CodeArts Deploy User Guide

Issue 01

Date 2025-07-03

HUAWEI

HUAWEI CLOUD COMPUTING TECHNOLOGIES CO., LTD.

Trademarks and Permissions


and other Huawei trademarks are the property of Huawei Technologies Co., Ltd.
All other trademarks and trade names mentioned in this document are the property of their respective holders.

Notice

The purchased products, services and features are stipulated by the contract made between Huawei Cloud and the customer. All or part of the products, services and features described in this document may not be within the purchase scope or the usage scope. Unless otherwise specified in the contract, all statements, information, and recommendations in this document are provided "AS IS" without warranties, guarantees or representations of any kind, either express or implied.

The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.

Huawei Cloud Computing Technologies Co., Ltd.

Address: Huawei Cloud Data Center Jiaoxinggong Road
Qianzhong Avenue
Gui'an New District
Gui Zhou 550029
People's Republic of China

Website: https://www.huaweicloud.com/intl/en-us/

Contents

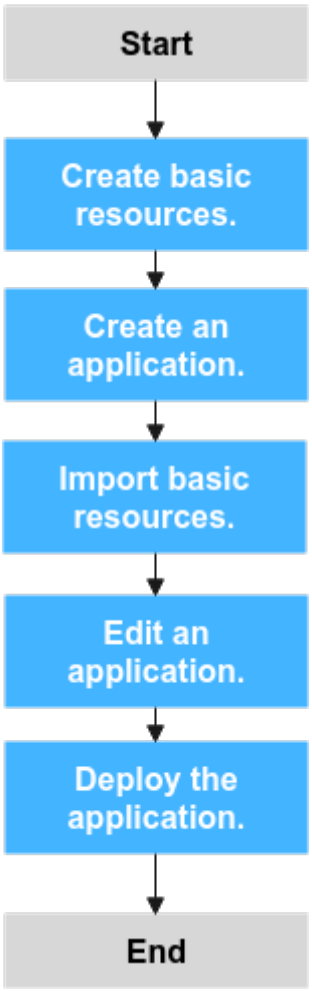
1 CodeArts Deploy Overview

CodeArts Deploy is a visualized and automatic deployment service. It provides various deployment actions for you to customize deployment process, improving efficiency and reducing costs.

CodeArts Deploy has the following features:

- CodeArts Deploy supports deployment on hosts (Huawei Cloud ECSs, your own hosts, and third-party hosts) or containers (Huawei Cloud CCE clusters, on-premises clusters, and third-party clusters).
- Functions are encapsulated as plug-ins, which are easy to use. Common applications can be deployed out of the box.
- CodeArts Deploy provides system templates such as Tomcat, Spring Boot, and Django for you to deploy tasks quickly.
- You can drag and drop atomic actions to orchestrate and assemble applications, customize application templates, and create applications in one click.

You can use CodeArts Deploy to deploy a project. The following figure shows the workflow.



The operations involved are as follows:

- **Create basic resources**: Prepare for the deploy environment.
- **Create an application**: Quickly set up applications based on the service plan or using templates.
- **Import basic resources**: Import target host to be deployed.
- **Edit an application**: Configure deployment actions and parameters.
- **Deploy an application**: Start the application deployment.

2 Purchasing and Authorizing CodeArts Deploy

Prerequisites

You have **registered a HUAWEI ID and enabled Huawei Cloud services**.

Adding and Assigning a Role to a Member

The permissions of CodeArts Deploy are three-layered from top to bottom to manage user behaviors. A new member must be assigned a specified role to use CodeArts Deploy.

Step 1 Add members and assign roles to them. For details, see *CodeArts User Guide* > "Preparations" > **Managing Members**.

Step 2 Configure permissions for different roles to use CodeArts Deploy.

----End

Configuring Project-Level Permissions

Step 1 Access the CodeArts homepage.

Step 2 Click the target project name to access the project.

Step 3 Choose **Settings** > **General** > **Service Permissions**. On the displayed **Permissions** page, add project-level permissions for the user as prompted.

----End

Table 2-1 Project-level permissions

Role/Operation	View	Create	Edit	Delete	Deploy	Clone	Disable	Create Environment	Assign Permissions	Manage Groups	Create Resource
Project manager	√	√	√	√	√	√	√	√	√	√	√
Project administrator	√	√	√	√	√	√	√	√	√	√	×
Product manager	√	×	×	×	×	×	×	×	×	×	×
Test manager	√	×	×	×	×	×	×	×	×	×	×
O&M manager	√	×	×	×	×	×	×	√	×	×	√
System engineer	√	√	√	√	√	√	√	×	×	√	×
Committer	√	√	√	√	√	√	×	×	×	√	×
Developer	√	√	√	√	√	√	×	×	×	√	√
Tester	√	×	×	×	×	×	×	×	×	×	×
Participant	√	×	×	×	×	×	×	×	×	×	×
Viewer	√	×	×	×	×	×	×	×	×	×	×

Configuring Application-Level Permissions

Step 1 Log in to the CodeArts platform.

Step 2 Click the target project name to access the project.

Step 3 Choose **CICD** > **Deploy**.

Step 4 Click the target application name to access the application.

Step 5 Click **Edit**. The **Deployment Actions** page is displayed.

Step 6 Click **Permissions**. On the displayed **Permissions** page, add application-level permissions for the user as prompted.

----End

Table 2-2 Default application-level permissions

Role/ Operation	View	Edit	Delete	Deploy	Clone	Disable	Create Environment	Assign Permissions
App creator	√	√	√	√	√	√	√	√
Project administrator	√	√	√	√	√	√	√	√
Project manager	√	√	√	√	√	√	√	√
Product manager	√	×	×	×	×	×	×	×
Test manager	√	×	×	×	×	×	×	×
O&M manager	√	×	×	×	×	×	√	×
System engineer	√	√	√	√	√	√	×	×
Committer	√	√	√	√	√	×	×	×
Developer	√	√	√	√	√	×	×	×
Tester	√	×	×	×	×	×	×	×
Participant	√	×	×	×	×	×	×	×
Viewer	√	×	×	×	×	×	×	×

NOTE

- Roles with the **Permissions** permission can modify the permission matrix, but permissions of the **Project creator** and **App creator** roles cannot be modified.
- If you do not have the **Edit** permission, the editing page cannot be displayed.

  If you have the **Edit** permission but do not have the **Permissions**, you cannot edit other permissions.

Table 2-3 Template permissions

Operation	System Template	Custom Template
View	All users	All users of the same tenant
Create	N/A	All users of the same tenant
Edit	N/A	Template creator and tenant administrator
Delete	N/A	Template creator and tenant administrator

Configuring the Host Cluster Permissions

Step 1 Log in to the CodeArts platform.

Step 2 Click the target project name to access the project.

Step 3 Choose **Settings** > **General** > **Basic Resources**. The **Host Clusters** page is displayed.

Choose **CICD** > **Deploy**. Click **Basic Resources**. The **Host Clusters** page is displayed by default.

Step 4 Click the *** icon in the **Operation** column of a cluster, click **Assign Permissions**, and configure operation permissions for each role.

----End

Table 2-4 Host cluster permissions

Role/ Permission	View	Edit	Delete	Add Host	Clone Host	Assign Permissions
Host cluster creator	√	√	√	√	√	√
Project administrator	√	√	√	√	√	√

Role/ Permission	View	Edit	Delete	Add Host	Clone Host	Assign Permissions
Project manager	√	√	√	√	√	√
Test manager	√	×	×	×	√	×
O&M manager	√	×	×	×	√	×
System engineer	√	×	×	×	×	×
Committer	√	×	×	×	×	×
Developer	√	√	√	√	√	×
Tester	√	×	×	×	√	×
Participant	√	×	×	×	√	×
Viewer	√	×	×	×	√	×

NOTE

Roles with **Manage Permissions** can modify the permission matrix (including the permission to create host clusters), but permissions of the **Project admin** and **Host cluster creator** roles cannot be modified.

Only the **Project administrator**, **Project manager**, **O&M manager**, and **Developer** have the permission to create host clusters.

Configuring Environment Permissions

Step 1 Log in to the CodeArts platform.

Step 2 Click the target project name to access the project.

Step 3 Choose **CICD** > **Deploy**.

Step 4 Click the target application name to access the application.

Step 5 Click **Edit**. The **Deployment Actions** page is displayed.

Step 6 Click **Environment Management** to access the **Environment Management** page.

Step 7 Click the icon in the **Operation** column of an environment to configure operation permissions for each role.

----End

Table 2-5 Environment permissions

Role/ Permission	View	Edit	Delete	Deploy	Assign Permissions
Environment creator	√	√	√	√	√
Project administrator	√	√	√	√	√
Project manager	√	√	√	√	√
Product manager	√	×	×	×	×
Test manager	√	×	×	×	×
O&M manager	√	√	√	√	√
System engineer	√	√	√	√	×
Committer	√	√	√	√	×
Developer	√	√	√	√	×
Tester	√	×	×	×	×
Participant	√	×	×	×	×
Viewer	√	×	×	×	×

NOTE

Roles with the **Permissions** permission can modify the permission matrix, but permissions of the **Project administrator** and **Environment creator** roles cannot be modified.

3 Accessing CodeArts Deploy Homepage

Prerequisites

You have **purchased and authorized CodeArts Deploy**.

Accessing CodeArts Deploy Homepage

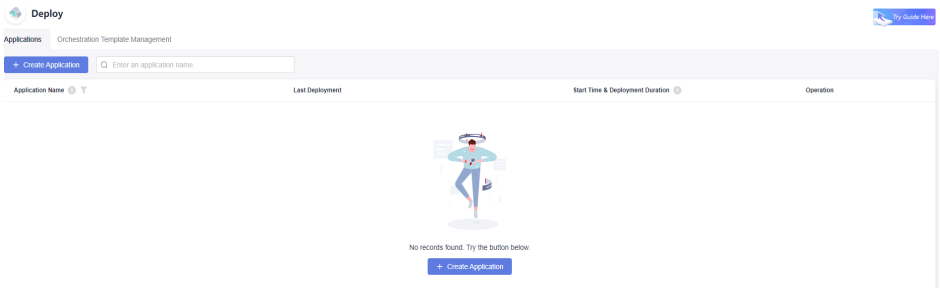
Step 1 **Log in to the Huawei Cloud console**.

Step 2 Click in the upper left corner of the page and choose **Developer Services** > **CodeArts Deploy** from the service list.

Step 3 You can access CodeArts Deploy from either the homepage or the project page.

- **From the homepage**

  Click **Access Service** to go to the CodeArts Deploy service homepage. This page displays the list of deployment applications.



- **From the project page**

  a. Click **Access Service** to go to the CodeArts Deploy service homepage.

  b. Click **Homepage** in the navigation pane.

  c. Click the name of the project to be viewed.

  d. Choose **CICD** > **Deploy**. The application list page of the specified project is displayed.

----End

4 Configuring a Host Cluster for CodeArts Deploy

4.1 Creating a Host Cluster

4.1.1 Overview

With basic resource management, you can manage the deployment objects of applications to be deployed on hosts. CodeArts Deploy deploys your artifacts (the application software packages to be deployed) to the environment consisting of one or more VMs (that is, target hosts).

Host clusters can be used to host your basic resources such as hosts. You can import the created resources to an application for deployment.

Host Connection Mode

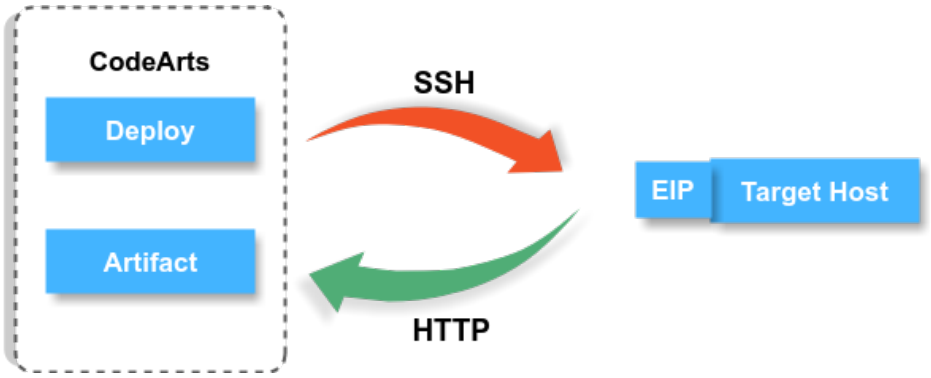
In the host deployment scenario, the execution host of CodeArts Deploy communicates with the target host through SSH/WSMan to deploy applications. An **execution host** is also called a **resource pool** where the deployment is physically executed. In addition to the official resource pool, CodeArts Deploy allows you to connect your own hosts to form a **self-hosted resource pool**. It supports **host connection mode** and **proxy mode** to connect resource pools to target hosts. Before deploying an application, ensure that the resource pool can communicate with target hosts. This process is called **host connectivity verification**.

Direct Connection

Direct Connection is suitable when EIP resources are abundant or only a few EIPs are required for project demo verification.

To ensure successful host connectivity verification, configure target hosts and **enable the corresponding ports**.

EIPs are bound to servers for connecting official resource pools with the target hosts, as shown in the following figure.



Proxy

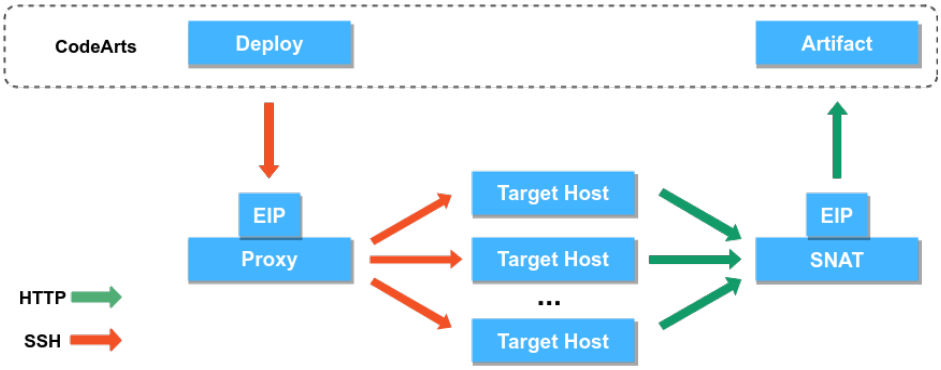
Proxy is suitable when there are no sufficient EIP resources and deployment on ECSs without EIPs is required.

To ensure successful host connectivity verification, configure target hosts and proxy hosts and **enable the corresponding ports**.

- Linux proxy:

  Use an ECS bound with an EIP as a proxy. During the deployment, the executed commands will be delivered to the proxy and forwarded to each target host through SSH. The hosts will be deployed in batches.

  When executing a deployment application, the target host accesses the NAT gateway to pull the software package, as shown in the following figure.

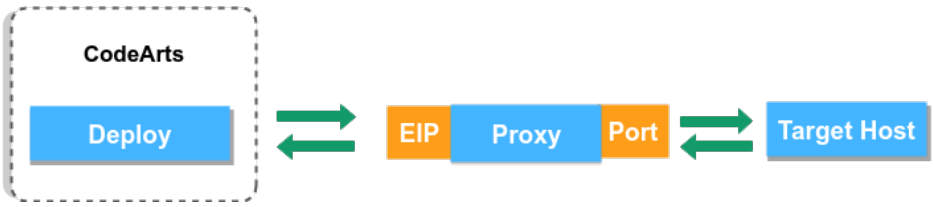


  NOTE

  - Red indicates the process of delivering deployment commands.
  - Green indicates the process of pulling software packages.

- Windows proxy:

  Use an ECS bound with an EIP as a proxy. During the deployment, the executed commands will be delivered to the proxy and forwarded to each target host through ports. The hosts will be deployed in batches.



4.1.2 Creating and Editing a Host Cluster

Prerequisites

- You have the permission to create resources. If not, contact the project administrator to grant you the permission.
- You have **created a resource pool** if you select **Self-hosted** as the **Execution Resource Pool**.

Creating a Host Cluster

Step 1 Go to the **Basic Resources** page.

- In the target project, choose **Settings** > **General** > **Basic Resources**. The **Host Clusters** page is displayed.
- Choose **CICD** > **Deploy**. Click **Basic Resources**. The **Host Clusters** page is displayed by default.

Step 2 Create a host cluster.

Click **Create Host Cluster** and enter the following information.

Parameter	Mandatory	Description
Cluster Name	Yes	3 to 128 digits, letters, hyphens (-), underscores (_), and periods (.).
OS	Yes	**Linux** or **Windows**.
Host Connection Mode	Yes	• Direct connection: Select a host bound with an EIP as the target host to connect to CodeArts. • Proxy: Select a host bound with an EIP as the proxy host to connect to CodeArts. If the target host cannot connect to the public network, select the proxy mode.

Parameter	Mandatory	Description
Execution Resource Pool	Yes	A resource pool is a collection of physical environments where commands are executed during software package deployment. • Official resource pool: You can use an official resource pool hosted by Huawei Cloud. • Self-hosted resource pool: You can also host your own servers as a self-hosted resource pool on Huawei Cloud. For details, see **Creating a Self-hosted Resource Pool**. Both **Official** and **Self-hosted** pools support adding IPv6 addresses for target hosts. To use a **Self-hosted resource pool**, perform the following operations: • Configure a **Self-hosted resource pool** by referring to **Creating a Self-hosted Resource Pool**. • On the **Basic Information** tab page of the target application, select **Self-hosted** for **Execution Resource Pool**.
Description	No	Description of the host cluster. Max. 500 characters.

Step 3 Click **Save**.

----End

Editing a Host Cluster

Step 1 Go to the host cluster page.

1. In the target project, choose **Settings** > **General** > **Basic Resources**. The **Host Clusters** page is displayed.

   Choose **CICD** > **Deploy**. Click **Basic Resources**. The **Host Clusters** page is displayed by default.
2. Click the target host cluster to enter its details page.

Step 2 Edit the host cluster.

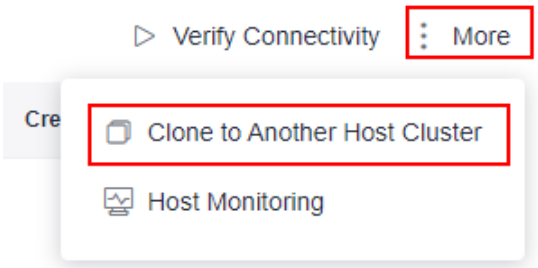
- **Add a host**: Click + in the **Operation** column of a cluster to add a host to the cluster.
- **Edit a cluster**: Click ✎ in the **Operation** column of a cluster to modify the cluster name, execution host, and description.
- **Delete a cluster**: Click ••• in the **Operation** column of a cluster, click **Delete**, and click **OK**.

  If the target cluster contains resources, clear all resources in it before you delete the cluster.

- Manage permissions: Click the ··· icon in the **Operation** column of a cluster and click **Assign Permissions** to configure operation permissions for each role. Enable or disable permissions as required. For details about the default permissions, see the host cluster permissions table in **Purchasing and Authorizing CodeArts Deploy**.

Step 3 Edit a host in the host cluster.

- Verify host connectivity in batches: Select multiple hosts and click ▷ Verify Connectivity.
- Clone hosts to another host cluster in batches: Select multiple hosts and choose **More** > **Clone to Another Host Cluster**. Then select the target host.



- Edit a host: Click ✎ in the **Operation** column of a host to modify the configurations.
- Enable network connectivity verification: Click ▷ in the **Operation** column of a host.
- Delete a host: Click ··· in the **Operation** column of a host, click **Delete**, and click **OK**.
  - If you want to delete a host from an application, select **Disassociate and Delete** to remove the host information from the environment. Otherwise, the host cannot be deleted.
  - A proxy host cannot be deleted directly. A proxy host is deleted, when its last target host is deleted from the environment.
- Clone a host to another host cluster: Click ··· in the **Operation** column of a host, click **Clone**, and select the target host cluster.

----End

4.1.3 Creating a Self-hosted Resource Pool

This section introduces how to add your own hosts to the self-hosted resource pool.

Creating a Self-hosted Resource Pool

Step 1 Create an ECS.

1. Go to the console, and choose **Service List** > **Compute** > **Elastic Cloud Server**. The **Elastic Cloud Server** page is displayed.
2. Click **Buy ECS** on the ECS console.

3. On the ECS configuration page, set parameters as prompted.
4. After setting the parameters, click **Submit**, and the ECS is created.

   NOTE

   You can apply for an EIP during ECS creation or you can also apply for it anytime by referring to **(Optional) Applying for an EIP**.

   Configure a security group for the created ECS by referring to **Configuring a Security Group**.

   Stop idle ECSs to avoid waste and unnecessary billing.

Step 2 Obtain the AK/SK.

1. On the console, click the username in the upper right corner and select **My Credentials** from the drop-down list.
2. Choose **Access Key** > **Create Access Key**.
3. Click **OK** to save the AK/SK.

Step 3 Create an agent pool.

1. On the CodeArts homepage, click the account name in the upper right corner and click **Account Settings**.
2. Choose **Agent Management** > **Agent Pool** > **Create Pool**, enter a pool name, set **Pool Type** to **LINUX_DOCKER**, and click **Save**.

Step 4 Create an agent.

1. Click the created pool and click **Create Agent**. Enable **Install a JDK automatically**, **Install Git automatically**, and **Install Docker automatically**.
2. Enter the AK/SK obtained in **2**, and select **I have read and agree to the** *Privacy Statement* **and** *CodeArts Service Statement* **and understand that related configurations and authentication information will be used by CodeArts to perform operations with this service.**
3. Click **Generate Command** to automatically generate the **Octopus Agent** command for installing the agent, then click **Copy Command**.

Step 5 Run the **Octopus Agent** command.

1. Log in to the ECS created in **1** and run the copied command in **/root** directory. The following information is displayed:

   ```
   End Install Octopus Agent,Agent output logs have been printed to [ /opt/octopus-agent/logs/octopus-agent.log ]
   ```

2. Check the status of the installed agent on the **Agents** page. If the status is **Idle**, the installation is successful.

   If the agent status is **Offline**, delete the agent and repeat steps 3 to 5.

----End

4.2 Adding a Host to a Host Cluster

4.2.1 Preparing for Adding a Host to a Host Cluster

Preparations

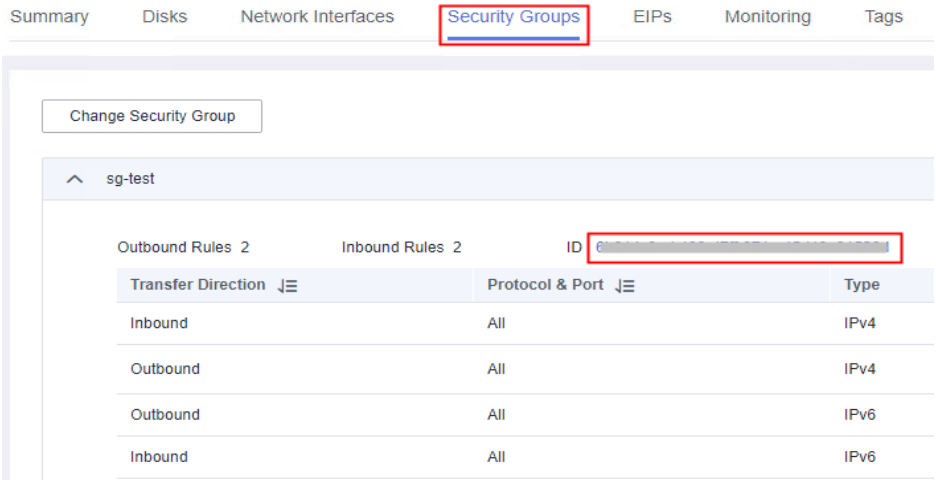
- A target host or proxy is available. For details about how to apply for a host, see **Overview**.
- An EIP is available. You can create one when applying for an ECS or anytime by referring to **Assigning an EIP**.
- Configure a security group for the created ECS by referring to **Configuring a Security Group**.
- To ensure successful host connectivity, configure the host as follows:
  - If your host is a newly applied ECS, configure the port by referring to **Configuring a Security Group**.
  - If you use your own host, configure the port by referring to **Configuring the Firewall**.

Configuring a Security Group

Before verifying host connectivity, configure a security group and enable some ports. Otherwise, the connectivity verification may fail. (The following uses a Linux host as an example.)

Step 1 Go to the console, and choose **Service List** > **Compute** > **Elastic Cloud Server**. The **Elastic Cloud Server** page is displayed.

Step 2 Click the target ECS. On the ECS details page, click the **Security Groups** tab. Click a security group ID. On the page that is displayed, click **Manage Rules** > **Inbound Rules**.



Step 3 Click **Fast-Add Rules** and set the parameters as follows:

- For Linux hosts, enable port **22** in the inbound rule. For Windows hosts, enable ports **54**, **5985**, and **5986** in the inbound rule when adding the target host or proxy host. Set the remote end to **0.0.0.0/0** (open the preceding ports for all IP addresses).
- Remove the inbound restriction on the port of the application deployed on the host (for example, port **8080** of the Tomcat application or all ports of

other applications must be enabled in the inbound direction). Otherwise, the application cannot be accessed.

- Remove the restriction on the outbound direction or at least make ports 80 and 443 accessible.

----End

Configuring the Firewall

Check the firewall configuration of the host to make sure that the firewall allows access to the SSH protocol. Otherwise, the connectivity verification may fail. The following part describes how to configure the firewall for different OSs.

- Linux firewall configurations

Table 4-1 Linux firewall configurations

OS Series	Configuration Method
CentOS/ EulerOS/ UnionTech OS	1. Check whether the SSH software package is installed on the local host. `rpm -qa | grep ssh` If the command output contains **openssh-server**, the SSH software package has been installed. 2. If no SSH software package is available, run the following command: `yum install openssh-server` 3. Enable the SSH service. `service sshd start` 4. Open the sshd configuration file. `vi /etc/ssh/sshd_config` 5. Delete the comment tag before the listening port number. 6. Restart the SSH service. `sudo service sshd restart` 7. Check whether port **22** is enabled. `netstat -ntpl | grep 22` **NOTE** If you have high security requirements on the overall deployment process and do not want to open the preceding ports to all IP addresses, you can configure an IP address whitelist. Add the following command to the end of the **sshd_config** file and save the file: `AllowUsers {User}@{IP}` Restart the SSH service. `sudo service sshd restart` **User**: whitelisted username. **IP**: whitelisted IP address. The whitelist should contain CodeArts IP address range. **All regions:** The IP addresses above are open IP addresses in the official resource pool of CodeArts Deploy for communications with target hosts and proxy hosts.

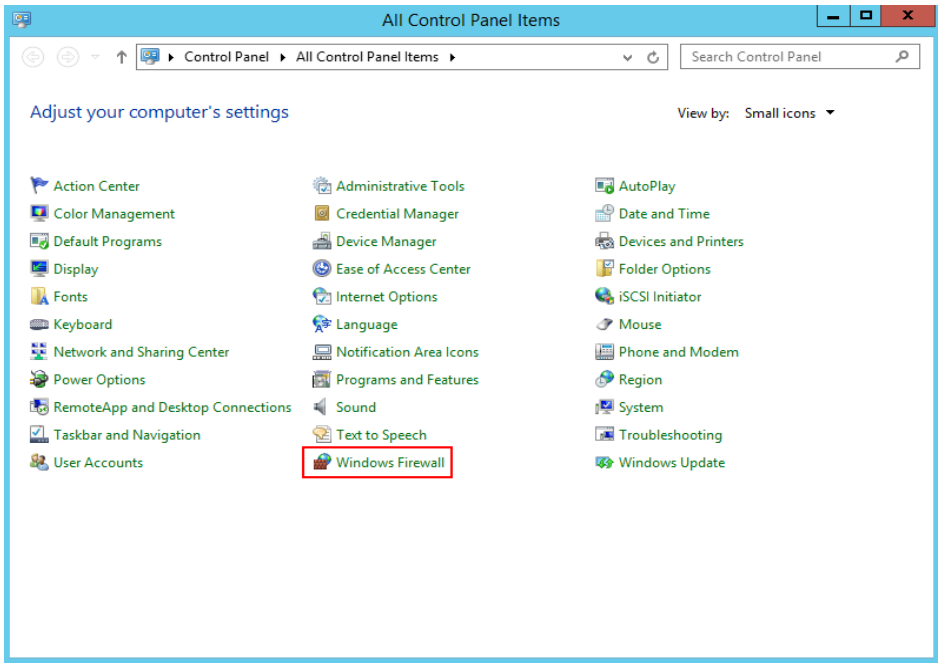
OS Series	Configuration Method
Debian	1. Log in to the system as the root user and install UFW. `apt install ufw` 2. Enable port **22**. `ufw allow 22/tcp` 3. Check whether port **22** is enabled. `ufw status` If the UFW status is **inactive**, run the following command to start UFW: `ufw enable` **NOTE** If you have high security requirements on the overall deployment process and do not want to open the preceding ports to all IP addresses, you can configure an IP address whitelist. Run the following command to add an IP address to the whitelist: `ufw allow from {IP} to any port 22` **IP**: whitelisted IP address. The whitelist should contain CodeArts IP address range. Check the rule list of UFW: `ufw status numbered` Disable the SSH connection rule (disable the rule whose source IP address is **Anywhere** to implement whitelist restriction). `ufw delete {Number}` *{Number}* indicates the number of the rule to be disabled. **All regions:** The IP addresses above are open IP addresses in the official resource pool of CodeArts Deploy for communications with target hosts and proxy hosts.

OS Series	Configuration Method
Ubuntu	1. Check the IP address of the local host. `ifconfig` 2. Check whether the **22** port is occupied. `netstat -nltp|grep 22` 3. If no port process exists, run the following commands in sequence: `sudo apt-get install openssh-server` `sudo apt-get install ufw` `sudo ufw enable` `sudo ufw allow 22` **NOTE** If you have high security requirements on the overall deployment process and do not want to open the preceding ports to all IP addresses, you can configure an IP address whitelist. Run the following command to add an IP address to the whitelist: `sudo ufw allow from {IP} to any port 22` **IP**: whitelisted IP address. The whitelist should contain CodeArts IP address range. Check the rule list of UFW: `ufw status numbered` Disable the SSH connection rule (disable the rule whose source IP address is **Anywhere** to implement whitelist restriction). `ufw delete {Number}` *{Number}* indicates the number of the rule to be disabled. **All regions:** The IP addresses above are open IP addresses in the official resource pool of CodeArts Deploy for communications with target hosts and proxy hosts.

