	• **Ignore**: Ignore the alarm event. The alarm is still generated when the next threat event occurs. • **Mark as handled**: You have manually isolated ports for the compromised server. • **Add to alarm whitelist**: Add the trusted server that triggers an alarm to the whitelist so that no alarm will be generated when similar events occur.
Batch Handle	If you need to handle the same alarm event at the same time, you can select the parameter.
(Optional) Remarks	To facilitate identification of the current processing, supplementary description can be provided.

Step 9 Click **OK**.

----End

Alarm Details Parameters

For details about the parameters on the alarm details, see **Table 6-37**.

Table 6-37 Alarm details parameters

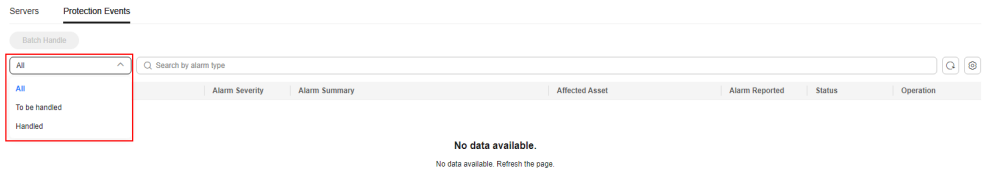
Parameter	Description
Intelligence Engine	Detection engines used by HSS, including the virus detection engine, AI detection engine, and malicious intelligence detection engine.
Attack Status	Status of the current threat.
First Occurred	Time when an attack alarm is generated for the first time
Alarm ID	Unique ID of an alarm

Parameter	Description
ATT&CK Phase	Attack model used by attackers in each phase.
Last Occurred	Time when an attack alarm was last generated
Alarm Information	Detailed information about an alarm, including the alarm description, alarm summary, affected assets, and handling suggestions.
Forensics	The dynamic port honeypot function checks the network forensics information of the attack source.
Similar Alarms	Alarms that are similar to the current alarm event. You can handle the alarm according to the handling method of the similar alarms.

Filtering Events in Different Handling Statuses

Select an event in the target status from the drop-down list.

Figure 6-60 Filtering events



6.7.4 Managing Dynamic Port Honeypot Protection Policies

Scenario

After a policy is created, you can manage the policy based on your protection requirements.

- **Disabling a policy**: Disable the dynamic port honeypot function temporarily.
- **Enabling a policy**: Enable a disabled function of dynamic port honeypot.
- **Editing a policy**: Modify the protection policy information of dynamic port honeypot, for example, adding or deleting ports, and unbinding or binding servers.
- **Deleting a policy**: Delete the dynamic port honeypot protection policy and disable the function.

Constraints and Limitations

The default policy cannot be deleted.

Disabling a Policy

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Dynamic Port Honeypot**.

Step 4 (Optional) If you have enabled the enterprise project, select the enterprise project where the target server resides from the drop-down list.

Step 5 In the row containing the target policy, click **Disable Policy** in the **Operation** column. The dialog box is displayed.

Step 6 Confirm the information and click **OK**.

----End

Enabling a Policy

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Dynamic Port Honeypot**.

Step 4 (Optional) If you have enabled the enterprise project, select the enterprise project where the target server resides from the drop-down list.

Step 5 In the row containing the target policy, click **Enable Policy** in the **Operation** column. The dialog box is displayed.

Step 6 Confirm the information and click **OK**.

----End

Editing a Policy

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Dynamic Port Honeypot**.

Step 4 (Optional) If you have enabled the enterprise project, select the enterprise project where the target server resides from the drop-down list.

Step 5 In the row containing the target policy, click **Edit Policy** in the **Operation** column. The dialog box is displayed.

Step 6 Configure a policy.

You can modify the policy name, protected port, and source IP address whitelist.

Step 7 Click **Next**.

Step 8 Select a server to be bound.

Step 9 Click **OK**.

----End

Delete a Policy

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Dynamic Port Honeypot**.

Step 4 (Optional) If you have enabled the enterprise project, select the enterprise project where the target server resides from the drop-down list.

Step 5 In the row containing the target policy, click **Delete** in the **Operation** column. The **Delete Policy** dialog box is displayed.

Step 6 Ensure that all information is correct and click **OK**.

----End

6.7.5 Managing Associated Servers

Scenario

For servers associated with a protection policy, you can **switch the protection policy** for servers or **unbind the protection policy** from the servers.

Changing a Policy

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Dynamic Port Honeypot**.

Step 4 (Optional) If you have enabled the enterprise project, select the enterprise project where the target server resides from the drop-down list.

Step 5 In the **Associated Servers** column of the target policy, click the value. The dialog box is displayed.

Step 6 Click **Change Policy** in the **Operation** column. The **Change Policy** dialog box is displayed.

To switch protection policies for multiple servers, select all target servers and click **Change Policy** in the upper left corner of the list.

Step 7 Select a protection policy as prompted.

Step 8 Click **OK**.

----End

Unbinding a Policy

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click  , and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Server Protection** > **Dynamic Port Honeypot**.

Step 4 (Optional) If you have enabled the enterprise project, select the enterprise project where the target server resides from the drop-down list.

Step 5 In the **Associated Servers** column of the target policy, click the value. The dialog box is displayed.

Step 6 Click **Unbind** in the **Operation** column. The **Unbind** dialog box is displayed.

To unbind multiple servers, select all target servers and click **Unbind** in the upper left corner of the list.

Step 7 Confirm the information and click **OK**.

----End

7 Container Protection

7.1 Container Firewalls

7.1.1 Container Firewall Overview

A container firewall controls and intercepts network traffic inside and outside a container cluster to prevent malicious access and attacks.

Constraints and Limitations

- The container firewall is available only in the HSS container edition. For details about how to purchase HSS, see **Purchasing an HSS Quota**.
- The following container network models can be protected:
  - CCE cluster: container tunnel network model, cloud native network 2.0 model, and VPC network model
  - Other Kubernetes clusters: container tunnel network model
- In a CCE cluster, to operate resource objects, you need to obtain either of the following operation permissions:
  - IAM permissions: Tenant Administrator or CCE Administrator.
  - Namespace permissions (authorized by Kubernetes RBAC): O&M permissions. For details about how to configure permissions, see **Configuring namespace permissions**.

How It Works

A container firewall controls the access scope of source and destination containers based on the access policies for pods and servers, blocking internal and external malicious accesses and attacks.

Related Operations

- **Configuring a Network Defense Policy (for a Cluster Using the Container Tunnel Network Model)**

- **Configuring a Network Defense Policy (for a Cluster Using the VPC Tunnel Network Model)**
- **Configuring a Network Defense Policy (for a Cluster Using the Cloud Native Network 2.0 Model)**

7.1.2 Configuring a Network Defense Policy (for a Cluster Using the Container Tunnel Network Model)

You can configure network defense policies to limit the access traffic to the pods in a cluster using the container tunnel network model. If no network policies are configured, all the inbound and outbound traffic of the pods in a namespace are allowed by default.

This section describes how to configure a network policy for a cluster using the container tunnel network model.

Constraints

- Only clusters that use the tunnel network model support network policies. Network policies are classified into the following types:
  - Inbound rules, which are supported by all cluster versions.
  - Outbound rules, which are supported only by clusters in version 1.23 and later.
- Network isolation is not supported for IPv6 addresses.

Creating a Network Defense Policy

You can create a network defense policy in various ways.

Creating a Network Policy from YAML

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click  , and choose **Security & Compliance** > **HSS**.

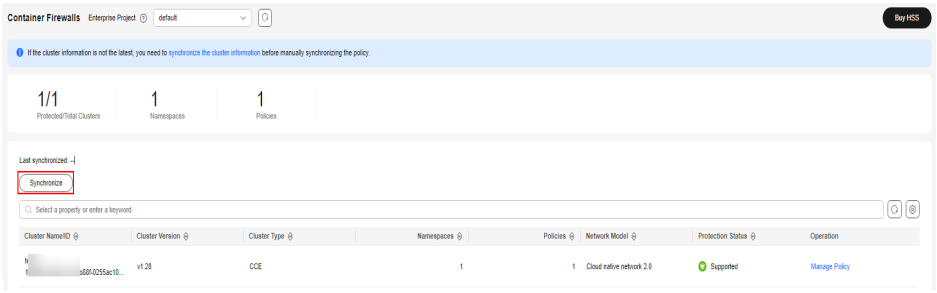
Step 3 In the navigation pane on the left, choose **Container Protection** > **Container Firewalls**.

Step 4 (Optional) If you have enabled the enterprise project, select the enterprise project where the target server resides from the drop-down list.

Step 5 Click **Synchronize** above the cluster list to synchronize the policies created on clusters.

The synchronization takes about 1 to 2 minutes. Wait for a while and click  in the upper right corner of the list to refresh and view the latest data.

Figure 7-1 Synchronizing CCE Cluster policies



Step 6 Click **Manage Policy** in the **Operation** column of a cluster using the container tunnel network model.

Step 7 Click **Create from YAML** above the policy list.

Step 8 On the YAML creation page, enter content or click **Import**.

An example of a network policy created from YAML is as follows:

```
apiVersion: networking.k8s.io/v1
kind: NetworkPolicy
metadata:
  name: test-network-policy
  namespace: default
spec:
  podSelector:                # The rule takes effect for pods with the role=db label.
    matchLabels:
      role: db
  policyTypes:
    - Ingress
    - Egress
  ingress:                    # Ingress rule
    - from:
        - namespaceSelector: # Only namespaces with project=myproject can be accessed.
            matchLabels:
              project: myproject
        - podSelector:            # Only the traffic from the pods with the role=frontend label is allowed.
            matchLabels:
              role: frontend
      ports                   # Only TCP can be used to access port 6379.
        - protocol: TCP
          port: 6379
  egress:                     # Egress rule
    - to:
        - ipBlock:              #Only the 10.0.0.0/24 network segment of the destination object can be accessed.
            cidr: 10.0.0.0/24
      ports:                  # Only TCP can be used to access port 6379 of the destination object.
        - protocol: TCP
          port: 6379
```

Step 9 Click **OK**.

----End

Creating a Network Policy on the GUI

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

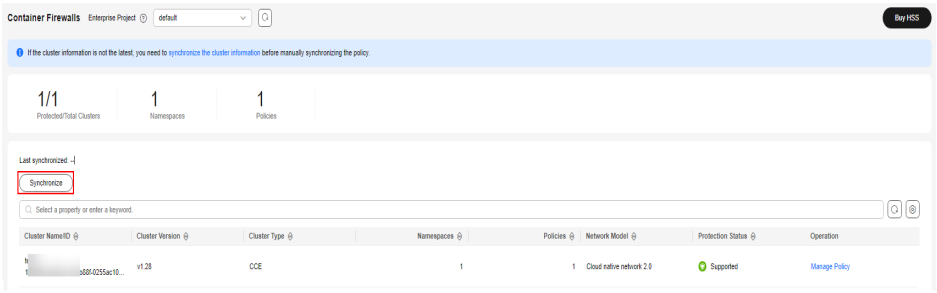
Step 3 In the navigation pane on the left, choose **Container Protection** > **Container Firewalls**.

Step 4 (Optional) If you have enabled the enterprise project, select the enterprise project where the target server resides from the drop-down list.

Step 5 Click **Synchronize** above the cluster list to synchronize the policies created on clusters.

The synchronization takes about 1 to 2 minutes. Wait for a while and click in the upper right corner of the list to refresh and view the latest data.

Figure 7-2 Synchronizing CCE Cluster policies



Step 6 Click **Manage Policy** in the **Operation** column of a cluster using the container tunnel network model.

Step 7 Click **Create Network Policy** above the network policy list.

- **Policy Name**: Enter a network policy name.
- **Namespace**: Select a namespace for the network policy.
- **Selector**: Enter a key and a value to set the pod to be associated, and click **Add**. You can also click **Reference Workload Label** to reference the label of an existing workload. If this parameter is not specified, all pods in the namespace are associated by default.
- Inbound rule: Click **Add Rule** in the **Inbound Rules** area. For more information, see **Table 7-1**.

Table 7-1 Adding an inbound rule

Parameter	Description
Protocol & Port	Enter the inbound protocol type and port number of the pods to be associated. Currently, TCP and UDP are supported. If this parameter is not specified, all access traffic is allowed.
Source Namespace	Select a namespace whose objects can be accessed. If this parameter is not specified, access to the objects that belong to the same namespace as the current policy is allowed.
Source Pod Label	Select a label. Pods with this label can be accessed. If this parameter is not specified, all pods in the namespace can be accessed.

- Outbound rule: Click **Add Rule** in the **Outbound Rules** area. For more information, see **Table 7-2**.

Table 7-2 Adding an outbound rule

Parameter	Description
Protocol & Port	Enter the port and protocol of destination objects. If this parameter is not specified, access is not limited.
Destination CIDR Block	Configure CIDR blocks. This parameter allows requests to be routed to a specified CIDR block (and not to the exception CIDR blocks). Separate the destination and exception CIDR blocks by vertical bars (|), and separate multiple exception CIDR blocks by commas (,). For example, 172.17.0.0/16|172.17.1.0/24,172.17.2.0/24 indicates that 172.17.0.0/16 is accessible, but not for 172.17.1.0/24 or 172.17.2.0/24.
Destination Namespace	Namespace where the destination object is located. If not specified, the object belongs to the same namespace as the current policy.
Destination Pod Label	Select a label. Pods with this label can be accessed. If this parameter is not specified, all pods in the namespace can be accessed.

Step 8 Click **OK**.

----End

Related Operations

Modifying or deleting a network policy

Step 1 Log in to the HSS console.

Step 2 In the navigation pane on the left, choose **Container Protection** > **Container Firewalls**.

Step 3 (Optional) If you have enabled the enterprise project, select the enterprise project where the target server resides from the drop-down list.

Step 4 Click **Manage Policy** in the **Operation** column of a cluster using the container tunnel network model.

Step 5 Click **Synchronize** above the network policy list.

The synchronization takes about 1 to 2 minutes. Wait for a while and click in the upper right corner of the list to refresh and view the latest data.

Step 6 Manage policies as needed.

- Modifying a policy
  - In the **Operation** column of a policy, click **Edit YAML**. On the YAML page, modify the YAML content and click **OK**.

  - In the **Operation** column of a policy, click **Update**. Modify the network policy information and click **OK**.
- Deleting a policy
  - In the **Operation** column of a policy, click **Delete**. In the confirmation dialog box, click **OK**.
  - Select one or multiple policies and click **Delete** above the policy list. In the displayed dialog box, click **OK**.

----End

7.1.3 Configuring a Network Defense Policy (for a Cluster Using the VPC Tunnel Network Model)

For clusters using the VPC network model, you can configure network defense policies to limit the traffic that accesses the servers where containers are deployed. If no security group rules are configured, all incoming and outgoing traffic of the servers is allowed by default.

This section describes how to configure a network defense policy for a cluster using the VPC network model.

Creating a Network Defense Policy

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click  , and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Container Protection** > **Container Firewalls**.

Step 4 (Optional) If you have enabled the enterprise project, select the enterprise project where the target server resides from the drop-down list.

Step 5 Click **Synchronize** above the cluster list to synchronize the policies created on clusters.

The synchronization takes about 1 to 2 minutes. Wait for a while and click  in the upper right corner of the list to refresh and view the latest data.

Step 6 Click **Manage Policy** in the **Operation** column of a cluster using the VPC network model.

Step 7 In the **Operation** column of a node, click **Configure Policy**.

Step 8 In the displayed dialog box, click **OK** to go to the cloud server console.

Step 9 Click the **Security Groups** tab and view security group rules.

Step 10 Click **Manage Rule**. The security group page is displayed.

Step 11 Configure inbound and outbound rules.

For details, see **Adding a Security Group Rule**.

----End

Related Operations

Modifying or deleting a network defense policy

Step 1 Go to the HSS console.

Step 2 In the navigation pane on the left, choose **Container Protection** > **Container Firewalls**.

Step 3 (Optional) If you have enabled the enterprise project, select the enterprise project where the target server resides from the drop-down list.

Step 4 Click **Manage Policy** in the **Operation** column of a cluster using the VPC network model.

Step 5 Click **Synchronize** above the node list to synchronize node information.

The synchronization takes about 1 to 2 minutes. Wait for a while and click in the upper right corner of the list to refresh and view the latest data.

Step 6 In the **Operation** column of a node, click **Configure Policy**.

Step 7 In the displayed dialog box, click **OK** to go to the cloud server console.

Step 8 Click the **Security Groups** tab and view security group rules.

Step 9 Click **Manage Rule**. The security group page is displayed.

Step 10 Click a rule tab and manage rules as needed.

- Modifying a rule

  In the **Operation** column of a rule, click **Modify**. Modify the rule and click **OK**.

- Deleting a rule

  In the **Operation** column of a rule, click **Delete**. In the confirmation dialog box, click **OK**.

----End

7.1.4 Configuring a Network Defense Policy (for a Cluster Using the Cloud Native Network 2.0 Model)

For clusters using the cloud native network 2.0 model, you can configure network defense policies to limit the traffic that accesses the servers where containers are deployed. If no security group policies are configured, all incoming and outgoing traffic of the servers is allowed by default.

This chapter describes how to create a network defense policy for a cluster using the cloud native network 2.0 model.

Creating a Network Defense Policy

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click , and choose **Security & Compliance** > **HSS**.

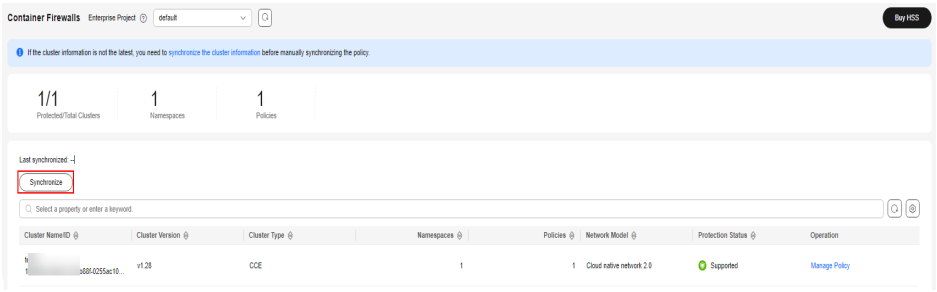
Step 3 In the navigation pane on the left, choose **Container Protection** > **Container Firewalls**.

Step 4 (Optional) If you have enabled the enterprise project, select the enterprise project where the target server resides from the drop-down list.

Step 5 Click **Synchronize** above the cluster list to synchronize the policies created on clusters.

The synchronization takes about 1 to 2 minutes. Wait for a while and click in the upper right corner of the list to refresh and view the latest data.

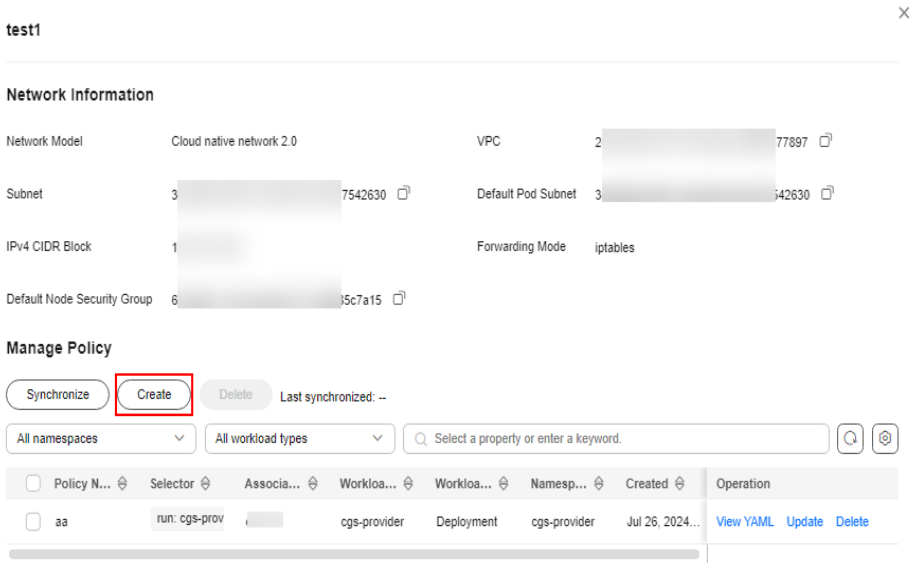
Figure 7-3 Synchronizing CCE Cluster policies



Step 6 Click **Manage Policy** in the **Operation** column of a cluster using the cloud native network 2.0 model.

Step 7 Click **Create** above the policy list. The **Create a Security Group Policy** dialog box is displayed.

Figure 7-4 Policy management



Step 8 Enter the policy information as prompted. For details about related parameters, see **Table 7-3**.

Figure 7-5 Create a security group policy

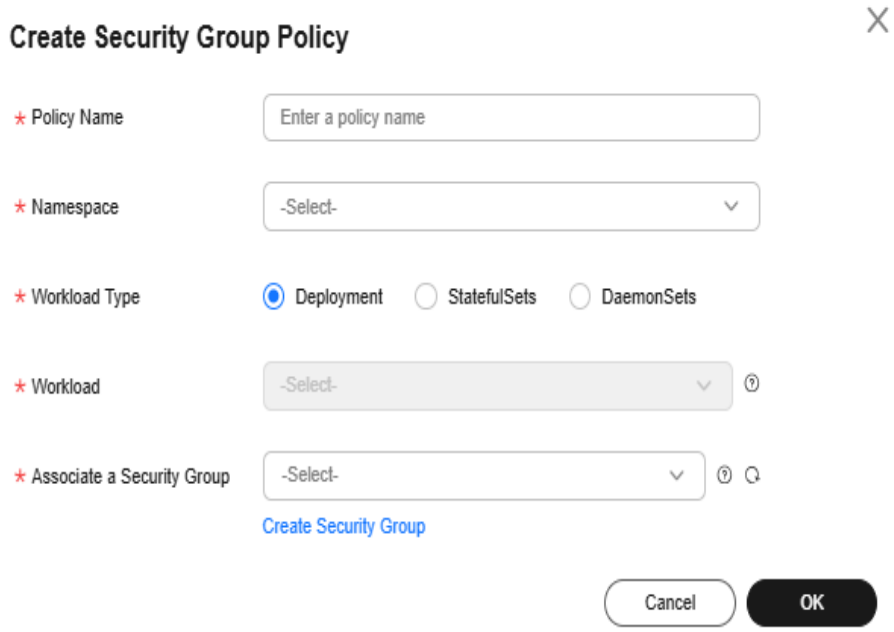


Table 7-3 Parameters for creating a security group policy

Parameter	Description
Policy	Enter a policy name.
Namespace	A namespace to be selected.
Workload Type	Select a load type. The following types are supported: • Deployment • StatefulSets • DaemonSets
Workload	Select the target workload.
Associate a Security Group	Select a security group to be associated. Each policy can be associated with a maximum of five groups. The existing security groups in the list are those you have created in the VPC service. To create a security group, click **Create a Security Group** to go to the VPC console. For details, see **Create a Security Group**.

Step 9 After entering the policy information, click **OK**.

----End

Related Operations

Modifying or deleting a network defense policy

Step 1 Go to the HSS console.

Step 2 In the navigation pane on the left, choose **Container Protection** > **Container Firewalls**.

Step 3 (Optional) If you have enabled the enterprise project, select the enterprise project where the target server resides from the drop-down list.

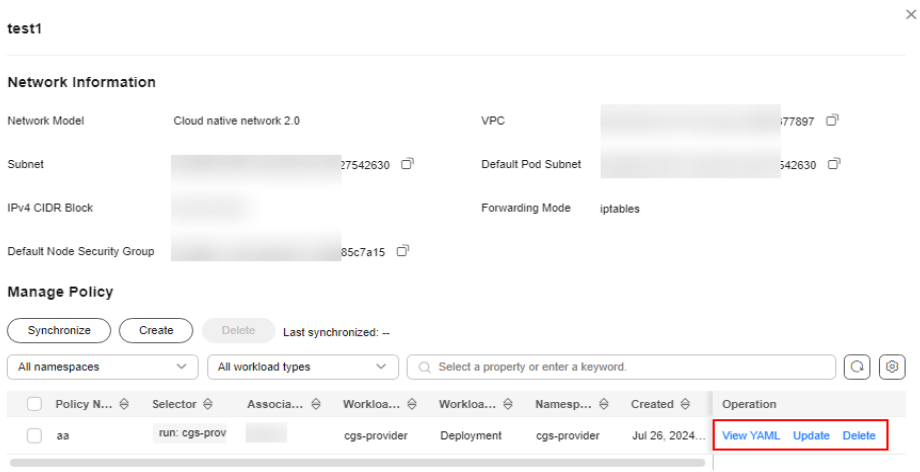
Step 4 Click **Manage Policy** in the **Operation** column of a cluster using the cloud native network 2.0 model.

Step 5 Click **Synchronize** above the policy list to synchronize cluster policy information.

The synchronization takes about 1 to 2 minutes. Wait for a while and click in the upper right corner of the list to refresh and view the latest data.

Step 6 Select the operation to be performed on the policy.

Figure 7-6 Managing policies



- View policy content.

  In the **Operation** column of a policy, click **View YAML**. In the displayed dialog box, you can select **YAML** or **JSON** to view the policy details. Click **Download** in the upper left corner of the dialog box.

- Update policy content.

  a. Locate a target policy and click **Update** in the **Operation** column. The **Update a Security Group Policy** dialog box is displayed.

  b. Add or delete an associated security group.

  c. Click **OK**.

- Delete a policy.

  a. Locate a target policy and click **Delete** in the **Operation** column. The **Delete Policy** dialog box is displayed.

  b. Ensure that all information is correct and click **OK**.

----End

7.2 Container Cluster Protection

7.2.1 Container Cluster Protection Overview

HSS can check for non-compliance baseline issues, vulnerabilities, and malicious files when a container image is started and report alarms on or block container startup that has not been unauthorized or may incur high risks.

You can configure container cluster protection policies to block images with vulnerabilities, malicious files, non-compliant baselines, or other threats, hardening cluster security.

Constraints and Limitations

- Container cluster protection is available only in the HSS container edition. For details about how to purchase HSS, see **Purchasing an HSS Quota**.
- To use container cluster protection, ensure the agent installed on the server falls within the following range. For details about how to upgrade the agent, see **Upgrading the Agent**.
  - Linux: 3.2.7 or later
  - Windows: 4.0.19 or later
- The cluster version is 1.20 or later.
- In a CCE cluster, to operate and protect resource objects, you need to obtain either of the following operation permissions:
  - IAM permissions: Tenant Administrator or CCE Administrator.
  - Namespace permissions (authorized by Kubernetes RBAC): O&M permissions. For details about how to configure permissions, see **Configuring namespace permissions**.

Process of Using Container Cluster Protection

Figure 7-7 Usage process

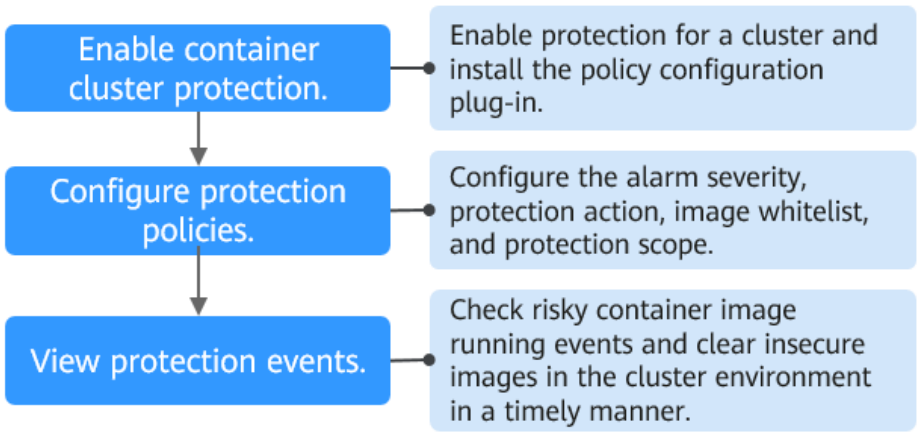


Table 7-4 Process of using container cluster protection

Operation	Description
Enable container cluster protection.	Enable protection for a cluster to protect its workloads and critical data. When protection is enabled, HSS automatically installs the policy management plug-in on the cluster.
Configure a protection policy.	Configure the severity of baseline, vulnerability, and malicious file risks that trigger alarms; container cluster protection scope; image whitelist; and actions to be taken on alarms.
Check container cluster protection events.	On the HSS console, you can view unauthorized or high-risk container image running events that are reported or blocked, and check and clear insecure container images in a timely manner.

7.2.2 Enabling Container Cluster Protection

Container cluster protection can detect risks in baselines, vulnerabilities, and malicious files; and can report alarms on or block insecure container images. You can enable protection to enhance cluster defense and protect containers.

Constraints

After container cluster protection is enabled, you need to configure a policy to make the protection take effect. For more information, see **Configuring a Container Cluster Protection Policy**.

Enabling Container Cluster Protection

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Container Cluster Protection**.

Step 4 Click the **Protected Clusters** tab.

Step 5 Click **Synchronize** to synchronize clusters.

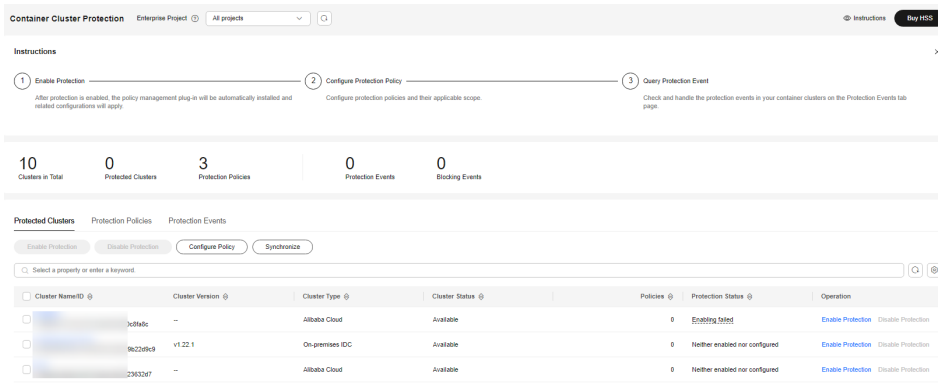
Step 6 Click **Enable** in the **Operation** column of a cluster.

To enable protection for clusters in batches, select clusters and click **Enable Protection** in the upper left corner of the cluster list.

NOTICE

- After container cluster protection is enabled for a cluster, the policy management plug-in will be installed in the cluster and occupy some cluster resources.
- When enabling protection for a container cluster, do not perform any operation on the cluster. Otherwise, protection will fail to be enabled.

Figure 7-8 Enabling container cluster protection



Step 7 Click **OK**.

If the **Protection Status** of the container cluster is **Enabled but not configured**, it indicates protection has been configured for the cluster and the policy management plug-in has been installed, but HSS has not started to protect your cluster. In this case, you need to configure a protection policy. For more information, see **Configuring a Container Cluster Protection Policy**.

----End

7.2.3 Configuring a Container Cluster Protection Policy

You can configure container cluster protection policies to specify the level of risks (unsafe baselines, vulnerabilities, or malicious files) that trigger alarms, cluster protection scope, image whitelist, and the actions taken on an alarm.

Creating a Protection Policy

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Container Cluster Protection**.

Step 4 Click the **Protection Policies** tab and click **Create Policy**.

Step 5 In the **Create Policy** dialog box, set policy parameters. For details about related parameters, see **Table 7-5**.

Figure 7-9 Creating a protection policy

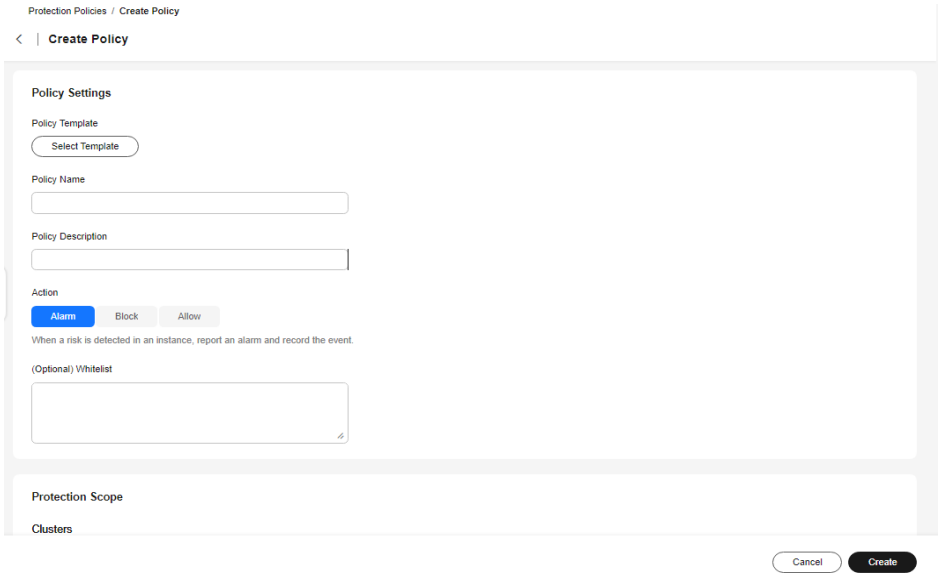


Table 7-5 Container cluster protection policy parameters

Parameter	Description	Example Value
Policy Template	Select a policy template. The procedure is as follows: 1. Click **Select Template**. 2. Select a policy template and click **OK**. You can select a policy template based on the policy description. After selecting a policy template, configure policy parameters based on the policy template requirements. You can refer to the parameter description.	K8sPSPPrivilegedContainer
Policy Name	Enter a policy name.	test
Policy Description	Enter policy description.	Test

Parameter	Description	Example Value
Action	Action taken by HSS if it detects that an image to be started contains specified unsafe baseline items, vulnerabilities, or malicious scripts. • **Alarm**: Generate an event whose **Action** is **Alarm** on the **Protection Events** tab of the **Container Cluster Protection** page. • **Block**: Block an unsafe image and generate an event whose **Action** is **Block** on the **Protection Events** tab of the **Container Cluster Protection** page. • **Allow**: Generate an event whose **Action** is **Allow** on the **Protection Events** tab of the **Container Cluster Protection** page.	Block
Protection Scope	Configure the protection scope of clusters. If you select the image blocking policy, you need to set the images and tags to specify the protection scope.	-
(Optional) Whitelist	Images to be added to the whitelist. Enter values in *ImageName*:*ImageVersion* format. An image name can contain only numbers, letters, underscores (_), hyphens (-), and periods (.). Each image name occupies a separate line. Example: • A single image **image:1.0** • Multiple images **image1:1.0** **image2:1.0** **NOTICE** Exercise caution when performing this operation. HSS does not check whitelisted images when they are started.	-

Step 6 Click **OK**.

You can view the protection policy in the policy list.

----End

Editing or Deleting a Cluster Protection Policy

Step 1 Choose **Container Cluster Protection** and click the **Protection Policies** tab.

Step 2 In the **Operation** column of a policy, click a button as required.

- **View YAML**: View the protection policy content in YAML format.
- **Edit**: Modify a protection policy.

- **Delete**: Delete a protection policy.

NOTICE

After a policy is deleted, the container clusters associated with it will no be protected. Exercise caution when performing this operation.

Step 3 Click **OK**.

----End

7.2.4 Checking Container Cluster Protection Events

HSS detects risks and displays security events in the protection event list. This section describes how to check the events.

Checking Container Cluster Protection Events

Step 1 Log in to the management console.

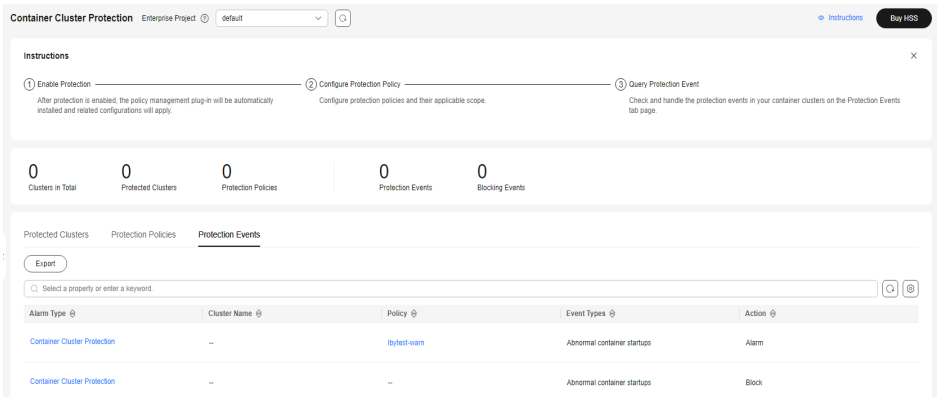
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Container Cluster Protection**.

Step 4 Click the **Protection Events** tab and check events in the cluster.

To export events to your local PC, click **Export** in the upper left corner of the event list.

Figure 7-10 Viewing protection events



Step 5 Click an alarm name to view affected resources.

----End

7.2.5 Disabling Container Cluster Protection

If you no longer need HSS to protect your container clusters, you can disable container cluster protection.

Disabling Container Cluster Protection

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Container Cluster Protection**.

Step 4 Click the **Protected Clusters** tab.

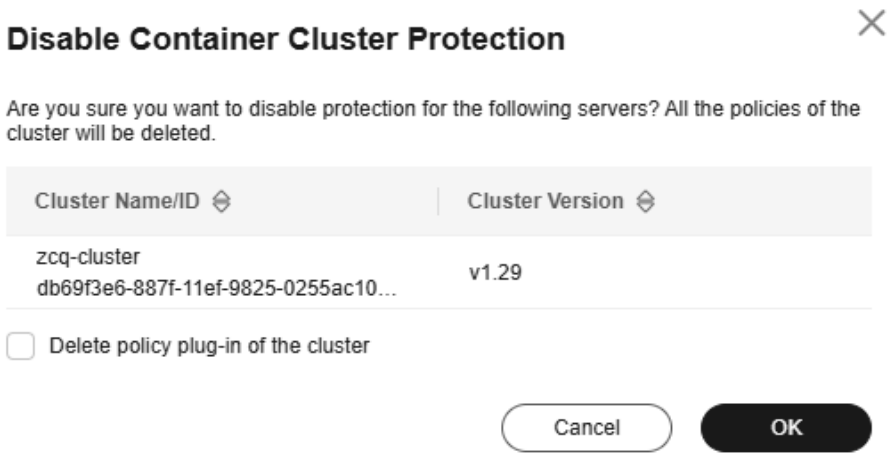
Step 5 In the **Operation** column of a cluster, click **Disable Protection**.

To disable protection for clusters in batches, select clusters and click **Disable Protection** in the upper left corner of the cluster list.

Step 6 In the dialog box that is displayed, determine whether to select the **Delete policy plug-in of the cluster** check box.

- If you select it, container cluster protection policies and the policy configuration plug-in will be deleted. If you enable protection again, you will need to install the policy configuration plug-in and configure protection policies again.
- If you deselect it, container cluster protection policies will be deleted but the policy configuration plug-in will be retained. If you enable protection again, you only need to configure protection policies. If you want to delete the policy configuration plug-in later, repeat the preceding steps to disable protection and select **Delete policy plug-in of the cluster**.

Figure 7-11 Disabling container cluster protection



Step 7 Click **OK**.

- If you did not select **Delete policy plug-in of the cluster** and the **Protection Status** of the cluster changes to **Enabled but not configured**, it indicates protection has been disabled.
- If you selected **Delete policy plug-in of the cluster** and the **Protection Status** of the cluster changes to **Unprotected**, it indicates protection has been disabled.

----End

FAQ

If the cluster network is abnormal or the plug-in is working, you will probably fail to uninstall the plug-in on the HSS console. In this case, you can refer to the content below: **What Do I Do If the Container Cluster Protection Plug-in Fails to Be Uninstalled?**

8 Detection and Response

8.1 HSS Alarms

8.1.1 Server Alarms

HSS generates alarms on a range of intrusion events, including brute-force attacks, abnormal process behaviors, web shells, abnormal logins, and malicious processes. You can learn all these events on the console, and eliminate security risks in your assets in a timely manner.

NOTE

Alarms generated by AV detection and HIPS detection are displayed under different types of events.

- Alarms generated by AV detection are displayed only under the **Malware** events.
- Alarms generated by HIPS detection are displayed in subcategories of all events.

Constraints

Servers that are not protected by HSS do not support alarm-related operations.

Server Security Alarms

For details about server security alarm types and alarm items, see **Table 8-1**. Alarms vary by HSS edition. For details, see **Features**.

Table 8-1 Server security alarms

Alarm Type	Alarm Type Description	Alarm	Alarm Description
Malware	Malicious software includes viruses, worms, Trojans, and web shells implanted by hackers to steal your data or control your servers. For example, hackers will probably use your servers as miners or DDoS zombies. This occupies a large number of CPU and network resources, affecting service stability.	Unclassified malware	Check malware, such as web shells, Trojan horses, mining software, worms, and other viruses and variants, and kill them in one-click. The malware is found and removed by analysis on program characteristics and behaviors, AI image fingerprint algorithms, and cloud scanning and killing. **Supported OSs**: Linux and Windows. **Isolation and removal**: automated or manual
		Viruses	Detect diverse viruses in server assets, reports alarms, and isolate and remove virus files. **Supported OSs**: Linux and Windows. **Isolation and removal**: automated or manual
		Worms	Detect and kill worms on servers and report alarms. **Supported OSs**: Linux and Windows. **Isolation and removal**: automated or manual
		Trojans	Detect and remove Trojan and viruses on servers and report alarms. **Supported OSs**: Linux and Windows. **Isolation and removal**: automated or manual
		Botnets	Detect and kill botnets on servers and report alarms. **Supported OSs**: Linux and Windows. **Isolation and removal**: automated or manual

Alarm Type	Alarm Type Description	Alarm	Alarm Description
		Backdoors	Detect backdoors in servers and reports alarms. **Supported OSs**: Linux and Windows. **Isolation and removal**: automated or manual
		Rootkits	Detect server assets and report alarms for suspicious kernel modules, files, and folders. **Supported OSs**: Linux.
		Ransomware	Check for ransomware in web pages, software, emails, and storage media. Ransomware can encrypt and control your data assets, such as documents, emails, databases, source code, images, and compressed files, to leverage victim extortion. **Supported OSs**: Linux and Windows. **Isolation and killing**: Automatically or manually detect, isolate, and remove some ransomware.
		Hacker tools	Detect and kill hacker tools on servers and report alarms. **Supported OSs**: Linux and Windows. **Isolation and removal**: manual

Alarm Type	Alarm Type Description	Alarm	Alarm Description
		Web shells	Check whether the files (often PHP and JSP files) detected by HSS in your web directories are web shells. You can configure the web shell detection rule in the **Web Shell Detection** rule on the **Policies** page. HSS will check for suspicious or remotely executed commands. You need to add a protected directory in policy management. For details, see **Web Shell Detection**. **Supported OSs**: Linux and Windows. **Isolation and removal**: manual
		Mining software	Detect, scan, and remove mining software on servers, and report alarms. **Supported OSs**: Linux and Windows. **Isolation and removal**: automated or manual

Alarm Type	Alarm Type Description	Alarm	Alarm Description
Vulnerability Exploits	The exploit of vulnerabilities in the server system, software, or network to obtain unauthorized access rights, steal data, or damage the target system. Exploits can be performed remotely or locally. In a remote vulnerability exploit, an attacker connects to the target system through the network and discovers system vulnerabilities to launch attacks. In a local vulnerability exploit, an attacker obtains low access permissions on the target system and exploits vulnerabilities to escalate permissions or perform other malicious operations.	Remote code executions	Detect and report alarms on server intrusions that exploit vulnerabilities in real time. **Supported OSs**: Linux and Windows.
		Redis vulnerability exploits	Detect the modifications made by the Redis process on key directories in real time and report alarms. **Supported OSs**: Linux.
		Hadoop vulnerability exploits	Detect the modifications made by the Hadoop process on key directories in real time and report alarms. **Supported OSs**: Linux.
		MySQL vulnerability exploits	Detect the modifications made by the MySQL process on key directories in real time and report alarms. **Supported OSs**: Linux.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
Abnormal System Behaviors	Abnormal system behaviors occur while servers are running, and are usually caused by system faults, malicious attacks, or security vulnerabilities. Abnormal system behaviors may cause data loss or system breakdown. To protect server system and data security, it is important to detect and handle abnormal system behaviors in a timely manner.	Reverse shells	Monitor user process behaviors in real time to report alarms on and block reverse shells caused by invalid connections. Reverse shells can be detected for protocols including TCP, UDP, and ICMP. You can configure the reverse shell detection rule in the **Malicious File Detection** rule on the **Policies** page. HSS will check for suspicious or remotely executed commands. To enable automatic reverse shell blocking, enable **Auto Blocking** in the **HIPS Detection** policy on the **Policies** page. Currently, the following types of reverse shells can be blocked: exec reverse shell, Perl reverse shell, AWK reverse shell, Python reverse shell.b, Python reverse shell.a, Lua reverse shell, mkfifo/openssl reverse shell, PHP reverse shell, Ruby reverse shell, rssocks reverse proxy, Bash reverse shell, Ncat reverse shell, exec redirection reverse shell, Node reverse shell, Telnet dual-port reverse shell, nc reverse shell, Socat reverse shell, rm/mkfifo/sh/nc reverse shell, and socket/tchsh reverse shell. **NOTE** Before you enable auto blocking of reverse shells, ensure you have enabled the function of **isolating and killing malicious programs**. **Supported OSs**: Linux.
		File privilege escalations	Detect file privilege escalation behaviors and generate alarms. **Supported OSs**: Linux.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
		Process privilege escalations	Detect the privilege escalation operations of the following processes and generate alarms: • Root privilege escalation by exploiting SUID program vulnerabilities • Root privilege escalation by exploiting kernel vulnerabilities **Supported OSs**: Linux.
		Important file changes	Monitor important system files (such as ls, ps, login, and top) in real time and generate alarms if these files are modified. For details about the monitored paths, see **Monitored Important File Paths**. HSS reports all the changes on important files, regardless of whether the changes are performed manually or by processes. **Supported OSs**: Linux.
		File/ Directory changes	Monitor system files and directories in real time and generate alarms if such files are created, deleted, moved, or if their attributes or content are modified. **Supported OSs**: Linux and Windows.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
		Abnormal process behaviors	Check the processes on servers, including their IDs, command lines, process paths, and behavior. Send alarms on unauthorized process operations and intrusions. The following abnormal process behavior can be detected: • Abnormal CPU usage • Processes accessing malicious IP addresses • Abnormal increase in concurrent process connections **Supported OSs**: Linux and Windows. **Isolation and killing**: Some abnormal processes can be manually isolated and killed.
		High-risk command executions	You can configure what commands will trigger alarms in the **High-risk Command Scan** rule on the **Policies** page. HSS checks executed commands in real time and generates alarms if high-risk commands are detected. **Supported OSs**: Linux and Windows.
		Abnormal shells	Detect actions on abnormal shells, including moving, copying, and deleting shell files, and modifying the access permissions and hard links of the files. You can configure the abnormal shell detection rule in the **Malicious File Detection** rule on the **Policies** page. HSS will check for suspicious or remotely executed commands. **Supported OSs**: Linux.
		Sensitive file access detection	Detect the unauthorized access to or modifications of sensitive files. **Supported OSs**: Linux and Windows.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
		Suspicious crontab tasks	Check and list auto-started services, scheduled tasks, pre-loaded dynamic libraries, run registry keys, and startup folders. You can get notified immediately when abnormal automatic auto-start items are detected and quickly locate Trojans. **Supported OSs**: Linux and Windows.
		System protection disabling	Detect the preparations for ransomware encryption: Disable the Windows defender real-time protection function through the registry. Once the function is disabled, an alarm is reported immediately. **Supported OSs**: Windows.
		Backup deletion	Detect the operations performed by ransomware before it encrypts your data. Once HSS detects that backup files or files in the **Backup** folder are deleted, an alarm is reported. **Supported OSs**: Windows.
		Suspicious registry operations	Detect operations such as disabling the system firewall through the registry and using the ransomware **Stop** to modify the registry and write specific strings in the registry. An alarm is reported immediately when such operations are detected. **Supported OSs**: Windows.
		System log deletion	An alarm is generated when a command or tool is used to clear system logs. **Supported OSs**: Windows.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
		Suspicious command executions	• Check whether a scheduled task or an automated startup task is created or deleted by running commands or tools. • Detect suspicious remote command execution. **Supported OSs**: Windows.
		Suspicious process executions	If application process control is enabled, HSS checks for application processes that are not authenticated or authorized based on the whitelist policy, and reports an alarm if such a process is detected. For more information, see **Application Process Control Overview**. **Supported OSs**: Linux and Windows.
		Suspicious process file access	If application process control is enabled, HSS checks for application processes that access specified directories but are not authenticated or authorized based on the whitelist policy, and reports an alarm if such a process is detected. For more information, see **Application Process Control Overview**. **Supported OSs**: Linux and Windows.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
Abnormal User Behaviors	Abnormal or unexpected user behaviors that occur in a specific environment or system, sometimes within a short period of time, such as abnormal logins or unauthorized access. To detect and identify these abnormal behaviors, user operations need to be checked and analyzed.	Brute-force attacks	If hackers log in to your servers through brute-force attacks, they can obtain the control permissions of the servers and perform malicious operations, such as steal user data; implant ransomware, miners, or Trojans; encrypt data; or use your servers as zombies to perform DDoS attacks. HSS can detect brute-force attacks on the following service accounts: • Windows: RDP, SQL Server • Linux: MySQL, vsftpd, SSH If the number of brute-force attacks (consecutive incorrect password attempts) reaches 5 or within 30 seconds or reaches 15 within 1 hour, HSS will block the login source IP address. By the IP address is blocked for 12 hours to prevent server intrusions caused by brute-force attacks. You can check whether a login IP address can be trusted based on its brute-force attack alarm details, including the attack source IP address, attack type, and how many times it has been blocked. You can manually unblock trusted IP addresses. **Supported OSs**: Linux and Windows.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
		Abnormal logins	Detect abnormal login behavior, such as remote login and brute-force attacks. If abnormal logins are reported, your servers may have been intruded by hackers. • Check and handle remote logins. You can check the blocked login IP addresses, and who used them to log in to which server at what time. If a user's login location is not any common login location, an alarm will be triggered. • Trigger an alarm if a user logs in to the server by a brute-force attack. **Supported OSs**: Linux and Windows.
		Invalid accounts	Hackers can probably crack unsafe accounts on your servers and control the servers. HSS checks suspicious hidden accounts and cloned accounts and generates alarms on them. **Supported OSs**: Linux and Windows.
		User account added	Detect the commands used to create hidden accounts. Hidden accounts cannot be found in the user interaction interface or be queried by commands. **Supported OSs**: Windows.
		Password thefts	Detect the abnormal obtaining of hash value of system accounts and passwords on servers and report alarms. **Supported OSs**: Windows.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
Abnormal Network Access	Abnormal network access refers to exceptions that occur during network connection or data transmission and different from normal usage. These exceptions include abnormal resource usage, unauthorized access, and abnormal connections. Abnormal network access behaviors on servers may be a prelude to attacks.	Cloud honeypots	An alarm is reported if a connection to the honeypot port of a server is detected. **Supported OSs**: Linux and Windows.
		Suspicious download requests	An alarm is generated when a suspicious HTTP request that uses system tools to download programs is detected. **Supported OSs**: Windows.
		Suspicious HTTP requests	An alarm is generated when a suspicious HTTP request that uses a system tool or process to execute a remote hosting script is detected. **Supported OSs**: Windows.
		Abnormal outbound connections	Report alarms on suspicious IP addresses that initiate outbound connections. **Supported OSs**: Linux (kernel 5.10 or later).
		Port forwarding	Report alarms on port forwarding using suspicious tools. **Supported OSs**: Linux.
Reconnaissance	Reconnaissance is the act of gathering information about a target network before launching an attack.	Port scan	Detect scanning or sniffing on specified ports and report alarms. **Supported OSs**: Linux.
		Host scan	Detect the network scan activities based on server rules (including ICMP, ARP, and nbtscan) and report alarms. **Supported OSs**: Linux.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
Fileless Attacks	A fileless attack does not release malicious executable files. Instead, it writes malicious code into the system memory or registry. Because there are no malicious files used, such an attack is difficult to detect. Fileless attacks are classified into the following types based on disk file activities: • No file activities. That is, no disk files are stored or operated in disks. Generally, such attacks are initiated in the upper-layer hardware, firmware, or software layer rather than the OS. • Indirect activities through files. That is, no files are stored in disks, but activities are indirectly performed through files. Malicious code is usually indirectly loaded to the memory for execution through white files. Most of such malicious code is carried by scripts, which are executed through program commands or specific mechanisms such as disk boot records. • File activities required.	Process injection	Scan for malicious code injection into running processes and report alarms. **Supported OSs**: Linux.
		Dynamic library injection	Scan for the payloads injected by hijacking functions in the dynamic link library (DLL) and report alarms. **Supported OSs**: Linux.
		Memory file process	Scan for the behaviors of creating an anonymous malicious file that exists only in the RAM through the memfd_create system call and executing the file, and report alarms on such behaviors. **Supported OSs**: Linux.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
	Generally, malicious code is converted into data. Attackers exploit file-related program vulnerabilities or features to convert malicious data into malicious code for execution.		

Security Alarm Severities

HSS alarm severities indicate alarm impact on service systems. It can be Critical, High, Medium, or Low. For details, see **Table 8-2**.

