CodeArts Deploy

User Guide

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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 within a few clicks.

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

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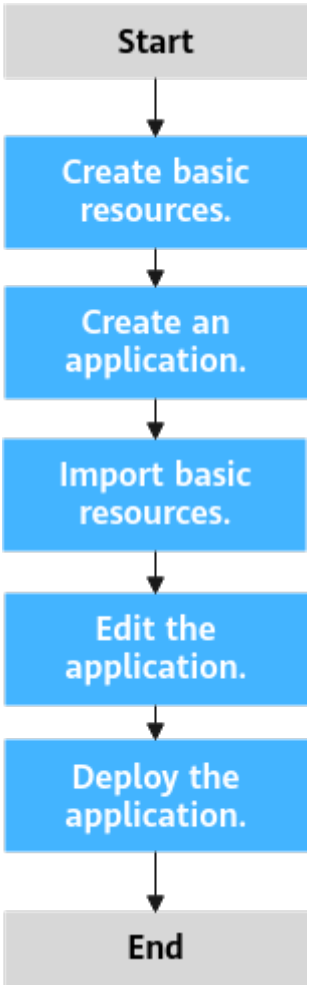

The operations involved are as follows:

- **Create basic resources**: Prepare for the deploy environment.
- **Create an application**: Quickly set up an application 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.

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2 Purchasing and Authorizing CodeArts Deploy

2.1 Enabling CodeArts Deploy

Prerequisites

You have signed up for **a Huawei Cloud account**.

Terms of Service

You need to first subscribe to a CodeArts package. Then you can use CodeArts Deploy and other individual services.

Enabling Service

Step 1 Go to the **CodeArts Deploy console**.

Step 2 Click **Buy Now** to purchase a CodeArts package.

Step 3 Purchase a package as needed. For details, see **Purchasing CodeArts**.

----End

2.2 Authorizing IAM Users to Use CodeArts Deploy

This section describes how to use **Identity and Access Management** (IAM) to manage permissions for your CodeArts Deploy resources on the console. With IAM, you can:

- Create users or user groups in your Huawei Cloud account based on your enterprise's organizational structure. Each user has their own security credentials for accessing CodeArts Deploy resources.
- Grant only the permissions required for users to perform a specific task.
- Entrust a Huawei Cloud account or a cloud service to perform efficient O&M on your CodeArts Deploy resources.

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If your Huawei Cloud account meets your permission requirements, you can skip this section.

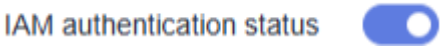
This section describes the policy-based authorization method. **Figure 2-1** shows the authorization process.

Prerequisites

- Learn about the permissions supported by the CodeArts Deploy console and select them according to your requirements. For details about the system-defined policies supported by the CodeArts Deploy console, see **Identity Policy-based Permissions Management**.
- To grant permissions for other services, learn about all **system-defined permissions** supported by IAM.
- IAM authentication has been enabled for 5 minutes.

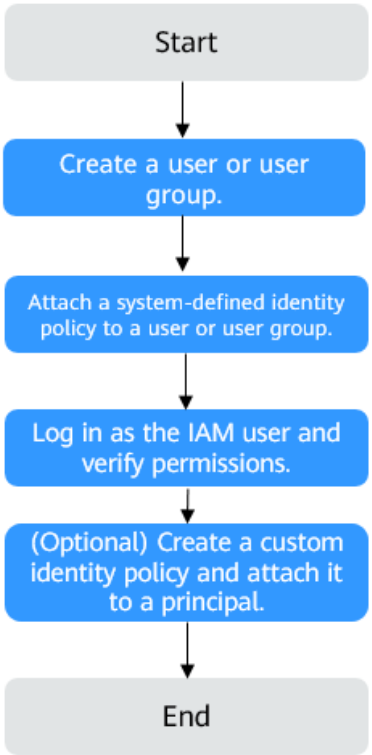
  a. Log in to the service homepage, click the username  on the top navigation bar, and choose **All Account Settings**.

  b. In the navigation pane, choose **General** > **Global Settings**. On the displayed page, enable IAM authentication. Example:

Example Process

Figure 2-1 Process of granting permissions for the CodeArts Deploy console



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1. **Create a user** or **a user group**:

   On the IAM console, create a user or user group.

2. **Attach a system-defined policy to a user or user group.**

   Assign the permissions specified in the system-defined policy **CodeArtsDeployReadOnlyPolicy** to the user or group, or attach the policy to it.

3. **Log in** and verify permissions.

   Log in to the console as an authorized user and verify the permissions.

   a. Choose **Developer Services** > **CodeArts Deploy** from the service list. Go to the CodeArts Deploy console.

   b. Choose **Enterprise Account Authorization**. On the displayed page, check the authorized enterprise accounts.

   c. Click **Authorize Enterprise Account**. In the displayed dialog box, enter characters for testing. If the system prompts that your permissions are insufficient, the **CodeArtsDeployReadOnlyPolicy** policy has already taken effect.

Custom Policies for the CodeArts Deploy Console

You can create custom policies to supplement the system-defined policies of CodeArts Deploy. For the actions supported for custom policies, see "Identity Policy-based Authorization" in the *CodeArts Deploy API Reference*.

You can create custom policies in either of the following ways:

- Visual editor: Select cloud services, actions, resources, and request conditions for auto-generation. This does not require knowledge of policy syntax.
- JSON: Create a policy in the JSON format from scratch or based on an existing policy.

For details, see **Creating a Custom Policy**. The following lists examples of common CodeArts Deploy custom policies.

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NOTE

- The current version does not support field **RequestedRegion**.
- The **codeartsdeploy:application:create** and **codeartsdeploy:application:list** operations do not support application resource update.

Compliant example:

```
{
 "Version": "5.0",
 "Statement": [
  {
   "Effect": "Allow",
   "Action": [
    "codeartsdeploy:application:create",
    "codeartsdeploy:application:list"
   ]
  }
 ]
}
```

Non-compliant example:

```
{
 "Version": "5.0",
 "Statement": [
  {
   "Effect": "Allow",
   "Action": [
    "codeartsdeploy:application:create",
    "codeartsdeploy:application:list"
   ],
   "Resource": [
    "codeartsdeploy:*:*:application:40d0cc8bae254bfaaa32707d540e2dc3"
   ]
  }
 ]
}
```

- Example 1: Grant permissions to query application details.

```
{
    "Version": "5.0",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "codeartsdeploy:application:get"
            ]
        }
    ]
}
```

- Example 2: Grant permission to deny application deletion.

  A policy with only "Deny" permissions must be used together with other policies. If the permissions granted to an IAM user contain both "Allow" and "Deny", the "Deny" permissions take precedence over the "Allow" permissions. To grant a user the **CodeArtsDeploy.Application** permissions while preventing the deletion of applications, a custom policy that denies the delete permission can be created and assigned to the user together with the **CodeArtsDeploy.Application** policy. The user can then perform all operations on applications except deletion. The following is an example of a deny policy:

```
{
    "Version": "5.0",
    "Statement": [
        {
            "Effect": "Deny",
            "Action": [
                "codeartsdeploy:application:delete"
```

```
            ]
        }
    ]
}
```

- Example 3: Grant permission to create a custom policy containing multiple actions.

  A custom policy can contain the actions of both the current and other services. The following is an example policy containing multiple actions:

```
{
    "Version": "5.0",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "cce:cluster:get",
                "cce:cluster:list"
            ]
        },
        {
            "Effect": "Allow",
            "Action": [
                "codeartsdeploy:application:get",
                "codeartsdeploy:application:list"
            ]
        }
    ]
}
```

2.3 Configuring CodeArts Deploy Permissions

Adding and Assigning a Role to a Member

The permissions of CodeArts Deploy can be divided into multiple levels. User actions can be managed at different granularities. 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 **Adding Project Members**.

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

----End

Configuring Permissions for Each Level

CodeArts Deploy permissions are organized into four levels: project, application, host cluster, and environment. Below is a guide to configuring permissions at each level.

Configuring Project-Level Permissions

Step 1 Go to the CodeArts homepage.

1. Log in to the **CodeArts console**, click , and select a region where you have enabled CodeArts.
2. Click **Go to Workspace**.

   If your account uses the old billing mode (see **Old Billing Modes**), click **Access Service**.

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

Step 3 Choose **Settings** > **Permissions**. On the displayed **Permissions** page, modify the default permissions of system roles or add project-level permissions for the user as prompted.

----End

NOTE

Project administrators (project creators) and project managers can customize roles and edit the permissions of custom roles.

Table 2-1 Default project-level permissions

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

Configuring Application-Level Permissions

Step 1 Go to the CodeArts homepage.

1. Log in to the **CodeArts console**, click , and select a region where you have enabled CodeArts.
2. Click **Go to Workspace**.

   If your account uses the old billing mode (see **Old Billing Modes**), click **Access Service**.

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

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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

NOTE

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

  If you possess **Edit** but do not possess **Assign Permissions**, you cannot edit other permissions.
- **Committer**, **Project admin**, **Project manager**, **Developer**, and **System engineer** have the permission to create applications.
- The **Operation manager** is available only in Türkiye, Santiago, Riyadh, Cairo, and Johannesburg. The **Deploy** permission of **Operation manager** is available only in Türkiye and Santiago.

Table 2-2 Default application-level permissions

Role/ Operation	View	Edit	Delete	Deploy	Clone	Disable	Create Environment	Assign Permissions
App creator	√	√	√	√	√	√	√	√
Project admin	√	√	√	√	√	√	√	√
Project manager	√	√	√	√	√	√	√	√
Product manager	√	×	×	×	×	×	×	×
Test manager	√	×	×	×	×	×	×	×
Operation manager	√	×	×	√	×	×	√	×
System engineer	√	√	√	√	√	√	×	×
Committer	√	√	√	√	√	×	×	×
Developer	√	√	√	√	√	×	×	×

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Role/ Operation	View	Edit	Delete	Deploy	Clone	Disable	Create Environment	Assign Permissions
Tester	√	×	×	×	×	×	×	×
Participant	√	×	×	×	×	×	×	×
Viewer	√	×	×	×	×	×	×	×
CI/CD engineer	√	√	×	√	√	×	√	×

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 Host Cluster Permissions

Step 1 Go to the CodeArts homepage.

1. Log in to the **CodeArts console**, click , and select a region where you have enabled CodeArts.
2. Click **Go to Workspace**.

   If your account uses the old billing mode (see **Old Billing Modes**), click **Access Service**.

Step 2 Click the target project name to go to 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 in the **Operation** column of a cluster, click **Assign Permissions**, and configure operation permissions for each role.

----End

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NOTE

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

Only **Project admin**, **Project manager**, **Operation manager**, and **Developer** have the permission to create a host cluster in a project by default.

Table 2-4 Default permissions on a host cluster

Role/ Permission	View	Edit	Delete	Add Host	Copy Host	Assign Permissions
Host cluster creator	√	√	√	√	√	√
Project admin	√	√	√	√	√	√
Project manager	√	√	√	√	√	√
Product manager	√	×	×	×	×	×
Test manager	√	×	×	×	√	×
Operation manager	√	×	×	×	√	×
System engineer	√	×	×	×	×	×
Committer	√	×	×	×	×	×
Developer	√	√	√	√	√	×
Tester	√	×	×	×	√	×
Participant	√	×	×	×	√	×
Viewer	√	×	×	×	√	×
CI/CD engineer	√	√	√	√	√	×

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Configuring Environment Permissions

Step 1 Go to the CodeArts homepage.

1. Log in to the **CodeArts console**, click , and select a region where you have enabled CodeArts.
2. Click **Go to Workspace**.

   If your account uses the old billing mode (see **Old Billing Modes**), click **Access Service**.

Step 2 Click the target project name to go to 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 Choose **Environment Management**. The **Environment Management** page is displayed.

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

----End

NOTE

Roles with **Assign Permissions** can modify the permission matrix, but they cannot modify the permissions of **Project creator** and **Environment creator**.

Table 2-5 Environment permissions

Role/ Permission	View	Edit	Delete	Deploy	Assign Permissions
Environment creator	√	√	√	√	√
Project admin	√	√	√	√	√
Project manager	√	√	√	√	√
Product manager	√	×	×	×	×
Test manager	√	×	×	×	×
Operation manager	√	√	√	√	√
System engineer	√	√	√	√	×

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Role/ Permission	View	Edit	Delete	Deploy	Assign Permissions
Committer	√	√	√	√	×
Developer	√	√	√	√	×
Tester	√	×	×	×	×
Participant	√	×	×	×	×
Viewer	√	×	×	×	×
CI/CD engineer	√	√	√	√	×

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3 Accessing CodeArts Deploy Homepage

Prerequisites

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

Accessing CodeArts Deploy

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 checked.

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

----End

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4 Configuring CodeArts Deploy a Host Cluster

4.1 Creating a Host Cluster

4.1.1 Overview

You can manage your hosts (**target hosts**) to be deployed in the Basic Resources tab page.

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

Before deploying an application, you need to verify the connectivity between the execution host and the target host. For details, see **Connectivity Verification**.

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 an agent pool where the deployment is executed in a physical environment. In addition to the **default agent pool**, CodeArts Deploy allows you to connect your own hosts to form a **self-hosted agent pool**. CodeArts Deploy also supports **direct connection** and **agent** mode to connect agent pools to target hosts.

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 agent pools with the target hosts, as shown in the following figure.

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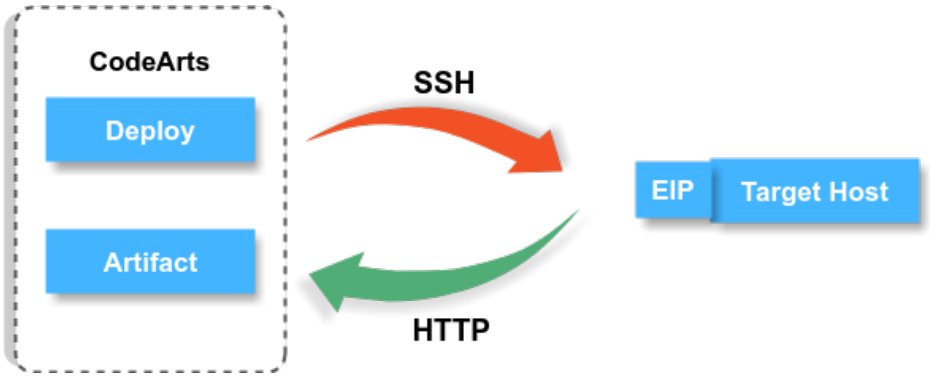


Agent

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

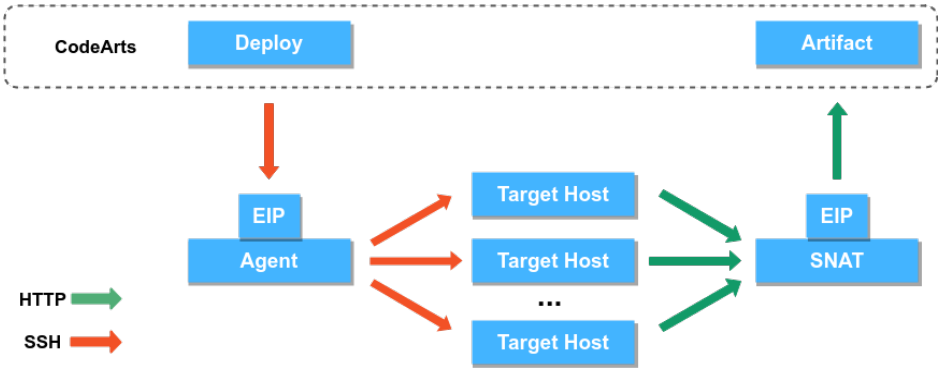
To ensure successful host connectivity verification, configure target hosts and agent hosts and **enable the corresponding ports**.

- Linux agent:

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

  When deploying an application, the target host accesses the NAT gateway to pull the software package to download it, as shown in the following figure.

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



- Windows agent:

  Use an ECS bound with an EIP as an agent. During deployment, CodeArts Deploy sends the execution commands to the target host via agent port forwarding.



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4.1.2 Creating and Editing a Host Cluster

This section describes how to create and edit a host cluster in CodeArts Deploy.

Prerequisites

- You have the permission to create resources. If not, contact the project administrator to grant you the permission. For details, see **Adding and Assigning a Role to a Member**.
- You have **created a self-hosted agent pool** and selected self-hosted agent pool as the execution agent pool.

Constraints

For details about the maximum number of host clusters that can be created in a project, see **Specifications and Constraints** > **Basic constraints** > **Basic resource management**.

Creating a Host Cluster

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

- Access it from the **Services** tab page.
- Choose **CICD** > **Deploy**. Click **Basic Resources**. The **Host Clusters** page is displayed by default.
- Access it from a project.

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

Step 2 Create a host cluster.

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

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

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Parameter	Description
Execution Resource Pool	Select an environment for the execution host. An agent pool is a collection of physical environments. Deployment commands are executed in the environments during software package deployment. • Official agent pool: You can use an official agent pool hosted by Huawei Cloud. • Self-hosted agent pool: You can also host your servers in a self-hosted agent pool on Huawei Cloud. For details, see **Creating a Self-hosted Agent Pool**. Both **Default** and **Self-hosted** pools support adding IPv6 addresses for target hosts. If **Self-hosted** is selected, perform the following operations: • Configure a **Self-hosted** by referring to **Creating a Self-hosted Agent Pool**. • On the **Basic Information** tab page of the target application, select **Self-hosted** for **Execution Resource Pool**.
New System	**CAUTION** **New System** is available when you create an application or a host cluster. The status of **New System** in application creation and host cluster creation should be the same. In this case, the corresponding host cluster can be selected in the application environment management. After this function is enabled, the operation will be supported by the new OS (Ubuntu 24.04 or Debian 12.0.0). Currently, the new OS is compatible with only some action plugins and may not be compatible with OSs of earlier versions.
Description	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.

- Access it from the **Services** tab page.

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

- Access it from a project.

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

Step 2 Click a target host cluster to enter its details page.

Step 3 Edit the host cluster by referring to the following table.

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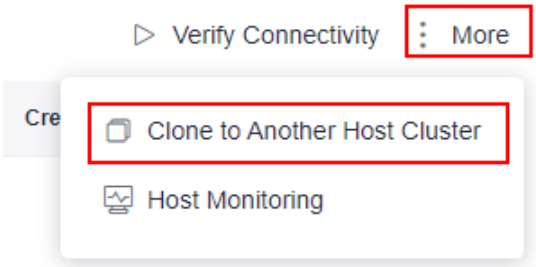
Table 4-1 Editing the host cluster

Operation	Procedure
Add Host	Click + in the **Operation** column of a cluster to add a host to the cluster.
Edit	Click ✎ in the **Operation** column of a cluster to modify the cluster name, execution host, and description.
Delete	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.
Assign Permissions	Click ••• in the **Operation** column of a cluster, click **Assign Permissions**, and configure operation permissions for each role. Enable or disable permissions as required. For details about default permissions, see **2.3 - Table 7 Default permissions on a host cluster**.

Step 4 Edit hosts in a host cluster by referring to the following table.

Table 4-2 Editing hosts in a host cluster

Operation	Procedure
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**. In the dialog box that is displayed, select the target host cluster to copy the hosts to the host cluster in batches. 
Edit a host	Click ✎ in the **Operation** column of a host to modify the configurations.
Start Connectivity Verification	• Click ▷ in the **Operation** column of a host to start the connectivity verification for the host. For details about connectivity verification, see **Host Management**.

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Operation	Procedure
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. • An agent host cannot be deleted. An agent host is removed when the 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

Helpful Links

- For details about APIs related to host clusters, see **Managing Host Clusters**.
- For details about connectivity verification, see **Host Management** for troubleshooting.

4.1.3 Creating a Self-Hosted Agent Pool

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

Billing

This operation requires purchasing an ECS as the cloud host. For details about ECS billing, see **Price Calculator**.

Creating a Self-hosted Agent Pool

Step 1 **Create an Elastic Cloud Server (ECS)**.

- You can apply for an EIP during ECS creation or you can also apply for it anytime by referring to **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**.

Step 3 **Create an agent pool**.

Set the pool type to **LINUX_DOCKER**.

Step 4 **Create an agent**.

Retain the default enabled status of **Auto Install JDK**, **Auto Install Git**, and **Auto Install Docker**.

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

1. Log in to the ECS created in **Step 1**, and run the installation command, copied in the previous step, in the **/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 4 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 an agent host is available. For details about how to apply for a host, see **(Optional) Applying for an ECS**. You may be charged during the process. For details, see **ECS Billing**.
- An EIP is available. You can apply for one during ECS creation or anytime by referring to **(Oprional) Applying for an EIP**. You may be charged during the process. For details, see **EIP Billing**.
- 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 to go to its details page. Click the **Security Groups** tab. Choose **Manage Rule** > **Inbound Rules** of the corresponding target security group to configure inbound rules.

Figure 4-1 Configuring rules

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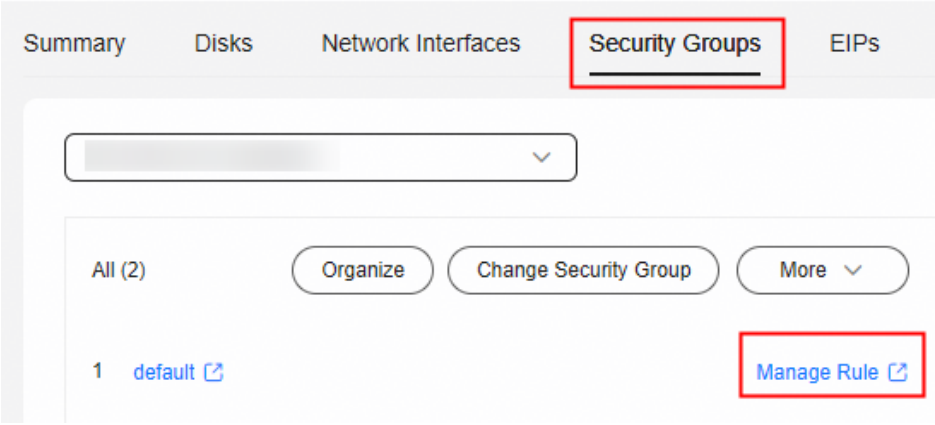
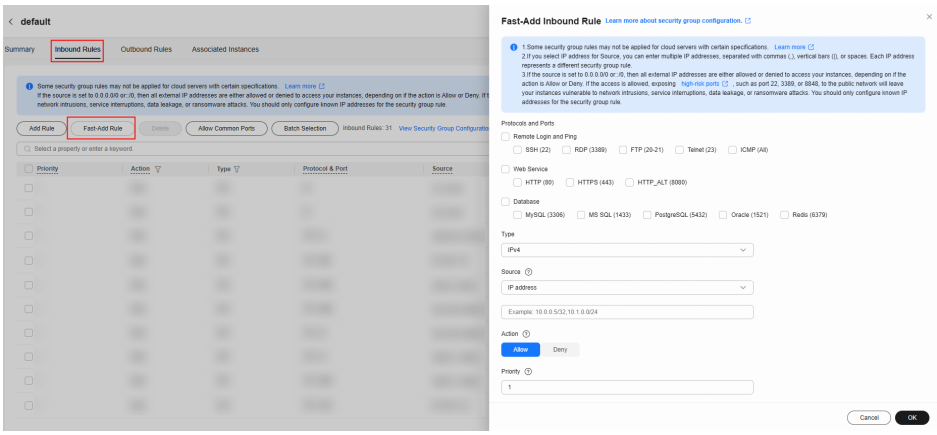


Step 3 Click **Fast-Add Rules** and set the parameters as follows:

Figure 4-2 Fast-add rules



- Protocols and ports: Port 22 must be open for Linux systems, and ports 54, 5985, and 5986 must be open for Windows systems. These are the ports specified when a target host or agent host is added.
- Source: In an inbound rule, it is used to match the source address of an external request. Set it to **0.0.0.0/0**, which opens the ports above to all IP addresses.

  If stricter security is required, the management ports do not have to be open to all IP addresses. In this case, the **CodeArts Deploy's external IP address** can be added to the security group, with the required ports opened for it. The IP address is the external IP address of the official agent pool in CodeArts Deploy, and is used for communications with target hosts and agent hosts. If this parameter is not configured, host connectivity cannot be verified.

Step 4 Remove the inbound restrictions on the ports used by deployed applications (for example, port 8080 for Tomcat; for other applications, the ports they require). Otherwise, the applications cannot be accessed.

Step 5 Do not restrict outbound traffic, or at least allow access to ports 80 and 443.

----End

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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 4-3 Linux firewall configurations

OS Series	Configuration Method

CentOS/ EulerOS/ UnionTechOS	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 Port 22 and adjust the port number as required.
	6. Restart the SSH service.
	`sudo service sshd restart`
	7. Check whether port **22** is enabled.
	After you run the following command, the current ufw status (for example, "active" indicates that ufw is enabled) and rule list are displayed. If port **22** is enabled, **22/tcp** or **ssh** will be displayed in the rule (SSH uses port **22** by default).
	`netstat -ntpl | grep 22`
	8. 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.
	User: whitelisted username. **IP**: whitelisted IP address. The whitelist should contain CodeArts IP address range.
	`AllowUsers {User}@{IP}`
	Restart the SSH service.
	`sudo service sshd restart`
	All regions: For details, see **CodeArts Deploy's External IP Addresses**. These IP addresses above are open IP addresses in the official agent pool of CodeArts Deploy for communications with target hosts and agent hosts.

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OS Series	Configuration Method

Debian	1. Log in to the system as the root user and install the ufw.
	`apt install ufw`
	2. Enable port **22**.
	`ufw allow 22/tcp`
	3. Check whether port **22** is enabled.
	After you run the following command, the current ufw status (for example, "active" indicates that ufw is enabled) and rule list are displayed. If port **22** is enabled, **22/tcp** or **ssh** will be displayed in the rule (SSH uses port **22** by default).
	`ufw status`
	If the ufw status is "inactive", run the following command to start ufw:
	`ufw enable`
	4. 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 whitelist. **IP**: whitelisted IP address. The whitelist should contain CodeArts IP address range.
	`ufw allow from {IP} to any port 22`
	Check the ufw rule list. The sequence number is marked for each rule, facilitating subsequent rule deletion or modification.
	`ufw status numbered`
	Disable the SSH connection rule (disable the rule whose source IP address is **Anywhere** to implement whitelist restriction). *{Number}* indicates the number of the rule to be disabled.
	`ufw delete {Number}`
	All regions: For details, see **CodeArts Deploy's External IP Addresses**. These IP addresses above are open IP addresses in the official agent pool of CodeArts Deploy for communications with target hosts and agent hosts.

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OS Series	Configuration Method

Ubuntu	1. Check the IP address of the local host.
	`ifconfig`
	The value following **inet** is the IP address.
	2. Check whether the **22** port is occupied.
	`netstat -nltp|grep 22`
	If any command output is displayed, port **22** is occupied. If no command output is displayed, port **22** is not listened on by any process.
	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`
	4. 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 whitelist. **IP**: the whitelisted IP address. The whitelist should contain CodeArts IP address range.
	`ufw allow from {IP} to any port 22`
	Check the ufw rule list. The sequence number is marked for each rule, facilitating subsequent rule deletion or modification.
	`ufw status numbered`
	Disable the SSH connection rule (disable the rule whose source IP address is **Anywhere** to implement whitelist restriction). *{Number}* indicates the number of the rule to be disabled.
	`ufw delete {Number}`
	All regions: For details, see **external IP addresses of CodeArts Deploy**. These IP addresses are external IP addresses in the official agent pool of CodeArts Deploy for communications with target hosts and agent 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.