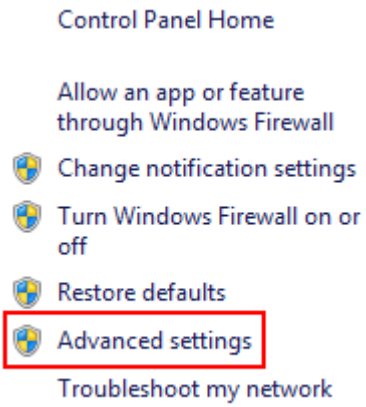
- Windows firewall configurations

  This section uses Windows Server 2012 as an example.

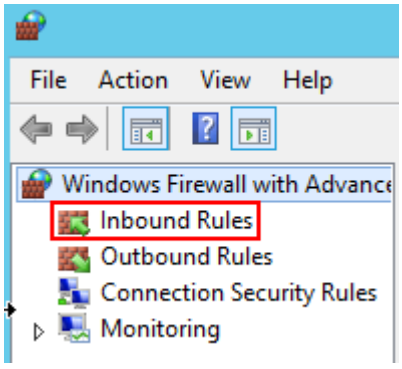
Step 1 Choose **Windows Firewall** on the control panel of the Windows host.



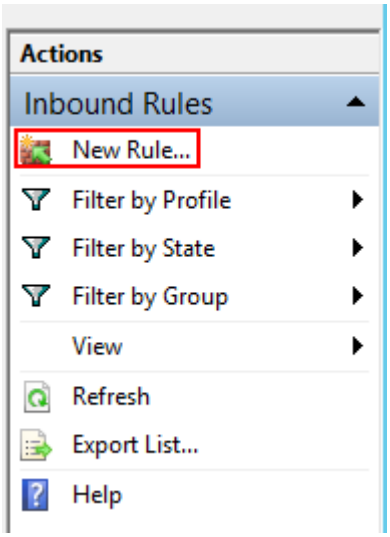
Step 2 Click **Advanced settings**.



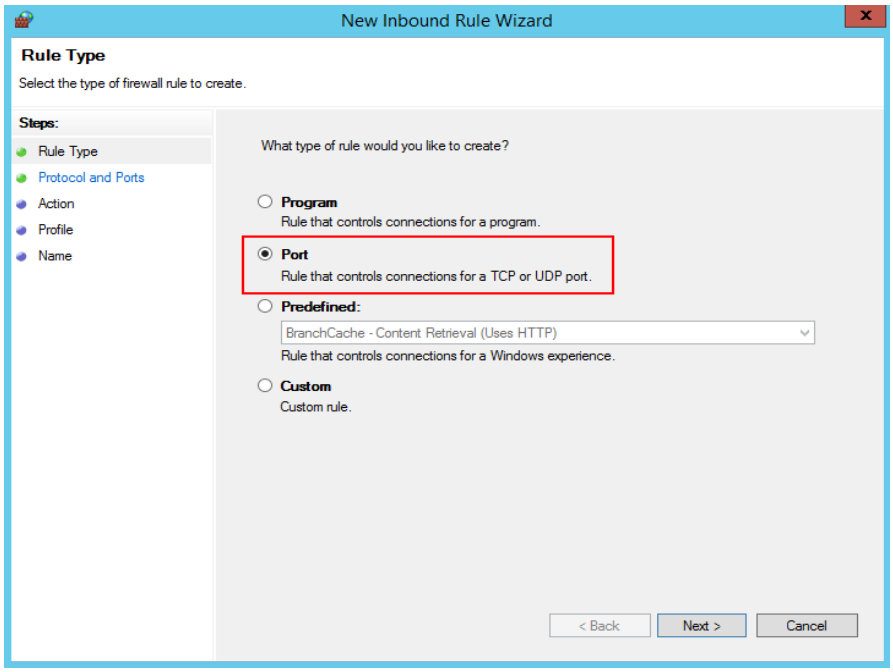
Step 3 Click **Inbound Rules**.



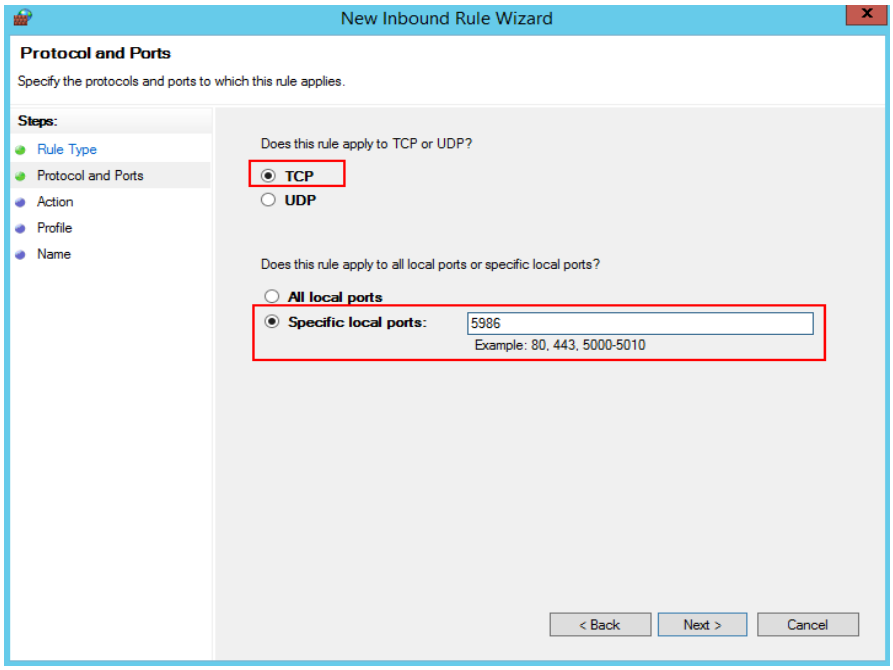
Step 4 Click **New Rule**.



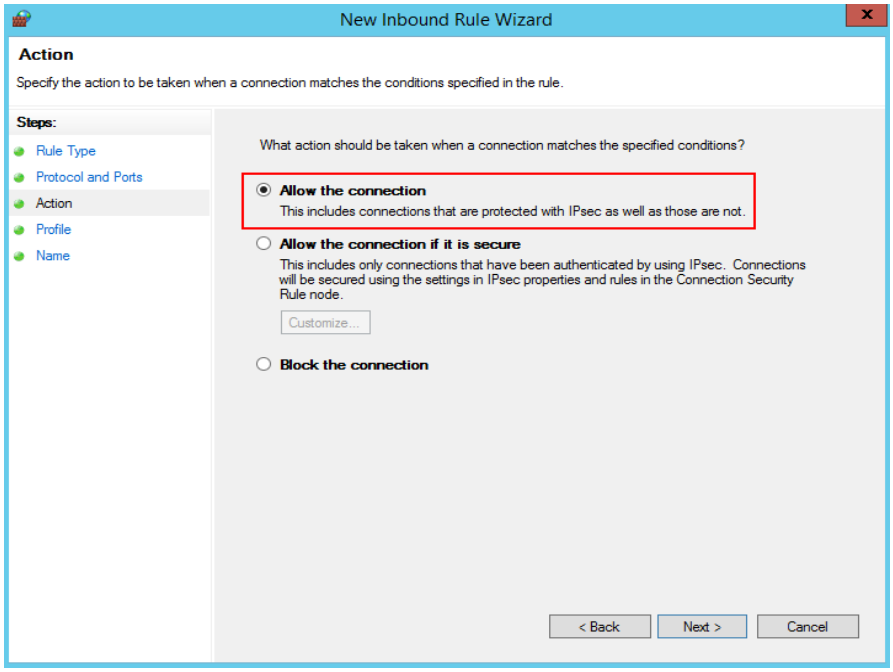
Step 5 Set **Rule Type** to **Port** and click **Next**.



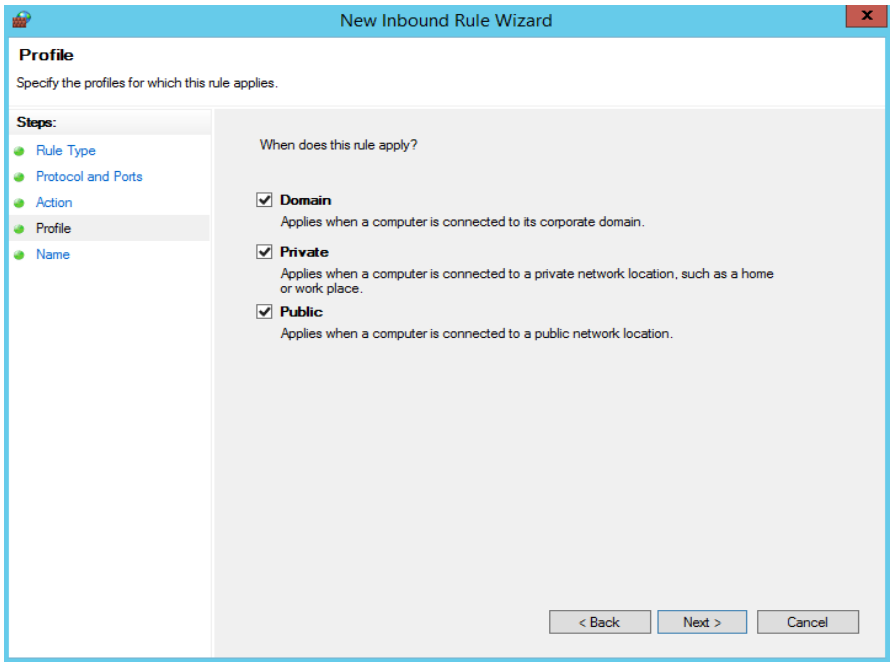
Step 6 Select **TCP** and **Specific local ports**, enter port **5986**, and click **Next**.



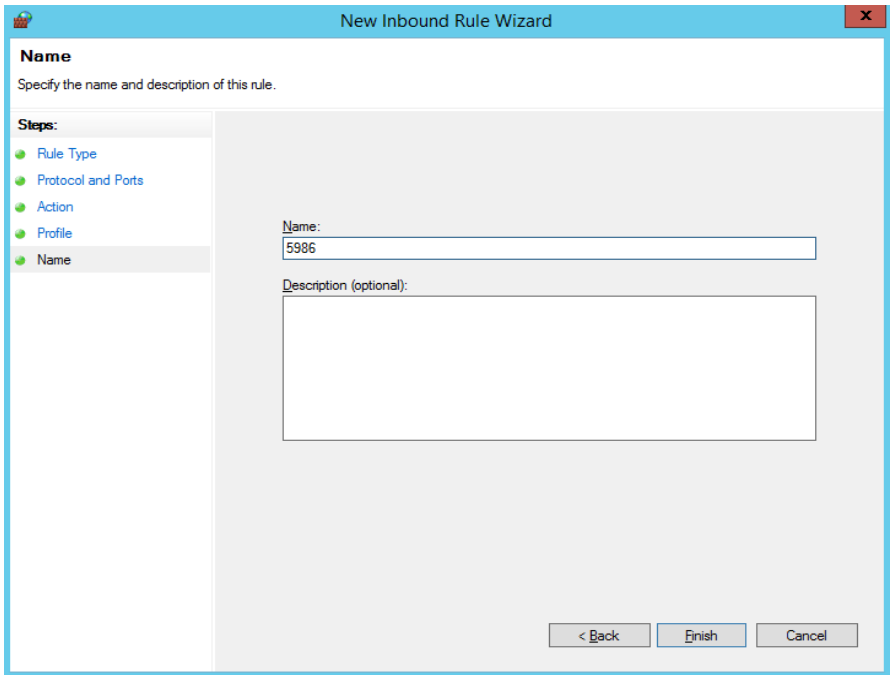
Step 7 Select **Allow the connection**, and click **Next**.



Step 8 Select all the options for **Profile** and click **Next**.



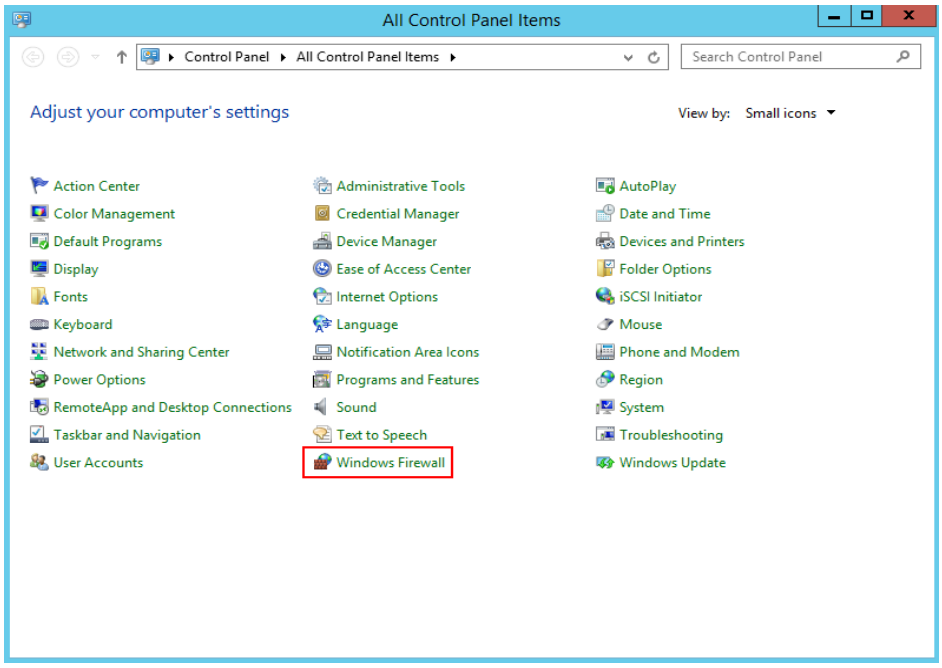
Step 9 Enter a rule name and click **Finish** to complete the firewall configurations.



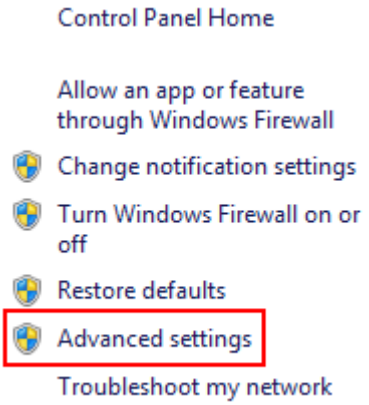
Step 10 (Optional) To connect to the target host through a proxy host, repeat steps 1 to 9 to configure the firewall for the proxy host. Add an inbound rule for the listening port of the proxy be referring to **step 4**, for example, port **54**.

Step 11 (Optional) To meet higher security requirements, configure an IP address whitelist on the target host, instead of opening the preceding ports to all IP addresses.

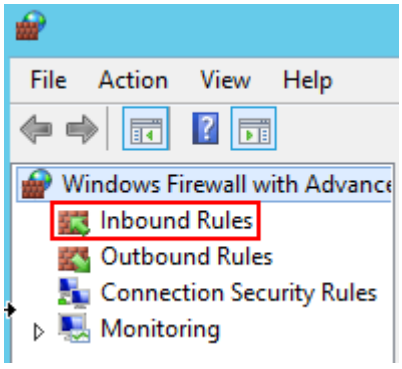
1. Choose **Windows Firewall** on the control panel of the **Windows** host.



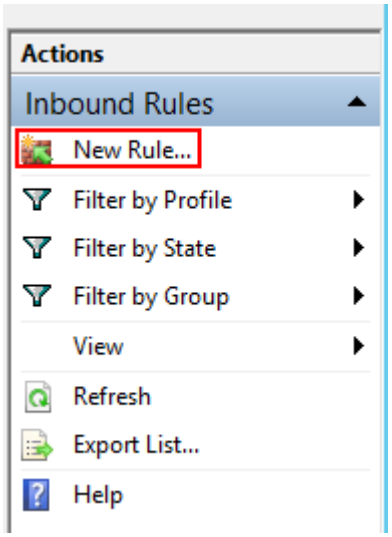
2. Click **Advanced settings**.



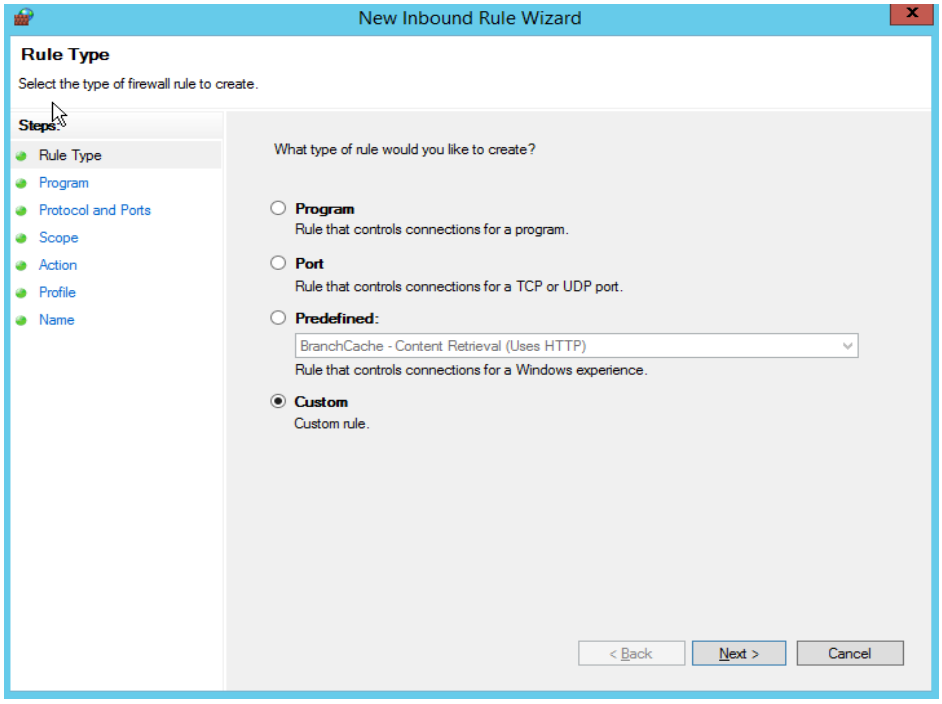
3. Click **Inbound Rules**.



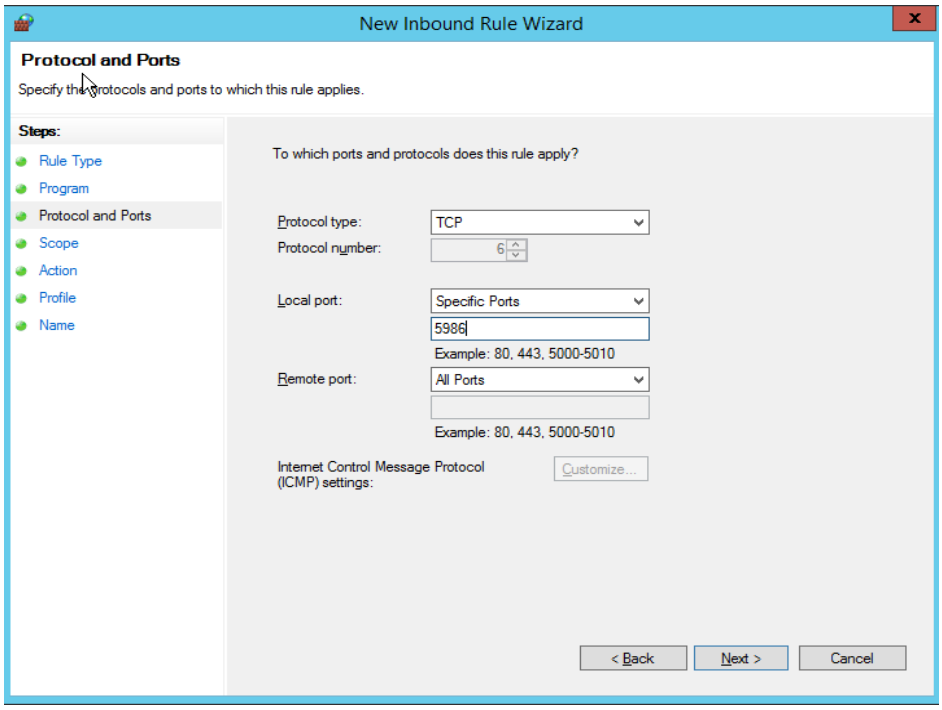
4. Click **New Rule**.



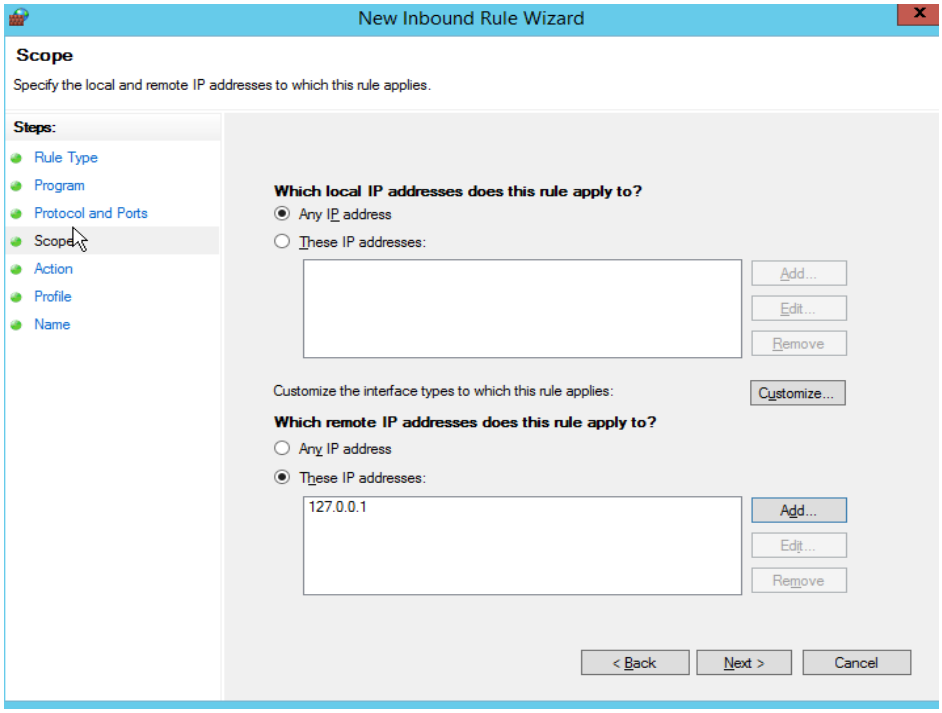
5. Set **Rule Type** to **Custom** and click **Next**.



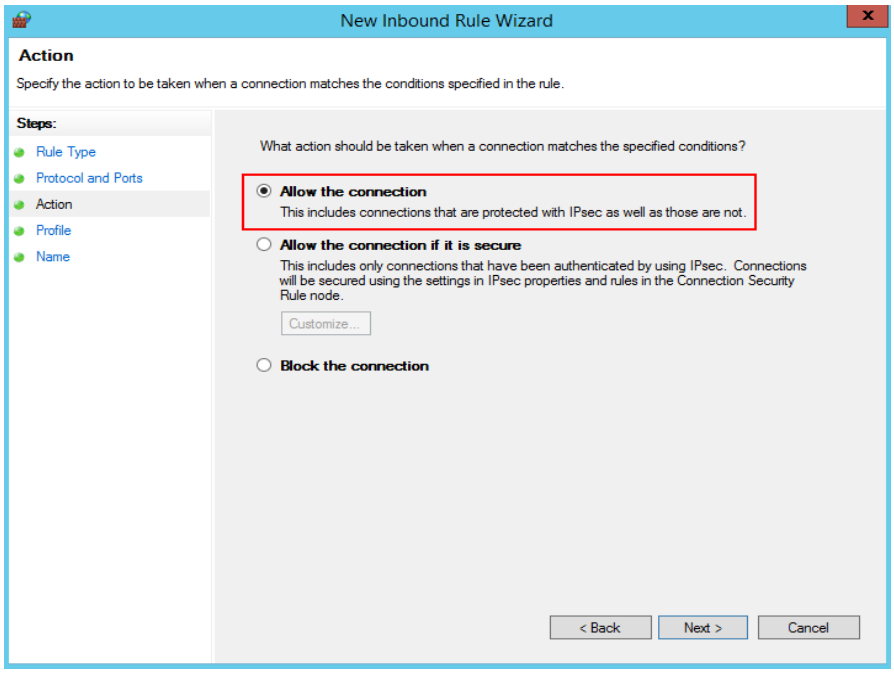
6. Set **Program** to **All programs** and click **Next**.
7. Set **Protocol type** to **TCP** and **Local port** to **Specific Ports**, enter port **5986**, and click **Next**.



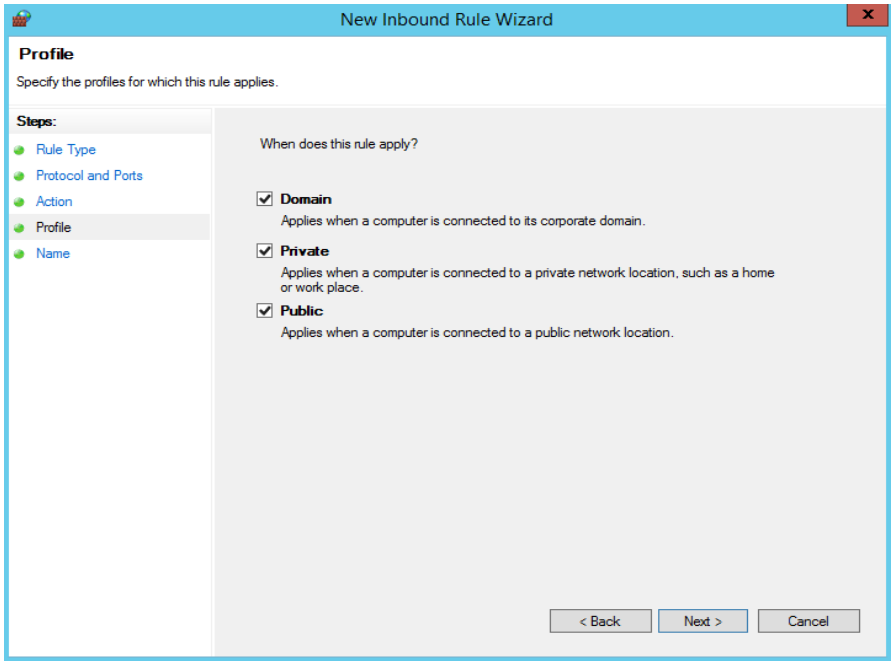
8. In the **Scope** area, select **Any IP address** for **Which local IP addresses does this rule apply to?** and select **These IP addresses** for **Which remote IP addresses does this rule apply to?**, enter a whitelisted IP address and click **Next**.



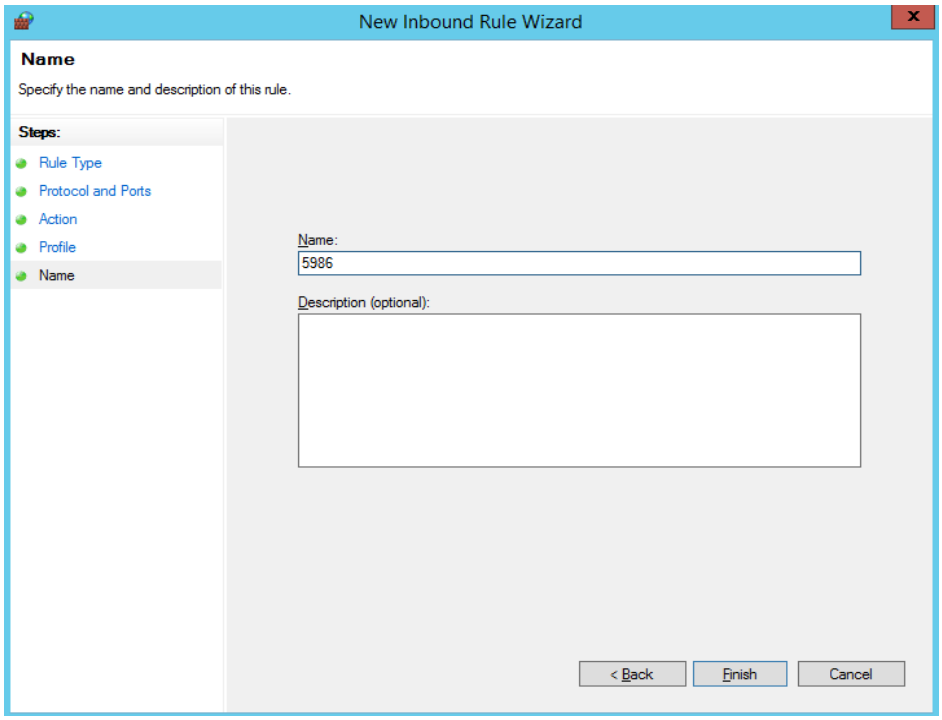
9. Select **Allow the connection**, and click **Next**.



10. Select all the options for **Profile** and click **Next**.



11. Enter a rule name and click **Finish** to complete the IP address access whitelist setting for the target host.



12. If you need to connect to the target host through a proxy host, repeat steps a to k to configure the IP address access whitelist on the proxy host. Add an inbound rule for the listening port of the proxy host, for example, port **54**.

----End

4.2.2 Adding a Target Host to a Host Cluster

This section describes how to add a target host to a host cluster.

Prerequisites

- A host cluster is available, and you have the permission to add hosts to the cluster.
- A host that meets the following requirements is available.
  - A public IP address has been bound.
  - A host is configured.
  - If you need to monitor a host, you need to create an agency for the host. For details, see **Creating an Agency**.

NOTE

This configuration has been completed for Huawei Cloud ECSs (Linux) by default. You do not need to configure it again. However, you need to configure it for Windows ECSs.

Adding a Target Host

Step 1 Go to the **Basic Resources** page.

Step 2 Click the name of the desired cluster to go to the **Target Hosts** tab page.

Step 3 Click **Add Host** and select **Adding IP** for **Add Hosts by**.

Step 4 Select **Direct Connection** for **Host Connection Mode** and add a target host. Enter the following information and click **OK**.

Table 4-2 Parameters of the target host (Linux)

Parameter	Mandatory	Description
Host Name	Yes	Enter a user-defined target host name. Enter 3 to 128 characters. Use digits, letters, hyphens (-), underscores (_), and periods (.).
IP	Yes	Enter the public IP address bound to the target host. IPv4 or IPv6 address is supported.
OS	Yes	The default value is the OS of the current host cluster and cannot be changed. Configure the target host by referring to **Configuring a Linux Host** to ensure successful connectivity verification.
Authorization	Yes	Select a **password** or **key** for authentication as required. • If you select **Password**, the **Username** and **Password** are displayed. Take ECS as an example. Enter the ECS username and password. • If you select **Key**, the **Username** and **Key** are displayed. For details about how to generate and obtain a key, see **Obtaining the Linux key**.
SSH Port	Yes	Port **22** is recommended. You may customize the port number.