Table 8-2 Security alarm severities

Alarm Severity	Description
Critical	A critical alarm indicates that the system is severely attacked, which may cause data loss, system breakdown, or long service interruption. For example, such alarms are generated if ransomware encryption behaviors or malicious programs are detected. You are advised to handle the alarms immediately to avoid severe system damage.
High	A high-risk alarm indicates that the system may be under an attack that has not caused serious damage. For example, such alarms are generated if unauthorized login attempts are detected or unsafe commands (for deleting critical system files or modifying system settings) are executed. You are advised to investigate and take measures in a timely manner to prevent attacks from spreading.
Medium	A medium-risk alarm indicates that the system has potential security threats, but there are no obvious signs of being attacked. For example, if abnormal modifications of a file or directory are detected, there may be potential attack paths or configuration errors in the system. You are advised to further analyze and take proper preventive measures to enhance system security.

Alarm Severity	Description
Low	A low-risk alarm indicates that a minor security threat exists in the system but does not have significant impact on your system. For example, such alarms are generated if port scans are detected, indicating that there may be attackers trying to find system vulnerabilities. These alarms do not require immediate emergency measures. If you have high requirements on asset security, pay attention to the security alarms of this level.

Monitored Important File Paths

Type	Linux
bin	/bin/ls /bin/ps /bin/bash /bin/login
usr	/usr/bin/ls /usr/bin/ps /usr/bin/bash /usr/bin/login /usr/bin/passwd /usr/bin/top /usr/bin/killall /usr/bin/ssh /usr/bin/wget /usr/bin/curl

8.1.2 Viewing Server Alarms

HSS displays alarm and event statistics and their summary all on one page. You can have a quick overview of alarms, including the numbers of urgent alarms, total alarms, servers with alarms, blocked IP addresses, and isolated files.

The **Events** page displays the alarm events generated in the last 30 days. You can manually handle the alarmed items.

The status of a handled event changes from **Unhandled** to **Handled**.

NOTE

Alarms generated by AV detection and HIPS detection are displayed under different types of events.

- Alarms generated by AV detection are displayed only under the **Malware** events.
- Alarms generated by HIPS detection are displayed in subcategories of all events.

Constraints and Limitations

- To skip the checks on high-risk command execution, privilege escalations, reverse shells, abnormal shells, or web shells, manually disable the corresponding policies in the policy groups on the **Policies** page. HSS will not check the servers associated with disabled policies. For details, see **Viewing a Policy Group**.
- Other detection items cannot be manually disabled.
- Servers that are not protected by HSS do not support operations related to alarms and events.

Viewing Server Alarms

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Detection & Response** > **Alarms** and click **Server Alarms**.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 8-1 Server alarms

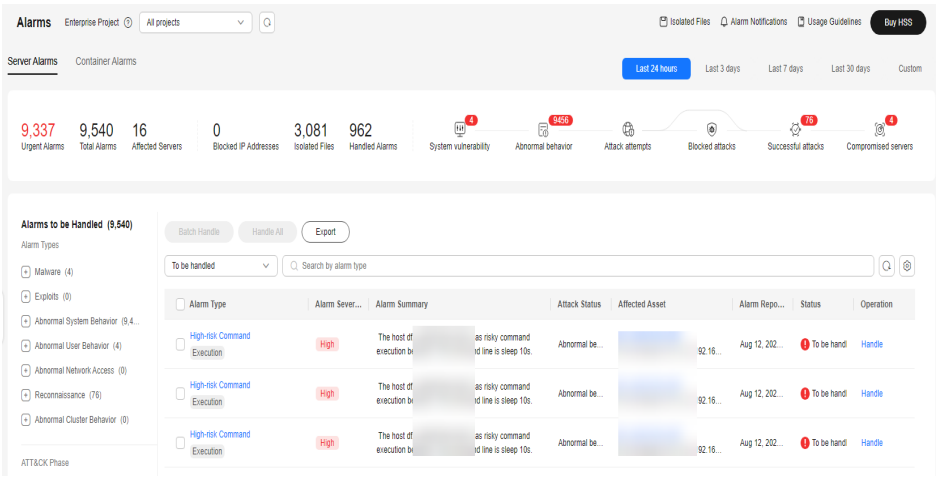


Table 8-3 Alarm statistics

Parameter	Description
Enterprise Project	Select an enterprise project and view alarm details by enterprise project.
Time range	You can select a fixed period or customize a time range to search for alarms. Only alarms generated within 30 days can be queried. The options are as follows: • Last 24 hours • Last 3 days • Last 7 days • Last 30 days
Urgent Alarms	Number of urgent alarms that need to be handled.
Total Alarms	Total number of alarms on your assets.
Affected Servers	Number of servers for which alarms are generated. When checking alarms generated in the last 24 hours, you can click the number of servers to go to the **Servers & Quota** page and check the corresponding servers.
Handled Alarms	Number of handled alarms.
Blocked IP Addresses	Number of blocked IP addresses. You can click the number to check blocked IP address list. The blocked IP address list displays the server name, attack source IP address, login type, blocking status, number of blocks, blocking start time, and the latest blocking time. If a valid IP address is blocked by mistake (for example, after O&M personnel enter incorrect passwords for multiple times), you can manually unblock it. If a server is frequently attacked, you are advised to fix its vulnerabilities in a timely manner and eliminate risks. **NOTICE** • The agent of Linux 3.2.10 or later supports IPv6 interception. The agent of a version earlier than Linux 3.2.10 supports TCP Wrapper interception, but does not support IPv6 interception using IPTables. • After a blocked IP address is unblocked, HSS will no longer block the operations performed by the IP address. • A maximum of 10,000 IP addresses can be blocked for each type of software. If your Linux server does not support ipset, a maximum of 50 IP addresses can be clocked for MySQL and vsftp. If your Linux server does not support ipset or hosts.deny, a maximum of 50 IP addresses can be blocked for SSH.

Parameter	Description
Isolated Files	HSS can isolate detected threat files. Files that have been isolated are displayed on a slide-out panel on the **Server Alarms** page. You can click **Isolated Files** on the upper right corner to check them. You can recover isolated files. For details, see **Managing Isolated Files**.

- **Viewing the alarms of a certain type or ATT&CK phase**

  In the **Alarms to Be Handled** area, you can select an alarm type and an ATT&CK phase to view the alarms of the selected type. For details, see **ATT&CK attack phase description**.

  NOTE

  Adversarial Tactics, Techniques and Common Knowledge (ATT&CK) is a framework that helps organizations understand the cyber adversary tactics and techniques used by threat actors across the entire attack lifecycle.

  Table 8-4 ATT&CK phases

ATT&CK Phase	Description
Reconnaissance	Attackers seek vulnerabilities in your system or network.
Initial Access	Attacker try to enter your system or network.
Execution	Attackers try to run malicious code.
Persistence	Attackers try to maintain their foothold.
Privilege Escalation	Attackers try to obtain higher permissions.
Defense Evasion	Attackers try to avoid being detected.
Credential Access	Attackers try to steal account names and passwords.
Command and Control	Attackers try to communicate with compromised machines to control them.
Impact	Attackers try to manipulate, interrupt, or destroy your system or data.

- **Viewing the details of a server alarm**

  You can click the alarm name of an event to view the alarm details. **Table 8-5** describes the alarm parameters.

NOTE

- For some HSS alarms that have been determined as malware alarms, the alarm source files are saved in the cloud center and you can download them. You can download the alarm source files to your local PC for analysis. The password for decompressing the files is **unlock**.
- For unacknowledged malware alarms, alarm source files cannot be downloaded. Check the actual service conditions and determine whether the files are malicious files.

Figure 8-2 Alarm details

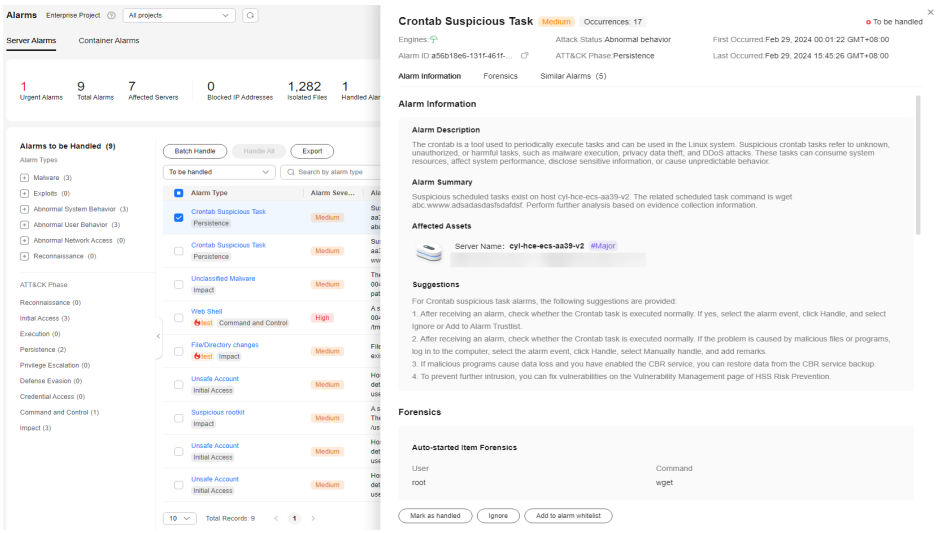


Table 8-5 Alarm detail parameters

Parameter	Description
Protection Engine	Detection engines used by HSS, including the virus detection engine, AI detection engine, and malicious intelligence detection engine.
Attack Status	Status of the current threat.
First Occurred	Time when an attack alarm was first generated
Alarm ID	Unique ID of an alarm
ATT&CK Phase	For details about the attack technology models used by attackers in each phase, see **Table 8-4**.
Last Occurred	Time when an attack alarm was last generated
Alarm Information	Detailed information about an alarm, including the alarm description, alarm summary, affected assets, and handling suggestions.

Parameter	Description
Forensics	HSS investigates information such as the attack triggering path or virus type based on the alarm type, helping you quickly trace and locate the attack source. – **Process Tree**: If an alarm event contains process information, you can check the process ID, process file path, process command line, process startup time, and process file hash on the **Forensics** tab page. You can locate malicious processes based on such information. – **File Forensics**: If an alarm event contains file information, the file forensics information is displayed on the **Forensics** tab page. File forensics information includes the file path, file hash, file operation type, and user information (which may not be obtained by instantaneous processes). You can locate a file based on the information. – Network Forensics: If an alarm event contains file information, the network forensics information is displayed on the **Forensics** tab page. Network forensics information includes the local IP address, local port, remote IP address, remote port, and protocol. You can determine whether the access is unauthorized based on such information. – User Forensics: If an alarm event contains user behavior information, the user forensics information is displayed on the **Forensics** tab page. User forensics information includes the username, login IP address, login service type, login service port, last login event, and number of login failures. You can determine whether the access is unauthorized based on such information. – **Registry Forensics**: If an alarm event contains registry information, you can check the registry keys and values on the **Forensics** tab page. You can locate registry risks based on such information. – **Abnormal Login Forensics**: If an alarm event contains abnormal login information, you can check the login IP address and port number on the **Forensics** tab page. You can determine whether the login is trusted based on such information. – **Malware Forensics**: If an alarm event contains malware information, you can check the malware family, virus name, virus type, and confidence level on the **Forensics** tab page. – **Auto-started Item Forensics**: If an alarm event contains self-startup item information, you can check the user, command, self-startup item information, and process file command line information on the **Forensics** tab page. You can locate the auto-boot item based on the auto-started item forensics information. – **Kernel Forensics**: If an alarm event contains kernel information, you can check system functions and kernel

Parameter	Description
	functions on the **Forensics** tab page. You can locate kernel risks based on the information.
Similar Alarms	Alarm whose server and event type are the same as those of this alarm. You can handle the alarm according to the handling method of the similar alarms.

----End

FAQ

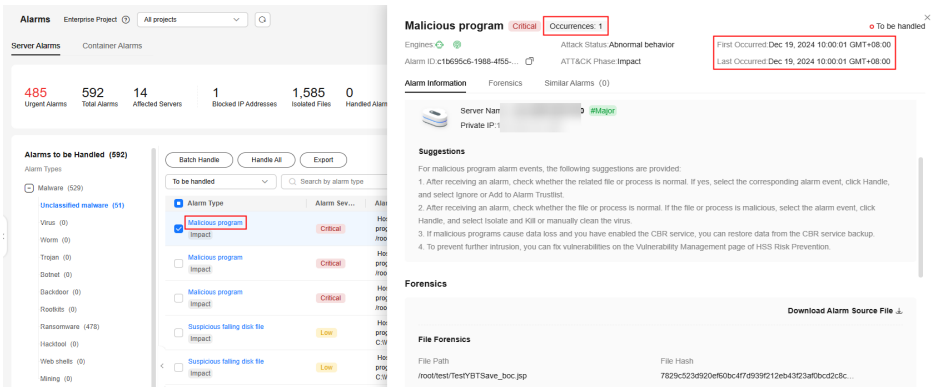
- **Why are there multiple similar alarms?**

  If similar events that occur within 24 hours, HSS combines them into one alarm. If similar events occur at an interval of 24 hours or more, HSS reports them as independent alarms. Therefore, you can see multiple similar alarms.

- **How do I check the number of similar alarms that occurred within 24 hours?**

  Click an alarm name to view the number of occurrences, first occurrence time, and latest occurrence time on the alarm details page.

Figure 8-3 Alarm details



8.1.3 Handling Server Alarms

HSS displays alarm and event statistics and their summary all on one page. You can have a quick overview of alarms, including the numbers of urgent alarms, total alarms, servers with alarms, blocked IP addresses, and isolated files.

The **Events** page displays the alarms generated in the last 30 days.

The status of a handled alarm changes from **Unhandled** to **Handled**.

NOTE

Alarms generated by AV detection and HIPS detection are displayed under different types of events.

- Alarms generated by AV detection are displayed only under the **Malware** events.
- Alarms generated by HIPS detection are displayed in subcategories of all events.

Constraints and Limitations

- To skip the checks on high-risk command execution, privilege escalations, reverse shells, abnormal shells, or web shells, manually disable the corresponding policies in the policy groups on the **Policies** page. HSS will not check the servers associated with disabled policies. For details, see **Viewing a Policy Group**.
- Other detection items cannot be manually disabled.
- Servers that are not protected by HSS do not support operations related to alarms and events.

Handling Server Alarms

This section describes how you should handle alarms to enhance server security.

NOTE

Do not fully rely on alarm handling to defend against attacks, because not every issue can be detected in a timely manner. You are advised to take more measures to prevent threats, such as checking for and fixing vulnerabilities and unsafe settings.

Step 1 **Log in to the management console**.

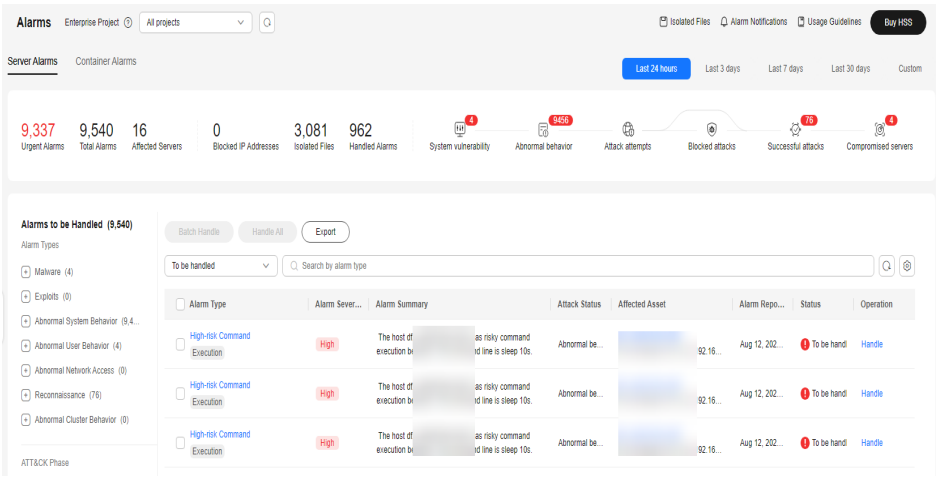
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Detection & Response** > **Alarms** and click **Server Alarms**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Figure 8-4 Server alarms



Step 4 Click an alarm name to view the alarm details and suggestions.

Step 5 Handle alarms.

NOTE

Alarms are displayed on the **Server Alarms** page. Here you can check up to 30 days of historical alarms.

Check and handle alarms as needed. The status of a handled alarm changes from **Unhandled** to **Handled**.

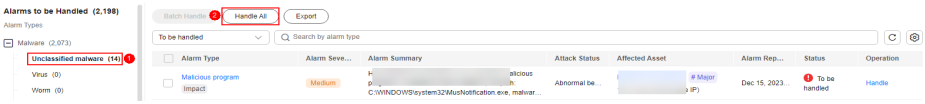
- Handling a single alarm

  In the **Operation** column of an alarm, click **Handle**.
- Handling alarms in batches

  Select all alarms and click **Batch Handle** above the alarm list.
- Handling all alarms

  In the **Alarms to be Handled** area on the left pane of the alarm list, select an alarm type and click **Handle All** above the alarm list.

Figure 8-5 Handling all alarms



Step 6 In the **Handle Event** dialog box, select an action. For details about the alarm handling actions, see **Table 8-6**.

When handling a single alarm event or handling alarms in batches, you can select **Handle duplicate alarms in batches** in the **Handle Event** dialog box.

Table 8-6 Alarm handling methods

Action	Description
Ignore	Ignore the current alarm. Any new alarms of the same type will still be reported by HSS.
Isolate and kill	If a program is isolated and killed, it will be terminated immediately and no longer able to perform read or write operations. Isolated source files of programs or processes are displayed on the **Isolated Files** slide-out panel and cannot harm your servers. You can click **Isolated Files** on the upper right corner to check the files. For details, see **Managing Isolated Files**. For details about events that can be isolated and killed, see **Server Alarms**. **NOTE** When a program is isolated and killed, the process of the program is terminated immediately. To avoid impact on services, check the detection result, and cancel the isolation of or unignore misreported malicious programs (if any).
Mark as handled	If you have manually handled an event, choose **Mark as handled**. You can add remarks to record details about event handling.
Add to process whitelist	If you can confirm that a process triggering an alarm can be trusted, you can add it to the process whitelist. HSS will no longer report alarms on whitelisted processes.

Action	Description
Add to Login Whitelist	Add false alarmed items of the **Brute-force attack** and **Abnormal login** types to the Login Whitelist. HSS will no longer report alarm on the Login Whitelist. A whitelisted login event will not trigger alarms. The following alarm events can be added: • Brute-force attacks • Abnormal logins
Add to alarm whitelist	Add false alarmed items to the login whitelist. HSS will no longer report alarm on the whitelisted items. A whitelisted alarm will not trigger alarms. After adding an alarm to the alarm whitelist, you can customize a whitelist rule. The custom rule types vary depending on the alarm types, including the file path, process path, process command line, remote IP address, and user name. If a detected alarm event hit the rule you specified, HSS does not generate an alarm. For details about events that can be isolated and killed, see **Server Alarms**.

Step 7 Click **OK**.

You check handled alarms. For details, see **Handling History**.

----End

Canceling Handled Server Alarms

You can cancel the processing of a handled alarm event.

Step 1 In the alarm event list, filter handled alarms.

Step 2 In the **Operation** column of an alarm, click **Handle**.

Step 3 In the **Handle Alarm Event** dialog box, click **OK** to cancel the last handling.

----End

8.1.4 Exporting Server Alarms

You can export server alarms and events to a local PC.

Exporting Server Alarms

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Detection & Response** > **Alarms**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Server Alarms** tab.

Step 5 Click **Export** above the alarm list to export all security events.

To export the alarms of a certain type or ATT&CK attack phase, select the type or phase in the **Alarms to Be Handled** area and click **Export**.

Step 6 View the export status in the upper part of the alarms page. After the export is successful, obtain the exported information from the default file download address on the local host.

NOTICE

Do not close the browser page during the export. Otherwise, the export task will be interrupted.

----End

8.1.5 Managing Isolated Files

HSS can isolate detected threat files. Files that have been isolated are displayed on a slide-out panel on the **Server Alarms** page. You can click **Isolated Files** on the upper right corner to check them, and can recover or delete isolated files anytime.

For details about events that can be isolated and killed, see **Server Alarms**.

Constraints

Servers that are not protected by HSS do not support alarm-related operations.

Isolation and Killing Operations

Step 1 **Log in to the management console**.

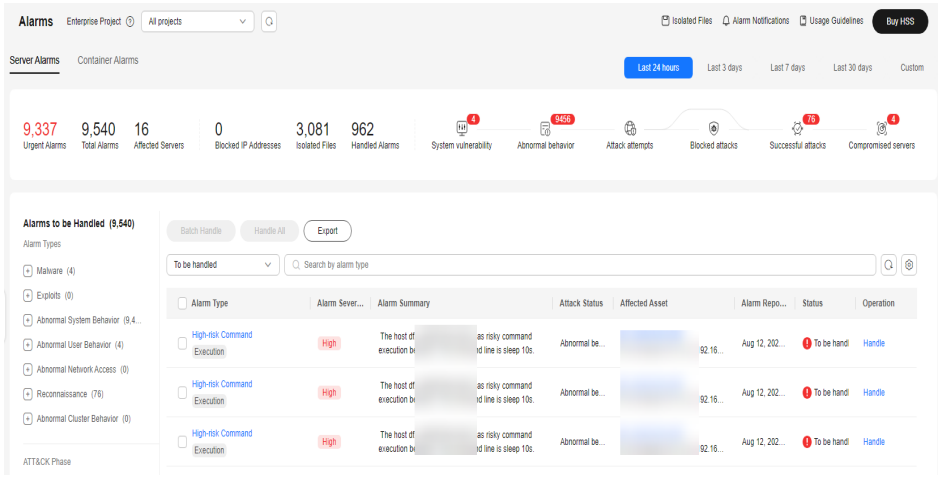
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Detection & Response** > **Alarms** and click **Server Alarms**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Figure 8-6 Server alarms



Step 4 Locate an event that can be isolated and killed, click **Handle** in the **Operation** column, and select **Isolate and Kill** in the displayed box.

NOTE

For details about events that can be isolated and killed, see **Server Alarms**.

Step 5 Click **OK** and isolate and kill the target alarm event.

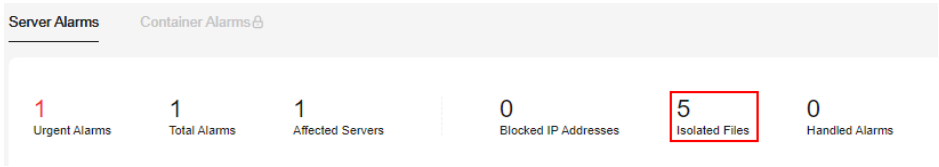
Files that have been isolated are displayed on a slide-out panel on the **Server Alarms** page and cannot harm your servers. You can click **Isolated Files** on the upper right corner to check them.

----End

Checking Isolated Files

Step 1 In the alarm statistics area on the **Server Alarms** page, click the number above **Isolated Files** to check the isolated files.

Figure 8-7 Alarm statistics



Step 2 Check the servers, names, paths, and modification time of the isolated files.

----End

Restoring Isolated Files

If you want to de-isolate an isolated file, you can restore it by referring to the following steps.

Step 1 Click **Restore** in the **Operation** column of the list. The dialog box is displayed.

Step 2 Click **OK**.

NOTE

The permissions for this file will be restored to what they were before it was isolated.

----End

Deleting Isolated Files

If you want to permanently delete an isolated file, you can perform the deletion operation by referring to the following steps.

Step 1 Click **Delete** in the **Operation** column of the list. The dialog box is displayed.

To delete isolated files in batches, select multiple isolated files and click **Delete** in the upper left corner of the list.

Step 2 Click **OK**.

NOTE

Deleted isolated files cannot be restored. Exercise caution when performing this operation.

----End

8.2 Container Alarms

8.2.1 Container Alarm Events

After node protection is enabled, an agent is deployed on each container host to monitor the running status of containers in real time. The agents support escape detection, high-risk system calls, abnormal processes, abnormal files, and container environment detection. You can learn alarm events comprehensively on the **Container Alarms** page, and eliminate security risks in your assets in a timely manner.

Constraints

- Only the HSS container edition supports container security alarms. For details about how to purchase and upgrade HSS, see **Purchasing HSS** and **Upgrading Quota**.
- The container security alarm function supports intrusion detection and alarm reporting for the following Linux container runtime components:
  - Containerd
  - Docker

Container Security Alarms

For details about container security alarm types and alarm items, see **Table 8-7**.

Table 8-7 Container security alarms

Alarm Type	Alarm Type Description	Alarm	Alarm Description
Malware	Malicious software includes viruses, worms, Trojans, and web shells implanted by hackers to steal your data or control your servers. For example, hackers will probably use your servers as miners or DDoS zombies. This occupies a large number of CPU and network resources, affecting service stability.	Unclassified malware	Check malware, such as web shells, Trojan horses, mining software, worms, and other viruses and variants. The malware is found and removed by analysis on program characteristics and behaviors, AI image fingerprint algorithms, and cloud scanning and killing.
		Viruses	Check containers in real time and report alarms for viruses detected in the container runtime.
		Worms	Detect worms in container runtime and report alarms.
		Trojans	Detect and remove Trojan and viruses in containers and report alarms.
		Botnets	Detect and kill botnetsin containers and report alarms.
		Backdoors	Detect backdoors in containers and report alarms.
		Rootkits	Check container assets and report alarms for suspicious kernel modules, files, and folders.
		Ransomware	Check for ransomware in web pages, software, emails, and storage media. Ransomware can encrypt and control your data assets, such as documents, emails, databases, source code, images, and compressed files, to leverage victim extortion.
		Web shells	Check whether the files (often PHP and JSP files) in the web directories on containers are web shells.
		Hacker tools	Report alarms on the malicious behaviors that exploit vulnerabilities or are performed using hacker tools.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
		Mining software	Detect programs that are hidden in normal programs and have special functions such as damaging and deleting files, sending passwords, and recording keyboards. If a suspicious program is detected, an alarm is reported immediately.
Vulnerability Exploits	The exploit of vulnerabilities in the server system, software, or network to obtain unauthorized access rights, steal data, or damage the target system. Exploits can be performed remotely or locally. In a remote vulnerability exploit, an attacker connects to the target system through the network and discovers system vulnerabilities to launch attacks. In a local vulnerability exploit, an attacker obtains low access permissions on the target system and exploits vulnerabilities to escalate permissions or perform other malicious operations.	Vulnerability escapes	A vulnerability escape attack exploits application vulnerabilities, container infrastructure vulnerabilities, orchestration system vulnerabilities, or container runtime vulnerabilities to bypass the security mechanism and obtain unauthorized access permissions or perform unauthorized operations. HSS reports an alarm if it detects container process behavior that matches the behavior of known vulnerabilities (such as Dirty COW, brute-force attack, runC, and shocker).
		File escapes	In file escape attacks, attackers exploit file system or application vulnerabilities to bypass file permission restrictions and access or modify unauthorized files or directories. HSS reports an alarm if it detects that a container process accesses a key file directory (for example, **/etc/shadow** or **/etc/crontab**). Directories that meet the container directory mapping rules can also trigger such alarms. **NOTE** UOS 1050u2e does not support file escape detection.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
Abnormal System Behaviors	Abnormal system behaviors occur while servers are running, and are usually caused by system faults, malicious attacks, or security vulnerabilities. Abnormal system behaviors may cause data loss or system breakdown. To protect server system and data security, it is important to detect and handle abnormal system behaviors in a timely manner.	Reverse shells	Monitor user process behaviors in real time to report alarms on and block reverse shells caused by invalid connections. Reverse shells can be detected for protocols including TCP, UDP, and ICMP. You can configure the reverse shell detection rule in the **Malicious File Detection** rule on the **Policies** page. HSS will check for suspicious or remotely executed commands. To enable automatic reverse shell blocking, enable **Auto Blocking** in the **HIPS Detection** policy on the **Policies** page. Currently, the following types of reverse shells can be blocked: exec reverse shell, Perl reverse shell, AWK reverse shell, Python reverse shell.b, Python reverse shell.a, Lua reverse shell, mkfifo/openssl reverse shell, PHP reverse shell, Ruby reverse shell, rssocks reverse proxy, Bash reverse shell, Ncat reverse shell, exec redirection reverse shell, Node reverse shell, Telnet dual-port reverse shell, nc reverse shell, Socat reverse shell, rm/mkfifo/sh/nc reverse shell, and socket/tchsh reverse shell. **NOTE** Before you enable auto blocking of reverse shells, ensure you have enabled the function of **isolating and killing malicious programs**.
		File privilege escalation	Report alarms on root privilege escalations exploiting SUID and SGID program vulnerabilities.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
		Process privilege escalations	After hackers intrude containers, they will try exploiting vulnerabilities to grant themselves the root permissions or add permissions for files. In this way, they can illegally create system accounts, modify account permissions, and tamper with files. HSS can detect the following abnormal privilege escalation operations: • Root privilege escalation by exploiting SUID program vulnerabilities • Root privilege escalation by exploiting kernel vulnerabilities • File privilege escalation
		Important file changes	Monitor important system files (such as ls, ps, login, and top) in real time and generate alarms if these files are modified. For more information, see **Monitored important file paths**. HSS reports all the changes on important files, regardless of whether the changes are performed manually or by processes.
		File/ Directory changes	Monitor system files and directories in real time and generate alarms if such files are created, deleted, moved, or if their attributes or content are modified.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
		Abnormal process behaviors	Check the processes on servers, including their IDs, command lines, process paths, and behavior. Send alarms on unauthorized process operations and intrusions. The following abnormal process behavior can be detected: • Abnormal CPU usage • Processes accessing malicious IP addresses • Abnormal increase in concurrent process connections
		High-risk system calls	Users can run tasks in kernels by Linux system calls. CGS reports an alarm if it detects a high-risk call, such as **open_by_handle_at**, **ptrace**, **setns**, and **reboot**.
		Abnormal shells	Check containers for actions on abnormal shells, including moving, copying, and deleting shell files, and modifying the access permissions and hard links of the files. You can configure the abnormal shell detection rule in the **Malicious File Detection** rule on the **Policies** page. HSS will check for suspicious or remotely executed commands.
		High-risk command executions	Check executed commands in containers and generate alarms if high-risk commands are detected.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
		Abnormal container processes	• Malicious container program HSS monitors container process behavior and process file fingerprints. It reports an alarm if it detects a process whose behavior characteristics match those of a predefined malicious program. • Abnormal processes Container services are usually simple. If you are sure that only specific processes run in a container, you can whitelist the processes on the **Policy Groups** page, and associate the policy with the container. HSS reports an alarm if it detects that a process not in the whitelist is running in the container.
		Sensitive file access	HSS monitors the container image files associated with file protection policies, and reports an alarm if the files are modified.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
		Abnormal container startups	HSS monitors container startups and reports an alarm if it detects that a container with too many permissions is started. This alarm does not indicate an actual attack. Attacks exploiting this risk will trigger other HSS container alarms. HSS container check items include: • Privileged container startup (**privileged:true**) Alarms are triggered by the containers started with the maximum permissions. Settings that can trigger such alarms include the **–privileged=true** parameter in the **docker run** command, and **privileged: true** in the **securityContext** of the container in a Kubernetes pod. If the alarm name is **Container Security Options** and the alarm content contains **privileged:true**, it indicates that the container is started in privileged container mode. • Too many container capabilities (**capability:[xxx]**) In Linux OSs, system permissions are divided into groups before assigned to containers. A container only has a limited number of permissions, and the impact scope of this container is limited in the case of an incident. However, malicious users can grant all the system permissions to a container by modifying its startup configurations. If the alarm name is **Container Security Options** and the alarm content contains **capabilities: [xxx]**, it indicates that the container is started with an overlarge capability set, which poses risks. • Seccomp not enabled (**seccomp=unconfined**)

Alarm Type	Alarm Type Description	Alarm	Alarm Description
			Secure computing mode (seccomp) is a Linux kernel feature. It can restrict system calls invoked by processes to reduce the attack surface of the kernel. If **seccomp=unconfined** is configured when a container is started, system calls will not be restricted for the container. If the alarm name is **Container Security Options** and the alarm content contains **seccomp=unconfined**, it indicates that the container is started without seccomp, which poses risks. **NOTE** If seccomp is enabled, permissions will be verified for every system call. The verifications will probably affect services if system calls are frequent. Before you decide whether to enable seccomp, you are advised to test-enable it and analyze the impact on your services. • Container privilege escalation (**no-new-privileges:false**) Processes can escalate permissions by running the **sudo** command and using SUID or SGID bits. Default container configurations do not allow privilege escalation. If **–no-new-privileges=false** is specified when a container is started, the container can escalate privileges. If the alarm name is **Container Security Options** and the alarm content contains **no-new-privileges:false**, it indicates that privilege escalation restriction is disabled for the container, which poses risks. • High-risk directory mapping (**mounts:[...]**) For convenience purposes, when a container is started on a

Alarm Type	Alarm Type Description	Alarm	Alarm Description
			server, the directories of the server can be mapped to the container. In this way, services in the container can directly read and write resources on the server. However, this mapping incurs security risks. If any critical directory in the server OS is mapped to the container, improper operations in the container will probably damage the server OS. HSS reports an alarm if it detects that a critical server path (**/boot**, **/dev**, **/etc**, **/sys**, and **/var/run**) is mounted during container startup. If the alarm name is **Container Mount Point** and the alarm content contains **mounts: [{"source":"xxx","destination":"yyy"...]**, it indicates that a file path mapped to the container is unsafe. In this case, check for risky directory mappings. You can configure the mount paths that are considered secure in the container information collection policy. **NOTE** Alarms will not be triggered for the files that need to be frequently accessed by Docker containers, such as **/etc/hosts** and **/etc/resolv.conf**. ● Startup of containers in the **host** namespace The namespace of a container must be isolated from that of a server. If a container and a server use the same namespace, the container can access and modify the content on the server, which incurs container escape risks. To prevent such problems, HSS checks the container PID, network, and whether the container namespace is **host**.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
			If the alarm name is **Container Namespace** and the alarm content contains **Container PID Namespace Mode**, **Container IPC Namespace Mode**, or **Container Network Namespace Mode**, it indicates that a container whose namespace is **host** is started. In this case, check the container startup options based on the alarm information. If you are sure that the container can be trusted, you can ignore the alarm.
		Container Image blocking	If a container contains insecure images specified in the **Suspicious Image Behaviors**, before the container is started, an alarm will be generated for the insecure images. **NOTE** You need to **install the Docker plug-in**.
		Suspicious command executions	• Check whether a scheduled task or an automated startup task is created or deleted by running commands or tools. • Detect suspicious remote command execution.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
		Abnormal runtime behaviors	Abnormal runtime behaviors refer to suspicious behaviors that occur during container running. These behaviors may affect container security or even be exploited by attackers to escape containers. HSS can detect container escapes at the levels of networks, servers, pods, containers, processes, and system calls. Five types of abnormal behaviors (processes, files, network activities, process capabilities, and system calls) in containers and their hosts can be detected, reported, and blocked to prevent container escape and protect container runtime. ● Process monitoring: Monitor suspicious process behaviors in containers and their hosts, and detect and prevent abnormal system calls and process operations, for example, using **cdk evaluate** to collect container information through container penetration test tools. ● File system monitoring: Monitor file system operations in containers and their hosts, and detect and prevent unauthorized file access and modification, for example, running the **echo "test" /etc/profile** command to modify key system files. ● Network activity monitoring: Monitor network activities in containers and their hosts, and detect and prevent abnormal network connections and data transmission, for example, running the **wget 127.0.0.x** command to connect to the destination IP address in a container. ● Process capabilities monitoring: Monitor the capabilities of processes in containers and their

Alarm Type	Alarm Type Description	Alarm	Alarm Description
			hosts, and detect and prevent suspicious capability configuration, for example, running the **mknod -m 640 /tmp/test4 c 100 2** command to mount the devices represented by special strings. • System call monitoring: Monitor system calls in the containers and their hosts, and detect and prevent high-risk system calls, for example, running the **chown root.root /opt/testfile** command to change the owner and owner group of files in a container. Containers that meet the following conditions can be scanned for abnormal runtime behaviors: • The Linux kernel version is 5.10 or later. • BPF LSM is enabled. To use abnormal runtime behavior detection, configure and enable the container escape prevention policy. For details, see **Configuring Policies**.
Abnormal User Behavior	Abnormal or unexpected user behaviors that occur in a specific environment or system, sometimes within a short period of time, such as abnormal logins or unauthorized access. To detect and identify these abnormal behaviors, user operations need to be checked and analyzed.	Invalid accounts	Hackers can probably crack unsafe accounts on your containers and control the containers. HSS checks suspicious hidden accounts and cloned accounts and generates alarms on them.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
		Brute-force attacks	Detect and report alarms for brute-force attack behaviors, such as brute-force attack attempts and successful brute-force attacks, on containers. Detect SSH, web, and Enumdb brute-force attacks on containers. **NOTE** • Currently, brute-force attacks can be detected only in the Docker runtime. • Ubuntu 24.04 and SUSE 15 SP6 do not support brute-force attack detection.
		Password thefts	Report alarms on user key theft.
Abnormal Network Access	Abnormal network access refers to exceptions that occur during network connection or data transmission and different from normal usage. These exceptions include abnormal resource usage, unauthorized access, and abnormal connections. Abnormal network access behaviors on servers may be a prelude to attacks.	Abnormal outbound connections	Report alarms on suspicious IP addresses that initiate outbound connections. Only the containers with kernel 5.10 or later can be checked.
		Port forwarding	Report alarms on port forwarding using suspicious tools.
Abnormal Cluster Behaviors	Abnormal cluster behaviors occur in the cluster environment, such as pod creation, execution exceptions, and user information enumeration. These exceptions may indicate that the cluster is under an attack.	Abnormal pod behaviors	Detect abnormal operations such as creating privileged pods, static pods, and sensitive pods in a cluster and abnormal operations performed on existing pods and report alarms.
		User information enumerations	Detect the operations of enumerating the permissions and executable operation list of cluster users and report alarms.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
		Binding cluster roles	Detect operations such as binding or creating a high-privilege cluster role or service account and report alarms.
		Kubernetes event deletions	Detect the deletion of Kubernetes events and report alarms.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
Fileless Attacks	A fileless attack does not release malicious executable files. Instead, it writes malicious code into the system memory or registry. Because there are no malicious files used, such an attack is difficult to detect. Fileless attacks are classified into the following types based on disk file activities: • No file activities. That is, no disk files are stored or operated in disks. Generally, such attacks are initiated in the upper-layer hardware, firmware, or software layer rather than the OS. • Indirect activities through files. That is, no files are stored in disks, but activities are indirectly performed through files. Malicious code is usually indirectly loaded to the memory for execution through white files. Most of such malicious code is carried by scripts, which are executed through	Process injection	Scan for malicious code injection into running processes and report alarms.
		Dynamic library injection	Scan for the payloads injected by hijacking functions in the dynamic link library (DLL) and report alarms.
		Memory file process	Scan for the behaviors of creating an anonymous malicious file that exists only in the RAM through the memfd_create system call and executing the file, and report alarms on such behaviors.

Alarm Type	Alarm Type Description	Alarm	Alarm Description
	program commands or specific mechanisms such as disk boot records. • File activities required. Generally, malicious code is converted into data. Attackers exploit file-related program vulnerabilities or features to convert malicious data into malicious code for execution.		

Security Alarm Severities

HSS alarm severities indicate alarm impact on service systems. It can be Critical, High, Medium, or Low. For details, see **Table 8-8**.

Table 8-8 Security alarm severities

Alarm Severity	Description
Critical	A critical alarm indicates that the system is severely attacked, which may cause data loss, system breakdown, or long service interruption. For example, such alarms are generated if ransomware encryption behaviors or malicious programs are detected. You are advised to handle the alarms immediately to avoid severe system damage.
High	A high-risk alarm indicates that the system may be under an attack that has not caused serious damage. For example, such alarms are generated if unauthorized login attempts are detected or unsafe commands (for deleting critical system files or modifying system settings) are executed. You are advised to investigate and take measures in a timely manner to prevent attacks from spreading.

Alarm Severity	Description
Medium	A medium-risk alarm indicates that the system has potential security threats, but there are no obvious signs of being attacked. For example, if abnormal modifications of a file or directory are detected, there may be potential attack paths or configuration errors in the system. You are advised to further analyze and take proper preventive measures to enhance system security.
Low	A low-risk alarm indicates that a minor security threat exists in the system but does not have significant impact on your system. For example, such alarms are generated if port scans are detected, indicating that there may be attackers trying to find system vulnerabilities. These alarms do not require immediate emergency measures. If you have high requirements on asset security, pay attention to the security alarms of this level.

Monitored important file paths

Type	Linux
bin	/bin/ls /bin/ps /bin/bash /bin/login
usr	/usr/bin/ls /usr/bin/ps /usr/bin/bash /usr/bin/login /usr/bin/passwd /usr/bin/top /usr/bin/killall /usr/bin/ssh /usr/bin/wget /usr/bin/curl

8.2.2 Viewing Container Alarms

HSS displays alarm and event statistics and their summary all on one page. You can have a quick overview of alarms, including the numbers of urgent alarms, total alarms, containers with alarms, and handled alarms.

The **Events** page displays the alarm events generated in the last 30 days.

The status of a handled event changes from **Unhandled** to **Handled**.

Constraints

Servers that are not protected by HSS do not support operations related to alarms and events.

Viewing Container Alarms

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Detection & Response** > **Alarms** and click the **Container Alarms** tab to view container alarms and events.

Figure 8-8 Container alarms

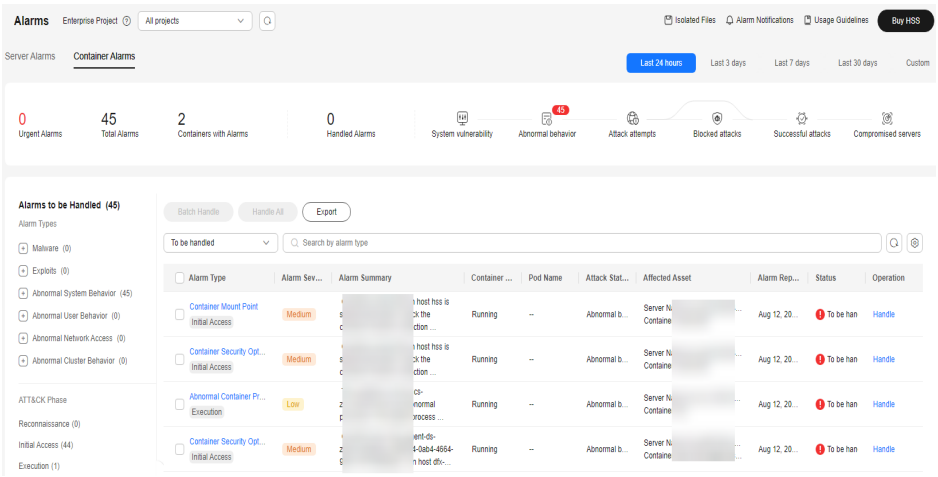


Table 8-9 Container alarm statistics

Parameter	Description
Urgent Alarms	Number of alarms that need to be handled immediately. You can click a value to view the corresponding alarm events.
Total Alarms	Total number of alarms reported on your assets. You can click the number to view all alarms.
Containers with Alarms	Number of containers for which alarms are generated.
Handled Alarms	Number of handled alarms

- **Viewing the alarms of a certain type or ATT&CK phase**

  In the **Alarms to Be Handled** area, select an alarm type or att&ck phase. For details, see **ATT&CK attack phase description**.

NOTE

Adversarial Tactics, Techniques and Common Knowledge (ATT&CK) is a framework that helps organizations understand the cyber adversary tactics and techniques used by threat actors across the entire attack lifecycle.

Table 8-10 ATT&CK phases

ATT&CK Phase	Description
Reconnaissance	Attackers seek vulnerabilities in your system or network.
Initial Access	Attacker try to enter your system or network.
Execution	Attackers try to run malicious code.
Persistence	Attackers try to maintain their foothold.
Privilege Escalation	Attackers try to obtain higher permissions.
Defense Evasion	Attackers try to avoid being detected.
Credential Access	Attackers try to steal account names and passwords.
Command and Control	Attackers try to communicate with compromised machines to control them.
Impact	Attackers try to manipulate, interrupt, or destroy your system or data.

- **Viewing details about container alarms and events**

  Click an alarm name to go to its details page. You can view the alarm description, handling suggestion, alarm path and address in HSS forensics, and the handling history of similar alarms. **Table 8-11** describes the details of alarm information.

  NOTE

  For some HSS alarms that have been determined as malware alarms, the alarm source files are saved in the cloud center and you can download them. You can download the alarm source files to your local PC for analysis. The password for decompressing the files is **unlock**.

  For unacknowledged malware alarms, alarm source files cannot be downloaded. Check the actual service conditions and determine whether the files are malicious files.

Table 8-11 Alarm detail parameters

Parameter	Description
Intelligence Engine	Detection engines used by HSS, including the virus detection engine, AI detection engine, and malicious intelligence detection engine.
Attack Status	Status of the current threat.

Parameter	Description
First Occurred	Time when an attack alarm was first generated
Alarm ID	Unique ID of an alarm
ATT&CK Phase	For details about the attack technology models used by attackers in each phase, see **Table 8-10**.
Last Occurred	Time when an attack alarm was last generated
Alarm Information	Detailed information about an alarm, including the alarm description, alarm summary, affected assets, and handling suggestions.

Parameter	Description
Forensics	HSS investigates information such as the attack triggering path or virus type based on the alarm type, helping you quickly trace and locate the attack source. – **Process Tree**: If an alarm event contains process information, you can check the process ID, process file path, process command line, process startup time, and process file hash on the **Forensics** tab page. You can locate malicious processes based on such information. – **File Forensics**: If an alarm event contains file information, the file forensics information is displayed on the **Forensics** tab page. File forensics information includes the file path, file hash, file operation type, and user information (which may not be obtained by instantaneous processes). You can locate a file change based on the information. – Network Forensics: If an alarm event contains network-related information, you can check the local IP address, local port, remote IP address, remote port, and protocol on the **Forensics** tab. You can determine whether a user is unauthorized based on such information. – User Forensics: If an alarm event contains user-related information, you can check the user name, login IP address, login service type, login service port, last login event, and number of login failures on the **Forensics** tab. You can determine whether the access is unauthorized based on such information. – **Registry Forensics**: If an alarm event contains registry information, you can check the registry keys and values on the **Forensics** tab page. You can locate registry risks based on such information. – **Abnormal Login Forensics**: If an alarm event contains abnormal login information, you can check the login IP address and port number on the **Forensics** tab page. You can determine whether the login is trusted based on such information. – **Malware Forensics**: If an alarm event contains malware information, you can check the malware family, virus name, virus type, and confidence level on the **Forensics** tab page. – **Auto-started Item Forensics**: If an alarm event contains self-startup item information, you can check the user, command, self-startup item information, and process file command line information on the **Forensics** tab page. You can locate the auto-started items based on such information. – **Kernel Forensics**: If an alarm event contains kernel information, you can check system functions and kernel functions on the **Forensics** tab page. You can locate kernel risks based on the information.

Parameter	Description
	– **Container Forensics**: If an alarm event contains container information, you can check the container name and image ID on the **Forensics** tab page. You can locate container risks based on such information.
Similar Alarms	Alarm whose server and event type are the same as those of this alarm. You can handle the alarm according to the handling method of the similar alarms.

- **Viewing the pod details of a container alarm event**

  Click the pod name of the target alarm event to view the pod details, including the node IP address, namespace, pod IP address, pod label, and container list.

----End

8.2.3 Handling Container Alarms

HSS displays alarm and event statistics and their summary all on one page. You can have a quick overview of alarms, including the numbers of urgent alarms, total alarms, containers with alarms, and handled alarms.

The **Events** page displays the alarms generated in the last 30 days.

The status of a handled alarm changes from **Unhandled** to **Handled**.

Constraints

Servers that are not protected by HSS do not support operations related to alarms and events.

Handling Container Alarms

This section describes how you should handle alarms to enhance server security.

NOTE

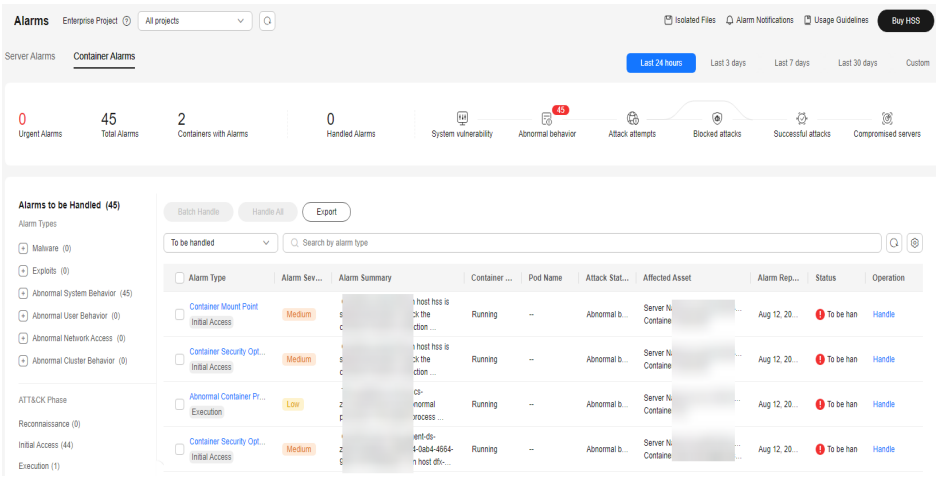
Do not fully rely on alarm handling to defend against attacks, because not every issue can be detected in a timely manner. You are advised to take more measures to prevent threats, such as checking for and fixing vulnerabilities and unsafe settings.

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Detection & Response** > **Alarms**, and click **Container Alarms**.

Figure 8-9 Container alarms



Step 4 Click an alarm name to view the alarm details and suggestions.

Step 5 Handle alarms.

NOTE

Alarms are displayed on the **Container Alarms** page. Here you can check up to 30 days of historical alarms.

Check and handle alarms as needed. The status of a handled alarm changes from **Unhandled** to **Handled**. HSS will no longer collect its statistics.

- Handling a single alarm

  In the **Operation** column of an alarm, click **Handle**.

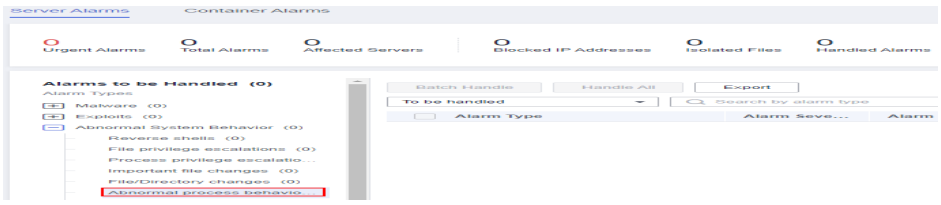
- Handling alarms in batches

  Select all alarms and click **Batch Handle** above the alarm list.

- Handling all alarms

  In the **Alarms to be Handled** area on the left pane of the alarm list, select an alarm type and click **Handle All** above the alarm list.

Figure 8-10 Handling all alarms



Step 6 In the **Handle Event** dialog box, select an action. For details about the processing modes, see **Table 8-12**.

When handling a single alarm event or handling alarms in batches, you can select **Handle duplicate alarms in batches** in the **Handle Event** dialog box.

Table 8-12 Alarm handling methods

Action	Description
Ignore	Ignore the current alarm. Any new alarms of the same type will still be reported by HSS.
Mark as handled	If you have manually handled an event, choose **Mark as handled**. You can add remarks to record details about event handling.
Add to Login Whitelist	Add false alarmed items of the **Brute-force attack** and **Abnormal login** types to the Login Whitelist. HSS will no longer report alarm on the Login Whitelist. A whitelisted login event will not trigger alarms. If the login IP address has been blocked, adding the login alarm event to the Login Whitelist will unblock the login IP address. The following alarm events can be added: • Brute-force attacks • Abnormal logins
Add to process whitelist	If you can confirm that a process triggering an alarm can be trusted, you can add it to the process whitelist.
Add to alarm whitelist	Add false alarmed items to the login whitelist. HSS will no longer report alarm on the whitelisted items. A whitelisted alarm will not trigger alarms. After adding an alarm to the alarm whitelist, you can customize a whitelist rule. The custom rule types vary depending on the alarm types, including the file path, process path, process command line, remote IP address, and user name. If a detected alarm event hit the rule you specified, HSS does not generate an alarm. For details about events that can be isolated and killed, see **Container Alarm Events**.

Step 7 Click **OK**.

You check handled alarms. For details, see **Historical Records**.

----End

Canceling Handled Container Alarms

You can cancel the processing of a handled alarm event.

Step 1 In the alarm event list, filter handled alarms.

Step 2 In the **Operation** column of an alarm, click **Handle**.

Step 3 In the **Handle Alarm Event** dialog box, click **OK** to cancel the last handling.

----End

8.2.4 Exporting Container Alarms

You can export container alarms and events to a local PC.

Exporting Container Alarms

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Detection & Response** > **Alarms**.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Container Alarms** tab.

Step 5 Click **Export** above the alarm list to export all security events.

To export the alarms of a certain type or ATT&CK attack phase, select the type or phase in the **Alarms to Be Handled** area and click **to export**.

Step 6 View the export status in the upper part of the alarms page. After the export is successful, obtain the exported information from the default file download address on the local host.

NOTICE

Do not close the browser page during the export. Otherwise, the export task will be interrupted.

----End

8.3 Whitelist Management

8.3.1 Managing Login Whitelist

You can configure the IP addresses of destination servers, login IP addresses, login usernames, and user behaviors in the Login Whitelist.

You can add Login Whitelist in either of the following ways:

- Add it to the Login Whitelist when handling false alarms of the **Brute-force attack** and **Abnormal login** types. For details, see Viewing Server Alarms.
- On the Login Whitelist page, add Login Whitelist.

NOTE

- If the destination server IP address, login IP address, and username of a login are all whitelisted, this login will be allowed without checking.
- To unblock IP addresses, add the IP address to the whitelist of the login security detection policy. For details, see **Login Security Check**.