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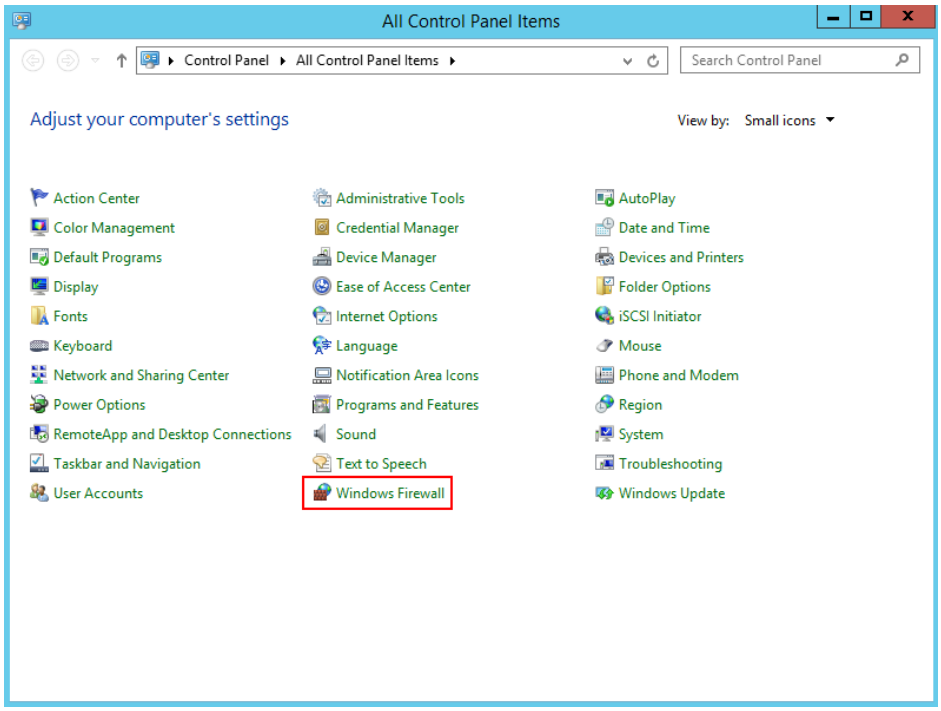
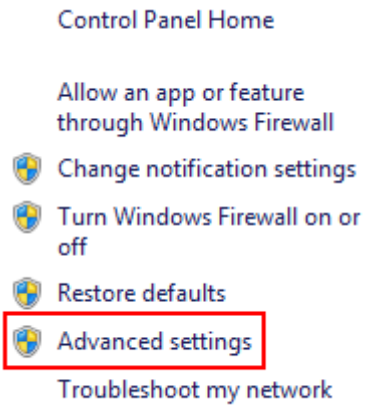
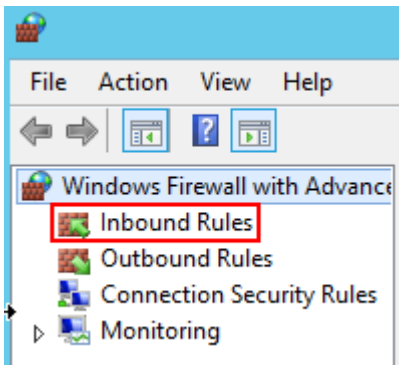


Step 2 Click **Advanced settings**.



Step 3 Click **Inbound Rules**.



Step 4 Click **New Rule**.

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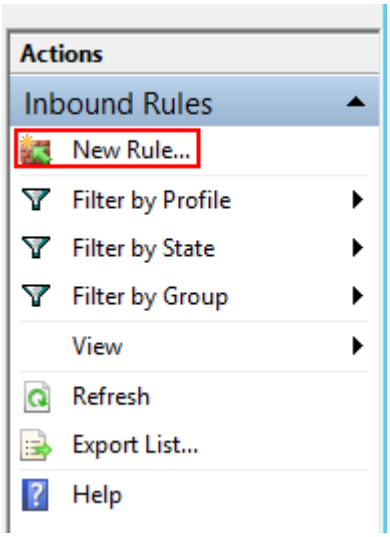
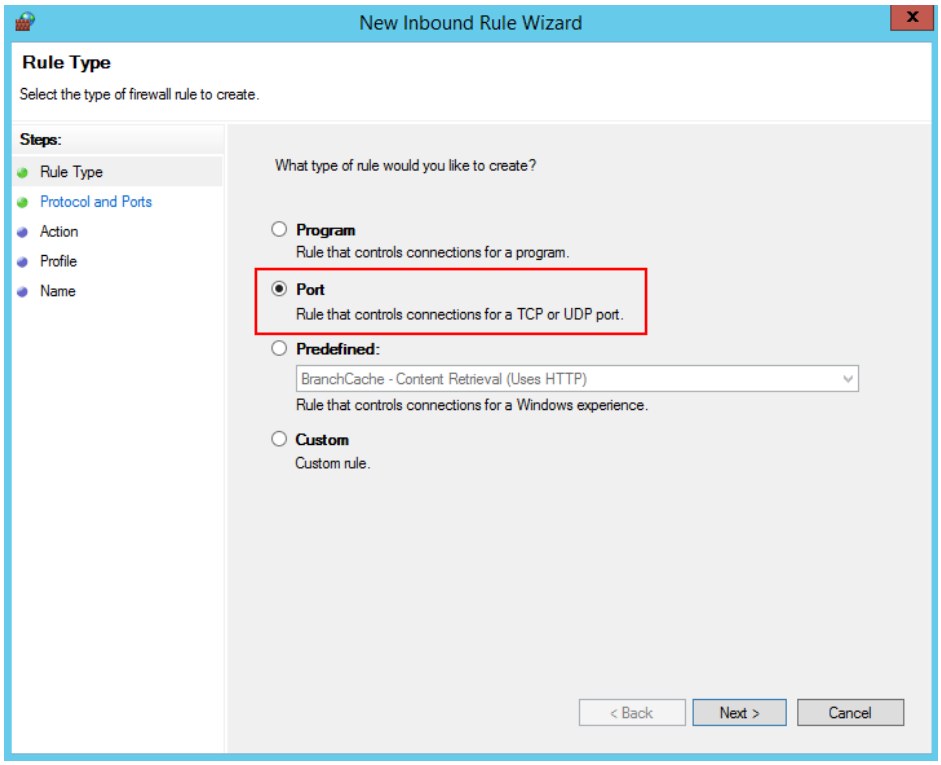


Step 5 Set **Rule Type** to **Port** and click **Next**.



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

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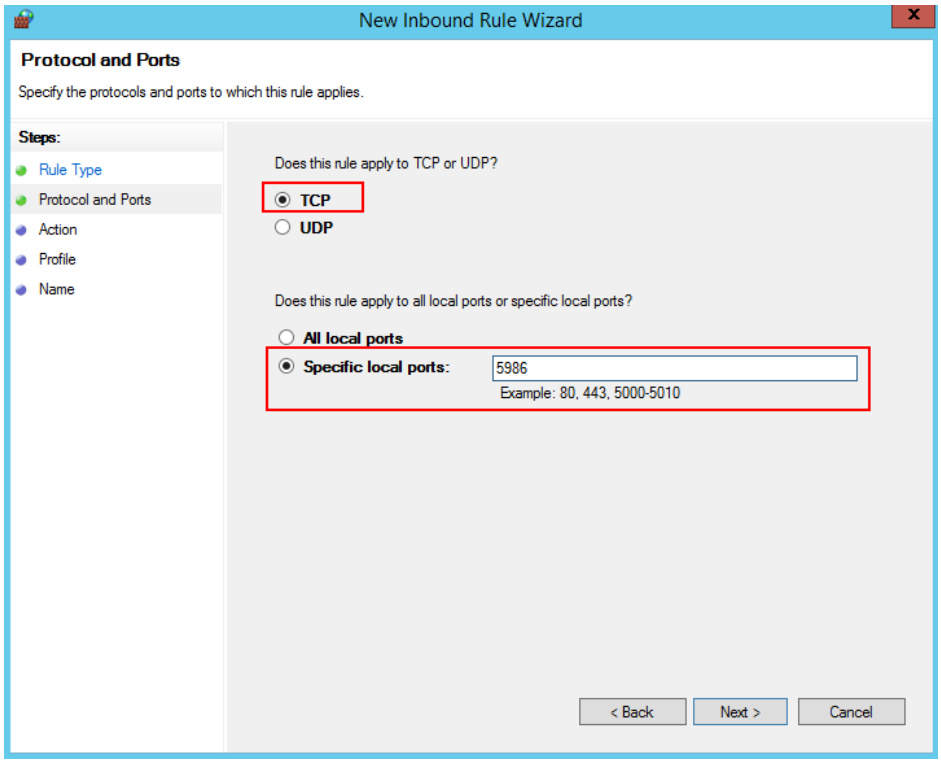
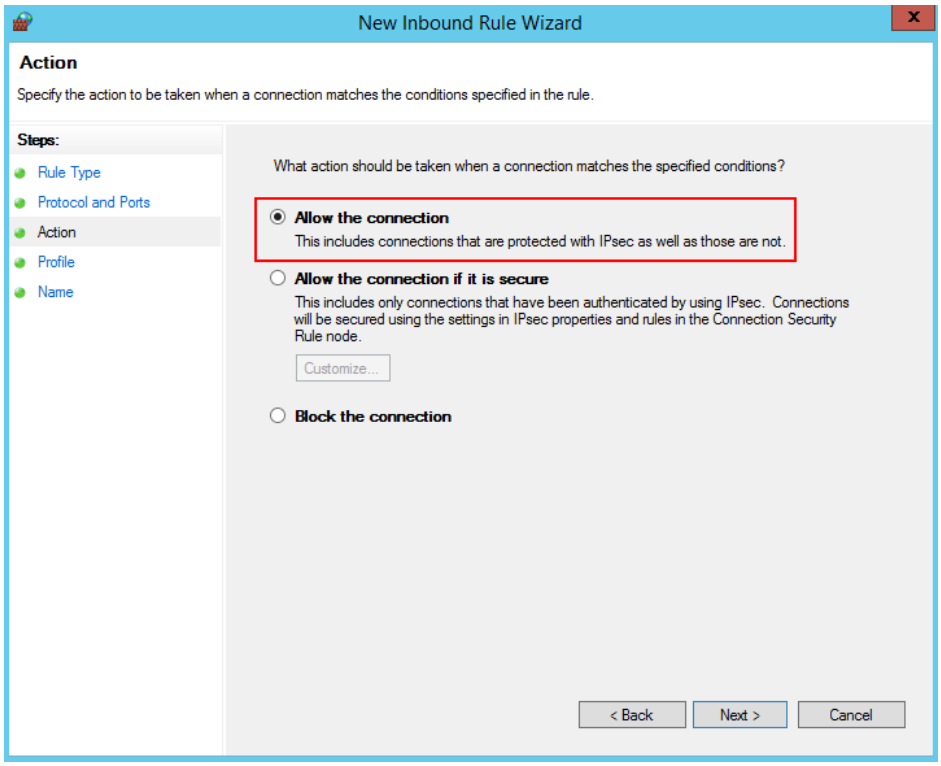


Step 7 Select **Allow the connection**, and click **Next**.



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

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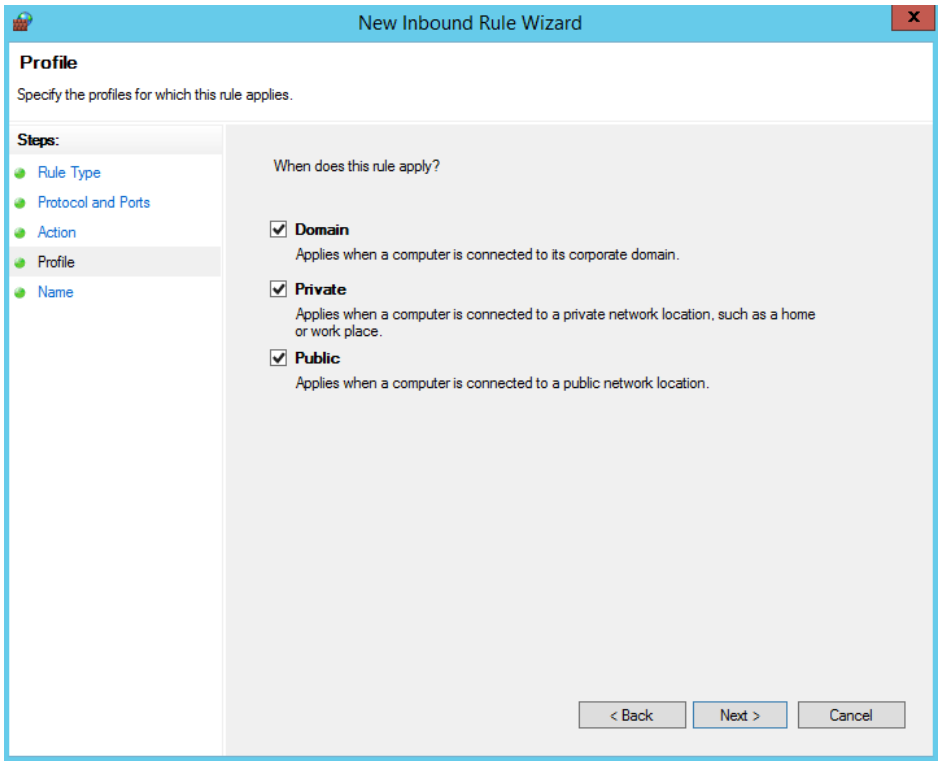
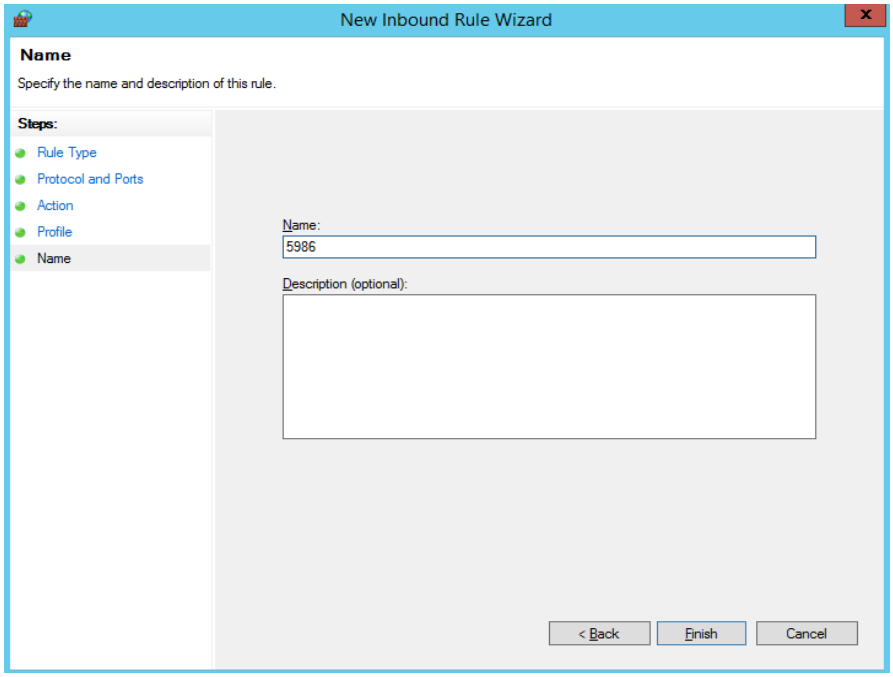


Step 9 Enter a rule name and click **Finish** to complete the firewall configurations.



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

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.

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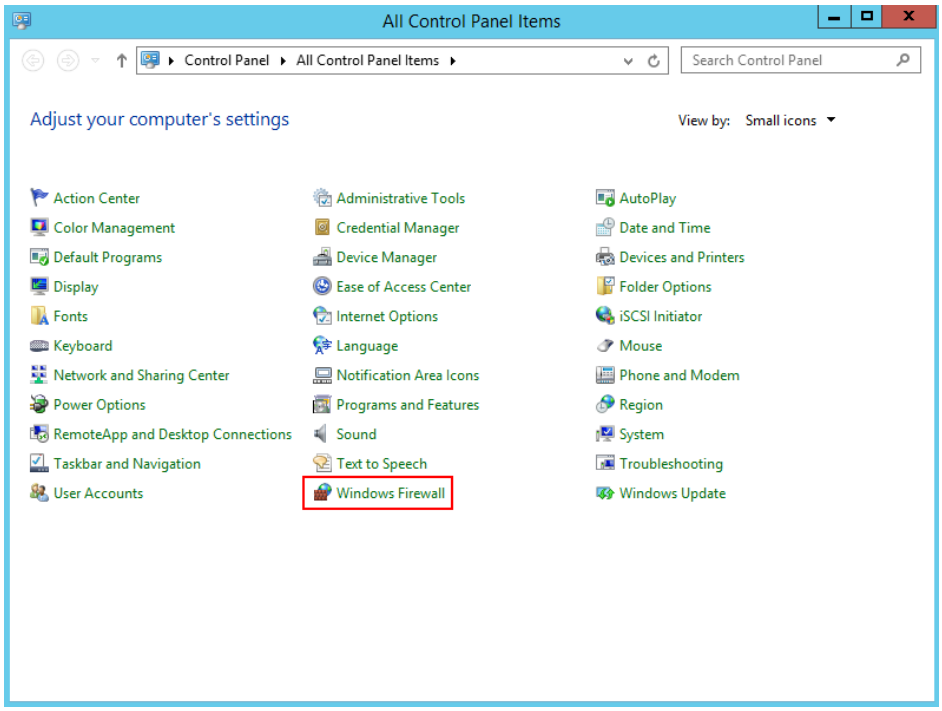
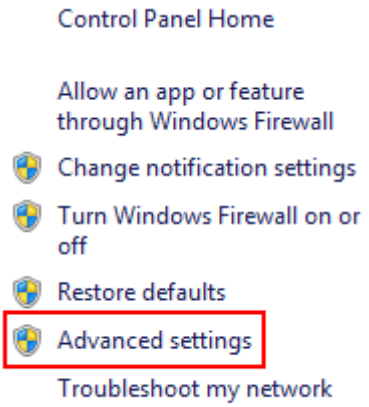
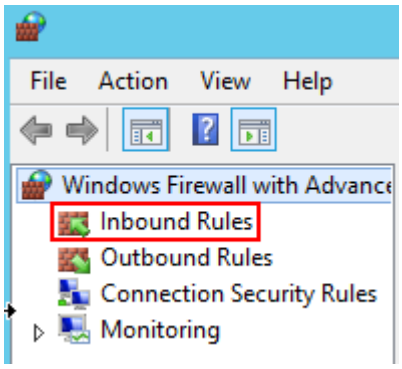


2. Click **Advanced settings**.



3. Click **Inbound Rules**.



4. Click **New Rule**.

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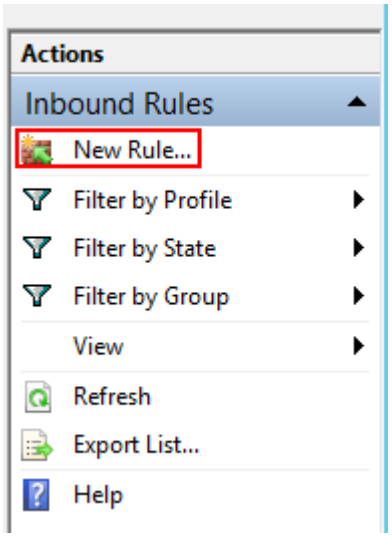
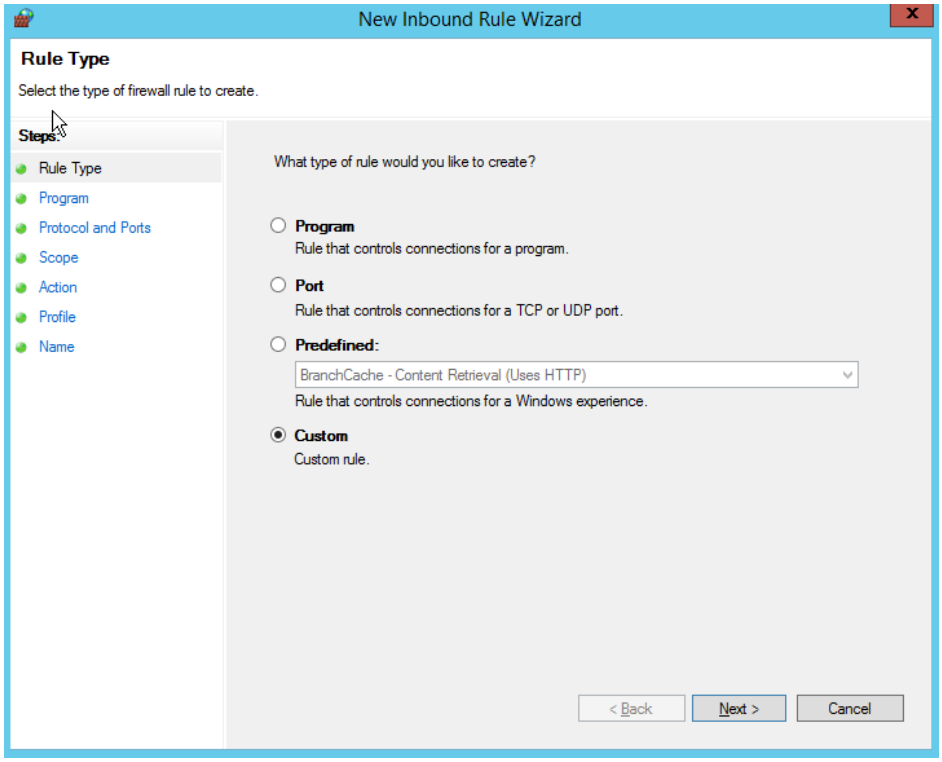


5. Set **Rule Type** to **Custom** and click **Next**.



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**.

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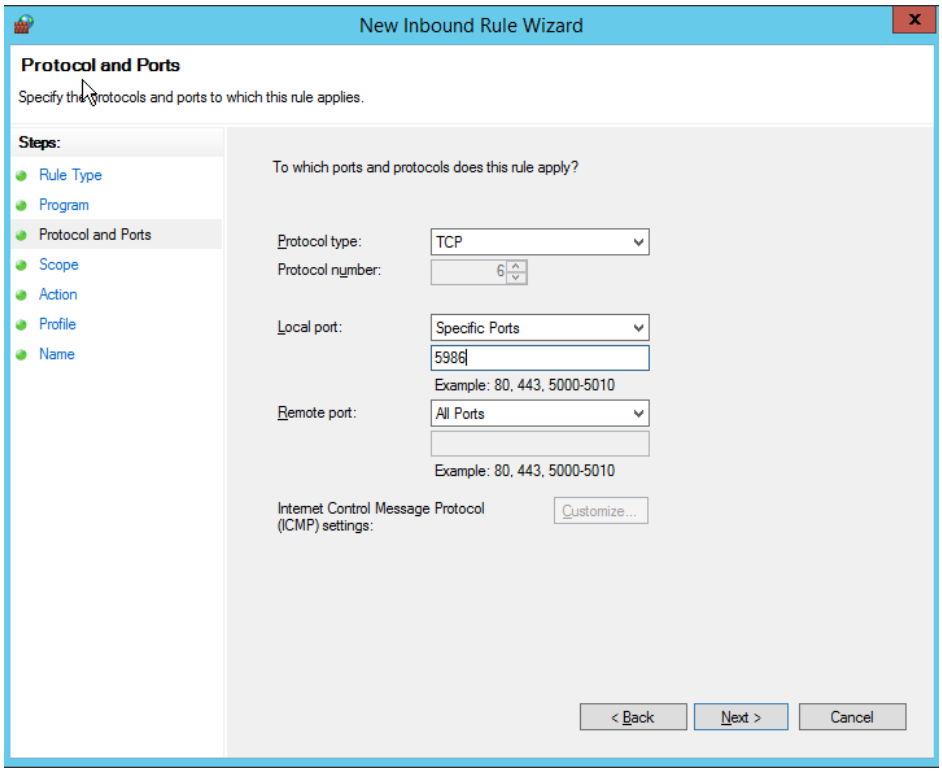
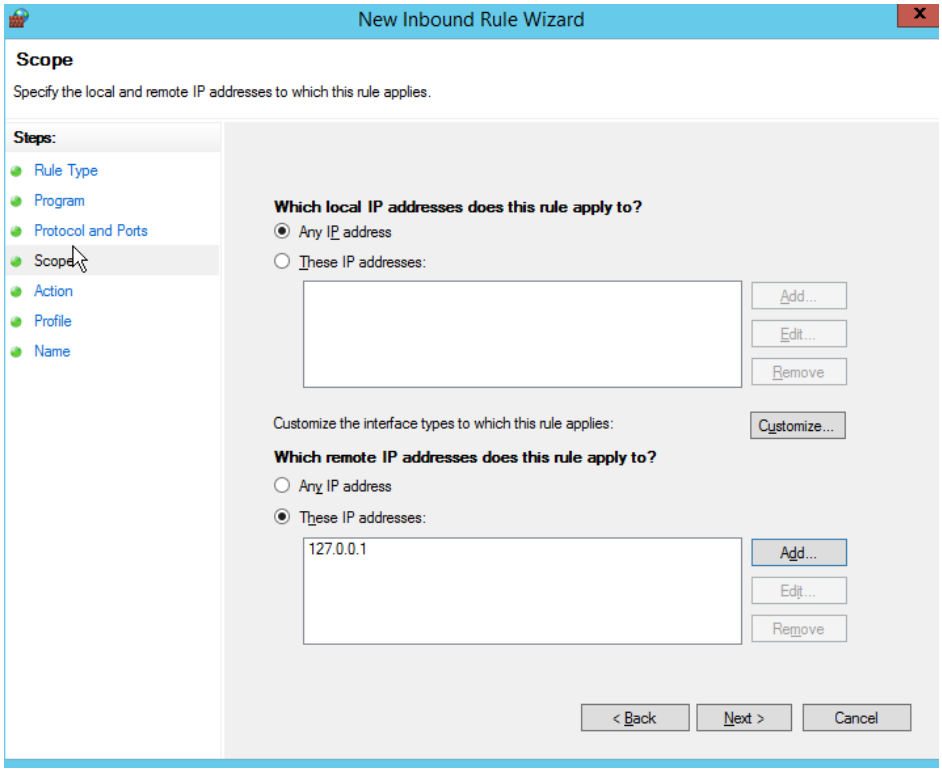


8. In the **Scope** area, select **Any IP address** for **Which local IP addresses does this rule apply to?** and **These IP addresses** for **Which remote IP addresses does this rule apply to?**, enter a whitelisted IP address, and click **Next**.



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

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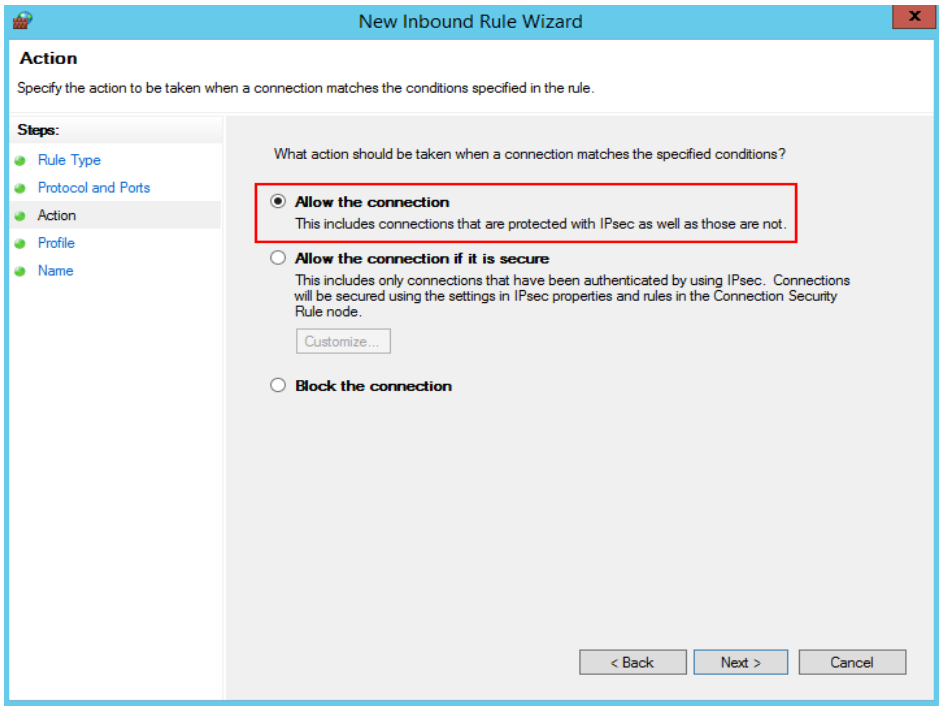
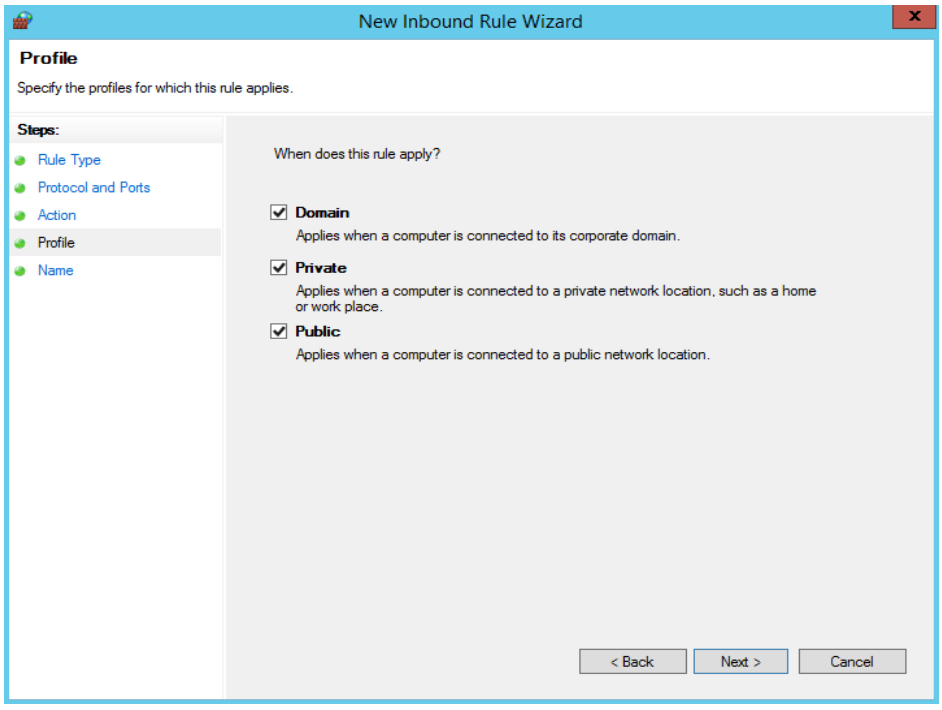


10. Select all the options for **Profile** and click **Next**.



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

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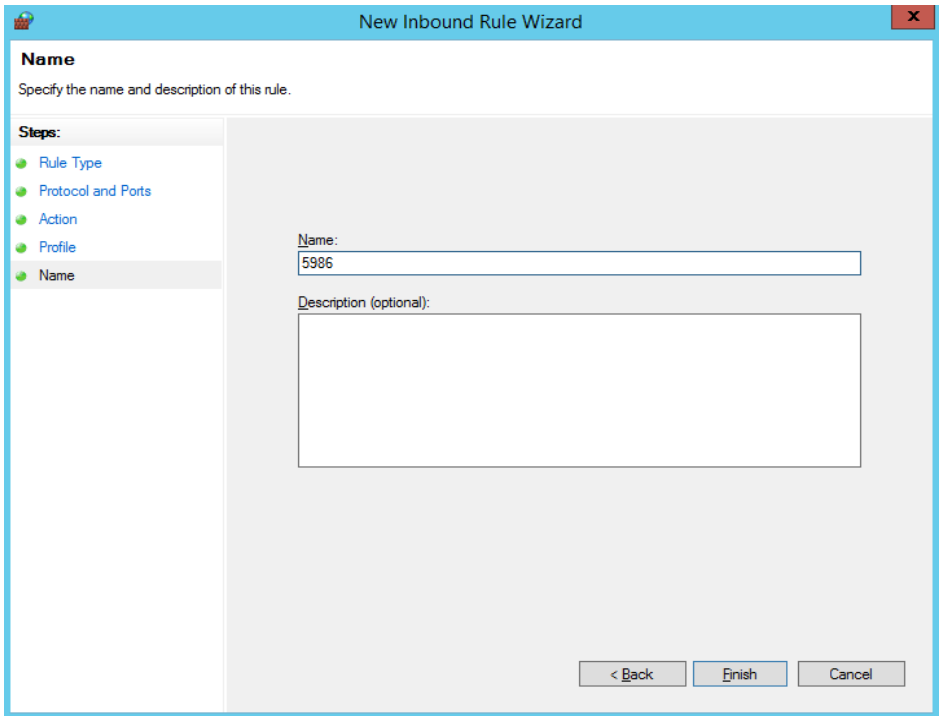

12. To connect to the target host through an agent host, repeat **step 1** to **step 11** to configure the IP address access whitelist on the agent host and add an inbound rule for the listening port of the agent host, for example, port **54**.