Table 4-3 Parameters of the target host (Windows)

Parameter	Mandatory	Description
Host Name	Yes	Enter a user-defined target host name. Enter 3 to 128 characters. Use digits, letters, hyphens (-), underscores (_), and periods (.).
IP	Yes	Enter the public IP address bound to the target host. IPv4 or IPv6 address is supported.
OS	Yes	The default value is the OS of the current host cluster and cannot be changed. Configure the target host by referring to **Configuring the Host Running Windows** to ensure successful connectivity verification.

Parameter	Mandatory	Description
Authorization	Yes	Windows proxies support only password authentication. Take ECS as an example. Enter the ECS username and password.
Winrm Port	Yes	Port **5986** is recommended. You may customize the port number.

Step 5 Select **Proxy** for **Host Connection Mode** and add a proxy host and a target host. Enter the following information and click **OK**.

1. Add a proxy host.

Table 4-4 Parameters of the proxy host (Linux)

Parameter	Mandatory	Description
Host Name	Yes	Enter a user-defined proxy host name. Enter 3 to 128 characters. Use digits, letters, hyphens (-), underscores (_), and periods (.).
IP	Yes	Enter the public IP address bound to the proxy host. IPv4 or IPv6 address is supported.
OS	Yes	The default value is the OS of the current host cluster and cannot be changed. Configure the target host by referring to **Configuring a Linux Host** to ensure successful connectivity verification.
Authorization	Yes	Select a **password** or **key** for authentication as required. – If you select **Password**, the **Username** and **Password** are displayed. Take ECS as an example. Enter the ECS username and password. – If you select **Key**, the **Username** and **Key** are displayed. For details about how to generate and obtain a key, see **Obtaining the Linux key**.
SSH Port	Yes	Port **22** is recommended. You may customize the port number.

Table 4-5 Parameters of the proxy host (Windows)

Parameter	Mandatory	Description
Host Name	Yes	Enter a user-defined proxy host name. Enter 3 to 128 characters. Use digits, letters, hyphens (-), underscores (_), and periods (.).
IP	Yes	Enter the public IP address bound to the proxy host. IPv4 or IPv6 address is supported.
OS	Yes	The default value is the OS of the current host cluster and cannot be changed. Configure the target host by referring to **Configuring the Host Running Windows** to ensure successful connectivity verification.
Authorization	Yes	Windows proxies support only password authentication. Take ECS as an example. Enter the ECS username and password.
Winrm Port	Yes	Port **5986** is recommended. You may customize the port number.

2. Add a target host.

Table 4-6 Parameters of the target host (Linux)

Parameter	Mandatory	Description
Host Name	Yes	Enter a user-defined target host name. Enter 3 to 128 characters. Use digits, letters, hyphens (-), underscores (_), and periods (.).
Proxy Host	Yes	Select the target proxy host as the network proxy of the target host that cannot connect to the public network.
IP	Yes	Enter the IP address of the target host. IPv4 or IPv6 address is supported.
OS	Yes	The default value is the OS of the current host cluster and cannot be changed. Configure the target host by referring to **Configuring a Linux Host** to ensure successful connectivity verification.

Parameter	Mandatory	Description
Authorization	Yes	Select a **password** or **key** for authentication as required. – If you select **Password**, the **Username** and **Password** are displayed. Take ECS as an example. Enter the ECS username and password. – If you select **Key**, the **Username** and **Key** are displayed. For details about how to generate and obtain a key, see **Obtaining the Linux key**.
SSH Port	Yes	Port **22** is recommended. You may customize the port number.

Table 4-7 Parameters of the target host (Windows)

Parameter	Mandatory	Description
Host Name	Yes	Enter a user-defined target host name. Enter 3 to 128 characters. Use digits, letters, hyphens (-), underscores (_), and periods (.).
Proxy Host	Yes	Select the target proxy host as the network proxy of the target host that cannot connect to the public network.
IP	Yes	Enter the IP address of the target host. IPv4 or IPv6 address is supported.
OS	Yes	The default value is the OS of the current host cluster and cannot be changed. Windows: Configure the target host by referring to **Configuring the Host Running Windows** to ensure successful connectivity verification.
Authorization	Yes	Windows proxies support only password authentication. Take ECS as an example. Enter the ECS username and password.
Proxy Forwarding Port	Yes	Set this port to the listening port specified during **Configuring a Windows Proxy**. Port **54** is recommended. You can also use a custom port.

Step 6 To add your Huawei Cloud ECS as the target host or proxy host, click **Add Host**, and select **Importing ECS** for **Add Hosts by**.

The prerequisites for importing the purchased ECS are as follows:

- The ECS is running.

- The ECS and host cluster have the same OS.
- Proxy host has a public IP (proxy mode) when using official resource pool.
- The ECS has been imported as a target host. It cannot be imported as a proxy host.
- In the proxy mode, you need to configure the proxy host before using the target host.

Step 7 Verify the host connectivity.

After the host is added, the system automatically verifies the connectivity. If the connectivity verification fails, click **Failed** and rectify the fault based on the failure cause displayed in the dialog box or click **View Solution**.

----End

Configuring a Linux Host

To ensure that the connectivity verification of the Linux host is successful, ensure that **Python** is installed on the Linux host and the **SELinux mechanism** is enabled. The target host must meet the following requirements:

- **Install Python**

  Install **Python version 2.6** or later. If Python earlier than 2.6 has been installed, run the following commands to install the following modules on the host:

  – Ubuntu
  ```
  sudo apt install python-minimal python-simplejson
  ```
  – CentOS or EulerOS
  ```
  sudo yum install python-minimal python-simplejson
  ln -s /usr/bin/python2 /usr/bin/python
  ```

  NOTE

  Before using Advanced Packaging Tool (APT) or Yellowdog Updater Modified (yum), ensure that an available source has been configured.

- **Enable SELinux and install libselinux-python**

  a. Run the following command to check the SELinux status:
  ```
  /usr/sbin/sestatus
  ```

  NOTE

  Mode corresponding to the value of SELinux:

  SELinux=disabled: disabled.

  SELinux=enforcing: forcible mode, indicating that all behavior that violates the security policy are prohibited.

  SELinux=permissive: indicates that all behavior that violates security policies are not prohibited but are recorded in logs.

  b. If SELinux is set to disabled, SELinux is disabled on the host. In this case, perform the following steps to change the SELinux status.

  i. Run the following command to edit the config file of the SELinux:
  ```
  vi /etc/selinux/config
  ```
  ii. Modify the SELinux parameters based on the site requirements.

SELinux=enforcing: forcible mode, indicating that all behavior that violates the security policy are prohibited.

SELinux=permissive: indicates that all behavior that violates security policies are not prohibited but are recorded in logs.

iii. After the modification, press **Esc** to exit. Run the following command to save the file and exit.

```
wq
```

iv. Create the hidden file **.autorelabel** in the root directory, run the following command, and restart the Linux host.

```
touch /.autorelabel
```

c. Run the following commands to install **libselinux-python**:

- Ubuntu

```
sudo apt install libselinux-python
```

- CentOS or EulerOS

```
sudo yum install libselinux-python
```

Configuring the Host Running Windows

To ensure that the Window host connectivity verification succeeds, perform the following operations on target hosts. The following uses a Windows Server 2012 as an example. The configuration modes include **automatic script configuration** and **manual configuration**.

NOTE

To configure a host running Windows 10, Windows Server 2016 or Windows Server 2019 as a target host, see the configuration method of Windows Server 2012. For details about how to obtain the script, see **Windows2016ConfigureRemotingForAnsible.zip**.

For details about automatic configuration of a target host running Windows 7, see the configuration method of Windows 2012 and obtain the **script**.

- **Automatic Script Configuration**

To use an automatic configuration script to add a host running Windows Server 2012 as an authorized host, perform the following steps:

Step 1 Before configuring the script, check whether you have completed security settings by referring to **Configuring a Security Group**.

Step 2 Obtain the automatic configuration script.

1. Download **Windows2012ConfigureRemotingForAnsible.zip**.
2. Decompress **Windows2012ConfigureRemotingForAnsible.zip** to obtain script **Windows2012ConfigureRemotingForAnsible.ps1**.

Step 3 Configure the host.

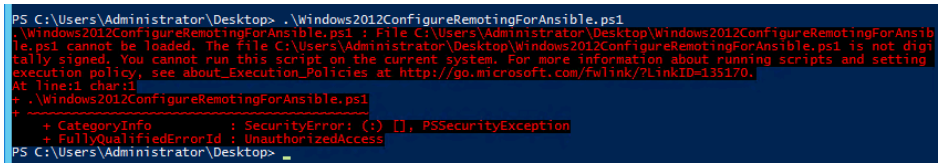
Log in to the host, open PowerShell, access the directory where script **Windows2012ConfigureRemotingForAnsible.ps1** is stored, and run the following command:

```
.\Windows2012ConfigureRemotingForAnsible.ps1
```

The output is as follows.

```
PS C:\Users\Administrator\Desktop> .\Windows2012ConfigureRemotingForAnsible.ps1
```


The system may display a message indicating that **the file cannot be loaded and a digital signature is required**.



This error occurs because the script cannot be executed in default mode of PowerShell. If this happens, run the following command in PowerShell to change the execution policy to **unrestricted**:

```
set-executionpolicy unrestricted
```

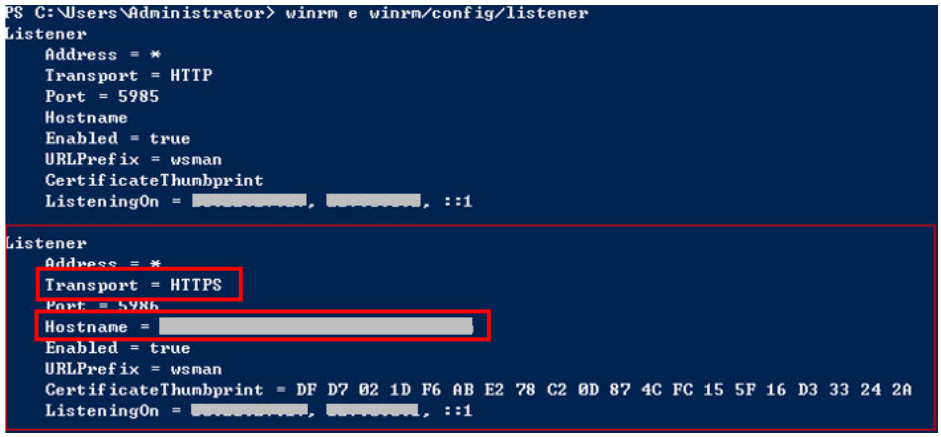
Enter **Y** to confirm the change.

Step 4 View the configuration.

Run the following command in PowerShell:

```
winrm e winrm/config/listener
```

If the output contains **HTTPS** and **Hostname** is not left blank, the listening is successful. The Windows Server 2012 deployment environment is automatically configured.



NOTE

If **Hostname** is left blank in the command output, the host does not have IIS or signature certificate information. In this case, run the following script:

```
# Configure WinRM.
winrm enumerate winrm/config/listener
winrm quickconfig
winrm set winrm/config/service/auth '@{Basic="true"}'
winrm set winrm/config/service/auth '@{CredSSP="true"}'
winrm set winrm/config/service '@{AllowUnencrypted="true"}'
# Install IIS.
Import-Module servermanager
Add-windowsfeature Web-Server,Web-WebServer,Web-Common-Http,Web-Static-Content,Web-Default-Doc,Web-Dir-Browsing,Web-Http-Errors,Web-App-Dev,Web-ASP,Web-ISAPI-Ext,Web-Health,Web-Http-Logging,Web-Log-Libraries,Web-Request-Monitor,Web-Security,Web-Filtering,Web-Stat-Compression,Web-Mgmt-Tools
# Create a self-signed certificate.
New-SelfSignedCertificate -CertStoreLocation Cert:\LocalMachine\My\ -DnsName 'windows-deploy-connect'
# View the self-signed certificate.
ls Cert:\LocalMachine\My
# Add a secure connection using the created self-signed certificate.
$windows_test_key=(Get-ChildItem -Path Cert:\LocalMachine\My | Where-Object {$_.Subject -match "windows-deploy-connect"}).Thumbprint
cmd /c "winrm set winrm/config/Listener?Address=*+Transport=HTTPS @{Enabled=`"true`";Port=`"5986`";Hostname=`"windows-deploy-connect`";CertificateThumbprint=`"$windows_test_key`"}"
```

----End

- **Manual Configuration**

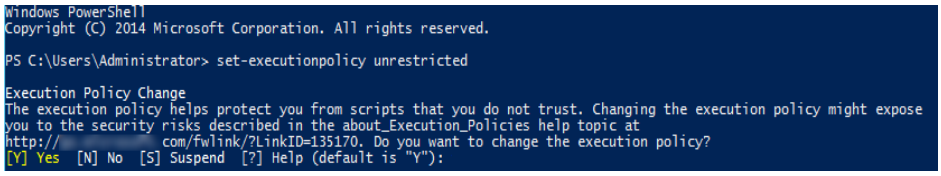
To manually add a host running Windows Server 2012 as an authorized host, perform the following steps:

Step 1 Change the PowerShell execution policy to **unrestricted**.

Open PowerShell as an administrator and run the following command:

```
set-executionpolicy unrestricted
```

The output is as follows.



Enter **Y** to confirm the change.

Step 2 Configure Windows remote management (WinRM).

1. Run the following commands in PowerShell:

   ```
   winrm enumerate winrm/config/listener
   winrm quickconfig
   winrm set winrm/config/service/auth '@{Basic="true"}'
   winrm set winrm/config/service/auth '@{CredSSP="true"}'
   winrm set winrm/config/service '@{AllowUnencrypted="true"}'
   ```

2. Run the following command to check whether the configuration is successful:

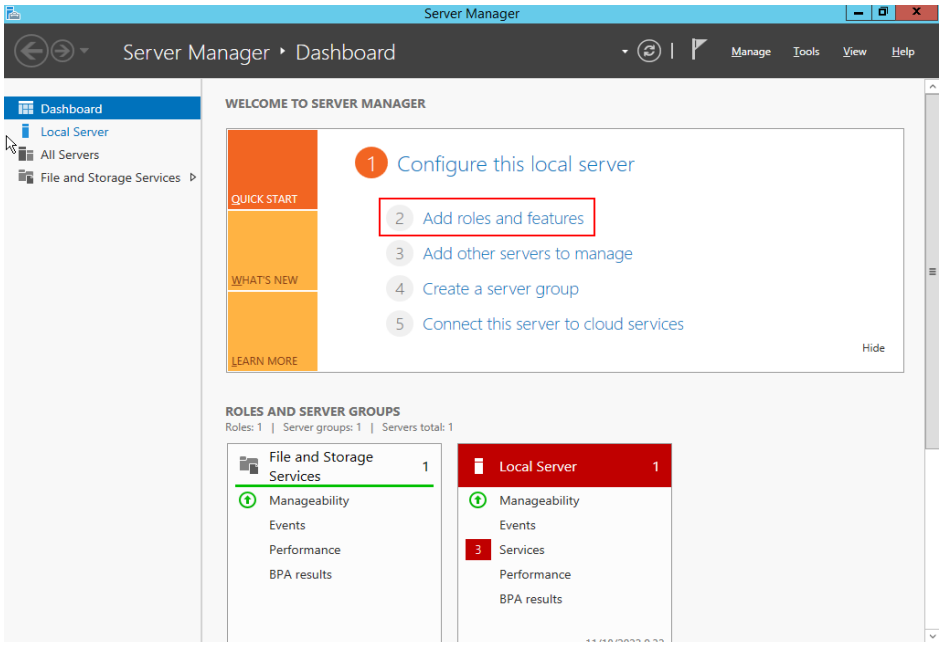
   ```
   winrm get winrm/config/service/auth
   ```

   If the values of **Basic**, **Kerberos**, and **CredSSP** are all **true**, the configuration is successful.

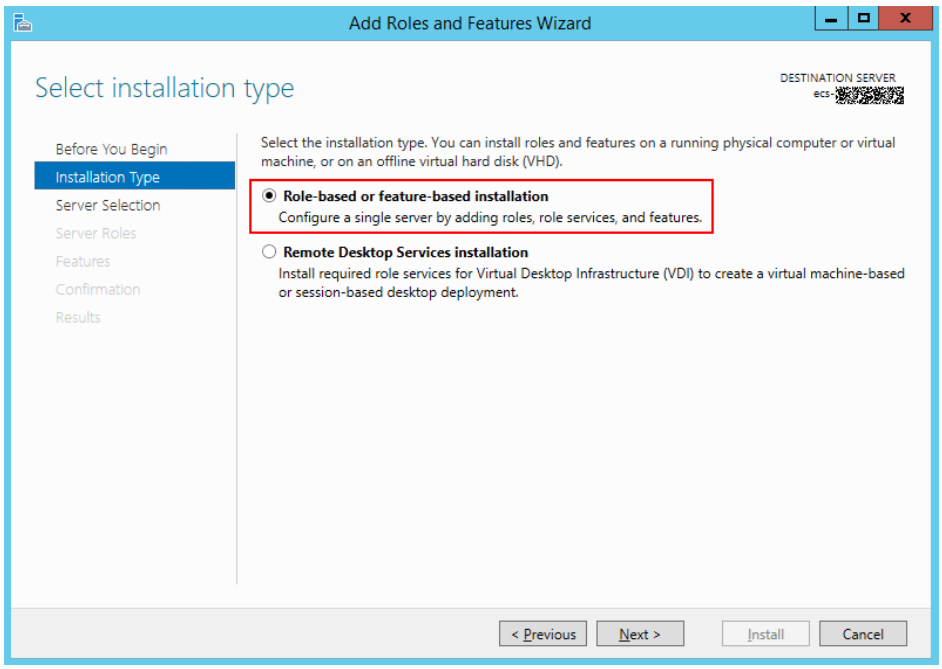

```
PS C:\Users\Administrator> winrm get winrm/config/service/auth
Auth
    Basic = true
    Kerberos = true
    Negotiate = true
    Certificate = false
    CredSSP = true
    CbtHardeningLevel = Relaxed
```

Step 3 Install the certificate.

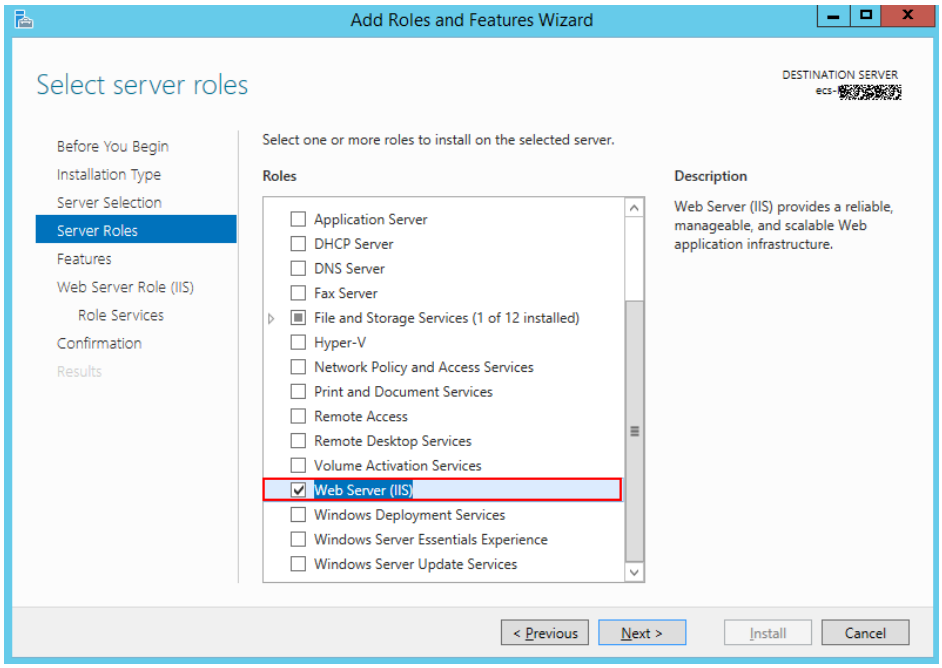
1. Open **Server Manager**, and start IIS.
2. Click **Add roles and features > Next**, as shown in the following figure.



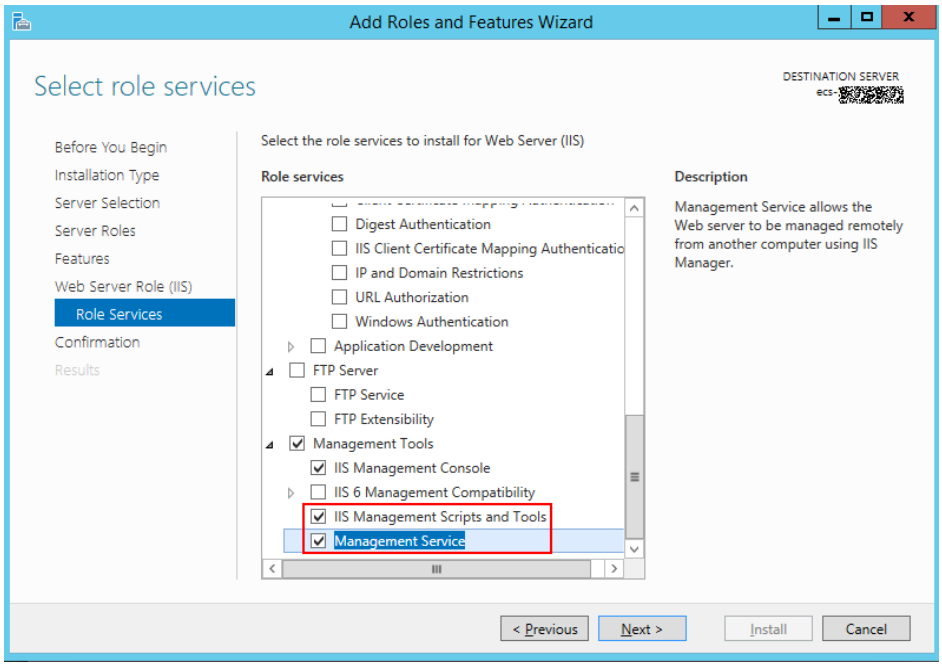
3. On the **Installation Type** page, select the first option and click **Next**.



4. Go to the **Server Roles** page and select **Web Server (IIS)**.

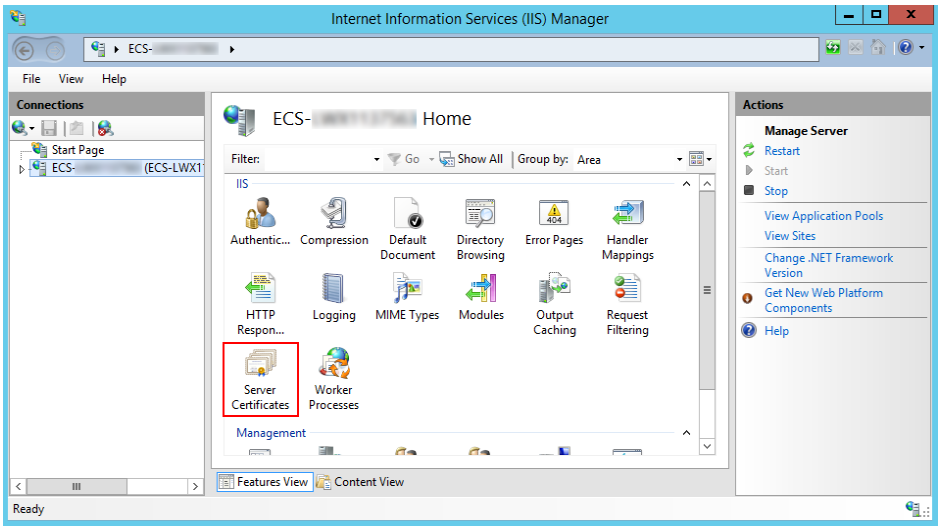


5. Go to the **Features** page, select **.NET Framework 4.5**, and click **Next**.
6. Go to the **Role Services** page, select **IIS Management Scripts and Tools** and **Management Service**, and click **Next** to complete the installation.

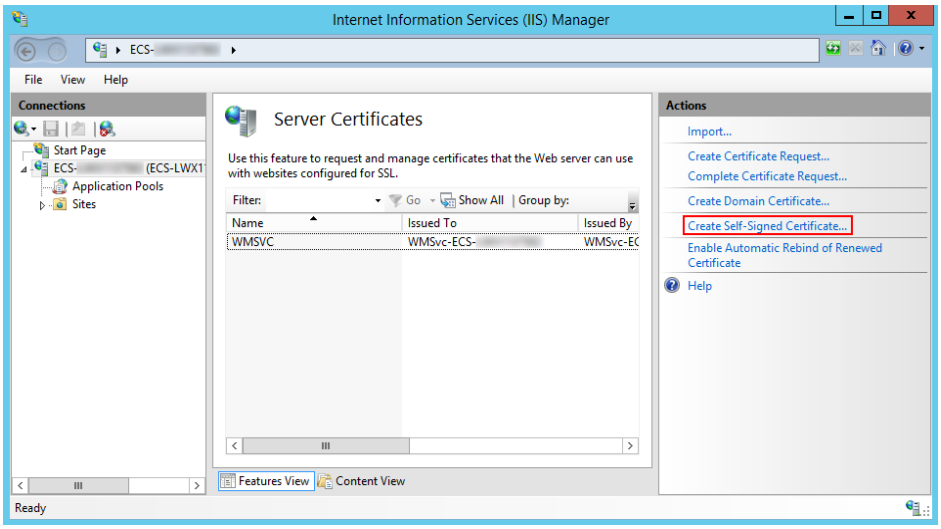


Step 4 Add a certificate.

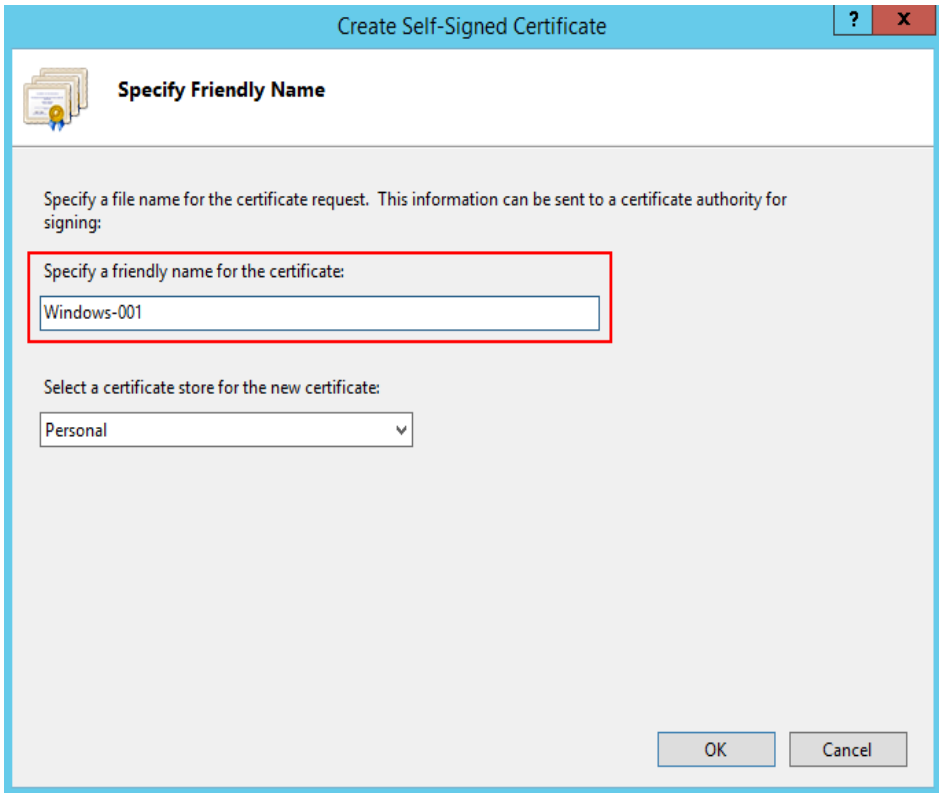
1. Press **Windows+R** to open the **Run** dialog box, enter the **inetmgr** command for opening the IIS management window, and click **OK**.
2. Open IIS Manager, and double-click **Server Certificates**.



3. On the **Server Certificates** page, click **Create Self-Signed Certificate**.



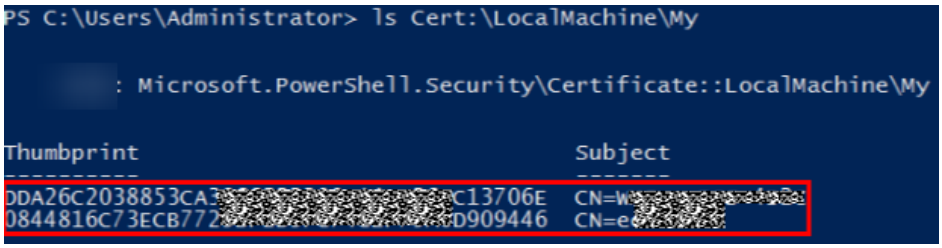
4. In the **Specify Friendly Name** dialog box, enter the certificate name and click **OK**.



5. Run the following command to view the certificate in PowerShell:

```
ls Cert:\LocalMachine\My
```

If the following two columns of data are displayed, the certificate is added.



6. Use the certificate to listen to the HTTPS port and configure a secure connection.

The commands are in the following format:

```
winrm create winrm/config/Listener?Address=*+Transport=HTTPS @{Port="User-defined port; default: 5986";Hostname="Certificate domain name";CertificateThumbprint="Certificate key value"}
```

NOTE

- **Hostname** is the value in the **Subject** column in the preceding step.
- **CertificateThumbprint** is the value behind "CN=" next to the **Thumbprint** column in the preceding step. Every two characters are separated by a space.