Adding Login Whitelist

Step 1 **Log in to the management console**.

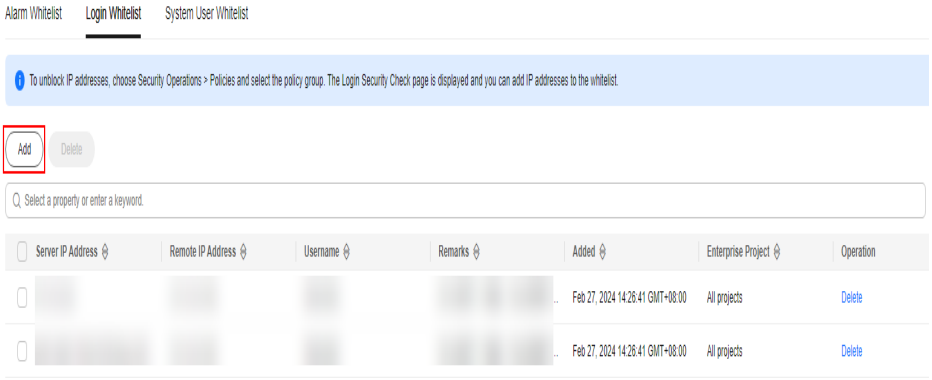
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 Choose **Detection & Response** > **Whitelists**. Click **Login Whitelist** and click **Add**.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 8-11 Adding Login Whitelist



Step 4 On the displayed page, enter the server IP address, login IP address, and login username.

Table 8-13 Login Whitelist parameters

Parameter	Description	Example Value
Server IP Address	IP address or subnet mask of the destination server. • IP address: for example, **192.168.1.1** or **16A0::1** • IP subnet mask: for example, **192.168.7.0/24** or **16A0:10:AB00:1E::/64**	192.168.1.1
Login IP Address		
Login Username	Current login username	hss_test
Remarks	Custom whitelist description	Test

Parameter	Description	Example Value
Handle historical alarms	After this option is selected, login alarms that have been generated will be synchronized.	Selected

Step 5 Click **OK**.

----End

Removing an Item from the Login Whitelist

To remove a server IP address from the Login Whitelist, select it and click **Delete** above the list, or click **Delete** in its **Operation** column.

NOTE

Exercise caution when performing the deletion operation because it cannot be rolled back.

8.3.2 Managing the Alarm Whitelist

You can configure the alarm whitelist to reduce false alarms. Events can be deleted from the whitelist.

Whitelisted events will not trigger alarms.

On the **Alarms** page, you can add falsely reported alarms to the alarm whitelist. After an alarm is added to the whitelist, HSS will not generate alarms on it.

Adding Events to the Alarm Whitelist

When handling an alarm event, you can select **Add it to alarm whitelist**. For details, see **Handling Server Alarms**.

Checking the Alarm Whitelist

Perform the following steps to check the alarm whitelist:

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Detection & Response** > **Whitelists**.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 4 Click the **Alarm Whitelist** tab to view the whitelist. For more information, see **Table 8-14**.

Figure 8-12 Alarm whitelist

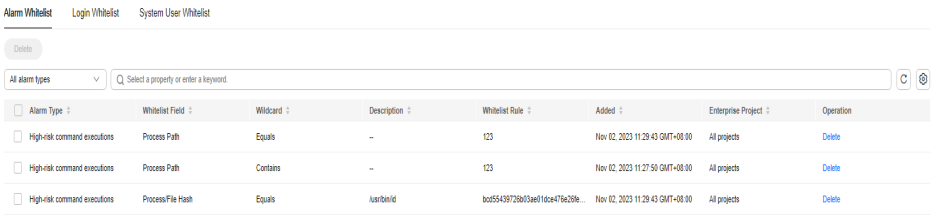


Table 8-14 Alarm whitelist parameters

Parameter Name	Description
Alarm Type	Name of the alarm whitelist type.
Whitelist Field	Whitelisted file field
Wildcard	Logic used by a whitelisted rule, which can be equal or include.
Description	Description of the whitelist.
Whitelist Rule	Whitelisted rule ID
Added	Time when an alarm is added to the whitelist.
Enterprise Project	Enterprise project
Occurrences Today	Number of times that alarm events meet the whitelist conditions today.
Total Occurrences	Total number of times that alarm events meet the whitelist conditions. By default, this parameter is not displayed.

----End

Removing an Alarm from the Whitelist

To remove an alarm from the whitelist, select it and click **Delete**.

NOTE

- Exercise caution when performing this operation. Whitelisted alarms cannot be restored after removal, and will be reported once triggered.
- When an alarm is removed from the whitelist, you can select **Clear Associated Alarms** to update the handling status of all alarm events associated with the whitelist item.

8.3.3 Managing the System User Whitelist

HSS generates risky account alarms when non-root users are added to the root user group. You can add the trusted non-root users to the system user whitelist. HSS does not generate risky account alarms for users in the system user whitelist.

Adding an Item to the System User Whitelist

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

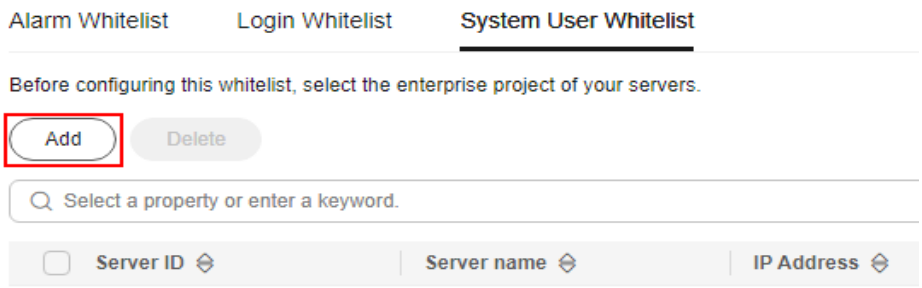
Step 3 In the navigation pane on the left, choose **Detection & Response** > **Whitelists**.

Step 4 (Optional) In the upper left corner of the **Whitelists** page, select the enterprise project to which the server belongs or **All projects** for **Enterprise Project**.

If you have not enabled the enterprise project function, skip this step.

Step 5 Click the **System User Whitelist** tab and click **Add**.

Figure 8-13 Configuring the system user whitelist



Step 6 In the **Add to System User Whitelist** dialog box, enter the server ID, system username, and remarks.

Step 7 Click **OK**.

----End

Modifying the System User Whitelist

Step 1 (Optional) In the upper left corner of the **Whitelists** page, select the enterprise project to which the server belongs or **All projects** for **Enterprise Project**.

If you have not enabled the enterprise project function, skip this step.

Step 2 In the row of the target system user whitelist, click **Modify** in the **Operation** column.

Step 3 In the **Modify System User Whitelist** dialog box, modify the information and click **OK**.

----End

Removing an Item from the System User Whitelist

Step 1 (Optional) In the upper left corner of the **Whitelists** page, select the enterprise project to which the server belongs or **All projects** for **Enterprise Project**.

If you have not enabled the enterprise project function, skip this step.

Step 2 In the row of the target system user whitelist, click **Delete** in the **Operation** column.

You can also select multiple system user whitelists and click **Delete** in the upper left corner of the system user whitelist list.

Step 3 In the dialog box displayed, click **OK**.

----End

9 Security Operations

9.1 Policy Management

9.1.1 Policy Management Overview

What Is a Policy Group?

HSS comes in multiple editions, including basic, professional, enterprise, premium, WTP, and container editions. Except for the basic edition, they each have a default protection policy group. A policy group is a collection of policies. These policies can be applied to servers to centrally manage and configure the sensitivity, rules, and scope of HSS detection and protection.

You can create custom policy groups for HSS premium and container editions. If you have multiple servers protected by the premium or container edition but have different protection requirements for them, you can create custom policy groups for different servers and deploy different policy groups. For details, see **Creating a Custom Policy Group**.

What Policies Are Does a Policy Group Contain?

Policy groups vary by edition, as shown in **Table 9-1**. You can customize policies for asset management, baseline inspection, and intrusion detection as needed. For details, see **Configuring Policies**.

Table 9-1 Policies

Function Type	Policy	Action	Supported OS	Default Status	Professional Edition	Enterprise Edition	Premium Edition	WTP Edition	Container Edition
Assets	Asset discovery	Scan and display all software in one place, including software name, path, and major applications, helping you identify abnormal assets.	Linux and Windows	Enabled	×	×	√	√	√
Baseline Inspection	Weak password detection	Change weak passwords to stronger ones based on HSS scan results and suggestions.	Linux and Windows	Enabled	√	√	√	√	√
	Container information collection	Collect information about all containers on a server, including ports and directories, and report alarms for risky information.	Linux	Enabled	×	×	×	×	√
	Configuration check	Check the unsafe Tomcat, Nginx, and SSH login configurations found by HSS.	Linux and Windows	Enabled	×	×	√	√	√

Function Type	Policy	Action	Supported OS	Default Status	Professional Edition	Enterprise Edition	Premium Edition	WTP Edition	Container Edition
Intrusions	AV detection	Check server assets and report, isolate, and kill the detected viruses. The generated alarms are displayed under **Detection & Response** > **Alarms** > **Server Alarms** > **Event Types** > **Malware**. After AV detection is enabled, the resource usage is as follows: The CPU usage does not exceed 40% of a single vCPU. The actual CPU usage depends on the server status. For details, see **How Many CPU and Memory Resources Are Occupied by the Agent When It Performs Scans?**	Linux and Windows	Enabled	√	√	√	√	×
	Cluster intrusion detection	Detect container high-privilege changes, creation in key information, and virus intrusion.	Linux	Disabled	×	×	×	×	√

Function Type	Policy	Action	Supported OS	Default Status	Professional Edition	Enterprise Edition	Premium Edition	WTP Edition	Container Edition
	Container escape	Check for and generate alarms on container escapes. If you do not want to detect container escape for certain containers, you can set the image, process, and pod name whitelist.	Linux	Disabled	×	×	×	×	√
	Container anti-escape	Container escape prevention can monitor abnormal runtime behaviors of five types (including processes, files, network activities, process capabilities, and system calls) on containers and their hosts; and report alarms and block abnormal behaviors to enhance container security. To use abnormal runtime behavior detection, configure a container escape prevention policy, select a protected object (a server or container), and enable the policy.	Linux	Disabled	×	×	×	×	√

Function Type	Policy	Action	Supported OS	Default Status	Professional Edition	Enterprise Edition	Premium Edition	WTP Edition	Container Edition
	Container information module	You can configure a trusted container whitelist based on the container name, organization name to which the image belongs, and namespace. The container whitelist does not detect or generate alarms.	Linux	Enabled	×	×	×	×	√
	Webshell detection	Scan web directories on servers for web shells.	Linux and Windows	Enabled	√	√	√	√	√
	Container file monitoring	Detect file access that violates security policies. Security O&M personnel can check whether hackers are intruding and tampering with sensitive files.	Linux	Enabled	×	×	×	×	√
	Container process whitelist	Check for process startups that violate security policies.	Linux	Disabled	×	×	×	×	√
	Suspicious image behaviors	Configure the blacklist and whitelist and customize permissions to ignore abnormal behaviors or report alarms.	Linux	Disabled	×	×	×	×	√

Function Type	Policy	Action	Supported OS	Default Status	Professional Edition	Enterprise Edition	Premium Edition	WTP Edition	Container Edition
	HIPS detection	Check registries, files, and processes, and report alarms for operations such as abnormal changes.	Linux and Windows	Enabled	×	√	√	√	√
	File protection	Check the files in the Linux OS, applications, and other components to detect tampering.	Linux and Windows	Enabled	√	√	√	√	√

Function Type	Policy	Action	Supported OS	Default Status	Professional Edition	Enterprise Edition	Premium Edition	WTP Edition	Container Edition
	Login security check	HSS can detect brute-force attacks on the following service accounts: • Windows: RDP, SQL Server • Linux: MySQL, vsftpd, SSH If the number of brute-force attacks (consecutive incorrect password attempts) reaches 5 or within 30 seconds or reaches 15 within 1 hour, HSS will block the login source IP address. By the IP address is blocked for 12 hours to prevent server intrusions caused by brute-force attacks. You can check whether a login IP address is trustworthy based on its attack type and how many times it has been blocked. You can manually unblock the IP addresses you trust.	Linux and Windows	Enabled	√	√	√	√	√

Function Type	Policy	Action	Supported OS	Default Status	Professional Edition	Enterprise Edition	Premium Edition	WTP Edition	Container Edition
	Malicious file detection	• Reverse shell: Monitor user process behaviors in real time to detect reverse shells caused by invalid connections. • Detect actions on abnormal shells, including moving, copying, and deleting shell files, and modifying the access permissions and hard links of the files.	Linux	Enabled	√	√	√	√	√
	External connection detection	Detect a process proactively connects to an external network.	Linux (kernel 5.10 or later)	Enabled	√	√	√	×	√
	Port scan detection	Detect scanning or sniffing on specified ports and report alarms.	Linux	Disabled	×	×	√	√	√

Function Type	Policy	Action	Supported OS	Default Status	Professional Edition	Enterprise Edition	Premium Edition	WTP Edition	Container Edition
	Abnormal process behaviors	All the running processes on all your servers are monitored for you. You can create a process whitelist to ignore alarms on trusted processes, and can receive alarms on unauthorized process behavior and intrusions.	Linux	Enabled	√	√	√	√	√
	Root privilege escalation	Detect the root privilege escalation for files in the current system.	Linux	Enabled	√	√	√	√	√
	Real-time process	Monitor the executed commands in real time and generate alarms if high-risk commands are detected.	Linux and Windows	Enabled	√	√	√	√	√
	Rootkit detection	Detect server assets and report alarms for suspicious kernel modules, files, and folders.	Linux	Enabled	√	√	√	√	√
	Fileless attack detection	Scan for process injection, dynamic library injection, and memory file process behavior in user assets.	Linux	Disabled	√	√	√	√	√

Function Type	Policy	Action	Supported OS	Default Status	Professional Edition	Enterprise Edition	Premium Edition	WTP Edition	Container Edition
Self-protection	Windows self-protection	Prevent malicious programs from uninstalling the agent, tampering with HSS files, or stopping HSS processes.	Windows	Disabled	×	×	√	√	×

Function Type	Policy	Action	Supported OS	Default Status	Professional Edition	Enterprise Edition	Premium Edition	WTP Edition	Container Edition

		NOTE
		• Self-protection depends on antivirus detection, HIPS detection, and ransomware protection. It takes effect only when more than one of the three functions are enabled.
		• Enabling the self-protection policy has the following impacts:
		  • The agent cannot be uninstalled on the control panel of a server, but can be uninstalled on the HSS console.
		  • HSS processes cannot be terminated.
		  • In the agent installation path **C:\Program Files\HostGuard**, you can only access the **log** and **data** directories (and the **upgrade** directory, if your agent has been upgraded).							

Function Type	Policy	Action	Supported OS	Default Status	Professional Edition	Enterprise Edition	Premium Edition	WTP Edition	Container Edition

	Linux self-protection	Prevent malicious programs from stopping the HSS process and uninstalling the agent.
		NOTE
		• Enabling the self-protection policy has the following impacts:
		  • The agent cannot be uninstalled using commands but can be uninstalled on the HSS console.
		  • HSS processes cannot be terminated.
			Linux	Disabled	×	×	√	√	√

Policy Group Protection Modes

The Policy groups can detect threats in sensitive or balanced mode to meet the requirements of different scenarios. The two modes apply to the following scenarios:

- Sensitive mode: applicable to high security scenarios, such as network protection drills and key event security assurance. It achieves a high threat detection rate.
- Balanced mode: applicable to routine protection scenarios. The threat detection rate and accuracy are relatively balanced.

Policies affected by the protection mode: malicious file detection, web shell detection, HIPS detection, antivirus, and abnormal process behavior policies. For details about the differences between these policies in the two protection modes, see **Table 9-2**.

Table 9-2 Differences between policies in sensitive and balanced modes

Policy Name	Balanced	Sensitive
Malicious File Detection	• File size: 10 MB • File types: ELF, Python, shell, and web shell	• File size: 50 MB • File types: all
Web Shell Detection	The suspicious files that match YARA rules are not checked.	All files
HIPS detection	Moderately sensitive	Highly sensitive. Compared with the balanced mode, it is more suitable for special detection rules in network protection drills and key event assurance.

Policy Name	Balanced	Sensitive
AV Detection	If **Protected File Type** is set to **All** for anti-virus detection, only the files with the following file name extensions are checked: • **Linux** bat, bin, cmd, com, cpl, exe, gadget, inf1, ins, inx, isu, job, jse, js, lnk, msc, msi, msp, mst, paf, pif, ps1, reg, rgs, scr, sct, shb, shs, u3p, vb, vbe, vbs, vbscript, ws, wsf, wsh, doc, dot, wbk, docx, docm, dotm, docb, pdf, wll, wwl, xls, xlt, xlm, xll_, xla_, xla5, xla8, xlsx, xlsm, xltx, xltm, xlsb, xla, xlam, xll, xlw, ppt, pot, pps, ppa, pptx, pptm, potx, potm, ppam, ppsx, ppsm, sldx, sldm, pa, accda, accdb, accde, accdt, accdr, accdu, mda, mde, one, ecf, pub, xps, png, tif, wmf, bmp, gif, jpeg, dwg, ico, pgp, psd, cdr, dxf, emf, eps, jp2, sgi, xpm, dll, sys, rar, zip, 7z, sh, cab, gz, gzip, xz, ace, tar, lzh, lha, bz, bz2, iso, jar, apk, jsp, jspx, php, asp, aspx, ashx, asmx, py, hta, ko • **Windows** bat, bin, cmd, com, cpl, exe, gadget, inf1, ins, inx, isu, job, jse,js, lnk, msc, msi, msp, mst, paf, pif, ps1, reg, rgs, scr, sct,shb, shs, u3p, vb, vbe, vbs, vbscript, ws, wsf, wsh, doc, dot, wbk,docx, docm, dotm, docb, pdf, wll, wwl, xls, xlt, xlm, xll_, xla_, xla5, xla8, xlsx, xlsm, xltx, xltm, xlsb, xla, xlam, xll, xlw, ppt, pot, pps,ppa, pptx, pptm, potx, potm, ppam, ppsx, ppsm, sldx, sldm, pa, accda, accdb, accde, accdt, accdr, accdu, mda, mde, one, ecf, pub, xps, png, tif, wmf, bmp, gif, jpeg, dwg, ico, pgp, psd, cdr, dxf, emf, eps, jp2, sgi, xpm, dll, sys, rar, zip, 7z, sh, cab, gz, gzip, xz, ace, tar, lzh, lha, bz, bz2, iso, jar, apk, jsp, jspx, php, asp, aspx, ashx, asmx, hta	If **Protected File Type** is set to **All** for anti-virus detection, all types of files are checked.

Policy Name	Balanced	Sensitive
Abnormal Process Behaviors	An alarm is generated only if multiple abnormal process behaviors are detected at the same time.	An alarm is generated immediately if an abnormal process behavior is detected.

9.1.2 Configuring Policies

Scenario

After HSS is enabled, you can configure HSS policies based on your service requirements.

Constraints

- The professional, enterprise, premium, WTP, or container edition is enabled.
- For the default policy groups, you are advised to retain their default configurations.
- Modifications on a policy take effect only in the group it belongs to.

Accessing the Policies Page

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree on the left, choose **Security Operation** > **Policies**. On the displayed page, **Policy group parameters** describes the fields.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 9-1 Policy management

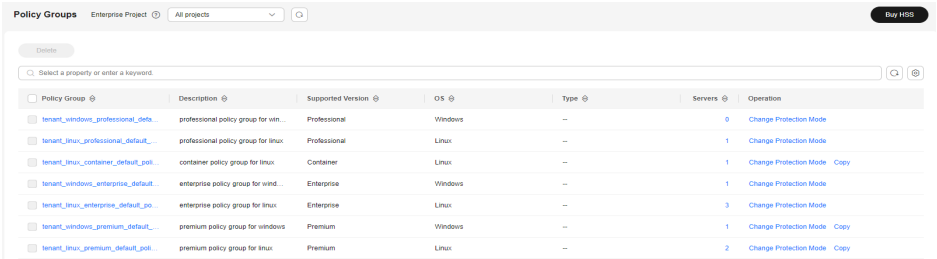
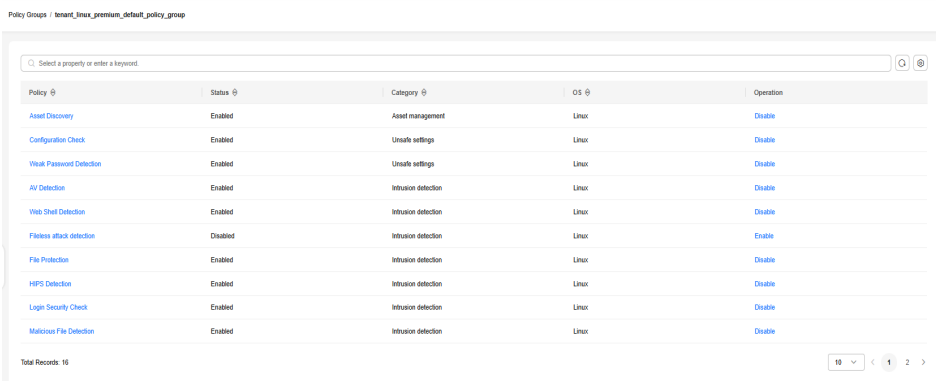


Table 9-3 Policy group parameters

Parameter	Description
Policy Group	Name of a policy group The preset policy group names are as follows: • **tenant_linux_advanced_default_policy_group**: preset policy of the Linux professional edition, which can only be viewed but cannot be copied or deleted. • **tenant_windows_advanced_default_policy_group**: preset policy of the Windows professional edition, which can only be viewed but cannot be copied or deleted. • **tenant_linux_container_default_policy_group**: preset Linux policy of the container edition. You can copy this policy group and create a new one based on it. • **tenant_linux_enterprise_default_policy_group** is the default Linux policy of the enterprise edition. This policy group can only be viewed, and cannot be copied or deleted. • **tenant_windows_enterprise_default_policy_group**: preset Windows policy of the enterprise edition. This policy group can only be viewed, and cannot be copied or deleted. • **tenant_linux_premium_default_policy_group**: preset Linux policy of the premium edition. You can create a policy group by copying this default group and modify the copy. • **tenant_windows_premium_default_policy_group**: preset Windows policy of the premium edition. You can create a policy group by copying this default group and modify the copy. • **wtp**_*ServerName* is a WTP edition policy group. It is generated by default when WTP is enabled for a server.
Description	Detailed description of a policy group.
Supported Version	HSS edition supported by a policy group.
Supported OS	OS supported by a policy group.
Associated Servers	To view details about the servers associated with a policy group, click the number in the **Servers** column of the group.

Step 4 Click the name of a policy group to access the policy detail list.

Figure 9-2 Policies



Step 5 In the row of the policy, click **Enable** or **Disable** in the **Operation** column.

After a policy is disabled, HSS does not check for security issues based on the policy.

Step 6 Click the name of a policy to modify it. The following sections describe the policies.

----End

Asset Discovery

Step 1 Click **Asset Discovery**.

Step 2 On the displayed page, modify the settings as required. For more information, see **Table 9-4**.

Table 9-4 Parameter description

Parameter	Description
Scan Time	Fixed time for automatic assets scan. The scan time can be customized for middleware, web frameworks, kernel modules, web applications, websites, web services, and databases. Offset time is the automatic adjust ahead of or behind the specified scan time. • Accounts: Linux accounts are automatically checked every hour, and Windows accounts are checked in real time. • Open ports are automatically checked every 30 seconds. • Processes are automatically checked every hour. • Installed software is automatically checked once a day. • Auto-started items are automatically checked every hour. • Middleware/Web framework: You can select the scan date and time together. • Kernel modules: You can set the scan date and time as required. • Web applications/Websites/Web services/Databases: You can select the scan date and time together.
Scanned Web Directories	Specifies a web directory to be scanned.

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

Weak Password Scan

Weak passwords are not attributed to a certain type of vulnerabilities, but they bring no less security risks than any type of vulnerabilities. Data and programs will become insecure if their passwords are cracked.

HSS proactively detects the accounts using weak passwords and generates alarms for the accounts. You can also add a password that may have been leaked to the weak password list to prevent server accounts from using the password.

Step 1 Click **Weak Password Detection**.

Step 2 In the **Policy Settings** area, modify the settings as required. For more information, see **Table 9-5**.

Figure 9-3 Modifying the weak password detection policy

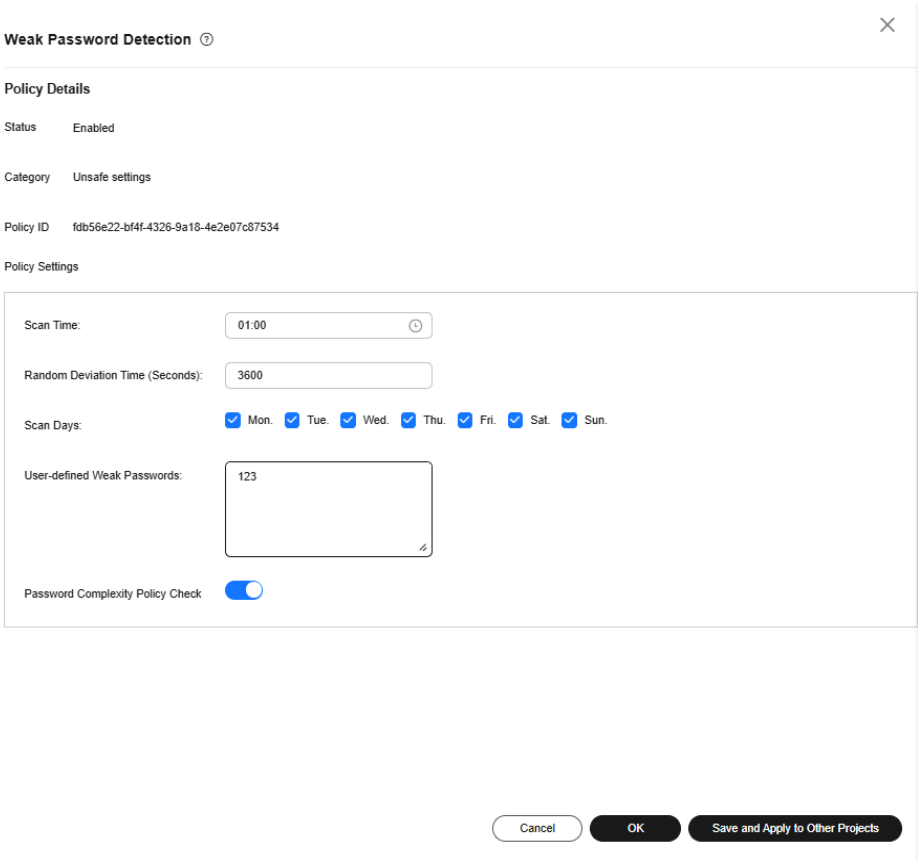


Table 9-5 Parameter description

Parameter	Description
Scan Time	Time point when detections are performed. It can be accurate to the minute.
Random Deviation Time (Seconds)	Random deviation time of the weak password based on **Scan Time**. The value range is 0 to 7200s.
Scan Days	Days in a week when weak passwords are scanned. You can select one or more days.
User-defined Weak Passwords	You can add a password that may have been leaked to this weak password text box to prevent server accounts from using the password. Enter only one weak password per line. Up to 300 weak passwords can be added.
Password Complexity Policy Check	A password complexity policy refers to the password rules and standards set on a server. If you enable **Password Complexity Policy Check**, HSS will check the password complexity policy when you manually perform a baseline check.

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

Configuration Check

Step 1 Click **Configuration Check**.

Step 2 On the **Configure Check**, modify the policy.

Figure 9-4 Modifying the configuration check policy

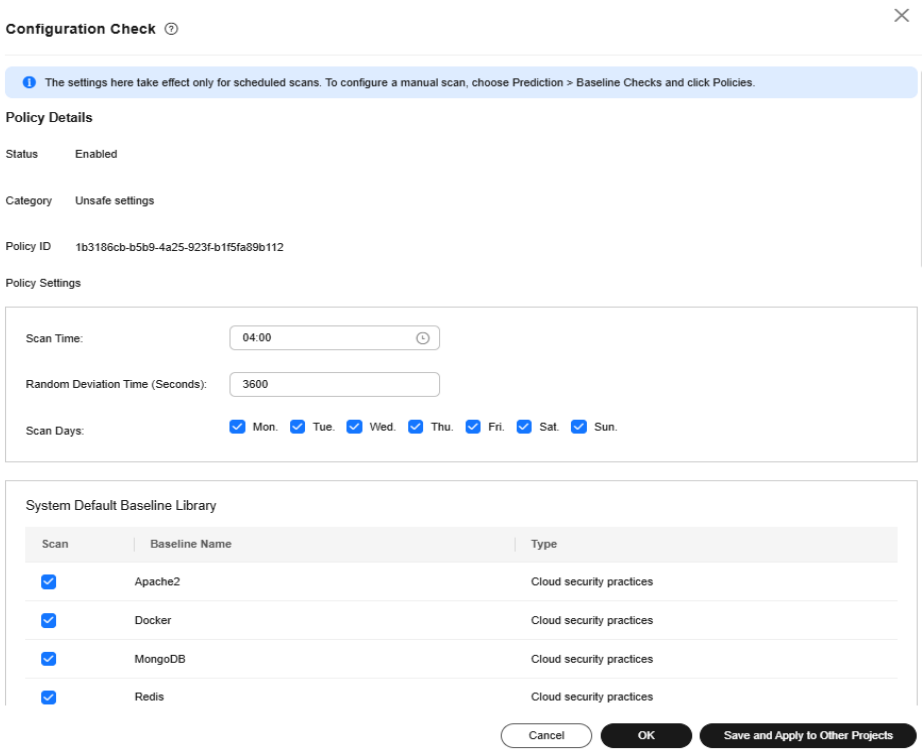


Table 9-6 Parameter description

Parameter	Description
Scan Time	Time point when detections are performed. It can be accurate to the minute.
Random Deviation Time (Seconds)	Random deviation time of the system detection. The value ranges from 0 to 7,200s.
Scan Days	Day in a week when a detection is performed. You can select any days from Monday to Sunday.

Parameter	Description
System Default Baseline Library	The detection baseline has been configured in the system. You only need to select the baseline you want to scan. All parameters are in their default values and cannot be modified.

Step 3 Select the baseline to be detected or customize a baseline.

NOTE

To check whether your system meets compliance requirements, select **DJCP MLPS** in the **Type** area.

Step 4 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

Web Shell Detection

If **User-defined Scan Paths** is not specified, the website paths in your assets are scanned by default. If **User-defined Scan Paths** is specified, website paths and the specified paths are scanned.

Step 1 Click **Web Shell Detection**.

Step 2 On the **Web Shell Detection** page, modify the settings as required. For more information, see **Table 9-7**.

Figure 9-5 Modifying the web shell detection policy

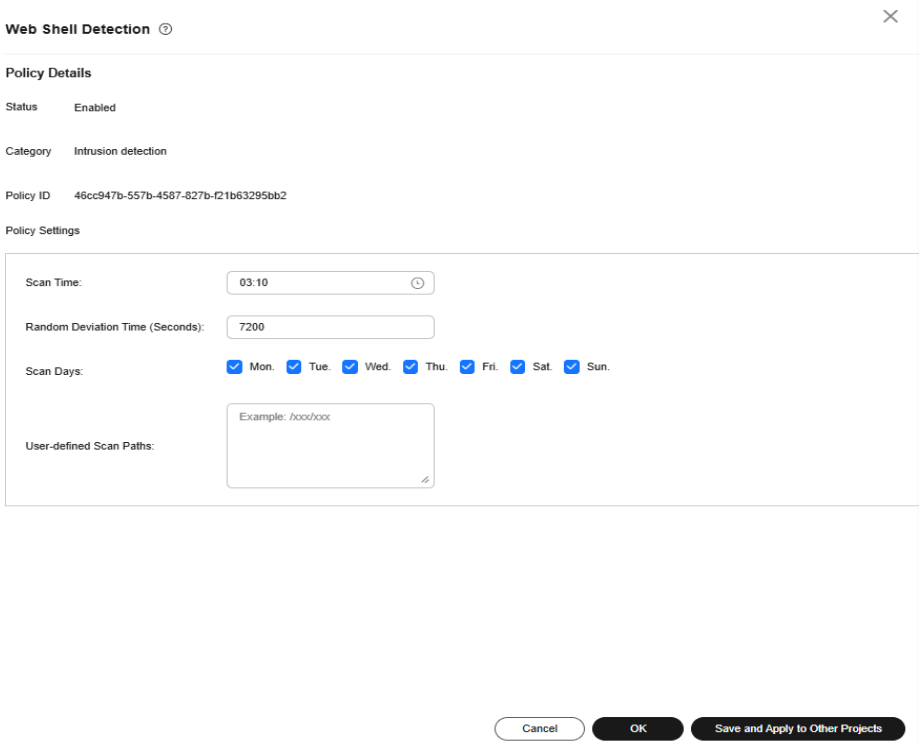


Table 9-7 Parameter description

Parameter	Description
Scan Time	Time point when detections are performed. It can be accurate to the minute.
Random Deviation Time (Seconds)	Random deviation time. The value ranges from 0 to 7,200s.
Scan Days	Days in a week when web shells are scanned. You can select one or more days.
User-defined Scan Paths	Web paths to be scanned. A file path must: • Start with a slash (/) and end with no slashes (/). • Occupy a separate line and cannot contain spaces.

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

File Protection

Step 1 Click **File Protection**.

Step 2 On the **File Protection** page, modify the policy. For more information, see **Table 9-8**.

The following figure uses the Linux policy as an example.

Figure 9-6 Modifying the file protection policy

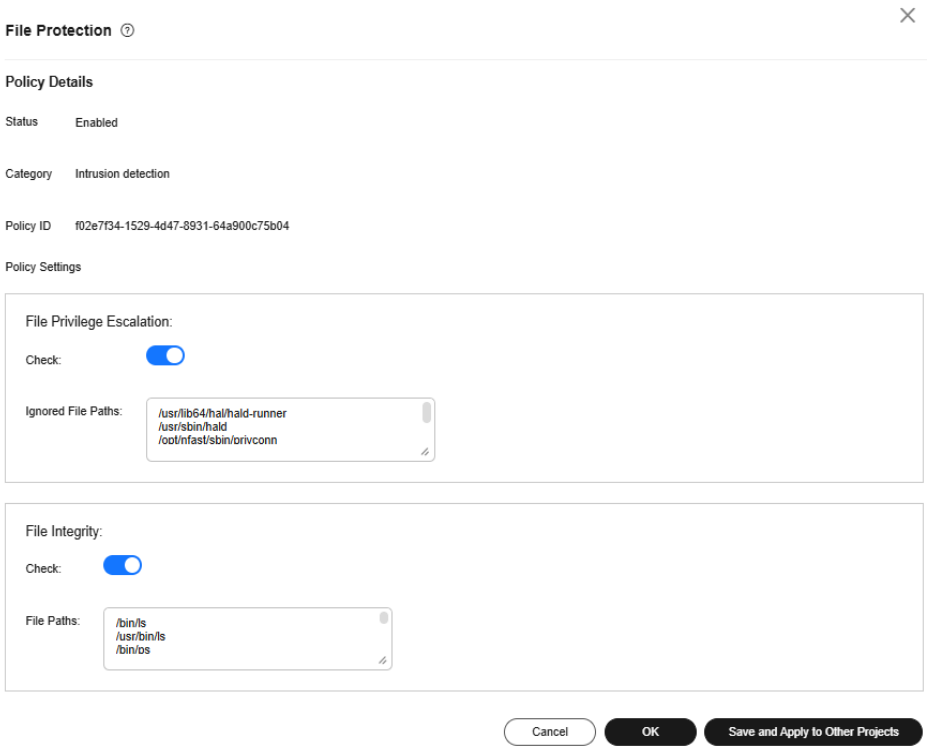


Table 9-8 Parameter description

Parameter	Description	Supported OS
File Privilege Escalation	• Detects privilege escalation. – : enabled – : disabled • **Ignored File Path**: Files to be ignored. Start the path with a slash (/) and do not end it with a slash (/). Each path occupies a line. No spaces are allowed between path names.	Linux
File Integrity	• Checks the integrity of key files. – : enabled – : disabled • **File Paths**: Configure the file paths.	Linux

Parameter	Description	Supported OS
Important File Directory Change	• Detects the directory change of key files. – : enabled – : disabled • **Session IP Whitelist**: If the file process belongs to the sessions of the listed IP addresses, no audit applies. • **Unmonitored File Types**: File types that do not need to be monitored. • **Unmonitored File Paths**: File paths that do not need to be monitored. • **Monitoring Login Keys**: monitors login keys. – : enabled – : disabled	Linux
Directory Monitoring Mode for Linux	• Directory monitoring mode. Its value can be **Conservative** or **Sensitive**. The **Conservative** mode has two more attributes (**Monitor Subdirectory** and **Monitor Property Change**) selected by default than the **Sensitive** modes. • Some file or directory monitoring paths are preset in the system. You can modify the file change type to be detected and add the file or directory paths to be monitored. – **File or Directory Path**: path of the file or directory to be monitored. Up to 50 paths can be added. Ensure the specified paths are valid. – **Alias**: alias of a file or directory path. You can enter a name that is easy to distinguish. – **Monitor Subdirectory**: If this option is selected, all files in the corresponding subdirectories are monitored. If it is not selected, subdirectories are not monitored. – **Monitor Creation**, **Monitor Deletion**, **Monitor Movement**, and **Monitor Modification**: Select them as needed.	Linux

Parameter	Description	Supported OS
Directory Monitoring Mode for Windows	Some file or directory monitoring paths are preset in the system. You can modify the file change type to be detected and add the file or directory paths to be monitored. • **File or Directory Path**: path of the file or directory to be monitored. Up to 50 paths can be added. Ensure the specified paths are valid. • **Alias**: a user-defined name used to distinguish files or directories. Its value has no impact on the monitoring effect. • **Monitor Subdirectory**: If this option is selected, all files in the subdirectories are monitored. If it is not selected, subdirectories are not monitored. • **File Name Extension**: type of the file to be monitored. A maximum of 50 extensions can be added. • **Ignored Path**: Valid if **Monitor Subdirectory** is selected. It specifies the subdirectories that do not need to be monitored. Up to 20 paths can be added. Ensure the specified paths are valid. • **Monitor Creation**, **Monitor Deletion**, **Monitor Movement**, and **Monitor Modification**: Select them as needed.	Windows

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

HIPS Detection

Step 1 Click **HIPS Detection**.

Step 2 Modify the policy content. For more information, see **Table 9-9**.

Figure 9-7 Modifying the HIPS detection policy

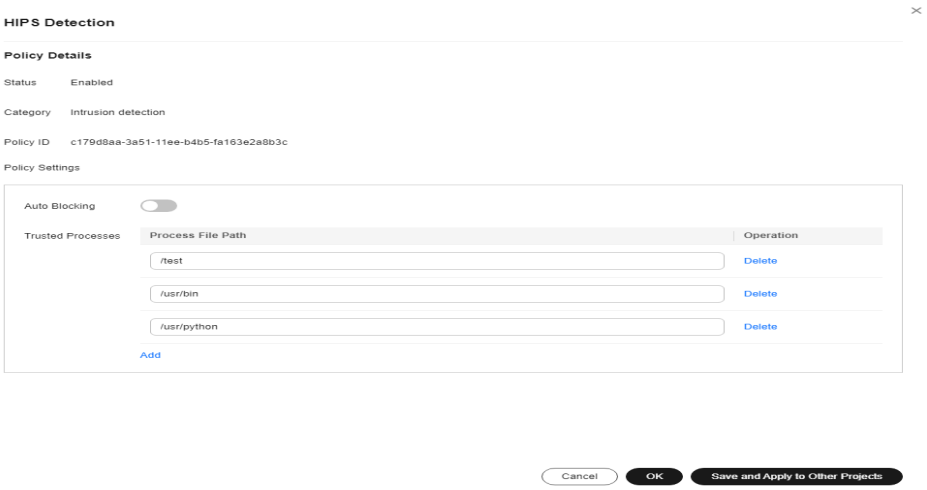


Table 9-9 HIPS detection policy parameters

Parameter	Description
Auto Blocking	If this function is enabled, abnormal changes on registries, files, and processes will be automatically blocked to prevent reverse shells and high-risk commands. • : enabled • : disabled
Trusted Processes	Paths of trusted processes. You can click **Add** to add a path and click **Delete** to delete it.

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

Login Security Check

Step 1 Click **Login Security Check**.

Step 2 On the displayed **Login Security Check** page, modify the policy content. **Table 9-10** describes the parameters.

Figure 9-8 Modifying the security check policy

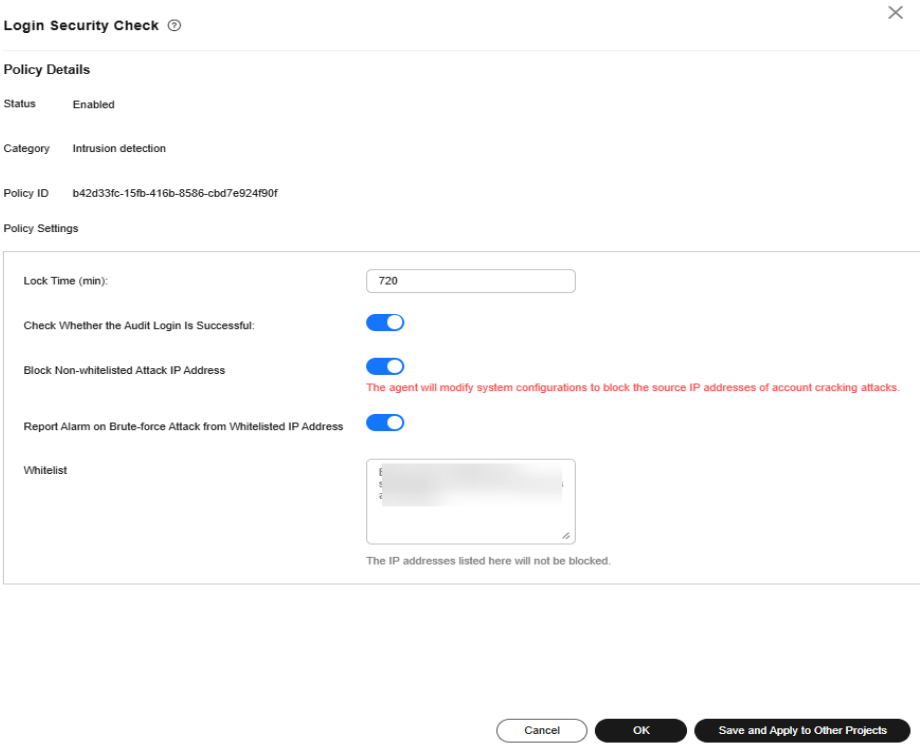


Table 9-10 Parameter description

Parameter	Description
Lock Time (min)	This parameter is used to determine how many minutes the IP addresses that send attacks are locked. The value range is 1 to 43200. Login is not allowed in the lockout duration.
Check Whether the Audit Login Is Successful	• After this function is enabled, HSS reports successful logins. –  : enabled –  : disabled
Block Non-whitelisted Attack IP Address	After this function is enabled, HSS blocks the login of brute force IP addresses (non-whitelisted IP addresses).
Report Alarm on Brute-force Attack from Whitelisted IP Address	• After this function is enabled, HSS generates alarms for brute force attacks from whitelisted IP addresses. –  : enabled –  : disabled

Parameter	Description
Whitelist	After an IP address is added to the whitelist, HSS does not block brute force attacks from the IP address in the whitelist. A maximum of 50 IP addresses or network segments can be added to the whitelist. Both IPv4 and IPv6 addresses are supported.

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

Malicious File Detection

Step 1 Click **Malicious File Detection**.

Step 2 On the displayed page, modify the policy. For more information, see **Table 9-11**.

Figure 9-9 Modifying the malicious file detection policy

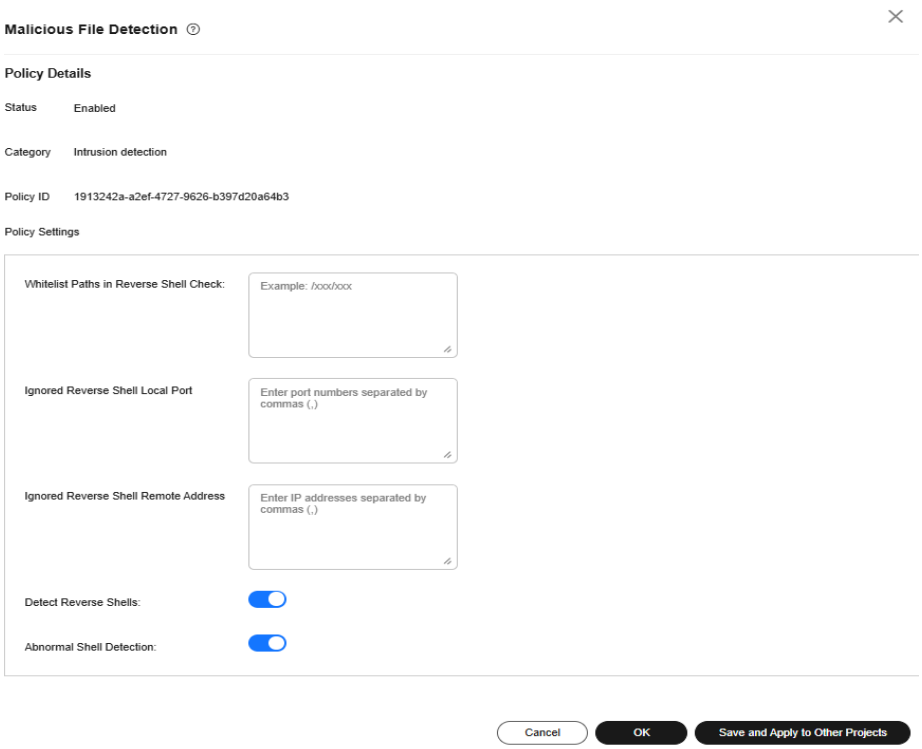


Table 9-11 Parameter description

Parameter	Description
Whitelist Paths in Reverse Shell Check	Process file path to be ignored in reverse shell detection Start with a slash (/) and end with no slashes (/). Occupy a separate line and cannot contain spaces.
Ignored Reverse Shell Local Port	Local ports that do not need to be scanned for reverse shells.
Ignored Reverse Shell Remote Address	Remote addresses that do not need to be scanned for reverse shells.
Detect Reverse Shells	• Detects reverse shells. You are advised to enable it. –  : enabled –  : disabled
Abnormal Shell Detection	• Detects abnormal shells. You are advised to enable it. –  : enabled –  : disabled

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

Abnormal Process Behaviors

The abnormal process behavior policy supports two detection modes:

- Sensitive: In-depth full scans are performed on all processes, which may cause false positives. Suitable for network protection drills and key event assurance.
- Balanced: All processes are scanned. The scan result accuracy and the abnormal process detection rate are balanced. Suitable for routine protection.

This policy does not need to be configured separately. It changes with the protection mode of the policy group. To enable the sensitive mode, change the protection mode of the policy group to **Sensitive** by referring to **Configuring the Policy Group Protection Mode**.

Root Privilege Escalation Detection

Step 1 Click **Root privilege escalation**.

Step 2 In the displayed area, modify the settings as required. For more information, see **Table 9-12**.

Figure 9-10 Modifying the root privilege escalation policy

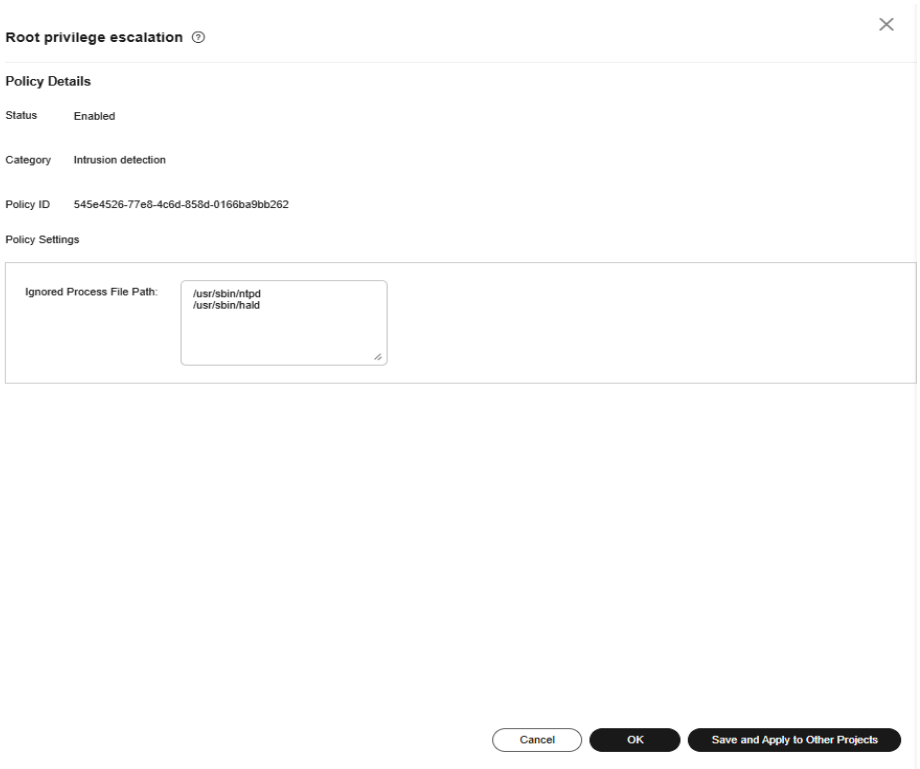


Table 9-12 Parameter description

Parameter	Description
Ignored Process File Path	Ignored process file path Start with a slash (/) and end with no slashes (/). Occupy a separate line and cannot contain spaces.

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

Real-time Process

Step 1 Click **Real-time Process**.

Step 2 On the displayed page, modify the settings as required. For more information, see **Table 9-13**.

Figure 9-11 Modifying the real-time process policy

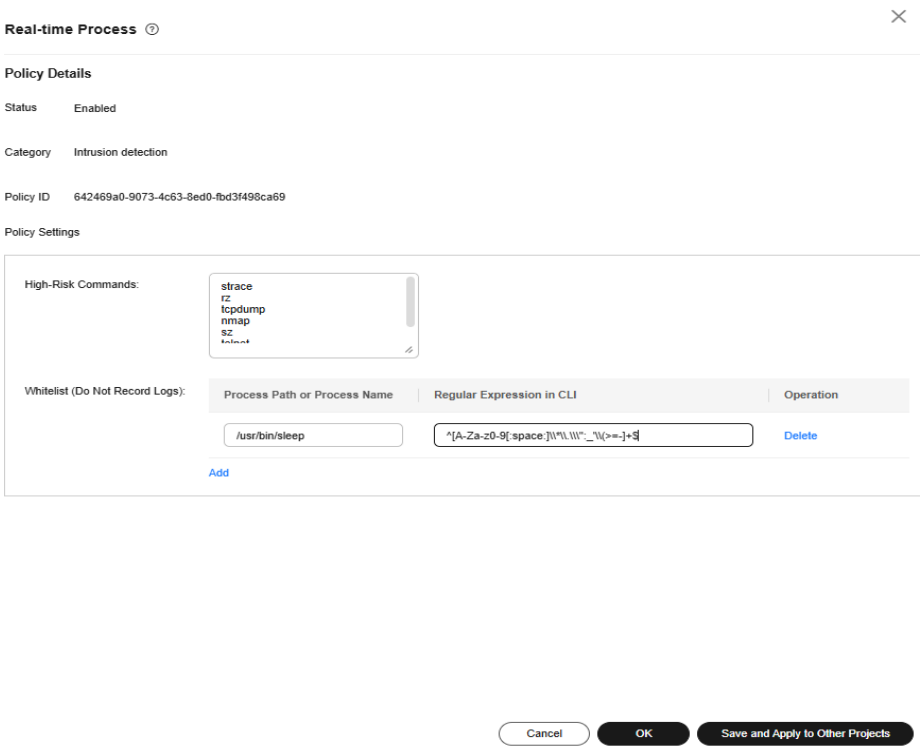


Table 9-13 Parameters for real-time process policy settings

Parameter	Description
High-Risk Commands	High-risk commands that contain keywords during detection. The command can contain only letters, numbers, hyphens (-), spaces, and special characters (/* \=>.:'"+-). **NOTE** Currently, built-in shell commands cannot be detected.
Whitelist (Do Not Record Logs)	Paths or programs that are allowed or ignored during detection. You can enter the regular expression of the command to be added to the whitelist. The command regular expression is optional. Example: • Full path or program name of a process: /usr/bin/sleep • Command regular expression: ^[A-Za-z0-9[:space:]* \\.\\\":_'\\(>=-]+$

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

Rootkit Detection

Step 1 Click **Rootkit Detection**.

Step 2 On the rootkit detection page, modify the policy content.