----End

4.2.2 Adding a Target Host to a Host Cluster

To better meet actual service requirements, maintain system stability, and enhance deployment efficiency, it is necessary to add one or more target hosts to the host cluster.

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

Prerequisites

- A host cluster is available. You have the permission to add hosts to the cluster.
- A host bound to a public IP address is available and meets the following conditions. (If you do not have a host, purchase one by referring to **Purchasing an ECS in Custom Config Mode**.)
  - The system host has been configured. For details, see **Configuring a Linux Host** or **Configuring the Host Running Windows**.

    (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 system hosts.)
  - If you need to monitor a host, you need to create an agency for the host. For details, see **Creating an Agency for a Host**.
- Before importing a purchased ECS, confirm that these conditions are met:
  - ECS is running.
  - ECS and the host cluster have the same OS.

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- When using an official agent pool, the agent host must have a public IP address.
- An ECS instance that has been imported as a target host cannot be imported as an agent host.
- In the agent mode, configure the agent host before using the target host.

Constraints

- For details about the maximum number of hosts that can be added to a host cluster, see **Specifications and Constraints** > **Basic constraints** > **Basic resource management**.
- For details about the OS versions supported by hosts, see **Specifications and Constraints** > **OSs supported**.

Adding a Target Host

Step 1 Go to the CodeArts homepage.

1. Log in to the **CodeArts console**, click , and select a region where you have enabled CodeArts.
2. Click **Go to Workspace**.

   If your account uses the old billing mode (see **Old Billing Modes**), click **Access Service**.

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

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

Step 4 On the **Basic Resources** tab page, click the name of the created cluster to go to the **Target Hosts** page.

Step 5 Click **Add Host** and select **Adding IP** for **Add Hosts by**.

Step 6 Select **Direct Connection** for **Host Connection Mode** and add a target host. Enter the following information and click **OK**.

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

Parameter	Description
Host Name	Enter a custom target host name. Enter 3 to 128 characters. Use digits, letters, hyphens (-), underscores (_), and periods (.).
IP	Enter the public IP address bound to the target host. IPv4 or IPv6 address is supported.
OS	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 the successful connectivity verification.

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Parameter	Description
Authorization	Select **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	Port **22** is recommended. You may customize the port.

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

Parameter	Description
Host Name	Enter a custom target host name. Enter 3 to 128 characters. Use digits, letters, hyphens (-), underscores (_), and periods (.).
IP	Enter the public IP address bound to the target host. IPv4 or IPv6 address is supported.
OS	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 the successful connectivity verification.
Authorization	Windows target hosts support only password authentication. Take ECS as an example. Enter the ECS username and password.
Winrm Port	Port **5986** is recommended. You may customize the port.

Step 7 Select **Agent** for **Host Connection Mode** and add an agent host and a target host. Enter the following information and click **OK**.

1. Add an agent host.

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

Parameter	Description
Host Name	Enter a custom agent host name. Enter 3 to 128 characters. Use digits, letters, hyphens (-), underscores (_), and periods (.).
IP	Enter the public IP address bound to the agent host. IPv4 or IPv6 address is supported.

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Parameter	Description
OS	The default value is the OS of the current host cluster and cannot be changed. Configure the agent host by referring to **Configuring a Linux Host** to ensure the successful connectivity verification.
Authorization	Select **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	Port **22** is recommended. You may customize the port.

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

Parameter	Description
Host Name	Enter a custom agent host name. Enter 3 to 128 characters. Use digits, letters, hyphens (-), underscores (_), and periods (.).
IP	Enter the public IP address bound to the agent host. IPv4 or IPv6 address is supported.
OS	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 the successful connectivity verification.
Authorization	Windows proxies support only password authentication. Take ECS as an example. Enter the ECS username and password.
Winrm Port	Port **5986** is recommended. You may customize the port.

2. Add a target host.

Table 4-8 Parameters of the target host (Linux)

Parameter	Description
Host Name	Enter a custom target host name. Enter 3 to 128 characters. Use digits, letters, hyphens (-), underscores (_), and periods (.).

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Parameter	Description
Agent Host	Select the target agent host as the network agent of the target host that cannot connect to the public network.
IP	Enter the IP address of the target host. IPv4 or IPv6 address is supported.
OS	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 the successful connectivity verification.
Authorization	Select **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	Port **22** is recommended. You may customize the port.

Table 4-9 Parameters of the target host (Windows)

Parameter	Description
Host Name	Enter a custom target host name. Enter 3 to 128 characters. Use digits, letters, hyphens (-), underscores (_), and periods (.).
Agent Host	Select the target agent host as the network agent of the target host that cannot connect to the public network.
IP	Enter the IP address of the target host. IPv4 or IPv6 address is supported.
OS	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 the successful connectivity verification.
Authorization	Windows target hosts support only password authentication. Take ECS as an example. Enter the ECS username and password.
Agent Forwarding Port	Set this port to the listening port specified during **Configuring a Windows Agent**. Port **54** is recommended. You can also use a custom port.

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Step 8 Select **Importing ECS**.

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

- Importing an ECS (host)

  Click **Import** in the row where the ECS is located. On the displayed page, configure the parameters for the Linux or Windows hosts by referring to **step 6** or **step 7**.

- Importing ECSs (hosts) in batches

  Select the ECSs to be imported and click **Import Selected** in the lower part. On the displayed page, configure the parameters for the Linux or Windows hosts by referring to **step 6** or **step 7**.

  After the configuration, click  next to the parameter to copy its value to the hosts listed below.

Step 9 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**.

For details about connectivity verification, see **Host Management**.

----End

Configuring Target Hosts of Different Systems

CodeArts Deploy supports adding Linux and Windows target hosts. The following sections describe how to configure them.

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 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
    ```

    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
     ```

     Mode corresponding to the value of SELinux:

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- **SELinux=disabled**: disabled.
- **SELinux=enforcing**: forcible mode, indicating that any behavior that violates the security policy is prohibited.
- **SELinux=permissive**: permissive mode, indicating that any behavior that violates security policies is not prohibited but is 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 as required.

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

SELinux=permissive: permissive mode, indicating that any behavior that violates security policies is not prohibited but is 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 Windows 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**.

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

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

- **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**.

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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.

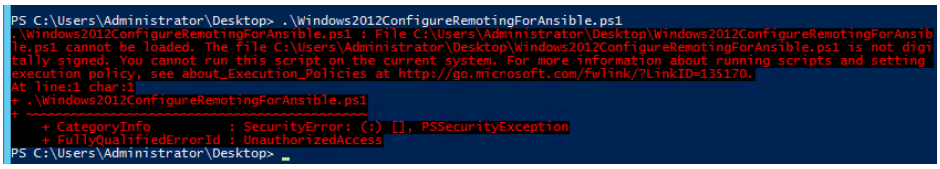
Log in to the host, open PowerShell, access the directory where script **Windows2012ConfigureRemotingForAnsible.ps1** is stored, and run the following command:

```
.\Windows2012ConfigureRemotingForAnsible.ps1
```

The output is as follows.



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 the 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.

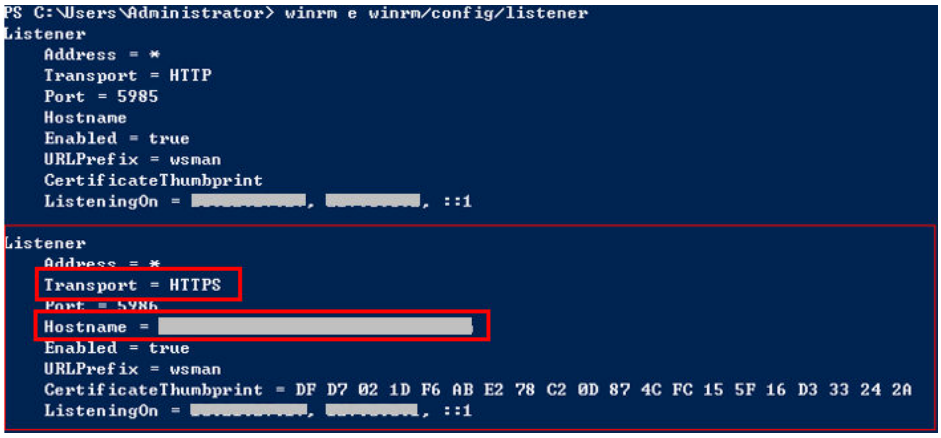


Step 4 View the configuration.

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.



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- 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'
# Check 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**

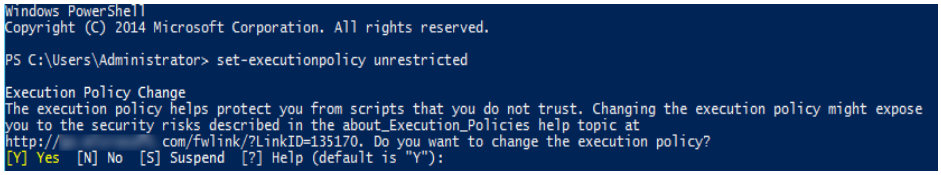
To manually add a host running Windows Server 2012 as an authorized host, perform the following steps:

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.

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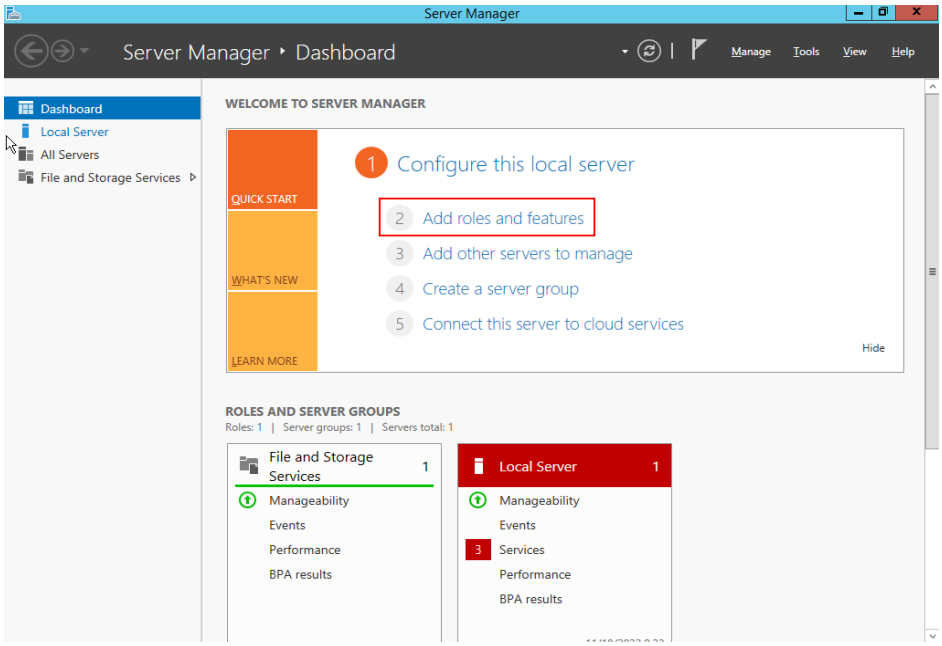
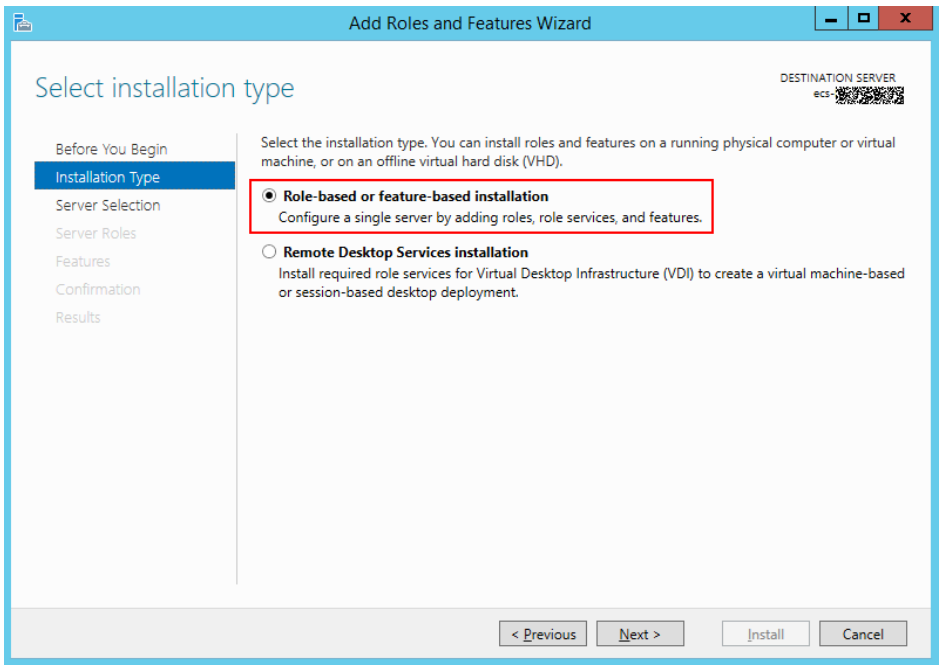
```
PS C:\Users\Administrator> winrm get winrm/config/service/auth
Auth
    Basic = true
    Kerberos = true
    Negotiate = true
    Certificate = false
    CredSSP = true
    CbtHardeningLevel = Relaxed
```

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)**.

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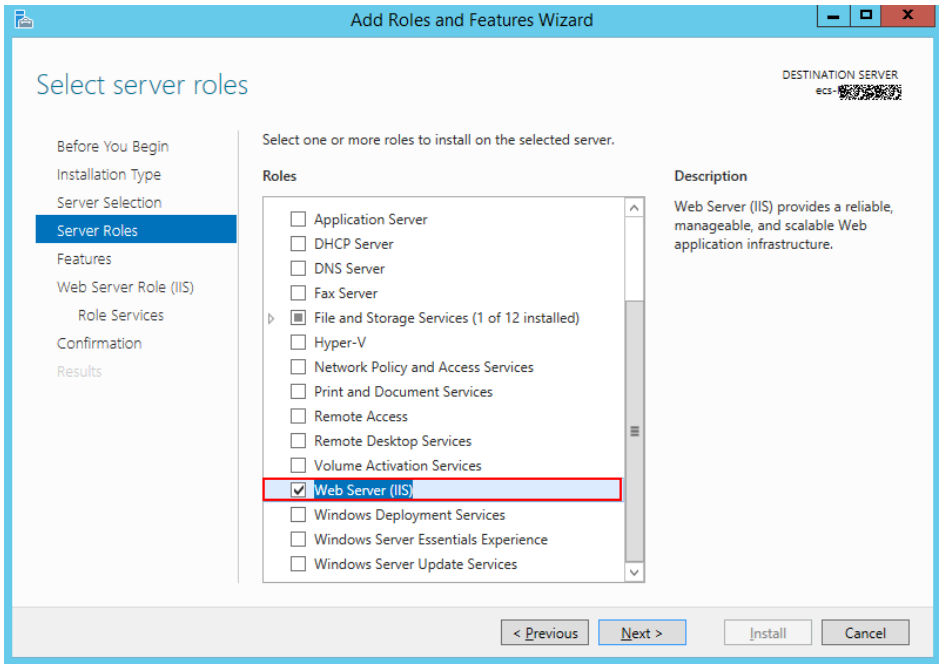
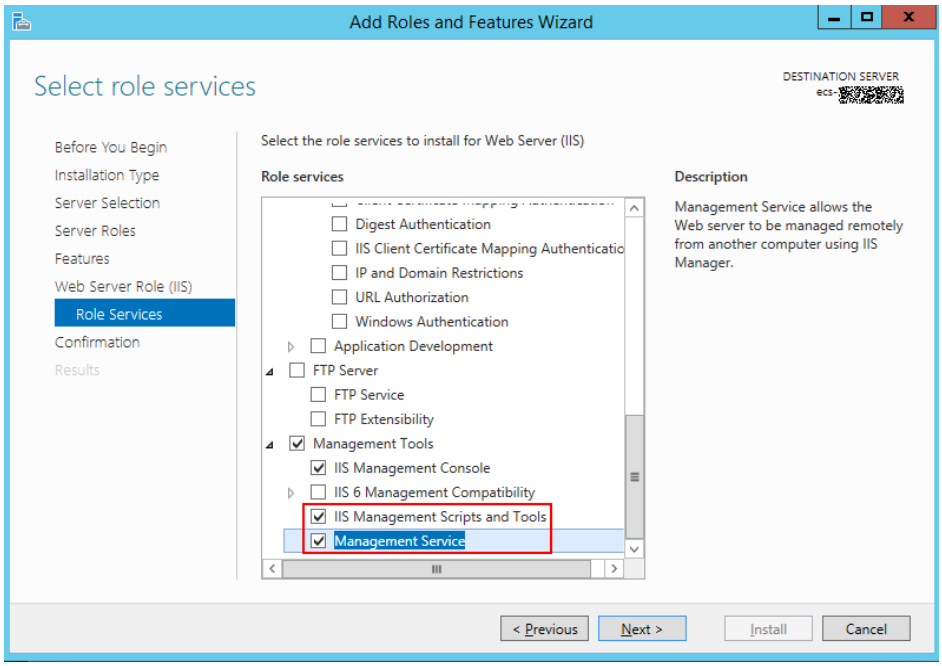


5. Go to the **Features** page, select **.NET Framework 4.5**, and click **Next**.
6. Go to the **Role Services** page, select **IIS Management Scripts and Tools** and **Management Service**, and click **Next** to complete the installation.



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**.

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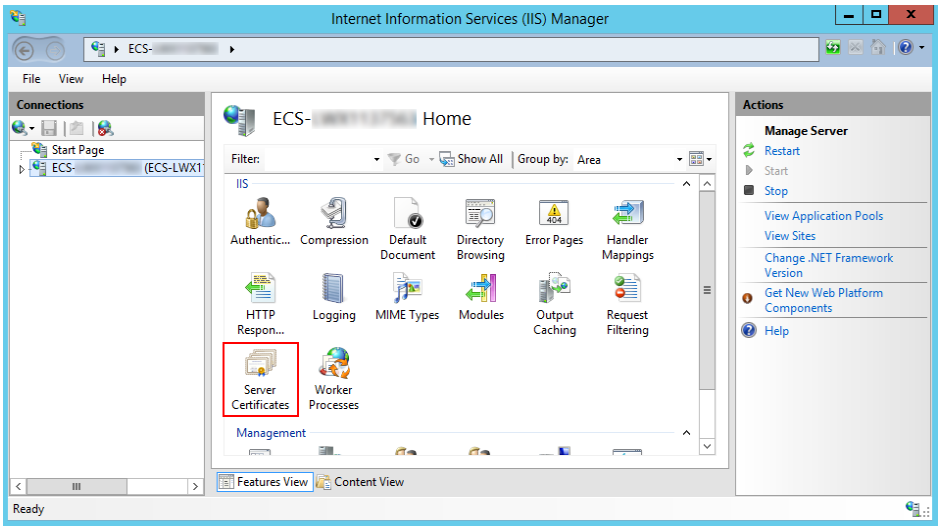
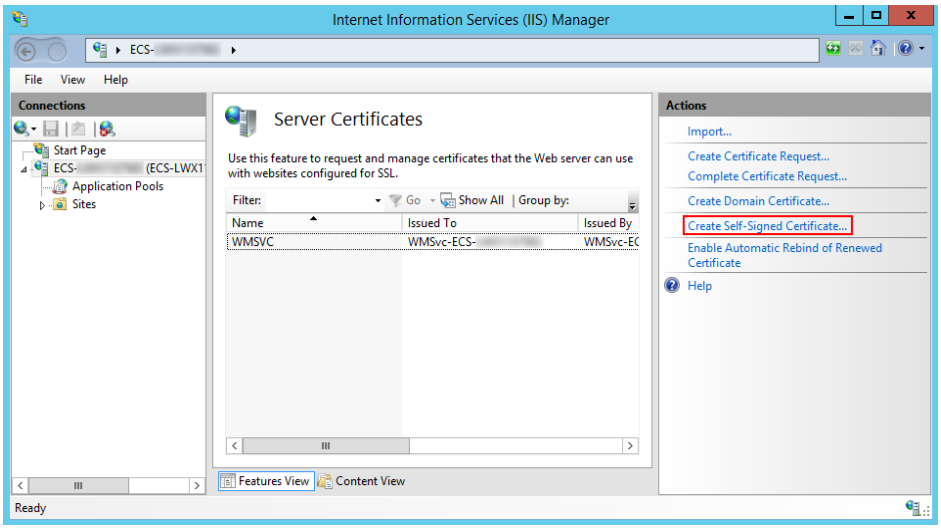
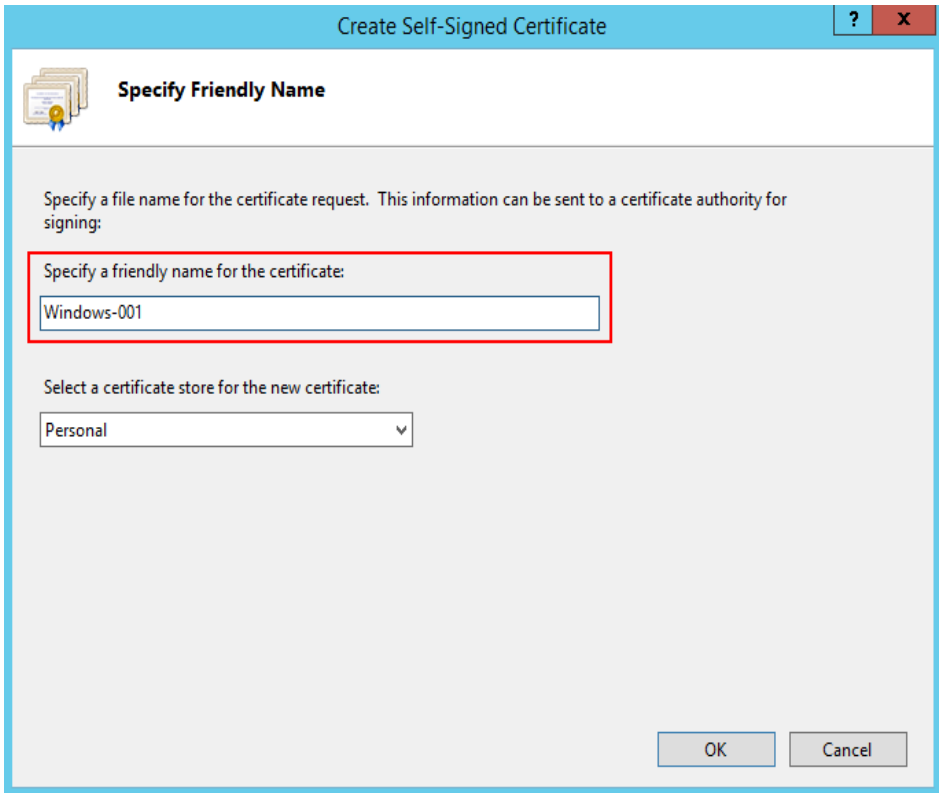


3. On the **Server Certificates** page, click **Create Self-Signed Certificate**.



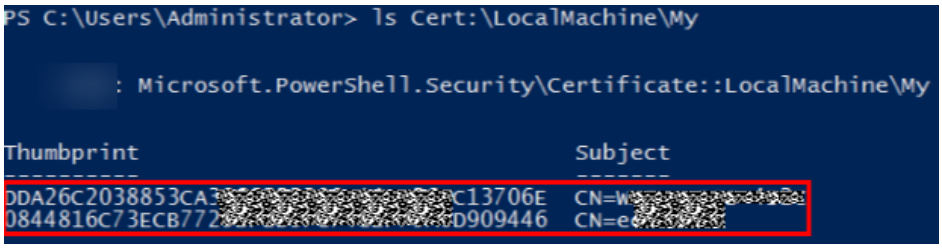
4. In the **Specify Friendly Name** dialog box, enter the certificate name and click **OK**.



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"}
```

- **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"}
```

Run the command in the command prompt and separate every two characters in the value of **Thumbprint** with a space. Otherwise, the

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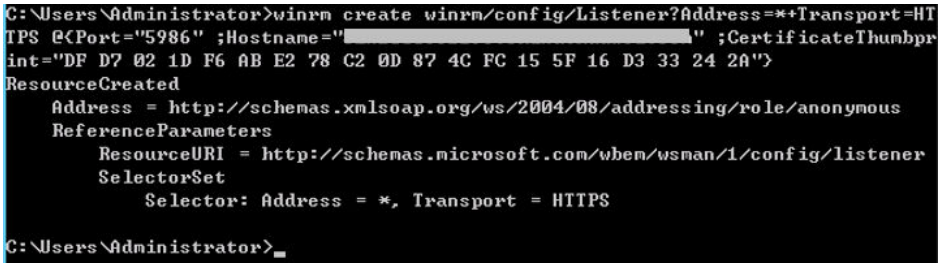
connectivity verification may fail. If the characters are not separated by spaces, delete the signatures and add them again.



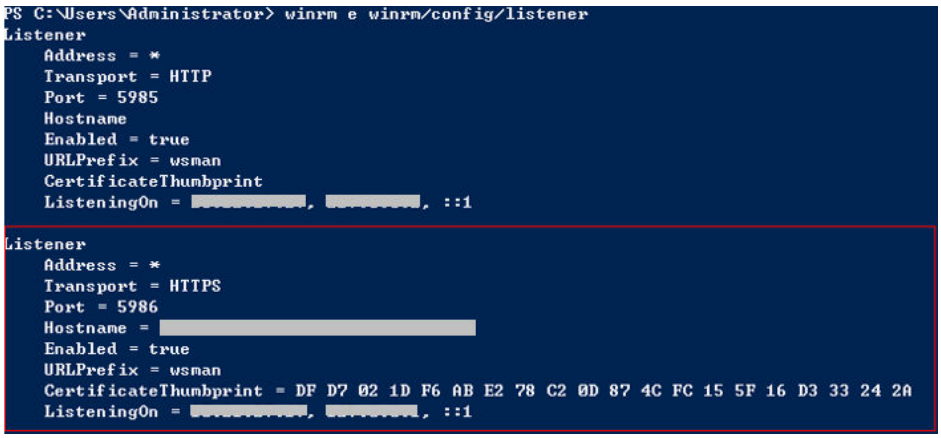
If the system displays a message indicating that the service cannot create the resource because it already exists, run the following command to delete the resource and perform this step again:

```
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.



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 the information about the generated key.

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 agent.
- 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
```

This operation allows the local host to log in to itself using SSH localhost without a password. It is mainly used for unified invoking logic of automation scripts and

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scheduled tasks. It can also be used to test the key connectivity process on a single host. This operation is not needed in fully manual local operation scenarios.