Enter the following commands in the command prompt, as shown in the following figure.

```
winrm create winrm/config/Listener?Address=*+Transport=HTTPS
@{Port="5986";Hostname="XXXXXXXXXXXXXXXX";CertificateThumbprint="DF D7 02 1D F6 AB E2 78 C2 0D 87 4C FC 15 5F 16 D3 33 24 2A"}
```


NOTE

Run the command in the command prompt and separate every two characters in the value of **Thumbprint** with a space. Otherwise, the connectivity verification may fail. If the characters are not separated by spaces, delete the signatures and add them again.

```
C:\Users\Administrator>winrm create winrm/config/Listener?Address=*+Transport=HT
TPS @{Port="5986" ;Hostname="[redacted]" ;CertificateThumbpr
int="DF D7 02 1D F6 AB E2 78 C2 0D 87 4C FC 15 5F 16 D3 33 24 2A"}
ResourceCreated
    Address = http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous
    ReferenceParameters
        ResourceURI = http://schemas.microsoft.com/wbem/wsman/1/config/listener
        SelectorSet
            Selector: Address = *, Transport = HTTPS

C:\Users\Administrator>_
```

NOTE

If the system displays a message indicating that the service cannot create the resource because it already exists, run the following command to delete the resource and perform this step again:

```
winrm delete winrm/config/Listener?Address=*+Transport=HTTPS
```

7. Run the following command to check whether the listening is successful in PowerShell:

```
winrm e winrm/config/listener
```

If the output contains **HTTPS**, the listening is successful.

```
PS C:\Users\Administrator> winrm e winrm/config/listener
Listener
    Address = *
    Transport = HTTP
    Port = 5985
    Hostname
    Enabled = true
    URLPrefix = wsman
    CertificateThumbprint
    ListeningOn = [redacted], ::1

Listener
    Address = *
    Transport = HTTPS
    Port = 5986
    Hostname = [redacted]
    Enabled = true
    URLPrefix = wsman
    CertificateThumbprint = DF D7 02 1D F6 AB E2 78 C2 0D 87 4C FC 15 5F 16 D3 33 24 2A
    ListeningOn = [redacted], ::1
```

Step 5 Before verifying the connectivity, check whether you have completed security settings by referring to **Configuring a Security Group**.

----End

Obtaining the Linux Key

Step 1 Check whether the key exists on the host.

Log in to the host and run the following command to switch to user **root**:

```
sudo su root
```

Run the following command to view the key file:

```
ls ~/.ssh
```

- If a message is displayed indicating that the directory does not exist or the **~/.ssh** directory does not contain the **id_rsa** file, **generate a key**.

- If the **id_rsa** file exists in the **~/.ssh** directory, use the existing key file or **generate a new one**.

Step 2 Generate a key.

Perform the following steps:

1. Generate a key.
   ```
   ssh-keygen -t rsa
   ```
2. When the following information is displayed, press **Enter**.
   ```
   Enter file in which to save the key (/root/.ssh/id_rsa):
   ```
3. When the following information is displayed, press **Enter**. By default, no password is set. (Setting the password will fail the key verification of CodeArts Deploy.)
   ```
   Enter passphrase (empty for no passphrase):
   ```
4. When the following information is displayed, press **Enter**.
   ```
   Enter same passphrase again:
   ```
5. If the following information is displayed, the key has been generated:
   ```
   Your identification has been saved in /root/.ssh/id_rsa.
   Your public key has been saved in /root/.ssh/id_rsa.pub.
   The key fingerprint is:
   SHA256:pk3di9lcxFJ[redacted] root@host-[redacted]
   The key's randomart image is:
   +---[RSA 2048]----+
   |           . o.o.|
   |          . ++B .|
   |         . ..+++o|
   |        .... +o..|
   |        S.oo+..  |
   |       =  +X.E   |
   |      . o +=Bo   |
   |     . + o *= .  |
   |    ..=.. +++    |
   +----[SHA256]-----+
   [root@host-[redacted] ~]# _
   ```
6. Run the following command to check the key file generated in the **.ssh** directory. The **id_rsa** and **id_rsa.pub** files store the generated private key and public key, respectively.
   ```
   ls ~/.ssh
   ```
   ```
   [root@host-[redacted] ~]# ls ~/.ssh
   authorized_keys  id_rsa  id_rsa.pub
   [root@host-[redacted] ~]# _
   ```

Step 3 Check information about the key generated.

Run the following command:
```
cat ~/.ssh/id_rsa
```

- If the key prefix is **-----BEGIN RSA PRIVATE KEY-----**, the key is correct. Copy the key and save it to the local PC. Enter the key when adding a host or proxy.
- If the key prefix is **-----BEGIN OPENSSH PRIVATE KEY-----**, the key is incorrect. Run the following command to generate a new key:
  ```
  ssh-keygen -m PEM -t rsa
  ```

Step 4 Authorize the key.

Run the following command to add the public key to the **authorized_keys** file of the host:

```
cat ~/.ssh/id_rsa.pub >> ~/.ssh/authorized_keys
```

NOTE

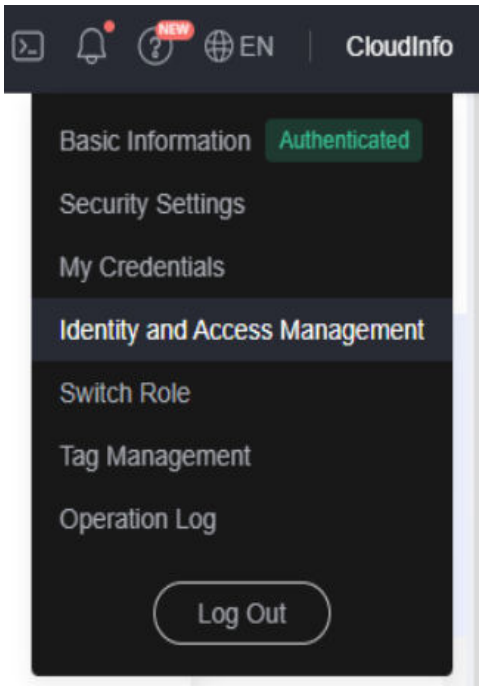
- To perform operations on the **authorized_keys** file, you must have the permission to operate the **id_rsa** and **id_rsa.pub** files.
- When the key is used for connectivity verification, the username must be the name of the user who operates the **authorized_keys** file.
- Do not copy unnecessary spaces when manually copying the key. Otherwise, the connectivity verification may fail.

----End

Creating an Agency

Step 1 Log in to the Console.

Step 2 Move the cursor to the username in the upper right corner, as shown in the following figure, and click **Identity and Access Management**.



Step 3 Click **Agencies** in the navigation tree on the left. The **Agencies** page is displayed.

Step 4 Click **Create Agency** in the upper right corner. The **Create Agency** page is displayed.

Step 5 Set the parameters by referring to Table 1.

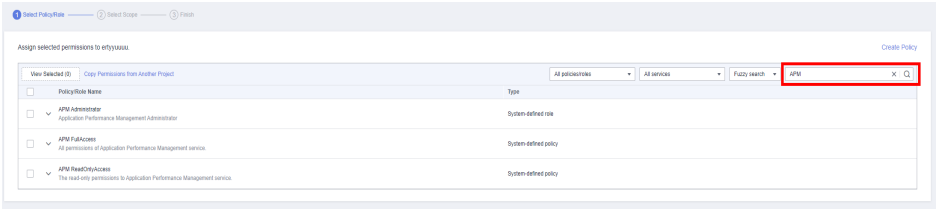
Table 4-8 Agency parameters

Name	Description	Example
Agency Name	Name of the agency. Mandatory.	aom_ecm_trust
Agency Type	Select **Cloud service**.	-

Name	Description	Example
Cloud Service	Select **Elastic Cloud Server (ECS) and Bare Metal Server (BMS)** from the drop-down list.	-
Validity Period	Select **Unlimited**.	-
Description	This parameter is optional. Provides supplementary information about the agency.	-

Step 6 Click **Done**. The **Authorize Agency** page is displayed.

Step 7 Enter **APM** in the search box in the upper right corner and select **APM Administrator** in the search result.

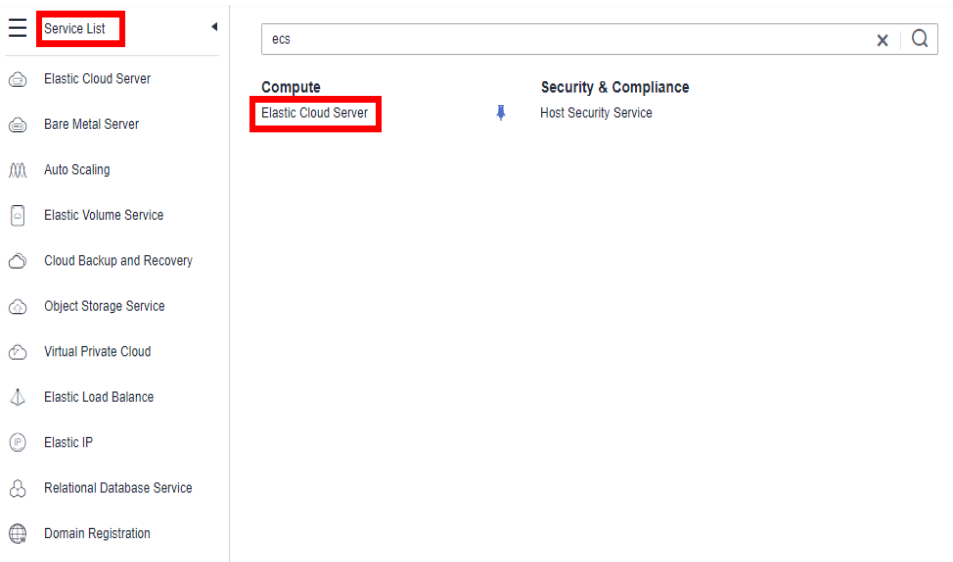


Step 8 Click **OK** and the agency is successfully created.

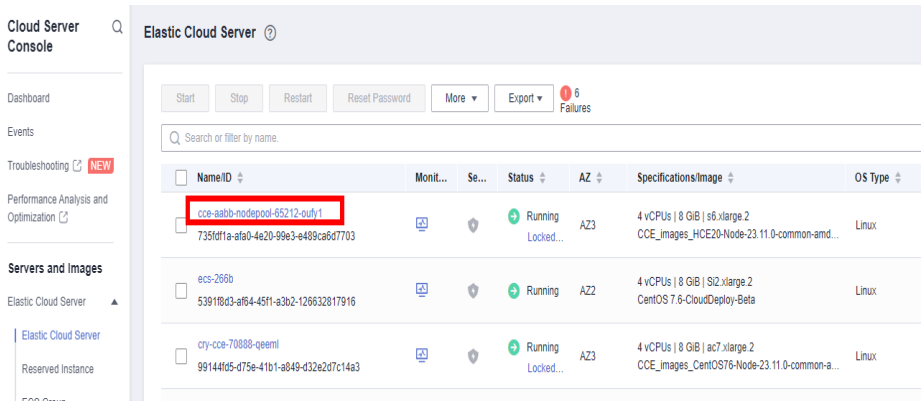
----End

Selecting an Agency

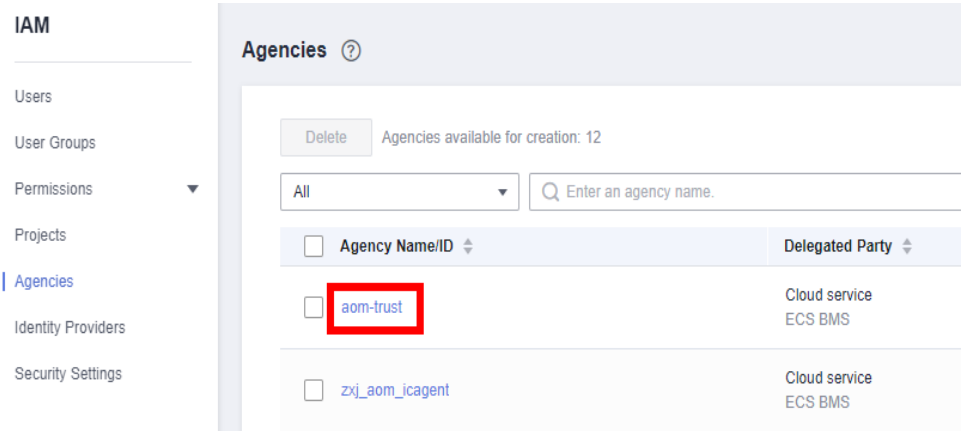
Step 1 In the navigation pane, choose **Services List** > **Elastic Cloud Server**.



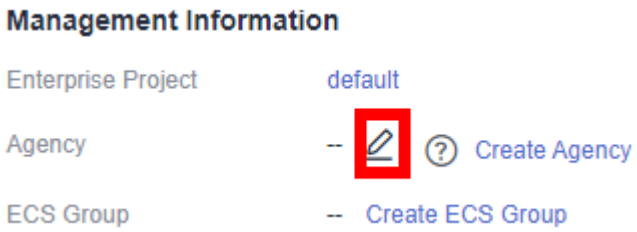
Step 2 Click the name of the ECS for which AOM monitoring is to be enabled. The ECS parameter configuration page is displayed, as shown in the following figure. By default, the search box searches for and filters data by name.



Step 3 Click the ID of the agency to be delegated, as shown in the following figure.



Step 4 Click  . The configuration takes effect after confirmation, as shown in the following figure.



----End

4.2.3 Adding a Proxy Host to a Host Cluster

This section describes how to add a proxy host to a host cluster.

Prerequisites

- A host cluster is available, and you have the permission to add hosts to the cluster.

- A host bound with a public IP address is available.

Adding a Proxy Host

Step 1 Go to the **Basic Resources** page.

Step 2 Click the name of the desired cluster to go to the **Target Hosts** tab page.

Step 3 Click **Add Host** and select **Adding IP** for **Add Hosts by**.

Step 4 Select **Proxy** for **Host Connection Mode** to add a proxy host. Enter the following information and click **OK**.

Table 4-9 Parameters of the proxy host (Linux)

Parameter	Mandatory	Description
Host Name	Yes	Enter a user-defined proxy host name. Enter 3 to 128 characters. Use digits, letters, hyphens (-), underscores (_), and periods (.).
IP	Yes	Enter the public IP address bound to the proxy host. IPv4 or IPv6 address is supported.
OS	Yes	The default value is the OS of the current host cluster and cannot be changed. Configure the target host by referring to **Configuring a Linux Host** to ensure successful connectivity verification.
Authorization	Yes	Select a **password** or **key** for authentication as required. • If you select **Password**, the **Username** and **Password** are displayed. Take ECS as an example. Enter the ECS username and password. • If you select **Key**, the **Username** and **Key** are displayed. For details about how to generate and obtain a key, see **Obtaining the Linux key**.
SSH Port	Yes	Port **22** is recommended. You may customize the port number.

Parameter	Mandatory	Description
Install AOM ICAgent for metric monitoring, log query, and alarm functions on Huawei Cloud Linux hosts. Configure an agency before installation.	No	If the checkbox is selected, you can install and use AOM-ICAgent on your hosts for free for metric monitoring, log query, and alarm functions. ICAgent applies only to Huawei Cloud Linux hosts. Before installing ICAgent, configure an agency by referring to **Creating an Agency**.

Table 4-10 Parameters of the proxy host (Windows)

Parameter	Mandatory	Description
Host Name	Yes	Enter a user-defined proxy host name. Enter 3 to 128 characters. Use digits, letters, hyphens (-), underscores (_), and periods (.).
IP	Yes	Enter the public IP address bound to the proxy host. IPv4 or IPv6 address is supported.
OS	Yes	The default value is the OS of the current host cluster and cannot be changed. Configure the target host by referring to **Configuring the Host Running Windows** to ensure successful connectivity verification.
Authorization	Yes	Windows proxies support only password authentication. Take ECS as an example. Enter the ECS username and password.
Winrm Port	Yes	Port **5986** is recommended. You may customize the port number.

Step 5 To add your Huawei Cloud ECS as the target host or proxy host, click **Add Host**, and select **Importing ECS** for **Add Hosts by**.

CAUTION

The following requirements are mandatory for you to import the purchased ECS:

- The ECS is running.
- The ECS and host cluster have the same OS.
- Proxy host has a public IP (proxy mode) when using official resource pool.
- The ECS has been imported as a target host. It cannot be imported as a proxy host.

In the proxy mode, you need to configure the proxy host before using the target host.

Step 6 Verify the host connectivity.

After the host is added, the system automatically verifies the connectivity. If the connectivity verification fails, click **Failed** and rectify the fault based on the failure cause displayed in the dialog box or click **View Solution**.

----End

Configuring a Linux Proxy

Required Resources

You have configured the following resources in a Virtual Private Cloud (VPC):

Resource Type	Supported Resource Specifications	Quantity	Description
EIP	Bandwidth ≥ 5 Mbit/s	2	1. When creating a proxy, you need to add an ECS bound to an elastic IP address as the proxy. 2. When creating an SNAT gateway, you need to bind an EIP to it.

Procedure

Step 1 Enable the SSH forwarding function of the proxy.

- If the proxy mode is used, run the following command to check whether **AllowTcpForwarding** has been enabled for SSH on the proxy:

```
grep AllowTcpForwarding "/etc/ssh/sshd_config"
```

- If the value is **no**, set it to **yes** and run the following command to restart the sshd service:

```
service sshd restart
```

Step 2 Configure SNAT for the proxy:

1. Click ☰ in the upper left corner and choose **Networking** > to access the console.
2. On the NAT Gateway console, click **Buy Public NAT Gateway**.
3. Click Next. For details about the costs incurred during this process, see .
4. After the NAT gateway is created, return to the NAT gateway list and click the target NAT gateway.
5. On the NAT gateway details page, click the **SNAT Rules** tab, click **Add SNAT Rule**, configure required parameters, and click **OK**.
6. Check whether the SNAT rule is added.

Step 3 Check routing policies.

1. Go to the console. In the upper left corner of the page, click ☰ and choose **Networking** > **Virtual Private Cloud** to access the network console.
2. Choose **Virtual Private Cloud** > **Route Tables** and click the target route table.

   Check the route information.

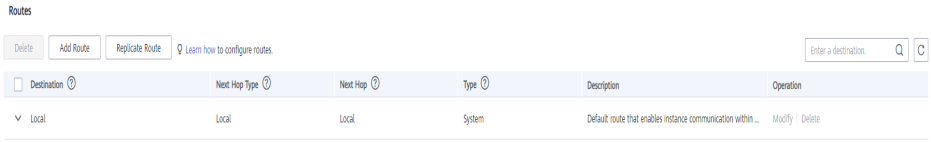


Table 4-11 Description of route information

Route Information	Description
Destination	Destination CIDR block. The default value is **0.0.0.0/0**. Select the IP address for the access environment based on project requirements.
IP Addresses	Click to check detailed information about the IP addresses.
Next Hop Type	Set it to **NAT gateway**.
Next Hop	Set it to the public NAT gateway that you have added the SNAT rule to.
Type	**System**: A system route is automatically added by the system and cannot be modified or deleted. **Custom**: A user-defined route is added by a user to direct traffic to a desired destination, and can be modified and deleted. The destination of a custom route cannot overlap with that of a system route.
Description	Description of the route.

Route Information	Description
Operation	You can modify and delete routes.

----End

Configuring a Windows Proxy

Required Resources

- A Windows host is available.
- The network connection between the proxy and hosts is normal.

Procedure

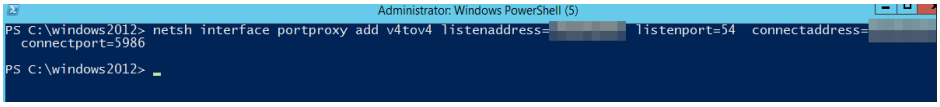
Step 1 Log in to the proxy, open PowerShell, and run the **netsh** command. Replace the parameters based on the parameter descriptions.

```
netsh interface portproxy add v4tov4 listenaddress=${proxy_ip}  listenport=${proxy_port}  connectaddress=${host_ip}  connectport=${host_port}
```

For IPv6 hosts, replace **v4tov4** in the following command with **v6tov6**.

Table 4-12 Parameters

Parameter	Description
${proxy_ip}	Private IP address of the proxy.
${proxy_port}	Listening port of the proxy, for example, **54**.
${host_ip}	Private IP address of the host.
${host_port}	Port of the host. Generally, the port is **5986**.



Step 2 Enable the proxy listening port, that is, *${proxy_port}* in the preceding command. For details, see **Configuring a Security Group**.

----End

4.3 Deleting a Host Cluster

Prerequisites

- You have the permission to delete host clusters. For details, see the host cluster permissions table in **Purchasing and Authorizing CodeArts Deploy**.

- If the target cluster contains resources, clear all resources in it before you delete the cluster.

Deleting a Host Cluster

Step 1 Go to the host cluster page.

- In the target project, choose **Settings** > **General** > **Basic Resources**. The **Host Clusters** page is displayed.
- Choose **CICD** > **Deploy**. Click **Basic Resources**. The **Host Clusters** page is displayed by default.

Step 2 Delete the host cluster.

- Click *** in the **Operation** column of a cluster, click **Delete**, and click **OK**.

----End

5 Creating and Deploying an Application with a Blank Template

5.1 Creating an Application with a Blank Template

Prerequisites

CodeArts Deploy supports deployment on hosts, containers, microservices, and functions. This section describes how to create and maintain an application.

- You have permissions to create applications. For details, see **Application Permission Matrix**.
- A project is available. If no project is available, **create one**.

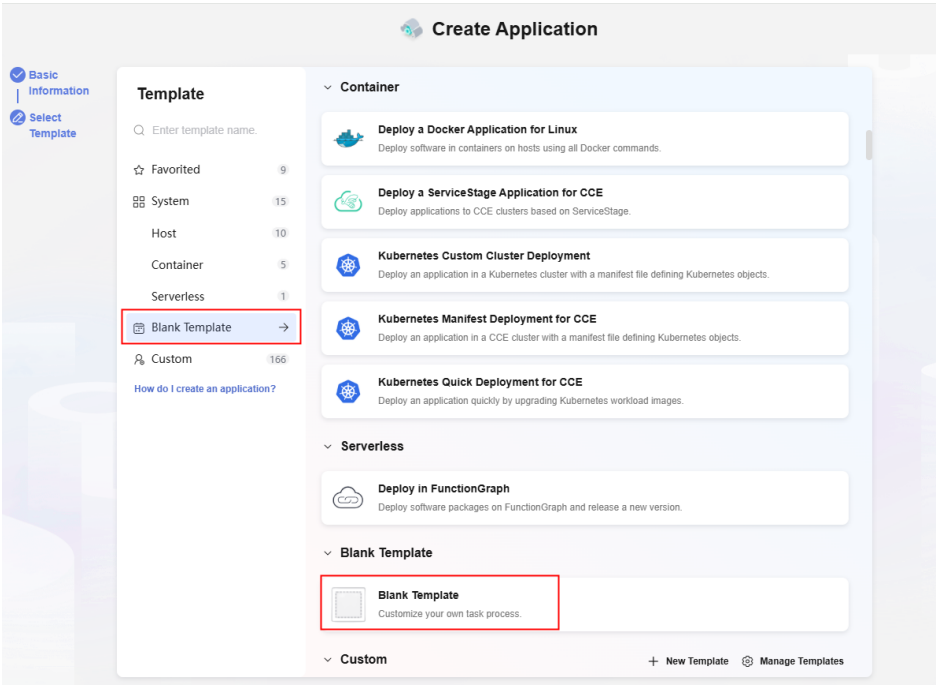
Creating an Application

Step 1 Go to the CodeArts homepage and click the target project name to access the project.

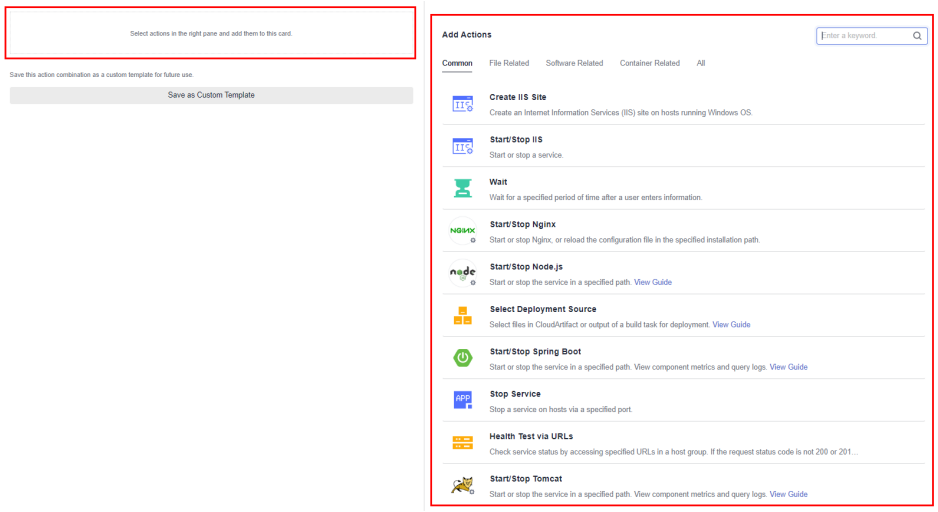
Step 2 Choose **CICD** > **Deploy**.

Step 3 Click **Create Application**. On the displayed **Basic Information** page, modify the basic information such as **Name**, **Execution Resource Pool**, and **Description** as required. For details, see **Editing Basic Information**.

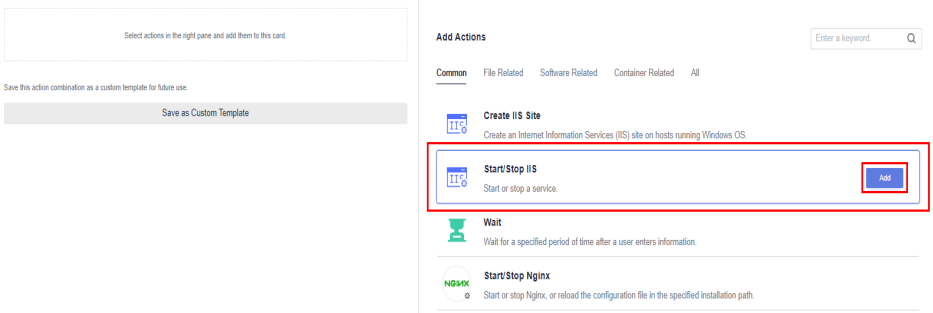
Step 4 After editing the basic application information, click **Next**. On the deployment template selection page that is displayed, select **Blank Template** and click **OK**.



The **Deployment Actions** page is displayed. The left pane is the action orchestration area, and the right pane is the list of actions.



Step 5 On the right list, click **Add** of the target action to add the action to the orchestration area.



Step 6 (Optional) Configure application information.

1. Click  above or below an added action. All actions that can be added are displayed in the right pane. You can add an action before or after the current action.
   - You can drag, add, and delete actions in the action orchestration area.
   - Click **Save as Custom Template** to save the current application as a custom template. The template is displayed in **Custom**.
2. After adding an action, configure the action information. For details, see **Configuring Application Deployment Actions**.
3. After the action information is configured, switch to the **Basic Information** tab page and click **Edit** to edit the basic information as required. For details, see **Editing Basic Information**.
4. Switch to the **Parameters** tab page, and create custom parameters as required. For details, see **Editing Parameters**.
5. Switch to the **Environment Management** tab page, and create and manage environments as required. For details, see **Configuring an Environment**.
6. Switch to the **Permissions** tab page and configure role permissions as required. For details, see **Configuring Permissions for Different Roles**.
7. Switch to the **NotificationsNotifications** page to notify users of application events they favorited through emails. For details, see **Configuring System Notifications**.

Step 7 After configuring all information, click **Save**.

----End

Editing Basic Information

Step 1 Select the target application, click , and click **Edit**. The **Deployment Actions** page is displayed.

Step 2 Click **Basic Information** to edit **Execution Resource Pool**, **Name**, and **Description** as required.

Table 5-1 Parameters

Parameter	Mandatory	Description
Name	Yes	Enter the application name. The value contains 3 to 128 characters, including letters, digits, hyphens (-), and underscores (_).
Project	Yes	Retain the default value. Project to which an application belongs. If your account does not have a project, click **Create Project** and click **Scrum** to create one.

Parameter	Mandatory	Description
Description	No	Enter the application description. The value contains a maximum of 1,024 characters.
Execution Resource Pool	Yes	Official resource pool is selected by default. A resource pool is a collection of physical environments where commands are executed during software package deployment. You can use an **official resource pool** hosted by Huawei Cloud or host your own servers as a **self-hosted resource pool** on Huawei Cloud. For details about hosting your own servers, see **Creating a Self-hosted Resource Pool**. If the tenant account has enabled **Intranet Secure Access** (only for whitelisted users), the self-hosted resource pool is selected by default and cannot be changed.
Deploy from Pipeline	No	Toggling on the switch indicates that this application can run only in a pipeline. It cannot run independently.

Step 3 Click **Save**.

----End

Managing Groups

Users can manage applications of the same features by sorting applications to user-defined groups based on functions or organizations. For example, applications can be classified into multiple categories based on functions and features, such as purchase group, order group, and user management group.

By default, only the project creator, project admin, project manager, system engineer, committer and developer have the group management permissions. The project creator and project manager can assign the group management permission to other roles.

Step 1 Go to the CodeArts homepage and click the target project name to access the project.

Step 2 Choose **CICD** > **Deploy**.

Step 3 Move the cursor to **All Groups**. The icon is displayed. Click to expand the deployment group panel.

Step 4 Click . The **Manage Groups** dialog box is displayed.

Step 5 Move the cursor to the row where **All Groups** is located and click .

Step 6 Enter the group name. Click to create the group or click to cancel.

After the group is created, you can perform the following operations:

- Click + in the row where the group is located to create a subgroup. You can create a maximum of three levels of subgroups.
- Click ✎ in the row where the group is located to change the group name.
- Click ··· in the row where the group is located to move or delete the group.

NOTE

After the first group is created, an **Ungrouped** group is automatically generated. New applications and ungrouped applications are automatically added to the **Ungrouped** group. If no group is selected when creating an application, the newly created and ungrouped applications are automatically added to **Ungrouped**.

Step 7 After groups are created, click **Close** to return to the application list page. You can move applications to the corresponding groups as required.

1. Select the applications to be grouped. The following dialog box is displayed at the bottom of the page.
2. Click **Move To**. The **Move Group** dialog box is displayed. You can move the application to the corresponding group.

----End

Favoriting an Application

If there are many applications in the application list, you can favorite an application to pin it on the top of the application list. If you favorite multiple applications, the applications are displayed on the top from newest to oldest based on the time when they are favorited.

On the **Applications** page, click ☆ next to the target application to favorite it.

Cloning an Application

You can clone an application without affecting the original application.

On the **Applications** page, click ··· next to the target application and click **Clone**. The **Deployment Actions** page is displayed. Click **Basic Information** to change the application name and click **Save**.