Figure 9-12 Modifying the rootkit detection policy

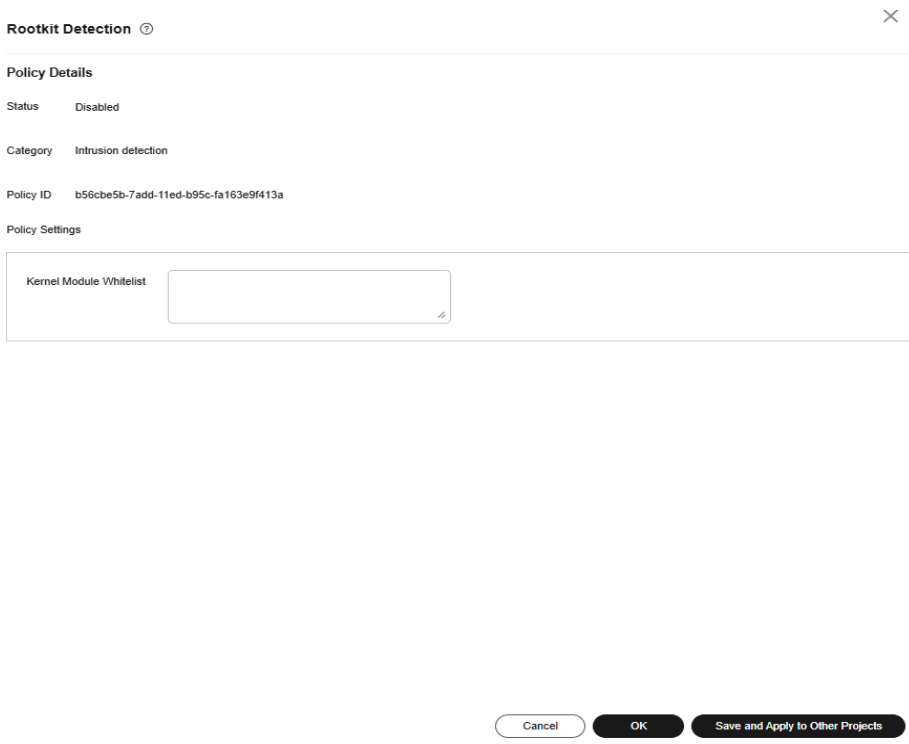


Table 9-14 Parameter description

Parameter	Description	Example Value
Kernel Module Whitelist	Add the kernel modules that can be ignored during the detection. Up to 10 kernel modules can be added. Each module occupies a line.	xt_conntrack virtio_scsi tun

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

AV Detection

Step 1 Click **AV Detection**.

Step 2 On the **AV Detection** slide pane that is displayed, modify the settings as required. For details, see **Table 9-15**.

Table 9-15 AV detection policy parameters

Parameter	Description	Example Value
Real-Time Protection	After this function is enabled, AV detection is performed in real time when the current policy is executed. You are advised to enable this function. •  : enabled •  : disabled	 : enabled
Protected File Type	Type of the files to be checked in real time. • **All**: Select all file types. • **Executable**: Executable file types such as EXE, DLL, and SYS. • **Compressed**: Compressed file types such as ZIP, RAR, and JAR. • **Text**: Text file types such as PHP, JSP, HTML, and Bash. • **OLE**: Composite file types such as Microsoft Office files (PPT and DOC) and saved email files (MSG). • **Other**: File types except the preceding types.	All
Action	Handling method for the object detection alarms. • **Automated handling**:Isolate high-risk virus files bu default. Report other virus files but do not isolate them. • **Manual handling**: Report all the detected virus files but do not isolate them. You need to handle them manually.	Automatic handling

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

Container Information Collection

Step 1 Click **Container Information Collection**.

Step 2 On the **Container Information Collection** slide pane that is displayed, modify the **Policy Settings**. For details about the parameters, see **Table 9-16**.

NOTE

The whitelist has a higher priority than blacklist. If a directory is specified in both the whitelist and blacklist, it is regarded as a whitelisted item.

Table 9-16 Container information collection policy parameters

Parameter	Description	Example Value
Mount Path Whitelist	Enter the directory that can be mounted.	/test/docker or /root/* Note: If a directory ends with an asterisk (*), it indicates all the sub-directories under the directory (excluding the main directory). For example, if **/var/test/*** is specified in the whitelist, all sub-directories in **/var/test/** are whitelisted, excluding the **test** directory.
Mount Path Blacklist	Enter the directories that cannot be mounted. For example, **user** and **bin**, the directories of key host information files, are not advised being mounted. Otherwise, important information may be exposed.	

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

Cluster Intrusion Detection

Step 1 Click **Cluster Intrusion Detection**.

Step 2 On the **Cluster Intrusion Detection** slide pane that is displayed, modify the **Policy Settings**. For details about the parameters, see **Table 9-17**.

Table 9-17 Cluster intrusion detection policy parameters

Parameter	Description	Example Value
Basic Detection Cases	Select basic check items as required.	Select all

Parameter	Description	Example Value
Whitelist	You can customize the types and values that need to be ignored during the detection. You can add and delete types and values as required. The following types are supported: • IP address filter • Pod name filter • Image name filter • User filter • Pod tag filter • Namespace filter **NOTE** Each type can be used only once.	Type: IP address filtering Value: 192.168.x.x

NOTE

After this policy is configured, you need to enable the log audit function and deploy the HSS agent on the management node (node where the APIServer is located) of the cluster to make the policy take effect.

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

Container Escape Detection

Step 1 Click **Container Escape**. The container escape policy details page is displayed.

Step 2 On the container escape page that is displayed, edit the policy content. For details about the parameters, see **Table 9-18**.

If no image, process, or POD needs to be added to the whitelist, leave the whitelist blank.

Table 9-18 Container escape detection policy parameters

Parameter	Description
Image Whitelist	Enter the names of the images that do not need to perform container escape behavior detection. An image name can contain only letters, numbers, underscores (_), and hyphens (-), and each name needs to be on a separate line. Up to 100 image names are allowed.

Parameter	Description
Process Whitelist	Enter the full paths of processes that do not need to perform container escape behavior detection. A process path can contain only letters, numbers, underscores (_), and hyphens (-), and each path needs to be on a separate line. Up to 100 process paths are allowed.
Pod Whitelist	Enter the names of pods that do not need to perform container escape behavior detection. A pod name can contain only letters, numbers, underscores (_), and hyphens (-), and each name needs to be on a separate line. Up to 100 pod names are allowed.

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

Container Escape Prevention

NOTE

This function is in the OBT phase. To use it, **submit a service ticket**.

Step 1 Click **Container Escape Prevention**. The policy details page is displayed.

Step 2 Edit the policy. For details about the parameters, see **Table 9-19**.

Figure 9-13 Container escape prevention policy

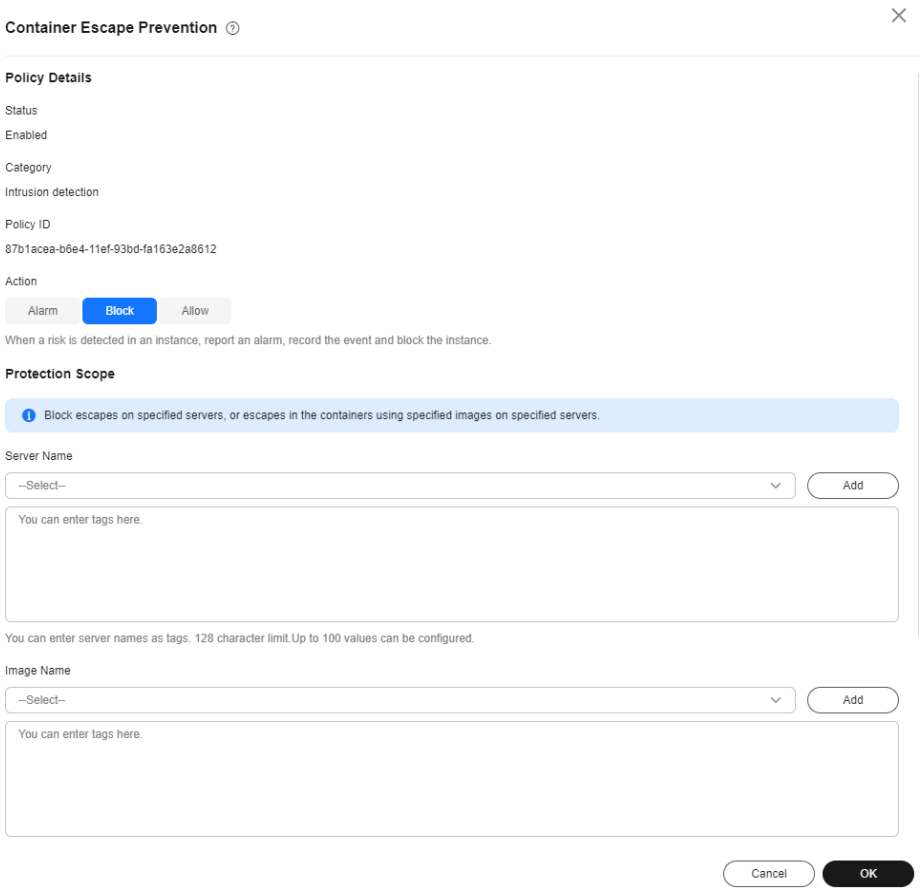


Table 9-19 Container escape prevention policy parameters

Parameter	Description	Example Value
Action	• **Alarm**: If an abnormal runtime behavior is detected, only an alarm is reported. • **Block**: If an abnormal runtime behavior is detected, an alarm is reported and the container instance is blocked. • **Allow**: If an abnormal runtime behavior is detected, the container instance is still allowed to run.	Block

Parameter	Description	Example Value
Protection Scope	Select the protection scope of abnormal runtime behavior detection. Specify server and image names to detect abnormal behaviors of the containers that use the specified images on specified servers. The configuration methods are as follows: • **Server Name**: Select a server from the drop-down list and click **Add**. Alternatively, enter a server name in the text box and press **Enter**. Each name can contain up to 128 characters. Up to 100 server names can be configured. • **Image Name**: Select an image name from the drop-down list and click **Add**. Alternatively, enter an image name in the text box and press **Enter**. Each name can contain up to 128 characters. Up to 100 image names can be configured.	• Server name: **test01** • Image name: **moby/buildkit buildx-stable-1**

Parameter	Description	Example Value
Policy Settings	The container anti-escape policy contains preset rules detecting abnormal behaviors in processes, files, and system calls. A detection rule specifically a scenario where abnormal behaviors are checked for. It does not define runtime abnormal behaviors. You can enable or disable the detection rule as required. (The rules are disabled by default.) The rule names and IDs are as follows: • **Escape by Writing in High-risk Directory on Host** (ae246a6fb5290701): Check whether a sensitive host directory is mounted to a container, and a process in the container is used to write data to the directory. • **Container Escape Tool Execution** (ce246a6fb5290702): Check for the execution of container escape tools such as CDK. • **User Configuration File Change on Host** (de246a6fb5290703): Check for modifications on the system and application configuration files on a host. • **High-risk System Call** (ee246a6fb5290704): Check for high-risk system calls, such as **chown**, used by processes. In addition to the preceding detection rules, the HSS can detect abnormal network activities and process capabilities. If an abnormal behavior event triggers a detection rule whose **Action** is **Alarm** or **Block**, the ID of the triggered rule is displayed in the alarm summary reported by HSS. The **Action** of a detection rule is **Alarm** by default, but this setting has a lower priority than the **Action** of the policy. If the policy action is **Block**, the actual rule action will also be **Block**.	Enable all ( )

Step 3 Confirm the information and click **OK**.

----End

Container Information Module

Step 1 Click **Container Information Collection**.

Step 2 Modify the policy content as prompted. For details about the parameters related to the policy, see **Table 9-20**.

Table 9-20 Container information module policy parameters

Parameter	Description
Custom Container Whitelist	Enter the container name that can be ignored during the detection. • Simple names of containers can be configured based on Docker. HSS automatically performs fuzzy match. Other containers perform exact match based on their names. • Each container name needs to be on a separate line. Up to 100 whitelist items are allowed.
Custom Image Organization Whitelist	Enter the organization name that can be ignored during the detection. Each organization name needs to be on a separate line. Up to 100 whitelist items are allowed.

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

Container File Monitoring

NOTICE

If a monitored file path is under the mount path rather than the writable layer of the container on the server, changes on the file cannot trigger container file modification alarms. To protect such files, configure a **file protection policy**.

Step 1 Click **Container File Monitoring**.

Step 2 On the **Container File Monitoring** slide pane that is displayed, modify the **Policy Settings**. For details about the parameters, see **Table 9-21**.

Table 9-21 Container file monitoring policy parameters

Parameter	Description	Example Value
Fuzzy Match	Indicates whether to enable fuzzy match for the target file. You are advised to select this option.	Selected
Image Name	Name of the target image to be checked	test_bj4

Parameter	Description	Example Value
Image ID	ID of the target image to be checked	-
File	Name of the file in the target image to be checked	/tmp/testw.txt

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

Container Process Whitelist

Step 1 Click **Container Process Whitelist**.

Step 2 On the **Container Process Whitelist** slide pane that is displayed, modify the **Policy Settings**. For details about the parameters, see **Table 9-22**.

Table 9-22 Container process whitelist policy parameters

Parameter	Description	Example Value
Fuzzy Match	Indicates whether to enable fuzzy match for the target file. You are advised to select this option.	Selected
Image Name	Name of the target image to be checked	test_bj4
Image ID	ID of the target image to be checked	-
Process	Full path of the file in the target image to be checked	/tmp/testw

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

Suspicious Image Behaviors

Step 1 Click **Suspicious Image Behaviors**.

Step 2 On the **Suspicious Image Behaviors** slide pane that is displayed, modify the **Policy Settings**. For details about the parameters, see **Table 9-23**.

Table 9-23 Suspicious image behaviors policy parameters

Parameter	Description	Example Value
Rule Name	Name of a rule	-
Description	Brief description of a rule	-
Template	• Configure templates based on different rules. The supported rules are as follows: – Image whitelist – Image blacklist – Image tag whitelist – Image tag blacklist – Create container whitelist – Create container blacklist – Container mount proc whitelist – Container seccomp unconfined – Container privilege whitelist – Container capability whitelist • The parameters are described as follows: – **Exact match**: Enter the names of the images you want to check. Use semicolons (;) to separate multiple names. A maximum of 20 names can be entered. – **RegEx match**: Use regular expressions to match images. Use semicolons (;) to separate multiple expressions. A maximum of 20 expressions can be entered. – **Prefix match**: Enter the prefixes of the images you want to check. Multiple prefixes are separated by semicolons (;). A maximum of 20 prefixes can be entered. – **Tag Name**: Enter the tag and value of the images you want to check. A maximum of 20 tags can be added. – **Permission Type**: Specify permissions to be checked or ignored. For details about permissions, see **Table 9-24**.	-

Table 9-24 Abnormal image permissions

Permissions Name	Description
AUDIT_WRITE	Write records to kernel auditing log.
CHOWN	Make arbitrary changes to file UIDs and GIDs.
DAC_OVERRIDE	Bypass file read, write, and execute permission checks.
FOWNER	Bypass permission checks on operations that normally require the file system UID of the process to match the UID of the file.
FSETID	Do not clear set-user-ID and set-group-ID permission bits when a file is modified.
KILL	Bypass permission checks for sending signals
MKNOD	Create special files using mknod.
NET_BIND_SERVICE	Bind a socket to internet domain privileged ports (port numbers less than 1024).
NET_RAW	Use RAW and PACKET sockets.
SETFCAP	Set file capabilities.
SETGID	Make arbitrary manipulations of process GIDs and supplementary GID list.
SETPCAP	Modify process capabilities.
SETUID	Make arbitrary manipulations of process UIDs.
SYS_CHROOT	Use chroot to change the root directory.
AUDIT_CONTROL	Enable and disable kernel auditing; change auditing filter rules; retrieve auditing status and filtering rules.
AUDIT_READ	Allow reading audit logs via multicast netlink socket.
BLOCK_SUSPEND	Allow suspension prevention.
BPF	Allow creating BPF maps, loading BPF Type Format (BTF) data, retrieve JITed code of BPF programs, and more.
CHECKPOINT_RESTORE	Allow operations related to checkpoints and restoration.
DAC_READ_SEARCH	Bypass file read permission checks and directory read and execute permission checks.
IPC_LOCK	Lock memory (such as mlock, mlockall, mmap, and shmctl).
IPC_OWNER	Bypass permission checks for operations on System V IPC objects.
LEASE	Establish leases on arbitrary files

Permissions Name	Description
LINUX_IMMUTABLE	Set the FS_APPEND_FL and FS_IMMUTABLE_FL i-node flags.
MAC_ADMIN	Allow MAC configuration or state changes.
MAC_OVERRIDE	Override Mandatory Access Control (MAC).
NET_ADMIN	Perform various network-related operations.
NET_BROADCAST	Make socket broadcasts, and listen to multicasts.
PERFMON	Allow privileged system performance and observability operations using perf_events, i915_perf and other kernel subsystems.
SYS_ADMIN	Perform a range of system administration operations.
SYS_BOOT	Use reboot and kexec_load. Reboot and load a new kernel for later execution.
SYS_MODULE	Load and unload kernel modules.
SYS_NICE	Raise process nice value (nice, set priority) and change the nice value for arbitrary processes.
SYS_PACCT	Enable or disable process accounting.
SYS_PTRACE	Trace arbitrary processes using ptrace.
SYS_RAWIO	Perform I/O port operations (ipl and ioperm).
SYS_RESOURCE	Override resource limits.
SYS_TIME	Set the system clock (settimeofday, stime, and adjtimex) and real-time (hardware) clock.
SYS_TTY_CONFIG	Use vhangup. Employ various privileged ioctl operations on virtual terminals.
SYSLOG	Perform privileged syslog operations.
WAKE_ALARM	Trigger something that will wake up the system.

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

Port Scan Detection

Step 1 Click **Port Scan Detection**.

Step 2 On the **Port Scan Detection** slide pane that is displayed, modify the **Policy Settings**. For details about the parameters, see **Table 9-25**.

Table 9-25 Port scan detection policy parameters

Parameter	Description	Example Value
Source IP Address Whitelist	Enter the IP address whitelist. Separate multiple IP addresses with semicolons (;).	test_bj4
Ports to Scan	Details about the port number and protocol type to be detected	-

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

External Connection Detection

Step 1 Click **External Connection Detection**. The details page is displayed.

Step 2 On the page that is displayed, modify the policy details. **Table 9-26** describes the parameters.

Table 9-26 Parameters of an external connection detection policy

Parameter	Description	Example Value
Process Whitelist	Traffic is filtered based on process names or process file paths, and the traffic directions in the whitelist.	• Process name or file path: **/usr/local/test** • Traffic direction: bidirectional
Traffic Whitelist	Traffic is filtered based on source or destination IP addresses, ports, or a combination of them.	-
Collection Protocol	The protocol to be detected. The value can be TCP or UDP.	Select all

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

Fileless Attack Detection

Step 1 Click **Fileless attack detection**.

Step 2 On the policy details page, view or modify the policy. The following table describes the parameters.

Table 9-27 Parameters of a fileless attack detection policy

Parameter	Description	Example Value
Process injection	• **Process Injection**: enables or disables process injection detection. –  : enabled –  : disabled • **Trustlist Matching Specifications**: How to match the user-defined path trustlist. Click to select a match mode. The options are as follows: – Full match, case sensitive – Full match, case-insensitive – Fuzzy matching • **Path trustlist**: Enter the paths that do not need to be checked for process injection. Enter one path on each line.	•  • Fuzzy matching • /usr/sbin/hald
LD hijacking	• **LD hijacking**: enables or disables LD hijacking detection. –  : enabled –  : disabled • **Full process detection**: enables or disables LD hijacking threat detection for all processes. –  : enabled –  : disabled • **Trustlist Matching Specifications**: How to match the user-defined path trustlist. Click to select a match mode. The options are as follows: – Full match, case sensitive – Full match, case-insensitive – Fuzzy matching • **Path trustlist**: Enter the paths that do not need to be checked for LD highjacking. Enter one path on each line.	•  •  • Fuzzy matching • /usr/sbin/hald

Parameter	Description	Example Value
Memory-based process	• **Memory-based process**: enables or disables memory process detection. –  : enabled –  : disabled • **Full process detection**: Enable or disable memory-based process threat detection for all processes. –  : enabled –  : disabled • **Trustlist Matching Specifications**: How to match the user-defined path trustlist. Click to select a match mode. The options are as follows: – Full match, case sensitive – Full match, case-insensitive – Fuzzy matching • **Path trustlist**: Enter the paths that do not need to be checked for memory-based processes. Enter one path on each line.	•  •  • Fuzzy matching • /usr/sbin/hald

Step 3 Confirm the information and click **OK**.

If **All projects** are selected for an enterprise project and the policy of the default policy group is modified, you can click **Save and Apply to Other Projects** to apply the modification to other policies of the same version.

----End

Self-protection

The self-protection policy protects HSS software, processes, and files from being damaged by malicious programs. You cannot customize the policy content.

9.1.3 Configuring the Policy Group Protection Mode

Scenario

There are two policy group protection modes. You can choose from them as needed.

- Sensitive mode: applicable to high security scenarios, such as network protection drills and key event security assurance. It achieves a high threat detection rate.
- Balanced mode: applicable to routine protection scenarios. The threat detection rate and accuracy are relatively balanced.

For details about the differences between the two modes, see **Policy Group Protection Modes**.

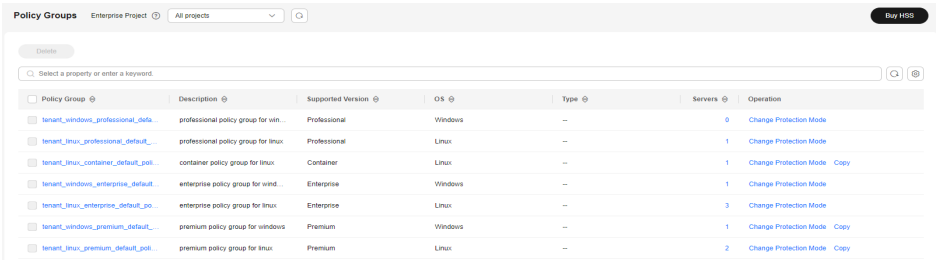
Configuring the Policy Group Protection Mode

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree on the left, choose **Security Operations** > **Policies**

Figure 9-14 Policy management



Step 4 In the **Operation** column of the target policy group, click **Change Protection Mode**.

Step 5 In the dialog box that is displayed, select a protection mode and click **OK**.

----End

9.1.4 Creating a Custom Policy Group

Scenario

For premium and container editions, you can copy a policy group and customize it as required to meet server security requirements in different application scenarios.

Creating a Custom Policy Group

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree on the left, choose **Security Operation** > **Policies**. On the displayed page, **Policy group parameters** describes the fields.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 9-15 Policy management

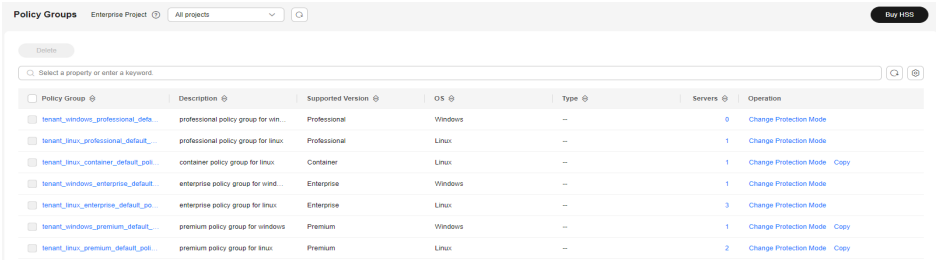


Table 9-28 Policy group parameters

Parameter	Description
Policy Group	Name of a policy group The preset policy group names are as follows: • **tenant_linux_advanced_default_policy_group**: preset policy of the Linux professional edition, which can only be viewed but cannot be copied or deleted. • **tenant_windows_advanced_default_policy_group**: preset policy of the Windows professional edition, which can only be viewed but cannot be copied or deleted. • **tenant_linux_container_default_policy_group**: preset Linux policy of the container edition. You can copy this policy group and create a new one based on it. • **tenant_linux_enterprise_default_policy_group** is the default Linux policy of the enterprise edition. This policy group can only be viewed, and cannot be copied or deleted. • **tenant_windows_enterprise_default_policy_group**: preset Windows policy of the enterprise edition. This policy group can only be viewed, and cannot be copied or deleted. • **tenant_linux_premium_default_policy_group**: preset Linux policy of the premium edition. You can create a policy group by copying this default group and modify the copy. • **tenant_windows_premium_default_policy_group**: preset Windows policy of the premium edition. You can create a policy group by copying this default group and modify the copy. • **wtp**_*ServerName* is a WTP edition policy group. It is generated by default when WTP is enabled for a server.
Description	Detailed description of a policy group.
Supported Version	HSS edition supported by a policy group.
Supported OS	OS supported by a policy group.

Parameter	Description
Associated Servers	To view details about the servers associated with a policy group, click the number in the **Servers** column of the group.

Step 4 Select a premium or container edition policy group and click **Copy** in the **Operation** column of the policy group.

Step 5 In the dialog box displayed, enter a policy group name and description, and click **OK**.

NOTE

- The name of a policy group must be unique, or the group will fail to be created.
- The policy group name and its description can contain only letters, digits, underscores (_), hyphens (-), and spaces, and cannot start or end with a space.

Step 6 Click **OK**.

After a policy group is created, you can configure rules for each policy in the policy group. For details, see **Configuring Policies**.

----End

Follow-up Procedure

After creating a policy group and configuring policies, you can apply the new policy group to servers. For details, see **Deploying a Protection Policy**.

9.1.5 Deleting a Custom Policy Group

Scenario

Preset policy groups cannot be deleted. You can delete custom policy groups of premium and container editions.

Precautions

After a policy group is deleted, the **Policy Group** column of the servers that were associated with the group will be blank. You need to deploy a policy group for a server again by referring to **Deploying a Protection Policy**.

Deleting a Policy Group

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation tree on the left, choose **Security Operations** > **Policies**

Step 4 Click **Delete** in the **Operation** column of the target policy.

You can also select multiple policies and click **Delete** in the upper left corner of the policy list to delete multiple policy groups in batches.

Step 5 Click **OK**.

----End

9.2 Handling History

You can check the handling history of vulnerabilities, alarms, container events, and virus-infected files, including their handlers and handling time.

Constraints

- The basic edition does not support this function. For details about how to buy and upgrade HSS, see **Purchasing an HSS Quota** and **Upgrading Protection Quotas**.
- Handling history can be retained for a maximum of 180 days.

Viewing the Handling History

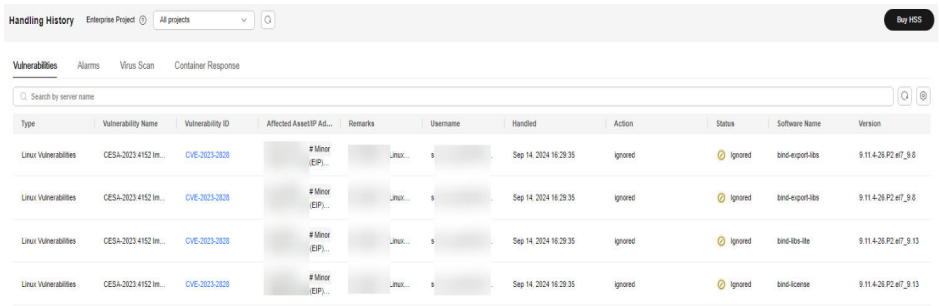
Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Security Operations** > **Handling History**.

Step 4 Click a tab and view the corresponding historical handling records.

Figure 9-16 Viewing the handling history



- Viewing the handling history of a specified enterprise project

  In the upper left corner of the **Handling History** page, select an enterprise project for **Enterprise Project** to view the handling history under the enterprise project.
- Viewing the handling history of a specified attribute

  In the search box above the list, select an attribute or enter a keyword to search for the handling records of a specified attribute.
- Export the handling history to the local PC

In the upper left corner of the tab page, click **Export**.

Up to 200,000 historical records can be exported at a time. Exporting more than 5,000 records may take a long time.

----End

9.3 Container Audit

9.3.1 Container Audit Overview

What Is Container Audit?

Keep track of the operations and activities in your container clusters, gaining insight into every phase of the container lifecycle, including creating, starting, stopping, and destroying containers; as well as the communication and transmission between containers. Find and handle security problems through audit and analysis in a timely manner, ensuring the security and stability of container clusters.

Audit Objects

- Cluster container: Kubernetes audit logs, Kubernetes events, container logs, and container commands
- Independent container: container logs and container commands
- SWR image repository: image repository logs

Scenario

If an abnormal operation or activity occurs in the container environment, you can analyze container audit logs to locate the occurrence time, track the event, and work out a solution.

Description

To enable container audit, the following conditions must be met:

1. The cluster container or independent container has been connected to HSS, and is protected by the container edition.

   For more information, see **Installing an Agent in a Cluster** and **Enabling Container Protection**.
2. Meet the prerequisites for certain audit objects, as shown in **Table 9-29**.

Table 9-29 Audit prerequisites

Object	Audit Object	Audit Prerequisite
User-built or third-party cloud cluster	Kubernetes audit logs	1. Enable the cluster intrusion detection policy. For details, see **Configuring Policies**. 2. Enable API server audit. For details, see **Enabling the API Server Audit Function**.
Huawei Cloud CCE clusters	Kubernetes audit logs	On the CCE console, enable the collection of Kubernetes events, Kubernetes audit logs, and container logs. For details, see **Configuring CCE Logs**.
	Kubernetes audit events	
	Container logs	
SWR private image repository	Image repository logs	You have used SWR and granted the operation permission (**CTSOperatePolicy**) for HSS. For details, see **Authorization**.

After container audit is enabled, operation and activity logs in the cluster are recorded on the HSS console. For details about how to view audit logs, see **Viewing Container Audit Logs**.

9.3.2 Viewing Container Audit Logs

Scenario

This section describes how to view container audit logs.

Viewing Container Audit Logs

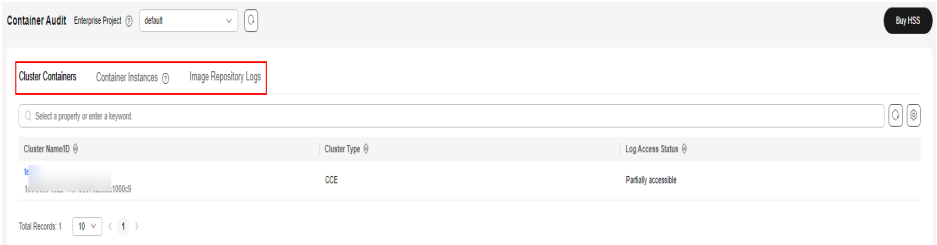
Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **Host Security Service**.

Step 3 In the navigation pane, choose **Security Operations** > **Container Audit**.

Step 4 Perform the following operations to view different types of audit logs:

Figure 9-17 Viewing container audit logs



- Viewing cluster container audit logs
  a. Click the **Cluster Containers** tab.
  b. Click the name of a cluster. On the audit details page, view Kubernetes audit logs, Kubernetes events, container logs, and container command records.
- Viewing container instances
  a. Click the **Container Instances** tab.
  b. Click the name of a container instance. On the audit details page, view container logs and container command records.
- Viewing image repository logs

  Click the **Image Repository Logs** tab to view the audit logs of image repositories.

----End

9.4 Security Report

9.4.1 Security Report Overview

HSS provides daily, weekly, and monthly security reports, and allows you to customize the report period. The reports show the statistics on the security trend, key events, and risks of protected servers.

Constraints and Limitations

- Security reports are available in HSS professional, enterprise, premium, WTP, and container editions. For details about how to purchase and upgrade HSS, see **Purchasing an HSS Quota** and **Upgrading Protection Quotas**.
- A report will be retained for six months after generation to meet DJCP MLPS and audit requirements.

Security Report Description

By default, weekly and monthly reports are preconfigured in HSS. After protection is enabled for your assets, reports are automatically generated by default. The report content and generation time are as follows:

- Report content:
  - Security overview: risk trend, risk distribution, top 5 unsafe servers, and top 5 brute-force attack sources
  - Risk management: vulnerability statistics, asset account change records, dangerous open ports, and weak passwords
  - Intrusion detection: unsafe accounts, remote login, malicious programs, web shells, account cracking, and key file changes
- Report generation time:
  - A default weekly security report is generated between 06:00 and 12:00 every Monday. It contains the statistics of a week, from 00:00 on Monday to 24:00 on Sunday.

- A default monthly security report is generated between 06:00 and 12:00 every Monday. It contains the statistics generated from 00:00 on the first day to 24:00 on the last day of a month.

You can view security reports. For details, see **Checking a Security Report**.

If the default report does not meet your requirements, you can create a custom report or edit the default report. For details, see **Creating a Security Report** and **Editing a Report**.

9.4.2 Creating a Security Report

If the type and content of the existing report template cannot meet your requirements, you can customize a report.

Creating a Security Report

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

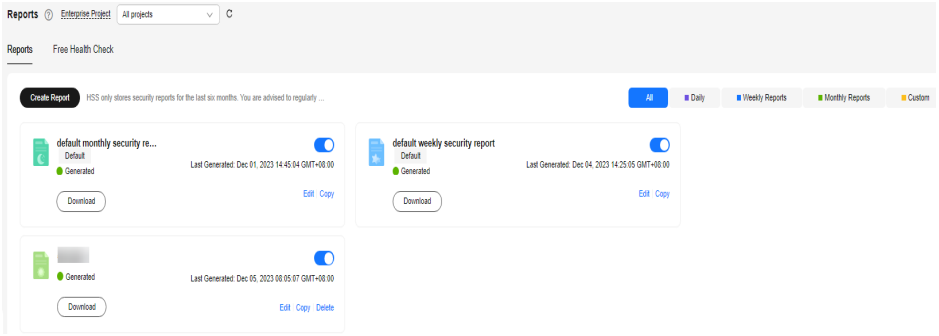
Step 3 In the navigation pane on the left, choose **Security Operations** > **Reports**.

You can use default security report templates directly, which are **default monthly security report** and **default weekly security report**.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 9-18 Checking a security report



Step 4 Create a report.

- Create a monthly or weekly security report based on templates.
  - Click **Copy** in the weekly or monthly report card to access the basic information configuration page.
- You can also customize the report period.
  - Click **Create Report** to access the basic information configuration page.

Step 5 Edit basic information of a report. For more information, see **Table 9-30**.

Table 9-30 Parameter description

Parameter	Description	Example Value
Report Name	Default report name	ecs security report
Report Type	Statistical period type of a report: • **Daily**: 00:00 to 24:00 every day • **Weekly Reports**: 00:00 on Monday to 24:00 on Sunday • **Monthly Reports**: 00:00 on the first day to 24:00 on the last day of each month • **Custom**: custom statistical period, which ranges from one day to three months • All types of reports will be sent to the recipients the day after it is generated.	Monthly Reports
Schedule Delivery	Time when a report is automatically sent	-
Send Report To	Security report recipients. • **Recipients specified in Message Center**: If you use Message Center settings, alarm notifications will be sent to the recipients specified in the **Security events** message type. You need to log in to the console and check the mailbox in the upper right corner. • **Recipients specified in SMN topic**: If you use SMN topic settings, you can create a topic and specify recipients for HSS. • **No need to send to email**: The report is not sent to the specified email address.	Recipients specified in SMN topic
Report Logo	Logo used in the report. • **None**: The report does not use any logo. • **Default** logo: Huawei Cloud logo is used by default. • **Custom**: Upload a custom logo image. The image cannot exceed 20 KB. Only JPG, PNG, JPEG, and BMP are supported.	None

Step 6 After confirming that the information is correct, click **Next** in the lower right corner of the page to configure the report.

Step 7 Select the report items to be generated in the left pane. You can preview the report items in the right pane. After confirming the report items, click **Save**, and enable security report subscription.

----End

9.4.3 Checking a Security Report

You can check **daily**, weekly, monthly, and **custom** reports, which are stored for six months. The reports show your server security trends and key security events and risks.

This section describes how to view the generated reports.

NOTE

- If you have enabled the enterprise project function, you can select your enterprise project from the **Enterprise project** drop-down list and subscribe to the security report of the project. You can also select **All projects** and subscribe to the security report of servers in all the projects in this region.
- After a daily report is created, you can view and download it the next day.

Security Report Overview

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

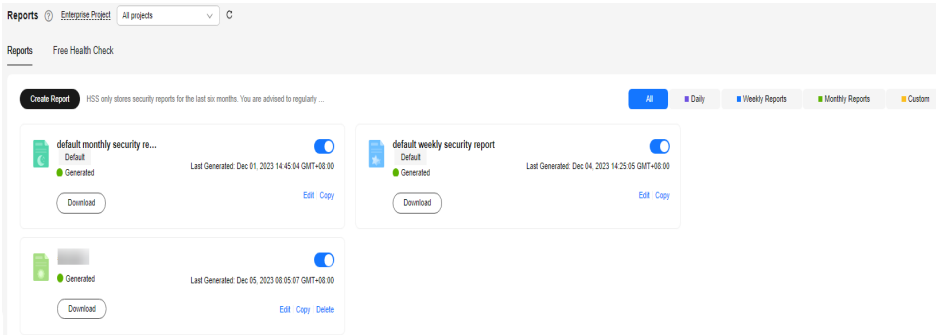
Step 3 In the navigation pane on the left, choose **Security Operations** > **Reports**.

You can use default security report templates directly, which are **default monthly security report** and **default weekly security report**.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 9-19 Checking a security report



Step 4 Click **Download** to go to the preview page. You can check the information of the target report and download or send it.

----End

Checking Report History

The report history stores the report sending details.

Step 1 In the upper right corner of the security report overview page, click **Report History** to check the report sending records.

Step 2 Check the report history on the displayed page, as shown in the following picture. For more information, see **Table 9-31**.

Table 9-31 Parameter description

Parameter	Description
Report Name	Name of a sent report.
Statistical Period	Statistical period of a sent report.
Report Type	Statistical period type of a sent report. • Weekly Reports • Monthly Reports • Daily Reports • Custom Reports
Sent	Time when the report is sent.

Step 3 Click **Download** in the **Operation** column to check historical reports. You can also preview and download the reports.

----End

9.4.4 Managing Security Reports

You can modify, cancel, or unsubscribe to a report.

Editing a Report

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

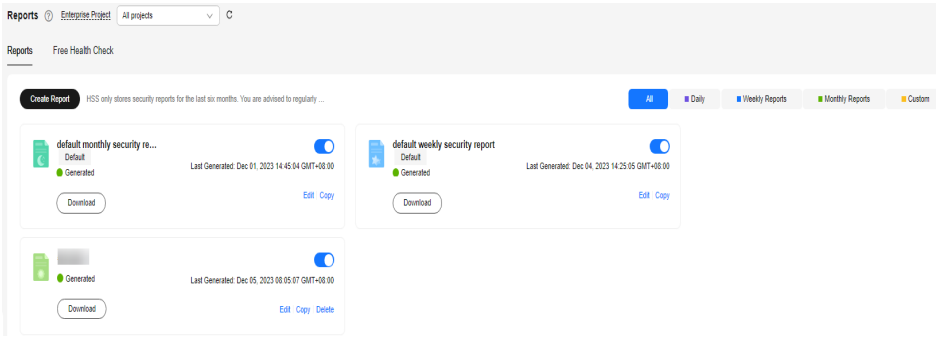
Step 3 In the navigation pane on the left, choose **Security Operations** > **Reports**.

You can use default security report templates directly, which are **default monthly security report** and **default weekly security report**.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 9-20 Checking a security report



Step 4 Click **Edit** in the lower right corner of the target report.

Step 5 Edit basic information of a report. For more information, see **Table 9-32**.

Table 9-32 Parameter description

Parameter	Description	Example Value
Report Name	Default report name.	**default monthly security report**
Report Type	Name of the statistical period type of a report, which cannot be edited.	**Monthly Reports**
Schedule Delivery	Time when a report is automatically sent.	-
Send Report To	Security report recipients. • **Recipients specified in Message Center**: If you use Message Center settings, alarm notifications will be sent to the recipients specified in the **Security events** message type. You need to log in to the console and check the mailbox in the upper right corner. • **Recipients specified in SMN topic**: If you use SMN topic settings, you can create a topic and specify recipients for HSS. • **No need to send to email**: The report is not sent to the specified email address.	Recipients specified in SMN topic

Step 6 Confirm the information and click **Next** in the lower right corner of the page to configure the report.

Step 7 Select or deselect the report items in the pane on the left. You can preview the report items on the right. After confirming the report items, click **Save**. The report is changed successfully.

----End

Enabling or Disabling Subscription

Step 1 Log in to the management console and go to the HSS page.

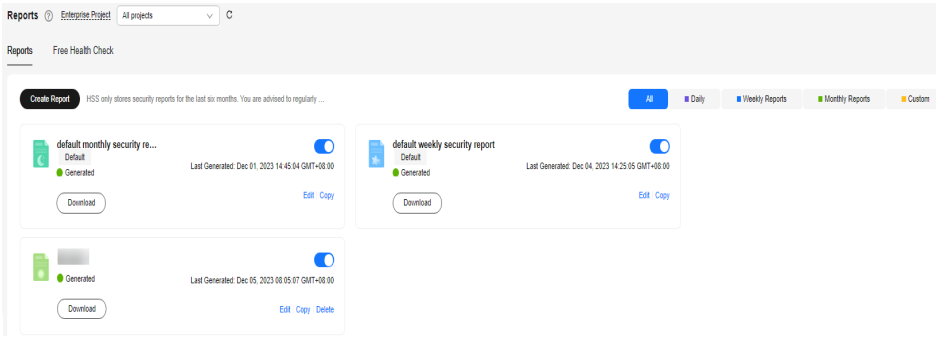
Step 2 In the navigation pane on the left, choose **Security Operations** > **Reports**.

You can use default security report templates directly, which are **default monthly security report** and **default weekly security report**.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 9-21 Checking a security report



Step 3 Click the switch in the upper right corner of a report to enable or disable the subscription.

-  : The subscription is disabled and no reports will be generated.
-  : The subscription is enabled and reports will be generated on time.

----End

Deleting a Report

NOTE

Default security report templates **default monthly security report** and **default weekly security report** cannot be deleted.

Step 1 Log in to the management console and go to the HSS page.

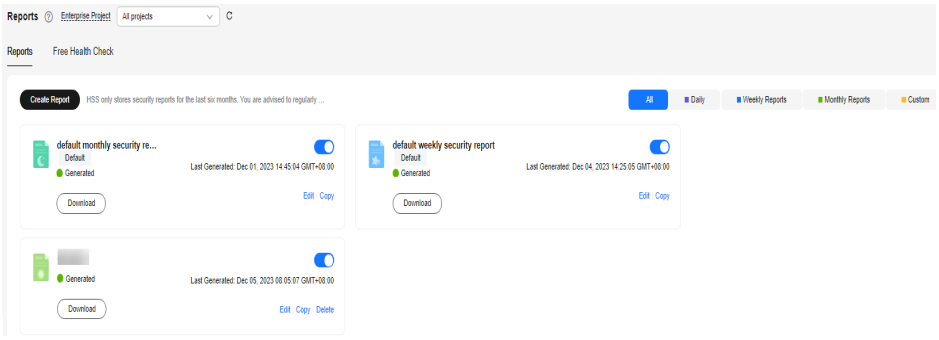
Step 2 In the navigation pane on the left, choose **Security Operations** > **Reports**.

You can use default security report templates directly, which are **default monthly security report** and **default weekly security report**.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Figure 9-22 Checking a security report



Step 3 Click **Delete** in the lower right corner of the target report.

----End

9.5 Free Scan

HSS provides free health check for ECSs that are not protected by HSS, and for the CCE clusters where free health check is enabled. HSS generates security reports on the risks in servers and containers.

- Free server health check

  This function checks for the vulnerabilities, unsafe passwords, and asset risks on ECSs and generates reports.

  To enjoy advanced features like vulnerability management, baseline inspection, application protection, web tamper protection, ransomware protection, intrusion detection, file integrity management, and virus scanning, you can enable the professional edition or higher.
- Free container health check

  This function checks for image vulnerabilities, cluster configurations, privileged container risks and ports, and software information in CCE clusters, and generates reports.

  To enjoy advanced features like asset management, image security scanning, container firewall, and container cluster protection, enable the container edition.

Free Scan

- ECSs that are not protected by HSS are scanned for free at 05:00 in the early morning on the first day of each month.
- To enable free health check for a CCE cluster, you can choose to enable security services when purchasing CCE or enable security services in the cluster configuration center. When you enable the free health check for the first time, HSS performs a health check immediately. Subsequent health checks are performed at 05:00 on the first day of each month.
- In a free server check report, up to five results can be displayed for each check item. If a check item has fewer than five results, only half of them will be displayed.
- In a free container check report, up to five risk check results and 10 asset check results can be displayed .

- A free health check report is generated on the first day of each month. You can only view the report online but cannot download it.
- You can purchase higher HSS editions to enjoy advanced functions, such as real-time protection, report download, online vulnerability fix, and compliance assistance.

Viewing the Free Health Checks of Servers

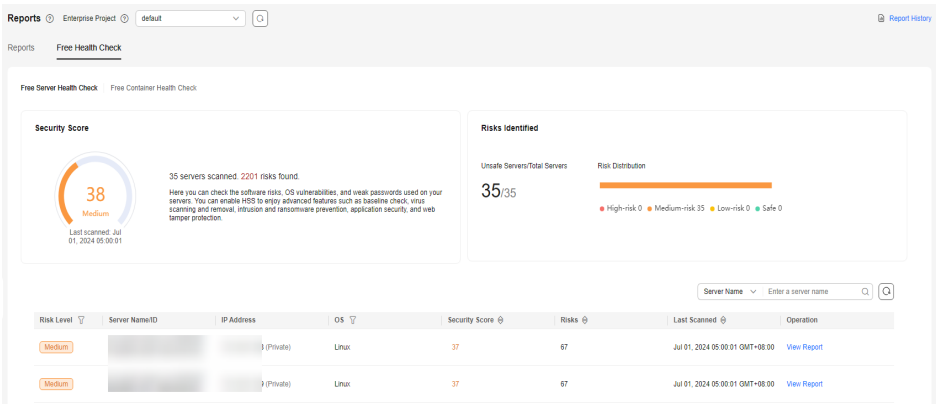
Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Security Operations** > **Reports**.

Step 4 Click the **Free Health Check** tab and click **Free Server Health Check** to view the health check results of the servers that are not protected by HSS.

Figure 9-23 Viewing the free health check results of servers



Step 5 In the **Operation** column of a server, click **View Report** to view the health check report online.

----End

Viewing the Free Health Check Results of Containers

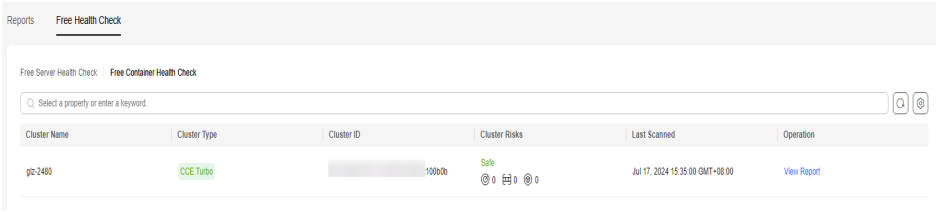
Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Security Operations** > **Reports**.

Step 4 Click the **Free Health Check** tab and click **Free Container Health Check** to view the health check results of the container clusters that are not protected by HSS.

Figure 9-24 Viewing the free health check results of containers



Step 5 In the **Operation** column of a cluster, click **View Report** to view the health check report online.

----End

9.6 Monthly Operation Summary

On the first day of each month, HSS generates a security operations summary report for last month. You can learn the asset security status and security configurations, analyze past security operations, and harden configurations and improve O&M efficiency accordingly.

Constraints and Limitations

- If you have not accessed HSS last month, no monthly operation summary report will be generated this month.
- The monthly operation summary report include statistics on all enterprise projects and cannot be generated for specific enterprise projects.
- Only the monthly operation summary reports of the latest 12 months are retained.

Checking a Monthly Operation Report

Step 1 **Log in to the management console**.

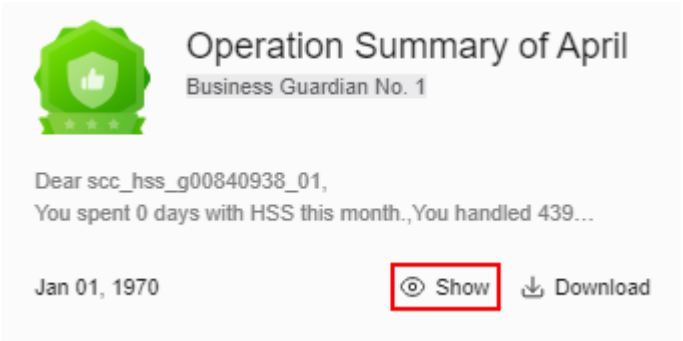
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the upper right corner of the **Dashboard** page, click **Operation Summary**.

Step 4 Click **Show** in a monthly report card.

To download a monthly operation summary report to your local PC, click **Download**. Open the **index.html** file in the downloaded package.

Figure 9-25 Checking a Monthly Operation Summary



NOTE

On the first day of each month, a dialog box is displayed, prompting you to view the monthly operation summary. You can click **Learn More** to go to the summary page. If you select **Don't show again**, you can refer to the preceding procedure to view the summary later.

----End

10 Installation and Configuration on Servers

10.1 Agent Management

10.1.1 Agent Release Notes

HSS will be continuously optimized to improve service capabilities, including but not limited to adding functions and fixing defects. This document describes the updates in each version of the HSS agent.

Agent release notes (Linux)

Agent Version	Update Description
3.2.17	1. Emergency vulnerability scans support the Arm architecture. 2. Antivirus can scan TXT files in sensitive mode. 3. The ransomware honeypot module can check honeypot deployment failures. 4. Agent protection can be degraded. Known issues on the live network have been fixed.
3.2.15	The bugs of the container security edition were fixed. Known issues on the live network were resolved.
3.2.14	Fileless attack detection is supported. Known issues on the live network are resolved.
3.2.13	The agent can be installed using a key or password. The installation and configuration page is optimized. Known issues on the live network are resolved.

Agent Version	Update Description
3.2.12	1. The self-protection function is added to prevent malicious programs from stopping the HSS service process and uninstalling the service agent. 2. Container image scan supports the containerd runtime. 3. Baseline checks based on the HCE1.1 general security standard is supported. 4. Apache RocketMQ applications can be identified. Known issues on the live network were resolved.
3.2.11	Fixed the issue that container information occasionally fails to be collected.
3.2.10	1. Added automatic virus scan and removal. 2. IPv6 addresses are supported for each function module. 3. Added the port honeypot function. 4. Fixed known issues of the honeypot module on the live network.
3.2.9	1. Added the virus scan and removal function to support quick, full-disk, and custom scan and removal. Static files on disks can be scanned to enhance virus defense capabilities. 2. Added the antivirus detection function to check the files flushed to disks in real time and identify most known malicious programs. 3. Added the emergency vulnerability detection function to check for emergency vulnerabilities. 4. Fixed known issues on the live network.

Agent release notes (Windows)

Agent Version	Update Description
4.0.26	1. Emergency vulnerability scans are supported. 2. Antivirus can scan TXT files in sensitive mode. 3. The ransomware honeypot module can check driver installation failures honeypot deployment failures. 4. The ransomware intelligence database supports filtering. 5. Agent protection can be degraded. Known issues on the live network have been fixed.
4.0.25	Fixed known issues on the live network.

Agent Version	Update Description
4.0.24	The agent can be installed through the GUI or script. The installation and configuration GUI was optimized. Known issues on the live network were resolved.
4.0.23	Known issues on the live network were resolved.
4.0.22	1. Added automatic virus scan and removal. 2. IPv6 addresses are supported for each function module. 3. Added the port honeypot function. 4. Fixed known issues of the honeypot module on the live network.
4.0.21	Fixed known issues on the live network.
4.0.20	1. Added the virus scan and removal function to support quick, full-disk, and custom scan and removal. Static files on disks can be scanned to enhance virus defense capabilities. 2. Added the common weak password detection function to check for weak passwords in Windows. 3. Fixed known issues on the live network.
4.0.19	1. Added the samples uploading function. 2. Added the application control (process whitelist) function. 3. Brute-force attack detection is supported for SQL Servers. 4. Added the SQL Server baseline check.

10.1.2 Viewing Agent Status

The HSS agent is a piece of software installed on cloud servers to exchange data between the servers and HSS, implementing security detection and protection. If no agent is installed, HSS is unavailable. For details about how to install the agent, see **Installing the Agent on Servers**.

This section describes how to view the agent status.

Viewing Agent Status

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Server Install & Config**. Click the **Agents** tab.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 4 Check the agent status, agent version, and agent upgrade status of the server.

----End

10.1.3 Upgrading the Agent

HSS keeps improving its service capabilities, including but not limited to new features and defect fixes. Please upgrade your agent to the latest version in a timely manner to enjoy better service.

About the Upgrade

- Agent upgrade is free of charge.
- The upgrade does not affect the workloads on your cloud servers.
- You are advised to perform the upgrade during off-peak hours.

Manually Upgrading the Agent

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

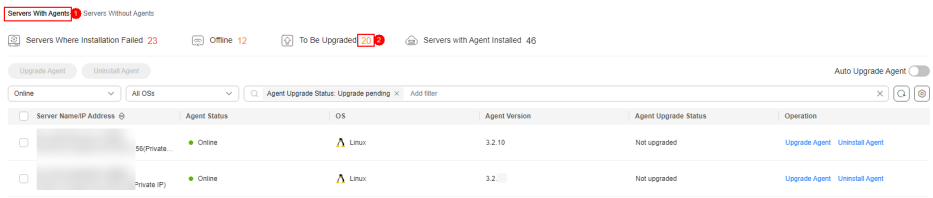
Step 3 In the navigation pane, choose **Installation & Configuration** > **Server Install & Config**. The **Agents** page is displayed.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

Step 4 Click the **Servers with Agents** tab and filter the servers where the agent needs to be upgraded.

Figure 10-1 Filtering servers where the agent needs to be upgraded



Step 5 In the **Operation** column of a server, click **Upgrade Agent**.

You can also select target servers in batches and click **Upgrade Agent** in the upper left corner of the server list to upgrade agents for the servers in batches.