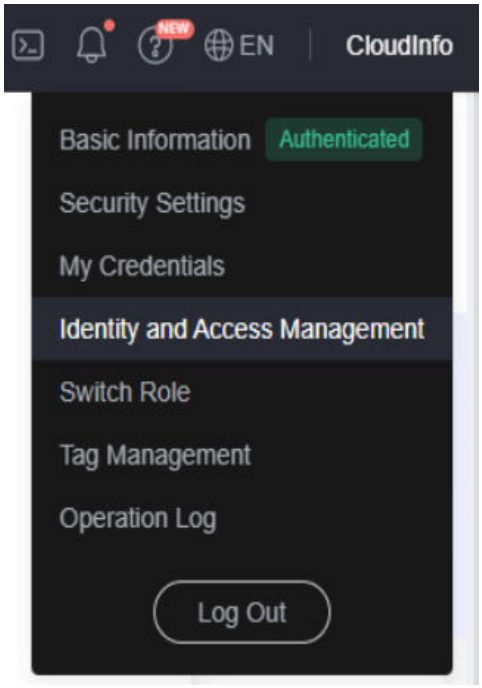
- To perform operations on the **authorized_keys** file, you must have permission to operate the **id_rsa** and **id_rsa.pub** files.
- When the key is used for connectivity verification, the username must be the name of the user who operates the **authorized_keys** file.
- Do not copy unnecessary spaces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

----End

Creating an Agency for a Host

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

Step 2 Hover over 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 pane 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 for creating an agency by referring to **Table 4-10**.

Table 4-10 Agency parameters

Name	Description	Example
Agency Name	Mandatory. Name of the agency.	aom_ecm_trust

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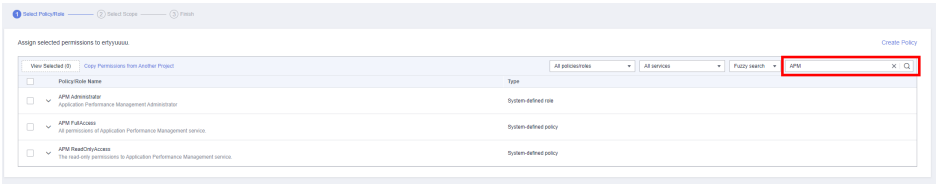
Name	Description	Example
Agency Type	Select **Cloud service**.	-
Cloud Service	Select **Elastic Cloud Server (ECS) and Bare Metal Server (BMS)** from the drop-down list.	-
Validity Period	Select **Unlimited**.	-
Description	Optional. Provide supplementary information about the agency.	-

Step 6 Click **OK**. 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.

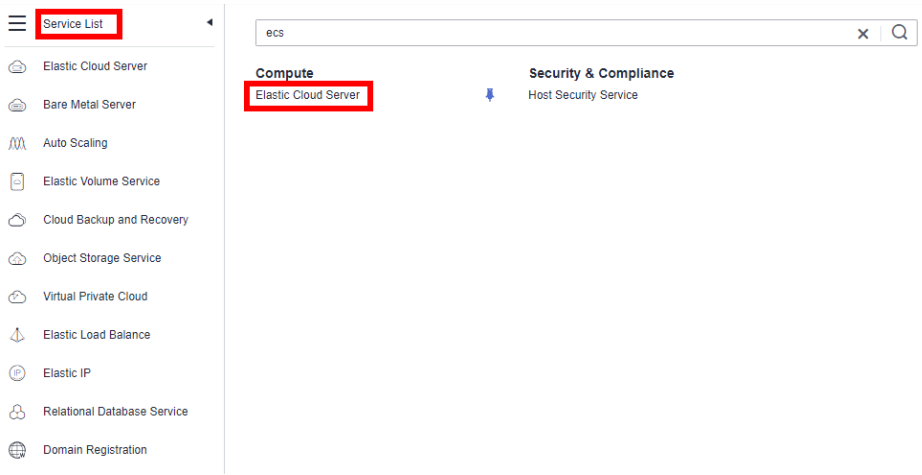


Step 8 Click **OK**. The agency is successfully created.

----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.

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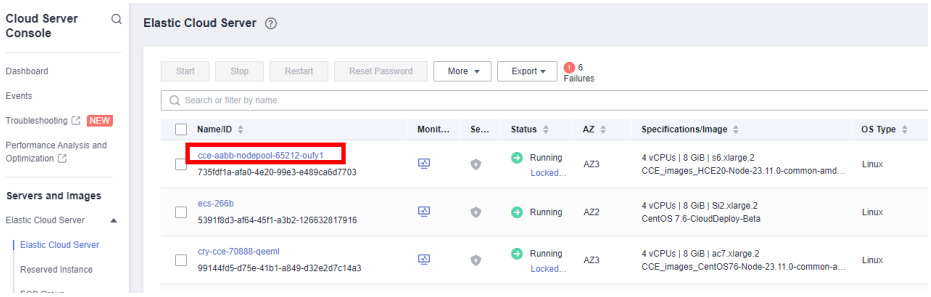
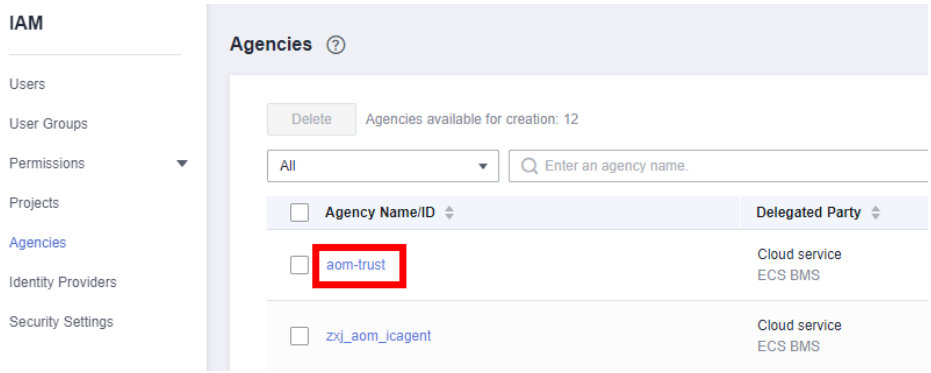
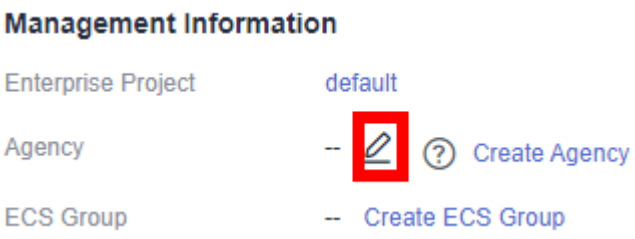


Step 3 Click the ID of the agency to be delegated, as shown in the following figure.



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



----End

Helpful Links

- For details about APIs related to host clusters, see **Managing Hosts**.
- For details about connectivity verification, see **Host Management** for troubleshooting.

4.2.3 Adding an Agent Host to a Host Cluster

To resolve communication issues in complex networks, it is necessary to add one or more agent hosts to the host cluster. This section describes how to add an agent host to a host cluster.

Prerequisites

- A host cluster is available. You have the permission to add hosts to the cluster.

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- A host bound to a public IP address is available. (If you do not have a host, purchase one by referring to **Purchasing an ECS in Custom Config Mode**.)
- The following requirements are mandatory for you to import the purchased ECS:
  - ECS is running.
  - ECS and the host cluster have the same OS.
  - When using an official agent pool, the agent host must have a public IP address.
  - An ECS instance that has been imported as a target host cannot be imported as an agent host.
  - In the agent mode, configure the agent host before using the target host.

Constraints

- For details about the maximum number of hosts that can be added to a host cluster, see **Specifications and Constraints** > **Basic constraints** > **Basic resource management**.
- For details about the OS versions supported by hosts, see **Specifications and Constraints** > **OSs supported**.

Adding an Agent Host

Step 1 Go to the CodeArts homepage.

1. Log in to the **CodeArts console**, click , and select a region where you have enabled CodeArts.
2. Click **Go to Workspace**.

   If your account uses the old billing mode (see **Old Billing Modes**), click **Access Service**.

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

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

Step 4 On the **Basic Resources** tab page, click the name of the created cluster to go to the **Target Hosts** page.

Step 5 Click **Add Host** and select **Adding IP** for **Add Hosts by** or **Importing ECS**.

Step 6 Select **Adding IP**.

Select **Agent** for **Host Connection Mode** to add an agent host. Enter the following information and click **OK**.

Table 4-11 Parameters of the agent host (Linux)

Parameter	Description
Host Name	Enter a custom agent host name. Enter 3 to 128 characters. Use digits, letters, hyphens (-), underscores (_), and periods (.).

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Parameter	Description
IP	Enter the public IP address bound to the agent host. IPv4 or IPv6 address is supported.
OS	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 the successful connectivity verification.
Authorization	Select **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	Port **22** is recommended. You may customize the port.
Install AOM ICAgent for metric monitoring, log query, and alarm functions on Huawei Cloud Linux hosts. Configure an agency before installation.	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 4-12 Parameters of the agent host (Windows)

Parameter	Description
Host Name	Enter a custom agent host name. Enter 3 to 128 characters. Use digits, letters, hyphens (-), underscores (_), and periods (.).
IP	Enter the public IP address bound to the agent host. IPv4 or IPv6 address is supported.
OS	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 the successful connectivity verification.

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

Step 7 Select **Importing ECS**.

To add your Huawei Cloud ECS as the agent host, click **Add Host**, and select **Importing ECS** for **Add Hosts by**.

- Importing an ECS (host)

  Click **Import** in the row where the ECS is located. On the displayed page, set the parameters for the Linux or Windows hosts by referring to **step 6**.

- Importing ECSs (hosts) in batches

  Select the ECSs to be imported and click **Import Selected** in the lower part. On the displayed page, configure the parameters for the Linux or Windows hosts by referring to **step 6**.

  After the configuration, click  next to the parameter to copy its value to the hosts listed below.

Step 8 Verify the host connectivity.

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

For details about connectivity verification, see **Host Management**.

----End

Configuring Agent Hosts of Different Systems

CodeArts Deploy supports adding Linux and Windows agent hosts. The following sections describe how to configure them.

Configuring a Linux Agent

Required Resources

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

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

Procedure

Step 1 Enable the SSH forwarding function of the agent.

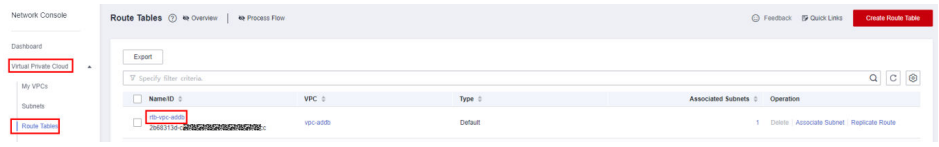
- If the agent mode is used, run the following command to check whether **AllowTcpForwarding** has been enabled for SSH on the agent:
  ```
  grep AllowTcpForwarding "/etc/ssh/sshd_config"
  ```
- If the value of this attribute is no, set it to yes.
  ```
  AllowTcpForwarding yes
  ```
- Run the following command to restart the sshd service:
  ```
  service sshd restart
  ```

Step 2 Configure SNAT for the agent:

1. Click ☰ in the upper left corner and choose **Networking** > **NAT Gateway** to access the console.
2. On the NAT Gateway console, click **Buy Public NAT Gateway**.
3. Click **Next**.
4. After the NAT gateway is created, return to the NAT gateway list and click the target NAT gateway.
5. Click the **SNAT Rules** tab, click **Add SNAT Rule**, and enter the related configuration.
6. Click **OK**. The SNAT service is configured.

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.

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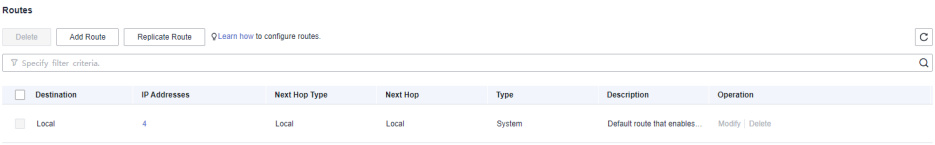


Table 4-13 Description of route information

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	Gateway instance of the SNAT rule.
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.
Operation	You can modify and delete routes.

----End

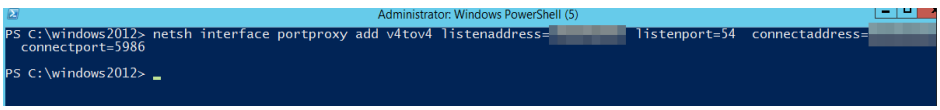
Configuring a Windows Agent

Required Resources

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

Procedure

Step 1 Go to the agent, open the PowerShell window, and run the netsh command, as shown in the following figure.



- Replace the parameters as follows:
  netsh interface portproxy add v4tov4 listenaddress=${*proxy_ip*} listenport=${*proxy_port*} connectaddress=${*host_ip*} connectport=${*host_port*}

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

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- Run the following command to check whether the settings take effect:
  ```
  netsh interface portproxy show all
  ```
- If the agent information is incorrect, run the following command to clear the information:
  ```
  netsh interface portproxy delete v4tov4  listenaddress=${proxy_ip} listenport= ${proxy_port} protocol=tcp
  ```

Table 4-14 Parameters

Parameter	Description
${proxy_ip}	Private IP address of the agent.
${proxy_port}	Listening port of the agent, 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 agent listening port, that is, *${proxy_port}* in the preceding command. For details, see **Configuring a Security Group**.

----End

Helpful Links

- For details about APIs related to host clusters, see **Managing Hosts**.
- For details about connectivity verification, see **Host Management**.

4.3 Deleting a Host Cluster

When managing a host cluster's lifecycle, remove the cluster from the system if its resources are idle, the service architecture changes, or the deployment is abnormal. To delete the host cluster, follow these steps.

WARNING

Once deleted, the host cluster cannot be restored. Exercise caution when performing this operation.

Prerequisites

- You have the permission to delete host clusters. For details, see **Configuring Host Cluster Permissions**.
- If the target cluster contains resources, clear all resources in it before you delete the cluster.

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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

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5 Creating an Application

5.1 Creating an Application with a Blank Template

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

Prerequisites

- You have permissions to create applications. For details, see **Configuring CodeArts Deploy Permissions**.
- A project is available. If no project is available, **create one**.

Constraints

For details about the maximum number of applications that can be created in a single project, see **Specifications and Constraints** > **Basic constraints** > **Application management**.

Creating an Application

Step 1 Go to the CodeArts homepage.

1. Log in to the **CodeArts console**, click , and select a region where you have enabled CodeArts.
2. Click **Go to Workspace**.

   If your account uses the old billing mode (see **Old Billing Modes**), click **Access Service**.

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

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

Step 4 Click **Create Application**. The **Basic Information** page is displayed.

Step 5 On the displayed **Basic Information** page, modify the basic information such as **Name**, **Agency URN**, **Execution Resource Pool**, and **Description** as required. For details, see **Editing Basic Information**.

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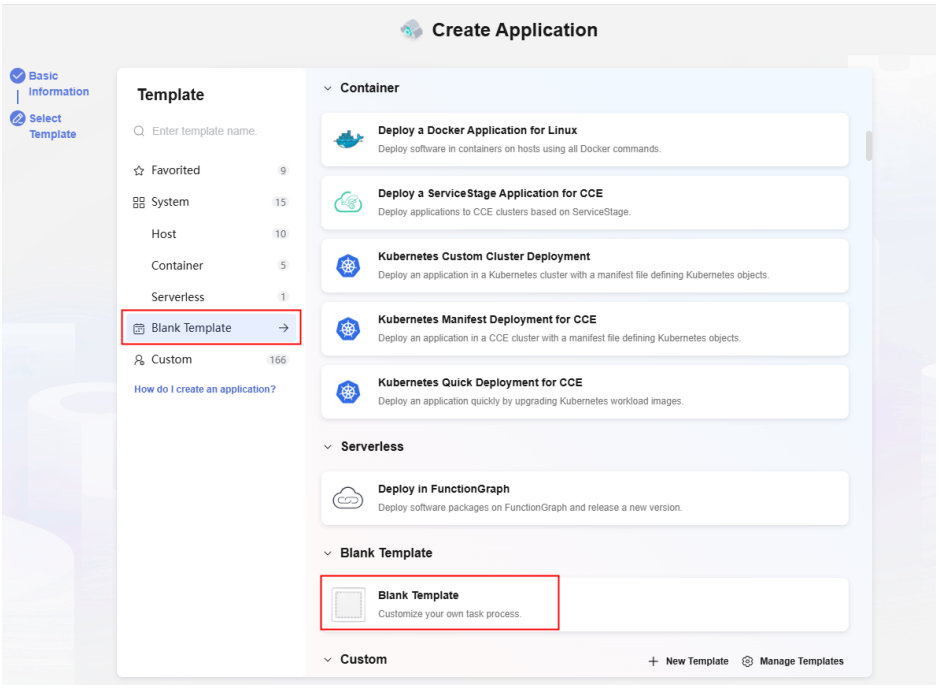
CAUTION

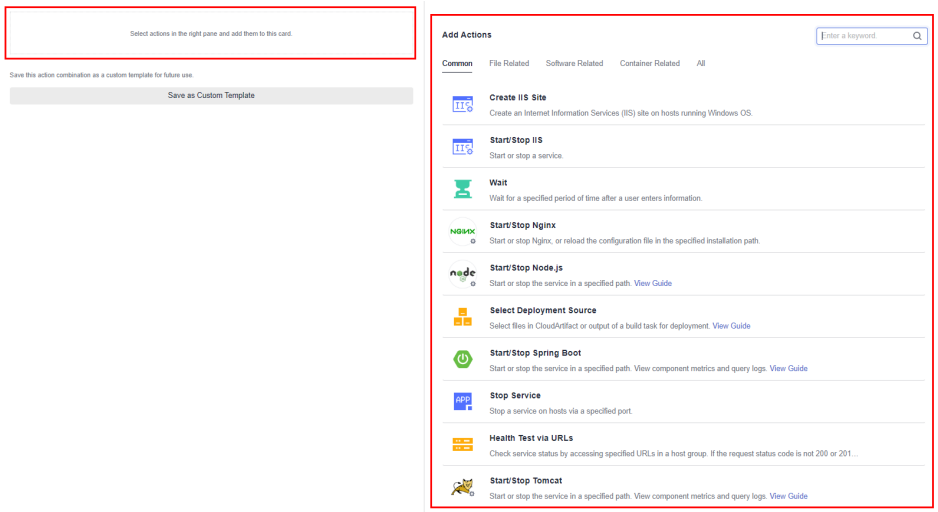
Only specific users at the Mexico region can edit **Execution Host**.

Step 6 After editing the basic application information, click **Next**. On the deployment template selection page that is displayed, select **Blank Template** and click **OK**.

Figure 5-1 Selecting a blank template.



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



Step 7 On the right list, click **Add** of the target action to add the action to the orchestration area.

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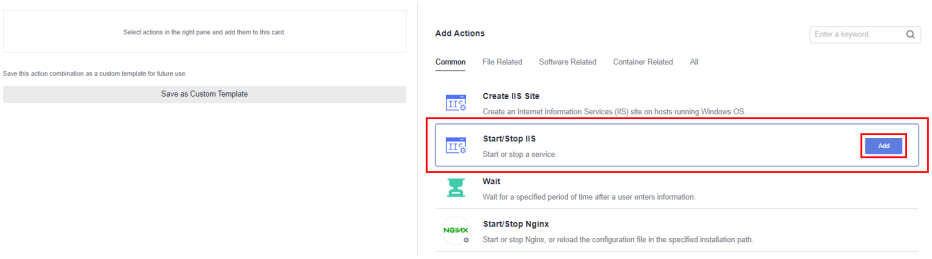

Step 8 (Optional) Configure application information.

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 **Configuring Parameters of an Application**.
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 **Notifications** page to notify users of application events they favorited through emails. For details, see **Configuring CodeArts Deploy Application Notifications**.

Step 9 After configuring all information, click **Save**.

----End

Editing Basic Information

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

Step 2 Click **Basic Information**. You can edit **Agency URN**, **Execution Resource Pool**, **Name**, and **Description** as required.

Table 5-1 Parameters

Parameter	Description
Name	Enter an application name. The value contains 3 to 128 characters, including letters, digits, hyphens (-), and underscores (_).

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Parameter	Description
Agency URN	Enter the agency permissions required for accessing other cloud services during application deployment. • Creating an agency Click **Create Agency** to create an agency. • Checking a URN. Click **Create Agency**. On the displayed page, click the agency name or ID to check the URN on the basic information page. URN format: **iam::*{{Account ID}}*:agency:*{{Agency name}}*** If no agency is set, the default agency **deploy_admin_trust** will be used to ensure normal application deployment. (The agency is manually created by the tenant administrator when accessing CodeArts.)
Project	Project to which the application belongs when the application is created. If your account does not have a project, click **Create Project** and click **Scrum** to create one. After an application is created, its project cannot be changed.
Group	Select a created group. Once the application is created, it will be placed in the group's folder. To create a group or manage groups, click **Manage Groups**. For more details, see **Managing Groups**. If no group is selected, the application will be saved in the **Ungrouped** folder after creation.
Description	Enter an application description. The value contains a maximum of 1,024 characters.
Execution Resource Pool	**CAUTION** Only specific users at the Mexico region can edit **Execution Host**. **Default** is selected by default. An agent pool is a collection of physical environments where commands are executed during software package deployment. You can use an official agent pool hosted by Huawei Cloud or host your own servers as a self-hosted agent pool on Huawei Cloud. For details about hosting your own servers, see **Creating a Self-hosted Agent Pool**. If the tenant account has **Intranet Secure Access** enabled (only for whitelisted users), **Self-hosted** is selected by default and cannot be changed.
New System	After this function is enabled, the operation will be supported by the new OS (Ubuntu 24.04 or Debian 12.0.0). Currently, the new OS is compatible with only some action plugins and may not be compatible with OSs of earlier versions. This option cannot be modified after the application is created.
Deploy from Pipeline	Toggling on the switch indicates that this application can be executed only in a pipeline. It cannot be executed independently.

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Parameter	Description
Timeout	Set a timeout for the deployment task. If it runs longer than this time, it will stop automatically. The value ranges from 10 to 180 minutes (default value: 30 minutes).

Step 3 After modifying all information, 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.

1. Log in to the **CodeArts console**, click , and select a region where you have enabled CodeArts.
2. Click **Go to Workspace**.

   If your account uses the old billing mode (see **Old Billing Modes**), click **Access Service**.

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.

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**.

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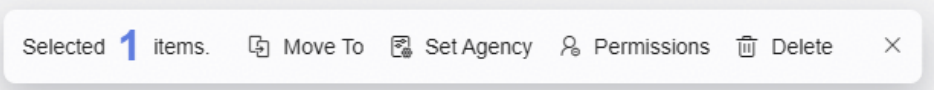
Step 7 After groups are created, click **Close** to return to the application list page. You can move applications to the corresponding groups as required.

1. Select the applications to be grouped. The following dialog box is displayed at the bottom of the page.

   Figure 5-2 Moving a group

2. Click **Move To**. The **Move Group** dialog box is displayed. You can move the application to the corresponding group.

----End

Favoriting an Application

You can favorite an application when there are many applications in the list.

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

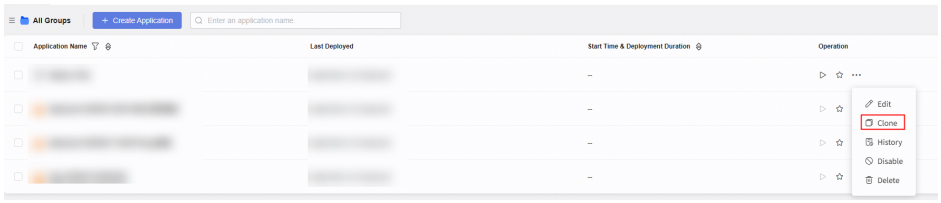
   You can click ★ again to unfavorite it.
2. After the application is favorited, the application is pinned on the top of the application list.
3. If you favorite multiple applications, the applications are displayed on the top from newest to oldest based on the time when they are favorited.

Cloning an Application

You can clone an application without affecting the original application.

Step 1 Select the application to be copied, click ••• , and click **Copy**.

Figure 5-3 Cloning an Application



Step 2 Change the name and click **Save** to clone the application.

----End

Deleting an Application

You can delete an application that is no longer needed.

WARNING

Once deleted, the application cannot be restored. Exercise caution when performing this operation.

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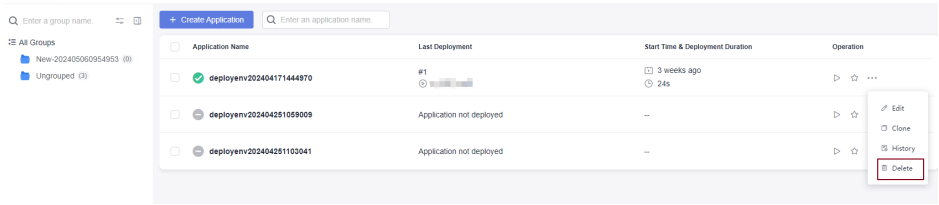
Click ••• next to the application to be deleted and click **Delete**. In the dialog box that is displayed, enter **YES** and click the confirm button to delete the application.

Figure 5-4 Deleting an application



Batch Deleting Applications

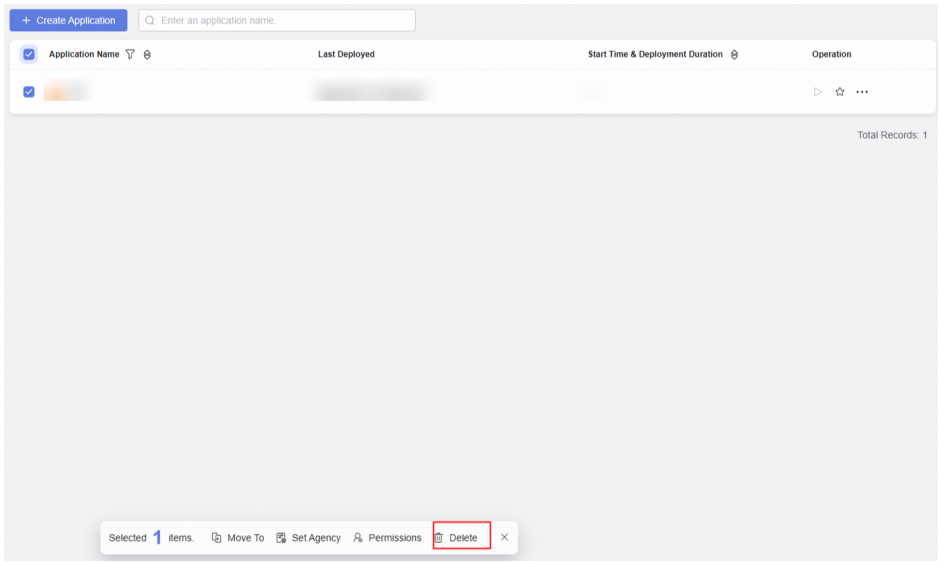
You can delete applications if you do not need them anymore.

WARNING

Once deleted, the application cannot be restored.

On the **Applications** page, click **Delete** on the bottom of the page. In the displayed dialog box, enter **Yes** and click **Yes**.

Figure 5-5 Batch Deleting Applications



Disabling an application

WARNING

After an application is disabled, the application cannot be edited, deployed, or rolled back. Creating or editing an environment is not allowed and environment permissions cannot be modified.

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Select the application to be disabled, click the *** icon, and click **Disable**.

Helpful Links

- For details about application APIs, see **Managing Applications**.
- For details about APIs related to application groups, see **Managing Application Groups**.
- For details about APIs related to application permissions, see **Managing Application Permissions**.
- For details about application-related FAQs, see **Application Deployment FAQs**.

5.2 Creating an Application Using a Preset Template

5.2.1 Knowing Application Deployment Templates and Creating Applications Using Them

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.

Table 5-2 System templates

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

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Name	Description
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.
Deploy 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.

Constraints

For details about the maximum number of applications that can be created in a single project, see **Specifications and Constraints** > **Basic constraints** > **Application management**.