Deleting an Application

You can delete an application that is no longer needed.

On the **Applications** page, click ··· next to the target application and click **Delete**. In the displayed dialog box, enter the application name and click **Yes**.

CAUTION

Note that the application cannot be restored after being deleted.

5.2 Configuring Application Deployment Actions

5.2.1 Configuring Deployment Actions for Software Installation

5.2.1.1 Installing IIS

This action aims to install Internet Information Services (IIS) on environments. The following table shows the configuration.

Table 5-2 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Select a host cluster as the deployment object.
Action Control	You can configure whether to enable this setting. **Keep running on failure**: whether to continue the task even if this action fails.

NOTE

Installing IIS service does not support Windows 7 and Windows 10.

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.1.2 Installing/Uninstalling Docker

Install or uninstall the Docker environment on hosts.

Table 5-3 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()

Parameter	Description
Environment	Select a host cluster as the deployment object.
Operation	Select **Install Docker** or **Uninstall Docker**. **NOTE** The Docker service supports only users with the sudo permission. This installation will overwrite the previous Docker version.
Docker Version	Target version of Docker to be installed.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

5.2.1.3 Installing Go

This action aims to install Go on a host. The following figure shows the configuration page.

Table 5-4 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,:./()
Environment	Select a host cluster as the deployment object.
Go Version	GO version.
Installation Path	Installation path of Go.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.1.4 Installing PHP

This action aims to install PHP on a host. The following figure shows the configuration page.

Table 5-5 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,:./()
Environment	Select a host cluster as the deployment object.
PHP Version	PHP version.
Installation Path	Installation path of PHP.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.1.5 Installing Python

This action aims to install Python on a host. The following figure shows the configuration page.

Table 5-6 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,:./()
Environment	Select a host cluster as the deployment object.
Python Version	Python version.
Installation Path	Installation path of Python.

Parameter	Description
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.1.6 Installing Nginx

This action aims to install Nginx on a host. The following figure shows the configuration page.

Table 5-7 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_;:./()
Environment	Select a host cluster as the deployment object.
Nginx Version	Nginx version.
Installation Path	Installation path of Nginx.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.1.7 Installing JDK

This action aims to install JDK on a host. The following figure shows the configuration page.

Table 5-8 Parameters for installing JDK

Parameter	Mandatory	Description
Action Name	Yes	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Yes	Select a host cluster as the deployment object.
JDK Version	Yes	JDK version.
Installation Path	Yes	Installation path of JDK.
Action Control	No	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

NOTE

When purchasing a Huawei Cloud ECS, you are advised to select CentOS, Ubuntu, or Huawei Cloud EulerOS based on Arm. EulerOS based on Arm does not have the yum source of openjdk-11.

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.1.8 Installing Tomcat

This action aims to install Tomcat on a host. The following figure shows the configuration page.

Table 5-9 Parameters for installing Tomcat

Parameter	Mandatory	Description
Action Name	Yes	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Yes	Select a host cluster as the deployment object.

Parameter	Mandatory	Description
Tomcat Version	Yes	Version of Tomcat to be installed.
Installation Path	Yes	Installation path of Tomcat.
HTTP Port	Yes	Default port: **8080**
AJP Port	Yes	Default port: **8009**
Service Shutdown Port	Yes	Default port: **8005**
Action Control	No	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.1.9 Installing Node.js

This action aims to install Node.js on a host. The following figure shows the configuration page.

Table 5-10 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,:./()
Environment	Select a host cluster as the deployment object.
Node.js Version	Node.js version.
Installation Path	Installation path of Node.js.

Parameter	Description
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.2 Configuring Deployment Actions for Containers

5.2.2.1 Deploying on Kubernetes

This step uses kubectl commands to control your Kubernetes cluster and perform deployment operations. Currently, deployment on Kubernetes consists of the following three phases. Select a proper solution based on project requirements.

- **Deploying an Application in Kubernetes (CCE Cluster) Using Manifest**
- **Deploying an Application in Kubernetes (CCE Cluster) Quickly**
- **Deploying an Application with a Custom Kubernetes Cluster**

5.2.2.2 Deploying an Application in Kubernetes (CCE Cluster) Using Manifest

This section introduces how to deploy an application in a Huawei Cloud CCE cluster with manifest file defining Kubernetes objects.

Prerequisites

A **CCE cluster** is available.

Procedure

Table 5-11 Parameters

Parameter	Description
Action Name	This parameter is mandatory. After the action name is added, it will be displayed in the **Deployment Actions** orchestration area. **NOTE** The action name can contain 1 to 128 characters, including letters, digits, hyphens (-), underscores (_), commas (,), semicolons (;), colons (:), slashes (/), parentheses, and spaces. However, it cannot start or end with a space.
Manifest File Source	This parameter is mandatory. **Artifact**, **Repo**, or **obs** can be selected.

Parameter	Description
Manifest File	This parameter is mandatory. • If the **Manifest File Source** is **Artifact** or **OBS**, select the **Manifest Files** to be deployed. Files must be suffixed with .yaml, .yml, or .json. Click  . On the file selection page that is displayed, select a **Manifest File** to be deployed in **Artifact**. By default, the project cannot be changed. You can search for the manifest file by keyword or upload the local manifest file to the repository, click  , refresh the repository file, and select a manifest file. Click  . • If the **Manifest File Source** is **Repo**, enter file name suffixed with .yaml, .yml, or .json, and click  to edit the file.
Tenant	This parameter is mandatory. There are two options: • **Current**: The software package is deployed in the CCE cluster of the current tenant for release. Select **Current**. The current tenant must have the CCE cluster operation permission. If the current tenant does not have the CCE cluster operation permission, select **IAM authorization** for deployment. • **Other**: The software package is deployed and published in the CCE cluster of another tenant in IAM authorization mode. If you select **Other**, you must select an authorized tenant to deploy the CCE cluster. **NOTE** You are advised to configure the AK/SK of a member account that has the **CCE cluster operation permission** and not advised to configure the AK/SK of a tenant account.
IAM authorization	This parameter is optional. If you do not have the permission to execute an API, this parameter enables you to obtain the temporary AK/SK of the parent user to execute the CCE API through IAM.
Region	Select the region to be deployed.
Cluster Name	Select the Kubernetes cluster applied for on CCE.
Namespace	Select the namespace of the Kubernetes cluster on CCE.
Action Control	Continue the task even if this action fails.
Overtime	Maximum execution duration of an action, in minutes. If the task duration exceeds the specified time before you stop the application, the action will be timed out. Value range: 1–30

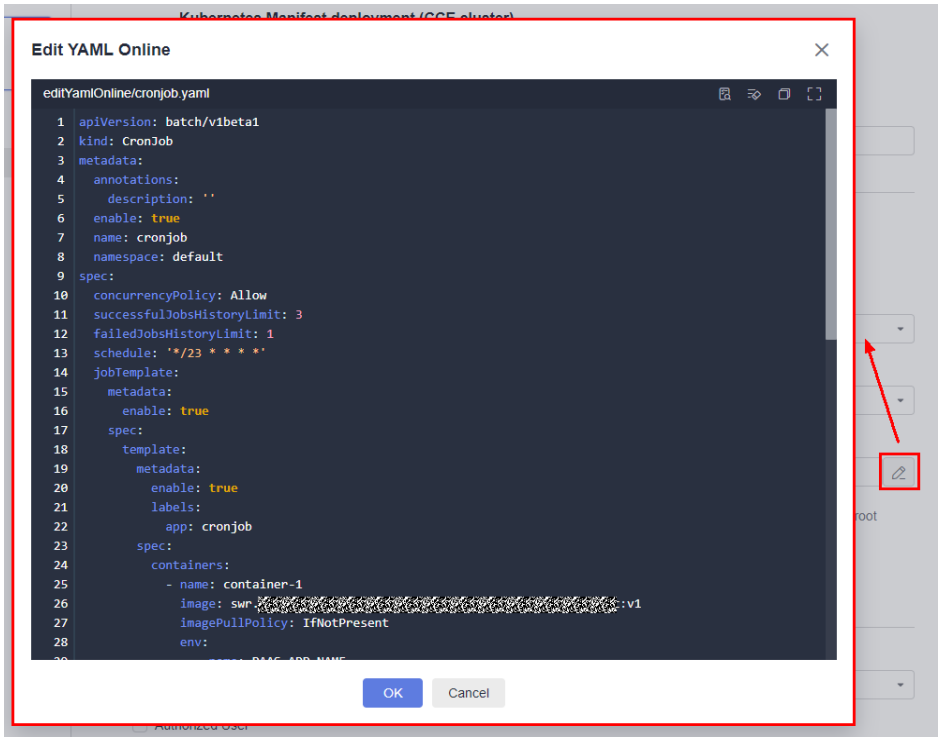
Online Manifest File Editing

When **File Source** is set to **Repo**, you can edit the manifest file online. Click the icon next to **Manifest File** to go to the online editing page.

NOTE

To modify the manifest file in CodeArts Repo, you must have the corresponding member permissions. For details, see section **Repository Member Permission** of CodeArts Repo.

- Click the icon to perform basic syntax verification on the content of the manifest file to better optimize your code.
- Click the icon to optimize the manifest file format.
- Click the icon to copy all manifest file content.
- Click the icon to display the content of the manifest file in full screen to better browse the code.



5.2.2.3 Deploying an Application in Kubernetes (CCE Cluster) Quickly

This section introduces how to deploy an application quickly by upgrading Kubernetes workload images.

Prerequisites

A **CCE cluster** is available.

Procedure

Table 5-12 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Tenant	• **Current**: The software package is deployed in the CCE cluster of the current tenant for release. Select **Current**. The current tenant must have the CCE cluster operation permission. If the current tenant does not have the CCE cluster operation permission, select **IAM authorization** for deployment. • **Other**: The software package is deployed and published in the CCE cluster of another tenant in IAM authorization mode. If you select **Other**, you must select an authorized tenant to deploy the CCE cluster. **NOTE**
IAM authorization	If you do not have the permission to execute an API, this parameter enables you to obtain the temporary AK/SK of the parent user to execute the CCE API through IAM.
Region	Select the region to be deployed.
Cluster Name	Select the Kubernetes cluster applied for on CCE.
Namespace	Select the namespace of the Kubernetes cluster on CCE.
Workload	Select the target Deployment.
Instances	Enter the number of instances to be deployed. **NOTE** If blank, the current number of pods in the CCE cluster will be adopted.
Container	Select the name of the CCE container to be deployed.
Image	Select the image to be deployed.
Image Tag	Select the tag of the image to be deployed.

Parameter	Description
Container Specifications	You can configure the specifications of the target container in the target workload. • **CPU Quota** – **Request**: Minimum number of CPU cores required by a container. Resources are scheduled for the container based on this value. The container can be scheduled to a node only when the total available CPU on the node is greater than or equal to the requested quota. – **Limit**: Maximum number of CPU cores required by a container. If the CPU usage is greater than the limit, the CPU resources used by the container may be limited. • **Memory Quota** – **Request**: Minimum memory size required by a container. Resources are scheduled for the container based on this value. The container can be scheduled to a node only when the total available memory on the node is greater than or equal to the requested quota. – **Limit**: Maximum memory size available for a container. When the memory usage exceeds the configured memory limit, the instance may be restarted, affecting normal use of deployment.
Environment Variables	You can configure environment variables of the target container in the target workload. You can synchronize real-time environment variables from CCE to this page to replace current variables.
Action Control	Continue the task even if this action fails.
Overtime	Maximum execution duration of an action, in minutes. If the task duration exceeds the specified time before you stop the application, the action will be timed out. Value range: 1–30

NOTE

You can use **${*XXX*}** to reference parameters in **Parameter** to use in **Container**, **Image**, **Image Tag**, **Instances**. For details, see **Parameter Management**.

5.2.2.4 Deploying an Application with a Custom Kubernetes Cluster

This section introduces how to deploy an application in a Kubernetes cluster with a manifest file defining Kubernetes objects. In this way, self-built or third-party Kubernetes clusters can be deployed.

Prerequisites

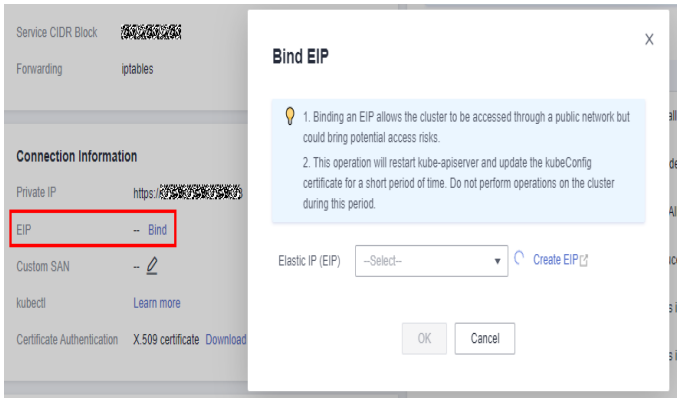
A custom cluster is available.

Procedure

Step 1 Obtain the kubeconfig file.

- **Your Kubernetes cluster is used as an example.**
- **Example of a CCE cluster**

  a. Go to the console. In the upper left corner of the page, choose **Service List** > > . Click the target cluster and click **Bind** next to **EIP** to bind the public IP address.



  NOTE

  The CodeArts Deploy official resource pool and your Kubernetes cluster are not in the same VPC. Therefore, you can access the Kubernetes cluster only through an EIP.

  b. Click **Configure** next to **kubectl** in the **Connection Information** area. On the displayed page, click **Download** under **Download the kubeconfig file** to download the configuration file.

  NOTE

  After the download is complete, a **kubeconfig.json** file is available.

Step 2 Create a Kubernetes endpoint.

1. Log in to CodeArts Deploy.
2. Click **Create Application**, enter basic information, click **Next**, select **Blank Template**, and click **OK**. The **Deployment Actions** page is displayed.
3. Click **All**, search for **Deploy a Custom Kubernetes Cluster**, and click **Add**.
4. Create an endpoint for accessing the Kubernetes cluster.

   Click **Create** to create a Kubernetes access point.

   After entering the information, click **Verify and OK** to check whether the endpoint is configured successfully.

Table 5-13 Parameters

Parameter	Description
Service Endpoint Name	Name of the service endpoint.

Parameter	Description
Kubernetes URL	Set this parameter to the public API Server address in the custom cluster.
Kubeconfig	Copy all content in the **kubeconfig.json** file.

5. Configure other required parameters as prompted to complete deployment over the public network with Kubernetes.

Table 5-14 Parameters

Parameter	Description
Kubernetes Service Endpoint	Select the target Kubernetes access point. You can create and manage Kubernetes access points.
kubectl Command	Select the target kubectl command.
Use Manifest File	If this option is selected, you need to select the target manifest file for deployment. The file name must be suffixed with .yaml, .yml, or .json.
Manifest File Source	Select **Artifact** or **Repo** as the file source.
Manifest file or folder	This parameter is mandatory. Select a manifest file or folder to be deployed. Files must be suffixed with .yaml, .yml, or .json. Click ... . On the file selection page that is displayed, select a **Manifest File** to be deployed in **Artifact**. By default, the project cannot be changed. You can search for the manifest file by keyword or upload the local manifest file to the repository, click  , refresh the repository file, and select a manifest file. Click  .
kubectl Command Parameters	kubectl command parameters to be executed.
Action Control	Continue the task even if this action fails.

----End

5.2.2.5 Kubernetes Nginx-Ingress Grayscale Deployment (CCE Cluster)

Grayscale deployment of CCE Kubernetes clusters based on the Nginx-Ingress component

Prerequisites

- A **CCE cluster** is available.
- The Nginx Ingress plug-in is installed in the CCE cluster.

Procedure

Table 5-15 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Tenant	• **Current**: The software package is deployed in the CCE cluster of the current tenant for release. Select **Current**. The current tenant must have the CCE cluster operation permission. If the current tenant does not have the CCE cluster operation permission, select **IAM authorization** for deployment. • **Other**: The software package is deployed and published in the CCE cluster of another tenant in IAM authorization mode. If you select **Other**, you must select an authorized tenant to deploy the CCE cluster. **NOTE** You are advised to configure the AK/SK of a member account that has the **CCE cluster operation permission** and not advised to configure the AK/SK of a tenant account.
IAM authorization	If you do not have the permission to execute an API, this parameter enables you to obtain the temporary AK/SK of the parent user to execute the CCE API through IAM.
Region	Select the region to be deployed.
Cluster Name	Select the Kubernetes cluster applied for on CCE.
Namespace	Select the namespace of the Kubernetes cluster on CCE.
Workload	Select the target Deployment.
Service	Name of the service bound to the target workload.
Ingress	Select the name of the route bound to the target service.
Container	Select the name of the CCE container to be deployed.
Image	Select the image to be deployed.

Parameter	Description
Image Tag	Select the tag of the image to be deployed.
Enable grayscale configuration	**Grayscale release policy**: • **Header** **Header-Key**: You can enter the key of a custom header. **Header-Value**: You can enter a custom header value. The value can be a character string or a regular expression. The regular expression format is ^....$. Grayscale traffic weight (%): Traffic can be customized. • **Cookie** Cookie: Custom cookie content can be entered. Grayscale traffic weight (%): Traffic can be customized. **NOTE** The values of **Header** and **Cookie** can contain a maximum of 500 characters.

5.2.2.6 Deploying with Helm3

Helm is a Kubernetes package management tool, which is similar to the package manager in Linux, such as yum and APT. Helm can easily deploy packaged YAML files on Kubernetes. Helm 3 is the commonly used and stable version of Helm.

CodeArts Deploy allows you to use Helm to deploy and upgrade Kubernetes clusters.

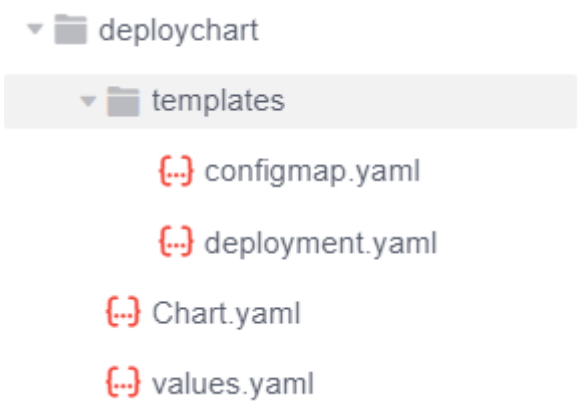
Table 5-16 Parameters

Parameter	Description
Action Name	Mandatory. Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Cluster Type	The default value is **Custom**.
Kubernetes Service Endpoint	Mandatory. You can select a CCE cluster or your own Kubernetes cluster. • Huawei Cloud CCE clusters 1. Create a CCE cluster. 2. Create a namespace. 3. Select the CCE cluster to be deployed. • Your own Kubernetes cluster **Configure the kubeconfig file** and select the cluster to be deployed.

Parameter	Description
Helm Command	Mandatory. **install**, **upgrade**, and **uninstall** are available. If you select **upgrade** for **Helm Command** and the chart name does not exist, the system automatically run **install**.
Namespace	Mandatory. Enter a namespace.
Chart Name	Mandatory. The custom chart name. You can perform the upgrade operation on the same chart name.
Chart Package Source	Mandatory. Select the source of the chart package to be installed. **Artifact** and **Repo** are available. If you select **Repo**, you need to specify the code repository and branch.
Chart Package	Mandatory. Enter a directory or GZIP package with a chart file structure.
Values File	Select the **values** file from Artifact. For example, if you specify **Myvalues.yaml**, **-f Myvalues.yaml** will be added to Helm command parameters.
Values	Set values in the CLI. If you specify **key1=val1,key2=val2** (separate values with commas), **-set key1=val1,key2=val2** will be added to Helm command parameters.
Helm Command Parameters	Add other content to Helm command parameters. For details, see **Helm Install**, **Helm Upgrade**, and **Helm Uninstall**.
Action Control	Continue the task even if this action fails.

Environment Preparation for Helm3 Deployment Example

This section uses the chart directory as an example to describe how to prepare the environment for the following three examples. Use the following template to deploy a CCE cluster and create the following directories in the code repository of CodeArts Repo.



Segment in **configmap.yaml**

```
metadata:
  name: {{ .Values.configmapname }}
```

Segment in **deployment.yaml**

```
spec:
  template:
    spec:
      containers:
        - image: '{{ .Values.imagename }}:{{ .Values.imagetag }}'
```

Segment in **values.yaml**

```
configmapname: valuesfromfile
imagename: httpd
imagetag: latest
```

NOTE

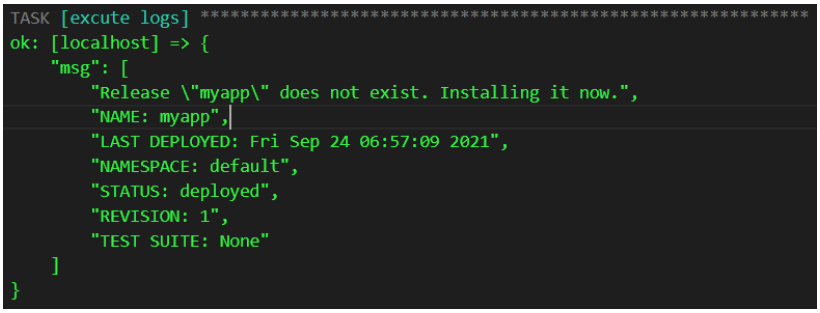
{{**.Values.***xxxx*}} corresponds to the variable defined in the **values.yaml** file in the chart.

The following three examples are based on this section.

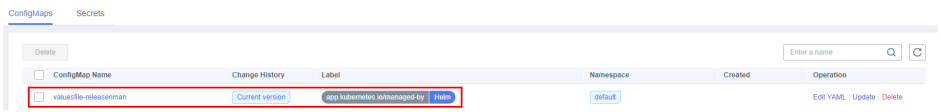
1. Example 1: Using the chart package or chart file structure directory for deployment

   If the default **values** file exists in the chart, you do not need to specify the **values** file in Artifact. You can directly deploy the default **values** file.

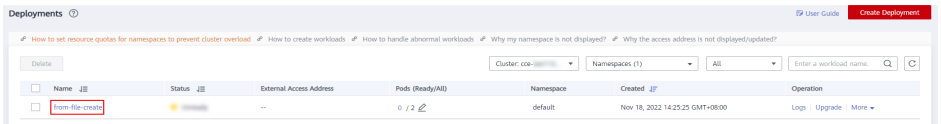
   The deployment result is as follows:

   The corresponding ConfigMap generated on the CCE console is as follows.

   The corresponding Deployment generated on the CCE console is as follows.

2. Example 2: Deploying Helm3 by specifying the values file in codearts artifact

   This example demonstrates how to deploy Helm3 by specifying the **Values** file in Artifact.

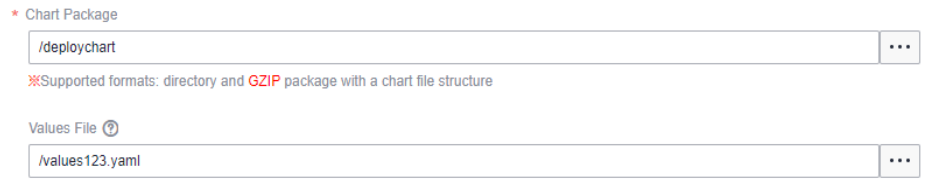
   NOTE

   The values defined in the external **values** file will overwrite the values defined in the **Values** file in the chart.

Segment of an external **Values** file. In this example, the file is named **values123.yaml**.

```
configmapname: valuesfile-releasenman
imagename: nginx
imagetag: stable
```

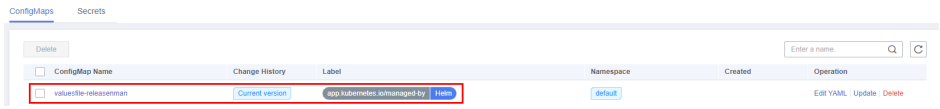
As shown in the following figure, for **Values File**, select the **Values** file in Artifact.



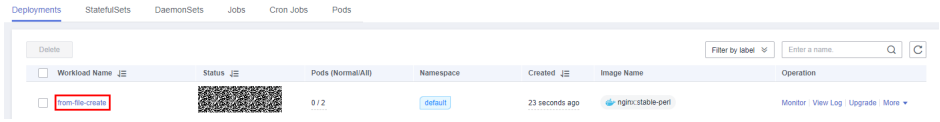
The deployment result is as follows:

```
TASK [excute logs] ********************************************************
ok: [localhost] => {
    "msg": [
        "Release \"myapp\" has been upgraded. Happy Helming!",
        "NAME: myapp",
        "LAST DEPLOYED: Fri Sep 24 07:21:15 2021",
        "NAMESPACE: default",
        "STATUS: deployed",
        "REVISION: 3",
        "TEST SUITE: None"
    ]
}
```

The corresponding ConfigMap generated on the CCE console is as follows.



The corresponding Deployment generated on the CCE console is as follows.



3. Example 3: Deploying Helm3 by configuring values

   If **Values** is set, it has the highest priority and overwrites the values set in the **values** file of Chart and the values set in the external **values** file.

   The following figure describes how to configure the image version:

   Segment of the **Values File** in **Chart Package**:

```
imagetag: latest
```

   Segment of **Values File** in Artifact:

```
imagetag: stable
```

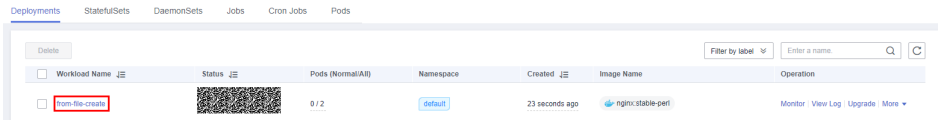

When setting **Values**, enter the following information:

```
imagetag=perl
```

The deployment result is as follows:

```
TASK [excute logs] ********************************************************
ok: [localhost] => {
    "msg": [
        "Release \"myapp\" has been upgraded. Happy Helming!",
        "NAME: myapp",
        "LAST DEPLOYED: Fri Sep 24 07:41:39 2021",
        "NAMESPACE: default",
        "STATUS: deployed",
        "REVISION: 10",
        "TEST SUITE: None"
    ]
}
```

The corresponding Deployment generated on the CCE console is as follows.



5.2.3 Configure Deployment Actions for Starting or Stopping a Service

5.2.3.1 Stopping a Service

This action aims to stop a service with a specified port. The following table shows the configuration information.

Table 5-17 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Select a host cluster as the deployment object.
Service Port Number	Port of the service to stop.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.3.2 Starting or Stopping Spring Boot

This action aims to start or stop the Spring Boot service in a specified path in an environment. The following table shows the configuration.

Table 5-18 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Select a host cluster as the deployment object.
Operation	**Start** and **Stop** are available.
Absolute Path	Absolute path of the Spring Boot service.
System Variables	• Optional. • Java running parameters. JVM variables are used. The commonly used parameter is **-D**. • The **-XX** and **-X** parameters are used to set the memory and GC parameters, respectively. The parameter settings may vary according to JVMs. • The **-D** and **-X** parameters are followed by Java. When starting the service, you can set the memory required for service running. **NOTE** The common parameter format is **-Dfile.encoding=UTF-8 -Xms256m -Xmx512m**.
Command Parameters	• Optional. • Spring Boot running parameters, that is, application parameters. • If you choose to start the service, you can use the -- parameter to set the listening port of the Spring Boot service. **NOTE** The common parameter format is **--server.port=9000 --spring.profiles.active=prod**.
Waiting Time	Time for waiting for the service to start. If you choose to start the service, the system checks the process during the startup to determine whether the service is started successfully. You can adjust the time based on the actual time required for starting the service. If the time is improper, the detection fails.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.3.3 Starting or Stopping IIS

This action aims to start or stop IIS by specifying a name. The following table shows the configuration.

Table 5-19 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Select a host cluster as the deployment object.
Operation	**Start** and **Stop** are available.
Service Name	Enter the name of the target service.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails.

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.3.4 Starting or Stopping Tomcat

This action aims to start or stop a service in a specified path. In addition, you can monitor metrics and query logs of components after deployment. The following table shows the information configuration.

Table 5-20 Parameters for starting or stopping Tomcat

Parameter	Mandatory	Description
Action Name	Yes	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Yes	Select a host cluster as the deployment object.
Operation	Yes	**Start** and **Stop** are available.
Absolute Path	Yes	Absolute path of the Tomcat service.
HTTP Port	Yes	Mandatory when **Operation** is set to **Start**. HTTP port of the Tomcat service.
AJP Port	Yes	Mandatory when **Operation** is set to **Start**. AJP port of the Tomcat service.
Service Shutdown Port	Yes	Mandatory when **Operation** is set to **Start**. Shutdown port listened by the Tomcat service.
Waiting Time	Yes	Mandatory when **Operation** is set to **Start**. The time required for starting the service. If you select **Start** for **Operation**, the system checks the process during the startup to determine whether the service is started successfully. You can adjust the time based on the actual time required for starting the service. If the time is improper, the check result is invalid.
Action Control	No	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.3.5 Starting or Stopping Nginx

This action aims to start or stop the Nginx service in a specified path in an environment. The following table shows the configuration.

Table 5-21 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Select a host cluster as the deployment object.
Operation	**Start Nginx**, **Reload configuration file**, **Stop Nginx immediately**, and **Quit Nginx gracefully** are available.
Nginx Installation Path	Enter the installation path of the Nginx service in the target environment.
Modify configuration file before execution	Enable or disable this function based on whether to modify the Nginx configuration file on the target host.
Nginx Configuration File Path	Path of the Nginx configuration file on the target host.
Configuration File Backup Path	Target path for backing up the original Nginx configuration file on the target host.
Configuration File Content	Content of the new configuration file.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.3.6 Starting or Stopping the Go service

This action aims to start or stop a service in a specified path.

Table 5-22 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Select a host cluster as the deployment object.
Operation	**Start** and **Stop** are available.
Absolute Path	Installation path of Go.
Waiting Time	Time for waiting for the service to start. If you choose to start the service, the system checks the process during the startup to determine whether the service is started successfully. You can adjust the time based on the actual time required for starting the service. If the time is improper, the detection fails.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

5.2.3.7 Starting or Stopping Node.js

This action aims to start or stop the Node.js service based on a specified path in a host. The following figure shows the configuration page.

Table 5-23 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Select a host cluster as the deployment object.
Operation	**Start** and **Stop** are available.
Absolute Path	Path of the Node.js service.