Step 6 In the displayed dialog box, confirm the server whose agent is to be upgraded and click **OK** to start the automatic upgrade.

Step 7 After the upgrade completes, check the agent version. If the latest version agent is used, the upgrade is successful.

----End

Automatically Upgrading Agents

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Server Install & Config**. The agent management page is displayed.

NOTE

If your servers are managed by enterprise projects, you can select the target enterprise project to view or operate the asset and detection information.

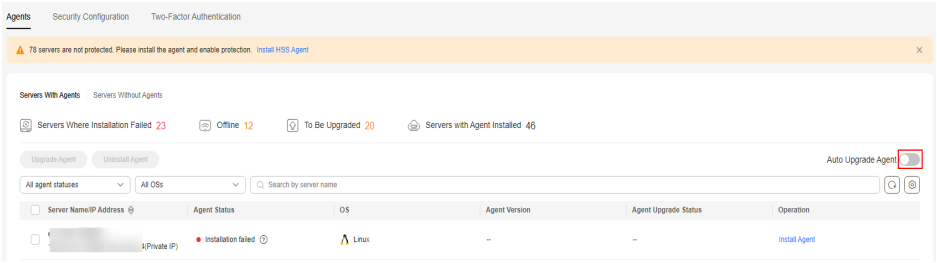
Step 4 Click  to enable automatic agent upgrade.

After this function is enabled, HSS checks the agent to be upgraded from 00:00 to 06:00 every day and automatically upgrades the agent to the latest version.

NOTE

The automatic upgrade can be performed only when the agent status is **Online**.

Figure 10-2 Enabling auto upgrade



----End

Related Operations

For details about how to install an agent, see **Installing the Agent on Servers**.

10.1.4 Uninstalling the Agent

If you no longer need to use HSS, uninstall the agent by following the instructions provided in this section. If the agent is uninstalled, HSS will stop protecting your servers and detecting risks.

Uninstallation Methods

Uninstallation Mode	Description
Uninstall the Online Agents	If the agent status of a server is **Online**, uninstall the agent by referring to **Uninstalling an Online Agent**.

Uninstallation Mode	Description
Uninstall the Offline Agents	If the agent status of a server is **Offline**, uninstall the agent by referring to **Uninstalling an Offline Agent**.

Uninstalling an Online Agent

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

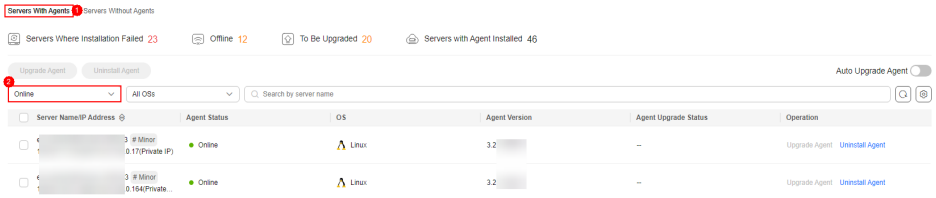
Step 3 In the navigation pane, choose **Installation & Configuration** > **Server Install & Config**. Click the **Agents** tab.

NOTE

If your servers are managed by enterprise projects, you can select an enterprise project to view or operate the asset and scan information.

Step 4 Click the **Servers with Agents** tab and filter the servers with online agents.

Figure 10-3 Filtering servers with online agents



Step 5 Click **Uninstall Agent** in the **Operation** column of a server. In the dialog box that is displayed, confirm the uninstallation information and click **OK**.

If you need to uninstall the agent in batches, you can select servers and click **Uninstall Agent** above the list.

----End

Uninstalling an Offline Agent

- **Uninstalling the Linux agent**
  a. Log in to the server from which you want to uninstall the agent and run the following command to switch to user root:

     su - root

  b. Perform the following operations to stop HSS:

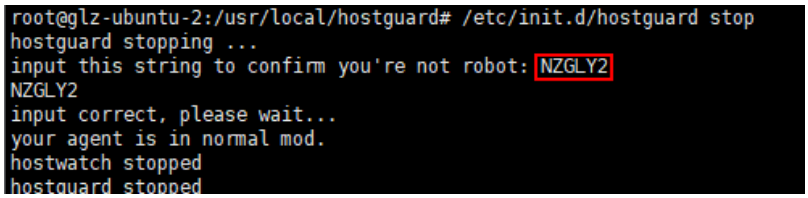
     i. Run the following command to stop the service:

     /etc/init.d/hostguard stop

     ii. (Optional) Enter the verification code displayed in the command output. See **Figure 10-4**.

This operation is required only for servers where HSS self-protection is enabled.

Figure 10-4 Verification code



c. In any directory, run the following command to uninstall the agent:

NOTE

Do not run the uninstallation command in the **/usr/local/hostguard/** directory. You can run the uninstallation command in any other directory.

- For EulerOS, CentOS and Red Hat, or other OSs that support RPM installation, run the **rpm -e hostguard** command.
- For Ubuntu and Debian OSs, or other OSs that support DEB installation, run the **dpkg -P hostguard** command.

If information similar to the following is displayed, the agent has been successfully uninstalled. If the uninstallation fails, go to the **step 3**.

```
Stopping Hostguard...
Hostguard stopped
Hostguard uninstalled.
```

d. (Optional) If the agent fails to be uninstalled in **step 2**, perform the following operations to uninstall the agent:

- For OSs that support RPM installation, such as EulerOS, CentOS, and Red Hat,

  1) Run the following command to delete the installation record:

     rpm -e --justdb hostguard

  2) Run the following command to check whether there are hostguard processes:

     ps -ef | grep hostguard

     If there are residual processes, run the **kill -9 PID** command to stop all residual processes.

  3) Run the following command to check whether the **/usr/local/hostguard** directory exists:

     ll /usr/local/hostguard

     If the directory exists, run the **rm -rf /usr/local/hostguard** command to delete it.

  4) Run the following command to check whether the **/etc/init.d/hostguard** file exists:

     ll /etc/init.d/hostguard

     If the file exists, run the **rm -f /etc/init.d/hostguard** command to delete the file.

- For OSs that support DEB installation, such as Ubuntu and Debian.

  1) Run the following command to check whether there are hostguard processes:

     ps -ef | grep hostguard

     If there are residual processes, run the **kill -9 PID** command to stop all residual processes.

  2) Run the following command to check whether the **/usr/local/hostguard** directory exists:

     ll /usr/local/hostguard

     If the directory exists, run the **rm -rf /usr/local/hostguard** command to delete it.

  3) Run the following command to check whether the **/etc/init.d/hostguard** file exists:

     ll /etc/init.d/hostguard

     If the file exists, run the **rm -f /etc/init.d/hostguard** command to delete the file.

- **Uninstalling the Windows agent**

  a. (Optional) Disable HSS self-protection.

     If HSS self-protection is enabled, disable it and then uninstall the agent. Otherwise, the agent cannot be uninstalled locally on the server. For details about how to disable the function, see **How Do I Disable Self-Protection?**

  b. Log in to the server that you want to uninstall the agent.

  c. Click **Start** and choose **Control Panel** > **Programs**. Then select **HostGuard** and click **Uninstall**.

     NOTE

     - Alternatively, go to the **C:\Program File\HostGuard** directory and double-click **unins000.exe** to uninstall the program.
     - If you have created a folder for storing the agent shortcut under the **Start** menu when installing the agent, you can also choose **Start** > **HostGuard** > **Uninstall HostGuard** to uninstall HostGuard.

  d. In the **Uninstall HostGuard** dialog box, click **Yes**.

  e. (Optional) Restart the server.

     - If you have enabled WTP, you need to restart the server after uninstalling the agent. In the **Uninstall HostGuard** dialog box, click **Yes** to restart the server.
     - If you have not enabled WTP, you do not need to restart the server. In the **Uninstall HostGuard** dialog box, click **No** to skip server restart.

Related Operations

Installing the Agent on Servers

11 Installation and Configuration on Containers

11.1 Installing an Agent in a Cluster

11.1.1 Overview of Agent Installation in a Cluster

HSS can protect Huawei Cloud CCE clusters, third-party cloud clusters, on-premises clusters, and independent containers. This section describes how to install an agent for these assets.

Context

In earlier versions, HSS provides **cluster agent management** to connect to containers. However, the containers connected in this way cannot use some container-related functions, such as container firewall and container cluster protection.

To solve this problem, in Linux agent 3.2.12 or later and Windows agent 4.0.23 or later, HSS supports **installation and configuration management on containers** to replace **cluster agent management**. Using the new function, cluster assets can fully connect to HSS and enjoy all the container-related functions provided.

If you have connected HSS to your cluster assets through **cluster agent management**, you are advised to uninstall the agent from your clusters, and then connect to them again by following the instructions provided in this section. In this way, you can fully enjoy cluster security functions. For more information, see **Uninstalling the Agent from a Cluster**.

Notice on ANP-Agent

ANP-Agent is different from HSS Agent. When the HSS agent is installed in a **non-CCE** cluster, ANP-Agent is used to enable the communication between HSS and the cluster. For details about the HSS agent, see **Agent Overview**.

Installing an Agent

The procedure for installing the agent varies depending on the cluster type. For details, see the following:

- **Installing the Agent in a Huawei Cloud CCE Cluster**
- **Installing an Agent in a User-built Cluster on Huawei Cloud**
- **Installing the Agent in a Third-Party Public Network Cluster**
- **Installing the Agent in a Third-Party Private Network Cluster**

Installing an Agent on an Independent Container

The method of installing the agent on an independent node is the same as that of installing the agent on a common server. You simply need to install the agent on the node. For more information, see **Installing the Agent on Servers**.

11.1.2 Installing the Agent in a Huawei Cloud CCE Cluster

Scenario

Install the agent in a Huawei Cloud CCE cluster. After the configuration is complete, HSS automatically installs the agent on existing cluster nodes, installs the agent on new nodes when the cluster is scaled out, and uninstalls the agent from removed nodes when the cluster is scaled in.

Prerequisites

Before installing an agent for a CCE cluster, grant the CCEOperatePolicy permission to HSS. For details, see **Authorization**.

Constraints and Limitations

- Supported container runtime: Docker and Containerd
- Supported cluster editions: CCE standard and Turbo editions
- Node resource requirements: At least 50 MiB memory and 200m CPU should be available.
- When an agent is installed in a cluster, HSS creates an HSS namespace in the cluster.

Installing the Agent in a Huawei Cloud CCE Cluster

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click  , and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Container Install & Config**.

Step 4 On the **Cluster** tab page, click **Install Container Agent**. The **Container Asset Access and Installation** slide-out panel is displayed.

Step 5 Select **CCE Cluster Installation** and click **Configure Now**.

Step 6 Select a cluster and click **Next**.

Step 7 Configure agent parameters. For more information, see **Table 11-1**.

Table 11-1 Agent parameters

Parameter	Description
Configuration Rules	Select an agent configuration rule. • **Default Rule**: Select this if the sock address of container runtime is a common address. The agent will be installed on nodes having no taints. • **Custom**: Select this rule if the sock address of your container runtime is not a common address or needs to be modified, or if you only want to install the agent on specific nodes. **NOTE** • If the sock address of your container runtime is incorrect, some HSS functions may be unavailable after the cluster is connected to HSS. • You are advised to select all runtime types.
(Optional) Advanced Configuration	This parameter can be set if **Custom** is selected for **Configuration Rules**. Click ﹀ to expand advanced configurations. The **Enabling auto upgrade agent** option is selected by default. • **Enabling auto upgrade** Configure whether to enable automatic agent upgrade. If it is enabled, HSS automatically upgrades the agent to the latest version between 00:00 to 06:00 every day to provide you with better services. • **Node Selector Configuration** Set the **Key** and **Value** of tags of the nodes where the agent is to be installed and click **Add**. If no tags are specified, the agent will be installed on all the nodes having no taints. • **Tolerance Configuration** If you added a node whose tag contains a taint in **Node Selector Configuration**, set the **Key**, **Value**, and **Effect** of the taint, and click **Add** to allow agent installation on the node.

Step 8 Click **OK** to start installing the HSS agent.

Step 9 In the cluster list, check the cluster status. If the cluster status is **Running**, the cluster is successfully connected to HSS.

----End

11.1.3 Installing an Agent in a User-built Cluster on Huawei Cloud

Scenario

Install the agent on a user-built cluster on Huawei Cloud that can access the SWR image repository. After the configuration is complete, HSS automatically installs the agent on existing cluster nodes, installs the agent on new nodes when the cluster is scaled out, and uninstalls the agent from removed nodes when the cluster is scaled in.

Step 1: Prepare the kubeconfig File

The kubeconfig file specifies the cluster permissions assigned to HSS. The kubeconfig file configured using method 1 contains the cluster administrator permissions, whereas the file generated using method 2 contains only the permissions required by HSS. If you want to minimize HSS permissions, prepare the file using method 2.

- **Method 1: configuring the default kubeconfig file**

  The default kubeconfig file is in the **$HOME/.kube/config** directory. Perform the following operations to create a dedicated namespace for HSS:]

  a. Log in to a cluster node.

  b. Create the **hss.yaml** file and copy the following content to the file:

  ```
  {"metadata":{"name":"hss"},"apiVersion":"v1","kind":"Namespace"}
  ```

  c. Run the following command to create a namespace:

  ```
  kubectl apply -f hss.yaml
  ```

- **Method 2: generating a kubeconfig file dedicated to HSS**

  a. Create a dedicated namespace and an account for HSS.

  i. Log in to a cluster node.

  ii. Create the **hss-account.yaml** file and copy the following content to the file:

  ```
  {"metadata":{"name":"hss"},"apiVersion":"v1","kind":"Namespace"}{"metadata":
  {"name":"hss-user","namespace":"hss"},"apiVersion":"v1","kind":"ServiceAccount"}
  {"metadata":{"name":"hss-user-token","namespace":"hss","annotations":{"kubernetes.io/
  service-account.name":"hss-user"}},"apiVersion":"v1","kind":"Secret","type":"kubernetes.io/
  service-account-token"}
  ```

  iii. Run the following command to create a namespace and an account:

  ```
  kubectl apply -f hss-account.yaml
  ```

  b. Generate the kubeconfig file.

  i. Create the **gen_kubeconfig.sh** file and copy the following content to the file:

  ```
  #!/bin/bash

  KUBE_APISERVER=`kubectl config view  --output=jsonpath='{.clusters[].cluster.server}' |
  head -n1 `
  CLUSTER_NAME=`kubectl config view -o jsonpath='{.clusters[0].name}'`
  kubectl get secret hss-user-token -n hss -o yaml |grep ca.crt: | awk '{print $2}' |base64 -d
  >hss_ca_crt

  kubectl config set-cluster ${CLUSTER_NAME} --server=${KUBE_APISERVER}  --certificate-
  authority=hss_ca_crt  --embed-certs=true --kubeconfig=hss_kubeconfig.yaml
  kubectl config set-credentials hss-user --token=$(kubectl describe secret hss-user-token -n
  ```



```
hss | awk '/token:/{print $2}') --kubeconfig=hss_kubeconfig.yaml
kubectl config set-context hss-user@kubernetes --cluster=${CLUSTER_NAME} --user=hss-user --kubeconfig=hss_kubeconfig.yaml
kubectl config use-context hss-user@kubernetes --kubeconfig=hss_kubeconfig.yaml
```

ii. Run the following command to generate the kubeconfig file named **hss_kubeconfig.yaml**:

```
bash gen_kubeconfig.sh
```

Step 2: Install an Agent in a User-built Cluster on Huawei Cloud

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Container Install & Config**.

Step 4 On the **Cluster** tab page, click **Install Container Agent**. The **Container Asset Access and Installation** slide-out panel is displayed.

Step 5 Select **Non-CCE cluster (Internet access)** and click **Configure Now**.

Step 6 Configure cluster access information and click **Generate Command**. For more information, see **Table 11-2**.

Figure 11-1 Configuring cluster access information

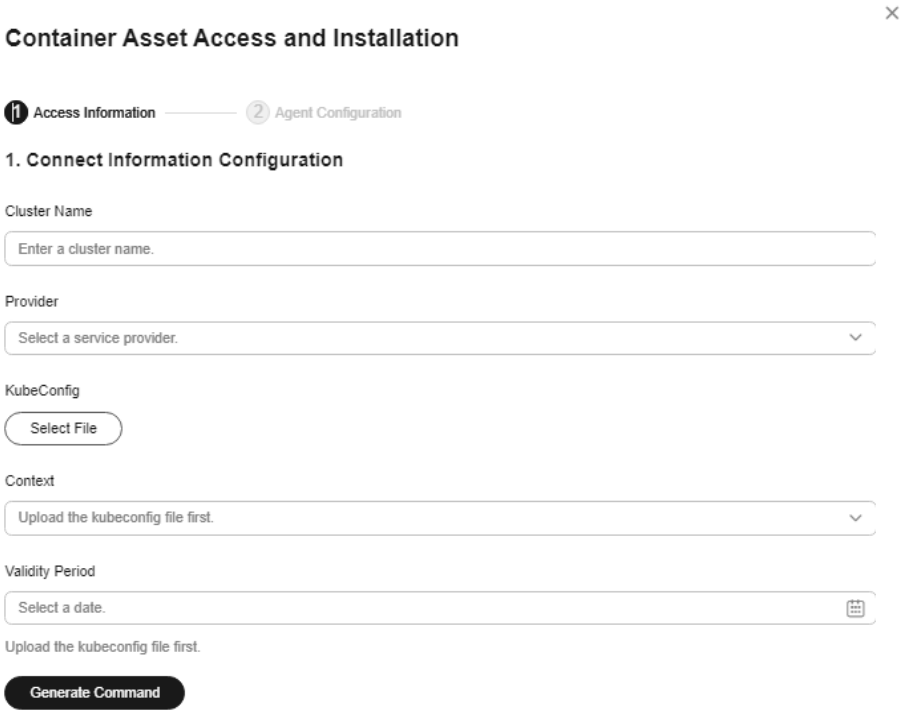


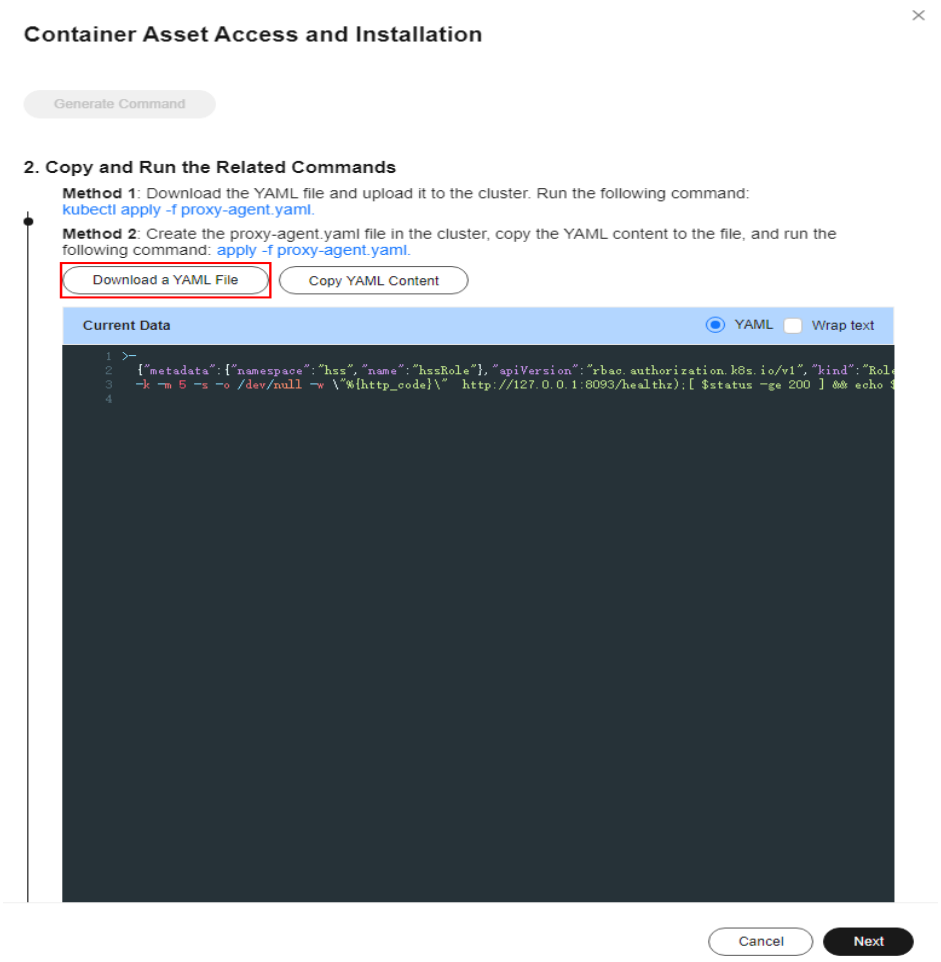
Table 11-2 Access parameters

Parameter	Description
Cluster Name	Name of the cluster to be connected.
Provider	Service provider of the cluster. Currently, the clusters of the following service providers are supported: • Alibaba Cloud • Tencent Cloud • AWS • Azure • User-built • On-premises IDC
KubeConfig	Add and upload the kubeconfig file configured as required in **Step 1: Prepare the kubeconfig File**.
Context	After the kubeconfig file is uploaded, HSS automatically parses the context.
Validity Period	After the kubeconfig file is uploaded, HSS automatically parses the validity period. You can also specify a time before the final validity period. After the specified validity period expires, you need to connect to the asset again.

Step 7 Perform the following operations to install the cluster connection component (ANP-agent) and establish a connection between HSS and the cluster:

1. In the **Container Asset Access and Installation** dialog box, click **Download a YAML File**.

Figure 11-2 Downloading the YAML file



2. Copy the command file to a directory on any node.
3. Run the following command to install the cluster connection component (ANP-Agent):

```
kubectl apply -f proxy-agent.yaml
```

4. Run the following command to check whether the cluster connection component (ANP-agent) is successfully installed:

```
kubectl get pods -n hss | grep proxy-agent
```

If the command output shown in **Figure 11-3** is displayed, the cluster connection component (ANP-agent) is successfully installed.

Figure 11-3 ANP-Agent installed

```
[root@glz-ubuntu-1 [redacted]  # kubectl get pods -n hss
NAME                           READY   STATUS    RESTARTS   AGE
proxy-agent-559fbcf95d-ql5bq   1/1     Running   0          56m
proxy-agent-559fbcf95d-sn5xf   1/1     Running   0          56m
```

5. Run the following command to check whether the cluster is connected to HSS:

```
for a in $(kubectl get pods -n hss| grep proxy-agent | cut -d ' ' -f1); do kubectl -n hss logs $a | grep 'Start serving';done
```

If the command output shown in **Figure 11-4** is displayed, the cluster is connected to HSS.

Figure 11-4 Cluster connected to HSS

Step 8 In the **Container Asset Access and Installation** dialog box, click **Next**.

Step 9 Configure agent parameters. For more information, see **Table 11-3**.

Table 11-3 Agent parameters

Parameter	Description
Configuration Rules	Select an agent configuration rule. • **Default Rule**: Select this if the sock address of container runtime is a common address. The agent will be installed on nodes having no taints. • **Custom**: Select this rule if the sock address of your container runtime is not a common address or needs to be modified, or if you only want to install the agent on specific nodes. **NOTE** • If the sock address of your container runtime is incorrect, some HSS functions may be unavailable after the cluster is connected to HSS. • You are advised to select all runtime types.
(Optional) Advanced Configuration	This parameter can be set if **Custom** is selected for **Configuration Rules**. Click ⌄ to expand advanced configurations. The **Enabling auto upgrade agent** option is selected by default. • **Enabling auto upgrade** Configure whether to enable automatic agent upgrade. If it is enabled, HSS automatically upgrades the agent to the latest version between 00:00 to 06:00 every day to provide you with better services. • **Node Selector Configuration** Set the **Key** and **Value** of tags of the nodes where the agent is to be installed and click **Add**. If no tags are specified, the agent will be installed on all the nodes having no taints. • **Tolerance Configuration** If you added a node whose tag contains a taint in **Node Selector Configuration**, set the **Key**, **Value**, and **Effect** of the taint, and click **Add** to allow agent installation on the node.

Step 10 Click **OK** to start installing the HSS agent.

Step 11 In the cluster list, check the cluster status. If the cluster status is **Running**, the cluster is successfully connected to HSS.

----End

11.1.4 Installing the Agent in a Third-Party Public Network Cluster

Scenario

Install the agent on a third-party cluster that can access the public network. After the configuration is complete, HSS automatically installs the agent on existing cluster nodes, installs the agent on new nodes when the cluster is scaled out, and uninstalls the agent from removed nodes when the cluster is scaled in.

Constraints and Limitations

- Supported cluster orchestration platforms: Kubernetes 1.19 or later
- Supported node OS: Linux
- Node specifications: at least 2 vCPUs, 4 GiB memory, 40 GiB system disk, and 100 GiB data disk
- The agent is incompatible with clusters of Galera 3.34, MySQL 5.6.51, or earlier versions.

Step 1: Create a VPC

Step 1 Log in to the console and go to the page for **Creating a VPC**.

Step 2 On the **Create VPC** page, set parameters for the VPC and subnets as prompted.

You are advised to set some parameters by referring to **Table 11-4** and retain the default values for other parameters. For details about how to create a VPC, see **Creating a VPC**.

Table 11-4 Parameters for creating a VPC

Parameter	Description	Example Value
Region	Select a region near you to ensure the lowest latency possible.	CN-Hong Kong
Name	VPC name. The name: • Must contain 1 to 64 characters. • Can contain letters, numbers, underscores (_), hyphens (-), and periods (.).	HSS-outside-anp-VPC
Enterprise Project	Enterprise project to which the VPC belongs. An enterprise project facilitates project-level management and grouping of cloud resources and users. The name of the default project is **default**. For details about creating and managing enterprise projects, see the **Enterprise Management User Guide**.	default

Parameter	Description	Example Value
Subnet Name	Subnet name. The name: • Must contain 1 to 64 characters. • Can contain letters, numbers, underscores (_), hyphens (-), and periods (.).	HSS-outside-subnet

Step 3 Click **Create Now**. You can view the VPC after it is created.

----End

Step 2: Create a Security Group

Step 1 In the navigation pane on the left, choose **Access Control** > **Security Groups**.

Step 2 Click **Create Security Group** in the upper right corner.

Step 3 Configure security group parameters as prompted.

You are advised to configure some parameters by referring to **Table 11-5** and configure other parameters based on site requirements. For details about how to create a security group, see **Creating a Security Group**.

Table 11-5 Parameters for creating a security group

Parameter	Description	Example Value
Region	Select a region near you to ensure the lowest latency possible.	CN-Hong Kong
Name	Specify the name of the security group. The name: • Must contain 1 to 64 characters. • Can contain letters, numbers, underscores (_), hyphens (-), and periods (.).	HSS-outside-anp-secGroups
Enterprise Project	When creating a security group, you can add the security group to an enterprise project that has been enabled. An enterprise project facilitates project-level management and grouping of cloud resources and users. The default project is **default**. For details about creating and managing enterprise projects, see the **Enterprise Management User Guide**.	default
Preset Rule	Inbound and outbound rules are preset in security group rules. You can select a rule as needed to quickly create a security group.	All ports open

Step 4 Click **Create Now**. You can view the security group after it is created.

----End

Step 3: Create an ECS

Step 1 Click ☰ in the upper left corner and **Compute** > **Elastic Cloud Server**.

Step 2 In the upper right corner, click **Buy ECS**.

Step 3 Configure ECS parameters as prompted.

You are advised to configure some parameters by referring to **Table 11-6** and configure other parameters based on site requirements.

Table 11-6 Parameters for purchasing an ECS

Parameter	Description	Example Value
Billing Mode	ECS billing mode. • Yearly/Monthly: Prepaid mode. Yearly/monthly ECSs are billed by the purchased duration specified in the order. • Pay-per-use: Postpaid billing mode. You pay as you go and just pay for what you use. Pay-per-use ECSs are billed by the second and settled by the hour. • Spot price: Spot pricing is a postpaid billing mode. You pay as you go and just pay for what you use. In **Spot pricing** billing mode, your purchased ECS is billed at a lower price than that of a pay-per-use ECS with the same specifications. In **Spot pricing** billing mode, you can select **Spot** or **Spot block** for the **Spot Type**. Spot ECSs and Spot block ECSs are billed by the second and settled by the hour.	Pay-per-use
Region	Select a region near you to ensure the lowest latency possible.	CN-Hong Kong
CPU Architecture	Select a CPU architecture. The value can be **x86**.	x86
Instance	• Select vCPUs and memory, or enter a keyword to search for ECS specifications. You can search for ECS flavors when you select **By Type**. • Select ECS specifications by instance family and generation from the list.	General computing, 2 vCPUs, 4 GiB

Parameter	Description	Example Value
Image	An image is an ECS template that contains an OS. It may also contain proprietary software and application software. You can use images to create ECSs.	Public image, EulerOS 2 5 64bit (40 GiB)
System Disk	A system disk stores the OS of an ECS, and is automatically created and initialized upon ECS creation.	Ultra-high I/O
Network	VPC allows you to create logically isolated, configurable, and manageable virtual networks for VPCs. You can configure security groups, Virtual Private Network (VPNs), CIDR blocks, and bandwidths in your VPC. ECSs in different VPCs cannot communicate with each other by default.	HSS-outside-anp-VPC (VPC created in **Step 1: Create a VPC**)
Security Group	Select an available security group from the drop-down list. You can select multiple security groups for an ECS (no more than five security groups are recommended). The access rules of all the selected security groups apply to the ECS.	HSS-outside-anp-secGroups (Security group created in **Step 2: Create a Security Group**)
EIP	An EIP is a static public IP address bound to a cloud server in a VPC. Using the EIP, the cloud server provides services externally.	Buy now, static BGP
ECS Name	This parameter will be set to the initial server name (**hostname**) in the ECS OS. The name can contain only letters, numbers, underscores (_), hyphens (-), and periods (.).	HSS-outside-anp-ECS
Enterprise Project	When purchasing an ECS, you can add it to an enabled enterprise project. An enterprise project facilitates project-level management and grouping of cloud resources and users. The name of the default project is **default**. For details about creating and managing enterprise projects, see the **Enterprise Management User Guide**.	default
Login Mode	Method for logging in to an ECS.	Password

Step 4 Click **Create**. In the displayed dialog box, click **Agree and Create**. After the payment is complete, the ECS will be automatically created and started by default.

----End

Step 4: Set Up Nginx

Step 1 Log in to the server created in **Step 3: Create an ECS**.

Step 2 Go to the **temp** directory.

cd /temp

Step 3 Run the following command to create the **install_nginx.sh** file:

vi install_nginx.sh

Step 4 Press **i** to enter the editing mode and copy the following content to the **install_nginx.sh** file:

```
#!/bin/bash

yum -y install pcre-devel zlib-devel popt-devel openssl-devel openssl
wget http://www.nginx.org/download/nginx-1.21.0.tar.gz
tar zxf nginx-1.21.0.tar.gz -C /usr/src/
cd /usr/src/nginx-1.21.0/
useradd -M -s /sbin/nologin nginx
./configure \
--prefix=/usr/local/nginx \
--user=nginx \
--group=nginx \
--with-file-aio \
--with-http_stub_status_module \
--with-http_gzip_static_module \
--with-http_flv_module \
--with-http_ssl_module \
--with-stream \
--with-pcre && make && make install
ln -s /usr/local/nginx/sbin/nginx /usr/local/sbin/
nginx
```

Step 5 Enter **ECS**, run the following command, and press **Enter** to exit.

:wq!

Step 6 Run the following command to install Nginx:

bash /tmp/install_nginx.sh

Step 7 Run the following command to modify the Nginx configuration file:

```
cat <<END >> /usr/local/nginx/conf/nginx.conf
stream {
  upstream backend_hss_anp {
    server {{ANP_proxy_address}}:8091 weight=5 max_fails=3 fail_timeout=30s;
  }
  server {
    listen 8091 so_keepalive=on;
    proxy_connect_timeout 10s;
    proxy_timeout 300s;
    proxy_pass backend_hss_anp ;
  }
}
END
```

Replace **{{ANP_proxy_address}}** with the actual address and then run the command. For details, see **Table 11-7**.

Table 11-7 ANP proxy address

Region	ANP proxy address
Guiyang1, Bangkok, Shanghai2, Guangzhou, Beijing4, Beijing2, and Shanghai1	hss-proxy.RegionCode.myhuaweicloud.com
Other	hss-anp.RegionCode.myhuaweicloud.com
For details about region codes, see **Regions and Endpoints**.	

Step 8 Run the following command to make the Nginx configuration take effect:

nginx -s reload

Step 9 Run the following command to check whether port 8091 is listened on properly:

netstat -anp | grep 8091

If information similar to **Figure 11-5** is displayed, the listening is normal.

Figure 11-5 Listening on port 8091 is normal.

----End

Step 5: Buy and Configure an ELB

Step 1 Log in to the console and go to the page for **Buying ELB** page.

Step 2 Set ELB parameters as prompted.

You are advised to configure some parameters by referring to **Table 11-8** and configure other parameters based on site requirements. For details about how to buy a load balancer, see **Creating a Dedicated Load Balancer**.

Table 11-8 Parameters for buying an ELB

Parameter	Description	Example Value
Type	Type of the shared load balancer. The type cannot be changed after the load balancer is created. Dedicated load balancers work well for heavy-traffic and high-concurrency workloads, such as large websites, cloud native applications, IoV, and multi-AZ disaster recovery applications.	Dedicated

Parameter	Description	Example Value
Billing Mode	Billing mode of a dedicated load balancer. • **Yearly/Monthly**: prepaid billing mode. You pay in advance for a subscription term, and in exchange, you get a discounted rate. • **Pay-per-use**: postpaid billing mode. You pay as you go and just pay for what you use. The load balancer usage is calculated by the second but billed every hour.	Pay-per-use
Region	Select a region near you to ensure the lowest latency possible.	CN-Hong Kong
Name	Load balancer name. The name can contain: • 1 to 64 characters. • Letters, numbers, underscores (_), hyphens (-), and periods (.).	HSS-outside-anp-ELB
Enterprise Project	When creating a load balancer, you can add it to an enabled enterprise project. An enterprise project facilitates project-level management and grouping of cloud resources and users. The name of the default project is **default**. For details about creating and managing enterprise projects, see the **Enterprise Management User Guide**.	default
Specification Type	Select **Elastic** or **Fixed** if pay-per-use is chosen as the billing mode. Specifications: • Elastic specifications work well for fluctuating traffic, and you will be charged for how many LCUs you use. • Fixed specifications are suitable for stable traffic, and you will be charged for the specifications you select.	• Fixed • Network load balancing • Small

Parameter	Description	Example Value
Network Configuration	• **Network Type**: You can select one or more network types. – **Private IPv4 network**: The load balancer routes IPv4 requests from the clients to backend servers in a VPC. If you want the load balancer to route IPv4 requests from the Internet, bind an EIP to the load balancer. – **IPv6 network**: An IPv6 address will be assigned to the load balancer to route requests from IPv6 clients. • **VPC**: VPC where the dedicated load balancer works. You cannot change the VPC after the load balancer is created. Plan the VPC as required. Select an existing VPC, or click **View VPCs** to create a desired one. • **Frontend Subnet**: Subnet where the dedicated load balancer is located. The system allocates an IP address from this subnet to the load balancer for external services. After a load balancer is created, you can unbind the IP address from it and assign an IP address from a new frontend subnet to the load balancer. • **Backend Subnet**: The load balancer uses IP addresses in the backend subnet to establish connections with backend servers.	• Private IPv4 network • HSS-outside-anp-VPC (VPC created in **Step 1: Create a VPC**) • HSS-outside-subnet (VPC subnet created in **Step 1: Create a VPC**) • Subnet of the load balancer
Elastic IPs	EIP that will be bound to the load balancer for receiving and forwarding IPv4 requests over the Internet.	• Auto assign • Dynamic BGP • Bandwidth

Step 3 After setting the parameters, click **Next**.

Step 4 On the ELB page, view the created ELB and record the public IPv4 address.

Step 5 In the row of a load balancer, click **Add now** in the **Listener (Frontend Protocol/Port)** column.

Step 6 Set the listener parameters as prompted.

You are advised to configure some parameters by referring to **Table 11-9** and configure other parameters based on site requirements. For details, see **Adding a TCP Listener**.

Table 11-9 Parameters for adding a listener

Parameter		Description	Example Value
Configure Listener	Name	Listener name.	HSS-outside-anp-Listener
	Protocol	Protocol used by the client and listener to distribute traffic.	TCP
	Frontend Port	Port used by the client and listener to distribute traffic.	8091
	Access Control	Supports access control based on the whitelist and blacklist.	All IP addresses
Configure Routing Policy	Backend Server Group	A group of backend servers with the same features. • **New** • **Use existing**	New
	Backend Server Group Name	Name of the backend server group.	HSS-outside-anp-server-group
	Backend Protocol	Specifies the protocol that backend servers in the backend server group use to receive requests from the listeners. The protocol varies depending on the forwarding mode.	TCP
	Load Balancing Algorithm	Algorithm used by the load balancer. • **Weighted round robin**: Requests are routed to different servers based on their weights. Backend servers with higher weights receive proportionately more requests, whereas equal-weighted servers receive the same number of requests. • **Weighted least connections**: In addition to the number of connections, each server is assigned a weight based on its capacity. Requests are routed to the server with the lowest connections-to-weight ratio. • **Source IP hash**: Allows requests from different clients to be routed based on source IP addresses and ensures that requests from the same client are forwarded to the same server.	Weighted round robin

Parameter		Description	Example Value
Add Backend Server	Backend Servers	When you use ELB to route requests, ensure that at least one backend server is running properly and can receive requests routed by the load balancer. Click **Add Backend Server**.	HSS-outside-anp-ECS Set the service port to 8091. (Server created in **Step 3: Create an ECS**)

Step 7 On the **Confirm** page, check parameter settings.

Step 8 Click **Submit** complete the configuration.

----End

Step 6: Modify a Security Group

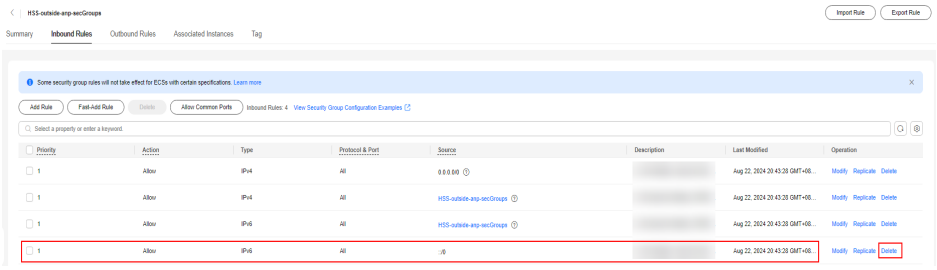
Step 1 Click ☰ in the upper left corner of the management console and choose **Network** > **Virtual Private Cloud**.

Step 2 In the navigation tree on the left, choose **Security Groups**.

Step 3 Locate the security group created in **Step 2: Create a Security Group** and click **Manage Rules**.

Step 4 Delete the IPv6 full passing rule, as shown in **Figure 11-6**.

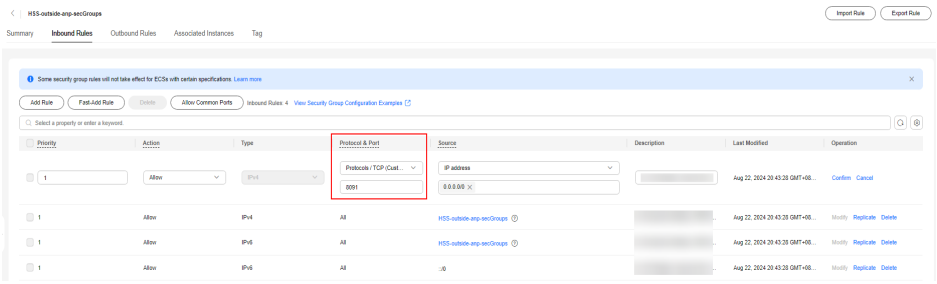
Figure 11-6 Deleting the IPv6 full passing rule



Step 5 Modify the IPv4 full bypass rule, as shown in **Figure 11-7**.

1. Change the value of **Protocol & Port** from **Protocols > All** to **Protocols / TCP (Custom ports)** and set the port number to **8091**.
2. Click **OK**.

Figure 11-7 Modifying the IPv4 full passing rule



----End

Step 7: Prepare the kubeconfig File

The kubeconfig file specifies the cluster permissions assigned to HSS. The kubeconfig file configured using method 1 contains the cluster administrator permissions, whereas the file generated using method 2 contains only the permissions required by HSS. If you want to minimize HSS permissions, prepare the file using method 2.

- **Method 1: configuring the default kubeconfig file**

  The default kubeconfig file is in the **$HOME/.kube/config** directory. Perform the following operations to create a dedicated namespace for HSS:]

  a. Log in to a cluster node.

  b. Create the **hss.yaml** file and copy the following content to the file:

  ```
  {"metadata":{"name":"hss"},"apiVersion":"v1","kind":"Namespace"}
  ```

  c. Run the following command to create a namespace:

  ```
  kubectl apply -f hss.yaml
  ```

- **Method 2: generating a kubeconfig file dedicated to HSS**

  a. Create a dedicated namespace and an account for HSS.

  i. Log in to a cluster node.

  ii. Create the **hss-account.yaml** file and copy the following content to the file:

  ```
  {"metadata":{"name":"hss"},"apiVersion":"v1","kind":"Namespace"}{"metadata":{"name":"hss-user","namespace":"hss"},"apiVersion":"v1","kind":"ServiceAccount"}{"metadata":{"name":"hss-user-token","namespace":"hss","annotations":{"kubernetes.io/service-account.name":"hss-user"}},"apiVersion":"v1","kind":"Secret","type":"kubernetes.io/service-account-token"}
  ```

  iii. Run the following command to create a namespace and an account:

  ```
  kubectl apply -f hss-account.yaml
  ```

  b. Generate the kubeconfig file.

  i. Create the **gen_kubeconfig.sh** file and copy the following content to the file:

  ```
  #!/bin/bash

  KUBE_APISERVER=`kubectl config view  --output=jsonpath='{.clusters[].cluster.server}' | head -n1 `
  CLUSTER_NAME=`kubectl config view -o jsonpath='{.clusters[0].name}'`
  kubectl get secret hss-user-token -n hss -o yaml |grep ca.crt: | awk '{print $2}' |base64 -d >hss_ca_crt

  kubectl config set-cluster ${CLUSTER_NAME} --server=${KUBE_APISERVER}  --certificate-authority=hss_ca_crt  --embed-certs=true --kubeconfig=hss_kubeconfig.yaml
  ```



```
kubectl config set-credentials hss-user --token=$(kubectl describe secret hss-user-token -n hss | awk '/token:/{print $2}') --kubeconfig=hss_kubeconfig.yaml
kubectl config set-context hss-user@kubernetes --cluster=${CLUSTER_NAME} --user=hss-user --kubeconfig=hss_kubeconfig.yaml
kubectl config use-context hss-user@kubernetes --kubeconfig=hss_kubeconfig.yaml
```

ii. Run the following command to generate the kubeconfig file named **hss_kubeconfig.yaml**:

```
bash gen_kubeconfig.sh
```

Step 8: Install the Agent for a Third-Party Public Network Cluster

The image repositories used by a cluster are classified into public and private image repositories.

- Public network image repository: An image repository that can be accessed as long as it can connect to the Internet. It is usually provided by a third party and paid by enterprises.
- Private image repository: an image repository deployed and maintained by an enterprise. Only authorized users can access the image repository.

Install the agent for the cluster based on the image repository type.

Public Network Image Repository

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click  , and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Container Install & Config**.

Step 4 On the **Cluster** tab page, click **Install Container Agent**. The **Container Asset Access and Installation** slide-out panel is displayed.

Step 5 Select **Non-CCE cluster (Internet access)** and click **Configure Now**.

Step 6 Configure cluster access information and click **Generate Command**. For more information, see **Table 11-10**.

Figure 11-8 Configuring cluster access information

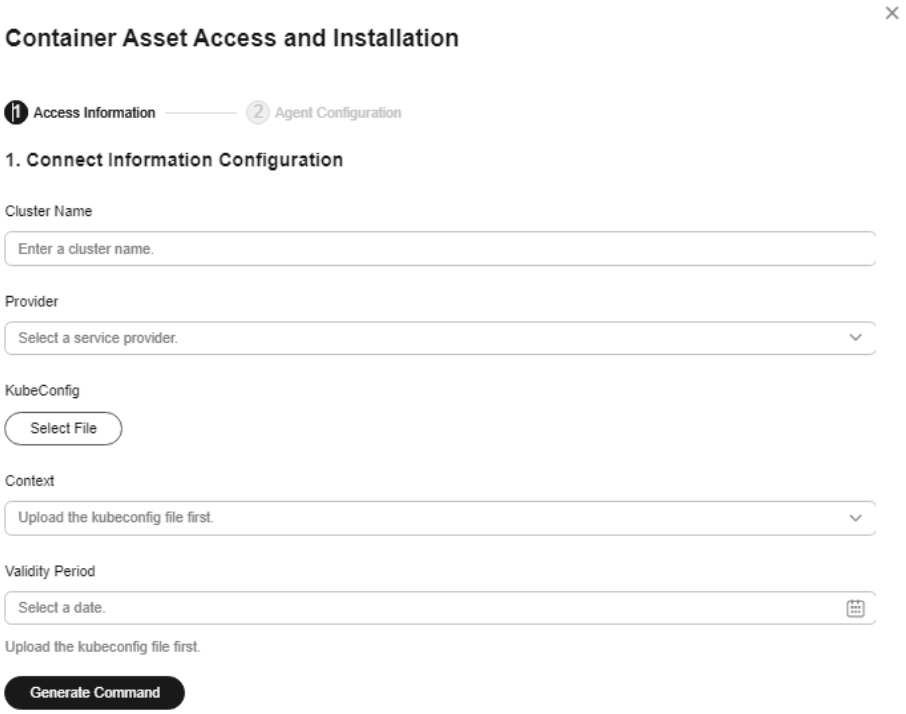


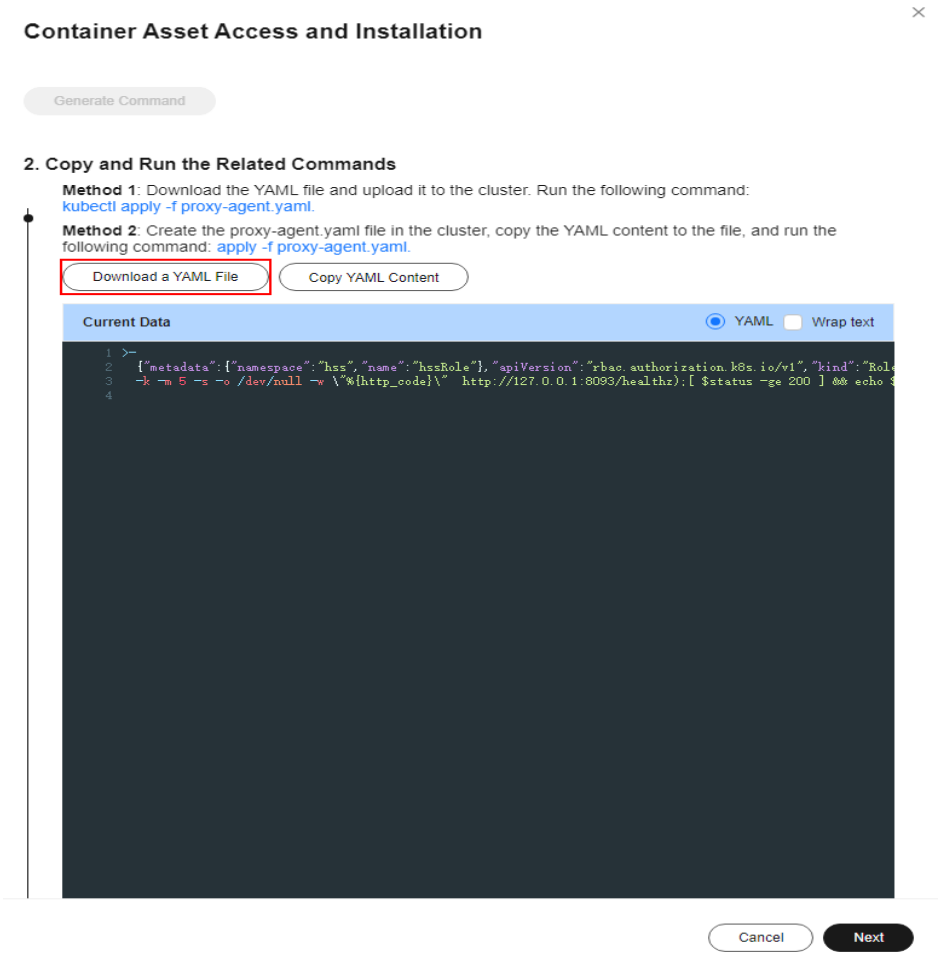
Table 11-10 Access parameters

Parameter	Description
Cluster Name	Name of the cluster to be connected.
Provider	Service provider of the cluster. Currently, the clusters of the following service providers are supported: • Alibaba Cloud • Tencent Cloud • AWS • Azure • User-built • On-premises IDC
KubeConfig	Add and upload the kubeconfig file configured as required in **Step 7: Prepare the kubeconfig File**.
Context	After the kubeconfig file is uploaded, HSS automatically parses the context.
Validity Period	After the kubeconfig file is uploaded, HSS automatically parses the validity period. You can also specify a time before the final validity period. After the specified validity period expires, you need to connect to the asset again.

Step 7 Perform the following operations to install the cluster connection component (ANP-agent) and establish a connection between HSS and the cluster:

1. In the **Container Asset Access and Installation** dialog box, click **Download a YAML File**.

   Figure 11-9 Downloading the YAML file



2. Copy the file to the directory of any node and run the following command to replace the proxy address:

   ```
   sed -i 's#proxy-server-host=.*","--proxy-server-port#proxy-server-host={{Forwarding address}}","--proxy-server-port#' proxy-agent.yaml
   ```

   Change **{{Forwarding address}}** to the public IPv4 address recorded in **Step 4** and then run the command again.

3. Run the following command to install the cluster connection component (ANP-Agent):

   ```
   kubectl apply -f proxy-agent.yaml
   ```

4. Run the following command to check whether the cluster connection component (ANP-agent) is successfully installed:

   ```
   kubectl get pods -n hss | grep proxy-agent
   ```

   If the command output shown in **Figure 11-10** is displayed, the cluster connection component (ANP-agent) is successfully installed.

Figure 11-10 ANP-Agent installed

```
[root@glz-ubuntu-1 [redacted] # kubectl get pods -n hss
NAME                              READY   STATUS    RESTARTS   AGE
proxy-agent-559fbcf95d-ql5bq      1/1     Running   0          56m
proxy-agent-559fbcf95d-sn5xf      1/1     Running   0          56m
```

5. Run the following command to check whether the cluster is connected to HSS:

```
for a in $(kubectl get pods -n hss| grep proxy-agent | cut -d ' ' -f1); do kubectl -n hss logs $a | grep 'Start serving';done
```

If the command output shown in **Figure 11-11** is displayed, the cluster is connected to HSS.

Figure 11-11 Cluster connected to HSS

```
I0419 17:01:18.441561       1 client.go:356] "Start serving" serverID="28d2b1f2-e8d4-4469-86e5-4a566649cb63"
I0419 17:01:19.523212       1 client.go:356] "Start serving" serverID="2edca7d1-59ba-41f9-97c9-ed0e2c0bfa0e"
```

Step 8 In the **Container Asset Access and Installation** dialog box, click **Next**.

Step 9 Configure agent parameters. For more information, see **Table 11-11**.

Table 11-11 Agent parameters

Parameter	Description
Configuration Rules	Select an agent configuration rule. • **Default Rule**: Select this if the sock address of container runtime is a common address. The agent will be installed on nodes having no taints. • **Custom**: Select this rule if the sock address of your container runtime is not a common address or needs to be modified, or if you only want to install the agent on specific nodes. **NOTE** • If the sock address of your container runtime is incorrect, some HSS functions may be unavailable after the cluster is connected to HSS. • You are advised to select all runtime types.

Parameter	Description
(Optional) Advanced Configuration	This parameter can be set if **Custom** is selected for **Configuration Rules**. Click ⌄ to expand advanced configurations. The **Enabling auto upgrade agent** option is selected by default. • **Enabling auto upgrade** Configure whether to enable automatic agent upgrade. If it is enabled, HSS automatically upgrades the agent to the latest version between 00:00 to 06:00 every day to provide you with better services. • **Node Selector Configuration** Set the **Key** and **Value** of tags of the nodes where the agent is to be installed and click **Add**. If no tags are specified, the agent will be installed on all the nodes having no taints. • **Tolerance Configuration** If you added a node whose tag contains a taint in **Node Selector Configuration**, set the **Key**, **Value**, and **Effect** of the taint, and click **Add** to allow agent installation on the node.

Step 10 Click **OK** to start installing the HSS agent.

Step 11 In the cluster list, check the cluster status. If the cluster status is **Running**, the cluster is successfully connected to HSS.

----End

Private Image Repository

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Container Install & Config**.

Step 4 On the **Cluster** tab page, click **Access Assets**. The **Container Asset Access and Installation** dialog box is displayed.

Step 5 Select **Non-CCE cluster (private network access)** and click **Configure Now**.

Step 6 Configure image repository information and click **Generate Command**. For more information, see **Table 11-12**.