For details about the supported cluster versions, see **Specifications and Constraints** > **Cluster versions**.

Creating an Application Using a System Template

Step 1 Go to the CodeArts homepage.

1. Log in to the **CodeArts console**, click , and select a region where you have enabled CodeArts.
2. Click **Go to Workspace**.

   If your account uses the old billing mode (see **Old Billing Modes**), click **Access Service**.

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

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

Step 4 Create an application.

- On the application list page, click **Create Application**. The **Basic Information** page is displayed.
- Generate an application using a system template with a few clicks: Choose **Templates** > **System**, click in the **Operation** column of the target template to generate an application with a few clicks. The **Basic Information** page is displayed.

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Step 5 On the displayed **Basic Information** page, modify the basic information such as **Name**, **Agency URN**, **Execution Resource Pool**, and **Description** as required. For details, see **Editing Basic Information**.

> **CAUTION**
>
> Only specific users at the Mexico region can edit **Execution Host**.

Step 6 After editing the basic application information, click **Next** and go to the **Select Template** page.

Step 7 (Optional) You can favorite system templates. After a template is added to favorites, the template is moved to the top of the system template list. If you favorite multiple templates, the most recently favorited template will be displayed at the top, followed by those favorited earlier.

Step 8 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 9 (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 **Configuring Parameters of an Application**.
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 **Notifications** page to notify users of application events they favorited through emails. For details, see **Configuring CodeArts Deploy Application Notifications**.

Step 10 After configuring all information, click **Save**.

----End

5.2.2 Creating an Application Using the ServiceStage Template

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5.2.2.1 Deploying an Application on ECS Based on ServiceStage

You can deploy applications on Huawei Cloud ECSs using Huawei Cloud ServiceStage.

Constraints

This system template is available only in the Santiago region.

Procedure

Step 1 In the template selection step, select this system template by referring to **Creating an Application Using a System Template**.

The related deployment actions are as follows:



Step 2 On the **Deployment Actions** page, configure the action. For details about the parameters, see **Deploying an Application on ServiceStage 2.0**.

----End

5.2.2.2 Deploying an Application on CCE Clusters Using ServiceStage

You can deploy applications on Huawei Cloud CCE clusters using Huawei Cloud ServiceStage.

Constraints

This template is available only in the Mexico, Santiago, and Johannesburg regions.

Procedure

Step 1 In the template selection step, select this system template by referring to **Creating an Application Using a System Template**.

The related deployment actions are as follows:



Step 2 On the **Deployment Actions** page, configure the action. For details about the parameters, see **Deploying an Application on ServiceStage 2.0**.

----End

5.2.2.3 Deploying an Application on ECS in an AS Group Using ServiceStage

You can deploy applications on Huawei Cloud ECSs in AS groups using Huawei Cloud ServiceStage.

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Constraints

This system template is available only in the Santiago region.

Procedure

Step 1 In the template selection step, select this system template by referring to **Creating an Application Using a System Template**.

The related deployment actions are as follows:



Step 2 On the **Deployment Actions** page, configure the action. For details about the parameters, see **Deploying an Application on ServiceStage 2.0**.

----End

5.2.3 Creating and Deploying an Application Using a Kubernetes Template

5.2.3.1 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.

Step 1 In the template selection step, select this system template by referring to **Creating an Application Using a System Template**.

The related deployment actions are as follows:



Step 2 On the **Deployment Actions** page, configure the action. For details about the parameters, see **Deploying an Application in Kubernetes (CCE Cluster) Using Manifest**.

----End

5.2.3.2 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.

Step 1 In the template selection step, select this system template by referring to **Creating an Application Using a System Template**.

The related deployment actions are as follows:

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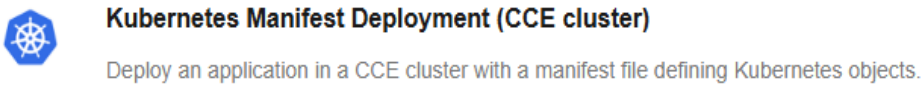


Step 2 On the **Deployment Actions** page, configure the action. For details about the parameters, see **Quickly Deploying an Application in Kubernetes (CCE Cluster)**.

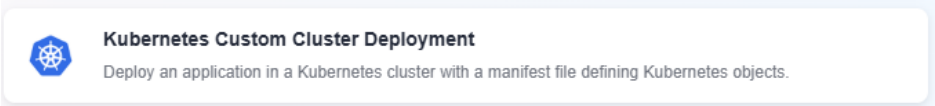
----End

5.2.3.3 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.

Step 1 In the template selection step, select this system template by referring to **Creating an Application Using a System Template**.

The related deployment actions are as follows:



Step 2 On the **Deployment Actions** page, configure the action. For details about the parameters, see **Deploying an Application with a Custom Kubernetes Cluster**.

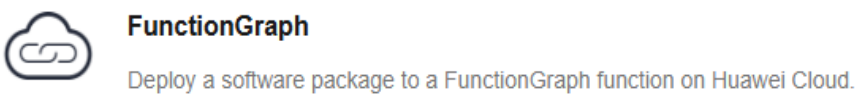
----End

5.2.4 Creating an Application Using the Function Deployment Template

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

Step 1 In the template selection step, select this system template by referring to **Creating an Application Using a System Template**.

The related deployment actions are as follows:



Step 2 On the **Deployment Actions** page, configure the action. For details about the parameters, see **Deploy in FunctionGraph**.

----End

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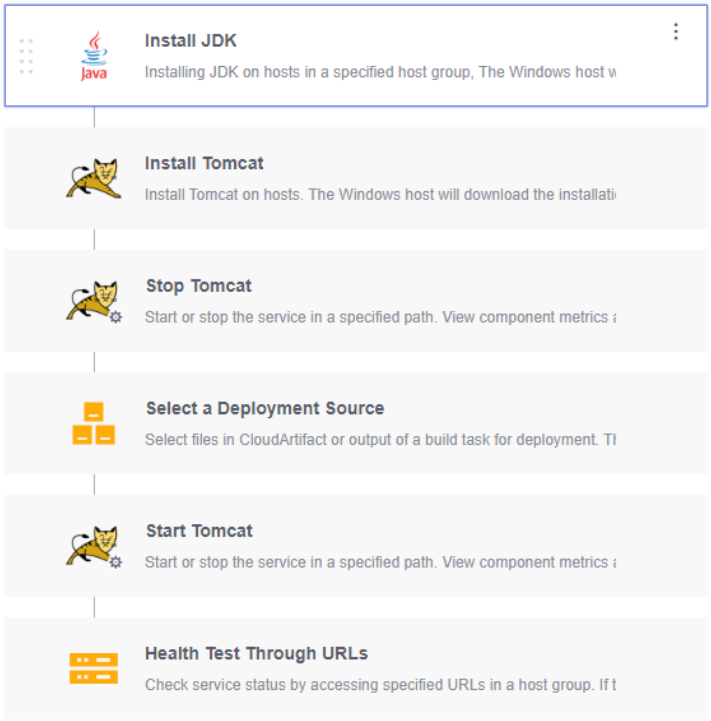
5.2.5 Creating an Application Using the Tomcat Application Deployment Template

You can deploy a WAR package to the Tomcat service on a host and start the service.

Step 1 In the template selection step, select this system template by referring to **Creating an Application Using a System Template**.

The related deployment actions are shown in the following figure. Check whether you have installed Tomcat on the target host. If yes, remove the **Install Tomcat** action from the template.



Step 2 On the **Deployment Actions** page, configure the following actions. For details about the parameters, see below.

- **Install JDK**.
- **Install Tomcat**.
- **Stop Tomcat**.
- **Select a deployment source**.
- **Start Tomcat**.
- **Perform the health test via URLs**.

Step 3 **Table 5-3** describes the parameters in the template.

Table 5-3 Template parameters

Parameter	Description
host_group	Target environment where the application is deployed.

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Parameter	Description
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**.

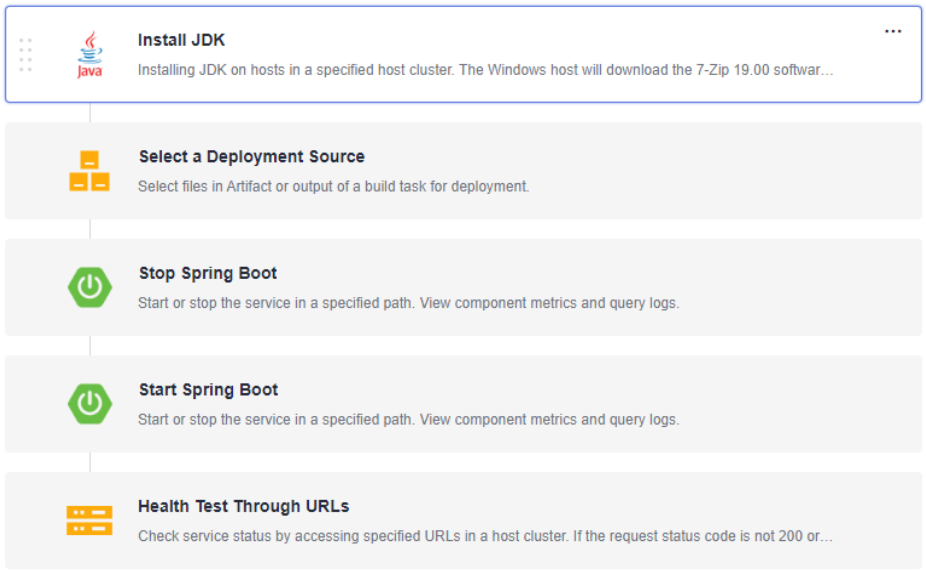
----End

5.2.6 Creating an Application Using the SpringBoot Application Deployment Template

You can deploy a Spring Boot Java background application on the host and start the service.

Step 1 In the template selection step, select this system template by referring to **Creating an Application Using a System Template**.

The related deployment actions are shown in the following figure. Check whether you have installed JDK on the target host. If yes, remove the **Install JDK** action from the template.



Step 2 On the **Deployment Actions** page, configure the following actions. For details about the parameters, see below.

- **Install JDK**.
- **Select a deployment source**.
- **Stop Spring Boot**.
- **Start Spring Boot**.
- **Perform the health test via URLs**.

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Step 3 Table 5-4 describes the parameters to be set in the template.

Table 5-4 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**.
package_name	Name of the Spring Boot application release package. The name excludes the file name extension.

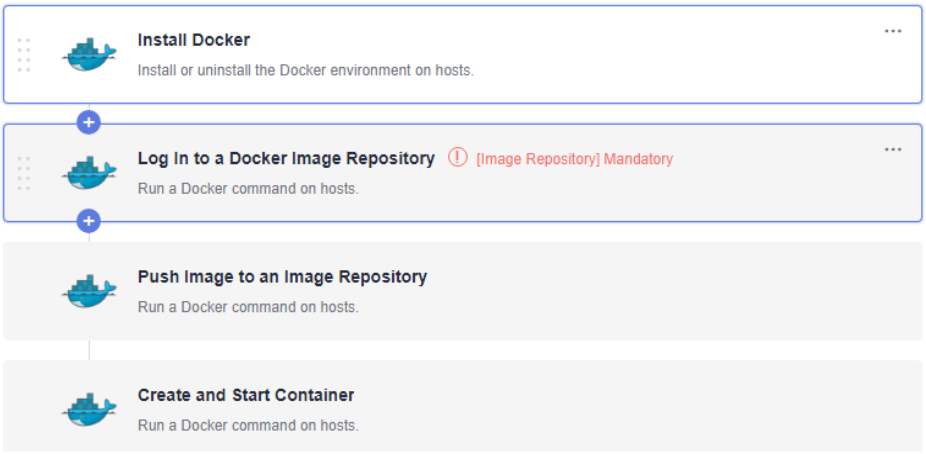
----End

5.2.7 Creating an Application Using "Deploy a Docker Application for Linux"

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

Step 1 In the template selection step, select this system template by referring to **Creating an Application Using a System Template**.

The related deployment actions are shown in the following figure. Check whether you have installed Docker on the target host. If yes, remove the **Install Docker** action from the template.



Step 2 On the **Deployment Actions** page, configure the following actions. For details about the parameters, see below.

- **Install Docker**.
- **Log in to the Docker image repository**.

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- **Pull an image**.
- **Create and run a container**.

----End

5.2.8 Creating an Application Using the Django Application Deployment Template

The template is not supported in Python 3.10 or later versions.

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.

Step 1 In the template selection step, select this system template by referring to **Creating an Application Using a System Template**.

The related deployment actions are as follows:

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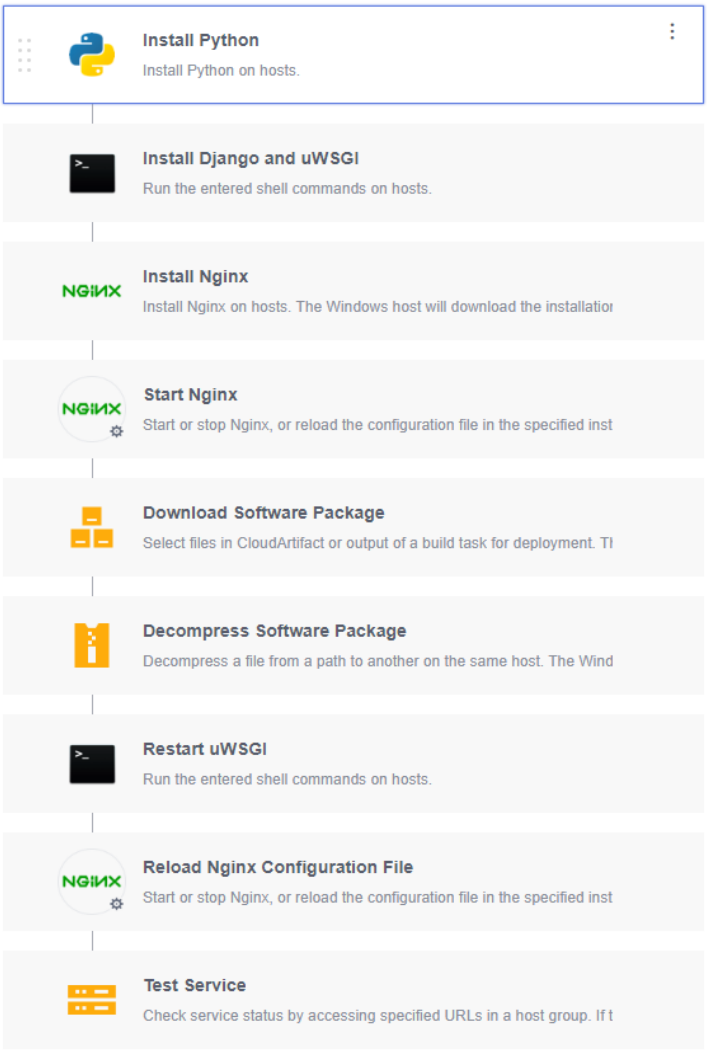

Step 2 On the **Deployment Actions** page, configure the following actions. For details about the parameters, see below.

- **Install Python**.
- **Install Django and uWSGI**.
- **Install Nginx**.
- **Start Nginx**.
- **Download the software package**.
- **Decompress the software package**.
- **Restart uWSGI**.
- **Reload the Nginx configuration file**.
- **Test services**.

Step 3 Table 5-5 describes the parameters to be set in the template.

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Table 5-5 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.

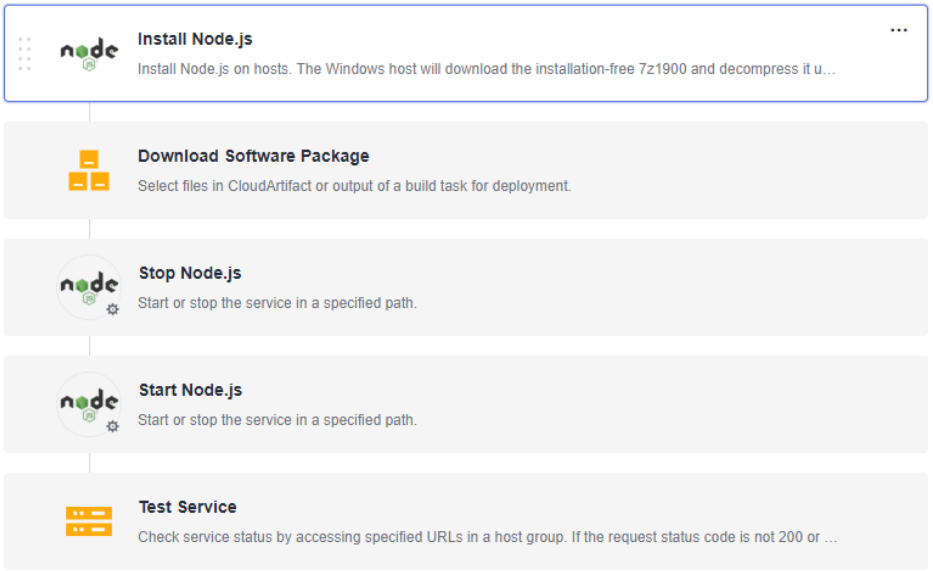
----End

5.2.9 Creating an Application Using the Node.js Application Deployment Template

You can deploy a Node.js web service on the host and start the service.

Step 1 In the template selection step, select this system template by referring to **Creating an Application Using a System Template**.

The related deployment actions are shown in the following figure. Check whether you have installed Node.js on the target host. If yes, remove the **Install Node.js** action from the template.



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Step 2 On the **Deployment Actions** page, configure the following actions. For details about the parameters, see below.

- **Install Node.js**.
- **Download the software package**.
- **Stop Node.js**.
- **Start Node.js**.
- **Test services**.

Step 3 Table 5-6 describes the parameters to be set in the template.

Table 5-6 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.
service_port	Application port.

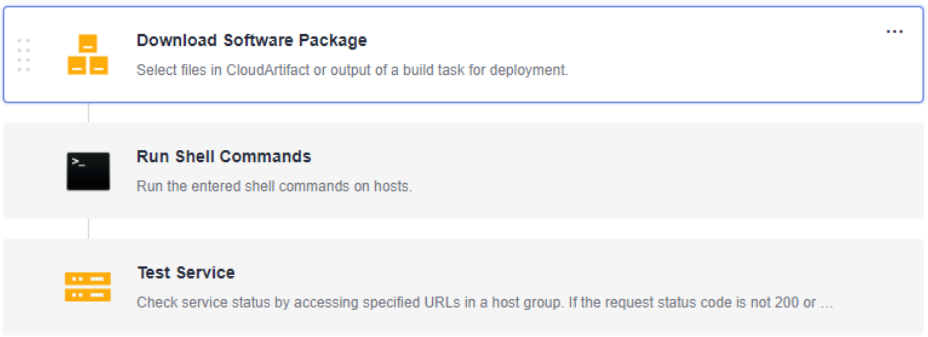
----End

5.2.10 Creating a General Application by Running the Shell Script

You can deploy a general application using Shell scripts.

Step 1 In the template selection step, select this system template by referring to **Creating an Application Using a System Template**.

The related deployment actions are as follows:



Step 2 On the **Deployment Actions** page, configure the following actions. For details about the parameters, see below.

- **Download the software package**.
- **Run the Shell script**.
- **Perform the health test via URLs**.

Step 3 Table 5-7 describes the parameters to be set in the template.

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Table 5-7 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.

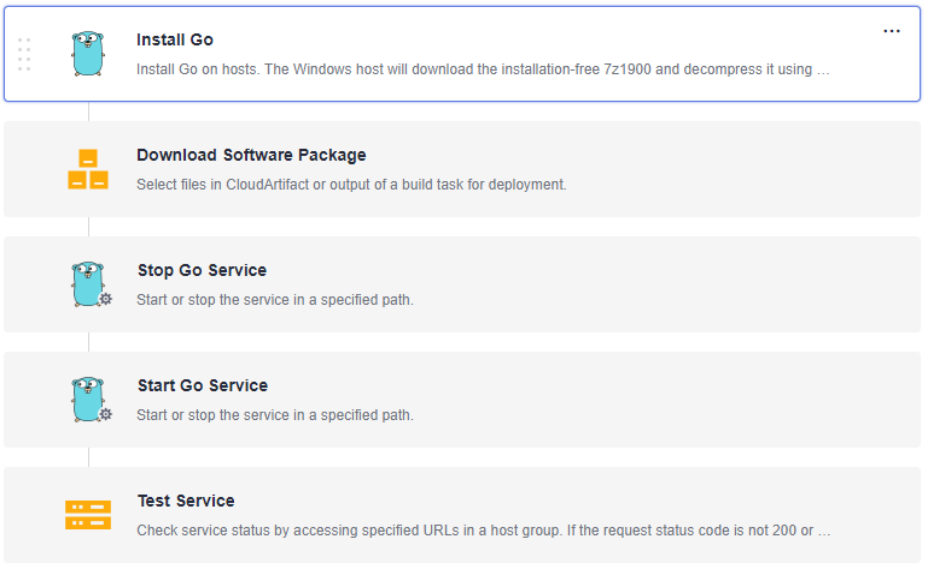
----End

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

You can deploy a Go web service on the host and start the service.

Step 1 In the template selection step, select this system template by referring to **Creating an Application Using a System Template**.

The related deployment actions are shown in the following figure. Check whether you have installed Go on the target host. If yes, remove the **Install Go** action from the template.



Step 2 On the **Deployment Actions** page, configure the following actions. For details about the parameters, see below.

- **Install Go**.
- **Download the software package**.
- **Stop Go**.
- **Start Go**.
- **Perform the health test via URLs**.

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Step 3 The table below describes the parameters to be set in the template.

Table 5-8 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.

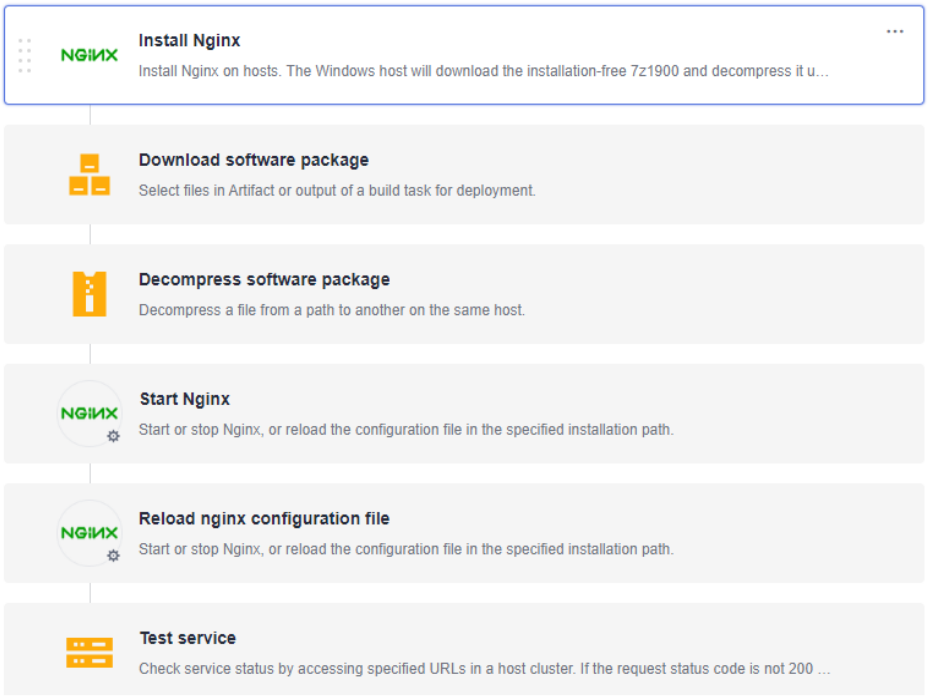
----End

5.2.12 Creating an Application Using the Vue Application Deployment Template

You can deploy a Vue web service on the host and start the service.

Step 1 In the template selection step, select this system template by referring to **Creating an Application Using a System Template**.

The related deployment actions are shown in the following figure. Check whether you have installed Nginx on the target host. If yes, remove the **Install Nginx** action from the template.



Step 2 On the **Deployment Actions** page, configure the following actions. For details about the parameters, see below.

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- **Install Nginx**.
- **Download the software package**.
- **Decompress the software package**.
- **Start Nginx**.
- **Reload the Nginx configuration file**.
- **Test services**.

Step 3 The table below describes the parameters to be set in the template.

Table 5-9 Template parameters

Parameter	Description
host_group	Target environment where the application is deployed.
nginx_install_path	Nginx installation path.
service_port	Application port.
package_path	Download path for software packages.
package_name	Software package name (including the file name extension).
package_url	Software package download link. To obtain it, go to the **Artifact** > **Release Repos** page.

----End

5.3 Creating 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 **customize a template on the application template page** or **customize a 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.
- A custom template can be directly used during application creation.
- Generating an application using a custom template: Choose **Templates** > **Custom** and click ⊕ in the **Operation** column of the target template to generate an application within a few clicks.

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Constraints

For details about the maximum number of applications that can be created in a single project, see **Specifications and Constraints** > **Basic constraints** > **Application management**.

Creating a Custom Template on the Application Template Page

Step 1 Go to the CodeArts homepage.

1. Log in to the **CodeArts console**, click , and select a region where you have enabled CodeArts.
2. Click **Go to Workspace**.

   If your account uses the old billing mode (see **Old Billing Modes**), click **Access Service**.

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

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

Step 4 Choose **Templates** > **All**.

Step 5 Click **Create Template**.

Step 6 Edit the basic information, deployment actions, and parameters as required. For details, see **Creating an Application with a Blank Template**.

Step 7 Click **Save** in the upper right corner to create a custom template.

----End

Customizing from a Blank Template

Step 1 Go to the CodeArts homepage.

1. Log in to the **CodeArts console**, click , and select a region where you have enabled CodeArts.
2. Click **Go to Workspace**.

   If your account uses the old billing mode (see **Old Billing Modes**), click **Access Service**.

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

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

Step 4 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 5 Click **Blank Template** to enter the **Deployment Actions** tab page.

Step 6 Edit the deployment actions based on service requirements.

Step 7 Click **Save as Custom Template**. In the dialog box displayed, enter a template name and description, and click **OK**.

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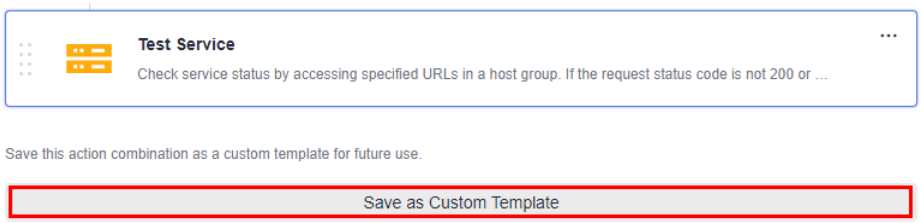

----End

Creating a Custom Template During Application Creation

Step 1 Go to the CodeArts homepage.

1. Log in to the **CodeArts console**, click , and select a region where you have enabled CodeArts.
2. Click **Go to Workspace**.

   If your account uses the old billing mode (see **Old Billing Modes**), click **Access Service**.

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

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

Step 4 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 5 Click **Next**, choose **Blank Template** > **Custom**. Click **New Template** on the right of **Custom**.

If no template is available, you can click **New Template** to customize one.

Step 6 Configure basic information, deployment actions, and parameter settings as needed.

Step 7 Click **Save** in the upper right corner to create a custom template.

----End

Customizing a Template from an Existing Application

Step 1 Go to the CodeArts homepage.

1. Log in to the **CodeArts console**, click , and select a region where you have enabled CodeArts.
2. Click **Go to Workspace**.

   If your account uses the old billing mode (see **Old Billing Modes**), click **Access Service**.

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

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

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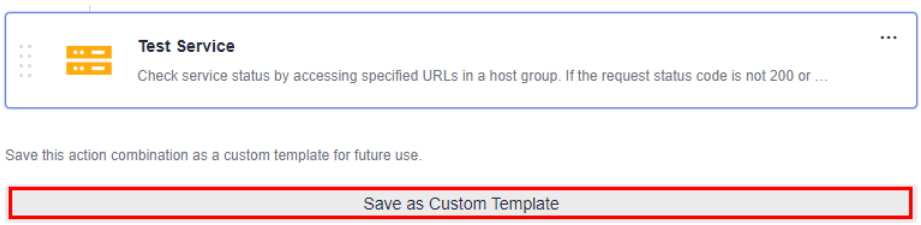
Step 4 On the **Applications** tab page, select an application to be deployed and find its **Operation** column. Click ··· on the right of the application, click **Edit** to view the detailed configuration information of the application.

Step 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

Favoriting, Editing, or Deleting a Custom Template

Step 1 Go to the CodeArts homepage.

1. Log in to the **CodeArts console**, click , and select a region where you have enabled CodeArts.
2. Click **Go to Workspace**.