Parameter	Description
Command Parameters	Optional. • The Node.js running parameters refer to the parameters of application. • If you choose **Start** for **Operation**, you can configure parameters, such as the listening port of Node.js to start Node.js.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.4 Configuring Deployment Actions for File Operations

5.2.4.1 Copying a File

This step supports file copying between directories within hosts and file copying across hosts. The configuration is as follows:

Table 5-24 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Copy Mode	• To copy files from one directory to another directory on the same host, select **Within host**. • To copy files from one host to another host, select **Across hosts**.
Environment	The environment where applications will be copied.

Parameter	Description
Target environment	If **Copy Mode** is set to **Across hosts**, this parameter indicates the target environment. **CAUTION** If an environment contains multiple hosts, copy files from all hosts in the target environment.
Files	Specify the source path and destination path of the file to copy. Both paths must be absolute paths.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.4.2 Decompressing a File

This action aims to decompress a file from one path on a host to another path on the host. The following table shows the information configuration.

Table 5-25 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Select a host cluster as the deployment object.
Decompress File	Path of the file to be decompressed or stored.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.4.3 Deleting a File

This action aims to delete a file or folder from a host in a specified environment. The following table shows the configuration.

Table 5-26 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Select a host cluster as the deployment object.
File Path	Path of the file or folder to delete. **NOTE** If a file path is specified, the file is deleted. If a folder path is specified, the folder and all files in the folder are deleted.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.4.4 Modifying a Configuration File

This action aims to modify the specified content in a file by identifying specific identifiers. The following figure shows the configuration page.

Table 5-27 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Select a host cluster as the deployment object.

Parameter	Description
Absolute Path	Absolute path of the configuration file to modify. • Modify a single file, for example, **/usr/local/server.config**. • Modify multiple files, for example, **/usr/local/server.config;/usr/local/a.txt**. • The wildcard character (*) can be used, for example, **/usr/local/*.config**. However, you cannot separate multiple wildcards using semicolons (;), for example, **/usr/local/*.config;/usr/local/*.txt**.
Prefix and Suffix	Parameter reference flag. If no prefix or suffix is matched, the configuration file remains unchanged and no error is reported in logs.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

Configuration Example

To change the service port, perform the following steps:

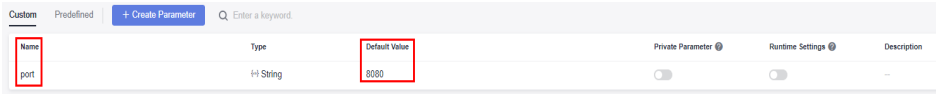
Step 1 Open the configuration file and view the content.

Figure 5-1 Viewing the configuration file

```
ServerPort=${port}
UserName=#{name}#
```

Step 2 Change the prefix and suffix. For example, change the prefix to **${** and the suffix to **}**.

Step 3 On the **Parameters** tab, set **Name** and **Default Value**.



Step 4 Save the configuration and deploy the application.

Step 5 After the deployment is complete, open the configuration file again.

The value of *${port}* is changed to **8080**.

Figure 5-2 Viewing the configuration file

```
ServerPort=8080
UserName=#{name}#
```

----End

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.5 Configuring Deployment Actions for Running Commands

5.2.5.1 Running Shell Commands

This action aims to run shell scripts on a host in a specified environment. The following table shows the configuration.

Table 5-28 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Select a host cluster as the deployment object.
Shell Commands	Bash scripts to run.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

Example: Using Shell Commands to View Service Logs

After application deployment is complete, you can run the shell commands to view the service startup or execution logs.

Preparations

1. Ensure that you are an authorized user of a host. Only authorized users have the permissions required to view service startup or execution logs.
2. Determine the full path of the service startup log.

   NOTE

   The following describes how to install the Tomcat service:

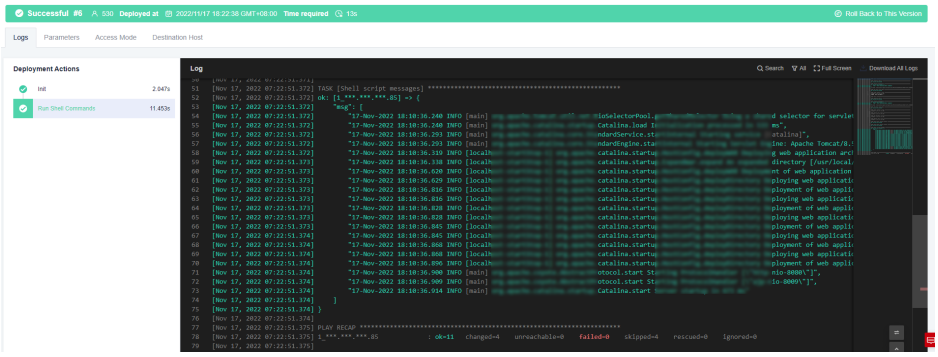
   Full path of the service startup log: **/usr/local/tomcat/apache-tomcat-8.5.38/logs/catalina.out**

Procedure

Step 1 Run the **tail** command to query the service startup or execution logs.

Step 2 Run the following command to query the last 20 lines of the log. The following figure shows the command output.


```
tail -n 20 /usr/local/tomcat/apache-tomcat-8.5.38/logs/catalina.out
```



----End

NOTE

Do not run the **cat** command when running the shell command to view files. If the log file is too large, it may take some time to load data. Do not use the **tail –f** command.

If the shell command to be executed contains more than 10,240 characters, you are advised to **Run Shell Script** extension.

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.5.2 Running Shell Scripts

This action aims to run shell scripts on a host in a specified environment. The following table shows the configuration.

Table 5-29 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Select a host cluster as the deployment object.
Running Mode	**Default** and **Background** are available. **NOTE** • Default: The result is printed, but the related service or process cannot be started. • Background: The service or process can be started, but the result will not be printed.
Shell Script Path	Path of the shell script on the target host.
Running Parameters	Before executing the script, set parameters. During script execution, the entered parameter values are loaded and used.

Parameter	Description
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

How Do I Use Script Execution Parameters?

Step 1 Use **$1**, **$2**, and similar formats in the shell script to reference parameter. For example, the content of the **hello.sh** script is shown in the following figure.

Figure 5-3 Script content

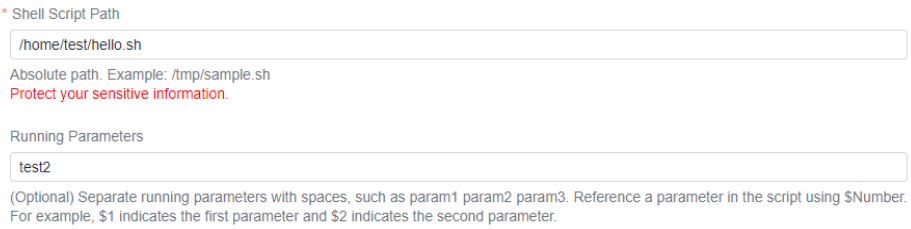
```
[root@SZX1000478390 test]# pwd
/home/test
[root@SZX1000478390 test]# ls
hello.sh
[root@SZX1000478390 test]# cat hello.sh


#!/bin/bash
#test execution parameters

cd /home/test
mkdir $1
```

Step 2 Separate running parameters with spaces, as shown in the following figure.

Figure 5-4 Entering running parameters



Step 3 View the result.

In the script, **$1** is replaced with **test2**, and the **test2** directory is created.

Figure 5-5 Viewing the result

```
[root@SZX1000478390 test]# pwd
/home/test
[root@SZX1000478390 test]# ls
hello.sh  test2
```

----End

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.5.3 Running PowerShell Commands

This action aims to run the **PowerShell** commands on a Windows host. The following figure shows the configuration page.

Table 5-30 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Select a host cluster as the deployment object.
PowerShell Commands	Specifies the command to be executed.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails.

NOTE

If the PowerShell command to be executed contains more than 10,240 characters, you are advised to **run the PowerShell script** extension.

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.5.4 Running PowerShell Scripts

This action aims to run the PowerShell scripts in a specified path on a Windows host. The following figure shows the configuration page.

Table 5-31 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Select a host cluster as the deployment object.

Parameter	Description
Running Mode	**Default** and **Background** are available. **NOTE** • Default: The result is printed, but the related service or process cannot be started. • Background: The service or process can be started, but the result will not be printed.
Script Path	Path of the script on the target host.
Running Parameters	Before executing the script, set parameters. During script execution, the entered parameter values are loaded and used.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails.

How Do I Use PowerShell Script Execution Parameters?

Step 1 Use **param($a,$b)** at the beginning of the script to declare variables **a** and **b**.

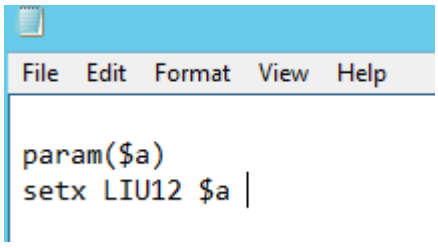
Step 2 Use variables **$a** and **$b** in the script.

Step 3 When running the script, enter the values of variables **a** and **b** in the script running parameters and separate them with spaces.

Example:

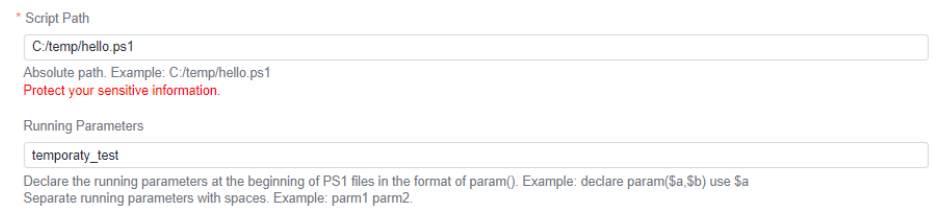
The following figure shows the content of the **hello.ps1** script. Set an environment variable to import a temporary value.

Figure 5-6 Script content



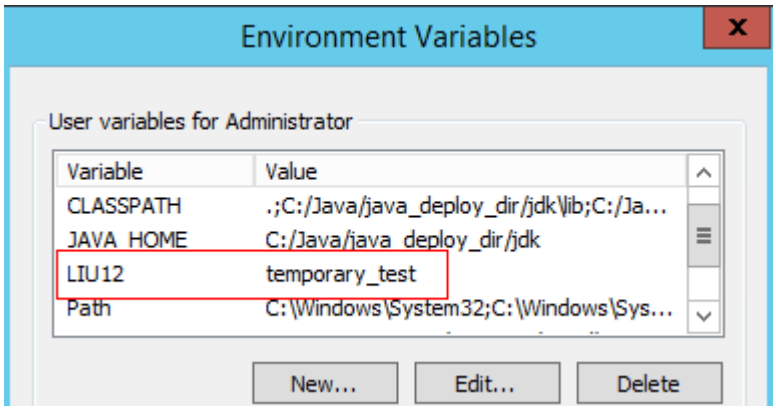
Configure parameters.

Figure 5-7 Settings



Step 4 View the result.

Figure 5-8 Result



----End

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.5.5 Running Docker Commands

This action aims to run Docker commands on a host to build, push, pull, and run images. The following describes how to configure each command.

login and logout

Step 1 Search for and add action **Run Docker Command**.

Step 2 Select **login** or **logout** for **Command**.

NOTE

Only self-hosted and SWR repositories are supported. You are advised to use the action **Run Shell Commands** to log in to or log out of a public repository.

When running the **login** command, retain the default value **No** for **Restart Docker**.

When you log in to a private repository, Docker provides a valid credential of the private repository in the ***.docker/config.json*** file. By default, the credential is encoded using Base64. You are advised to use **docker-credential-pass** and **gpg** to enhance Docker security.

Step 3 Select the image repository to be logged in to or logged out of. If no image repository is available, click **Create**.

The **Create Service Endpoint: Docker repository** dialog box is displayed, as shown in the following figure.

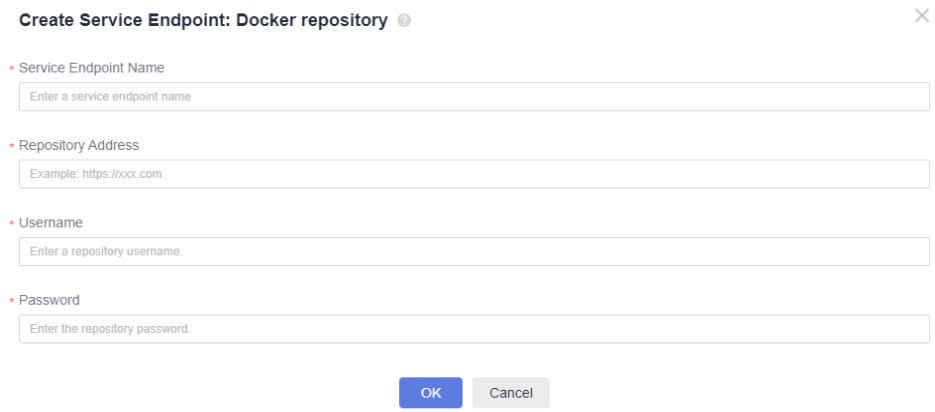
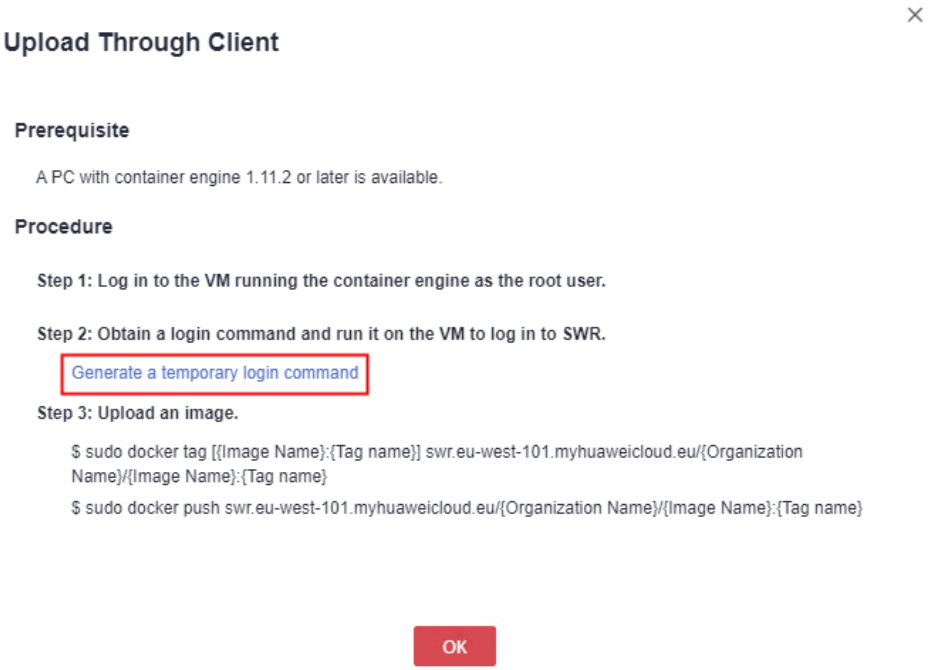


Table 5-32 Parameters

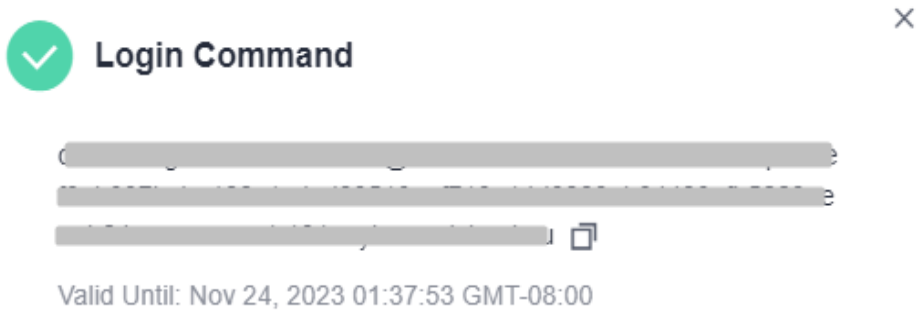
Parameter	Description
Service Endpoint Name	Name of the service endpoint to the image repository. The name facilitates service endpoint selection and management.
Repository Address	Address of the image repository. You can use a self-hosted or SWR repository. **NOTE** The image repository address cannot contain the organization name or image name. The repository address is in the **https://*XXXX*.com** or **http://*XXXX*.com** format.
Username	Username for logging in to the image repository.
Password	Password for logging in to the image repository.

Step 4 Log in to SWR.

1. Log in to the console. In the upper left corner of the page, choose **Service List** > **Application** > **SoftWare Repository for Container**. On the SWR console, choose **My Images** > **Upload Through Client**.
2. In the displayed dialog box, click **Generate a temporary login command**.



3. This topic uses the temporary command as an example. After you click **Generate a temporary login command**, the following dialog box is displayed.



NOTICE

- **-u** is followed by the username.
- **-p** is followed by the password.
- **swr.*XXXXX*.com** is the repository address.

4. On the deployment page, add the service endpoint.

   NOTE

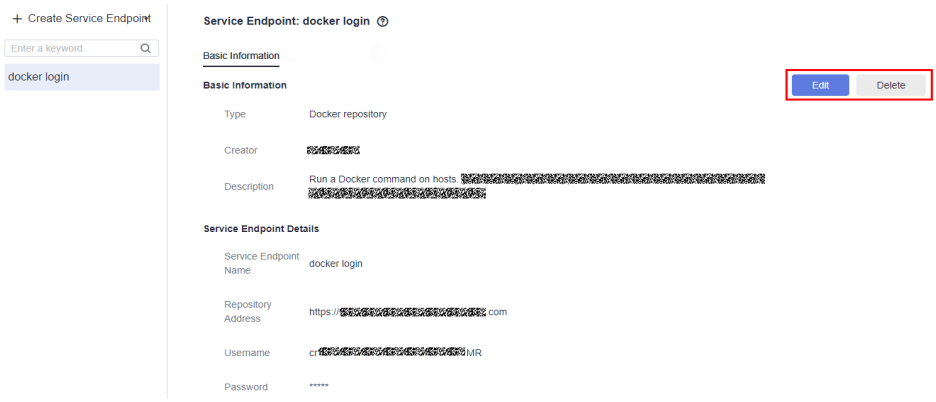
   The repository URL must be in the **https://*XXXX*.com** or **http://*XXXX*.com** format.

   The image repository address obtained by running the temporary command must be prefixed with **https://** or **http:**.

5. Click **OK**.

   Then you can run the **login** command to log in to the image repository on CodeArts Deploy.

Step 5 To modify the information about an image repository, click **Manage** next to **Image Repository** in the action **Run Docker Commands**. On the displayed page, edit or delete the repository.



----End

build

Preparations

To create a Docker image, upload the created **Dockerfile** to the target host in action **Select Deployment Source**.

Configuration Method

Step 1 Search for and add action **Run Docker Command**.

Step 2 Select the **build** command, enter the path where the Dockerfile is stored on the target host, and enter the execution parameters of the **build** command.

----End

tag

Step 1 Search for and add action **Run Docker Command**.

Step 2 Select the **tag** command, enter the image to be tagged, and set the execution parameters (optional) of the **tag** command.

NOTE

To add tags to multiple groups of images, separate the tags using newline characters.

----End

run

Step 1 Search for and add action **Run Docker Command**.

Step 2 Select the **run** command and enter the execution parameters of the **docker run** command.

NOTE

When running the **run** command, you cannot create or start a container in interactive mode. Instead, you must add the **-d** execution parameter so that the command can run in the background.

----End

Others

1. Search for and add action **Run Docker Command**.
2. Select a command (**push**, **pull**, **start**, **stop**, **restart**, **rm**, or **rmi**) and enter the execution parameters of the command.

   The command output similar to the following is displayed:

```
push: docker.test-registry.com/branch/Ubuntu:v1
pull: docker.test-registry.com/branch/Ubuntu:v1
rm: -f db01 db02
rmi: -f docker.test-registry.com/branch/Ubuntu:v1
start/stop/restart: container ID or name
```

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.6 Configuring Other Deployment Actions

5.2.6.1 Health Test via URLs

This action aims to access a URL on a target host to test the service status. The following table shows the configuration information.

Table 5-33 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Select a host cluster as the deployment object.
Retries	If a service does not start up when the health test reaches the maximum retry times, the service fails this test.
Interval (s)	Interval between two retries.
Test Path	Health test URL. Multiple URLs can be added.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails.

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.6.2 Selecting a Deployment Source

Select the software package path; or download the software package corresponding to the build record from Artifact to the target environment.

Table 5-34 Configuration parameters when Artifact is the source

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Source	**Artifact** and **Build task** are available.
Environment	Select a host cluster as the deployment object.
Software package	Select a software package to be deployed from the Artifact.
Download Path	Path for downloading the software package to the target host.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

Table 5-35 Configuration parameters when software package is the source

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Source	**Artifact** and **Build task** are available.
Environment	Select a host cluster as the deployment object.
Build Task	Target build task. If there is no build task, **create one**.
Artifact Filtering Mode	**Build version** and **Build branch** are available.
Build No.	Sequence number of the target build task.
Download Path	Path for downloading the software package to the target host.

Parameter	Description
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails. • **Execute this action with the sudo permission**: whether to use the sudo permission to deploy this action.

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.6.3 Wait

This action aims to control the time between two adjacent actions.

Table 5-36 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Select a host cluster as the deployment object.
Waiting Time (s)	Waiting time between two adjacent actions.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails.

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.6.4 Ansible

This action aims to execute the uploaded playbook on the host. Here is the configuration page.

Table 5-37 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()

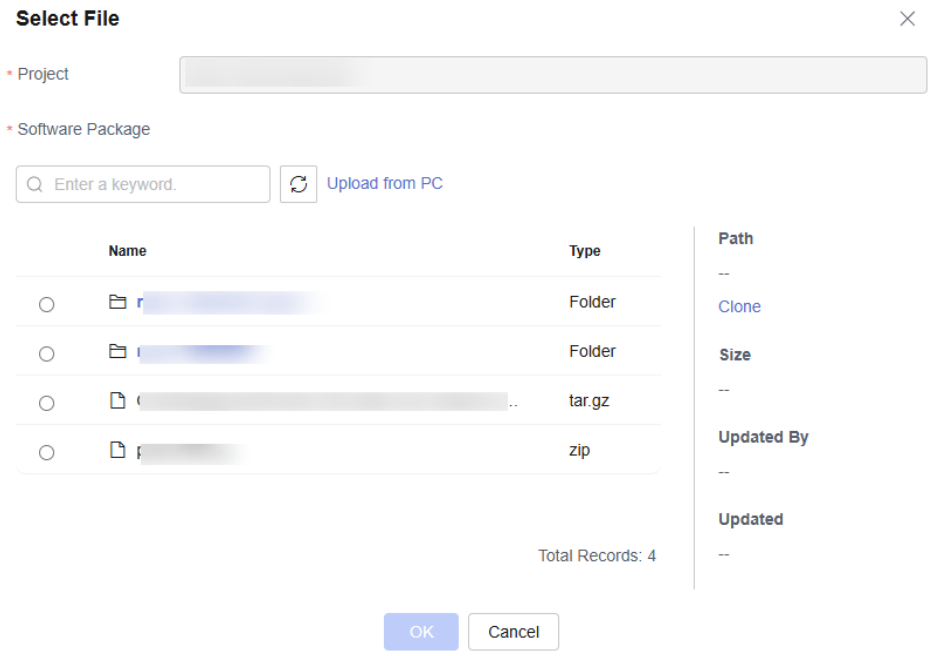
Parameter	Description
Environment	Select a host cluster as the deployment object.
Playbook Source	**Artifact** and **Repo** are available.
Playbook File	You can select an existing playbook file from Artifact or a playbook file uploaded from a local host. **NOTE** Local software packages or files uploaded to Artifact can be reused.
Entry File Path	The entry file path of playbook.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails.

The following describes how to use playbook based on the playbook source:

CodeArts Artifact

Step 1 On the tab displaying application action details, select **Artifact** for **Playbook Source**, and click ... on the right of **Playbook File**.

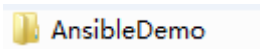
Step 2 In the displayed **Select File** dialog box, select the corresponding playbook file compression package.



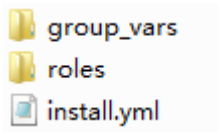
Step 3 Enter the entry file path of playbook.

Step 4 The entry file path is the directory generated after the playbook package is decompressed.

- If the directory after decompression is similar to that shown in the following figure, the entry file path is **AnsibleDemo/install.yml**.



- If the directory after decompression is similar to that shown in the following figure, the entry file path is **install.yml**.



----End

CodeArts Repo

Step 1 On the tab displaying application action details, select **Repo** for **Playbook Source**.

Step 2 Select the code repository address (that is, the SSH URL of the code repository for storing playbook) from the **Repo** drop-down list.

Step 3 Select a code repository before selecting a branch.

Step 4 Select the entry file path.

> NOTE
>
> The entry file path is generated after the playbook package is decompressed.

Step 5 Configure parameters.

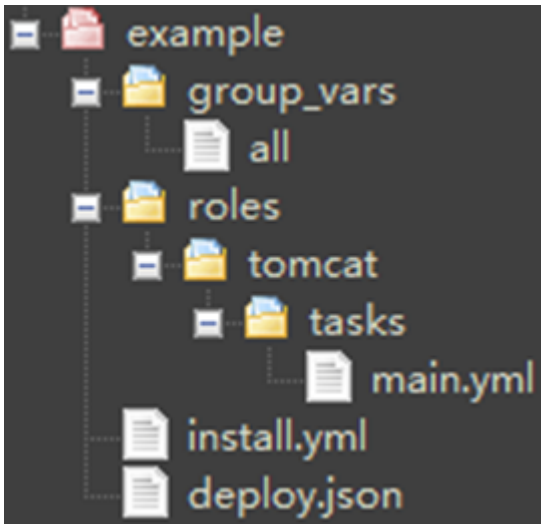
Switch to the **Parameter** tab and click **Create Now** to add parameters for the Ansible application action or replace parameters in the **all** file.

After an application task is executed, the corresponding build task is downloaded to a specified path.

The following is an example of the architecture and content of the ALL file:

```
tomcat_url: http://mirror.olnevhost.net/pub/apache/tomcat/tomcat-7/v7.0.78/bin/apache-tomcat-7.0.78.tar.gz
war_url: http://test.com/xxx.war
```


Figure 5-9 File architecture



NOTE

- If an added parameter exists in the playbook **all** file, the parameter with the same name in the **all** file will be replaced. Otherwise, the parameter will be used as a new parameter.
- The parameter name cannot contain the following characters: decimal points (.), hyphens (-), and colons (:).

----End

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.6.5 Creating IIS Site

What Is IIS?

IIS is short for Internet Information Services.

It is a service and a component of the Windows 2000 Server series. Different from common applications, IIS is a part of the operating system like a driver. It is started when the system is started.

Creating an IIS Site on a Windows Host

Table 5-38 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()

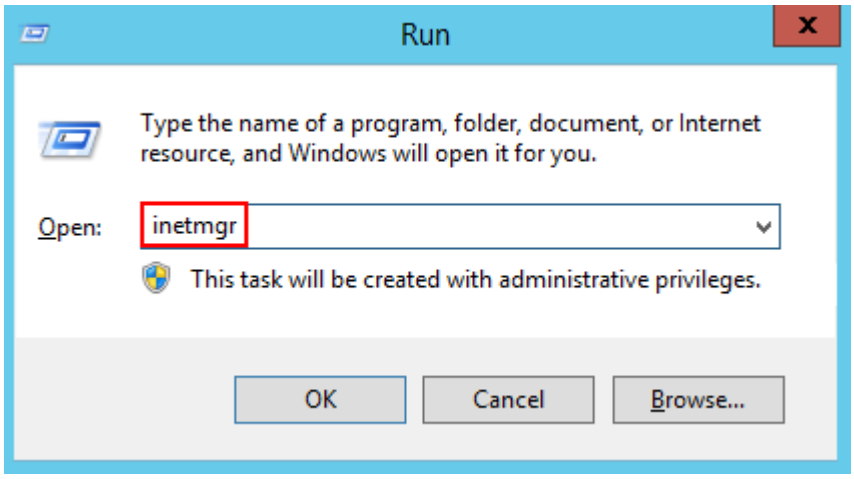
Parameter	Description
Environment	Select a host cluster as the deployment object.
Application Pool	Application pool of IIS.
.Net CLR Version	Version of .Net CLR.
Website Name	Name of the website.
Port	The (listening) port that is bound.
Physical Path	Physical path of the application.
Log Path	Log path of the IIS running site.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails.

Procedure

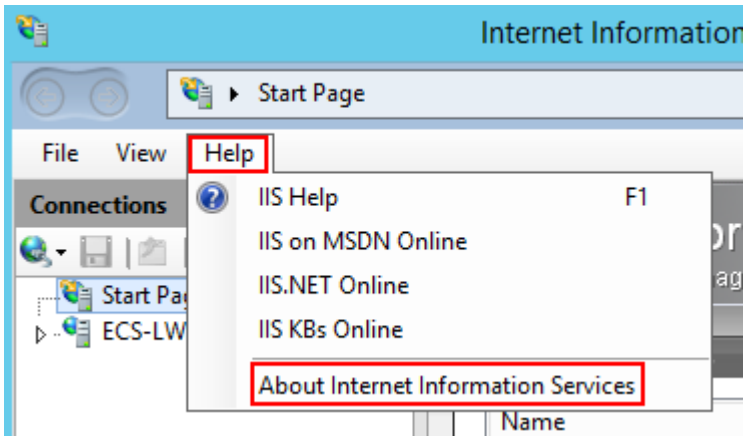
Step 1 Select a Windows environment for the application.

Step 2 Check whether the IIS version of the Windows host where the application is to be performed is later than **7.0**. The procedure is as follows:

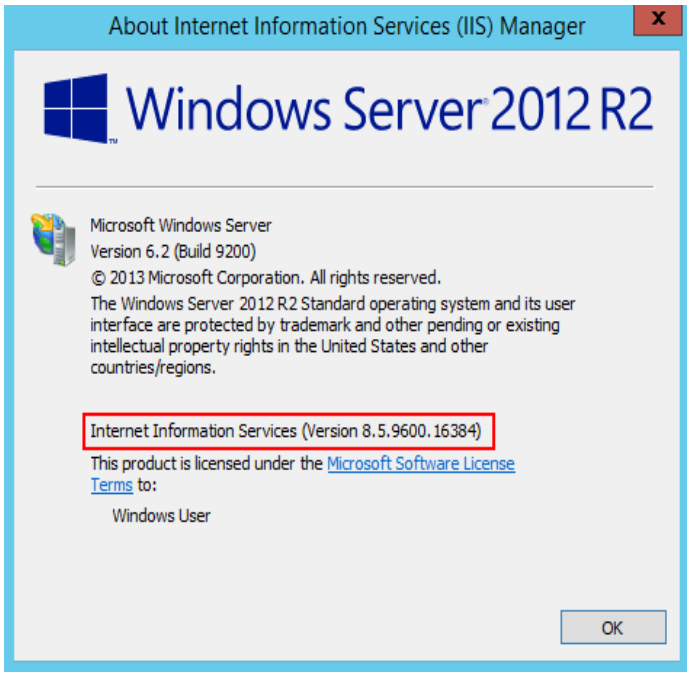
a. Press **Windows+R** to open the **Run** dialog box, enter the **inetmgr** command for opening the IIS management window, and click **OK**.



b. Start Internet Information Services (IIS) Manager, and then choose **Help** > **About Internet Information Services**.



c. View the IIS version in the displayed dialog box.