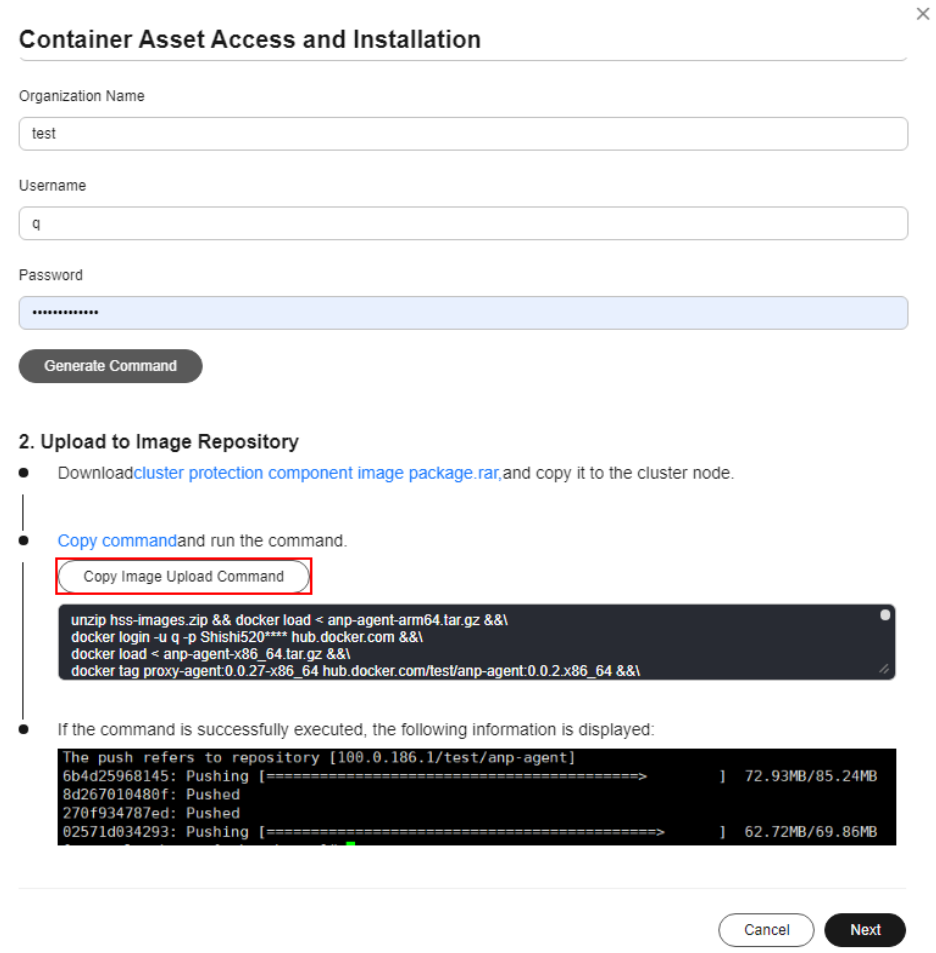
Table 11-12 Image repository parameters

Parameter	Description
Third-Party Image Repository Address	Third-party image repository address. Example: **hub.docker.com**
Image Repository Type	Type of the image repository. Currently, the following types are supported: • Harbor • Quay • Jfrog • Other
Organization Name	Organization name of the image repository.
Username	Image repository username.
Password	Password of the image repository.

Step 7 Perform the following operations to upload the images of the cluster connection component (ANP-agent) and the HSS agent to your private image repository:

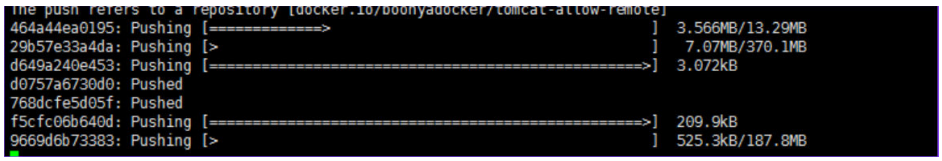
1. In the **Access and Install Container Assets** dialog box, click **cluster protection component image package.rar** to download the package to the local PC and copy the package to any cluster node.
2. In the **Container Asset Access and Installation** dialog box, click **Copy Image Upload Command** to copy the command and run it on the cluster node.

Figure 11-12 Copying image upload commands



If the command output shown in **Figure 11-13** is displayed, the upload succeeded.

Figure 11-13 Image uploaded



Step 8 In the **Container Asset Access and Installation** dialog box, click **Next**.

Step 9 Configure cluster access information and click **Generate Command**. For more information, see **Table 11-13**.

Figure 11-14 Configuring cluster access information

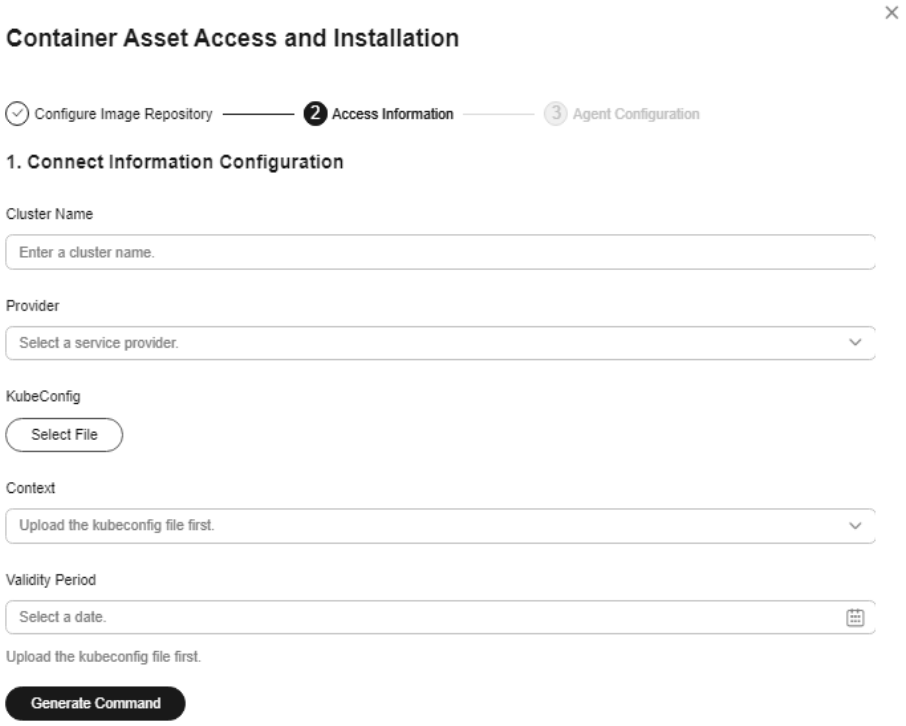


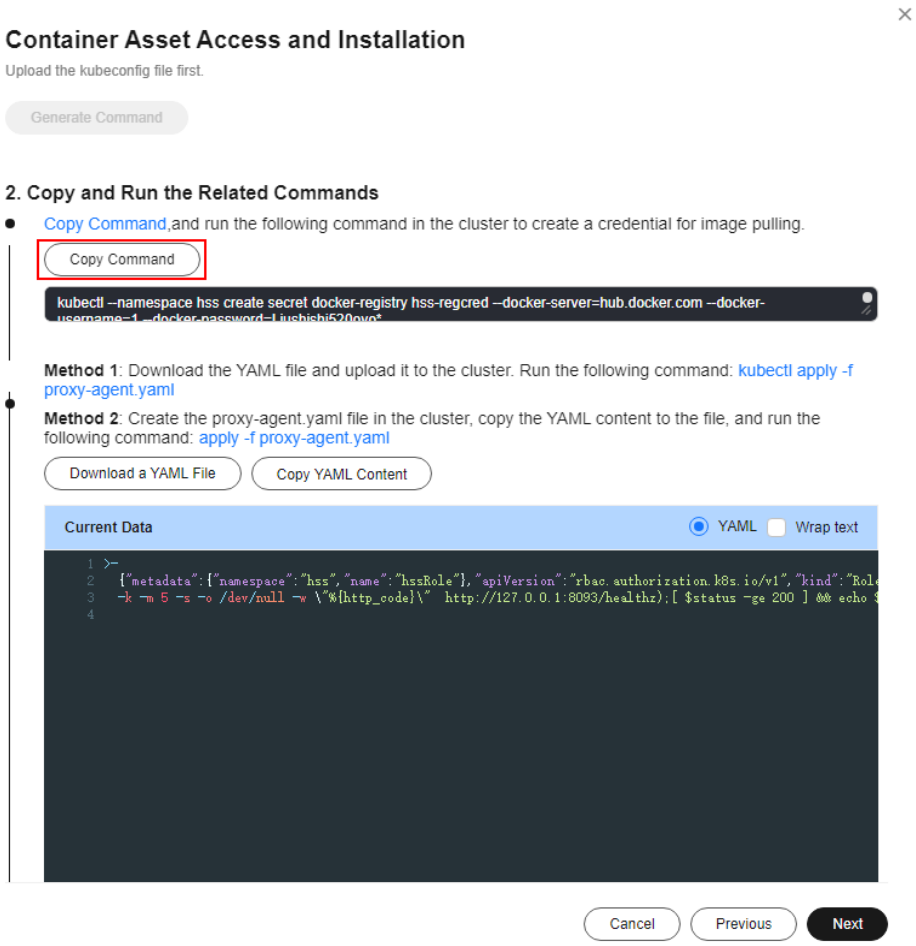
Table 11-13 Access parameters

Parameter	Description
Cluster Name	Name of the cluster to be connected.
Provider	Service provider of the cluster. Currently, the clusters of the following service providers are supported: • Alibaba Cloud • Tencent Cloud • AWS • Azure • User-built • On-premises IDC
KubeConfig	Add and upload the kubeconfig file configured as required in **Step 7: Prepare the kubeconfig File**.
Context	After the kubeconfig file is uploaded, HSS automatically parses the context.
Validity Period	After the kubeconfig file is uploaded, HSS automatically parses the validity period. You can also specify a time before the final validity period. After the specified validity period expires, you need to connect to the asset again.

Step 10 Perform the following operations to install the cluster connection component (ANP-agent) and establish a connection between HSS and the cluster:

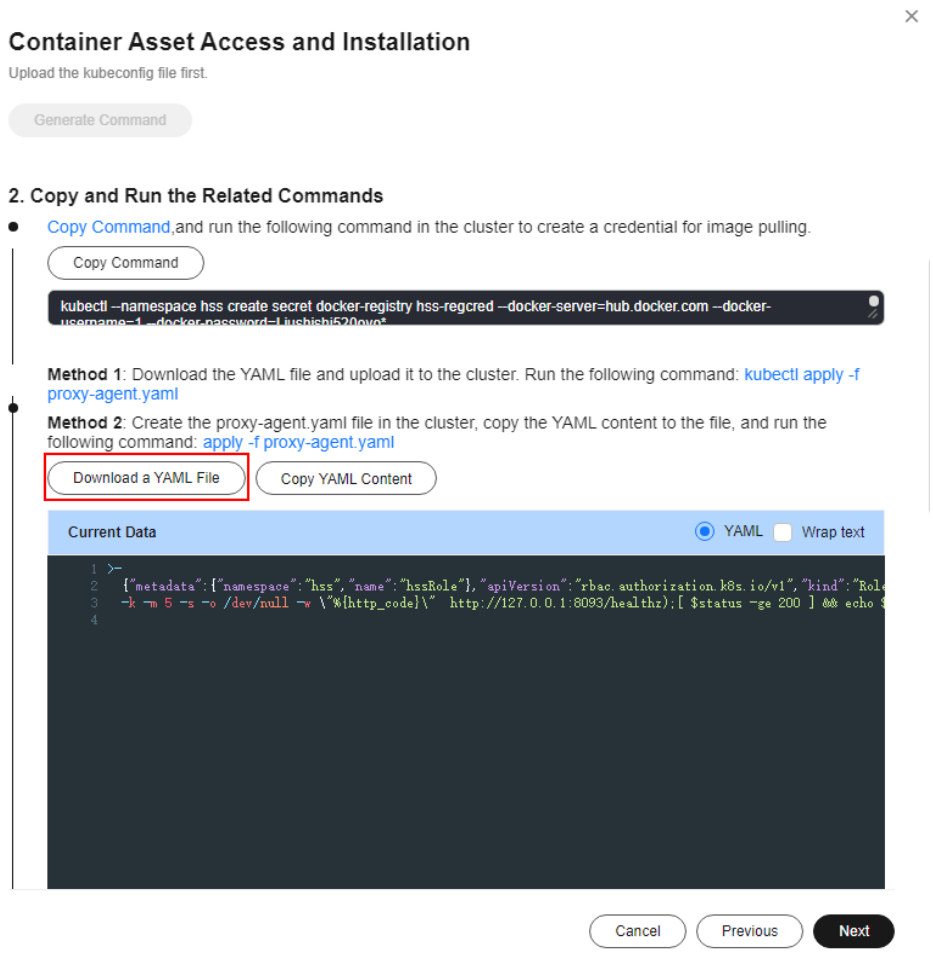
1. In the **Container Asset Access and Installation** dialog box, click **Copy Command**.

   Figure 11-15 Copying a command



2. Log in to a node and run the copied command to create a credential for the cluster to pull private images:
3. In the **Container Asset Access and Installation** dialog box, click **Download a YAML File**.

Figure 11-16 Downloading the YAML file



4. Copy the file to the directory of any node and run the following command to replace the proxy address:

```
sed -i 's#proxy-server-host=.*","--proxy-server-port#proxy-server-host={{Forwarding address}}","--proxy-server-port#' proxy-agent.yaml
```

   Change **{{Forwarding address}}** to the public IPv4 address recorded in **Step 4** and then run the command again.

5. Run the following command to install the cluster connection component (ANP-Agent):

```
kubectl apply -f proxy-agent.yaml
```

6. Run the following command to check whether the cluster connection component (ANP-agent) is successfully installed:

```
kubectl get pods -n hss | grep proxy-agent
```

   If the command output shown in **Figure 11-17** is displayed, the cluster connection component (ANP-agent) is successfully installed.

Figure 11-17 ANP-Agent installed

```
[root@glz-ubuntu-1 [redacted]  # kubectl get pods -n hss
NAME                              READY   STATUS    RESTARTS   AGE
proxy-agent-559fbcf95d-ql5bq   1/1     Running   0          56m
proxy-agent-559fbcf95d-sn5xf   1/1     Running   0          56m
```

7. Run the following command to check whether the cluster is connected to HSS:


```
for a in $(kubectl get pods -n hss| grep proxy-agent | cut -d ' ' -f1); do kubectl -n hss logs $a | grep 'Start serving';done
```

If the command output shown in **Figure 11-18** is displayed, the cluster is connected to HSS.

Figure 11-18 Cluster connected to HSS

Step 11 In the **Container Asset Access and Installation** dialog box, click **Next**.

Step 12 Configure agent parameters. For more information, see **Table 11-14**.

Table 11-14 Agent parameters

Parameter	Description
Configuration Rules	Select an agent configuration rule. • **Default Rule**: Select this if the sock address of container runtime is a common address. The agent will be installed on nodes having no taints. • **Custom**: Select this rule if the sock address of your container runtime is not a common address or needs to be modified, or if you only want to install the agent on specific nodes. **NOTE** • If the sock address of your container runtime is incorrect, some HSS functions may be unavailable after the cluster is connected to HSS. • You are advised to select all runtime types.
(Optional) Advanced Configuration	This parameter can be set if **Custom** is selected for **Configuration Rules**. Click ⌄ to expand advanced configurations. The **Enabling auto upgrade agent** option is selected by default. • **Enabling auto upgrade** Configure whether to enable automatic agent upgrade. If it is enabled, HSS automatically upgrades the agent to the latest version between 00:00 to 06:00 every day to provide you with better services. • **Node Selector Configuration** Set the **Key** and **Value** of tags of the nodes where the agent is to be installed and click **Add**. If no tags are specified, the agent will be installed on all the nodes having no taints. • **Tolerance Configuration** If you added a node whose tag contains a taint in **Node Selector Configuration**, set the **Key**, **Value**, and **Effect** of the taint, and click **Add** to allow agent installation on the node.

Step 13 Click **OK** to start installing the HSS agent.

Step 14 In the cluster list, check the cluster status. If the cluster status is **Running**, the cluster is successfully connected to HSS.

----End

FAQ

- **What Do I Do If the Cluster Connection Component (ANP-Agent) Failed to Be Deployed?**
- **What Do I Do If Cluster Permissions Are Abnormal?**
- **Failed to Upload the Image to the Private Image Repository**

11.1.5 Installing the Agent in a Third-Party Private Network Cluster

Scenario

Install the agent on a third-party private network cluster that cannot access the public network. After the configuration is complete, HSS automatically installs the agent on existing cluster nodes, installs the agent on new nodes when the cluster is scaled out, and uninstalls the agent from removed nodes when the cluster is scaled in.

Prerequisites

A Direct Connect connection has been created between the third-party private network cluster and the VPC on the cloud. For details about how to create a Direct Connect connection, see **Getting Started with Direct Connect**.

Constraints and Limitations

- Supported cluster orchestration platforms: Kubernetes 1.19 or later
- Supported node OS: Linux
- Node specifications: at least 2 vCPUs, 4 GiB memory, 40 GiB system disk, and 100 GiB data disk
- Constraints on private clusters to access regions: Currently, only CN North-Beijing1, CN North-Beijing4, CN East-Shanghai1, CN East-Shanghai2, CN South-Guangzhou, AP-Hong Kong, AP-Singapore, CN Southwest-Guiyang1, and AP-Jakarta allow third-party cloud clusters or on-premises clusters to access HSS through private networks.
- The agent is incompatible with clusters of Galera 3.34, MySQL 5.6.51, or earlier versions.

Step 1: Create an ECS

Step 1 **Log in to the ECS console and buy an ECS**.

Step 2 Configure ECS parameters as prompted.

You are advised to configure some parameters by referring to **Table 11-15** and configure other parameters based on site requirements.

Table 11-15 Parameters for purchasing an ECS

Parameter	Description	Example Value
Billing Mode	ECS billing mode. • Yearly/Monthly: Prepaid mode. Yearly/monthly ECSs are billed by the purchased duration specified in the order. • Pay-per-use: Postpaid billing mode. You pay as you go and just pay for what you use. Pay-per-use ECSs are billed by the second and settled by the hour. • Spot price: Spot pricing is a postpaid billing mode. You pay as you go and just pay for what you use. In **Spot pricing** billing mode, your purchased ECS is billed at a lower price than that of a pay-per-use ECS with the same specifications. In **Spot pricing** billing mode, you can select **Spot** or **Spot block** for the **Spot Type**. Spot ECSs and Spot block ECSs are billed by the second and settled by the hour.	Pay-per-use
CPU Architecture	Select a CPU architecture. The value can be **x86** or **Kunpeng**.	x86
Instance	• Select vCPUs and memory, or enter a keyword to search for ECS specifications. You can search for ECS flavors when you select **By Type**. • Select ECS specifications by instance family and generation from the list.	General computing, 2 vCPUs, 4 GiB
Image	An image is an ECS template that contains an OS. It may also contain proprietary software and application software. You can use images to create ECSs.	Public image, EulerOS 2.5 64 bit (40 GiB)
System Disk	Stores the OS of an ECS, and is automatically created and initialized upon ECS creation.	Ultra-high I/O

Step 3 Click **Create**. In the displayed dialog box, click **Agree and Create**. After the payment is complete, the ECS will be automatically created and started by default.

Step 4 In the ECS list, view the created ECS and record its private IP address.

----End

Step 2: Set Up Nginx

Step 1 Log in to the server created in **Step 1: Create an ECS**.

Step 2 Go to the **temp** directory.

cd /temp

Step 3 Run the following command to create the **install_nginx.sh** file:

vi install_nginx.sh

Step 4 Press **i** to enter the editing mode and copy the following content to the **install_nginx.sh** file:

```
#!/bin/bash

yum -y install pcre-devel zlib-devel popt-devel openssl-devel openssl
wget http://www.nginx.org/download/nginx-1.21.0.tar.gz
tar zxf nginx-1.21.0.tar.gz -C /usr/src/
cd /usr/src/nginx-1.21.0/
useradd -M -s /sbin/nologin nginx
./configure \
--prefix=/usr/local/nginx \
--user=nginx \
--group=nginx \
--with-file-aio \
--with-http_stub_status_module \
--with-http_gzip_static_module \
--with-http_flv_module \
--with-http_ssl_module \
--with-stream \
--with-pcre && make && make install
ln -s /usr/local/nginx/sbin/nginx /usr/local/sbin/
nginx
```

Step 5 Enter **ECS**, run the following command, and press **Enter** to exit.

:wq!

Step 6 Run the following command to install Nginx:

bash /tmp/install_nginx.sh

Step 7 Run the following command to modify the Nginx configuration file:

```
cat <<END >> /usr/local/nginx/conf/nginx.conf
stream {
  upstream backend_hss_anp {
    server {{ANP_proxy_address}}:8091 weight=5 max_fails=3 fail_timeout=30s;
  }
  server {
    listen 8091 so_keepalive=on;
    proxy_connect_timeout 10s;
    proxy_timeout 300s;
    proxy_pass backend_hss_anp ;
  }
}
END
```

Replace **{{ANP_proxy_address}}** with the actual address and then run the command. For details, see **Table 11-16**.

Table 11-16 ANP proxy address

Region	ANP proxy address
Guiyang1, Bangkok, Shanghai2, Guangzhou, Beijing4, Beijing2, and Shanghai1	hss-proxy.RegionCode.myhuaweicloud.com
Other	hss-anp.RegionCode.myhuaweicloud.com
For details about region codes, see **Regions and Endpoints**.	

Step 8 Run the following command to make the Nginx configuration take effect:

nginx -s reload

----End

Step 3: Prepare the kubeconfig File

The kubeconfig file specifies the cluster permissions assigned to HSS. The kubeconfig file configured using method 1 contains the cluster administrator permissions, whereas the file generated using method 2 contains only the permissions required by HSS. If you want to minimize HSS permissions, prepare the file using method 2.

- **Method 1: configuring the default kubeconfig file**

  The default kubeconfig file is in the **$HOME/.kube/config** directory. Perform the following operations to create a dedicated namespace for HSS:]

  a. Log in to a cluster node.

  b. Create the **hss.yaml** file and copy the following content to the file:

  ```
  {"metadata":{"name":"hss"},"apiVersion":"v1","kind":"Namespace"}
  ```

  c. Run the following command to create a namespace:

  ```
  kubectl apply -f hss.yaml
  ```

- **Method 2: generating a kubeconfig file dedicated to HSS**

  a. Create a dedicated namespace and an account for HSS.

  i. Log in to a cluster node.

  ii. Create the **hss-account.yaml** file and copy the following content to the file:

  ```
  {"metadata":{"name":"hss"},"apiVersion":"v1","kind":"Namespace"}{"metadata":{"name":"hss-user","namespace":"hss"},"apiVersion":"v1","kind":"ServiceAccount"}{"metadata":{"name":"hss-user-token","namespace":"hss","annotations":{"kubernetes.io/service-account.name":"hss-user"}},"apiVersion":"v1","kind":"Secret","type":"kubernetes.io/service-account-token"}
  ```

  iii. Run the following command to create a namespace and an account:

  ```
  kubectl apply -f hss-account.yaml
  ```

  b. Generate the kubeconfig file.

  i. Create the **gen_kubeconfig.sh** file and copy the following content to the file:

  ```
  #!/bin/bash

  KUBE_APISERVER=`kubectl config view  --output=jsonpath='{.clusters[].cluster.server}' |
  ```



```
head -n1 `
CLUSTER_NAME=`kubectl config view -o jsonpath='{.clusters[0].name}'`
kubectl get secret hss-user-token -n hss -o yaml |grep ca.crt: | awk '{print $2}' |base64 -d
>hss_ca_crt

kubectl config set-cluster ${CLUSTER_NAME} --server=${KUBE_APISERVER}  --certificate-
authority=hss_ca_crt  --embed-certs=true --kubeconfig=hss_kubeconfig.yaml
kubectl config set-credentials hss-user --token=$(kubectl describe secret hss-user-token -n
hss | awk '/token:/{print $2}') --kubeconfig=hss_kubeconfig.yaml
kubectl config set-context hss-user@kubernetes --cluster=${CLUSTER_NAME} --user=hss-
user --kubeconfig=hss_kubeconfig.yaml
kubectl config use-context hss-user@kubernetes --kubeconfig=hss_kubeconfig.yaml
```

ii. Run the following command to generate the kubeconfig file named **hss_kubeconfig.yaml**:

```
bash gen_kubeconfig.sh
```

Step 4: Install the Agent for a Third-Party Private Network Cluster

The image repositories used by a cluster are classified into public and private image repositories.

- Public network image repository: an image repository that can be accessed through the Internet. It is usually provided by a third party and paid by enterprises.
- Private image repository: an image repository deployed and maintained by an enterprise. Only authorized users can access the image repository.

Install the agent for the cluster based on the image repository type.

Public Network Image Repository

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click  , and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Container Install & Config**.

Step 4 On the **Cluster** tab page, click **Install Container Agent**. The **Container Asset Access and Installation** slide-out panel is displayed.

Step 5 Select **Non-CCE cluster (Internet access)** and click **Configure Now**.

Step 6 Configure cluster access information and click **Generate Command**. For more information, see **Table 11-17**.

Figure 11-19 Configuring cluster access information

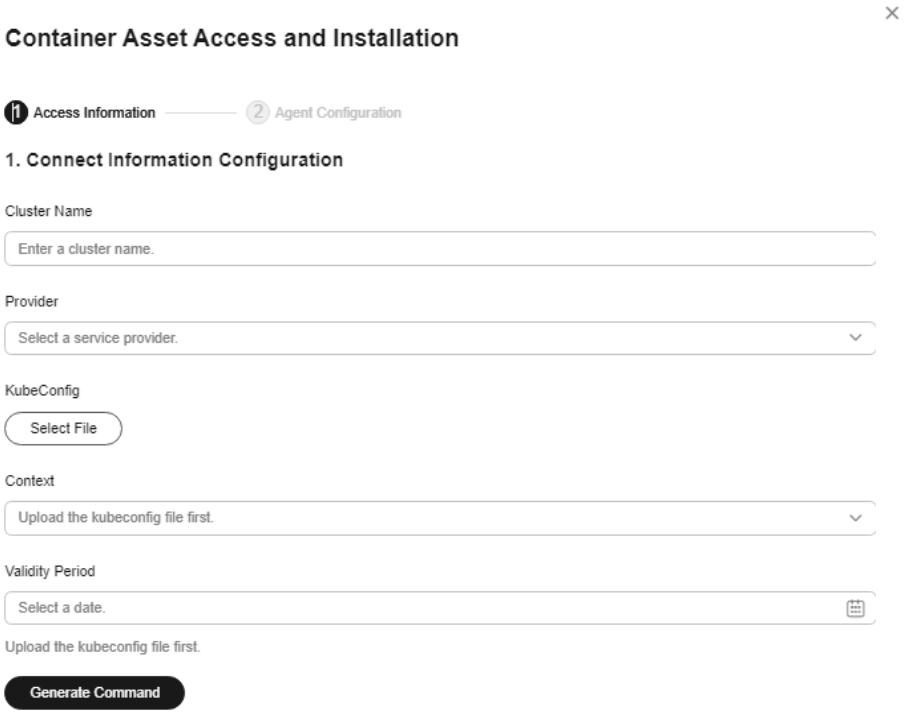


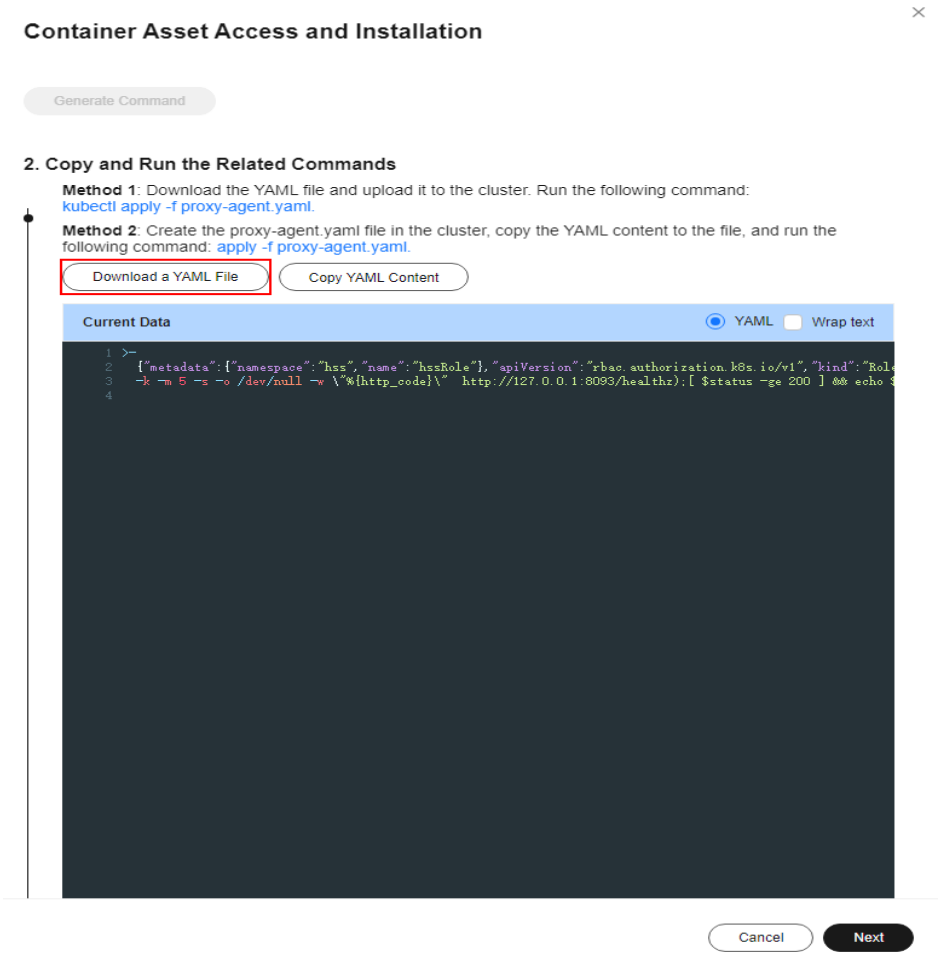
Table 11-17 Access parameters

Parameter	Description
Cluster Name	Name of the cluster to be connected.
Provider	Service provider of the cluster. Currently, the clusters of the following service providers are supported: • Alibaba Cloud • Tencent Cloud • AWS • Azure • User-built • On-premises IDC
KubeConfig	Add and upload the kubeconfig file configured as required in **Step 3: Prepare the kubeconfig File**.
Context	After the kubeconfig file is uploaded, HSS automatically parses the context.
Validity Period	After the kubeconfig file is uploaded, HSS automatically parses the validity period. You can also specify a time before the final validity period. After the specified validity period expires, you need to connect to the asset again.

Step 7 Perform the following operations to install the cluster connection component (ANP-agent) and establish a connection between HSS and the cluster:

1. In the **Container Asset Access and Installation** dialog box, click **Download a YAML File**.

   Figure 11-20 Downloading the YAML file



2. Copy the file to the directory of any node and run the following command to replace the proxy address:

   ```
   sed -i 's#proxy-server-host=.*","--proxy-server-port#proxy-server-host={{Forwarding address}}","--proxy-server-port#' proxy-agent.yaml
   ```

   Change **{{Forwarding address}}** to the private IP address of the server created in **Step 1: Create an ECS**, and then run the command.

3. Run the following command to install the cluster connection component (ANP-Agent):

   ```
   kubectl apply -f proxy-agent.yaml
   ```

4. Run the following command to check whether the cluster connection component (ANP-agent) is successfully installed:

   ```
   kubectl get pods -n hss | grep proxy-agent
   ```

   If the command output shown in **Figure 11-21** is displayed, the cluster connection component (ANP-agent) is successfully installed.

Figure 11-21 ANP-Agent installed

```
[root@glz-ubuntu-1 ~]# kubectl get pods -n hss
NAME                              READY   STATUS    RESTARTS   AGE
proxy-agent-559fbcf95d-ql5bq   1/1     Running   0          56m
proxy-agent-559fbcf95d-sn5xf   1/1     Running   0          56m
```

5. Run the following command to check whether the cluster connection component (ANP-agent) is successfully installed:

```
kubectl get pods -n hss | grep proxy-agent
```

If the command output shown in **Figure 11-22** is displayed, the cluster connection component (ANP-agent) is successfully installed.

Figure 11-22 ANP-Agent installed

```
[root@glz-ubuntu-1 ~]# kubectl get pods -n hss
NAME                              READY   STATUS    RESTARTS   AGE
proxy-agent-559fbcf95d-ql5bq   1/1     Running   0          56m
proxy-agent-559fbcf95d-sn5xf   1/1     Running   0          56m
```

Step 8 In the **Container Asset Access and Installation** dialog box, click **Next**.

Step 9 Configure agent parameters. For more information, see **Table 11-18**.

Table 11-18 Agent parameters

Parameter	Description
Configuration Rules	Select an agent configuration rule. • **Default Rule**: Select this if the sock address of container runtime is a common address. The agent will be installed on nodes having no taints. • **Custom**: Select this rule if the sock address of your container runtime is not a common address or needs to be modified, or if you only want to install the agent on specific nodes. **NOTE** • If the sock address of your container runtime is incorrect, some HSS functions may be unavailable after the cluster is connected to HSS. • You are advised to select all runtime types.

Parameter	Description
(Optional) Advanced Configuration	This parameter can be set if **Custom** is selected for **Configuration Rules**. Click ⌄ to expand advanced configurations. The **Enabling auto upgrade agent** option is selected by default. • **Enabling auto upgrade** Configure whether to enable automatic agent upgrade. If it is enabled, HSS automatically upgrades the agent to the latest version between 00:00 to 06:00 every day to provide you with better services. • **Node Selector Configuration** Set the **Key** and **Value** of tags of the nodes where the agent is to be installed and click **Add**. If no tags are specified, the agent will be installed on all the nodes having no taints. • **Tolerance Configuration** If you added a node whose tag contains a taint in **Node Selector Configuration**, set the **Key**, **Value**, and **Effect** of the taint, and click **Add** to allow agent installation on the node.

Step 10 Click **OK** to start installing the HSS agent.

Step 11 In the cluster list, check the cluster status. If the cluster status is **Running**, the cluster is successfully connected to HSS.

----End

Private Image Repository

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Container Install & Config**.

Step 4 On the **Cluster** tab page, click **Install Container Agent**. The **Container Asset Access and Installation** slide-out panel is displayed.

Step 5 Select **Non-CCE cluster (private network access)** and click **Configure Now**.

Step 6 Configure image repository information and click **Generate Command**. For more information, see **Table 11-19**.

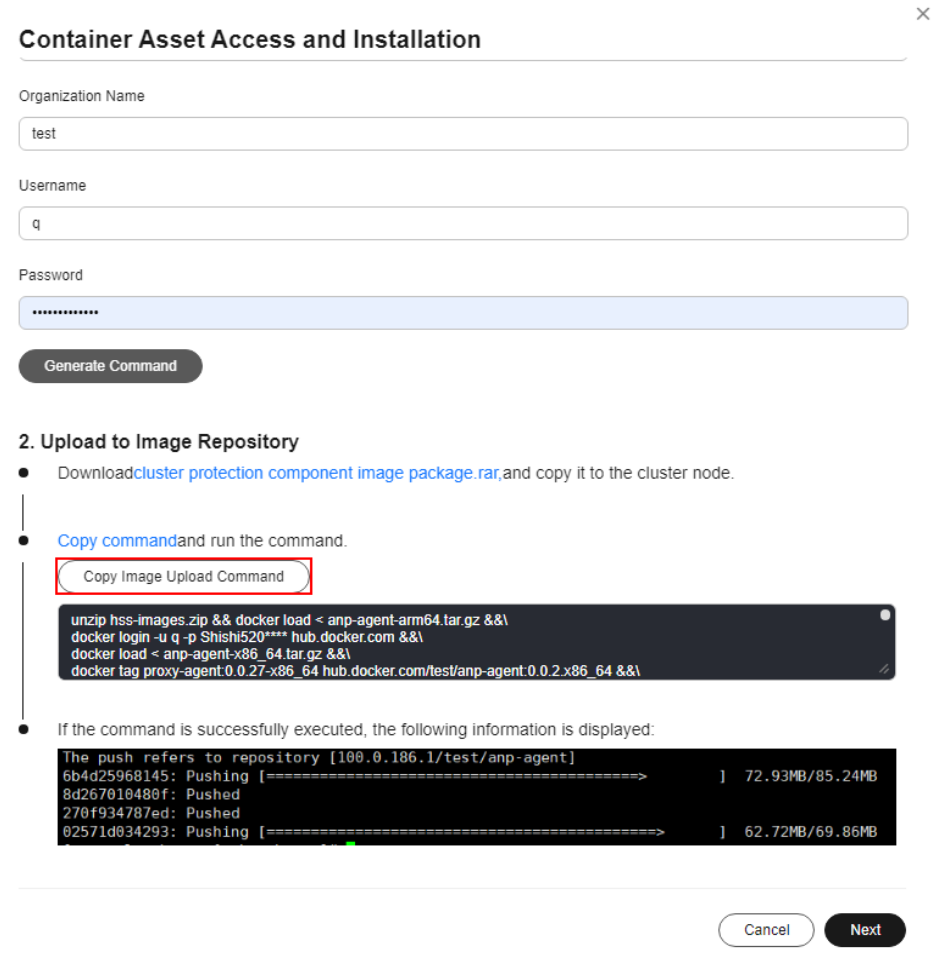
Table 11-19 Image repository parameters

Parameter	Description
Third-Party Image Repository Address	Third-party image repository address. Example: **hub.docker.com**
Image Repository Type	Type of the image repository. Currently, the following types are supported: • Harbor • Quay • Jfrog • Other
Organization Name	Organization name of the image repository.
Username	Image repository username.
Password	Password of the image repository.

Step 7 Perform the following operations to upload the images of the cluster connection component (ANP-agent) and the HSS agent to your private image repository:

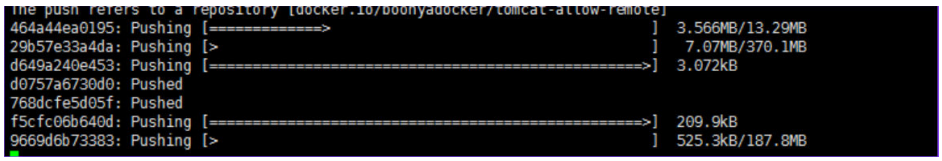
1. In the **Access and Install Container Assets** dialog box, click **cluster protection component image package.rar** to download the package to the local PC and copy the package to any cluster node.
2. In the **Container Asset Access and Installation** dialog box, click **Copy Image Upload Command** to copy the command and run it on the cluster node.

Figure 11-23 Copying image upload commands



If the command output shown in **Figure 11-24** is displayed, the upload succeeded.

Figure 11-24 Image uploaded



Step 8 In the **Container Asset Access and Installation** dialog box, click **Next**.

Step 9 Configure cluster access information and click **Generate Command**. For more information, see **Table 11-20**.

Figure 11-25 Configuring cluster access information

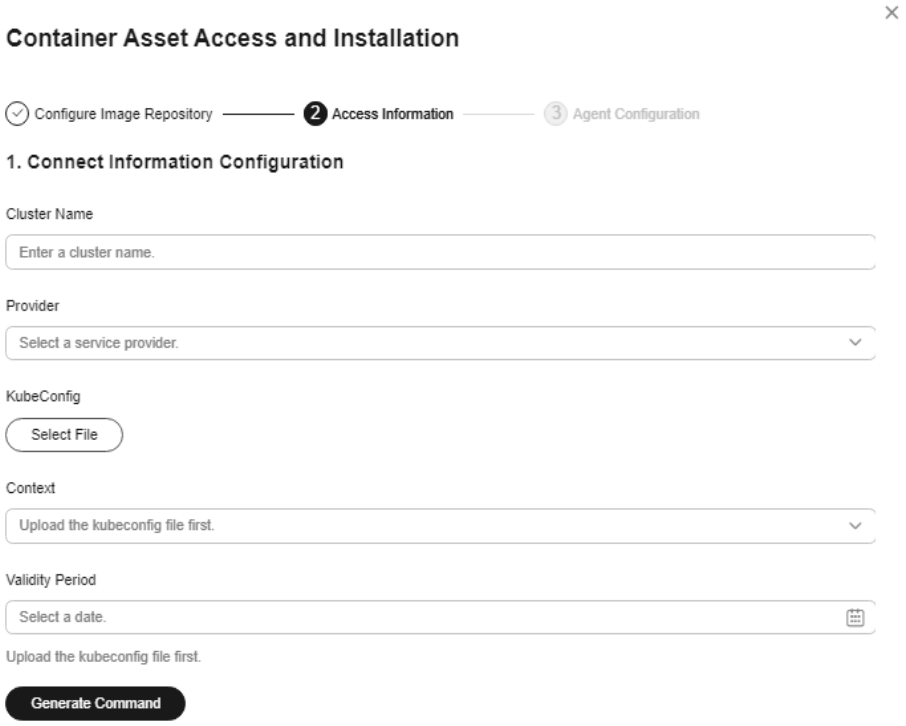


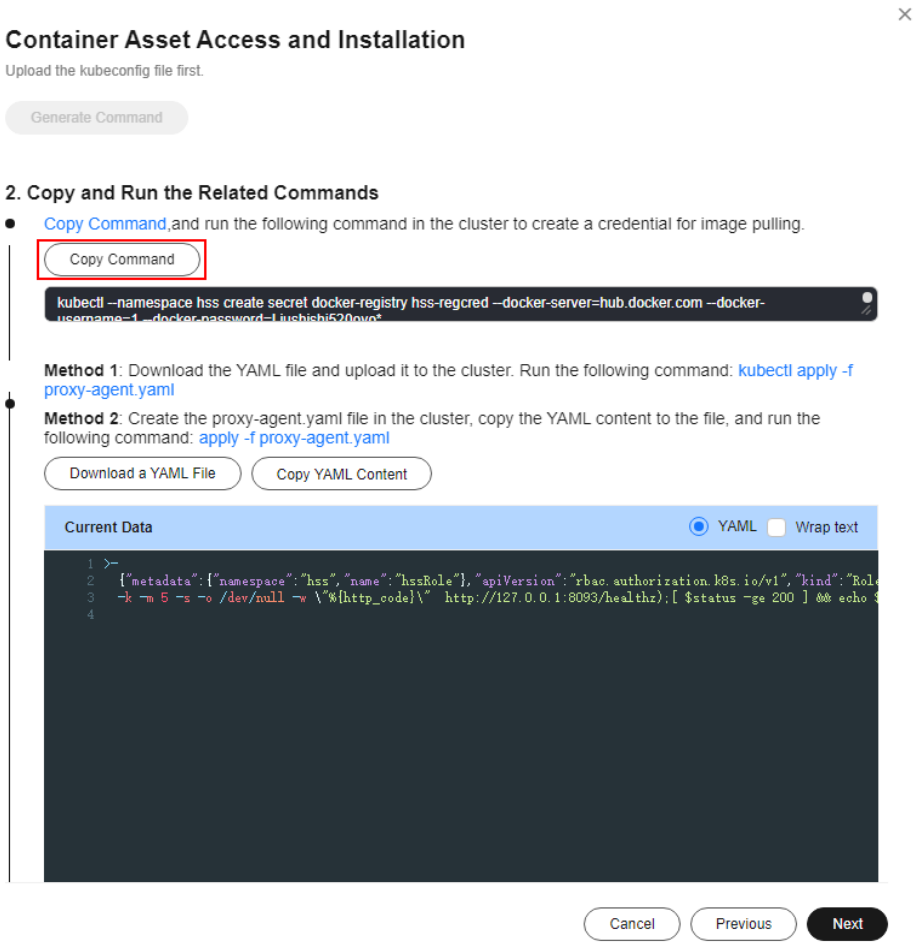
Table 11-20 Access parameters

Parameter	Description
Cluster Name	Name of the cluster to be connected.
Provider	Service provider of the cluster. Currently, the clusters of the following service providers are supported: • Alibaba Cloud • Tencent Cloud • AWS • Azure • User-built • On-premises IDC
KubeConfig	Add and upload the kubeconfig file configured as required in **Step 3: Prepare the kubeconfig File**.
Context	After the kubeconfig file is uploaded, HSS automatically parses the context.
Validity Period	After the kubeconfig file is uploaded, HSS automatically parses the validity period. You can also specify a time before the final validity period. After the specified validity period expires, you need to connect to the asset again.

Step 10 Perform the following operations to install the cluster connection component (ANP-agent) and establish a connection between HSS and the cluster:

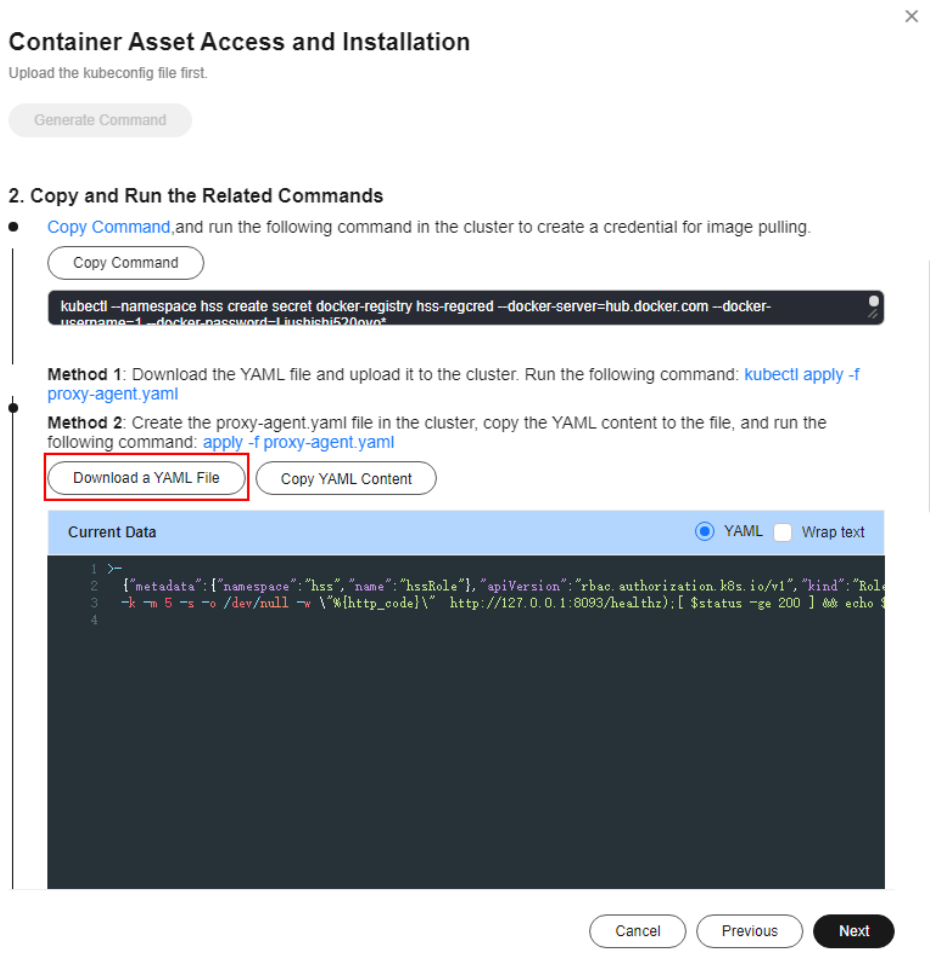
1. In the **Container Asset Access and Installation** dialog box, click **Copy Command**.

   Figure 11-26 Copying a command



2. Log in to a node and run the copied command to create a credential for the cluster to pull private images:
3. In the **Container Asset Access and Installation** dialog box, click **Download a YAML File**.

Figure 11-27 Downloading the YAML file



4. Copy the file to the directory of any node and run the following command to replace the proxy address:

```
sed -i 's#proxy-server-host=.*","--proxy-server-port#proxy-server-host={{Forwarding address}}","--proxy-server-port#' proxy-agent.yaml
```

   Replace **{{Forwarding address}}** with the private IP address of the server created in **Step 1: Create an ECS**, and then run the command.

5. Run the following command to install the cluster connection component (ANP-Agent):

```
kubectl apply -f proxy-agent.yaml
```

6. Run the following command to check whether the cluster connection component (ANP-agent) is successfully installed:

```
kubectl get pods -n hss | grep proxy-agent
```

   If the command output shown in **Figure 11-28** is displayed, the cluster connection component (ANP-agent) is successfully installed.

Figure 11-28 ANP-Agent installed

```
[root@glz-ubuntu-1 [redacted]  # kubectl get pods -n hss
NAME                              READY   STATUS    RESTARTS   AGE
proxy-agent-559fbcf95d-ql5bq   1/1     Running   0          56m
proxy-agent-559fbcf95d-sn5xf   1/1     Running   0          56m
```

7. Run the following command to check whether the cluster is connected to HSS:


```
for a in $(kubectl get pods -n hss| grep proxy-agent | cut -d ' ' -f1); do kubectl -n hss logs $a | grep 'Start serving';done
```

If the command output shown in **Figure 11-29** is displayed, the cluster is connected to HSS.

Figure 11-29 Cluster connected to HSS

Step 11 In the **Container Asset Access and Installation** dialog box, click **Next**.

Step 12 Configure agent parameters. For more information, see **Table 11-21**.

Table 11-21 Agent parameters

Parameter	Description
Configuration Rules	Select an agent configuration rule. • **Default Rule**: Select this if the sock address of container runtime is a common address. The agent will be installed on nodes having no taints. • **Custom**: Select this rule if the sock address of your container runtime is not a common address or needs to be modified, or if you only want to install the agent on specific nodes. **NOTE** • If the sock address of your container runtime is incorrect, some HSS functions may be unavailable after the cluster is connected to HSS. • You are advised to select all runtime types.
(Optional) Advanced Configuration	This parameter can be set if **Custom** is selected for **Configuration Rules**. Click ⌄ to expand advanced configurations. The **Enabling auto upgrade agent** option is selected by default. • **Enabling auto upgrade** Configure whether to enable automatic agent upgrade. If it is enabled, HSS automatically upgrades the agent to the latest version between 00:00 to 06:00 every day to provide you with better services. • **Node Selector Configuration** Set the **Key** and **Value** of tags of the nodes where the agent is to be installed and click **Add**. If no tags are specified, the agent will be installed on all the nodes having no taints. • **Tolerance Configuration** If you added a node whose tag contains a taint in **Node Selector Configuration**, set the **Key**, **Value**, and **Effect** of the taint, and click **Add** to allow agent installation on the node.

Step 13 Click **OK** to start installing the HSS agent.

Step 14 In the cluster list, check the cluster status. If the cluster status is **Running**, the cluster is successfully connected to HSS.

----End

FAQ

- **What Do I Do If the Cluster Connection Component (ANP-Agent) Failed to Be Deployed?**
- **What Do I Do If Cluster Permissions Are Abnormal?**
- **Failed to Upload the Image to the Private Image Repository**

11.2 Modifying Cluster Agent Installation Information

Scenario

You can modify the access information in the following cases:

- In a non-CCE cluster accessed through a private network, the image repository information has been configured and the command has been generated, but the command has not been executed on cluster nodes. In this case, you can refer to this section to go to the access information modification page and perform subsequent operations.
- In a non-CCE cluster accessed through Internet, the access information has been configured and the command has been generated, but the command has not been executed on cluster nodes. In this case, you can refer to this section to go to the access information modification page and perform subsequent operations.
- In a non-CCE cluster accessed through Internet, the specified certificate expiration date is earlier than the final expiration date, but needs to be changed to that date.
- You need to modify the scope of cluster nodes where the agent is to be installed. After the modification, the agent on all cluster nodes will be automatically uninstalled, and then the agent will be reinstalled on specified nodes.
- The container runtime type and sock address need to be modified. After the modification, the agent on all cluster nodes will be automatically uninstalled, and then the agent will be reinstalled on specified nodes.
- Automatic agent upgrade needs to be enabled or disabled.

Modifying Access Information

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

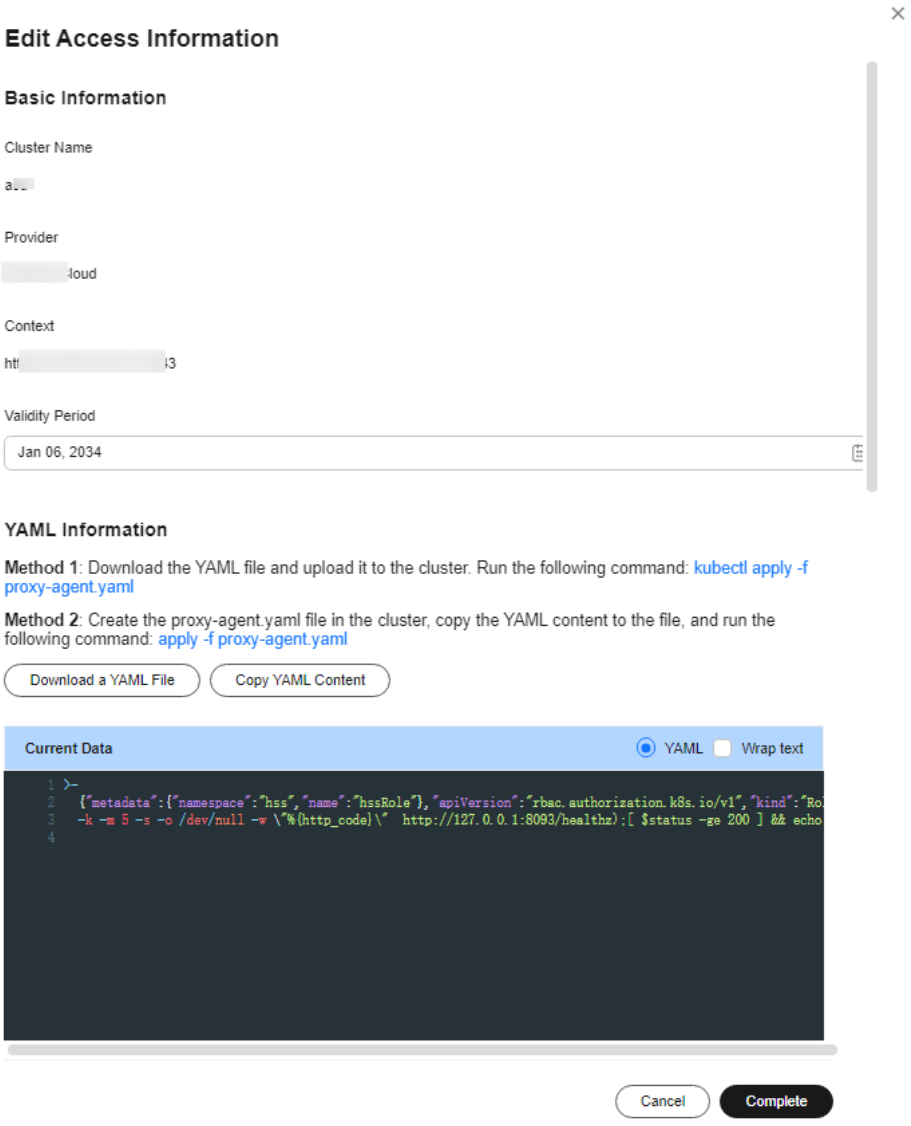
Step 3 In the navigation pane, choose **Installation & Configuration** > **Container Install & Config**.

