

solution

Source Code Compilation with Jenkins

Issue	1.0.1
Date	2025-08-20



Copyright © Huawei Technologies Co., Ltd. 2025. All rights reserved.

No part of this document may be reproduced or transmitted in any form or by any means without prior written consent of Huawei Technologies Co., Ltd.

Trademarks and Permissions



HUAWEI and other Huawei trademarks are trademarks of Huawei Technologies Co., Ltd.

All other trademarks and trade names mentioned in this document are the property of their respective holders.

Notice

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

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

Security Declaration

Vulnerability

Huawei's regulations on product vulnerability management are subject to the *Vul. Response Process*. For details about this process, visit the following web page:

<https://www.huawei.com/en/psirt/vul-response-process>

For vulnerability information, enterprise customers can visit the following web page:

<https://securitybulletin.huawei.com/enterprise/en/security-advisory>

Contents

1 Solution Overview.....

2 Resource Planning and Costs.....

3 Procedure.....

3.1 Preparations.....

3.2 Quick Deployment.....

3.3 Getting Started.....

3.4 Quick Uninstallation.....

4 Appendix.....

5 Change History.....

1

3

5

5

8

15

24

26

27

1 Solution Overview

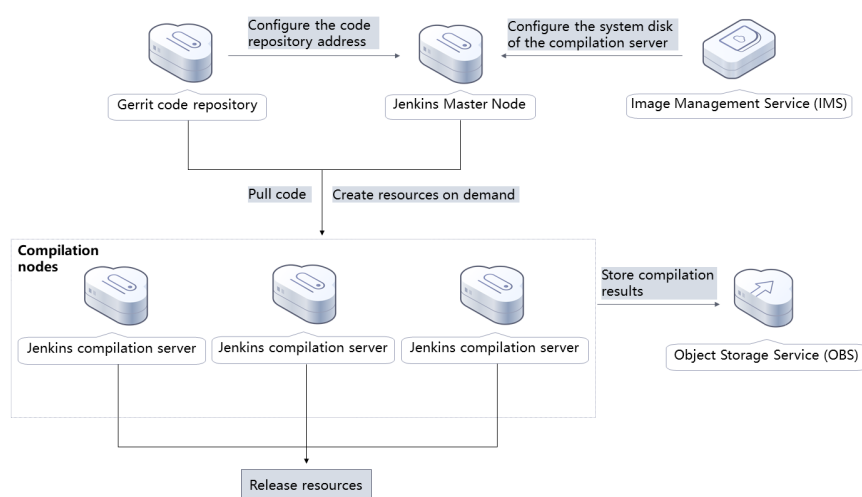
Scenarios

This solution helps you quickly deploy source code compilation environments on **Elastic Cloud Server (ECS)**. With the elastic scaling of ECS and the persistency of Jenkins, this solution helps you quickly and inexpensively deploy complex compilation environments, greatly improving the efficiency of software deployment. Jenkins is an open-source continuous integration tool written in Java. It aims to provide an open and easy-to-use software platform for continuous integration of software projects.

Solution Architecture

This solution is a great way to deploy software more efficiently. The solution architecture is illustrated below.

Figure 1-1 Architecture



This solution will:

- Create two ECSs, one for the Gerrit code repository and one for the Jenkins master node.
- Configure compilation nodes and configure Huawei Cloud plug-ins on the Jenkins master node to dynamically create and release ECS compilation nodes.
- Create an Object Storage Service (OBS) bucket to store compilation results.

You can use Image Management Service (IMS) to prepare the OS environment required for the compilation in advance.

Advantages

- Elastic scaling
Benefiting from elastic scaling and on-demand purchase of ECS, compilation nodes can be dynamically created or released.
- Low cost
ECS is used for scheduled, automatic compilation and OBS is used to store compiled code. You do not need to purchase physical servers.
- Easy deployment
Resources can be quickly provisioned and source code compilation environment based on Jenkins can be deployed.

Constraints

- Before deploying this solution, you need to sign up for Huawei Cloud. Ensure that your account is not in arrears or frozen.
- After this solution is deployed, the compilation environment with Jenkins is set up automatically, but it takes about 20 minutes to complete. Once this process is complete, you can access Jenkins and Gerrit URLs.

2 Resource Planning and Costs

This solution will deploy the resources listed in the following table. The costs are only estimates and may differ from the final prices. For details, see the [price calculator](#).