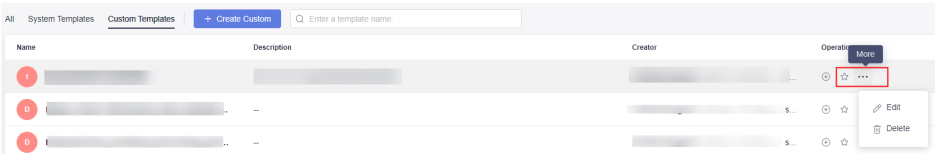
   If your account uses the old billing mode (see **Old Billing Modes**), click **Access Service**.

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

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

Step 4 Choose **Templates** > **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 ··· in the row of a custom template to be deleted and click **Delete**. Once deleted, the template cannot be restored.



----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 an Application with a Blank Template**.

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6 Configuring Application Deployment Actions

6.1 Configuring Deployment Actions for Software Installation

6.1.1 Installing IIS

Add this action to install Internet Information Services (IIS) on the target host in the specified environment.

Constraints

Installing IIS is not supported on Windows 7 or Windows 10.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-1 Parameters

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

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Parameter	Description
Environment	Deployment object. Select an environment whose resource type is host cluster.
Action Control	Whether to enable the settings. **Keep running on failure**: Continue the task even if this action fails.

----End

Helpful Links

If you encounter any problems during deployment, see **Installing IIS**.

6.1.2 Installing/Uninstalling Docker

Add this action to install or uninstall the Docker environment on a host.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-2 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
Operation	Select **Install Docker** or **Uninstall Docker**. 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	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

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----End

Helpful Links

If you encounter any problems during deployment, see **Installing/Uninstalling Docker**.

6.1.3 Installing Go

Add this action to install Go on a host. The following table describes the configuration parameters.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-3 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
Go Version	GO version.
Installation Path	Installation path of Go.
Action Control	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

Helpful Links

If you encounter any problems during deployment, see **Installing Go**.

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6.1.4 Installing PHP

Add this action to install PHP on a host. The following table describes the configuration parameters.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-4 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
PHP Version	PHP version.
Installation Path	Installation path of PHP.
Action Control	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

Helpful Links

If you encounter any problems during deployment, see **Installing PHP**.

6.1.5 Installing Python

Add this action to install Python on a host. The following table describes the configuration parameters.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

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Step 3 Configure the action using the parameters described in the table below.

Table 6-5 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
Python Version	Python version.
Installation Path	Installation path of Python.
Action Control	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

Helpful Links

If you encounter any problems during deployment, see **Installing Python**.

6.1.6 Installing Nginx

Add this action to install Nginx on a host. The following table describes the configuration parameters.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-6 Parameters

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

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Parameter	Description
Environment	Deployment object. Select an environment whose resource type is host cluster.
Nginx Version	Nginx version.
Nginx Installation Path	Installation path of Nginx.
Action Control	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

Helpful Links

If you encounter any problems during deployment, see **Installing Nginx**.

6.1.7 Installing JDK

Add this action to install JDK on a host. The following table describes the configuration parameters.

Constraints

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

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-7 Parameters for installing JDK

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

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Parameter	Description
Environment	Deployment object. Select an environment whose resource type is host cluster.
JDK Version	JDK version.
Installation Path	Installation path of JDK.
Action Control	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

Helpful Links

If you encounter any problem during deployment, see **Installing JDK**.

6.1.8 Installing Tomcat

Add this action to install Tomcat on a host.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-8 Parameters for installing Tomcat

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
Tomcat Version	Version of Tomcat to be installed.
Installation Path	Installation path of Tomcat.
HTTP Port	Default port: **8080**

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Parameter	Description
AJP Port	Default port: **8009**
Service Shutdown Port	Default port: **8005**
Action Control	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

Helpful Links

If you encounter any problem during deployment, see **Installing Tomcat**.

6.1.9 Installing Node.js

Add this action to install Node.js on a host.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-9 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
Node.js Version	Node.js version.
Installation Path	Installation path of Node.js.

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Parameter	Description
Action Control	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

Helpful Links

If you encounter any problems during deployment, see **Installing Node.js**.

6.2 Configuring Container-based Deployment Actions

6.2.1 Deploying in Kubernetes

This deployment runs kubectl commands to control your Kubernetes clusters. It includes three actions. Select one that fits your project requirements.

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

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

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

Prerequisites

A **CCE cluster** is available. You may be charged during the process. For details, see **CCE Billing**.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

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Table 6-10 Parameters

Parameter	Description
Action Name	Mandatory. This name will be displayed in the deployment action orchestration area. 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	Mandatory. **Artifact**, **Repo**, and **OBS** can be selected.
Repo	Mandatory when **Manifest File Source** is set to **Repo**.
Branch	Mandatory when **Manifest File Source** is set to **Repo**.
Manifest file or folder	Mandatory. • If **Manifest File Source** is set to **Artifact**, select the manifest file to be deployed. The file name 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 a local one to the repository, click  to refresh repository files, and select the manifest file. Click . • If **Manifest File Source** is set to **Repo**, enter the relative path of the file or folder. The file name extension must be **.yaml**, **.yml**, or **.json** format. Click  to edit the file. • If **Manifest File Source** is set to **OBS**, select a manifest file to be deployed. The file name must be suffixed with **.yaml**, **.yml**, or **.json**.
Tenant	Mandatory. There are two options: • **Current**: The software package is deployed in a CCE cluster of the current tenant for release. Select **Current**. The current tenant must have the CCE cluster operation permission. If not, enable **IAM authorization** to select an authorized user from the **User** drop-down list for deployment. • **Other**: The software package is deployed and released in a CCE cluster of another tenant in IAM authorization mode. After selecting **Other**, select an authorized tenant. 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.

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Parameter	Description
IAM authorization	Optional. If you do not have the permission to call CCE APIs, enable this option to obtain the temporary AK/SK of an authorized user.
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.
Java Probes	Locate workload issues and analyze performance bottlenecks. For details, see **Configuring APM Settings for Performance Bottleneck Analysis**. **Probe Type** • **APM 2.0 Probe**: Java probes will allocate 0.25-core CPU and 250-MiB memory to initialize containers. • **Disable**: Probe-based fault locating is disabled. When **Probe Type** is set to **APM 2.0 Probe**, configure the following parameters: **Probe Version**: Select a probe version. **Probe Upgrade Policy**: Select **Automatic upgrade upon restart** or **Manual upgrade upon restart**. • **Automatic upgrade upon restart**: The system downloads the image upon each restart. • **Manual upgrade upon restart**: If a local image is available, it will be used. If no local image is available, the system downloads the probe image. **APM Environment**: (Optional) Enter the APM environment information. **APM Business**: Select an APM application **APM Sub-Business**: (Optional) Enter a sub-application. **Access Key Id**: The system automatically obtains the relevant secret access key from APM. Go to the APM console to check the key details. For details about the APM 2.0 parameters, see **APM parameters**.
Action Control	Continue the task even if this action fails.
Overtime	Maximum execution duration of the action, in minutes. If the duration exceeds the specified time before you stop the action, the action will be timed out. Value range: 1–30.

----End

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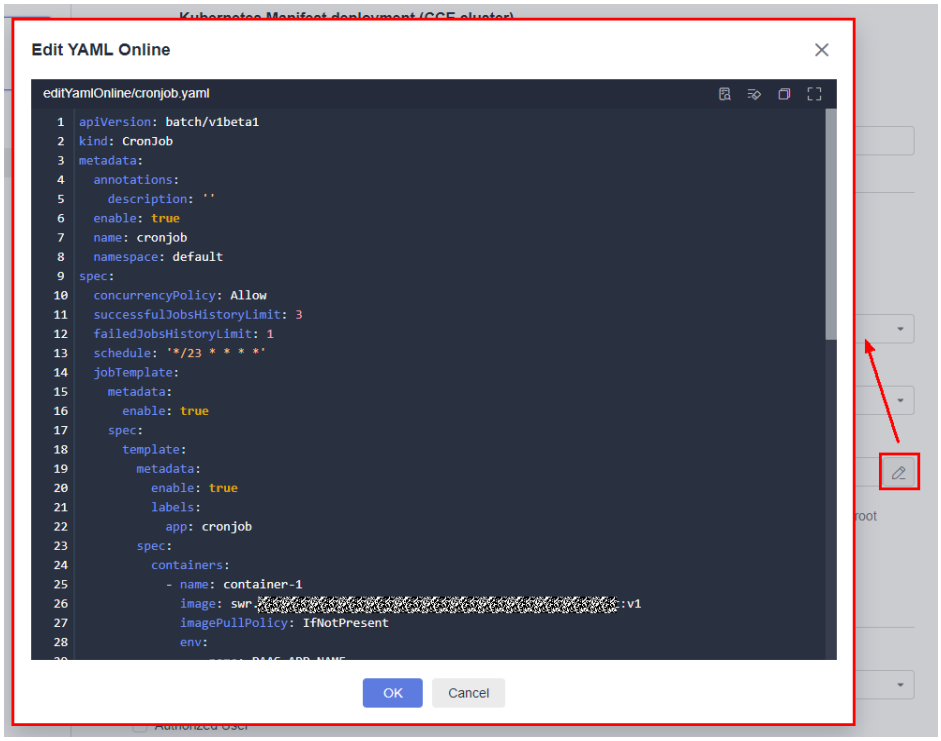
Online Manifest File Editing

When **Manifest 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.

- 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 content in the manifest file.
- Click the icon to display the content of the manifest file in full screen to better browse the code.



To modify the manifest file in CodeArts Repo, you must have the corresponding permissions. For details, see **Configuring Repo-Level Permissions** of CodeArts Repo.

Helpful Links

If you encounter any problem during deployment, see **FAQs About Kubernetes Deployment Tasks**.

6.2.3 Quickly Deploying an Application in Kubernetes (CCE Cluster)

This section introduces how to quickly deploy an application in a CCE cluster by upgrading Kubernetes workload images.

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Prerequisites

A **CCE cluster** is available. You may be charged during the process. For details, see **CCE Billing**.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

You can set **Container**, **Image**, **Image Tag**, **Instances**, and **Java Probes** (including APM Environment and APM Sub-Businesses) by referencing ${*XXX*} parameters defined on the **Parameters** tab. For details, see **Parameter Management**.

Table 6-11 Parameters

Parameter	Description
Action Name	Custom action name. 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 a CCE cluster of the current tenant for release. Select **Current**. The current tenant must have the CCE cluster operation permission. If not, enable **IAM authorization** to select an authorized user from the **User** drop-down list for deployment. • **Other**: The software package is deployed and released in a CCE cluster of another tenant in IAM authorization mode. After selecting **Other**, select an authorized tenant. 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 call CCE APIs, enable this option to obtain the temporary AK/SK of an authorized user.
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 workload to be deployed. Only Deployment workloads are supported.
Instances	Enter the number of instances to be deployed. If this parameter is left blank, the current number of pods in the CCE cluster will be adopted.

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Parameter	Description
Container	Select the name of the CCE container to be deployed.
Image	Select the image for deployment.
Image Tag	Select the tag of the image for deployment.
Container Specifications	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	Configure environment variables for the target container in the target workload. Real-time environment variables are synchronized from CCE to replace the variables on this page.

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Parameter	Description
Java Probes	Locate workload issues and analyze performance bottlenecks. For details, see **Configuring APM Settings for Performance Bottleneck Analysis**. **Probe Type** • **APM 2.0 Probe**: Java probes will allocate 0.25-core CPU and 250-MiB memory to initialize containers. • **Disable**: Probe-based fault locating is disabled. When **Probe Type** is set to **APM 2.0 Probe**, configure the following parameters: **Probe Version**: Select a probe version. **Probe Upgrade Policy**: Select **Automatic upgrade upon restart** or **Manual upgrade upon restart**. • **Automatic upgrade upon restart**: The system downloads the image upon each restart. • **Manual upgrade upon restart**: If a local image is available, it will be used. If no local image is available, the system downloads the probe image. **APM Environment**: (Optional) Enter the APM environment information. **APM Business**: Select an APM application **APM Sub-Business**: (Optional) Enter a sub-application. **Access Key Id**: The system automatically obtains the relevant secret access key from APM. Go to the APM console to check the key details. For details about the APM 2.0 parameters, see **APM parameters**.
Action Control	Continue the task even if this action fails.
Overtime	Maximum execution duration of the action, in minutes. If the duration exceeds the specified time before you stop the action, the action will be timed out. Value range: 1–30.

----End

Helpful Links

If you encounter any problem during deployment, see **FAQs About Kubernetes Deployment Tasks**.

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6.2.4 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, you can deploy applications in self-built or third-party Kubernetes clusters.

Prerequisites

A custom cluster is available.

Configuring Deployment Actions

Step 1 Obtain the kubeconfig file.

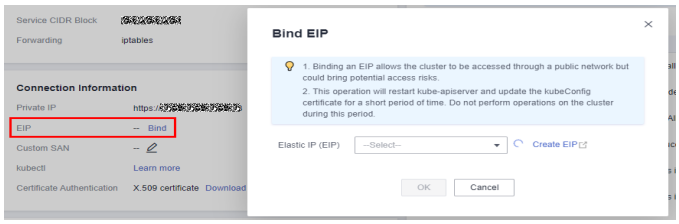
- Your Kubernetes cluster is used as an example.

  For details, see **Configure Access to Multiple Clusters**.

- Example of a CCE cluster.

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

  The CodeArts Deploy official agent pool and your Kubernetes cluster are not in the same VPC. Therefore, you can access CodeArts Deploy 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. After the download is complete, a **kubeconfig.json** file is available.

Step 2 Create a Kubernetes endpoint.

1. Go to the CodeArts Deploy homepage.
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 **Kubernetes Custom Cluster Deployment**, and click **Add**.
4. Create an endpoint for accessing your Kubernetes cluster.

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

   After entering the information, click **Confirm** to check whether the endpoint is configured successfully.

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Table 6-12 Parameters

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

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

Table 6-13 Parameters

Parameter	Description
Kubernetes Service Endpoint	Select the target Kubernetes access point. You can create and manage Kubernetes access points.
kubectl Command	Select the kubectl command you want to use. For details about such commands, see **Command line tool (kubectl)**.
Use manifest file	If this option is selected, 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	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 a local one to the repository, click  to refresh repository files, and select the manifest file. Click .

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Parameter	Description
kubectl Command Parameters	Parameters of the kubectl command to be executed. If the **kubectl Command** is set to **patch**, the **-p** option and file path will be automatically added in the **kubectl Command Parameters**. The **node**, **pod**, and **deployment** types can be modified in the **patch** command. For example, to change the **deployment** type, enter **deployment deployment-test** in **Kubectl Command Parameters**. **deployment** is the kind (or resource type), and **deployment-test** is the kind name (or type name). 
Action Control	Continue the task even if this action fails.

----End

Helpful Links

If you encounter any problem during deployment, see **FAQs About Kubernetes Deployment Tasks**.

6.2.5 Gray Releasing an Application in Kubernetes (CCE Cluster) with Nginx-Ingress

This section describes the procedure for grayscale deployment in a CCE Kubernetes cluster using the Nginx-Ingress component.

Prerequisites

- A **CCE cluster** is available. You may be charged during the process. For details, see **CCE Billing**.
- The NGINX Ingress controller is installed in the CCE cluster.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

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Step 3 Configure the action using the parameters described in the table below.

Table 6-14 Parameters

Parameter	Description
Action Name	Custom action name. 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 a CCE cluster of the current tenant for release. Select **Current**. The current tenant must have the CCE cluster operation permission. If not, enable **IAM authorization** to select an authorized user from the **User** drop-down list for deployment. • **Other**: The software package is deployed and released in a CCE cluster of another tenant in IAM authorization mode. After selecting **Other**, select an authorized tenant. You are advised to configure the AK/SK of a member account that has the **CCE cluster operation permission**. You are not advised to configure the AK/SK of a tenant account.
IAM authorization	If you do not have the permission to call CCE APIs, enable this option to obtain the temporary AK/SK of an authorized user.
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 workload to be deployed.
Service	Select the 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 for deployment.
Image Tag	Select the tag of the image for deployment.

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Parameter	Description
Enable grayscale configuration	**Grayscale release policy**: The values of **Header** and **Cookie** can contain a maximum of 500 characters. • **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 ^....$. **Gray Traffic Weight (%)**: You can customize the traffic weight of each service version. • **Cookie** **Cookie**: Enter custom cookie content. **Gray Traffic Weight (%)**: You can customize the traffic weight of each service version.

----End

6.2.6 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.

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-15 Parameters

Parameter	Description
Action Name	Mandatory. Custom action name. 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**.

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Parameter	Description
Kubernetes Service Endpoint	Mandatory. You can select a CCE cluster or your own Kubernetes cluster. • Huawei Cloud CCE cluster 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 for deployment.
Helm Version	Mandatory. Select a Helm version. The default value is **helm-3.4.1**.
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 runs **install**.
Namespace	Mandatory. Enter a namespace name.
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	This parameter is mandatory when **Chart Package Source** is set to **Artifact**. Enter a directory or GZIP package with a chart file structure.
Chart Package Path	This parameter is mandatory when **Chart Package Source** is set to **Repo**. Enter the path of the directory or GZIP package with a chart file structure.
Values File Path	When **Chart Package Source** is set to **Artifact**, you can select Values files or folders containing Values files from artifact repositories. When **Chart Package Source** is set to **Repo**, you can switch to **Repo** under **Values Source** and enter the path of the corresponding Values file or folder. For example, if you specify **Myvalues.yaml**, **-f Myvalues.yaml** will be added to **Helm Command Parameters**.
Specify Values Files	If the Values file path is a folder, enter the file relative path. Use commas (,) to separate multiple file paths, for example, **values1.yaml,values2.yaml**.

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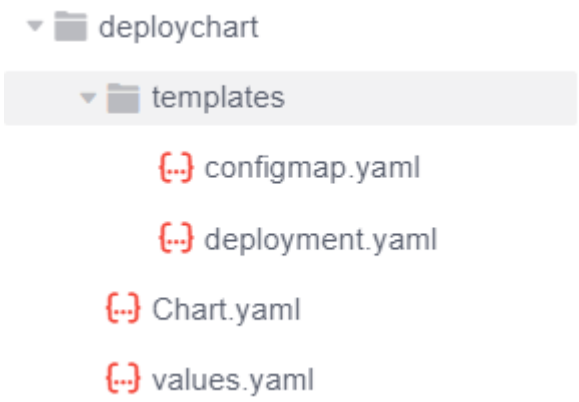
Parameter	Description
Values	Set values for the selected command. If you specify **key1=val1,key2=val2** (separate values with commas), **-set key1=val1,key2=val2** will be added to Helm command parameters.
Helm Command Parameters	Add other content to using Helm command parameters. For details, see **Helm Install**, **Helm Upgrade**, and **Helm Uninstall**.
Action Control	Continue the task even if this action fails.

----End

Environment Preparation for Helm3 Deployment Example

This section uses the chart directory as an example to describe how to prepare the environment for the subsequent three examples. Use the following template for CCE cluster-based deployment and create the following directories in a 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
```

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

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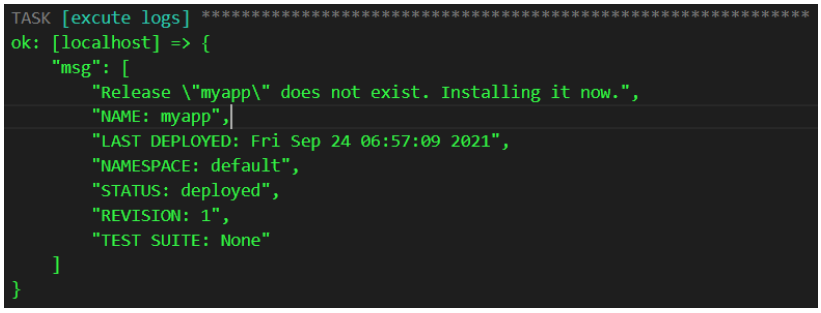
The following three examples are based on this section. For details, see **Values Files**.

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

   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.

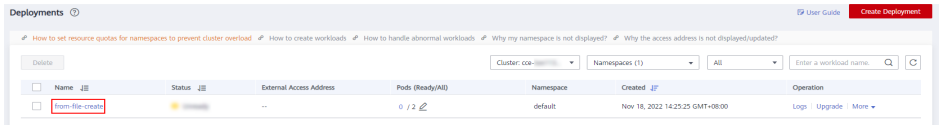
   The deployment result is as follows.



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



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



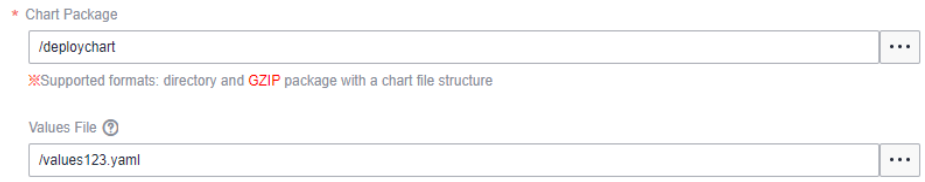
2. Example 2: Specifying the **values** file in CodeArts Artifact

   This example demonstrates how to use the **Values** file in Artifact for deployment. 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.

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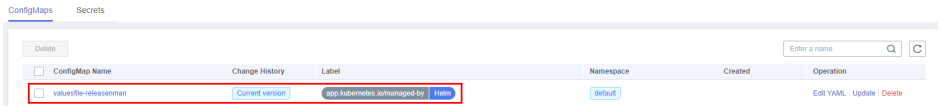
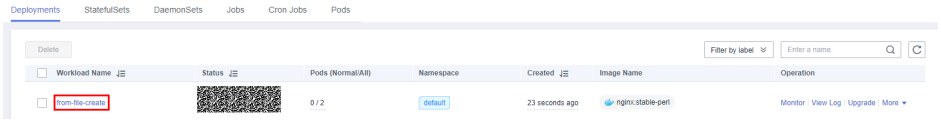
```
TASK [excute logs] ************************************************************
ok: [localhost] => {
    "msg": [
        "Release \"myapp\" has been upgraded. Happy Helming!",
        "NAME: myapp",
        "LAST DEPLOYED: Fri Sep 24 07:21:15 2021",
        "NAMESPACE: default",
        "STATUS: 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.

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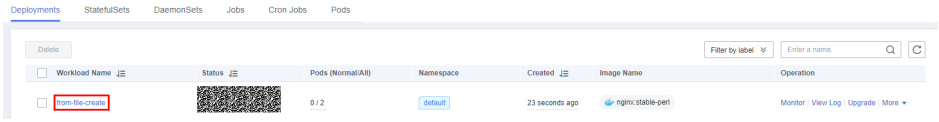

6.2.7 Deploying an Application on ServiceStage 2.0

ServiceStage is an application and microservice management platform that facilitates application deployment, monitoring, O&M, and governance.

ServiceStage supports **Container deployment**, **AS Group**, and **ECS**. You can select a deployment system based on project requirements.

Constraints

This action is not applicable to the Riyadh, Cairo, and Singapore regions.

Billing

This action requires operations on ServiceStage and may incur fees. For details, see **Price Calculator**.

Prerequisites

1. You have **created an application** on ServiceStage.
2. You have **created and deployed a component** on ServiceStage.
3. You have **created an environment** on ServiceStage.

Configuring Deployment Actions

Table 6-16 CCE deployment system

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Tenant	Mandatory. There are two options: • **Current**: The software package is deployed in a CCE cluster of the current tenant for release. Select **Current**. The current tenant must have the CCE cluster operation permission. If not, enable **IAM authorization** to select an authorized user from the **User** drop-down list for deployment. • **Other**: The software package is deployed and released in a CCE cluster of another tenant in IAM authorization mode. After selecting **Other**, select an authorized tenant. **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.

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Parameter	Description
Region	Region where ServiceStage is deployed.
Deployment System	Supports **Container deployment**, **AS Group**, and **ECS**.
Application	Select the application created in ServiceStage.
Stack	Docker or other technology stacks.
Component	Select the component to be deployed.
Component Version	The component version number is used to roll back the component in ServiceStage.
Environment	Select the environment to be deployed.
Cluster	Select the CCE cluster to be deployed in the preceding environment.
Namespace	Namespace where the component is to be deployed in the CCE cluster.
Instances	Enter the number of pods of the component.
Image	Select the image to be deployed. (Push the required image to SWR).
Image Tag	Select an image tag.
Container Specifications	Select specs: • **default**: You can select the default resource configuration provided by the system. • **customize**: You can configure resources as required.
Action Control	Continue the task even if this action fails.

Table 6-17 ECS deployment system

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Region	Region where ServiceStage is deployed.
Deployment System	Supports **Container deployment**, **AS Group**, and **ECS**.
Application	Select the application created in ServiceStage.

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Parameter	Description
Component	Select the component to be deployed.
Component Version	The component version number is used to roll back the component in ServiceStage.
Environment	Select the environment to be deployed.
ECS	Select the ECS to be deployed.
Select Deployment Source	**Artifact**: Select an existing software package from Artifact. **OBS**: Select the software package uploaded using OBS.
Action Control	Continue the task even if this action fails.

Table 6-18 AS Group deployment system

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Region	Region where ServiceStage is deployed.
Deployment System	Supports **Container deployment**, **ECS**, and **AS Group**.
Application	Select the application created in ServiceStage.
Component	Select the component to be deployed.
Component Version	The component version number is used to roll back the component in ServiceStage.
Environment	Select the environment to be deployed.
AS Group	Select the AS group to be deployed.
AS Instance	Select the AS group instance to be deployed.
Select Deployment Source	**Artifact**: Select an existing software package from Artifact. **OBS**: Select the software package uploaded using OBS.
Action Control	Continue the task even if this action fails.

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Helpful Links

If you encounter any problem during deployment, see **FAQs About ServiceStage**.

6.2.8 Rolling Back ServiceStage Components

This section introduces how to roll back an instance snapshot deployed on ServiceStage.

WARNING

After a version is rolled back, instances of later versions are overwritten and cleared.

Constraints

This action is not applicable to the LA-Mexico City2 and AP-Singapore regions.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-19 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Region	Region where ServiceStage is deployed.
Deployment System	Supports **Container deployment**, **AS Group**, and **ECS**.
Application	Select the application created in ServiceStage.
Component	Select the component to be deployed.
Environment	Select the environment to be deployed.
Component Instance	Select the component instance to be deployed.
Instance Snapshot	Select a snapshot version.

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Parameter	Description
Action Control	Continue the task even if this action fails.

----End

6.3 Configuring Deployment Actions for Starting or Stopping a Service

6.3.1 Stopping a Service

This action aims to stop a service with a specified port on the target host.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-20 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
Service Port Number	Port of the service to stop.
Action Control	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

Helpful Links

If you encounter any problem during deployment, see **Stopping a Service**.

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6.3.2 Starting or Stopping Spring Boot

This action aims to start or stop Spring Boot in a specified path on the target host in an environment.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-21 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
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. • 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. • The common parameter format is **--server.port=9000 --spring.profiles.active=prod**.

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Parameter	Description
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	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

Helpful Links

If you encounter any problem during deployment, see **Starting or Stopping Spring Boot**.

6.3.3 Starting or Stopping IIS

This action aims to start or stop IIS by specifying its name on the target host in an environment.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-22 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
Operation	**Start** and **Stop** are available.
Service Name	Enter the name of the target service.

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Parameter	Description
Action Control	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails.

----End

Helpful Links

If you encounter any problems during deployment, see **Starting or Stopping IIS**.

6.3.4 Starting or Stopping Tomcat

This action aims to start or stop Tomcat in a specified Tomcat root directory on the target host in an environment.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-23 Parameters for starting or stopping Tomcat

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
Operation	**Start** and **Stop** are available.
Absolute Path	Absolute path of the Tomcat service.
HTTP Port	Mandatory when **Operation** is set to **Start**. HTTP port of the Tomcat service.
AJP Port	Mandatory when **Operation** is set to **Start**. AJP port of the Tomcat service.
Service Shutdown Port	Mandatory when **Operation** is set to **Start**. Shutdown port listened by the Tomcat service.

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Parameter	Description
Waiting Time	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	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

Helpful Links

If you encounter any problems during deployment, see **Starting or Stopping Tomcat**.

6.3.5 Starting or Stopping Nginx

This action aims to start or stop Nginx in a specified path on the target host in an environment.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-24 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
Operation	**Start Nginx**, **Reload configuration file**, **Stop Nginx immediately**, and **Quit Nginx gracefully** are available.

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Parameter	Description
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	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

Helpful Links

If you encounter any problem during deployment, see **Starting or Stopping Nginx**.

6.3.6 Starting or Stopping the Go service

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

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

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Table 6-25 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
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	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

Helpful Links

If you encounter any problem during deployment, see **Starting/Stopping Go Service**.

6.3.7 Starting or Stopping Node.js

This action aims to start or stop Node.js in a specified path on a host.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

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Table 6-26 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
Operation	**Start** and **Stop** are available.
Absolute Path	Path of the Node.js service.
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	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

Helpful Links

If you encounter any problem during deployment, see **Starting or Stopping Node.js**.

6.4 Configuring Deployment Actions for File Operations

6.4.1 Copying a File

This action aims to copy files between directories within hosts and copy files across hosts.