Step 4 Click the **Cluster** tab.

Step 5 In the row of a cluster, click **Edit Access Information** in the **Operation** column. The **Edit Access Information** dialog box is displayed.

The following figure uses the access information of a non-CCE cluster (accessed through Internet) as an example.

Figure 11-30 Edit access information



Step 6 Modify access information. For details about the parameters that can be modified, see **Table 11-22**.

Table 11-22 Modifiable access parameters

Access Mode	Parameter	Description
Non-CCE cluster (Internet access)	Validity Period	You can specify a time before the final validity period. After the specified validity period expires, you need to connect to the asset again.
All access modes	Configuration Rules	Select an agent configuration rule. • **Default Rule**: Select this if the sock address of container runtime is a common address. The agent will be installed on nodes having no taints. • **Custom**: Select this rule if the sock address of your container runtime is not a common address or needs to be modified, or if you only want to install the agent on specific nodes. **NOTE** • If the sock address of your container runtime is incorrect, some HSS functions may be unavailable after the cluster is connected to HSS. • You are advised to select all runtime types.
	(Optional) Advanced Configuration	This parameter can be set if **Custom** is selected for **Configuration Rules**. Click ⌄ to expand all advanced configuration items. • **Enabling auto upgrade agent** Configure whether to enable automatic agent upgrade. If it is enabled, HSS automatically upgrades the agent to the latest version between 00:00 to 06:00 every day to provide you with better services. • Node Selector Configuration Select the tag of the nodes where the agent is to be installed. If this parameter is not specified, the agent will be installed on all nodes having no taints by default. • Tolerance Configuration If the taint tag is selected in **Node Selector Configuration** and the agent needs to be installed on the taint node, you can configure taint toleration.

Step 7 Click **Complete**.

If the container runtime type, container runtime sock address, node selection configuration, or tolerance configuration is modified, the agent on all cluster nodes will be automatically uninstalled and then reinstalled. Wait until the agent installation is complete.

----End

11.3 Managing Cluster Agents

You can upgrade the agent or uninstall it from a cluster.

Prerequisites

The cluster is running.

Constraints and Limitations

The agent can be upgraded only on CCE clusters. To use the latest HSS version for other types of clusters, uninstall the agent and connect it to the clusters again. For details, see **Uninstalling the Agent from a Cluster** and **Installing an Agent in a Cluster**.

Upgrading the Cluster Agent

HSS is periodically updated to improve its capabilities. You are advised to upgrade the agent to the latest version in a timely manner.

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click  , and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Container Install & Config**.

Step 4 Click the **Cluster** tab.

Step 5 In the **Operation** column of a cluster, click **Upgrade Agent**.

To upgrade the agent on CCE clusters in batches, select all target CCE clusters and click **Upgrade Agent**.

Step 6 Confirm the upgrade information and click **OK**.

Wait for 5 to 10 minutes. If the agent version in the cluster list is the latest and the **Upgrade Agent** button is grayed out, the upgrade is successful.

----End

Uninstalling the Agent from a Cluster

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click  , and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Container Install & Config**.

Step 4 Click the **Cluster** tab.

Step 5 In the **Operation** column of a cluster, click **Uninstall Cluster**.

To uninstall CCE clusters in batches, select all target clusters and click **Uninstall Agent**. Clusters of other types cannot be uninstalled in batches.

Step 6 Confirm the uninstallation information and click **OK**.

Wait for 5 to 10 minutes. If the cluster is not displayed in the cluster list, the agent has been uninstalled.

----End

11.4 Viewing the Cluster Node and Permission Lists

You can view the cluster node list and permission list.

Viewing the Cluster Node and Permission Lists

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click  , and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Container Install & Config**.

Step 4 Click the **Cluster** tab.

Step 5 Click **Synchronize Access Status** to refresh the cluster access status.

Step 6 Click **Synchronize the Latest Assets**.

Step 7 Check the cluster access status.

To export the cluster list, click **Export** above the list.

Step 8 Click the name of a cluster to go to the cluster node details page and view the node and permission lists.

- Node list

  The node list displays the information about all nodes and the agent status and version.

- Permission list

  The permission list displays the container-related functions and features provided by HSS, and whether the cluster has the permission to use the functions. CCE clusters have no permission lists.

----End

11.5 Managing Agents on Independent Nodes

You can upgrade the agent or uninstall it from an independent node.

Prerequisites

The agent of a node is online.

Upgrading the Agent on an Independent Node

HSS is periodically updated to improve its capabilities. You are advised to upgrade the agent to the latest version in a timely manner.

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Container Install & Config**.

Step 4 Click the **Non-cluster Node** tab.

Step 5 Upgrade the agent using either of the following methods:

- Automatic upgrade

  In the upper right corner of the node list, click  to enable automatic upgrade. After this function is enabled, HSS automatically upgrades all agents to the latest version between 00:00 and 06:00 every day. You can view the agent version of a node after 06:00 the next day to check whether the upgrade is successful.

- Manual upgrade

  a. In the **Operation** column of a cluster, click **Upgrade Agent**.

  To upgrade the agent on CCE clusters in batches, select all target nodes and click **Upgrade Agent**.

  b. Confirm the upgrade information and click **OK**.

  Wait for 5 to 10 minutes. If the agent version of the target node is the latest, the upgrade is successful.

----End

Uninstalling the Agent from an Independent Node

Uninstall the HSS agent if you no longer need it. This section describes how to uninstall an online agent. If the agent status is offline, perform the operations in **Uninstalling an Offline Agent**.

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Container Install & Config**.

Step 4 Click the **Non-cluster Node** tab.

Step 5 In the **Operation** column of a node, click **Uninstall Agent**.

To uninstall the agent from nodes in batches, select all target nodes and click **Uninstall Agent**.

Step 6 Confirm the uninstallation information and click **OK**.

Wait for 5 to 10 minutes. If the agent status of the target node is **Not installed**, the uninstallation is successful.

----End

11.6 Connecting to a Third-party Image Repository

HSS can connect to third-party image repositories and provides security detection and management capabilities for vulnerabilities, baselines, and malicious files, helping you detect security risks in images in a timely manner. This section describes how to connect a third-party image repository to HSS.

Constraints and Limitations

Restrictions on the types of third-party image repositories that can be connected to HSS are as follows:

- Third-party cloud container clusters: Alibaba Cloud, Tencent Cloud, AWS, and Azure.
- Third-party image repositories: Harbor and JFrog.

Connecting to a Third-party Image Repository

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Container Install & Config**.

Step 4 Click the **Third-Party Image Repository** tab.

Step 5 Click **Connect to Third-Party Image Repository**.

Step 6 Enter the required information as prompted. For details about the parameters, see **Table 11-23**.

Figure 11-31 Connecting to a Third-party image repository

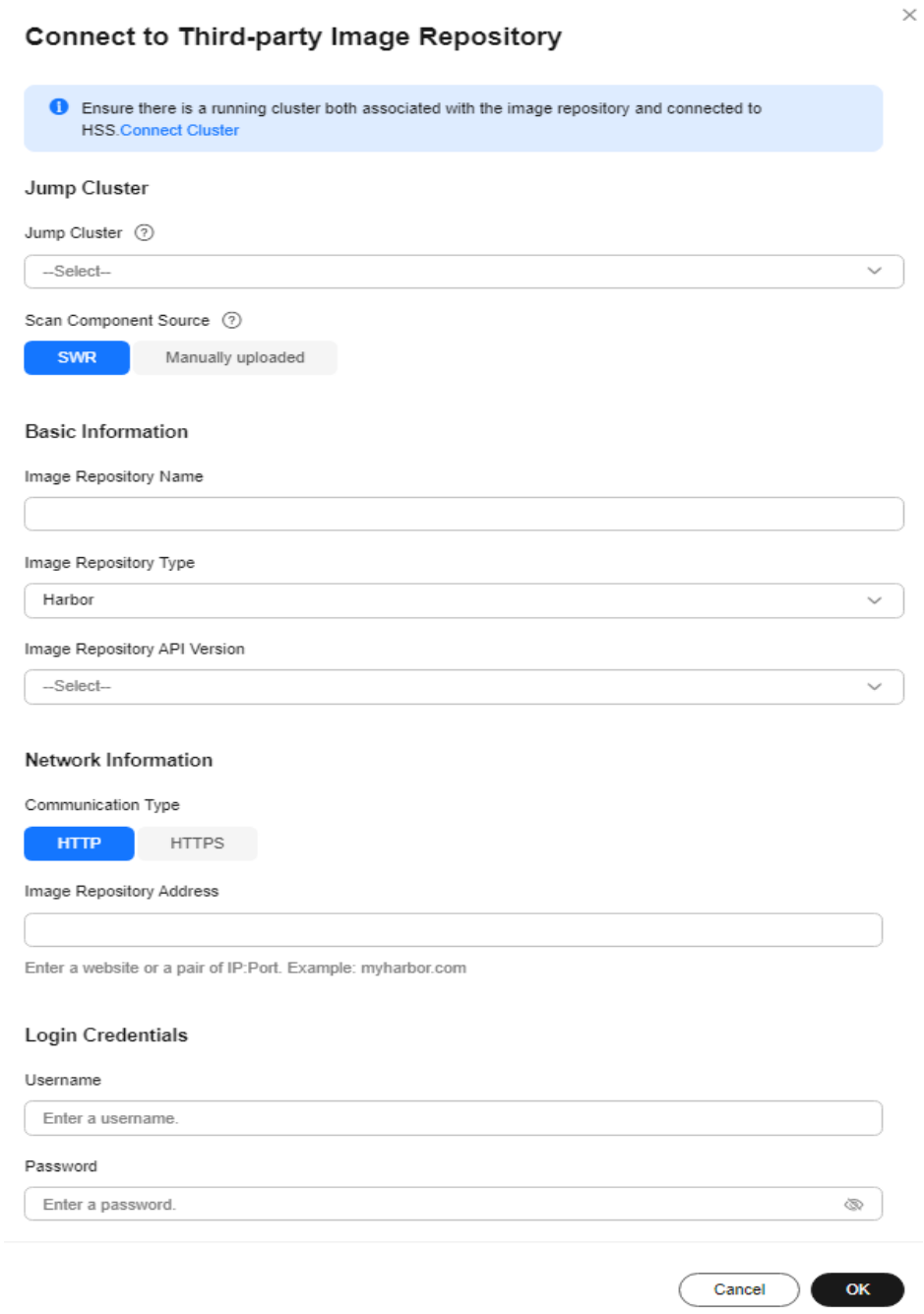


Table 11-23 Parameters for accessing an image repository

Parameter	Description	Example Value
Jump Cluster	Select the cluster that carries the image repository.	cluster01

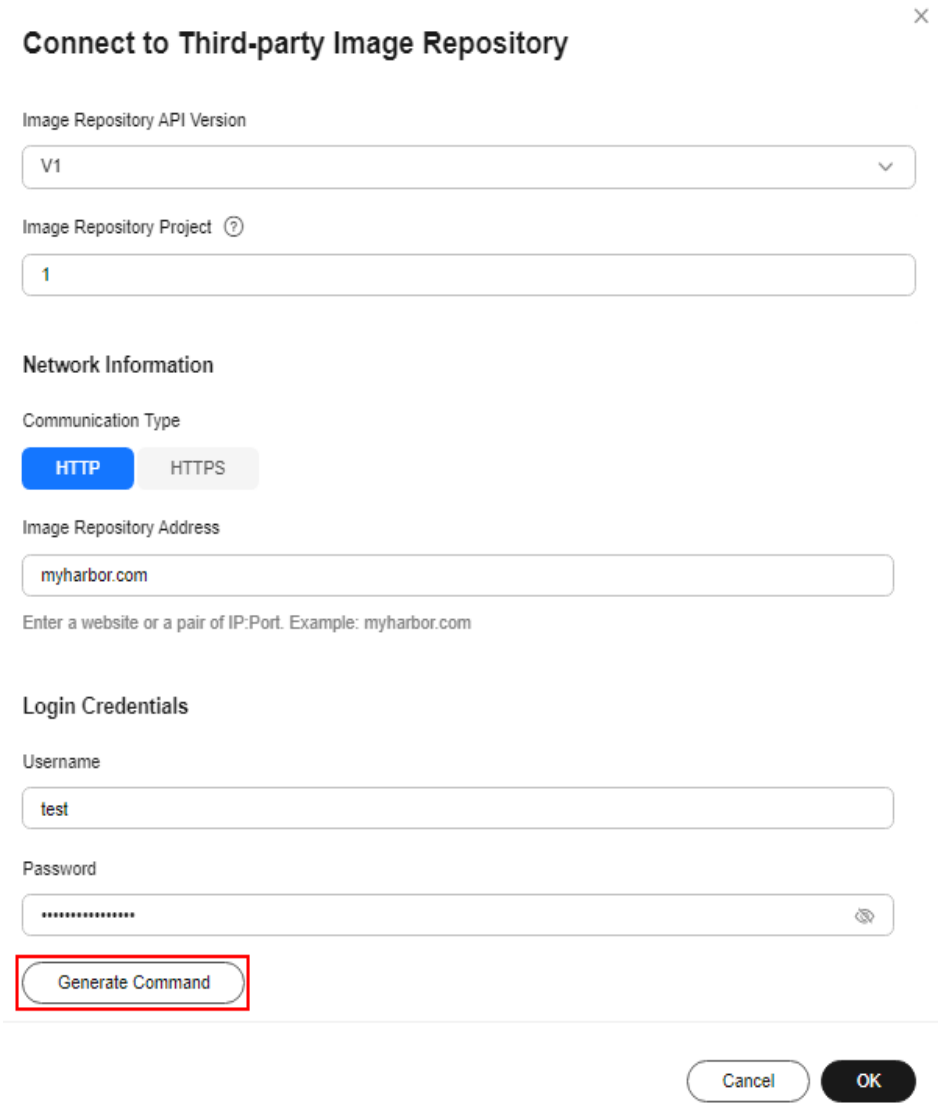
Parameter	Description	Example Value
Scan Component Source	The image scan component is used to pull images, scan and analyze required metadata, and transmit the metadata to the server. The server performs security detection on the metadata, such as vulnerabilities, baselines, malicious files, and sensitive information. The image scan component needs to be uploaded to the image repository. You can obtain the image scan component in either of the following ways: • **SWR**: The cluster can communicate with SWR and obtain image scan components from SWR. • **Manually uploaded**: If the network between the cluster and SWR is disconnected, you need to manually upload the image scan component to the image repository.	SWR
Image Repository Name	Enter the full name of an image repository.	test
Image Repository Type	Click ⌄ and select the type of the image repository.	Harbor
Image Repository API Version	Click ⌄ and select the interface version of the image repository.	V1
Image Repository Project	If you select **Manually uploaded** and the image repository type is **Harbor**, you need to enter image repository project information.	-
Image Repository Path	If you select **Manually uploaded** and set the image repository type to **Jfrog**, you need to enter the image repository path.	-

Parameter	Description	Example Value
Communication Type	Select the communication protocol type of the image repository. • **HTTP** • **HTTPS**	**HTTPS**
Image Repository Address	Enter the image repository address. You can enter the **website address** or *IP address*:*port number* of the image repository. Example: myharbor.com	myharbor.com
Username	Enter the login username.	-
Password	Enter the password of the login user.	-

Step 7 (Optional) If you select **Manually uploaded** for the scan component, perform the following operations to configure the scan components after entering the access information:

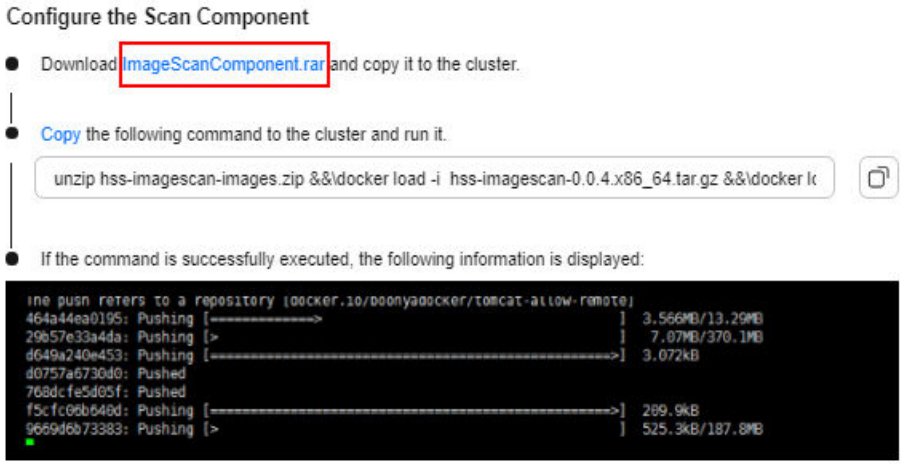
1. Click **Generate Command**.

Figure 11-32 Generating a command



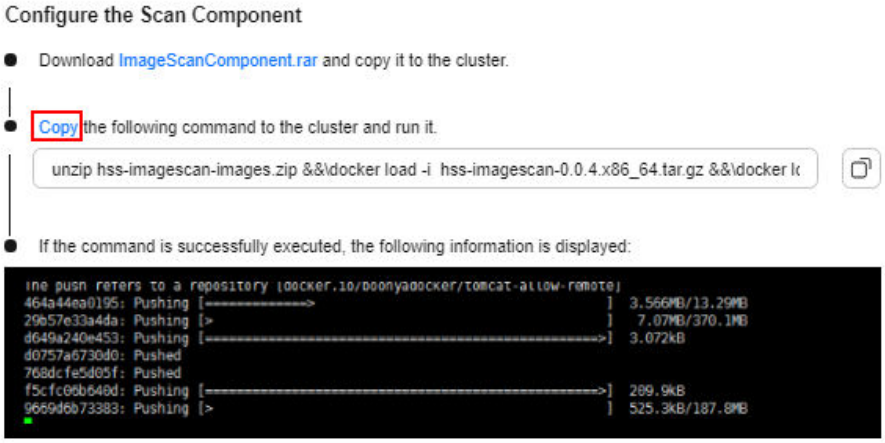
2. Click **ImageScanComponent.rar** to download the scan component package.

Figure 11-33 Downloading a scan component



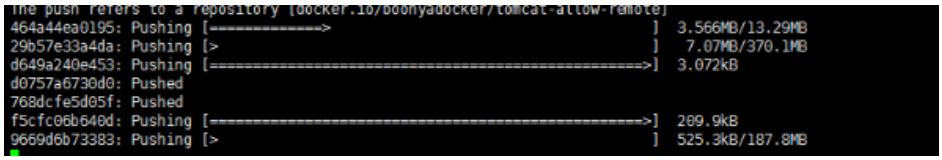
3. Copy the **ImageScanComponent.rar** to any cluster node.
4. Click **Copy Command** and run the copied command on the node where **ImageScanComponent.rar** is located to upload the scan component.

Figure 11-34 Copying a command



5. If the information shown in **Figure 11-35** is displayed, the scan component is uploaded successfully.

Figure 11-35 Scan component uploaded



Step 8 Click **OK** to connect to the image repository.

Step 9 On the **Third-party Image Repositories** tab page, view the access result in the **Image Repository Status** column of the target image repository.

----End

11.7 CI/CD Image Security Scan

11.7.1 CI/CD Image Security Scan Overview

The CI/CD image security scan function of HSS can be integrated into the CI/CD build pipeline of the Jenkins Pipeline project. It can implement security scan in the image build phase; identify system vulnerabilities, application vulnerabilities, abnormal system configurations, malicious files, and sensitive files in images; and shift security left to the DevOps phase, helping you eliminate security risks as early as possible and preventing unsafe images from being deployed in the production environment.

What Is CI/CD?

CI/CD is short for continuous integration and continuous delivery/deployment.

- Continuous Integration (CI) automatically and continuously integrates code into shared source code.
- CD consists of continuous delivery and continuous deployment. After continuous integration, continuous delivery verifies the code through automated building and testing to ensure that container images can be delivered at any time. Continuous deployment automatically updates and releases the images to the production environment.

What Is Jenkins Pipeline?

Jenkins is an open source CI tool that provides user-friendly GUIs. It originates from Hudson and is used to automate all sorts of tasks related to building, testing, and delivering or deploying software.

Jenkins is written in Java and can run in popular servlet containers such as Tomcat, or run independently. It is usually used together with the version control tools (or SCM tools) and build tools. Jenkins supports project building in diverse languages and is fully compatible with multiple third-party build tools, such as Maven, Ant, and Gradle. Jenkins is seamlessly integrated with common versioning tools, such as SVN and GIT, and can directly connect to source code hosting websites, such as GitHub.

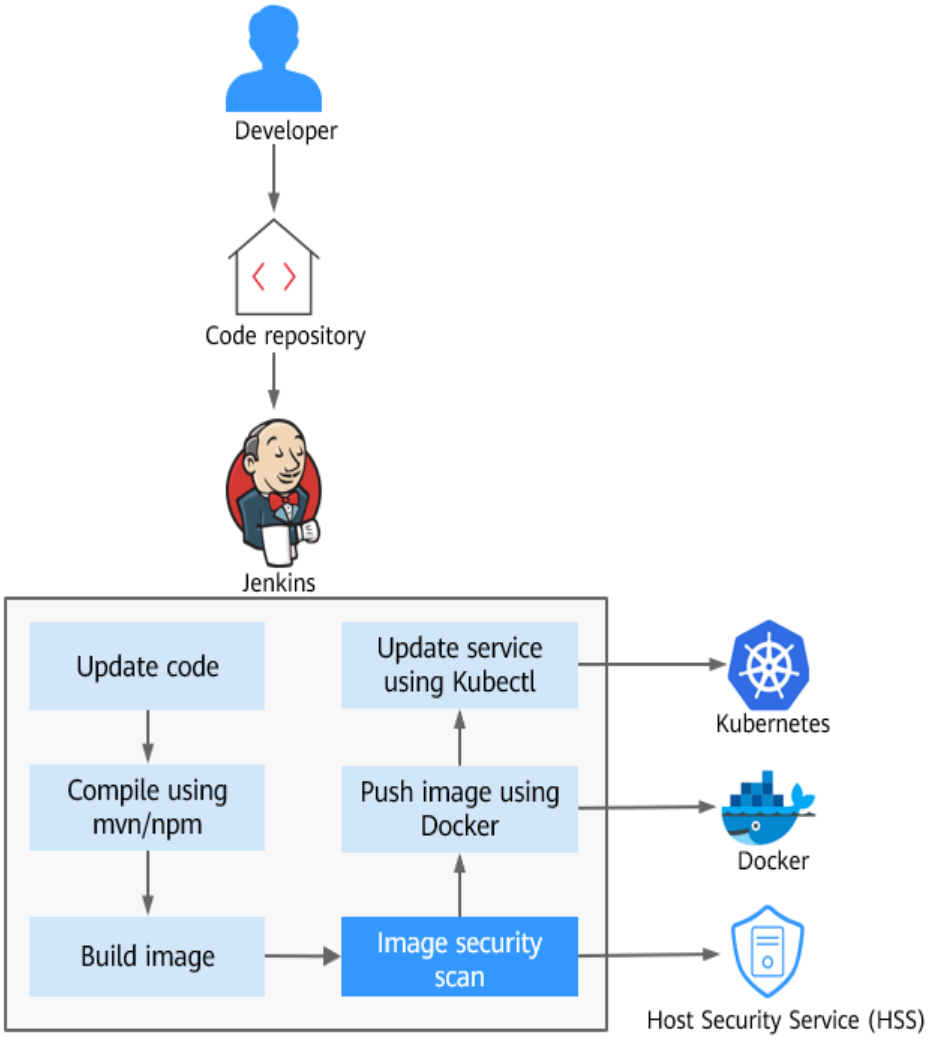
Pipeline is a working mode that implements CI/CD in Jenkins.

CI/CD Image Security Scan Principles

To use the CI/CD image security scan function of HSS, you do not need to synchronize your image assets to HSS. You simply need to add two commands to the Jenkins pipeline (the command for pulling the image of the HSS image security scan tool and the command for starting the tool). When you use Jenkins Pipeline to build a project, an image security scan task is triggered to scan for image security risks in the project and display the scan results on the HSS console. You can handle security risks in images in a timely manner based on the scan results.

Figure 11-36 shows the image security scan phase in the Jenkins pipeline.

Figure 11-36 CI/CD image security scan



CI/CD Image Security Scan Items

Table 11-24 describes the CI/CD image security scan items checked by HSS.

Table 11-24 Image scan items

Item	Description
Vulnerabilities	Detects system and application vulnerabilities in images. • System vulnerability scan supports the following OSs: – EulerOS 2.2, 2.3, 2.5, 2.8, 2.9, 2.10, 2.11, 2.12 (64-bit) – CentOS 7.4, 7.5, 7.6, 7.7, 7.8 and 7.9 (64-bit) – Ubuntu 16.04, 18.04, 20.04, 22.04 (64-bit) – Debian 9, 10, and 11 (64-bit) – Kylin V10 SP1 and SP2 (64-bit) – HCE 1.1 and 2.0 (64-bit) – SUSE 12 SP5, 15 SP1, and 15 SP2 (64-bit) – UnionTech OS V20 server E and V20 server D (64-bit) • Application vulnerability scanning supports the following applications: fastjson, log4j-core, log4j-api, spring-core, shiro-core, struts-core, tomcat-embed-el, tomcat-jdbc, tomcat-embed-websocket, tomcat-juli, tomcat-annotations-ap, tomcat-embed-core, spring-jdbc, druid, commons-lang, commons-logging, commons-configuration, commons-collections, spring-cloud-netflix-archaius, mysql-connector-java, tensorflow, bootstrap, json, spring-beans, spring-context, spring-aop and spring-webmvc.
Malicious Files	Detects malicious files in images.
Software Information	Collects software information in an image.
File Information	Collects file information in an image.
Unsafe Settings	• Configuration check: – Checks the images configurations of CentOS 7, Debian 10, EulerOS, and Ubuntu16. – Checks SSH configurations. • Weak password check: detects weak passwords of Linux (SSH) accounts. • Password complexity check: detects insecure password complexity policies in Linux.

Item	Description
Sensitive Information	Detects files that contain sensitive information in images. • The paths that are not checked by default are as follows: – /usr/* – /lib/* – /lib32/* – /bin/* – /sbin/* – /var/lib/* – /var/log/* – *AnyPath*/node_modules/*AnyPath*/*AnyName*.md – *AnyPath*/node_modules/*AnyPath*/test/*AnyPath* – */service/iam/examples_test.go – *AnyPath*/grafana/public/build/*AnyName*.js **NOTE** • *AnyPath*: indicates that the current path is a customized value and can be any path in the system. • *AnyName*: indicates that the file name in the current path is a customized value, which can be any name ended with .md or .js in the system. • On the **View Report** > **Sensitive Information** tab, click **Configure Sensitive File Path** to set the Linux paths of the file that do not need to be checked. A maximum of 20 paths can be added. • No checks are performed in the following scenarios: – The file size is greater than 20 MB. – The file type can be binary, common process, or auto generation.
Software Compliance	Detects software and tools that are not allowed to be used.
Base Images	Detects service images that are not created using base images.

Scenario

- **Scanning a local image**

  After an image is built, a security scan is performed on it. If the image has security risks, the pipeline can be blocked, so that it will not be pushed to the production image repository.

- **Scanning a remote image repository**

  A remote image repository is a remote test repository pushed after an image is built. A security scan is performed on the image in the remote test repository. If no risks are found, the image can be pushed to the production image repository. If risks are found, the pipeline can be blocked.

Constraints and Limitations

- Only the HSS container edition supports CI/CD image security scans.
- The CI/CD image scan function applies only to the Jenkins Pipeline mode.

  Jenkins configuration restrictions are as follows:

  - Hardware restrictions:
    - Jenkins compilation and building server: Linux server, x86 or Arm 64-bit
    - CPU: 1 or more cores
    - Memory: 2 GB or more
    - Disk space: 60 GB or higher
  - Technical restrictions:
    - Jenkins version: Jenkins 2.x
    - JDK version: JDK 17 or later
    - Docker version: Docker 18.09 or later
- To perform a remote image scan, the image repository must support interaction through Docker Registry HTTP API v2.

CI/CD Image Security Scan Process

Figure 11-37 Usage process

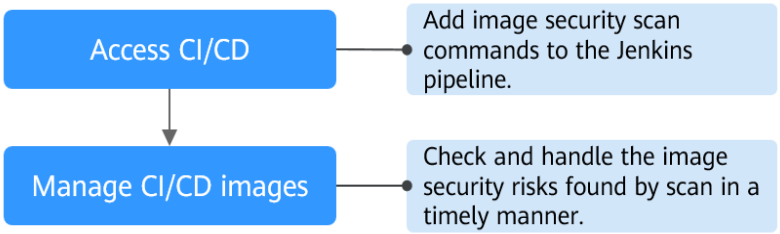


Table 11-25 Usage process

Operation	Description
Accessing CI/CD	Generate an image security scan command for Pipeline based on image information and add the command to the Jenkins pipeline.
Managing CI/CD Images	View the CI/CD image security scan results. Check and eliminate security risks in a timely manner to prevent insecure images from being deployed in the production environment.

11.7.2 Accessing CI/CD

Scenario

Integrate the image security scan plug-in of HSS in the Jenkins Pipeline project so that images can be scanned during the Jenkins Pipeline project construction.

Accessing CI/CD

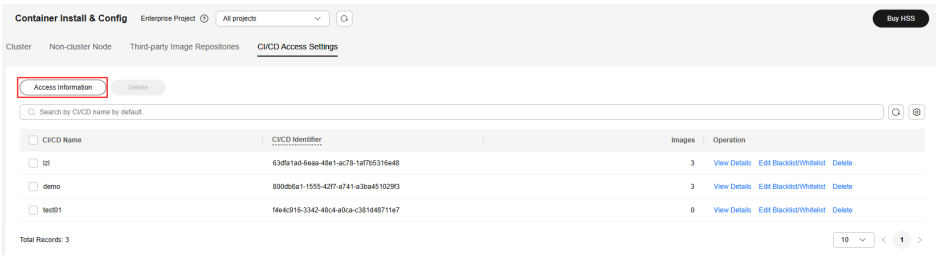
Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Container Install & Config**.

Step 4 Click the **CI/CD Access Settings** tab and then click **Access Information**.

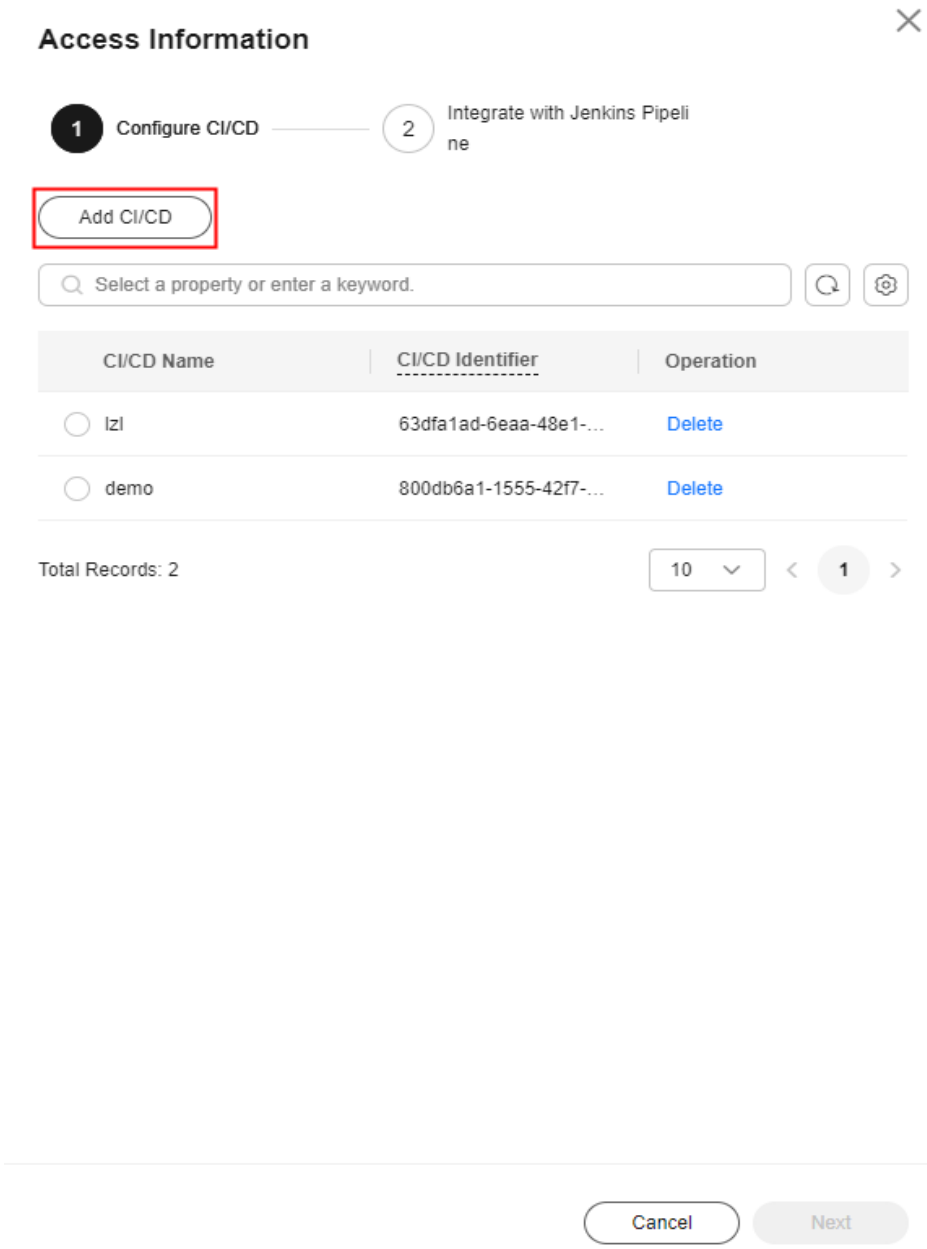
Figure 11-38 CI/CD access settings



Step 5 In the dialog box that is displayed, click **Add CI/CD**.

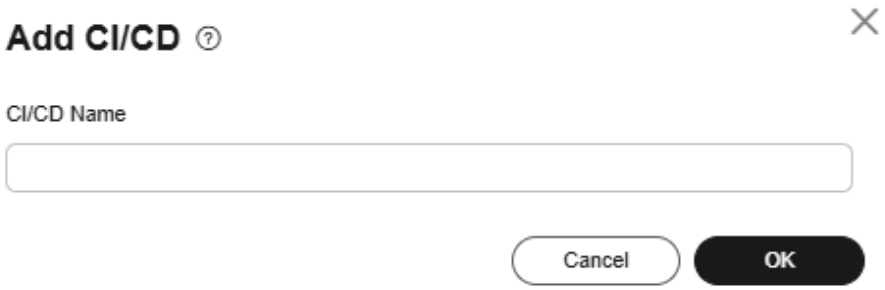
The CI/CD identifier is the access token of the CI/CD plug-in and is used for identity authentication during image scans.

Figure 11-39 Adding CI/CD



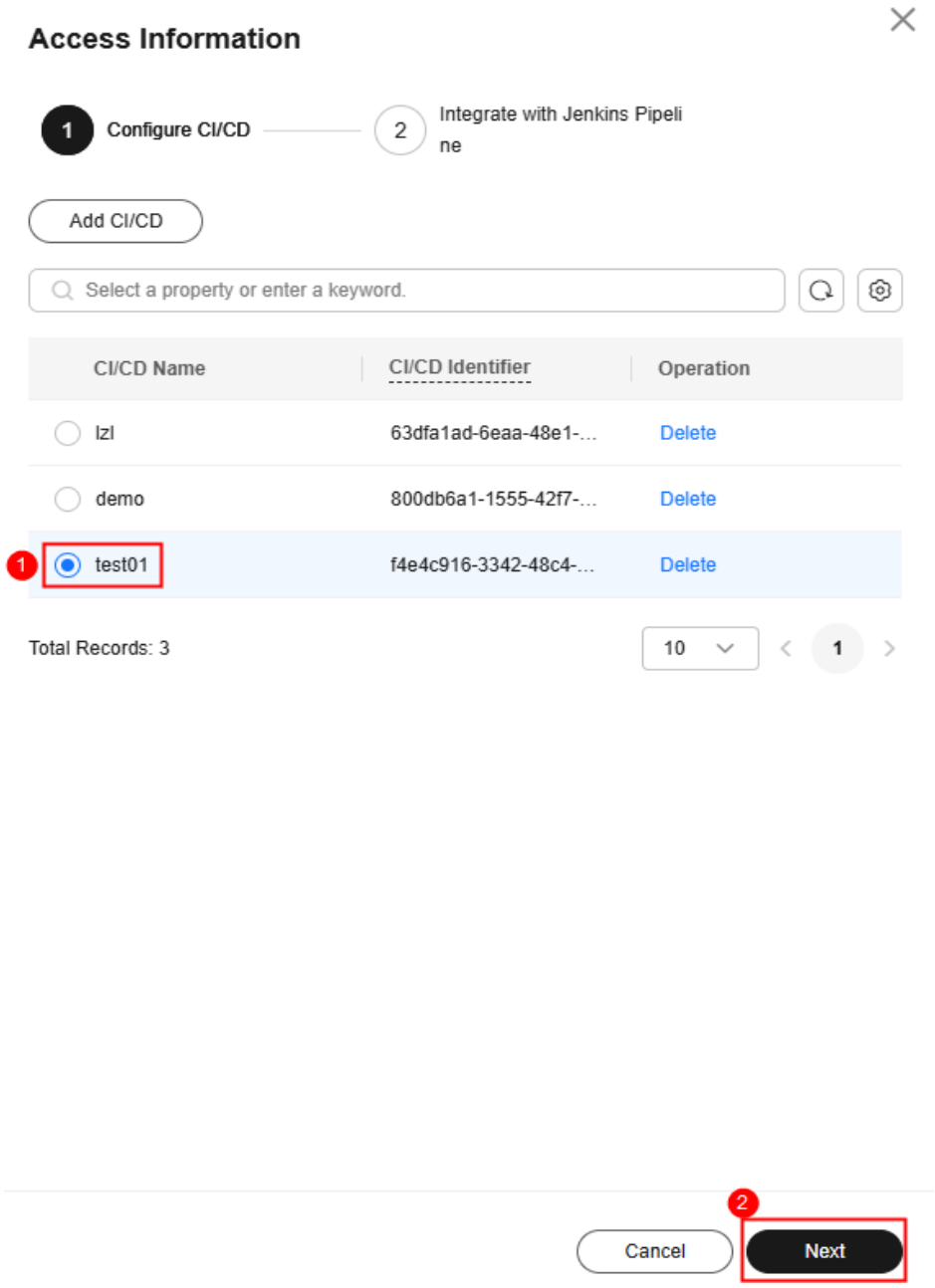
Step 6 Enter an identifier and click **OK**. The CI/CD identifier is added.

Figure 11-40 Entering an CI/CD identifier



Step 7 Select an identifier and click **Next**.

Figure 11-41 Selecting an identifier



Step 8 Configure image scan information as prompted.

Figure 11-42 Image scan information

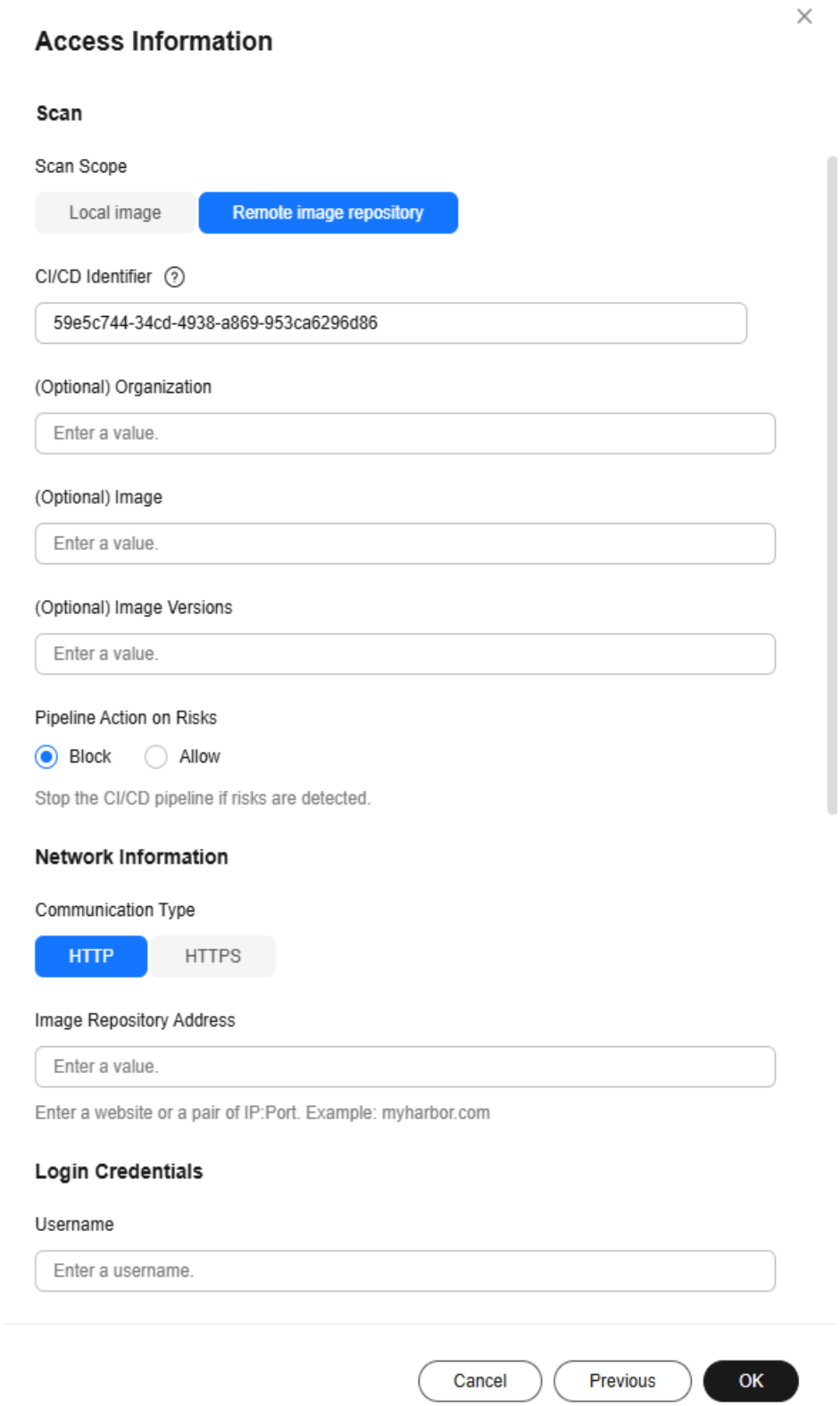


Table 11-26 Image scan parameters

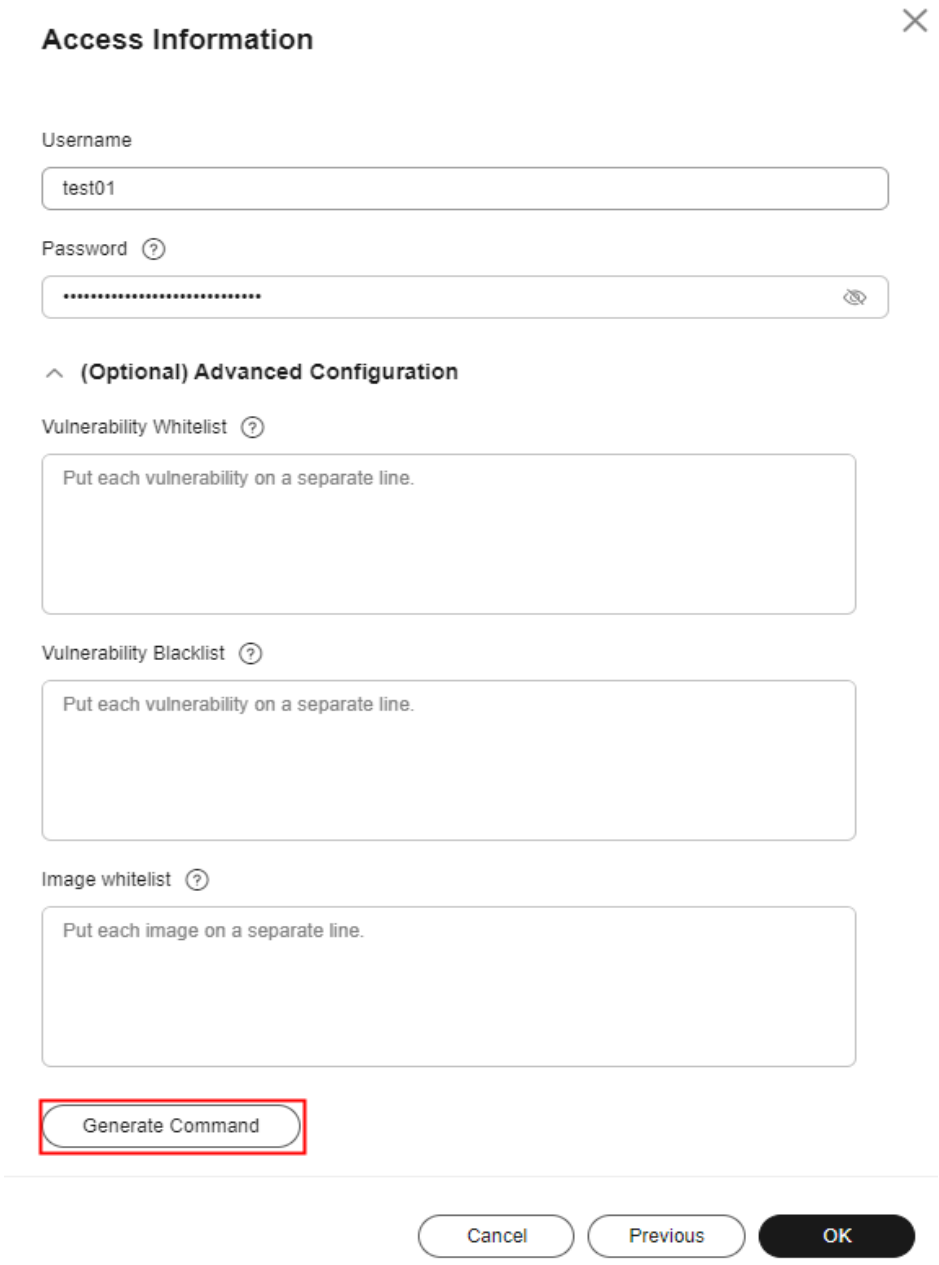
Category	Parameter on GUI	Description	Parameter in Command
Scan	Scan Scope	Type of images to be scanned. • **Local image** • **Remote image repository**	-
	CI/CD Identifier	CI/CD plug-in access token used for identity authentication during image scans.	cicd_id
	(Optional) Organization	If **Scan Scope** is set to **Remote image repository**, you can enter the name of the organization that the remote image belongs to.	NAMESPACE
	(Optional) Image	Image name.	IMAGE_NAME
	(Optional) Image Versions	Image version information.	IMAGE_VERSION
	Pipeline Action on Risks	HSS will handle insecure images during image building based on the selected action. • Block: When high-risk images are detected, the CI/CD pipeline is blocked. High-risk images refer to the images whose risk level is high in the check results of vulnerabilities, malicious files, or baselines. • Allow: The CI/CD pipeline is allowed to run properly even if image risks are detected.	is_blocking • Blocking the pipeline: **is_blocking=1** • Allowing the pipeline: **is_blocking=0** To block all the insecure pipelines, including the pipelines with high-risk images, set **is_blocking=non-secure**.

Category	Parameter on GUI	Description	Parameter in Command
Network Information (required only for remote image repository scans)	Communication Type	Communication protocol type of the image repository. • **HTTP** • **HTTPS**	repository_address Value format: *Communication_type*://*Image_repository_address*
	Image Repository Address	Image repository address. You can enter the website address or *IP_address*:*Port_number* of the image repository. Example: **myharbor.com**	repository_address Value format: *Communication_type*://*Image_repository_address*
Login Credentials (required only for remote image repository scans)	Username	Login username.	login_auth The value of this parameter is the encrypted value of the **image repository username** and **image repository password**.
	Password	Password of the login user.	login_auth The value of this parameter is the encrypted value of the **image repository username** and **image repository password**.

Category	Parameter on GUI	Description	Parameter in Command
(Optional) Advanced Configuration	Vulnerability Whitelist	During CI/CD pipeline building, if an image only has whitelist vulnerabilities, the CI/CD pipeline is not blocked. If you believe a high-risk vulnerability does not affect your services, you can add it to the vulnerability whitelist. Enter one or multiple vulnerability names. Put each vulnerability name on a separate line.	-
	Vulnerability Blacklist	During CI/CD pipeline building, if an image has a blacklisted vulnerability, the CI/CD pipeline is blocked. If you believe a low-risk vulnerability severely affects your services, you can add it to the vulnerability blacklist. Enter one or multiple vulnerability names. Put each vulnerability name on a separate line.	-
	Image Whitelist	During CI/CD pipeline building, if the image is found to have risks, the CI/CD pipeline is not blocked. Enter one or multiple image names. Put each image name on a separate line. Image name format: • Local image: *Image_name*:*Version* • Remote image: *Organization_name*/*Image_name*:*Version*	-

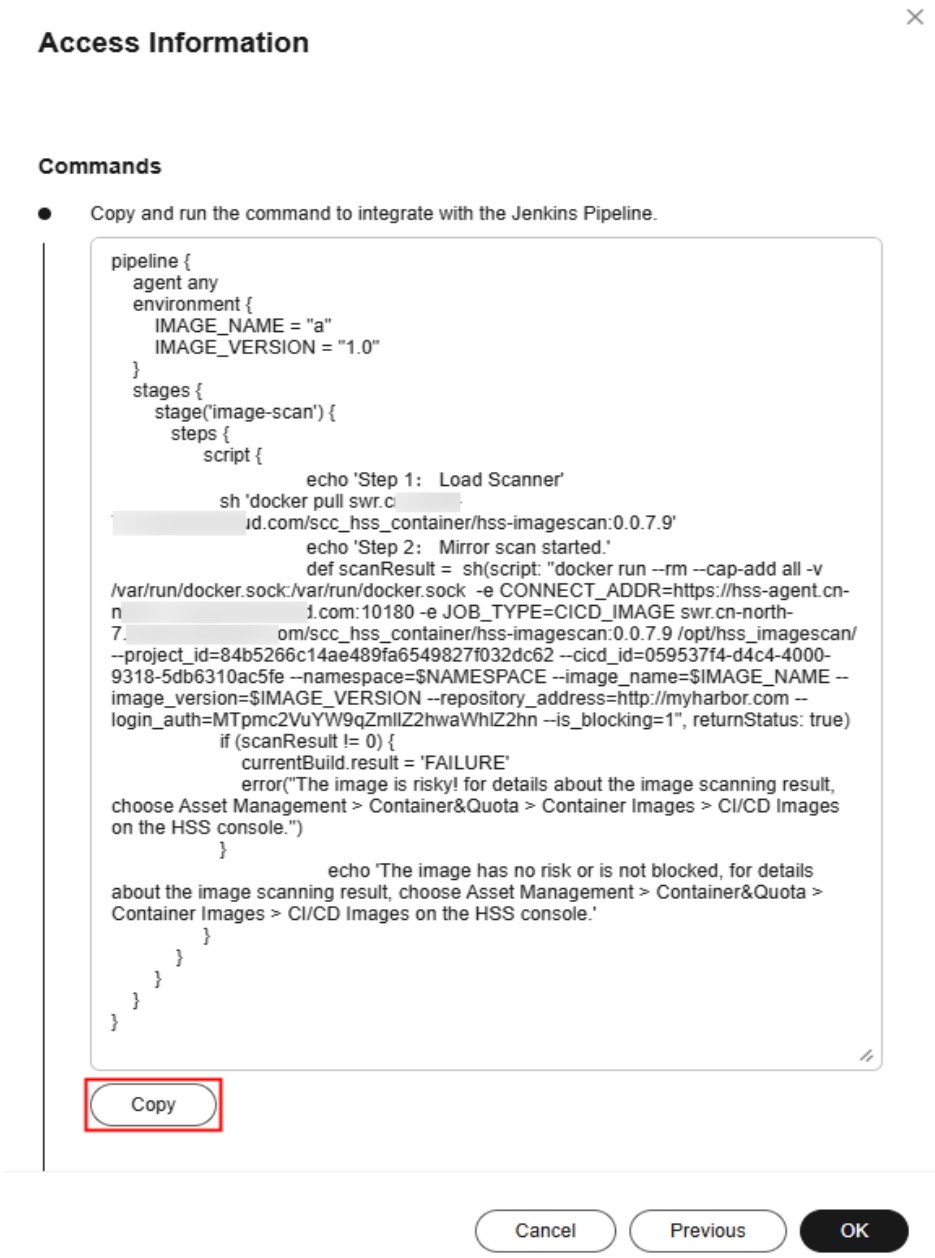
Step 9 After the configuration is complete, click **Generate Command** to generate commands for configuring the image security scan plug-in.