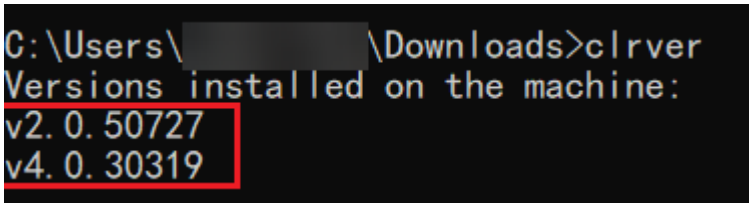
NOTE

If the IIS version of the Windows host where the application is to be performed is earlier than or is **7.0**, upgrade the IIS.

Step 3 Enter the physical path and log path of the application.

Step 4 Enter the .Net CLR Version of the target Windows host.

- Find **clever.exe** in **C:\Program Files\Microsoft SDKs\Windows\v7.0A\bin** or **C:\Program Files\Microsoft SDKs\Windows\v8.0A\bin\NETFX 4.0 Tools**.
- Run the program in the **cmd** window to obtain the version supported by the .NET CLR.



NOTE

If the clever.exe program cannot be found, download and install it.

Step 5 Enter the application pool name and website name.

Step 6 Specify a port (the port bound) and deploy the application.

----End

NOTE

If you encounter any problem during deployment, see **Solutions to Common Problems**.

5.2.6.6 Istio Gray Release

Istio provides you with microservice-based traffic governance capabilities. Istio allows you to develop a set of traffic distribution policies based on standards and deliver the policies to application pods in a non-intrusive manner, implementing smooth and stable grayscale release.

Prerequisites

- A CCE cluster is available. If no CCE cluster is available, **create one**.
- A workload of the current version exists and a service has been created. If no workload exists, create a **workload**.
- You have enabled the ASM service and the created service is normal. To check the service status, go to the **Service Management** page and check its **Configuration Diagnosis Result**.
- An Istio workload has been created and associated with the Service of the current version.

Procedure

Table 5-39 Parameters of custom release mode

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Cluster Name	Select a target cluster.
Namespace	Enter a namespace.
Release Mode	**Custom** and **Fast** are supported.

Parameter	Description
File Source	• **Artifact** **YML File**: Select the target YML file. • **Repo** **Repo**: Select the target code repository. **Branch**: Select the target branch. **YML File Path**: path of the target YML file.
Action Control	Continue the task even if this action fails.

Table 5-40 Parameters of fast release mode

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Cluster Name	Select a target cluster.
Namespace	Enter a namespace.
Release Mode	**Custom** and **Fast** are supported.

Parameter	Description
Traffic Takeover	**Gray release** **VirtualService Name**: Select the target VirtualService. Log in to the ASM console, choose **Mesh Configuration** > **Istio Resource Management** and filter the target namespace and istio resources. **DestinationRule Name**: Select the target destination rule. Log in to the ASM console, choose **Mesh Configuration** > **Istio Resource Management** and filter the target namespace and istio resources. **Current Version**: Use the keyword "version" in the label to distinguish the official version from the gray version. The version number must be the same as the subsets object name in DestinationRule and is used as an identifier for gray traffic distribution. **Gray Version Number**: Use the keyword "version" in the label to distinguish the official version from the gray version. The version number must be the same as the subsets object name in DestinationRule and is used as an identifier for gray traffic distribution. **Gray release policy**: • **Based on traffic ratio** **Gray Version Traffic (%)**: Traffic can be customized. • **Based on request content-Cookie** **Cookie Content**: Custom cookie content can be entered. • **Based on request content-Header** **Custom Header**: Headers can be added and customized.
	Official release **VirtualService Name**: Select the target VirtualService. Log in to the ASM console, choose **Mesh Configuration** > **Istio Resource Management** and filter the target namespace and istio resources. **DestinationRule Name**: Select the target destination rule. Log in to the ASM console, choose **Mesh Configuration** > **Istio Resource Management** and filter the target namespace and istio resources. **Official Version**: Enter the version that officially takes over traffic.
Action Control	Continue the task even if this action fails.

5.2.6.7 Deploying to FunctionGraph

In this step, you can deploy software packages in the Artifact, Repo, and OBS to FunctionGraph to release a new version.

Prerequisites

You have **FunctionGraph operation permissions**.

Procedure

Table 5-41 Parameters

Parameter	Description
Action Name	Customized action name displayed in the deployment actions Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Tenant	• **Current**: The software package is deployed in the FunctionGraph extension of the **Current** for release. Select **Current**. The FunctionGraph operation permission is needed in the **Current**. If not, select **IAM authorization** for deployment. • **Other**: The software package is deployed and published in the FunctionGraph of the **Other** in IAM authorization mode. You must select an authorized tenant for FunctionGraph deployment. **NOTE** You are advised to configure the AK/SK of a member account with **FunctionGraph operation permissions** and not advised to configure the AK/SK of a tenant account.
IAM authorization	If the current user does not have the FunctionGraph operation permissions, you can use IAM to authorize the user.
Function	Functions created in FunctionGraph. For details, see **FunctionGraph Usage Process**.
Deployment source	The deployment source can be Artifact, Repo, or OBS. • **Artifact**: You can select a software package from Artifact. The software package can be in ZIP or JAR format and must meet FunctionGraph requirements. For details, see **how to develop a function**. • **Repo**: You can manage code repos after choosing **Code** > **Repo**. • **OBS**: You can directly enter the address of the software package uploaded to OBS.
Release New Version	New versions of FunctionGraph can be released. A function can have a maximum of 20 version numbers and each version number must be unique.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails.

NOTICE

If **Deployment source** is set to **Artifact** or **Repo**, the maximum size of a code package is 50 MB. If the size of a code package exceeds 50 MB, you are advised to deploy the code package using OBS.

5.2.6.8 FunctionGraph Grayscale Release

This action supports version switching and grayscale release based on the function alias mechanism of FunctionGraph.

Prerequisites

You have **FunctionGraph operation permissions**.

Procedure

Table 5-42 Parameters

Parameter	Description
Action Name	Name of an action displayed in the deployment actions area.
Tenant	• **Current**: The software package is deployed in the FunctionGraph extension of the **Current** for release. Select **Current**. The FunctionGraph operation permission is needed in the **Current**. If not, select **IAM authorization** for deployment. • **Other**: The software package is deployed and published in the FunctionGraph of the **Other** in IAM authorization mode. You must select an authorized tenant for FunctionGraph deployment. **NOTE** You are advised to configure the AK/SK of a member account with **FunctionGraph operation permissions** and not advised to configure the AK/SK of a tenant account.
IAM authorization	If the current user does not have the FunctionGraph operation permissions, you can use IAM to authorize the user.
Function	Functions created in FunctionGraph. For details, see **FunctionGraph Usage Process**.
Function Alias	Alias of a function. A function alias can be bound to two versions (including one grayscale release version). In addition, you can configure traffic distribution weights for two versions under the same alias. Only one alias can be created for each version.
Version	You can use an alias to call a function of the corresponding version. Only one alias can be created for each version.

Parameter	Description
Turn on grayscale version	The grayscale release version can distribute the traffic of the main version. You can control how much traffic to distribute with a weight. For more information, see **Managing Versions**.
Action Control	You can configure whether to enable this setting. • **Keep running on failure**: whether to continue the task even if this action fails.

5.2.7 Editing the Deployment Actions of the CodeArts Deploy Application

On the **Deployment Actions** tab page, you can delete, edit, add, and drag deployment actions. This section describes how to configure deployment actions.

Procedure

Step 1 Select the target application, click ***, and click **Edit**. The **Deployment Actions** page is displayed.

- Add an action.

  Click  above or below an added action. All actions that can be added are displayed in the right pane. You can add an action before or after the current action.
- Modify the action details.

  Click the target action and modify the action details in the right pane.
- Copy, delete, or disable an action.

  Click *** and click **Clone** to clone the action to the current application.

  Click *** and click **Delete** to delete the action from the current application.

  Click *** and click **Disable** to disable the action in the current application.
- Adjust the execution sequence of actions.

  You can drag actions as required.

Step 2 Click **Save**.

----End

5.3 Configuring Parameters of an Application

This section describes how to configure application parameters. By configuring application parameters, you can deploy applications based on custom parameters.

Application parameters are classified into the following types:

- **Custom**: Add parameters as required. Parameter types include string, enumeration, and environment.
- **Predefined**: The parameter values are generated and cannot be deleted or modified.

Creating and Configuring a Parameter

This section describes how to create and configure user-defined parameters in an application.

Step 1 Select the target application, click ***, and click **Edit**. The **Deployment Actions** page is displayed.

Step 2 Click **Parameters**.

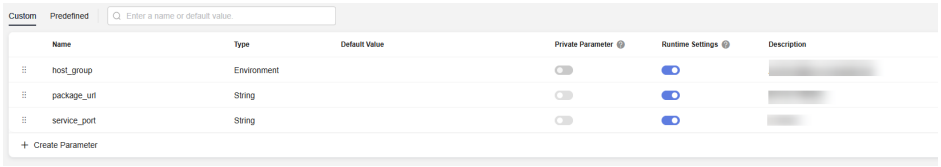
The following parameters are provided.

Basic Information	Description
Create Parameter	You can click **Create Parameter** to add a parameter.
Name	Parameter name. You can change the name of a custom parameter. **NOTE** The name of a custom parameter cannot be the same as that of a predefined parameter.
Type	Parameter types include string, enumeration, and environment.
Default Value	Enter or select a parameter value. **NOTE** If no environment is available when you select an environment type, you need to manually create an environment.
Private Parameter	If a parameter is private, the system encrypts the input for storage and only decrypts the parameter when you use it. If you enable **Private Parameter**, **Runtime Settings** cannot be enabled.
Runtime Settings	If this parameter is enabled, the parameter value can be changed during application deployment and the parameter value will be reported to the application. Enter Runtime Parameters during execution.
Description	Parameter description.
Operation	Click  to delete a parameter.

Step 3 Click **Create Parameter** to add a parameter. Customize the parameter name, type (**String** by default), and default value as required. Set private parameters and runtime settings.

- **String**

  The parameter value is a character string. You can customize the value in the **Default Value** column and set the private parameters or runtime settings.



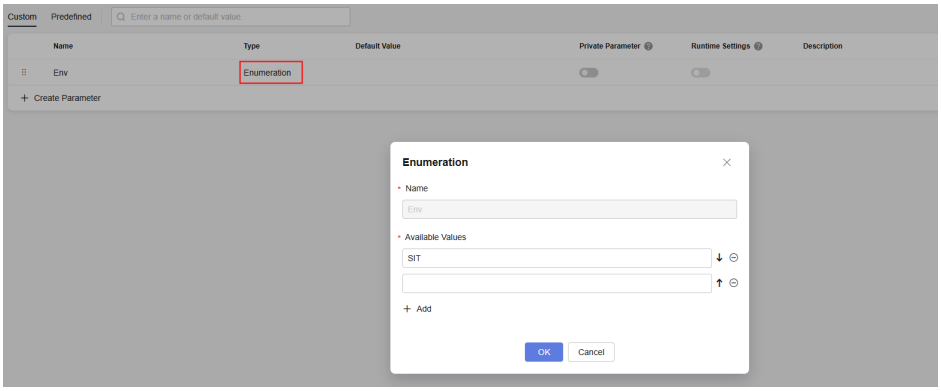
- **Enumeration**

  Select **Enumeration** and set the optional values.

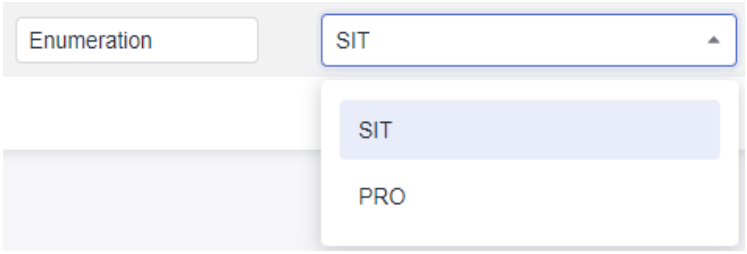
  Click + Add to set multiple values.

  To delete a value, click ⊖.

  Click ↑ ↓ to adjust the sequence. The adjusted sequence will be synchronized to the drop-down list in the **Default Value** column.



  After the setting, select a value from the **Default Value** drop-down list, as shown in the following figure.



- **Environment**

  Select an environment from the **Default Value** drop-down list. You can select all environments created in the application from the drop-down list.

  NOTE

  If there is no option in the drop-down list, create an environment on the **Environment Management** tab page. Then return to the parameter configuration page and click ↻ to refresh the environment to the drop-down list.

Step 4 Click **Save**.

----End

Editing a Parameter

Step 1 Select the target application, click ***, and click **Edit**. The **Deployment Actions** page is displayed.

Step 2 Click **Parameters**.

- Edit a parameter.

  You can edit **Name**, **Type**, **Default Value**, **Private Parameter**, **Runtime Settings**, and **Description** of the existing parameters.
- Add a parameter.

  Click **Create Parameter** to add a parameter.
- Delete a parameter.

  Click  to delete an existing parameter.

----End

Using a Parameter

This section uses an example to describe how to use custom parameters.

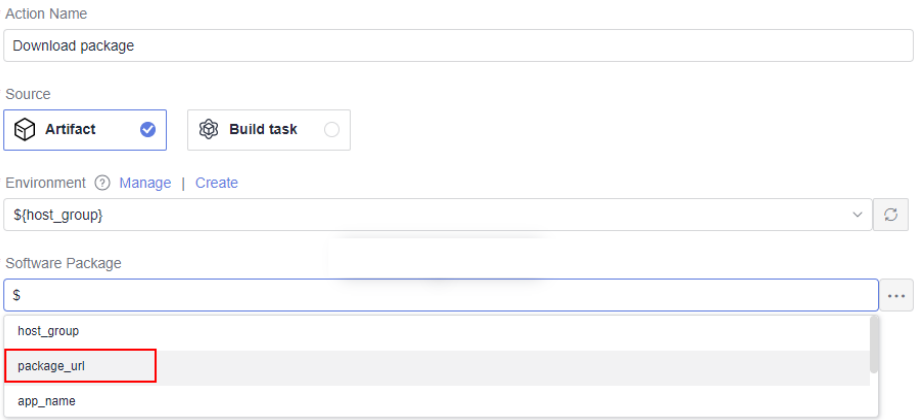
Step 1 Select the target application, click ***, and click **Edit**. The **Deployment Actions** page is displayed.

Step 2 Click **Parameters**, create custom parameters of **Environment**, **Enumeration**, and **String** respectively and enable their **Runtime Settings**.

Step 3 Click **Deployment Actions** and reference custom parameters in the actions details.

The parameter reference format is *${Parameter name}*. Enter **$** in the text box and the parameter list will be displayed. Select the parameter as required.

For example, when configuring the **Software Package** item, enter **$** to display the configured **package_url** parameter, and then select this parameter.



Step 4 Click **Save and Deploy**. In the dialog box that is displayed, assign values to the parameters again.

Step 5 Click **OK** to save and deploy the application.

----End

NOTE

1. When CodeArts Pipeline is associated with an application, parameters can be dynamically bound.
2. When CodeArts Pipeline is running, the entered parameter values will be replaced in the application and run.
3. After you add a task action of the deployment type to the pipeline task and select an application with **Runtime Settings** parameters, parameters can be dynamically configured when the pipeline is executed.

5.4 Configuring an Environment

During digital transformation, many applications need to be deployed quickly. In this case, an effective deployment method is required. The concept of environment arises accordingly. An is a set of one or more hosts running the same operating system. The environment is a deployment object in an application. It integrates multiple hosts to deploy applications in batches. This approach eliminates the need to deploy applications separately on each host. By running deployment commands once for the environment, applications can be efficiently and consistently deployed across multiple hosts. This method improves deployment efficiency and reduces the risk of human errors.

For host deployment scenarios, you can add, delete, and modify the environment of the application on the **Environment Management** tab page. You can also import, query, and delete hosts in the environment. The environment is important components of service deployment. This section describes how to configure an environment in an application.

Procedure

Step 1 Select the target application, click ***, and click **Edit**. The **Deployment Actions** page is displayed.

Step 2 Click the **Environment Management** tab.

Step 3 Create an environment.

1. Click **Create Environment**, set the following parameters, and click **Save**.

Parameter	Mandatory	Description
Environment	Yes	Enter a user-defined environment name. Enter 3 to 128 characters. Use digits, letters, hyphens (-), underscores (_), and periods (.).
Resource Type	Yes	You can choose **Host** based on the environment requirements.
OS	Yes	Choose **Linux** or **Windows** as the operating system for the host.
Description	No	Enter a description of the environment. Max. 500 characters.

2. Click **Import Host**. The system automatically filters all clusters that meet the requirements of the current environment. Select a target host cluster and import a host to the environment in either of the following ways:

   Import separately: Click in the **Operation** column of a host to import the host to the environment.

   Import in batches: Select multiple hosts and click **Import**.

   If you import a target host bound to a proxy host, the proxy host will be imported to the environment automatically.

3. (Optional) After the host is imported, click on the page to verify the connectivity.

Step 4 Modify the environment.

1. Edit the environment.
2. Edit the host cluster.
   - Editing an environment: Click in the **Operation** column of an environment to modify the environment name and description.
   - Deleting an environment: Click in the **Operation** column of an environment, and click **Yes**.
   - Managing permissions: Click in the **Operation** column of an environment to configure operation permissions for each role. Enable or disable permissions as required.

     For details about the permissions of each role, see the environment permissions table in **Purchasing and Authorizing CodeArts Deploy**.
3. Edit a host in the environment.
   - Verify host connectivity in batches: Select multiple hosts and click Verify Connectivity.
   - Enable network connectivity verification: Click in the **Operation** column of a host.
   - Delete a host: Click in the **Operation** column of a host, click **Delete**, and click **OK**.

     NOTE

     A proxy host cannot be deleted directly. A proxy host is deleted, when its last target host is deleted from the environment.

Step 5 Click **Save**.

----End

5.5 Configuring Permissions for Different Roles

On the **Permissions** tab page, you can manage and control application permissions. This section describes how to configure application permissions.

Procedure

Step 1 Select the target application, click ***, and click **Edit**. The **Deployment Actions** page is displayed.

Step 2 Click the **Permissions** tab.

Configure operation permissions for each role as required. View the **default application-l permissions**.

- indicates that the permission is enabled. You can click it again to disable the permission.
- indicates that the permission is disabled. You can click it again to enable the permission.
- indicates that the permission is enabled and cannot be changed.

NOTE

- An application or project creator's permissions cannot be changed.
- If you do not have the **Edit** permission, the editing page cannot be displayed.
- If you have the **Edit** permission but do not have the **Permissions**, you cannot edit other permissions.
- Project administrators (project creators and PMs) can customize roles and edit the permissions of custom roles.

Step 3 Click **Save**.

----End

5.6 Deploying an Application and Viewing the Result

You can deploy applications using the following methods:

- **Re-deployment**: Deploy an existing application again. This method applies to the scenario where the original application configurations are used to complete deployment.
- **Rollback**: Select a historical deployment record to roll back the application. Deployment records of the last 92 days can be retained. This method applies to the scenario where the historical application configurations are used to complete deployment.

Prerequisites

- An application is available. If no application is available, create one by following the instructions provided in **Creating an Application**.
- You have permissions to deploy applications. For details, see **Configuring Application-Level Permissions**.
- A deployment record is available for the target application in the rollback scenario.

New deployment

Step 1 Go to the CodeArts homepage and click the target project name to access the project.

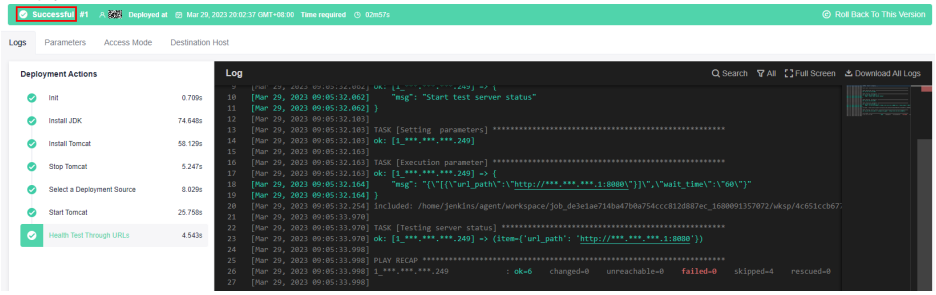
Step 2 Choose **CICD** > **Deploy**.

Step 3 Select the target application in the application list and click  .

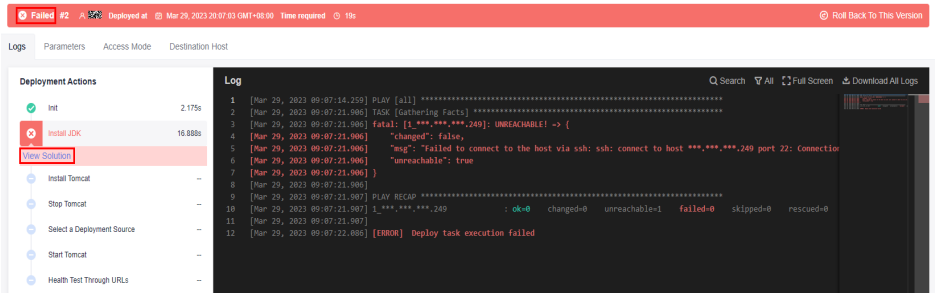
Step 4 If runtime parameters are configured, the parameter setting dialog box is displayed. Enter the parameter values and click **OK** to deploy the application. For details, see **Managing Parameters**.

Step 5 After the deployment is complete, click the application name and click the target deployment record. The application status bar changes to green and the message **Successful** is displayed, indicating that the application is successfully deployed.

The following figure shows that the deployment is successful.



If the application status bar turns red and displays **Failed**, the application fails to be deployed. In this case, click **View Solution**.



For details about deployment problems, see **Creating an Application**.

NOTE

Each time an application is deployed, a version record is added. The record with the largest ID is the latest deployment record. Deployment records of the last 92 days can be retained.

----End

Rollback Deployment

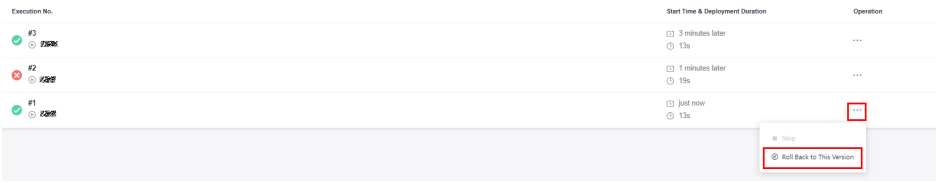
Step 1 Go to the CodeArts homepage and click the target project name to access the project.

Step 2 Choose **CICD** > **Deploy**.

Step 3 Click the target application name in the application list. The application deployment records are displayed.

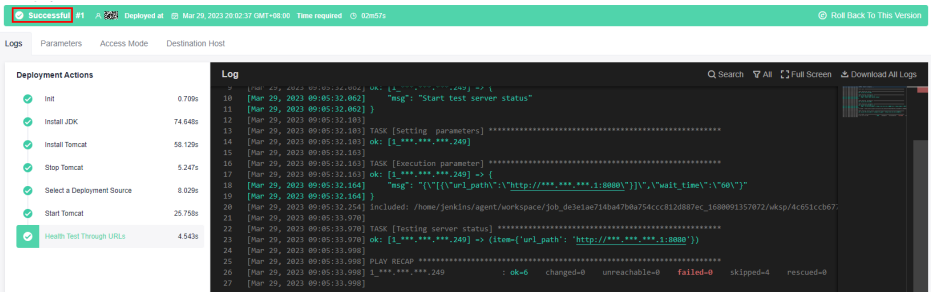
Step 4 Select the target version and click **Roll Back to This Version**. In the displayed dialog box, click **OK**.

The following uses version 2 as an example.

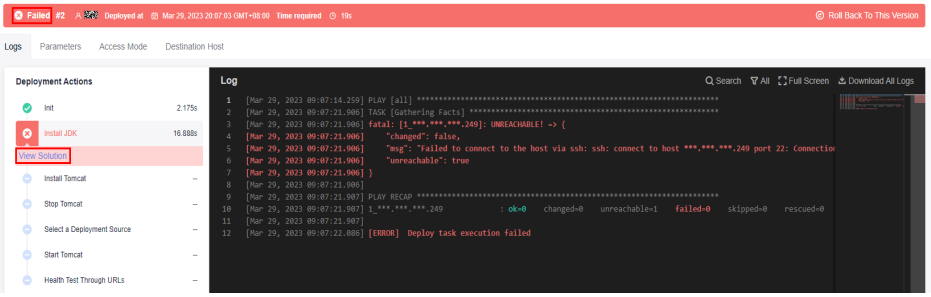


Step 5 After the deployment is complete, click the deployment record. The application status bar changes to green and the message **Successful** is displayed, indicating that the application is successfully deployed.

The following figure shows that the deployment is successful.



If the application status bar turns red and displays **Failed**, the application fails to be deployed. In this case, click **View Solution**.



For details about deployment problems, see **Creating an Application**.

NOTE

Each time an application is deployed, a version record is added. The record with the largest ID is the latest deployment record. Deployment records of the last 92 days can be retained.

----End

Viewing an Application

This section describes how to view the information about a created application, including the deployment records and configuration details of the application.

- Deployment records: You can view the deployment records of an application from the last 92 days.
- Configuration details: You can view the latest configurations of an application.
- Operation records: You can check the operation records of an application in the last year.

Each time an application is deployed, a version record is added. The record with the largest ID is the latest deployment record. You can check information about deployed applications, such as **Logs**, **Parameters**, **Access Mode**, and **Environment**.

Step 1 Click an application name in the application list. The **Deployment Records** tab page is displayed.

Step 2 View the historical versions of the application, which are sorted by deployment time from newest to oldest.

You can click an application version in the preceding figure to view its **Logs**, **Parameters**, **Access Mode**, and **Environment**.

Table 5-43 Parameters

Parameter	Description
Logs	Deployment log information. • By default, all logs of the application are displayed. Click a deployment action to view its log. • You can click **Full Screen** in the upper right corner of the log window to maximize the log window, and click **Exit Full Screen** to exit the full screen. • You can click **Download All Logs** to download all logs to a local directory.
Parameters	Parameters in the **Runtime Parameter** dialog box when the application is deployed.
Access Mode	This parameter is available only when **Deployment Actions** of an application contain **Health Test via URLs**. You can add this action to test the service status by accessing a URL on a specified host.
Environment	Environment where the application is deployed in the host deployment scenario.

Step 3 Go back to the deployment records page and switch tabs to view the latest **Basic Information**, **Deployment Actions**, **Parameters**, **Deployment Records**, **Environment Management**, **Permissions**, and **Notifications**.

Step 4 Click the ⋮ icon next to **Deploy** and click **History** in the drop-down list to view the operation records in the last year. You can also return to the application list, select a target application, click the ··· icon, and click **History** to access the page.

Parameter	Description
Operator	Nickname of the operator.
Operation	Operation types of the operator: **Create** and **Edit**.
Last Modified	Time when the operation is performed.
Object	Object on which the operator performs operations. Options: **Application**, **Deployment Actions**, **Parameters**, **Permissions**, and **Notifications**.

----End

5.7 Viewing an Application

This section describes how to view the information about a created application, including the deployment records and configuration details of the application.

- Deployment records: You can view the deployment records of an application from the last 92 days.
- Configuration details: You can view the latest configurations of an application.
- Operation records: You can check the operation records of an application in the last year.

Each time an application is deployed, a version record is added. The record with the largest ID is the latest deployment record. You can check information about deployed applications, such as **Logs**, **Parameters**, **Access Mode**, and **Environment**.

Step 1 Click an application name in the application list. The **Deployment Records** tab page is displayed.

Step 2 View the historical versions of the application, which are sorted by deployment time from newest to oldest.

You can click an application version in the preceding figure to view its **Logs**, **Parameters**, **Access Mode**, and **Environment**.

Table 5-44 Parameters

Parameter	Description
Logs	Deployment log information. • By default, all logs of the application are displayed. Click a deployment action to view its log. • You can click **Full Screen** in the upper right corner of the log window to maximize the log window, and click **Exit Full Screen** to exit the full screen. • You can click **Download All Logs** to download all logs to a local directory.
Parameters	Parameters in the **Runtime Parameter** dialog box when the application is deployed.
Access Mode	This parameter is available only when **Deployment Actions** of an application contain **Health Test via URLs**. You can add this action to test the service status by accessing a URL on a specified host.
Environment	Environment where the application is deployed in the host deployment scenario.

Step 3 Go back to the deployment records page and switch tabs to view the latest **Basic Information**, **Deployment Actions**, **Parameters**, **Deployment Records**, **Environment Management**, **Permissions**, and **Notifications**.

Step 4 Click the ⋮ icon next to **Deploy** and click **History** in the drop-down list to view the operation records in the last year. You can also return to the application list, select a target application, click the ••• icon, and click **History** to access the page.

Parameter	Description
Operator	Nickname of the operator.
Operation	Operation types of the operator: **Create** and **Edit**.
Last Modified	Time when the operation is performed.
Object	Object on which the operator performs operations. Options: **Application**, **Deployment Actions**, **Parameters**, **Permissions**, and **Notifications**.

----End

5.8 Configuring System Notifications

On the **NotificationsNotifications** tab page, you can set notification rules to send events to the application creator, executor, and follower via system messages, and emails. This section describes how to configure notifications.

Procedure

Step 1 Select the target application, click ••• , and click **Edit**. The **Deployment Actions** page is displayed.