Table 2-1 Resource and cost planning

Huawei Cloud Service	Example Configuration	Estimated Monthly Cost
Elastic Cloud Server (ECS)	<ul style="list-style-type: none">Region: AP-SingaporeBilling Mode: Pay-per-useCPU Architecture: x86Specifications: General computing-plus c6.xlarge.2 4 vCPUs 8 GiBImage: CentOS 7.6 64bitSystem Disk: High I/O 40 GiBData Disk: High I/O 100 GiBQuantity: 2	$0.24 \times 24 \times 30 \times 2 = \345.60 USD
Elastic IP (EIP)	<ul style="list-style-type: none">Region: AP-SingaporeBilling Mode: Pay-per-useProduct Type: DedicatedRouting Type: Dynamic BGPBilled By: BandwidthBandwidth: 10 Mbit/sQuantity: 2	$0.25 \times 24 \times 30 \times 2 = \352.80 USD

Huawei Cloud Service	Example Configuration	Estimated Monthly Cost
Object Storage Service (OBS)	<ul style="list-style-type: none">• Region: AP-Singapore• Billing Mode: Pay-per-use• Product Type: Object storage• Storage Class: Standard• Data Redundancy Policy: Single-AZ storage• Pay per Use Pricing, Standard (USD): 0.0250/GB per monthTraffic: Upload traffic to OBS: Free	It is estimated that 1 GB data will be added every month, which will cost \$0.02 USD. For details, see the monthly bill.
Total	-	\$698.42 USD

3 Procedure

- [3.1 Preparations](#)
- [3.2 Quick Deployment](#)
- [3.3 Getting Started](#)
- [3.4 Quick Uninstallation](#)

3.1 Preparations

Creating the rf_admin_trust Agency

- Step 1** Log in to the Huawei Cloud official website, open the [console](#), move your mouse over the account name, and choose **Identity and Access Management**.

Figure 3-1 Console page

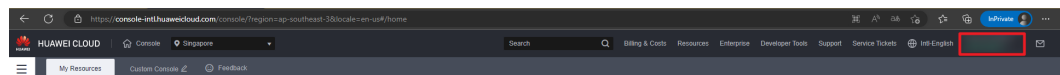
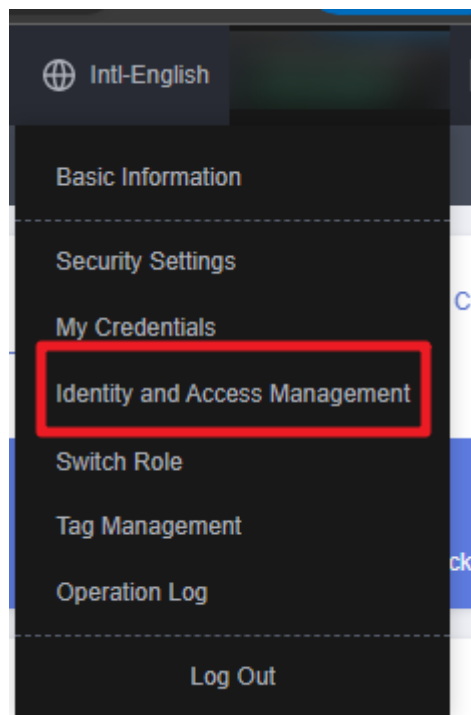
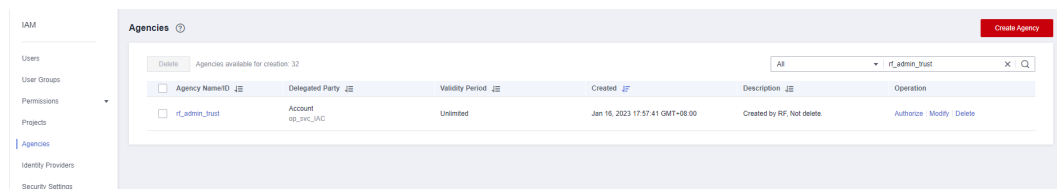


Figure 3-2 Identity and Access Management



Step 2 Choose **Agencies** in the left navigation pane and search for the **rf_admin_trust** agency.

Figure 3-3 Agency list



- If the agency is found, skip the following steps.
- If the agency is not found, perform the following steps to create it.

Step 3 Click **Create Agency** in the upper right corner of the page. On the displayed page, enter **rf_admin_trust** for **Agency Name**, select **Cloud service** for **Agency Type**, select **RFS** for **Cloud Service**, and click **Next**.

Figure 3-4 Create Agency

Agencies / Create Agency

★ Agency Name

rf_admin_trust

★ Agency Type

☐ Account

Delegate another HUAWEI CLOUD account to perform operations on your resources.

☒ Cloud service

Delegate a cloud service to access your resources in other cloud services.

★ Cloud Service

RFS

★ Validity Period

Unlimited

Description

Enter a brief description.

0/255

Next

Cancel

Step 4 Search for **Tenant Administrator**, select it in the search results, and click **Next**.

Figure 3-5 Selecting a policy

Authorize Agency

1 Select Policy/Role

2 Select Scope

3 Finish

Assign selected permissions to rf_admin_trust1.

View Selected (1)

Copy Permissions from Another Project

All policies/roles

All services

Tenant Administrator

X

Q

Policy/Role Name	Type
<input type="checkbox"/> CME AdministratorAccess Data Model Engine tenant administrator with full permissions.	System-defined policy
<input checked="" type="checkbox"/> Tenant Administrator Tenant Administrator (Exclude IAM)	System-defined role
<input type="checkbox"/> CS Tenant Admin Cloud Stream Service Tenant Administrator, can manage multiple CS users	System-defined role

Step 5 Select **All resources** and click **OK**.

Figure 3-6 Select Scope

Authorize Agency

1 Select Policy/Role

2 Select Scope

3 Finish

The following are recommended scopes for the permissions you selected. Select the desired scope requiring minimum authorization.