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Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-27 Parameters

Parameter	Description
Action Name	Custom action name. 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.
Target environment	If **Copy Mode** is set to **Across hosts**, this parameter indicates the target environment. 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	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

Helpful Links

If you encounter any problems during deployment, see **Copying a File**.

6.4.2 Decompressing a File

This action aims to decompress a file from one path on a host to another path on the host.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

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Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-28 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
Decompress File	Path of the file to be decompressed or stored.
Action Control	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

Helpful Links

If you encounter any problems during deployment, see **Decompressing a File**.

6.4.3 Deleting a File

This action aims to delete a file or folder from a host in a specified environment.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-29 Parameters

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

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Parameter	Description
Environment	Deployment object. Select an environment whose resource type is host cluster.
File Path	Path of the file or folder to delete. 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	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

Helpful Links

If you encounter any problem during deployment, see **Deleting a File**.

6.4.4 Modifying a Configuration File

This action aims to modify the specified content in a file by identifying specific identifiers. The following table describes the configuration parameters.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-30 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.

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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**. Do not 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	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

Configuration Example

To change the service port, perform the following steps:

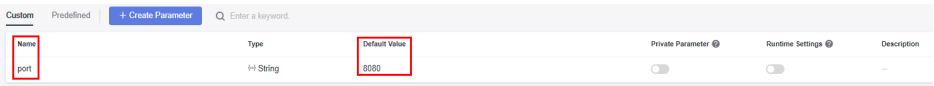
Step 1 Open the configuration file and view the content.

Figure 6-1 Checking 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**.

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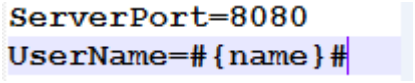
Figure 6-2 Checking the configuration file



----End

Helpful Links

If you encounter any problem during deployment, see **Modifying a Configuration File**.

6.5 Configuring Deployment Actions for Running Commands

6.5.1 Running Shell Commands

This action aims to run the Shell commands in a host in a specified environment.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-31 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
Shell Commands	Bash scripts to run.
Action Control	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

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Example: Using Shell Commands to Check 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. Obtain the full path of the service startup log. For example, the full path of the startup log of Tomcat is as follows:
   ```
   /usr/local/tomcat/apache-tomcat-8.5.38/logs/catalina.out
   ```

Constraints

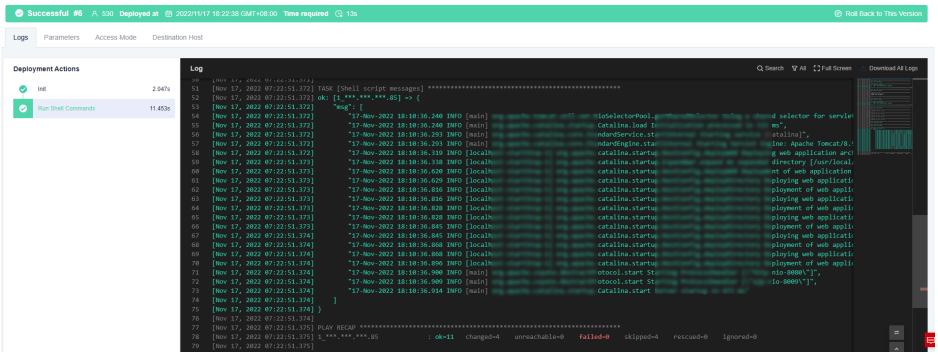
- Do not run the **cat** command when running the shell command to check files. If the log file is too large, it may take some time to load data. Do not use the **tail –f** command.
- If the shell command to be executed contains more than 10,240 characters, you are advised to use the extension for **running shell scripts**.

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

Helpful Links

If you encounter any problem during deployment, see **Running Shell Commands**.

6.5.2 Running Shell Scripts

This action aims to run the Shell scripts in a host in a specified environment.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

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Step 3 Configure the action using the parameters described in the table below.

Table 6-32 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
Running Mode	**Default** and **Background** are available. • **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.
Action Control	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

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 6-3 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.

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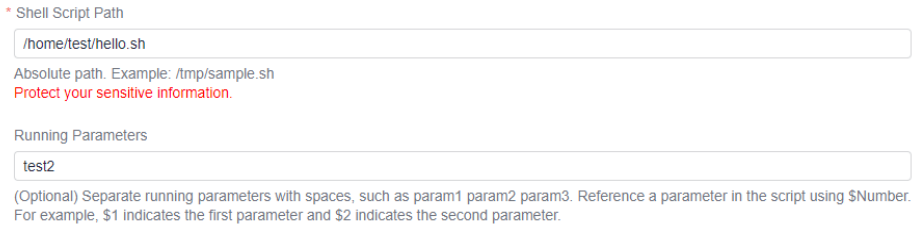
Figure 6-4 Entering running parameters



Step 3 Check the result.

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

Figure 6-5 Checking the result

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

----End

Helpful Links

If you encounter any problem during deployment, see **Running Shell Scripts**.

6.5.3 Running PowerShell Commands

This action aims to run the PowerShell command entered in the text box on the Windows host.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-33 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.

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Parameter	Description
PowerShell Commands	The command to be executed. If the PowerShell command to be executed contains more than 10,240 characters, you are advised to use the extension for **running PowerShell scripts**.
Action Control	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails.

----End

Helpful Links

If you encounter any problem during deployment, see **Running PowerShell Commands**.

6.5.4 Running PowerShell Scripts

This action aims to run the PowerShell scripts in the specified path on the Windows host.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-34 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
Running Mode	**Default** and **Background** are available. • **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.

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Parameter	Description
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	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails.

----End

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**.

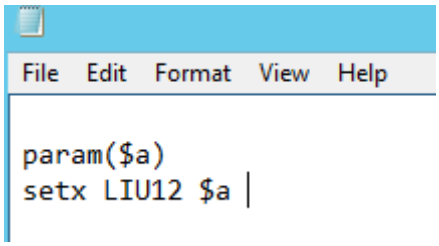
Step 2 Use variables **$a** and **$b** in the script.

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:

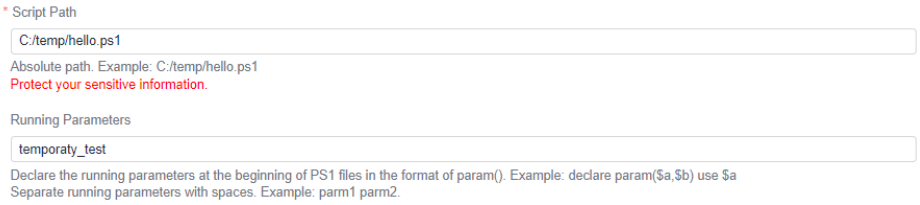
- The following figure shows the content of the **hello.ps1** script. Set an environment variable to import a temporary value.

  Figure 6-6 Script content

- Configure parameters.

  Figure 6-7 Settings

Step 4 Check the result.

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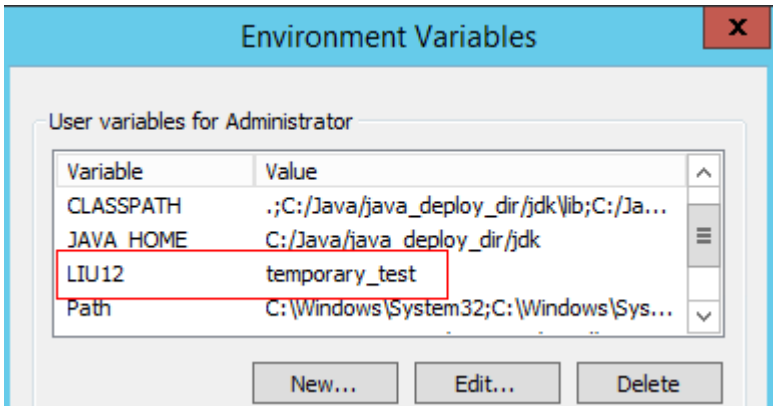
Figure 6-8 Result



----End

Helpful Links

If you encounter any problem during deployment, see **Running PowerShell Scripts**.

6.5.5 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

Constraints

- 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.

Procedure

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

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

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.

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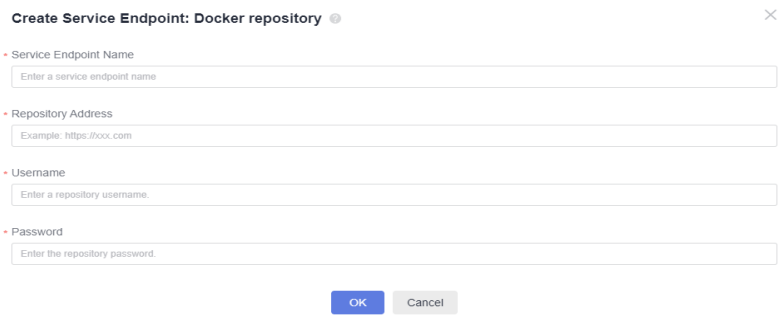

Table 6-35 Parameters

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. The image repository address **must not contain organization names or image names**. The format must be **https://*XXXX*.com** or **http://*XXXX*.com**.
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** > **Containers** > **SoftWare Repository for Container**. On the SWR console, choose **My Images** > **Upload Through Client**.
2. In the **Upload Through Client** dialog box, click **Generate Login Command**.
3. This topic uses the temporary command as an example. After you click **OK**, the following dialog box is displayed.
   - **-u** is followed by the username.
   - **-p** is followed by the password.
   - **swr.*XXXXX*.com** is the repository address.

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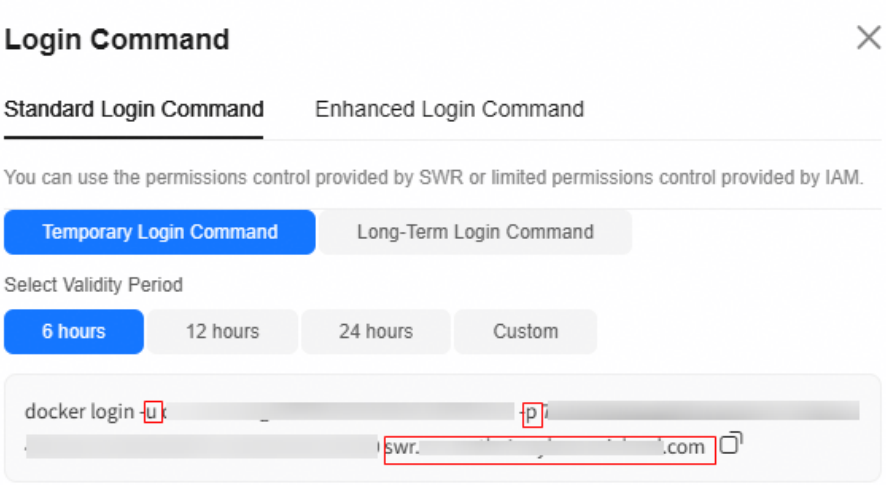


4. On the deployment page, add the service endpoint.

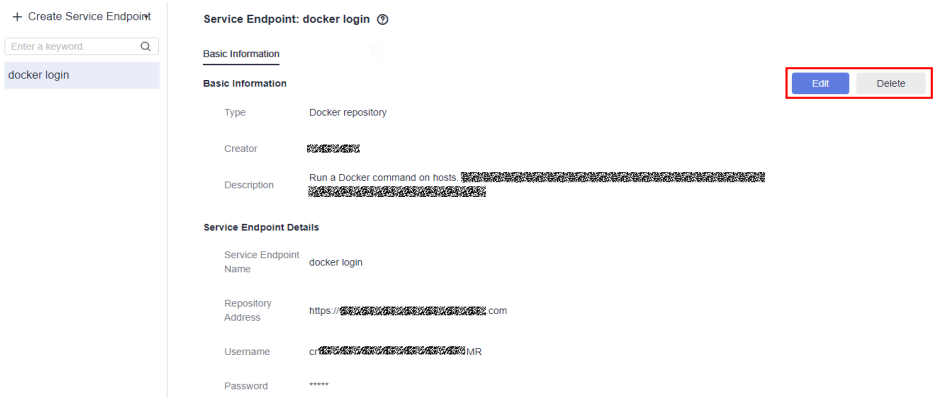
   The repository address must be in the **https://*XXXX*.com** or **http://*XXXX*.com** format.

   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 **docker login** command to log in to the image repository on CodeArts Deploy.

Step 5 After the image repository is added, if you need to modify the repository information, click **Manage** corresponding to **Image Repository** on the **Deployment Actions** tab page. On the **Service Endpoint** page, edit or delete the image repository, as shown in the following figure.



----End

build

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

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

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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 **docker 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 **docker tag** command.

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

----End

run

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.

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.