Figure 11-43 Generating commands



Step 10 Click **Copy**, as shown in **Figure 11-44**.

Figure 11-44 Copying commands



Step 11 Log in to Jenkins.

Step 12 On the **Dashboard** page, click the name of a project in Jenkins-Pipeline mode.

In this example, the project name is **mypipeline**.

Step 13 In the navigation tree on the left, choose **Configure**.

Step 14 Insert image security scan commands based on the type of the images to be scanned.

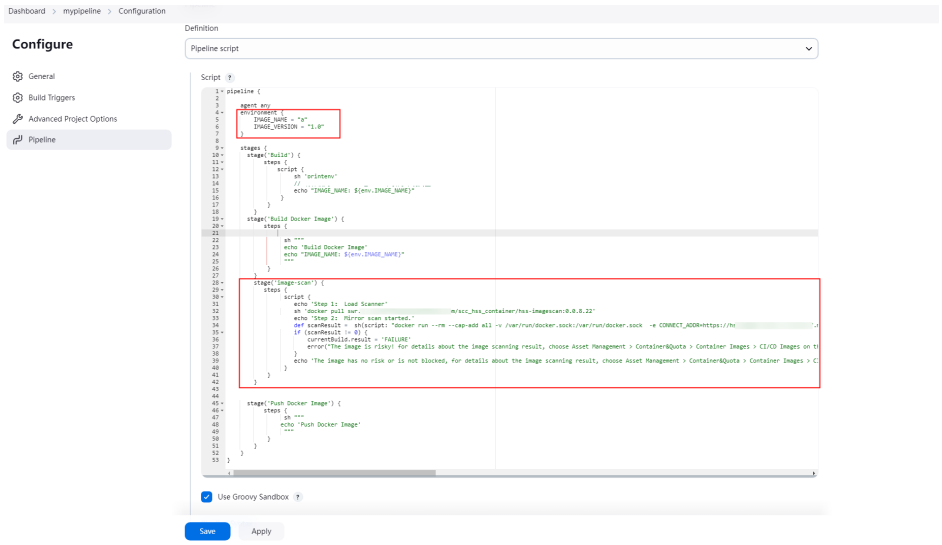
The following example is for reference only.

- **Local images**

1. In the **Pipeline** area, insert the **environment** code segment of the command copied in **Step 10** after **agent any** in the pipeline script.

2. Insert the **stage('image-scan')** code segment of the command copied in **Step 10** between the Build and Push phases in the pipeline script.

Figure 11-45 Inserting image security scan commands



- **Remote image repository**

  a. In the **Pipeline** area, insert the **environment** code segment of the command copied in **Step 10** after **agent any** in the pipeline script.

  b. Insert the **stage('image-scan')** code segment of the command copied in **Step 10** between the Test and Push phases in the pipeline script.

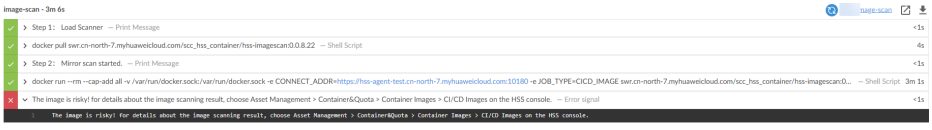
Step 15 Click **Apply**.

Image security scan tasks will be executed while you build the project.

You can use **Blue Ocean** to view the project build task. Image security scan is performed in the **image-Scan** step added to the project. After the scan is complete, you can view its results on the HSS console. For details, see **Managing CI/CD Images**.

If you choose to block a pipeline while performing **Step 8**, the image security scan plug-in will block the pipeline having high-risk images, as shown in **Figure 11-46**.

Figure 11-46 Blocking project building



----End

Related Operations

- **Managing CI/CD Images**

- Editing the Blacklist or Whitelist

11.7.3 Editing the Blacklist or Whitelist

Scenario

The blacklist and whitelist can control image blocking during image building. They can be configured during CI/CD access. This section describes how to add or modify blacklist or whitelist items after the CI/CD access configuration is complete.

Editing the Blacklist or Whitelist

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click  , and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Container Install & Config**.

Step 4 Click the **CI/CD Access Settings** tab.

Step 5 In the row of a CI/CD identifier, click **Edit Blacklist/Whitelist** in the **Operation** column.

Step 6 In the slide-out panel that is displayed, edit the vulnerability whitelist, vulnerability blacklist, and image whitelist.

Figure 11-47 Editing the blacklist or whitelist

Table 11-27 Blacklist and whitelist parameters

Parameter	Description
Vulnerability Whitelist	During CI/CD pipeline building, if an image only has whitelist vulnerabilities, the CI/CD pipeline is not blocked. If you believe a high-risk vulnerability does not affect your services, you can add it to the vulnerability whitelist. Enter one or multiple vulnerability names. Put each vulnerability name on a separate line. You can remove a vulnerability from the whitelist.
Vulnerability Blacklist	During CI/CD pipeline building, if an image has a blacklisted vulnerability, the CI/CD pipeline is blocked. If you believe a low-risk vulnerability severely affects your services, you can add it to the vulnerability blacklist. Enter one or multiple vulnerability names. Put each vulnerability name on a separate line. You can remove a vulnerability from the blacklist.
Image Whitelist	During CI/CD pipeline building, if the image is found to have risks, the CI/CD pipeline is not blocked. Enter one or multiple image names to add them to the whitelist. Put each image name on a separate line. Image name format: • Local image: *Image_name*:*Version* • Remote image: *Organization_name*/*Image_name*:*Version* You can remove an image from the whitelist.

Step 7 After the editing is complete, click **OK**.

----End

12 Account Management

12.1 Account Management Overview

HSS can collect statistics on the servers and risks under your organization member accounts. If your account is managed by an organization, you can view the number of servers under all the member accounts in the organization, as well as the number of vulnerabilities, baselines, and alarms of the servers.

To use HSS to view the numbers of servers and risks under your organization member accounts in a unified manner, perform the following operations:

1. **Adding an Account to an Organization**
2. **Viewing Account Management**

For details about the organization service, see **Overview of Organizations**.

12.2 Adding an Account to an Organization

To use HSS to view the numbers of servers and risks under your organization member accounts in a unified manner, perform the operations in this section to add accounts first.

Prerequisites

- You have created an organization. For details, see **Creating an Organization**.
- You have configured HSS as a trusted service. For details, see **Enabling or Disabling a Trusted Service**.
- The current account is the organization administrator or the delegated administrator. For more information, see **Adding a Delegated Administrator**.

Adding an Account to an Organization

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Installation & Configuration** and click the **Account Management** tab. On the displayed page, click **Add Account**.

Step 4 On the dialog box that is displayed, select an account from the **Available Accounts** tree. The account is automatically added to the **Selected Accounts** area on the right. Confirm the information and click **OK**.

NOTE

The added accounts belong to the same organization. For details about organization accounts, see **Overview of an Account**.

Step 5 The account is added successfully and is displayed in the account list.

----End

12.3 Viewing Security Risks of Organization Member Accounts

After organization member accounts are added to HSS, you can view the risks of these accounts on the **Account Management** page.

Viewing Security Risks of Organization Member Accounts

Step 1 **Log in to the management console**.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Installation & Configuration** and click the **Account Management** tab. On the displayed page, view the list of all accounts. For more information, see **Parameter description**.

Table 12-1 Parameter description

Parameter	Description
Account Name	Account name
Project Name	Region to which the account belongs
Servers	Number of servers under an account
Vulnerabilities (Last 24 hours)	Number of vulnerabilities on servers in the last 24 hours
Unsafe Settings (Last 24 hours)	Number of unsafe settings on servers in the last 24 hours
Alarms (Last 24 hours)	Number of security alarms on servers in the last 24 hours

----End

Deleting an Account

Step 1 Click **Delete** in the **Operation** column of the target account.

Step 2 In the dialog box that is displayed, confirm the information and click **OK**.

----End

13 Plug-in Settings

13.1 Plug-Ins Overview

If container protection is enabled and you want to use the image blocking function, you need to **install the Docker plug-in**.

The Docker plug-in provides the image blocking capability. It can prevent the startup of container images that have high-risk vulnerabilities or do not comply with security standards in the Docker environment.

You can configure image blocking in the following scenarios:

- To enhance the security of container images and prevent the risks caused by the use of untrusted or outdated images, you can configure an **image blocking policy** to specify the level of vulnerabilities to be blocked or the whitelist.
- If you need to comply with the security requirements of certain industries or regulations, such as PCI DSS and CIS, you can **configure an image blocking policy** to specify the security baseline or compliance check items to be blocked.
- If you need to implement the best practices of container DevSecOps and embed security check and defense into each phase of the container lifecycle, you can **configure an image blocking policy** to enhance security from source to devices.

Constraints and Limitations

The constraints for installing the Docker plug-in are as follows:

- The HSS container edition has been enabled.
- Only Docker containers can use this plug-in.
- The Docker engine version is 18.06.0 or later.
- The Docker API version is 1.38 or later.
- Only Linux servers are supported.
- Only the x86 and Arm hardware architectures are supported.

- Currently, this plug-in can be installed only on Huawei Cloud servers.

13.2 Viewing Plug-in Information

The plug-in configuration page displays the server list and the plug-in information of the servers. If no plug-ins are installed on a server, the corresponding plug-in information is empty. You can view the plug-in information of a server to determine the servers where plug-ins need to be installed.

Viewing Plug-in Information

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Installation & Configuration** > **Plug-in Settings**. View plug-in details on the plug-in settings page. For more information, see **Table 13-1**.

By default, all servers are displayed in the plug-in list. If a plug-in is installed on a server, the plug-in details are displayed. If no plug-ins are installed on a server, the plug-in information is empty.

Table 13-1 Docker plug-in list parameters

Parameter	Description
Server Name/ID	Server name and ID
IP Address	Server IP address
OS	Type of the OS running on the server
Plug-in Name	Name of the plug-in installed on the server.
Plug-in Version	Name of the plug-in installed on the server.
Plug-in Status	Current status of the plug-in. • **Created**: The plug-in has been created but has not been started. • **Running**: The plug-in is running properly. • **Paused**: The plug-in is paused. • **Restarting**: The plug-in is being restarted. • **Removing**: The plug-in is being deleted. • **Exited**: The plug-in has been stopped. • **Dead**: The plug-in cannot be started or has been deleted.

Parameter	Description
Plug-in Upgrade Status	Plug-in upgrade status. • **Not upgraded**: The plug-in has not been upgraded to the latest version. • **Upgrading**: The plug-in is being upgraded. • **Upgraded**: The plug-in has been upgraded. • **Upgrade failed**: The plug-in failed to be upgraded.

----End

13.3 Installing a Plug-in

If container protection is enabled and you want to use the image blocking function, install the Docker plug-in by following the instructions provided in this section.

Installing a Plug-in

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Installation & Configuration** > **Plug-in Settings**. Click **Plug-In Installation Guide**. In the slide-out panel, copy the commands in the **Installation Commands** section.

Step 4 Remotely log in to the server where the plug-in is to be installed as the **root** user.

- Log in to the ECS console, locate the target server, and click **Remote Login** in the **Operation** column to log in to the server. For details, see **Login Using VNC**.
- If your server has an EIP bound, you can also use a remote management tool, such as PuTTY or Xshell, to log in to the server and install the plug-in on the server as user **root**.

Step 5 Run the following command to access the **/tmp** directory:

```
cd /tmp/
```

Step 6 Create **linux-host-list.txt**, which will contain the server private IP addresses where the agent is to be installed:

Command syntax:

```
echo 127.8.8.8 22 root rootPassword >> linux-host-list.txt
Or
echo 127.8.8.8 22 user userPassword rootPassword >> linux-host-list.txt
```

To specify multiple IP addresses, write multiple commands, each in a separate line.

Example:


```
echo 127.8.8.1 22 root rootPassword >> linux-host-list.txt
echo 127.8.8.2 22 user userPassword rootPassword >> linux-host-list.txt
echo 127.8.8.3 22 root rootPassword >> linux-host-list.txt
```

Step 7 Press **Enter** to save the IP address. Run the **cat linux-host-list.txt** command to verify the IP addresses have been added.

Step 8 Copy the batch installation commands to the command terminal and press **Enter**.

NOTE

If the installation package cannot be downloaded, check to ensure the DNS can resolve the domain name in the installation commands.

Step 9 If **remote_install finished. [OK]** is displayed, the installation is successful. Wait for 3 to 5 minutes and check the Docker plug-in status of the panel server.

```
remote_install finished. [OK]
```

----End

13.4 Uninstalling a Plug-in

Uninstall the Docker plug-in if you do not need to use the image blocking function.

Uninstalling a Docker Plug-in

Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane on the left, choose **Installation & Configuration** > **Plug-in Settings**. Click **Plug-In Uninstallation Guide**. In the slide-out panel, copy the commands in the **Uninstallation Commands** section.

Step 4 Remotely log in to the server where the plug-in is to be uninstalled as the **root** user.

- Log in to the ECS console, locate the target server, and click **Remote Login** in the **Operation** column to log in to the server. For details, see **Login Using VNC**.
- If your server has an EIP bound, you can also use a remote management tool, such as PuTTY or Xshell, to log in to the server and uninstall the plug-in on the server as user **root**.

Step 5 Run the following command to access the **/tmp** directory:

```
cd /tmp/
```

Step 6 Create **linux-host-list.txt**, which will contain the server private IP addresses where the plug-in is to be uninstalled:

Command syntax:

```
echo 127.8.8.8 22 root rootPassword >> linux-host-list.txt
Or echo 127.8.8.8 22 user userPassword rootPassword >> linux-host-list.txt
```

To specify multiple IP addresses, write multiple commands, each in a separate line.

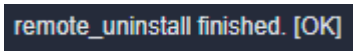
Example:

```
echo 127.8.8.1 22 root rootPassword >> linux-host-list.txt
echo 127.8.8.2 22 user userPassword rootPassword >> linux-host-list.txt
echo 127.8.8.3 22 root rootPassword >> linux-host-list.txt
```

Step 7 Press **Enter** to save the IP address. Run the **cat linux-host-list.txt** command to verify the IP addresses have been added.

Step 8 Copy the batch uninstallation commands to the command box and press **Enter**. The uninstallation starts automatically.

Step 9 If **remote_uninstall finished. [OK]** is displayed, the uninstallation is successful. Wait for 3 to 5 minutes and check the Docker plug-in status of the panel server.



----End

14 Authorization

Scenario

Some HSS functions depend on other cloud services. To use these functions, you need to assign HSS the permissions for the cloud service resources.

When you log in to the HSS console, HSS automatically requests the permissions to access other cloud service resources in the current region. After you assign the permissions, HSS will automatically create an agency named **hss_policy_trust** in IAM, which grants HSS the operation permissions on other cloud service resources in your account. For details, see **Cloud Service Delegation**.

To use HSS in multiple regions, request for cloud resource permissions in each region. To view the delegation records of each region, go to the IAM console, choose **Agencies**, and click **hss_policy_trust**.

Table 14-1 describes the cloud service resource permissions that HSS needs you to assign.

Table 14-1 Required permissions on other cloud service resources

Function	Required Permission	Cloud Service Permission		Usage
		Permission	Action	
Container audit (image repository audit)	CTSOperatePolicy	Query audit events	cts:trace:list	Obtain image operation logs (CTS logs of SWR).

Function	Required Permission	Cloud Service Permission		Usage
		Permission	Action	
Installation and configuration on servers	VPCOperatePolicy	Create a port	vpc:ports:create	Create network interface cards (NICs) and modify security groups to ensure that the port used for installing the agent is accessible.
		Delete a port	vpc:ports:delete	
		Create a security group rule	vpc:securityGroupRules:create	
		Delete a security group rule	vpc:securityGroupRules:delete	
		Query ports or details about a port	vpc:ports:get	
		Query networks or details about a network	vpc:networks:get	
		Query subnets or details about a subnet	vpc:subnets:get	
	VPCEPOperatePolicy	Create an endpoint	vpcep:endpoints:create	Maintain the network channel Between the agent and the HSS cloud protection center (master).
		Query endpoints	vpcep:endpoints:list	
		Delete a VPC endpoint	vpcep:endpoints:delete	
Installation and configuration on containers	CCEOperatePolicy	Query Cluster Information	cce:cluster:get	Manage the lifecycle of HSS-Daemonset and Configmap in a CCE cluster.
		Query Clusters in a Project	cce:cluster:list	
		Query Agencies Based on Specified Conditions	iam:agencies:listAgencies	

Prerequisites

To let an IAM user perform operations, assign the **Security Administrator** system role or the **HSS AgencyOperatePolicy** system policy to the user. For details, see **Creating a User Group and Granting Permissions**.

Assigning Cloud Service Resource Permissions

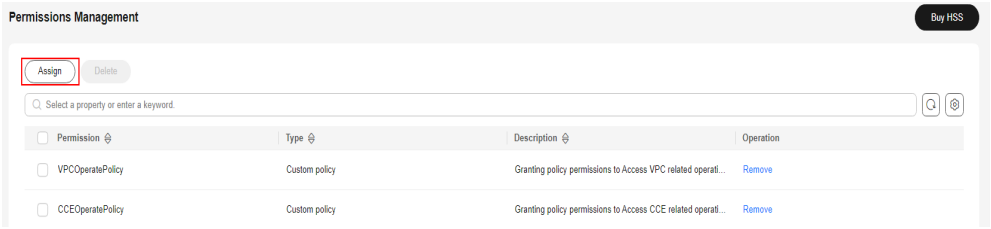
Step 1 Log in to the management console.

Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Permissions Management**.

Step 4 Click **Assign**. The **Assign** dialog box is displayed.

Figure 14-1 Assigning permissions



Step 5 Select permissions and click **OK**.

NOTE

The **Container Audit**, **Server Install & Config**, and **Container Install & Config** pages cannot work properly if required permissions are not assigned. You can click **Assign** in the reminder on the top of the pages to assign permissions.

----End

Deleting Cloud Service Resource Permissions

Step 1 Log in to the management console.

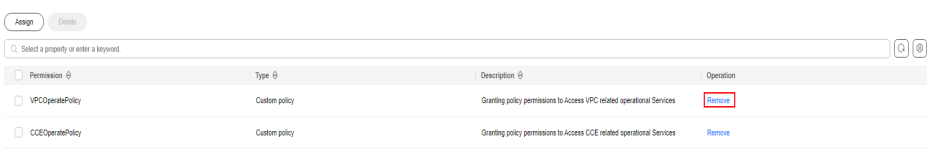
Step 2 In the upper left corner of the page, select a region, click ☰, and choose **Security & Compliance** > **HSS**.

Step 3 In the navigation pane, choose **Installation & Configuration** > **Permissions Management**.

Step 4 Locate a permission and click **Remove** in the **Operation** column. The **Remove Permissions** dialog box is displayed.

Alternatively, select multiple permissions and click **Remove** above the list.

Figure 14-2 Removing permissions



Step 5 Confirm the permission information, enter **DELETE** in the dialog box, and click **OK**.

If the permission is no longer displayed in the permission list, it indicates the permission has been removed.

----End

15 Monitoring and Auditing

15.1 Cloud Eye Monitoring

15.1.1 HSS Monitoring Metrics

Feature Description

This section describes the HSS namespaces, function metrics, and dimensions reported to Cloud Eye. You can view HSS function metrics and alarms by using the Cloud Eye console or calling APIs.

Namespace

SYS.HSS

Metrics

Table 15-1 HSS monitoring metrics

ID	Name	Description	Value Range	Monitored Object & Dimension	Monitoring Period (Original Metric)
host_num	Total Servers	Total number of servers	≥ 0	Enterprise Project	300s
unprotected_host_num	Unprotected Servers	Servers for which protection is not enabled	≥ 0	Enterprise Project	300s

ID	Name	Description	Value Range	Monitored Object & Dimension	Monitoring Period (Original Metric)
risky_host_num	Unsafe Servers	Number of servers where risks are detected	≥ 0	Enterprise Project	300s
uninstalled_or_offline_agent_num	Servers Without Agent Running	Number of servers where no agent is installed or the agent is offline	≥ 0	Enterprise Project	300s
protect_status	Server Protection Status	Whether protection is enabled for a server.	0 or 1 (0: enabled; 1: disabled)	Server dimension	300s
agent_status	Agent Running Status	Whether the agent is online	0 or 1 (0: online; 1: offline)	Server dimension	300s

Dimensions

Table 15-2 Dimension list

key	Value
hss_enterprise_project_id	Enterprise project ID.
host_id	Server dimension. The value is the server ID.

15.1.2 Configuring a Monitoring Alarm Rule

You can set HSS alarm rules to customize the monitored objects and notification policies, and set parameters such as the alarm rule name, monitored object, metric, threshold, monitoring period, and whether to send notifications. This helps you learn the HSS protection status in a timely manner.

Configuring a Monitoring Alarm Rule

Step 1 Log in to the management console.

Step 2 Click in the upper left corner of the management console and select a region or project.

Step 3 Hover your mouse over in the upper left corner of the page and choose **Management & Governance** > **Cloud Eye**.

Step 4 In the navigation pane on the left, choose **Alarm Management** > **Alarm Rules**.

Step 5 In the upper right corner of the page, click **Create Alarm Rule**.

Step 6 On the displayed page, set the parameters as prompted.

For more information, see **Creating an Alarm Rule**. The key parameters are as follows:

- **Name**: Alarm rule name. The system generates a name, which you can modify.
- **Cloud product**: Select **Host Security Service - Host Security** or **Host Security Service - Server**. **Host Security Service - Host Security** indicates metrics measured by enterprise project, and **Host Security Service - Server** indicates metrics measured by server.
- **Monitoring Scope**: Scope of resources that the alarm rule applies to. You can select **All resources** or **Specific resources**.
- **Method**: Select **Associate template** or **Configure manually**.

  NOTE

  After an associated template is modified, the policies contained in this alarm rule to be created will be modified accordingly.

Step 7 Configure the alarm notification.

To send alarm notifications via email, SMS, HTTP, or HTTPS, toggle on **Alarm Notification** ( ).

For more information, see **Creating an Alarm Rule**. The key parameters are as follows:

Step 8 Click **Create**.

----End

15.1.3 Viewing Monitoring Metrics

Cloud Eye can monitor the servers protected by HSS. You can view HSS monitoring metrics on the management console.

Viewing Monitoring Metrics

Step 1 Log in to the management console.

Step 2 Click in the upper left corner of the management console and select a region or project.

Step 3 Hover your mouse over in the upper left corner of the page and choose **Management & Governance** > **Cloud Eye**.

Step 4 In the navigation pane on the left, choose **Cloud Service Monitoring**.

Step 5 In the **Dashboard** column, click **Host Security Service HSS**.

Step 6 Select the **Host Security** or **Server** dimension.

Step 7 View monitoring metrics by dimension.

- Host Security

  In the **Operation** column of an enterprise project name, click **View Metric** to view the server protection metric details of the project.

- Server

  In the row of a server, click **View Metric** in the **Operation** column.

----End

15.2 CTS Auditing

15.2.1 HSS Operations Supported by CTS

Cloud Trace Service (CTS) records all operations on HSS, including requests initiated from the management console or open APIs and responses to the requests, for tenants to query, audit, and trace.

Table 15-3 provides more details.

Table 15-3 HSS operations that can be recorded by CTS

Operation	Resource Type	Trace Name
Adding or deleting resource tags in batches	hss	changeTmsResourceTagInfo
Provisioning a resource in a scenario	hss	moOpenResourceInfo
Placing an order in a scenario	hss	dealMoOrderInfo
Provisioning a resource	hss	openResourceInfo
Querying a resource instance	hss	listTmsResourceInstancesInfo
Deleting AOS	hss	deleteAosResourceInfo

Operation	Resource Type	Trace Name
Opening AOS resource information	hss	openAosResourceInfo
Deleting tenant information	hss	deleteProjectInfo
Checking whether the licenses exceed the threshold	hss	licenseCheck
Updating a license file	hss	updateLicenseFile
Uploading a license file	hss	uploadLicenseFile
Renewal	hss	dealChargeInfo
Obtaining resource information	hss	getCbcServiceResourceInstances
Changing resource status	hss	changeResourceStatusInfo
Changing a resource	hss	changeResourceInfo
Adding a tag to a resource	hss	addResourceInstanceTag
Deleting a resource tag	hss	deleteResourceInstanceTag
Creating tags in batches	hss	batchCreateTags
Deleting tags in batches	hss	batchDeleteTags
Filtering the number of purchased resources by tag	hss	countResourceInstances
Filtering purchased resources by tag	hss	filterResourceInstanceList
Deleting an authorization policy	hss	deleteIamAgenciesRoles
Binding an authorization policy	hss	createIamAgenciesRoles
Changing the status of the pay-per-use billing switch for virus scan	hss	changeAntivirusPayPerScanStatus

Operation	Resource Type	Trace Name
Changing the number of free virus scans	hss	changeAntivirusFreeQuota
Changing the display status of the pay-per-use billing switch for virus scan	hss	changeAntivirusNotificationStatus
Creating a paid virus scan task	hss	createAntiVirusPaidTask
Creating a custom scan policy	hss	createAntiVirusPolicy
Editing a custom scan policy	hss	changeAntivirusPolicy
Deleting a custom scan policy	hss	deleteAntivirusPolicy
Exporting the virus scan result list	hss	exportAntiVirusResult
Handling virus scan results	hss	operateAntiVirusResult
Creating a virus scan task	hss	createAntiVirusTask
Canceling a scan task	hss	switchAntivirusTask
Deleting a server from the whitelist policy	hss	deleteAppWhitelistPolicyHost
Adding a server to the whitelist policy	hss	addAppWhitelistPolicyHost
Managing the whitelist policy learning status	hss	switchAppWhitelistPolicyLearnStatus
Adding a process to the process whitelist policy	hss	addAppWhitelistPolicyProcess
Marking a process whitelist policy to identify a process	hss	changeAppWhitelistPolicyProcessStatus
Applying a whitelist policy	hss	switchAppWhitelistPolicyHost

Operation	Resource Type	Trace Name
Deleting a whitelist policy	hss	deleteAppWhitelistPolicy
Creating a whitelist policy	hss	createAppWhitelistPolicy
Modifying a whitelist policy	hss	changeAppWhitelistPolicy
Immediately collecting asset fingerprints on a single server	hss	runHostAssetManualCollect1
Changing the port status	hss	batchModifyPortStatus
Exporting container asset fingerprints	hss	downloadAssetFile
Immediately collecting asset fingerprints on a single server	hss	runHostAssetManualCollect
Asset management - server management - configuring asset importance	hss	addValuesLevel
Modifying the backup policy associated with the vault	hss	updateBackupPolicyInfo
Ignoring, unignoring, repairing, or verifying the failed configuration check items	hss	changeCheckRuleAction
Ignoring, unignoring, repairing, or verifying the failed configuration check items that failed to pass the check	hss	changeCheckRuleAction
Deleting a specified configuration check policy	hss	deleteSecurityCheckPolicyGroup

Operation	Resource Type	Trace Name
Modifying information about a specified configuration check policy	hss	updateSecurityCheckPolicyGroup
Creating a configuration check policy	hss	addSecurityCheckPolicyGroup
Unbinding quota	hss	cancelHostsQuota
Querying quota IDs in batches	hss	listResourceIds
Exporting the container cluster protection event list	hss	exportClusterProtectEventInfo
Changing the alarm status	hss	modClusterEvents
Deleting a cluster protection policy	hss	deleteClusterProtectionPolicy
Creating a cluster protection policy	hss	createClusterProtectionPolicy
Modifying a cluster protection policy	hss	changeClusterProtectionPolicy
Managing the cluster protection mode	hss	switchClusterProtectionMode
Creating a container export task	hss	exportContainerList
Deleting a cluster daemonset	hss	deleteAgentDaemonset
Creating a cluster daemonset	hss	createAgentDaemonset
Updating a cluster daemonset	hss	updateAgentDaemonset
Obtaining cluster configurations	hss	getCCEClusterConfig
Uninstalling daemonsets in batches	hss	batchDeleteAgentDaemonset

Operation	Resource Type	Trace Name
Upgrading cluster daemonsets in batches	hss	batchUpgradeAgentDaemonset
Obtaining cluster node tags	hss	listCCENodesLabel
Enabling protection for a cluster	hss	addCceIntegrationProtection
Obtaining container cluster risk information in batches	hss	getCCEClusterDetectRiskList
Creating a multi-cloud cluster	hss	createMultiCloudClusters
Deleting a multi-cloud cluster	hss	removeMultiCloudClusters
Updating a multi-cloud cluster	hss	updateMultiCloudClusters
Synchronizing the access status of a multi-cloud cluster	hss	syncMultiCloudClusterStatus
Parsing the configuration file of a multi-cloud cluster	hss	parseMultiCloudClusterConfig
Changing protection status	hss	switchContainerProtectStatus
Creating a security group policy	hss	createSecurityGroupPolicy
Updating a security group policy	hss	updateSecurityGroupPolicy
Deleting a configuration policy of the container cluster network	hss	deleteContainerNetworkPolicy
Adding a configuration policy to the container cluster network	hss	createContainerNetworkPolicy
Updating a configuration policy of the container cluster network	hss	updateContainerNetworkPolicy

Operation	Resource Type	Trace Name
Deleting a security group policy	hss	deleteSecurityGroupPolicy
Exporting emergency malicious programs	hss	exportEmergency
Handling incidents	hss	handleMalwareEvent
Managing the isolation switch	hss	isolateOperateEmergency
Restoring an isolated file	hss	recoverIsolateFile
Handling alarms in batches	hss	batchChangeEvent
Unblocking an IP address	hss	changeBlockedIp
Exporting vulnerabilities	hss	exportEventRequest
Deleting an isolated file	hss	deleteIsolatedFile
Restoring an isolated file	hss	changeIsolatedFile
Handling an alarm event	hss	changeEvent
Removing an alarm from whitelist	hss	removeAlarmWhiteList
Importing an alarm whitelist	hss	importAlarmWhiteList
Removing login information from login whitelist	hss	removeLoginWhiteList
Configuring the login whitelist	hss	addLoginWhiteList
Removing an item from the system user whitelist	hss	removeSystemUserWhiteList
Adding an item to the system user whitelist	hss	addSystemUserWhiteList
Modifying the system user whitelist	hss	updateSystemUserWhiteList

Operation	Resource Type	Trace Name
Exporting a task	hss	exportTaskInfo
Enabling protection for new servers by default	hss	switchDecoyPortAutoBind
Disabling HSS	hss	deleteDecoyPortHostPolicy
Changing the server protection policy	hss	switchDecoyPortHostPolicy
Creating a protection policy	hss	createDecoyPortPolicy
Deleting a server protection policy	hss	deleteDecoyPortPolicy
Editing a protection policy	hss	modifyDecoyPortPolicy
Enabling or disabling a protection policy	hss	switchDecoyPortPolicy
Ignoring or unignoring a server	hss	changeHostIgnoreStatus
Delivering a manual scan	hss	setManualDetect
Configuring asset importance	hss	associateHostAssetValue
Modifying the firewall authorization status	hss	switchFirewallStatus
Adding a server to group	hss	associateHostsGroup
Deleting a server group	hss	deleteHostsGroup
Creating a server group	hss	addHostsGroup
Editing a server group	hss	changeHostsGroup
Creating an on-premise data center server group	hss	addOutsideHostGroup
Editing an on-premises data center server group	hss	changeOutsideHostGroup

Operation	Resource Type	Trace Name
Changing protection status	hss	switchHostsProtectStatus
Switching editions	hss	switchHostsProtectVersion
Uninstall an agent	hss	uninstallAgents
Upgrading an agent	hss	upgradeAgents
Creating a VPC endpoint	hss	createVpcEndpoint
Querying the creation status of each server endpoint	hss	showEndpointStatus
Creating a service order	hss	createDealOrder
Changing specifications	hss	upgradeOrder
Batch exporting baseline check results of the SWR image repository	hss	batchExportBaselineTask
Changing the user-defined weak password of an image	hss	changeExtendedWeakPassword
Scanning images in the image repository in batches	hss	batchScanSwrImage
Scanning local images	hss	batchScanLocalImage
Batch exporting local image vulnerabilities	hss	batchExportLocalVulList
Batch exporting local image vulnerabilities	hss	batchExportLocalVulTask
Scanning SWR images in batches	hss	batchScanPrivateImage
Exporting image security report export statistics	hss	showImageSecurityReportStatistic

Operation	Resource Type	Trace Name
Modifying the whitelist of file paths containing sensitive image information	hss	changeFilePathWhiteDetail
Sensitive information processing	hss	changeSensitiveInfo
Updating images shared by others from SWR	hss	sharedImageSynchronization
Batch exporting SWR image repository vulnerabilities	hss	batchExportSWRVulList
Updating and scanning an SWR image	hss	runSwrImageScan
Batch exporting SWR image repository vulnerabilities	hss	batchExportSWRVulTask
Synchronizing the image list from SWR	hss	runImageSynchronize
Synchronizing private and shared images from SWR	hss	runImageSynchronizeTask
Scanning images	hss	runImageScan
(Operation tool) Clearing the search history of the tool	hss	deleteToolConditionHistory
(Operation tool) Using the tool to search	hss	executeTool
Managing the container lifecycle	hss	changeContainerStatus
Synchronizing cluster information	hss	createClustersInfo
Running a cluster script	hss	createDaemonset
Running a cluster script	hss	createDaemonset

Operation	Resource Type	Trace Name
Changing the status of the monthly operations report dialog box	hss	changeMonthlyOperationReport-TipStatus
Performing a security check again	hss	resetRiskScore
Modifying a policy	hss	changePolicyDetail
Applying a policy group	hss	associatePolicyGroup
Removing a policy group	hss	deletePolicyGroup
Modifying a policy group	hss	changePolicyGroup
Copying a server policy group	hss	addPolicyGroup
Deleting a server from the whitelist policy	hss	deletePWLPolicyHost
Applying a whitelist policy	hss	switchPWLPolicyHost
Adding a server to the whitelist policy	hss	addPWLPolicyHost
Marking a process whitelist policy to identify a process	hss	changePWLPolicyProcessStatus
Re-learning a whitelist policy	hss	relearnPWLPolicy
Handling an event	hss	operatePWLEvent
Deleting a whitelist policy	hss	deletePWLPolicy
Modifying a whitelist policy	hss	changePWLPolicy
Creating a whitelist policy	hss	createPWLPolicy
Creating a quota order	hss	createQuotasOrder
Applying a backup policy to a vault	hss	associateBackupPolicy

Operation	Resource Type	Trace Name
Enabling backup for a single server	hss	startBackupSingle
Enabling backup for a single server	hss	startSingleBackup
Deleting a backup	hss	deleteDuplicationInfo
Restoring data from a backup	hss	restoreDuplicationInfo
Ignoring a prompt	hss	updateAutoDeployAgent
Enabling ransomware prevention	hss	batchStartProtection
Disabling ransomware prevention	hss	stopProtection
Enabling ransomware prevention	hss	startProtection
Enabling ransomware protection for a single server	hss	startProtectionSingle
Deleting a policy	hss	deleteProtectionPolicy
Adding a protection policy	hss	addProtectionPolicy
Modifying a ransomware protection policy	hss	updateProtectionPolicy
Switching a ransomware protection policy	hss	associateProtectionPolicy
Deleting a protection policy	hss	deletePolicy
Adding a protection policy	hss	addPolicy
Modifying a policy	hss	updatePolicy
Enabling/Disabling application protection	hss	switchRasp
Uploading a security report logo	hss	uploadReportLogo

Operation	Resource Type	Trace Name
Changing the security report switch	hss	switchReportStatus
Deleting a report	hss	deleteSecurityReport
Creating or copying a report	hss	addSecurityReport
Modifying a report	hss	changeSecurityReport
Sending a report	hss	sendSecurityReport
Modifying the scheduled configuration of a security check	hss	updateSecurityCheckConfig
Manually starting a health check	hss	startManualSecurityCheck
Canceling a manually started health check	hss	stopManualSecurityCheck
Deleting a user-built cluster daemonset	hss	deleteSelfBuiltClusterDaemonset
Saving a user-built cluster daemonset	hss	saveSelfBuiltClusterDaemonset
Installing the agent	hss	installAgent
Configuring alarms	hss	updateAlarmConfig
Installing agents in batches	hss	batchInstallAgent
Enabling or disabling the automatic agent upgrade function	hss	changeAgentAutoUpgradeStatus
Enabling or disabling the automatic quota binding function	hss	changeAutoOpenQuotaStatus
Adding, editing, or deleting common login IP addresses	hss	modifyLoginCommonIp
Adding, editing, or deleting common login locations	hss	modifyLoginCommonLocation
Adding, editing, or deleting a login IP address whitelist	hss	modifyLoginWhiteIp

Operation	Resource Type	Trace Name
Enabling or disabling malware sample collection for cloud scan	hss	changeMalwareCollectStatus
Setting prompt information	hss	setMalwareReminders
Setting prompt information	hss	setRemindersConfig
Uploading a template file	hss	uploadTemplate
Configuring two-factor login	hss	setTwoFactorLoginConfig
Enabling or disabling automatic isolation and killing of malicious programs	hss	changeAutoKillVirusStatus
Upgrading from agent 1.0 to agent 2.0	hss	upgradeAgent
Restarting a server where vulnerabilities were fixed	hss	changeVulRestart
Exporting emergency vulnerabilities	hss	exportEmergencyVulnerabilities
Operating emergency vulnerabilities	hss	emergencyOperate
Exporting information about vulnerabilities and affected servers	hss	exportVuls
Scanning for vulnerabilities	hss	createVulnerabilityScanTask
Ignoring or unignoring the servers affected by the selected software vulnerability	hss	changeVulStatus1
Performing rollback using a backup	hss	restoreVulHostBackup

Operation	Resource Type	Trace Name
Querying the backup statistics of the servers where vulnerabilities were handled	hss	showVulBackupStatistics
Creating a task for exporting historical vulnerabilities	hss	exportHandledVulnerabilities
Querying the vulnerability fixing command list	hss	listVulRepairCmds
Vulnerability management - server view - server list - displaying report	hss	showVulReportData
Vulnerability management - server view - server list - exporting report	hss	exportVulReport
Modifying a vulnerability scan policy	hss	changeVulScanPolicy
Rescanning servers in the previous vulnerability scan job	hss	rescanVulScanTask
Querying the estimated time of vulnerability scan tasks	hss	showVulScanTaskEstimatedTime
Modifying a vulnerability scan policy	hss	changeVulScanPolicy
Creating a scan task	hss	createVulnerabilityScanTask
Changing the status of a vulnerability	hss	changeVulStatus
Recording the last time when a user viewed the vulnerability task management page	hss	recordUserViewVulTask

Operation	Resource Type	Trace Name
Removing a vulnerability whitelist item	hss	deleteVulWhiteList
Adding a vulnerability whitelist item	hss	addVulWhiteList
Modifying the vulnerability whitelist	hss	changeVulWhiteList
Enabling or disabling dynamic WTP	hss	setRaspSwitch
Setting the trustworthy status of a privileged process and its subprocesses	hss	setPrivilegedChildStatus
Enabling or disabling WTP	hss	setWtpProtectionStatusInfo
Setting the period for automatically disabling protection	hss	setDateOffConfigInfo
Setting the status of the monitoring-only switch	hss	setMonitorOnlyStatus
Removing a privileged process	hss	deletePrivilegedProcessInfo
Adding a privileged process	hss	addPrivilegedProcessInfo
Modifying a privileged process	hss	updatePrivilegedProcessInfo
Removing a protected directory	hss	deleteHostProtectDirInfo
Adding a protected directory	hss	addHostProtectDirInfo
Modifying a protected directory	hss	updateHostProtectDirInfo
Enabling or disabling directory protection	hss	setProtectDirSwitchInfo
Modifying the Tomcat bin directory for dynamic WTP	hss	updateRaspPathInfo

Operation	Resource Type	Trace Name
Enabling or disabling remote backup	hss	setRemoteBackupInfo
Setting the status of scheduled protection	hss	setTimingOffSwitchInfo
Deleting scheduled protection settings	hss	deleteTimingOffConfigInfo
Adding a scheduled protection setting	hss	addTimingOffConfigInfo
Modifying scheduled protection settings	hss	updateTimingOffConfigInfo
Removing a remote backup server	hss	deleteBackupHostInfo
Adding or modifying a remote backup server	hss	updateBackupHostInfo
Querying software information through file upload	hss	showFileAppInfoList
Importing the feature library upgrade package	hss	importFeatureUpload21
Deleting an account	hss	deleteAccount
Adding accounts in batches	hss	batchAddAccounts
Enabling a trusted service	hss	enableTrustService

15.2.2 Viewing CTS Traces in the Trace List

Scenarios

After you enable CTS and the management tracker is created, CTS starts recording operations on cloud resources. After a data tracker is created, the system starts recording operations on data in Object Storage Service (OBS) buckets. Cloud Trace Service (CTS) stores operation records (traces) generated in the last seven days.

NOTE

These operation records are retained for seven days on the CTS console and are automatically deleted upon expiration. Manual deletion is not supported.

This section describes how to query or export operation records of the last seven days on the CTS console.

- **Viewing Real-Time Traces in the Trace List of the New Edition**
- **Viewing Real-Time Traces in the Trace List of the Old Edition**

Constraints

- Traces of a single account can be viewed on the CTS console. Multi-account traces can be viewed only on the **Trace List** page of each account, or in the OBS bucket or the **CTS/system** log stream configured for the management tracker with the organization function enabled.
- You can only query operation records of the last seven days on the CTS console. To store operation records for longer than seven days, you must configure transfer to OBS or Log Tank Service (LTS) so that you can view them in OBS buckets or LTS log groups.
- After performing operations on the cloud, you can query management traces on the CTS console one minute later and query data traces five minutes later.
- Data traces are not displayed in the trace list of the new version. To view them, you need to go to the old version.

Viewing Real-Time Traces in the Trace List of the New Edition

1. Log in to the management console.
2. Click  in the upper left corner and choose **Management & Governance** > **Cloud Trace Service**. The CTS console is displayed.
3. Choose **Trace List** in the navigation pane on the left.
4. On the **Trace List** page, use advanced search to query traces. You can combine one or more filters.
   - **Trace Name**: Enter a trace name.
   - **Trace ID**: Enter a trace ID.
   - **Resource Name**: Enter a resource name. If the cloud resource involved in the trace does not have a resource name or the corresponding API operation does not involve the resource name parameter, leave this field empty.
   - **Resource ID**: Enter a resource ID. Leave this field empty if the resource has no resource ID or if resource creation failed.
   - **Trace Source**: Select a cloud service name from the drop-down list.
   - **Resource Type**: Select a resource type from the drop-down list.
   - **Operator**: Select one or more operators from the drop-down list.
   - **Trace Status**: Select **normal**, **warning**, or **incident**.
     - **normal**: The operation succeeded.
     - **warning**: The operation failed.
     - **incident**: The operation caused a fault that is more serious than the operation failure, for example, causing other faults.

- **Enterprise Project ID**: Enter an enterprise project ID.
- **Access Key**: Enter a temporary or permanent access key ID.
- Time range: Select **Last 1 hour**, **Last 1 day**, or **Last 1 week**, or specify a custom time range within the last seven days.

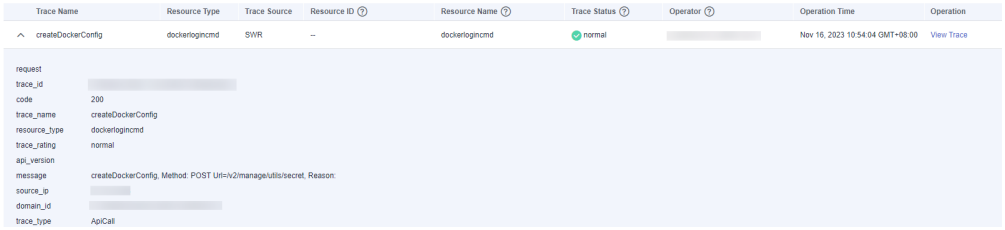
5. On the **Trace List** page, you can also export and refresh the trace list, and customize columns to display.
   - Enter any keyword in the search box and press **Enter** to filter desired traces.
   - Click **Export** to export all traces in the query result as an .xlsx file. The file can contain up to 5,000 records.
   - Click  to view the latest information about traces.
   - Click  to customize the information to be displayed in the trace list. If **Auto wrapping** is enabled (), excess text will move down to the next line; otherwise, the text will be truncated. By default, this function is disabled.
6. For details about key fields in the trace structure, see **Trace Structure** and **Example Traces**.
7. (Optional) On the **Trace List** page of the new edition, click **Go to Old Edition** in the upper right corner to switch to the **Trace List** page of the old edition.

Viewing Real-Time Traces in the Trace List of the Old Edition

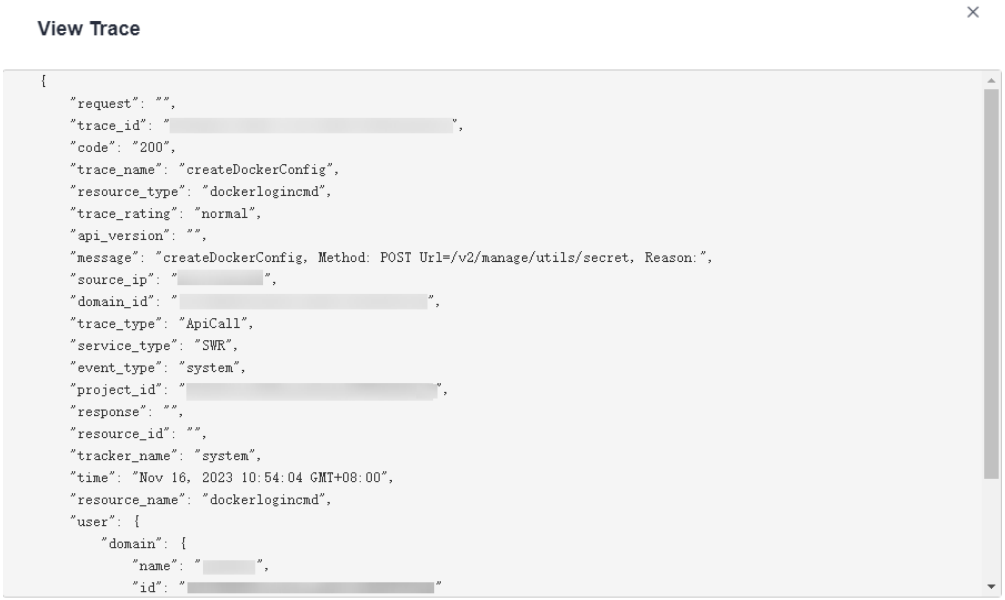
1. Log in to the management console.
2. Click  in the upper left corner and choose **Management & Governance** > **Cloud Trace Service**. The CTS console is displayed.
3. Choose **Trace List** in the navigation pane on the left.
4. Each time you log in to the CTS console, the new edition is displayed by default. Click **Go to Old Edition** in the upper right corner to switch to the trace list of the old edition.
5. Set filters to search for your desired traces. The following filters are available.
   - **Trace Type**, **Trace Source**, **Resource Type**, and **Search By**: Select a filter from the drop-down list.
     - If you select **Resource ID** for **Search By**, specify a resource ID.
     - If you select **Trace name** for **Search By**, specify a trace name.
     - If you select **Resource name** for **Search By**, specify a resource name.
   - **Operator**: Select a user.
   - **Trace Status**: Select **All trace statuses**, **Normal**, **Warning**, or **Incident**.
   - Time range: Select **Last 1 hour**, **Last 1 day**, or **Last 1 week**, or specify a custom time range within the last seven days.
6. Click **Query**.
7. On the **Trace List** page, you can also export and refresh the trace list.
   - Click **Export** to export all traces in the query result as a CSV file. The file can contain up to 5,000 records.

– Click to view the latest information about traces.

8. Click on the left of a trace to expand its details.



9. Click **View Trace** in the **Operation** column. The trace details are displayed.



10. For details about key fields in the trace structure, see **Trace Structure** and **Example Traces** in the *CTS User Guide*.
11. (Optional) On the **Trace List** page of the old edition, click **New Edition** in the upper right corner to switch to the **Trace List** page of the new edition.

16 Enterprise Project Management

16.1 Managing Projects and Enterprise Projects

Selections are available only if you have enabled the enterprise project function, or your account is an enterprise account. To enable this function, contact your customer manager. An enterprise project provides a cloud resource management mode, in which cloud resources and members are centrally managed by project.

Creating a Project and Assigning Permissions

- Creating a project

  Log in to the management console, click the username in the upper right corner, and select **Identity and Access Management**. In the navigation pane on the left, choose **Projects**. In the right pane, click **Create Project**. On the displayed **Create Project** page, select a region and enter a project name.

- Granting permissions

  You can assign permissions (of resources and operations) to user groups to associate projects with user groups. You can add users to a user group to control which projects they can access and what resources they can perform operations on. To do so, perform the following operations:

  a. On the **User Groups** page of the IAM console, locate the target user group and click **Authorize** in the **Operation** column. Grant permissions to the project.

     For details, see **Granting a User Group Permissions for a Project** in the IAM help.

  b. On the **Users** page, click a username to go to the details page. In the **User Groups** area, add a user group for the user.

Creating an Enterprise Project and Assigning Permissions

- Creating an enterprise project

  On the management console, click **Enterprise** in the upper right corner. The **Project Management** page is displayed. In the upper right corner of the **Project Management** page, click **Create Enterprise Project** and create a project as prompted.

NOTE

Enterprise is available on the management console only if you have enabled the enterprise project, or you have an enterprise account. To enable this function, contact customer service.

- Granting permissions

  You can add a user group to an enterprise project and configure a policy to associate the enterprise project with the user group. You can add users to a user group to control which projects they can access and what resources they can perform operations on. To do so, perform the following operations:

  a. On the **Project Management** page, click the name of an enterprise project to go to its details page.

  b. On the **Permissions** tab, click **Authorize User Group** to go to the **User Groups** page on the IAM console. Associate the enterprise project with a user group and assign permissions to the group.

     For details, see **Creating a User Group and Assigning Permissions** in the IAM help.

- Associating HSS with enterprise projects

  You can use enterprise projects to manage cloud resources.

  – Select an enterprise project when purchasing HSS.

    On the page for buying HSS, select an enterprise project from the **Enterprise Project** drop-down list.

  – Adding resources

    On the **Enterprise Project Management** page, you can add existing ECSs/BMSs to an enterprise project.

    Value **default** indicates the default enterprise project. Resources that are not allocated to any enterprise projects under your account are displayed in the default enterprise project.

  For more information, see **Creating an Enterprise Project**.

16.2 Managing All Projects Settings

If you have enabled the enterprise project function, you can select **All projects** from the **Enterprise Project** drop-down list and batch set all servers under all your projects.

- Binding quotas to servers

  Under **All projects**, you can bind the quota of an enterprise project to a server of another project. The project that the quota belongs to will be billed for the quota.

- Batch installation and configuration

  Configure the alarm whitelist, Login Whitelist, malicious program isolation and killing, and alarm notifications for all servers.

- Applying a policy group

  The policy groups under **All projects** can be applied to any servers in any enterprise projects protected by the premium edition.

The policy groups under **All projects** do not belong to any specific projects and do not affect the policy groups under any other projects.

- Subscribing to security reports under **All projects**

  The security reports under **All projects** do not belong to any specific projects and do not affect the security reports under any other projects.

You can configure uniform settings for all projects under **All projects** and customize settings under a specific project. The settings under an enterprise project do not affect those under other enterprise projects.

Prerequisites

You have the **Tenant Administrator** or **HSS Administrator+Tenant Guest** permissions.

Binding Quotas to Servers

Perform the following steps to bind the WTP edition quota to a server under **All projects**.

Step 1 **Log in to the management console.**

Step 2 In the upper left corner of the page, select a region, click  , and choose **Security and Compliance** > HSS. The HSS page is displayed.

Step 3 Choose **Asset Management** > **Servers & Quota** and click **Quotas**. The server protection quotas are displayed.

Step 4 In the quota list, select a quota whose **Usage Status** is **Idle** and click **Bind Server**.

Step 5 Select servers in the **Bind Server** dialog box.

Step 6 Click **OK**. The **Protection Status** of the server will change to **Enabled**.

----End

Binding Quotas to Containers

Perform the following steps to bind the container edition quota to a server under **All projects**.

Step 1 **Log in to the management console.**

Step 2 In the upper left corner of the page, select a region, click  , and choose **Security and Compliance** > HSS. The HSS page is displayed.

Step 3 Choose **Asset Management** > **Containers & Quota** and click **Protection Quotas**. The server protection quotas are displayed.

Step 4 In the quota list, select a quota whose **Usage Status** is **Idle** and click **Bind Server**.

Step 5 Click the **Container Nodes** tab. Locate the target server and click **Enable Protection** in the **Operation** column.

NOTE

The status of the server to be protected must be **Normal**, and the agent status must be **Online**.

Step 6 Select servers in the **Bind Server** dialog box.

In the displayed dialog box, select **Yearly/Monthly**, read the *Container Guard Service Disclaimer*, and select **I have read and agreed to Container Guard Service Disclaimer**.

The quota can be allocated in the following ways:

- **Select a quota randomly**: Let the system allocate the quota with the longest remaining validity to the server.
- Select a quota ID and allocate it to a server.

Step 7 Click **OK**. The **Protection Status** of the server will change to **Enabled**.

----End