Step 2 Click **Notifications**.

Step 3 To set event notifications, click  (indicates that the notification is enabled) or  (indicates that the notification is disabled) as required.

- **From CodeArts Deploy**: Application updates will be pushed via messages.
- **Email**: Application updates will be pushed to the application creator, executor, and members who have favorited the application via emails.

Step 4 Click **Save**.

----End

6 Creating and Deploying an Application Using a Preset Template

6.1 Introduction to CodeArts Deploy Templates

In CodeArts, the developed applications need to be frequently deployed in different environments, such as the test, pre-release, and production environment. Deployment templates are key tools to solve these problems.

CodeArts Deploy provides popular templates for deployment process (system templates) and allows you to save custom deployment processes as custom templates, enabling you to quickly create applications. This section describes how to create an application using a template.

NOTE

You can add a system template to favorites. After the template is added to favorites, the template is moved to the top of the system template list. If you favorite multiple templates, the templates are displayed on the top from newest to oldest based on the time when they are favorited.

Table 6-1 System templates

Name	Description
Deploy a ServiceStage Application for ECS	Deploy applications to ECS instances based on ServiceStage.
Deploy a ServiceStage Application for CCE	Deploy applications to CCE cluster based on ServiceStage.
Deploy a ServiceStage Application for AS	Deploy applications to ECS instances in the AS group based on ServiceStage.
Kubernetes Manifest Deployment for CCE	Deploy an application in a Kubernetes cluster with a manifest file defining Kubernetes objects.

Name	Description
Kubernetes Quick Deployment for CCE	Deploy an application quickly by upgrading Kubernetes workload images.
Kubernetes Custom Cluster Deployment	Deploy an application in a Kubernetes cluster with a manifest file defining Kubernetes objects.
Deploy in FunctionGraph	Deploy software packages on FunctionGraph and release a new version.
Deploy a Tomcat Application	Deploy a Tomcat application on hosts.
Deploy a Spring Boot Application	Deploy a Spring Boot application on hosts.
Deploy a Docker Application for Linux	Deploy software in containers on hosts using all Docker commands.
Deploy a Django Application	Deploy a Django application on hosts.
Deploy a Node.js Application	Deploy a Node.js application on hosts.
Deploying a General Application	Deploy a general application using Shell scripts.
Deploy a Go Application	Deploy a Go application on hosts.
Deploy a Vue Application	Deploy Vue applications on hosts.

Creating an Application Using a System Template - Procedure

Step 1 Go to the CodeArts homepage and click the target project name to access the project.

Step 2 Choose **CICD** > **Deploy**.

Step 3 Click **Create Application**. On the displayed **Basic Information** page, modify the basic information such as **Name**, **Execution Resource Pool**, and **Description** as required. For details, see **Editing Basic Information**.

Step 4 After editing the basic application information, click **Next** and go to the **Select Template** page.

Step 5 Select a recommended template based on the service type. Click **OK**. The **Deployment Actions** page is displayed. The left pane is the action orchestration area, and the right pane is the action details area.

Step 6 (Optional) Configure application information.

1. Click  above or below an added action. All actions that can be added are displayed in the right pane. You can add an action before or after the current action.
   - You can drag, add, and delete actions in the action orchestration area.
   - Click **Save as Custom Template** to save the current application as a custom template. The template is displayed in **Custom**.

2. After adding an action, configure the action information. For details, see **Configuring Application Deployment Actions**.
3. After the action information is configured, switch to the **Basic Information** tab page and click **Edit** to edit the basic information as required. For details, see **Editing Basic Information**.
4. Switch to the **Parameters** tab page, and create custom parameters as required. For details, see **Editing Parameters**.
5. Switch to the **Environment Management** tab page, and create and manage environments as required. For details, see **Configuring an Environment**.
6. Switch to the **Permissions** tab page and configure role permissions as required. For details, see **Configuring Permissions for Different Roles**.
7. Switch to the **NotificationsNotifications** page to notify users of application events they favorited through emails. For details, see **Configuring System Notifications**.

Step 7 After configuring all information, click **Save**.

----End

6.2 Creating and Deploying an Application Using a Kubernetes Template

6.2.1 Creating and Deploying an Application in a CCE Cluster

This section introduces how to deploy an application in a Huawei Cloud CCE cluster with manifest file defining Kubernetes objects.

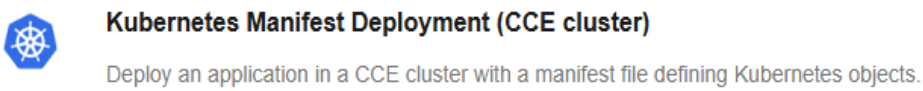
The related deployment action is as follows.

For details, see **Deploying an Application in Kubernetes (CCE Cluster) Using Manifest**.

6.2.2 Updating Applications Deployed in a CCE Cluster by Upgrading Application Images

This section introduces how to deploy an application quickly by upgrading Kubernetes workload images.

The related deployment action is as follows.

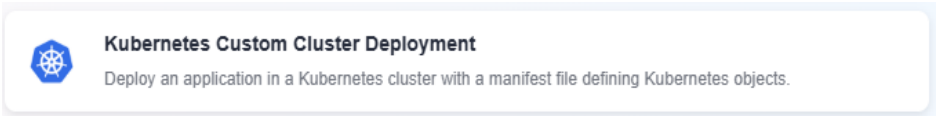


For details about this action, see **Deploying an Application in Kubernetes (CCE Cluster) Quickly**.

6.2.3 Creating and Deploying an Application to a General Kubernetes Cluster

This section introduces how to deploy an application in a Kubernetes cluster with a manifest file defining Kubernetes objects.

The related deployment action is as follows.

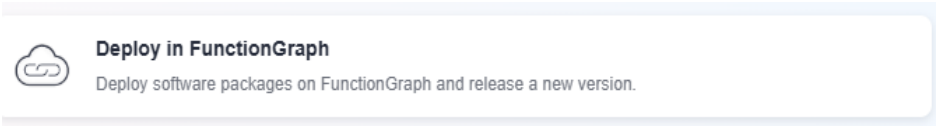


For details about this action, see **Deploying an Application with a Custom Kubernetes Cluster**.

6.3 Creating and Deploying an Application Using the Function Deployment Template

This action deploys a software package to FunctionGraph and releases a new version.

The related deployment action is as follows.



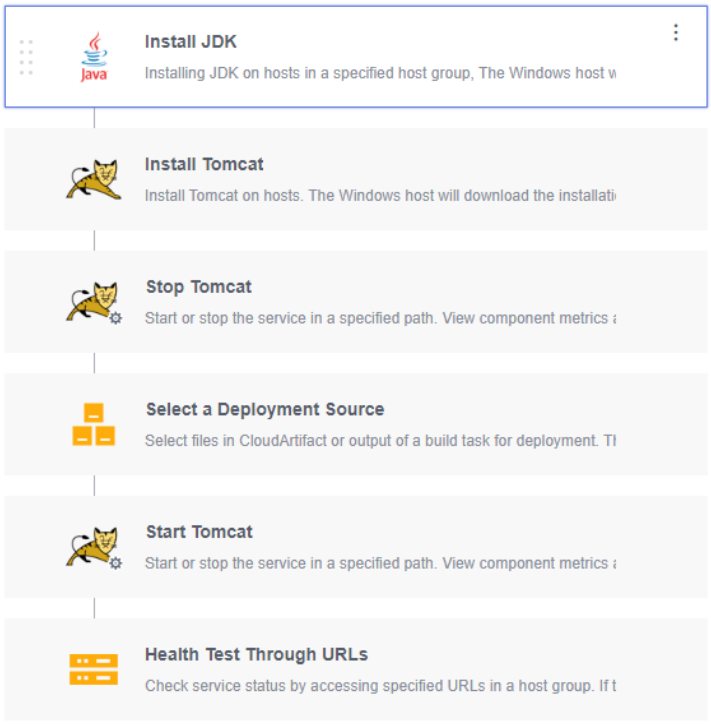
For details about this action, see **Deploying to FunctionGraph**.

6.4 Creating and Deploying an Application Using the Tomcat Template

Deploy a WAR package to the Tomcat service on a host and start the service.

You have installed **Tomcat** on the target host. If the **Tomcat** has been installed, remove the **Install Tomcat** action from the template.

The related deployment action is as follows.



Step 1 **Install JDK**.

Step 2 **Install Tomcat**.

Step 3 **Stop Tomcat**.

Step 4 **Select a deployment source**.

Step 5 **Start Tomcat**.

Step 6 **Perform health test via URLs**.

----End

Table 6-2 describes the parameters in the template.

Table 6-2 Template parameters

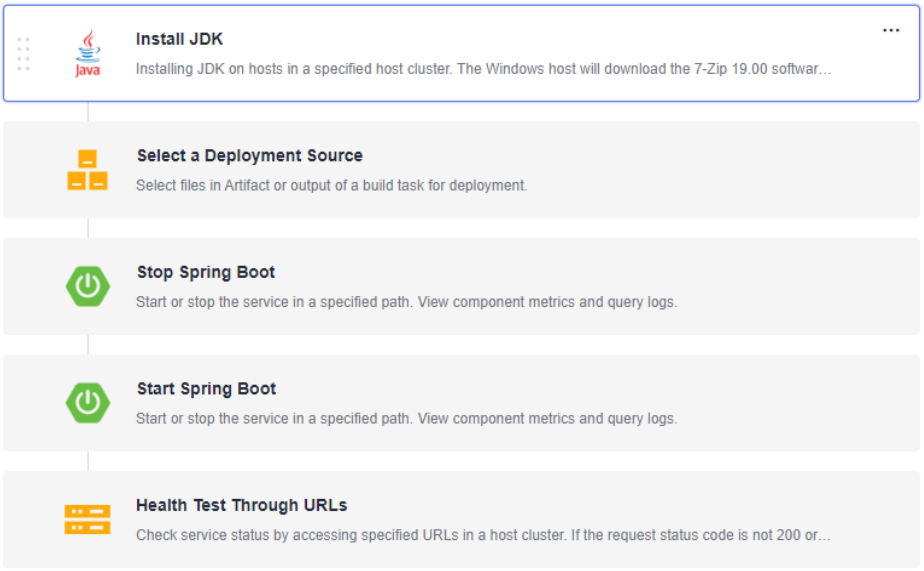
Parameter	Description
host_group	Target environment where the application is deployed.
package_url	Software package download link. To obtain it, go to the **Artifact** > **Release Repos** page.
service_port	Port number of a Tomcat application. The default value is **8080**.
tomcat_home_path	Path of the Tomcat client. The default value is **/usr/local/tomcat/apache-tomcat-8.5.38**.

6.5 Creating and Deploying an Application Using the Spring Boot Deployment Template

Deploy a Spring Boot Java background application on the host and start the service.

You have installed **JDK** on the target host. If the **JDK** has been installed, remove the **Install JDK** action from the template.

The related deployment action is as follows.



Step 1 **Install JDK**.

Step 2 **Select a deployment source**.

Step 3 **Stop Spring Boot**.

Step 4 **Start Spring Boot**.

Step 5 **Perform health test via URLs**.

----End

Table 6-3 describes the parameters to be set in the template.

Table 6-3 Template parameters

Parameter	Description
host_group	Target environment where the application is deployed.
package_url	Software package download link. To obtain it, go to the **Artifact** > **Release Repos** page.
service_port	Port number of a Spring Boot application. The default value is **8080**.

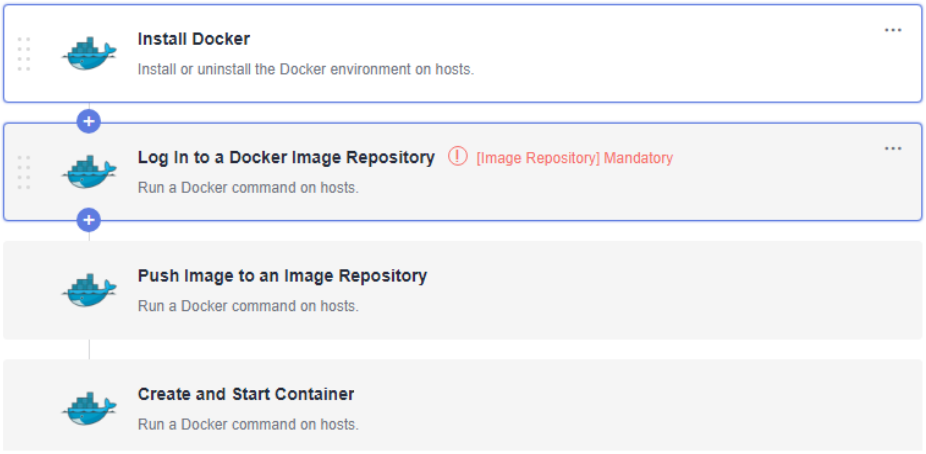
Parameter	Description
package_name	Name of the Spring Boot application release package, without the file name extension.

6.6 Creating and Deploying an Application Using the Docker Deployment Template (Linux)

Install Docker on the host, log in to the remote repository, and perform operations such as build, push, and run.

You have installed Docker on the target host. Remove the **Install Docker** action from the template.

The related deployment action is as follows.



Step 1 **Install Docker**.

Step 2 **Log in to the Docker image repository**.

Step 3 **Pull an image**.

Step 4 **Create and run a container**.

----End

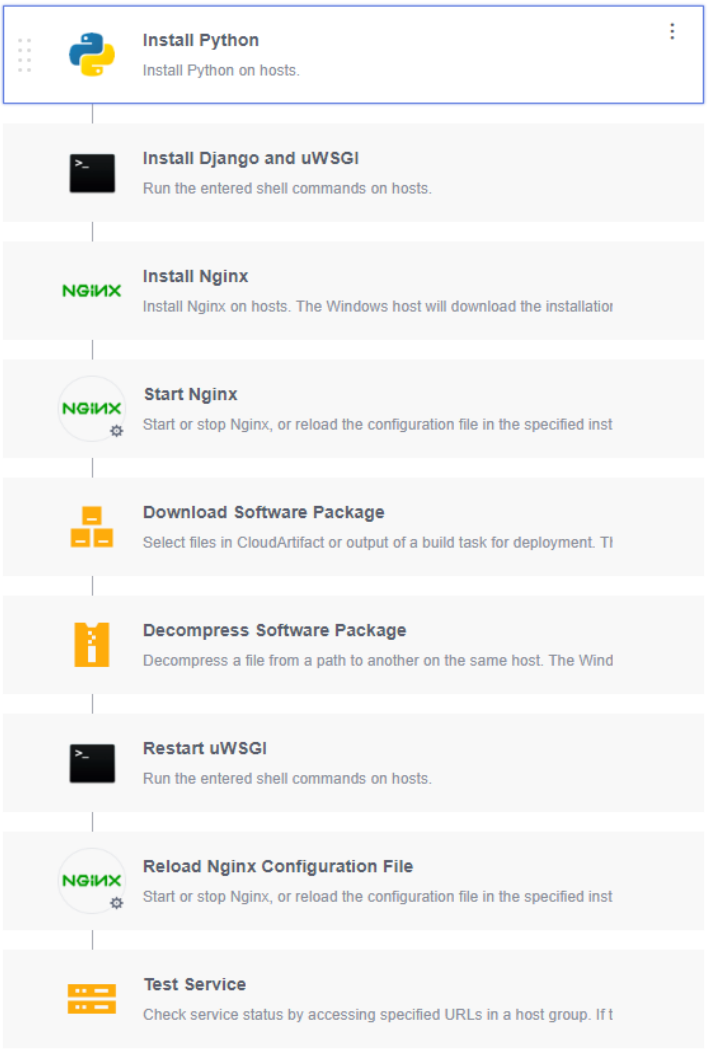
6.7 Creating and Deploying an Application Using the Django Template

Deploy a Django Python background application on the host and start the service.

- You have installed Nginx on the target host. If Nginx has been installed, remove the **Install Nginx** action from the template.
- You have installed uWSGI on the target host. If uWSGI has been installed, remove the **Install uWSGI** action from the template.

- You have configured the pip and yum sources. yum and pip are used to install software. The corresponding source addresses are configured to ensure normal installation.
- You have created a Django project and uploaded the project files to Artifact. You can use CodeArts Build to compress the Django project files and upload the package to Artifact. Then, download and decompress the package during the deployment.
- The template is not supported in Python 3.10 or later versions.

The related deployment actions are as follows.



Step 1 **Install Python**.

Step 2 **Install Django and uWSGI**.

Step 3 **Install Nginx**.

Step 4 **Start Nginx**.

Step 5 **Download the software package**.

Step 6 **Decompress the software package**.

Step 7 **Restart the uWSGI**.

Step 8 **Reload the Nginx configuration file**.

Step 9 **Test services**.

----End

Table 6-4 describes the parameters to be set in the template.

Table 6-4 Template parameters

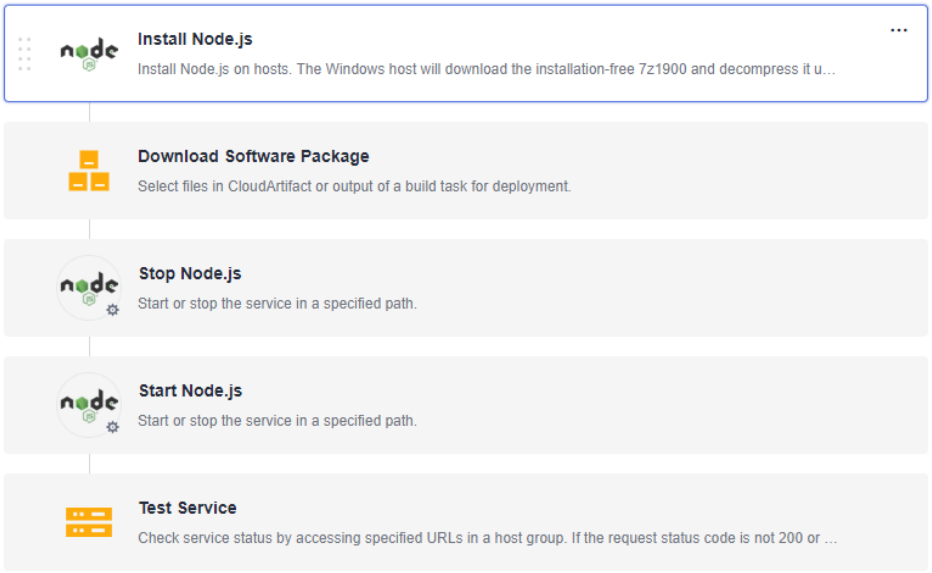
Parameter	Description
host_group	Target environment where the application is deployed.
service_port	Port number of a Django application. The default value is **8080**.
uwsgi_pid_file_path	Path of the uWSGI process ID file.
uwsgi_lni_file_path	Path of the uWSGI configuration file.
package_path	Path for downloading the Django application release package to the target host.
package_name	Name of the Django application release package downloaded to the target host.
package_url	Software package download link. To obtain it, go to the **Artifact** > **Release Repos** page.

6.8 Creating and Deploying an Application Using the Node.js Template

Deploy a Node.js web service on the host and start the service.

You have installed Node.js on the target host. Remove the **Install Node.js** action from the template.

The related deployment actions are as follows.



Step 1 **Install Node.js**.

Step 2 **Download the software package**.

Step 3 **Stop Node.js**.

Step 4 **Start Node.js**.

Step 5 **Test services**.

----End

Table 6-5 describes the parameters to be set in the template.

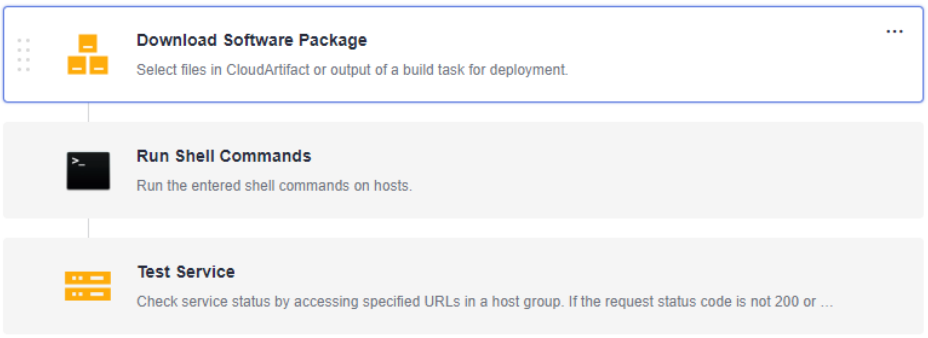
Table 6-5 Template parameters

Parameter	Description
host_group	Target environment where the application is deployed.
package_url	Software package download link. To obtain it, go to the **Artifact** > **Release Repos** page.
service_port	Application port.

6.9 Creating and Deploying a Common Application by Running the Shell Script

Deploy a general application using Shell scripts.

The related deployment actions are as follows.



Step 1 **Download the software package**.

Step 2 **Execute the deployment script**.

Step 3 **Perform the health test**.

----End

Table 6-6 describes the parameters to be set in the template.

Table 6-6 Template parameters

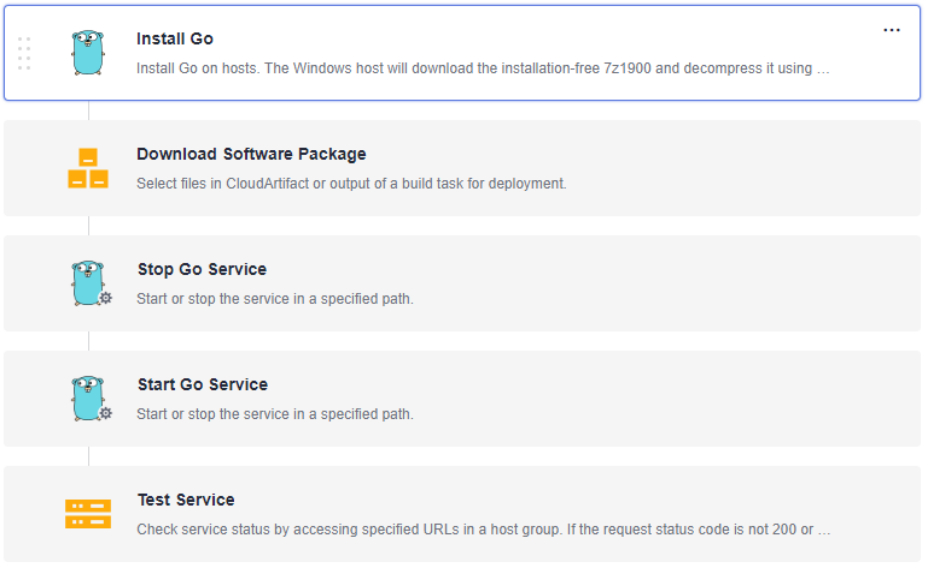
Parameter	Description
host_group	Target environment where the application is deployed.
package_url	Software package download link. To obtain it, go to the **Artifact** > **Release Repos** page.
app_name	Application name to obtain the process ID and stop the process.
service_port	Application port.

6.10 Creating and Deploying an Application Using the Go Application Deployment Template

Deploy a Go web service on the host and start the service.

You have installed Go on the target host. Remove the **Install Go** action from the template.

The related deployment actions are as follows.



Step 1 **Install Go**.

Step 2 **Download the software package**.

Step 3 **Stop Go**.

Step 4 **Start Go**.

Step 5 **Perform the health test**.

----End

The table below describes the parameters to be set in the template.

Table 6-7 Template parameters

Parameter	Description
host_group	Target environment where the application is deployed.
package_url	Software package download link. To obtain it, go to the **Artifact** > **Release Repos** page.
app_name	Application name to obtain the process ID and stop the process.
service_port	Application port.

7 Creating and Deploying an Application Using a Custom Template

You can customize an application by customizing deployment actions based on project requirements. This section describes how to use a custom template to create and deploy an application.

Application Scenarios

A custom template can be used in the following scenarios:

- If the existing system templates cannot meet your requirements, you can **create a custom template using the blank template**.
- You can also **customize a template when creating an application** or **customize a template from an existing application** for other members in the project to quickly create applications.

NOTE

A custom template can be directly used during application creation.

Customizing from a Blank Template

Step 1 Go to the CodeArts homepage and click the target project name to access the project.

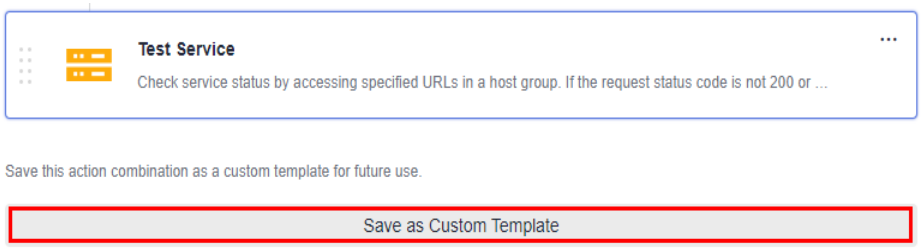
Step 2 Choose **CICD** > **Deploy**.

Step 3 On the **Applications** tab page, click **Create Application**, enter basic information and an application is created. You can modify basic information such as the **Name**, **Description**, and **Execution Resource Pool** as required. For details, see **Editing Basic Application Information**. Then click **Next**.

Step 4 Click **Blank Template** to enter the **Deployment Actions** tab page.

Step 5 Edit the deployment actions based on service requirements.

Step 6 Click **Save as Custom Template**. In the dialog box displayed, enter a template name and description, and click **OK**.



----End

Customizing a Template from an Existing Application

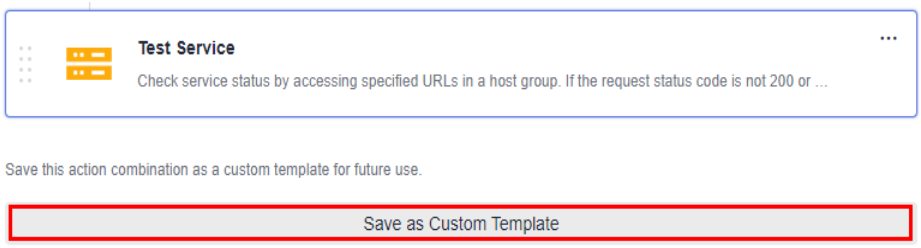
Step 1 Go to the CodeArts homepage and click the target project name to access the project.

Step 2 Choose **CICD** > **Deploy**.

Step 3 On the **Applications** tab page, select an application to be deployed and find its **Operation** column. Click *** on the right of the application, click **Edit** to view the detailed configuration information of the application.

Step 4 Edit the deployment actions based on service requirements.

Step 5 Click **Save as Custom Template**. In the dialog box displayed, enter a template name and description, and click **OK**.



----End

Creating a Custom Template on the Application Creation Page

Step 1 Go to the CodeArts homepage and click the target project name to access the project.

Step 2 Choose **CICD** > **Deploy**.

Step 3 On the **Applications** tab page, click **Create Application**. The **Basic Information** page is displayed. You can retain the default values of the basic parameters or modify the parameters based on your requirements.

Step 4 Click **Next**, select **Custom** on the right of the **Custom**.

Step 5 Configure basic information, deployment actions, and parameter settings as needed.

Step 6 Click **Save** in the upper right corner.

----End

Favoriting, Editing, or Deleting a Custom Template

Step 1 Go to the CodeArts homepage and click the target project name to access the project.

Step 2 Choose **CICD** > **Deploy**.

Step 3 Choose **Orchestration Template Management** > **Custom Templates**.

- Click ☆ next to a template to add it to your favorites. Then the template will be pinned on the top of the custom template list.
- Click ··· in the row of a template to be edited and click **Edit**.
- Click 🗑. Note that the template cannot be restored after being deleted.

----End

NOTE

For other operations such as configuring deployment actions, setting application parameters, and host environment, deploying applications, and viewing results, see deployment actions in **Creating and Deploying an Application with a Blank Template**.

8 Querying Audit Logs (Optional)

Cloud Trace Service (CTS) records operations on CodeArts Deploy for query, audit, and backtrack.

Operations Supporting Audit Logs

Table 8-1 CodeArts Deploy operations recorded by CTS

Operation	Resource Type	Event
Create an application	deployApp	createDeployApp
Modify an application	deployApp	updateDeployApp
Delete an application	deployApp	deleteDeployApp
Clone an application	duplicateDeployApp	deployApp
Favorite an application	applicationCare	applicationCare
Unfavorite an application	cancelApplicationCare	applicationCare
Deploy an application	deployTask	runDeployTask
Modify the parameters of a deployment task	changeDeployConfig	deployTaskConfig
Modifying the disabled status of an application	updateAppDisableStatus	deployApp
Download the application deployment logs	download_log	deployApplicationLog
Delete a deployment template	deleteDeployTemplate	deployTemplate
Edit a deployment template	updateDeployTemplate	deployTemplate

Operation	Resource Type	Event
Favorite a deployment template	careDeployTemplate	deployTemplate
Unfavorite a deployment template	cancelDeployTemplate-Care	deployTemplate
Create an application using a template	createDeployAppByTem-plate	deployApp
Test the connectivity of application notification subscription	testMsgConnection	deployTask
Save application notification subscription configuration	saveAppMsgConfig	deployApp
Gain application notification subscription configuration	getAppMsgConfig	deployTask
Batch delete applications	batchDeleteDeployApp	deployApp
Roll back a deployment task	DeployRollback	deployTask
Update application permissions	updateAppPermission	deployApplicationPer-mission
Update the application authentication level	updateProjectPermis-sionSwitch	deployApplicationPer-mission
Create a deployment environment	createEnvironment	applicationEnvironment
Modify a deployment environment	updateEnvironment	applicationEnvironment
Delete a deployment environment	deleteEnvironment	applicationEnvironment
Install ICAgent	installICAgent	aomAgent
Create a host cluster	createHostCluster	hostCluster
Verify connectivity	testSelectedTargetCon-nection	resourceHost
Clone a host	copyHosts	resourceHost
Import a host to an environment	importHostToEnviron-ment	environmentHost
Delete a host from an environment	deleteHostFromEnviron-ment	environmentHost

Operation	Resource Type	Event
Modify environment permissions	updateEnvironmentPermission	environmentPermission
Modify permissions for a host cluster	updatePermission	hostClusterPermission
Modify a host cluster	updateHostCluster	hostCluster
Delete a host cluster	deleteHostCluster	hostCluster
Create a host	createHost	resourceHost
Modify a host	updateHost	resourceHost
Batch delete hosts	batchDeleteHost	resourceHost
Delete a host	deleteHost	resourceHost

Viewing Audit Logs

Query CodeArts Deploy traces on the CTS console. For details, see **viewing audit events**.