----End

Others

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

Step 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
```

----End

Helpful Links

If you encounter any problem during deployment, see **Running Docker Commands**.

6.6 Configuring Other Deployment Actions

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6.6.1 Health Test via URLs

This action aims to access a URL on a target host to test the service status.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-36 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
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	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails.

----End

Helpful Links

If you encounter any problem during deployment, see **Health Test via URLs**.

6.6.2 Selecting a Deployment Source

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

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

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- If **Source** is set to **Artifact**, the software package is downloaded according to the release repository address provided by the user during deployment. For details about the parameter configuration, see **Table 6-37**.
- If **Source** is set to **Build task**, the build output uploaded to the artifact repository is downloaded during deployment. For details about the parameter configuration, see **Table 6-38**.

Table 6-37 Configuration parameters when Artifact is the source

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Source	Select **Artifact**.
Environment	Deployment object. Select an environment whose resource type is host cluster.
Software package	Select a software package to be deployed from the Artifact. You can either select a software package from the artifact repository or enter its download address in the artifact repository.
Download Path	Path for downloading the software package to the target host.
Action Control	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

Table 6-38 Configuration parameters when Build task is the source

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Source	Select **Build task**.
Environment	Deployment object. Select an environment whose resource type is host cluster.
Build Task	Target build task. If there is no build task, **create one**.
Artifact Filtering Mode	**Build version** and **Build branch** are available.

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Parameter	Description
Build No.	Sequence number of the target build task. If **Build No.** is set to **Latest**, the latest build uploaded to the artifact repository is downloaded during deployment.
Download Path	Path for downloading the software package to the target host.
Action Control	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails. • **Execute this action with the sudo permission**: Use the **sudo** permission to deploy this action.

----End

Helpful Links

If you encounter any problem during deployment, see **Selecting Deployment Sources**.

6.6.3 Pending Execution

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

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-39 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
Waiting Time (s)	Waiting time between two adjacent actions.
Action Control	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails.

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----End

Helpful Links

If you encounter any problems during deployment, see **Pending Execution**.

6.6.4 Ansible

This action aims to execute your uploaded playbook on the host.

Constraints

This action is available only to users who have used it before August 30, 2025.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-40 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
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. Local software packages or files uploaded to Artifact can be reused.
Entry File Path	The entry file path of playbook.
Action Control	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails.

----End

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

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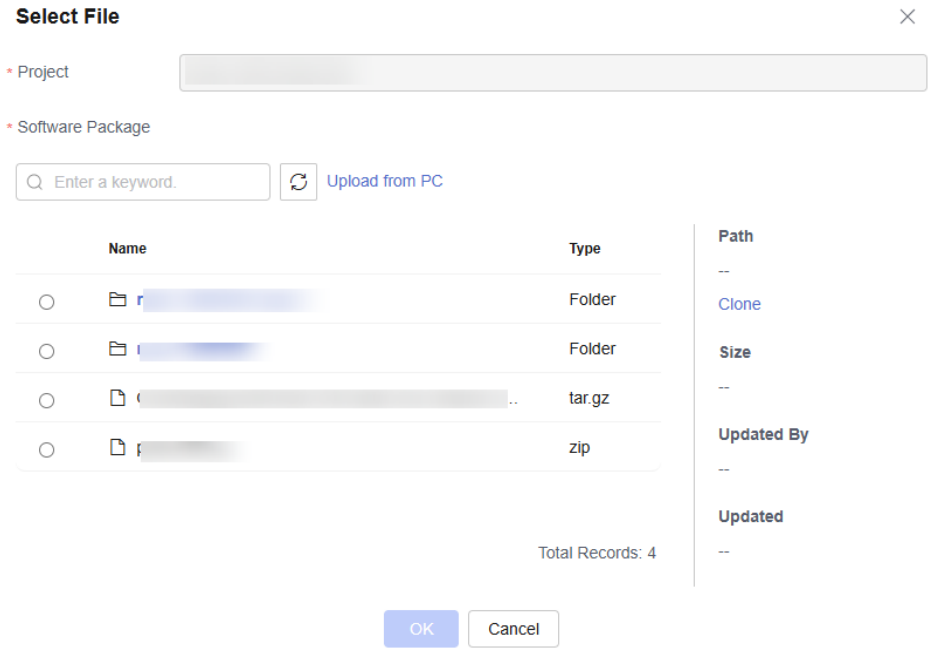
CodeArts Artifact

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

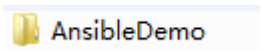
Step 2 In the displayed **Select File** dialog box, select the corresponding playbook file compression package.



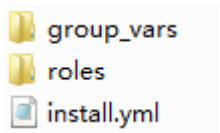
Step 3 Enter the entry file path of playbook.

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.

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Step 3 Select a code repository before selecting a branch.

Step 4 Select the entry file path.

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

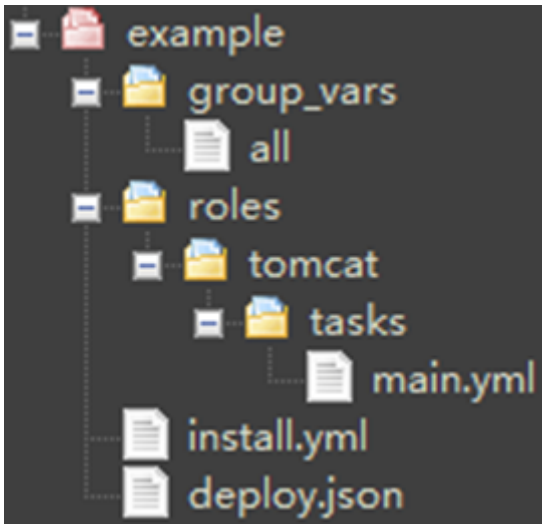
Step 5 Configure parameters.

1. Switch to the **Parameter** tab and click **Create Now** to add parameters for the Ansible application action or replace parameters in the **all** file.
   - 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 (:).
2. 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 6-9 File architecture



----End

Helpful Links

If you encounter any problems during deployment, see **Ansible**.

6.6.5 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.

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Creating an IIS Site on a Windows Host

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-41 Parameters

Parameter	Description
Action Name	Custom action name. Enter 1 to 128 characters. Do not start or end with a space. Use letters, digits, spaces, and these special characters: -_,;:./()
Environment	Deployment object. Select an environment whose resource type is host cluster.
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	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails.

----End

Procedure

Step 1 Select a Windows environment for the application.

Step 2 Check whether the IIS version on the target Windows host is higher than **7.0**. If the version is **7.0** or lower, upgrade it.

The check procedure is as follows:

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

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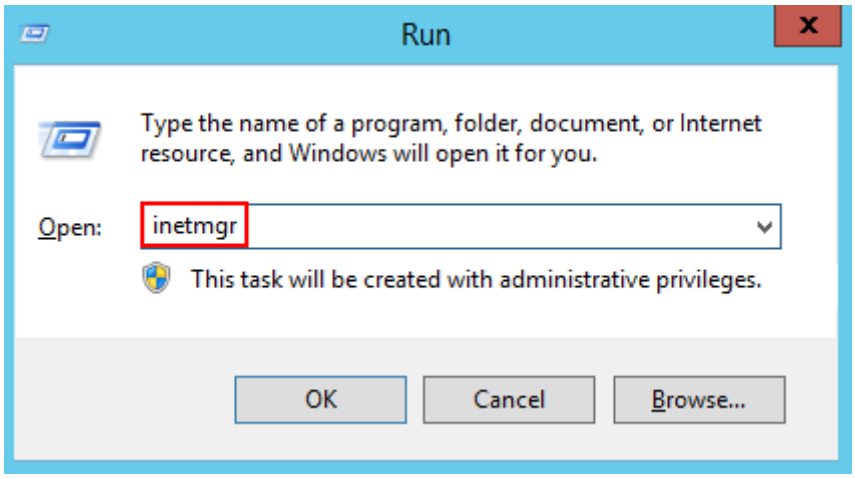
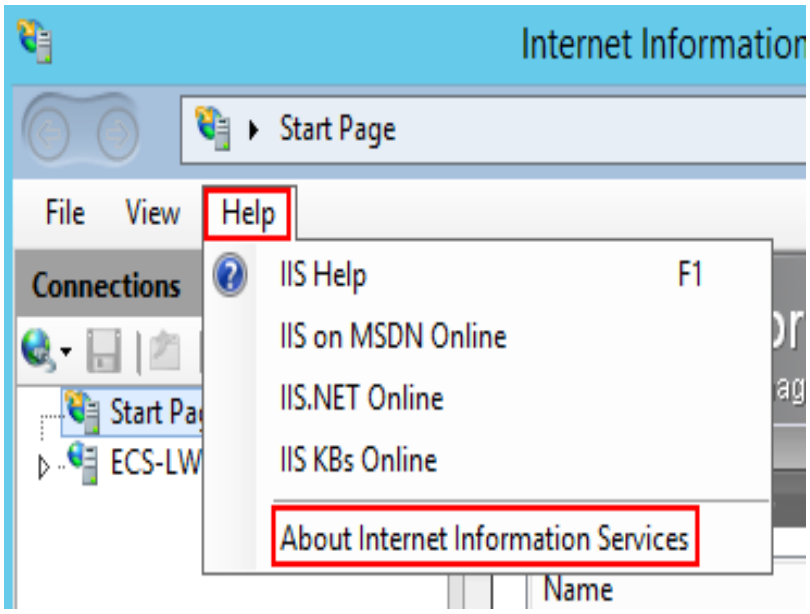


2. Start the IIS manager, and then choose **Help** > **About Internet Information Services**.



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

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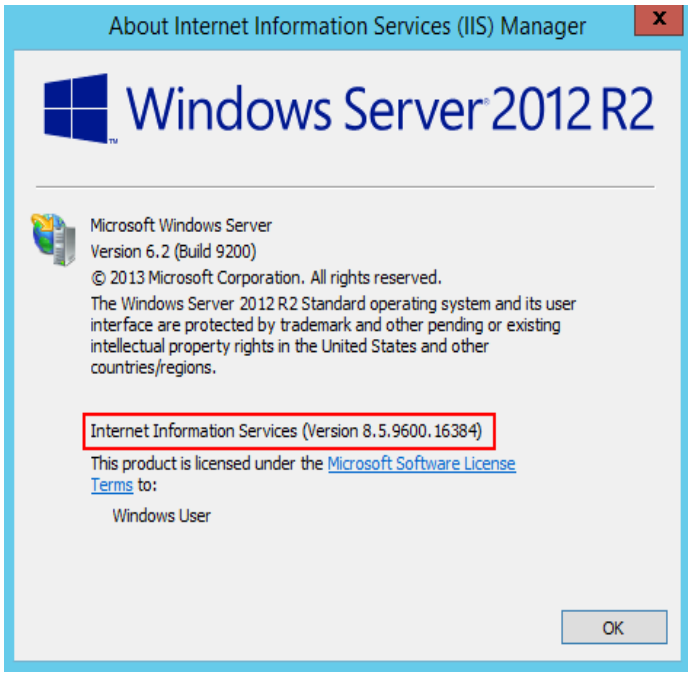
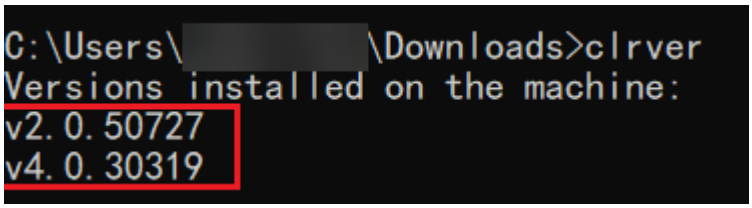


Step 3 Enter the physical path and log path of the application.

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**.

  If **clever.exe** cannot be found, download and install it.
- Run the program in the **cmd** window to obtain the version supported by the .NET CLR.



Step 5 Enter the application pool name and website name.

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

----End

Helpful Links

If you encounter any problem during deployment, see **Creating an IIS Site**.

6.6.6 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.

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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**.
- The ASM service has been enabled 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.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-42 Parameters of custom release mode

Parameter	Description
Action Name	Custom action name. 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 name.
Release Mode	**Custom** and **Fast** are supported.
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.

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Table 6-43 Parameters of fast release mode

Parameter	Description
Action Name	Custom action name. 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 name.
Release Mode	**Custom** and **Fast** are supported.
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. Grayscale 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.

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Parameter	Description
Action Control	Continue the task even if this action fails.

----End

Helpful Links

If you encounter any problem during deployment, see **Grayscale Release with Istio**.

6.6.7 Deploy in FunctionGraph

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

Billing

This action may incur fees because you will release a version using FunctionGraph. For details, see **Price Calculator**.

Prerequisites

You have **FunctionGraph operation permissions**.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-44 Parameters

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

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Parameter	Description
Tenant	• **Current**: The software package is deployed in the FunctionGraph extension of the **Current** for release. Select **Current**. The current tenant must have the FunctionGraph operation permission. If not, enable **IAM authorization** to select an authorized user from the User drop-down list for deployment. • **Other**: The software package is deployed and published in the FunctionGraph of another tenant in IAM authorization mode. You must select an authorized tenant for FunctionGraph deployment. 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. 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.
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	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails.

----End

6.6.8 FunctionGraph Grayscale Release

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

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Billing

This action may incur fees because you will release a version using FunctionGraph. For details, see **Price Calculator**.

Prerequisites

You have **FunctionGraph operation permissions**.

Configuring Deployment Actions

Step 1 Create an application by referring to **Creating an Application**.

Step 2 On the **Deployment Actions** page, add this deployment action based on the service scenario.

Step 3 Configure the action using the parameters described in the table below.

Table 6-45 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 current tenant must have the FunctionGraph operation permission. If not, enable **IAM authorization** to select an authorized user from the User drop-down list for deployment. • **Other**: The software package is deployed and published in the FunctionGraph of another tenant in IAM authorization mode. You must select an authorized tenant for FunctionGraph deployment. 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 **Process of Using FunctionGraph**.
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.

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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	Whether to enable the settings. • **Keep running on failure**: Continue the task even if this action fails.

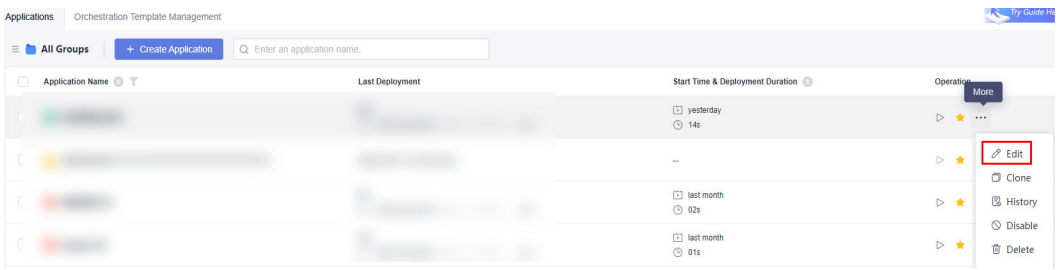
----End

6.7 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.

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Step 2 After modifying all information, click **Save**.

----End

7 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. The system encrypts the parameter for storage and decrypts it before usage.
- **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 Click the target application in the application list, click ***, and click **Edit**. The **Deployment Actions** page is displayed.

Step 2 Click **Parameters**.

The following describes how to set parameters.

Table 7-1 Parameter settings

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. The name of a custom parameter cannot be the same as that of a predefined parameter.

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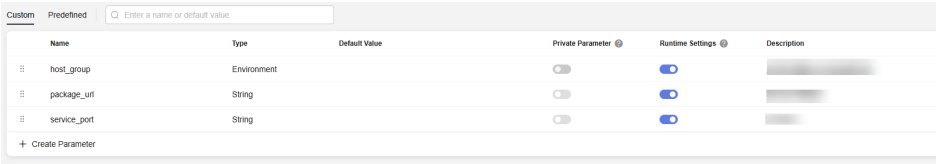
Basic Information	Description
Type	Parameter types, including **String**, **Enumeration**, and **Environment**.
Default Value	Enter or select a parameter value. If **Type** is set to **Environment** and no default value is available, create an environment.
Private Parameter	If a parameter is private, 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.

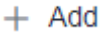
- **String**

  The parameter value is a string. You can customize the value in the **Default Value** column, and enable **Private Parameter** or **Runtime Settings**.

- **Enumeration**

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

  Click  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.

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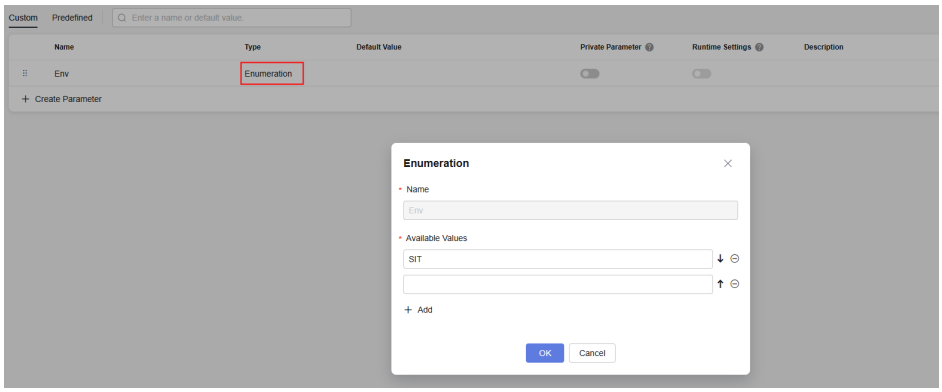
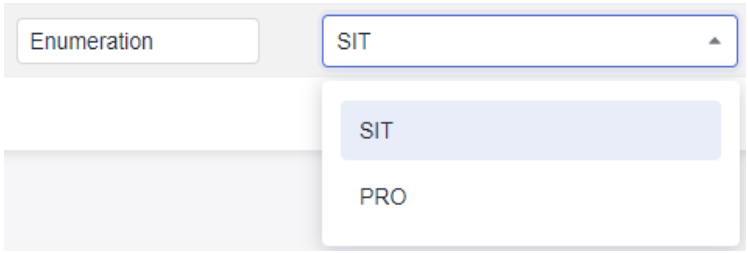


After the setting, select a value from the **Default Value** drop-down list, as shown in the following figure.



- **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.

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

Step 4 After modifying all information, 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. You can also click to drag parameters to change their order.

- Add a parameter.

  Click **Create Parameter** to add a parameter. You can also click in the **Operation** column to add a new parameter and edit it under the current parameter.

- Delete a parameter.

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Click  to delete an existing parameter.

----End

Using a Parameter

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

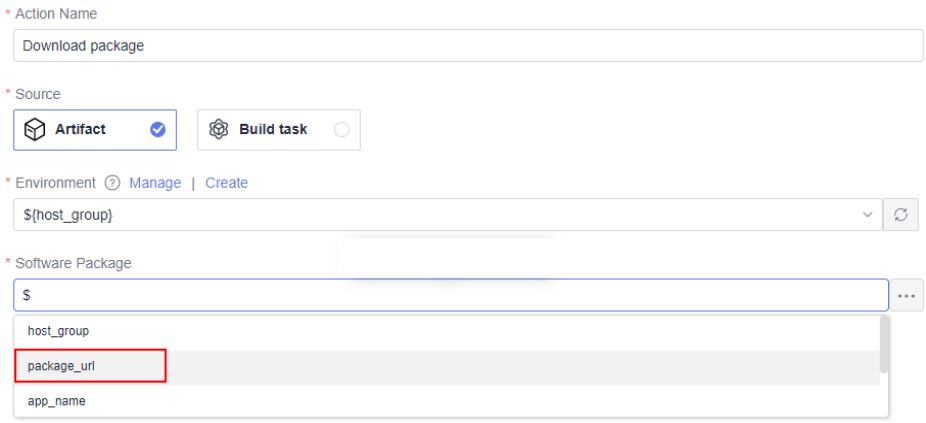
Step 1 Click the target application in the application list, click ***, and click **Edit**. The **Deployment Actions** page is displayed.

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.

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8 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 **environment** 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 environments of the application on the **Environment Management** tab page. You can also import, query, and delete hosts in the environment. The environments are important components of service deployment. This section describes how to configure an environment in an application.

Constraints

- For details about the maximum number of environments that can be created under an application, see **Specifications and Constraints** > **Basic constraints** > **Environment management**.
- For details about the maximum number of hosts that can be imported to an environment, see **Specifications and Constraints** > **Basic constraints** > **Application management**.

Procedure

Step 1 Click the target application in the application list, 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**.

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Table 8-1 Parameters for creating an environment

Parameter	Description
Environment	Enter a custom environment name. Enter 3 to 128 characters. Use digits, letters, hyphens (-), underscores (_), and periods (.).
Resource Type	You can choose **Host** based on the environment requirements.
OS	Choose **Linux** or **Windows** as the operating system for the host.
Description	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 an agent host, the agent host will be imported to the environment automatically.

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

   For details about connectivity verification, see **Host Management**.

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 **Configuring Environment Permissions**.
3. Edit a host in the environment.
   - Verify host connectivity in batches: Select multiple hosts and click .
   - Enable network connectivity verification: Click  in the **Operation** column of a host.

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

  NOTE

  An agent host cannot be deleted. An agent host is removed when the last target host is deleted from the environment.

Step 5 After modifying all information, click **Save**.

----End

9 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 Click the target application in the application list, click ***, and click **Edit**. The **Deployment Actions** page is displayed.

Step 2 Click the **Permissions** tab.

Configure operation permissions for each role as required. Check **Configuring Application-Level 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.

Step 3 After modifying all information, click **Save**.

----End

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10 Configuring CodeArts Deploy Application Notifications

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

Procedure

Step 1 Click the target application in the application list, 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.

- **System message**: 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 (Optional) Click **Use Project Notification Settings** to sync settings for **From CodeArts Deploy**, **Email**, and **System Messages**.

1. If **Use Project Notification Settings** is enabled for **From CodeArts Deploy**, the current notification settings will be overwritten. For details, click **Tips** in the upper right corner.
2. If **Use Project Notification Settings** is disabled for **From CodeArts Deploy**, the current notification settings will restore to the parameters configured before.

Step 5 After modifying all information, click **Save**.

----End

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11 Deploying an Application and Checking the Result

You can deploy applications using the following methods:

- **New 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 the permission 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.

1. Log in to the **CodeArts console**, click , and select a region where you have enabled CodeArts.
2. Click **Go to Workspace**.

   If your account uses the old billing mode (see **Old Billing Modes**), click **Access Service**.

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

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

Step 4 Select the target application in the application list and click .

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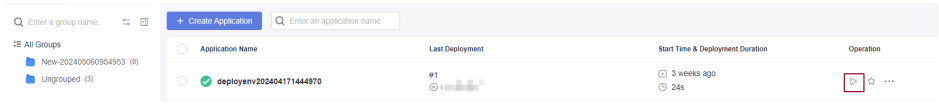
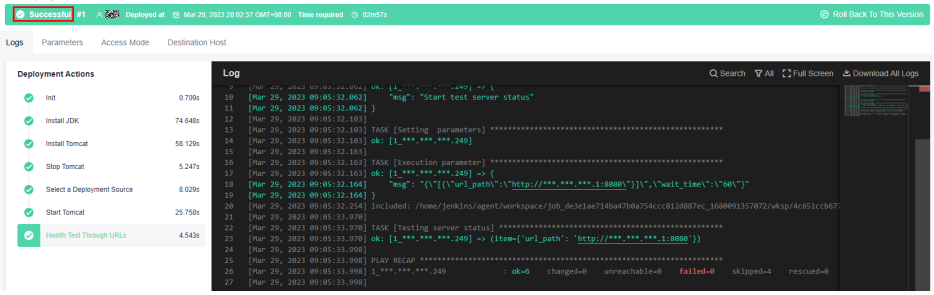


Step 5 If runtime parameters are configured, the parameter setting dialog box is displayed. Enter the parameter values and click **OK** to deploy the application. For details, see **Configuring Parameters of an Application**.

Step 6 After the deployment is complete, click the application name and then the target deployment record. Each time an application is deployed, a version record is added. The record with the largest ID is the latest deployment record.

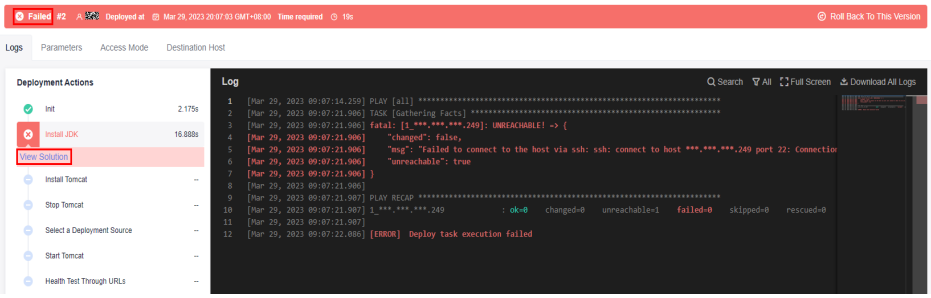
- If the application status bar turns green and displays **Successful**, the application is deployed successfully.

  Figure 11-1 Successful deployment

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

  Figure 11-2 Failed deployment

For details about deployment problems, see **Application Deployment**.

----End

Rollback Deployment

Step 1 Go to the CodeArts homepage.

1. Log in to the **CodeArts console**, click , and select a region where you have enabled CodeArts.
2. Click **Go to Workspace**.

   If your account uses the old billing mode (see **Old Billing Modes**), click **Access Service**.

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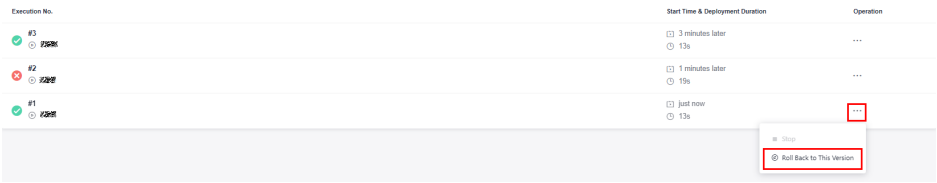
Step 2 Click the target project name to go to the project.

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

Step 4 Click the target application name in the application list. The application deployment records are displayed.

Step 5 Select the target version and click **Roll Back to This Version**. In the displayed dialog box, click **OK**.

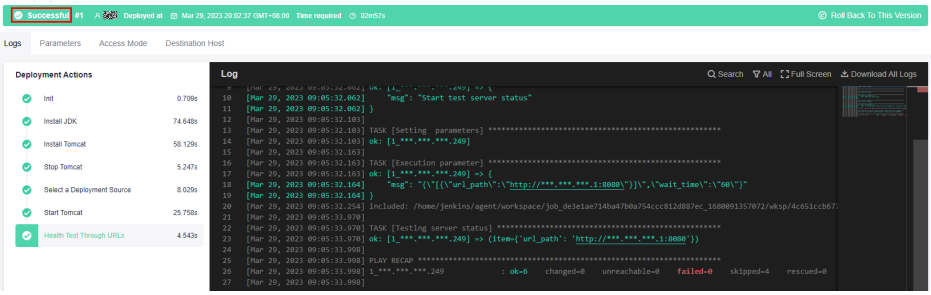
The following uses version 2 as an example.



Step 6 After the deployment is complete, click the deployment record. Each time an application is deployed, a version record is added. The record with the largest ID is the latest deployment record.

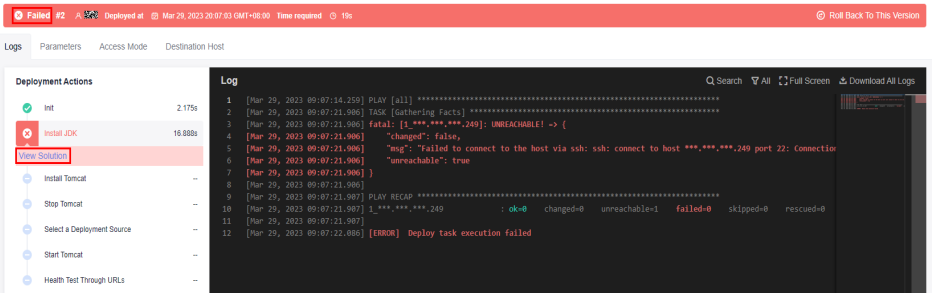
- If the application status bar turns green and displays **Successful**, the application is deployed successfully.

  Figure 11-3 Successful deployment

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

  Figure 11-4 Failed deployment

For details about deployment problems, see **Application Deployment**.

----End

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Checking an Application

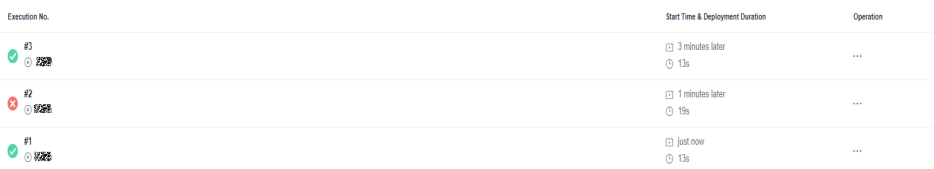
This section describes how to check the information about a created application, including the deployment records and configuration details of the application.

- Deployment records: You can check the deployment records of an application from the last 92 days.
- Configuration details: You can check 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 11-1 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.

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Parameter	Description
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**, **Notifications**, and **Permissions**.

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

Video Tutorial

The following video demonstrates the complete process for host deployment.

You can also use a wizard to quickly complete a deployment job. This video demonstrates how to use a wizard to create a deployment job for VM-based deployment.

NOTE

Given that functions go through iterations and layouts may be adjusted, this video is for reference only.

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12 Intelligent CodeArts Deploy Automation with CodeArts Agent

CodeArts Deploy can be integrated with **CodeArts Agent** through a CodeArts toolchain plug-in. The CodeArts toolchain plug-in can be invoked by flexible prompts or skills to help the agent efficiently complete host deployment tasks.

There is no need to learn console operations. You can just use natural language prompts in the CodeArts Agent chat window to implement cloud-based deployment, configure and manage deployment environments, and orchestrate and execute deployment tasks.

Core Benefits

- **No switching required**: You can complete deployment tasks directly in the agent chat window. There is no need to log in to the console or switch back and forth between different pages.
- **Natural language interaction**: You can complete operations such as configuring deployment environments, orchestrating deployment tasks, and executing deployment tasks with just prompts.
- **Full scenario coverage**: The integration covers environment creation and management, host cluster creation and management, deployment application creation and management, and deployment task execution.
- **End-to-end development process**: The integration involves cooperation with services such as CodeArts Pipeline, CodeArts Build, and CodeArts Artifact, enabling a seamless, end-to-end workflow.

Principles

CodeArts Deploy makes its APIs available to CodeArts Agent through the CodeArts toolchain plug-in. After the agent interprets a user's natural language prompts, it calls the CodeArts Deploy API via Koo Command Line Interface (KooCLI), to perform the corresponding operations, and returns results to the chat window.

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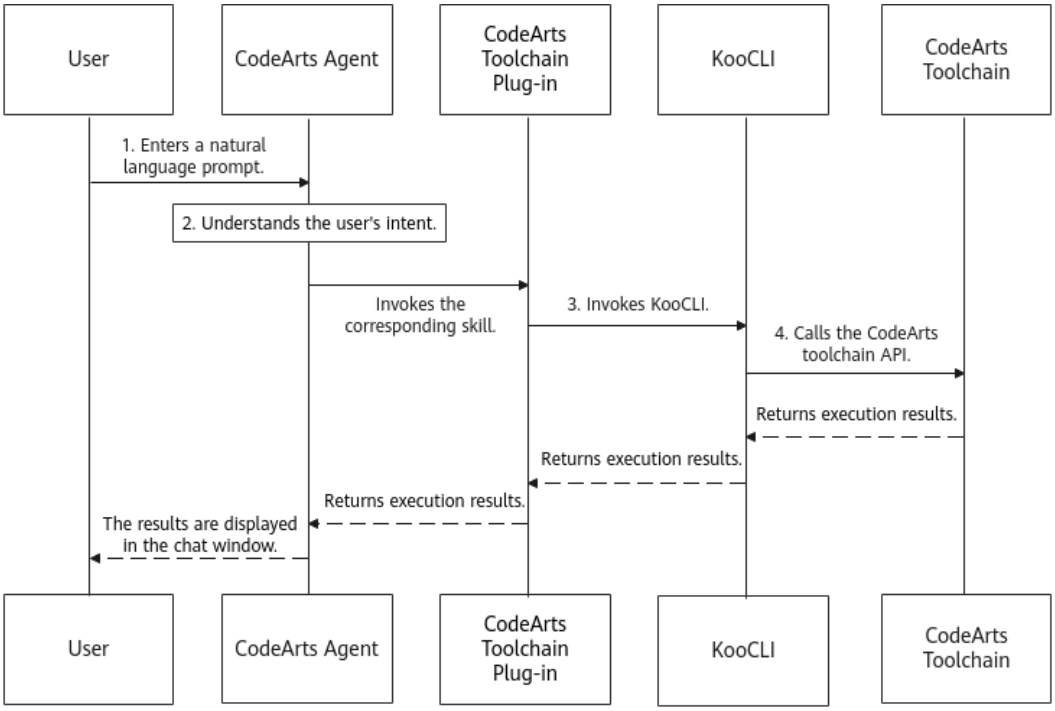
Figure 12-1 Interaction process



CodeArts Toolchain Plug-in (CodeArts Deploy)

The CodeArts toolchain plug-in integrates CodeArts R&D services, such as CodeArts Req, CodeArts Repo, CodeArts Check, CodeArts TestPlan, CodeArts Pipeline, CodeArts Build, CodeArts Artifact, and CodeArts Deploy, into CodeArts Agent as skills and sub-agents. After the plug-in is installed, you can trigger service operations directly through natural language prompts in the agent chat window. There is no need to switch to the console. Skills guide interactive operations step by step, while sub-agents handle complex orchestration tasks. Together, they address every scenario, from one-off queries to bulk workflows.

CodeArts Deploy provides two skills and a sub-agent in the CodeArts toolchain plug-in.

Skills (codearts-deploy-env-management and codearts-deploy-orchestration) are experts in interactive deployment execution, including creating deployment environments, deleting environments, creating host clusters, obtaining host cluster details, querying the host cluster list, creating applications, creating applications based on templates, querying the application list, obtaining application details, updating applications, batch deleting applications, and starting application deployment. They can understand your natural language intents and guide operations step by step. For complex tasks requiring batch processing or multi-step orchestration, the skills hand the tasks off to the sub-agent (codearts-deploy-assistant). The sub-agent runs autonomously in an independent context, without consuming primary chat resources. It can automatically complete complex orchestration tasks such as creating a deployment environment and executing a deployment task, and can return a structured result report upon completion. Together, the skill and sub-agent form a two-layer execution architecture, giving the agent the flexibility to handle varying tasks from single queries to batch orchestration.

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Application Scenarios

The following CodeArts Deploy scenarios are supported by CodeArts Agent.

Table 12-1 Intelligent scenarios supported by CodeArts Deploy

Scenario	Scenario Description	Natural Language Prompt Example
Environment and Configuration Management	Create a deployment environment, delete an environment, create a host cluster, obtain host cluster details, and query the host cluster list.	• Create a deployment environment named **my-deploy-environment**. • Delete a deployment environment named **my-deploy-environment**. • Create a host cluster named **my-deploy-HostCluster**. • Obtain details about the host cluster named **my-deploy-HostCluster**. • Query all host clusters in the **group** project.
Deployment and Orchestration Execution	Create an application, create an application using a system template, query the application list, obtain application details, update an application, batch delete applications, and start application deployment.	• Create an application named **my-deploy-application**. • Create an application named **my-deploy-application** using the **Spring Boot application deployment** template. • Query all applications in the **group** project. • Obtain details about the application named **my-deploy-application**. • Update the name of **my-deploy-application** to **my-deploy-application1**. • Delete applications whose names contain **my-deploy** in the **group** project in batches. • Start the deployment task of the application named **my-deploy-application**.

Prerequisites

- CodeArts Agent has been installed and you have logged in to it using your account.

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- The operations in **Purchasing and Authorizing CodeArts Deploy** have been performed.

CAUTION

Tokens or credits in your CodeArts Agent account are consumed when this operation invokes tools or runs LLM inference.

Procedure

Step 1 Download **the CodeArts toolchain plug-in**.

Step 2 Click **install.bat** in the plug-in package to install the plug-in and KooCLI.

Step 3 Complete **KooCLI initialization** and store the frequently used access keys (AK/SK) and region information in the configuration file to avoid repeated input.

Step 4 Open the CodeArts Agent chat panel and tell it what you want to do using natural language.

NOTE

- The first time you use CodeArts Agent to perform deployment tasks, the analysis process takes longer. As usage increases, the analysis speed gradually improves and response time shortens.
- The interface style varies across different CodeArts Agent clients; refer to the actual display in the tool you are using for the exact operations.

----End

Scenario 1: Environment and Configuration Management

The following is an example prompt you could use to create a deployment environment:

```
Creating an Environment
Name: my-deploy-environment
Region: north-x
Application ID: application123
OS: Linux
Retain the default values for other parameters.
```

The agent begins analyzing and executing the task, with the entire process displayed in real time within the chat. After the environment is created, you can view it on the CodeArts Deploy page.

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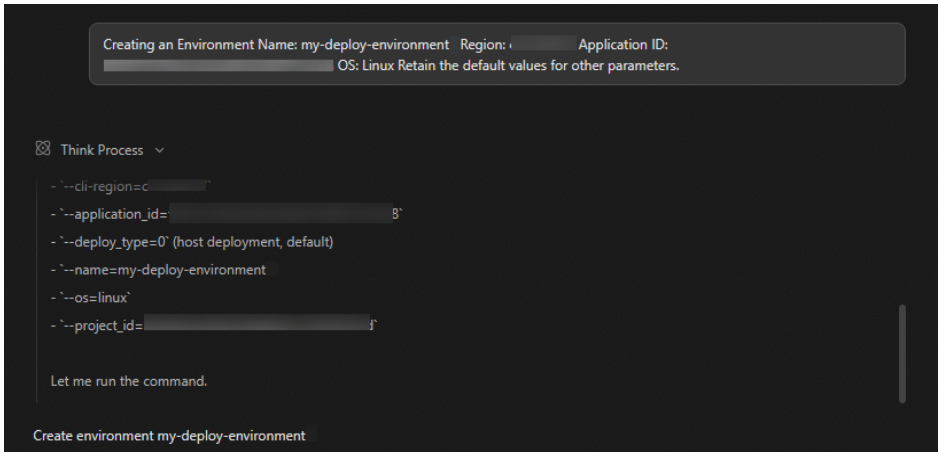
Figure 12-2 Example result



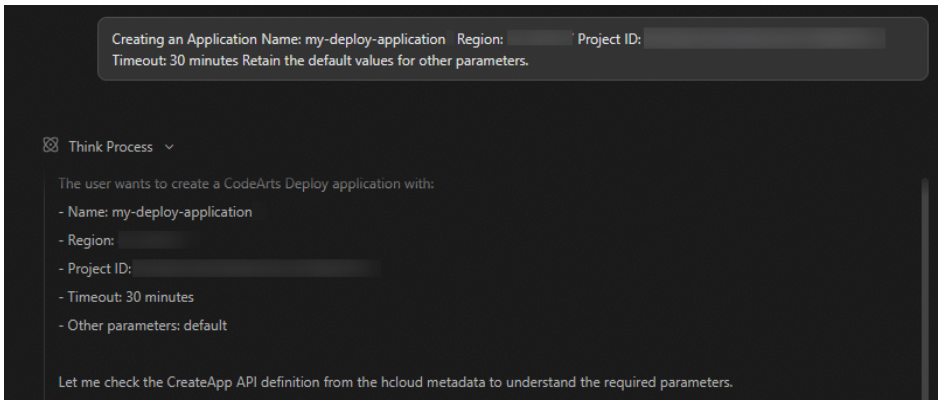
Scenario 2: Deployment and Orchestration Execution

The following is an example prompt you could use to create a deployment application:

```
Creating an Application
Name: my-deploy-application
Region: north-x
Project ID: project123
Timeout: 30 minutes
Retain the default values for other parameters.
```

The agent begins analyzing and executing the task, with the entire process displayed in real time within the chat. After the application is created, you can view it on the CodeArts Deploy page.

Figure 12-3 Example result



Related Documents

Developing a Travel Assistant Using the CodeArts Toolchain Plug-in

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13 (Optional) Querying Audit Logs

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

Operations Supporting Audit Logs

Table 13-1 CodeArts Deploy operations recorded by CTS

Operation	Resource Type	Event
Create an application	application	CreateApp
Modify an application	application	UpdateAppInfo
Delete an application	application	DeleteApplication
Clone an application	application	CopyApplication
Favorite an application	application	FollowApplication
Unfavorite an application	application	UnFollowApplication
Deploy an application	application	ExecutionDeployTask
Modify the parameters of a deployment job	application	UpdateConfig
Modify the disabled status of an application	application	UpdateAppDisableStatus
Download the application deployment execution log	application	DownloadApplication-RunLogs
Update application permissions	application	BatchUpdateApplication-Permissions
Update the application authentication level	application	BatchUpdatePermission-Level

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Operation	Resource Type	Event
Query application details	application	ShowAppDetailById
Start a deployment	application	StartDeployTask
Stop a deployment	application	StopDeployTask
Query the historical deployment records of a specified application in a project by the start time and end time	application	ListDeployTaskHistoryBy-Date
Obtain the deployment job list by project	application	ListDeployTasks
Query an application list	application	ListAllApp
Obtain deployment job details	application	ShowDeployTaskDetail
Query the deployment history list	application	ListDeployHistory
Obtain the host group used by a job	application	ShowDeployHistoryEnv
Query an application list	application	listAllApps
Query the application list in an environment	application	listEnvironmentApplica-tions
Query deployment record details	application	getRecordDetail
Query a deployment record list	application	listRecords
Query an orchestration list	application	listOrchestrations
Query orchestration details	application	getOrchestration
Add a template	template	CreateDeployTemplate
Delete a deployment template	template	DeleteDeployTemplate
Edit a deployment template	template	UpdateDeployTemplate
Favorite a deployment template	template	FollowTemplate
Unfavorite a deployment template	template	UnFollowTemplate

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Operation	Resource Type	Event
Query deployment template list by condition	template	ListDeployTemplates
Query deployment template details by template ID	template	ShowDeployTemplateDetail
Query details about an application template	template	getTemplateDetail
Query an application template list	template	getTemplateList
Create a deployment environment	environment	CreateEnvironment
Modify a deployment environment	environment	UpdateEnvironment
Delete a deployment environment	environment	DeleteEnvironment
Modify environment permissions	environment	UpdateEnvironmentPermission
Query environment details	environment	ShowEnvironmentDetail
Query the environment list of an application	environment	ListEnvironments
Query the host list in an environment	environment	ListEnvironmentHosts
Query information about the environment associated with a host cluster	environment	ListAssociateEnvironmentsInfos
Query the environment list of a project	environment	listEnvironments
Query environment information	environment	getEnvironment
Query the information about the environment and associated resources.	environment	getEnvironmentResourceDetail
Query an environment according to cluster resource information	environment	queryEnvironmentListByResource

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Operation	Resource Type	Event
Query a joint commissioning environment list	environment	listStagingEnvironments
Grant or revoke access to a joint commissioning environment for a project	environment	shareStagingEnvironmentToProject
Query details about a joint commissioning environment	environment	selectStagingEnvironment
Update joint commissioning environment information	environment	updateStagingEnvironment
Query a host list in a joint commissioning environment	environment	selectStagingEnvironmentHosts
Install ICAgent	resource	installICAgent
Create a host cluster	resource	CreateDeploymentGroup
Verify connectivity	resource	TestSelectedTargetConnection
Clone a host	resource	CopyHostsToTarget
Import a host to an environment	resource	ImportHostToEnvironment
Delete a host from an environment	resource	DeleteHostFromEnvironment
Modify permissions for a host cluster	resource	UpdateHostGroupPermissions
Modify a host cluster	resource	UpdateDeploymentGroup
Delete a host cluster	resource	DeleteDeploymentGroup
Create a host	resource	CreateDeploymentHost
Modify a host	resource	UpdateDeploymentHost
Batch delete hosts	resource	BatchDeleteHosts
Delete a host	resource	DeleteHost
Query environment basic information list under an application	resource	ListHostGroupBaseInfos

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Operation	Resource Type	Event
Query a host group list	resource	ShowDeploymentGroups
Query host cluster details	resource	ShowDeploymentGroup
Query a host list	resource	ShowDeploymentHosts
Obtain information of hosts by their IDs	resource	QueryDeploymentHosts-ById
Query a host cluster list	resource	ListHostClusters
Query host cluster details	resource	ShowHostClusterDetail
Query a host list	resource	ListNewHosts
Query host details	resource	ShowHostDetail
Query a host cluster list	resource	ListHostGroups
Query a host cluster	resource	ShowDeploymentGroup-Detail
Query a host list	resource	ListHosts
Query host details	resource	ShowDeploymentHost-Detail
Query cluster details	resource	selectCluster
Query information about clusters under a project	resource	selectClusterList

Checking Audit Logs

Query CodeArts Deploy traces on the CTS console. For details, see **Querying Traces in CTS**.

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