Scope

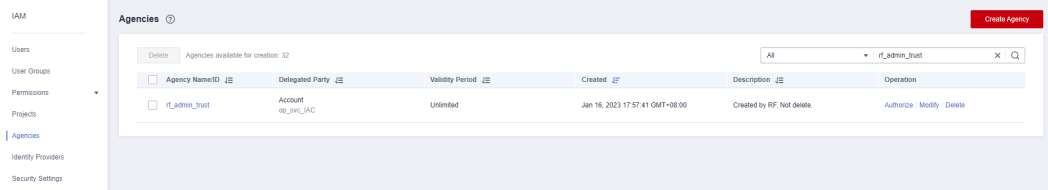
☒ All resources

IAM users will be able to use all resources, including those in enterprise projects, region-specific projects, and global services under your account based on assigned permissions.

Show More

Step 6 Check that the **rf_admin_trust** agency is created and displayed in the agency list.

Figure 3-7 Agency list



----End

3.2 Quick Deployment

This section describes how to deploy the Source Code Compilation with Jenkins solution.

Table 3-1 Parameter description

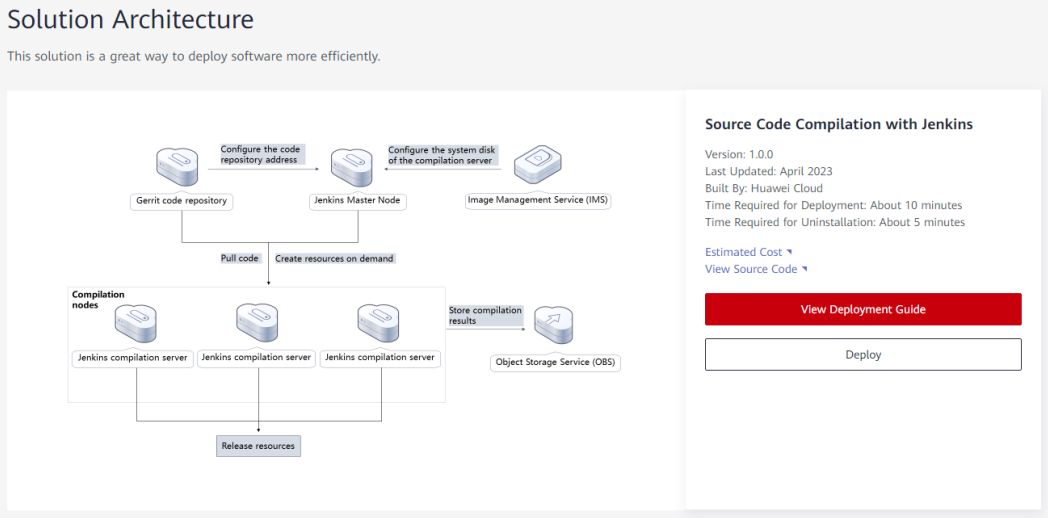
Parameter	Type	Mandatory	Description	Default Value
vpc_name	String	Yes	The prefix of a Virtual Private Cloud (VPC) name. The VPC naming format is {vpc_name}_vpc. This template uses a newly created VPC and the VPC name must be unique. The prefix can contain 1 to 57 characters and can include letters, digits, underscores (_), hyphens (-), and periods (.).	build_system_based_on_jenkins_demo
secgroup_name	String	Yes	The prefix of a security group name. The security group naming format is {secgroup_name}_secgroup. This template uses a newly created security group. For details about how to configure security group rules, see the (Optional) Modifying Security Group Rules . The prefix can contain 1 to 55 characters and can include letters, digits, underscores (_), hyphens (-), and periods (.).	build_system_based_on_jenkins_demo

Parameter	Type	Mandatory	Description	Default Value
ecs_name	String	Yes	The prefix of the Jenkins and Gerrit server names. The naming format is {ecs_name}-jenkins or {ecs_name}-gerrit. The server name must be unique. The prefix can contain 1 to 56 characters and can include letters, digits, underscores (_), hyphens (-), and periods (.)	build_system_based_on_jenkins_demo
jenkins_flavor	String	Yes	The flavor of the Jenkins server. The default flavor is c6.xlarge.2 (4U8G). For more flavors, see the deployment guide.	c6.xlarge.2
gerrit_flavor	String	Yes	The flavor of the Gerrit server. The default flavor is c6.xlarge.2 (4U8G). For more flavors, see the deployment guide.	c6.xlarge.2
ecs_password	String	Yes	The initial password of the Jenkins and Gerrit servers. After an ECS is created, log in to the ECS console and change the password by referring to the instructions provided in deployment guide. It can include 8 to 26 characters and must include at least three of the following character types: uppercase letters, lowercase letters, digits, and special characters (!@\$%^&_-=+[{ }];,./?). The password cannot contain any username or the username spelled backwards. The administrator is root .	Left blank
jenkins_disk_size	Number	Yes	The size of the data disk attached to the Jenkins server. The unit is GB. Value range: 10 to 32768. The default value is 500 .	500

Parameter	Type	Mandatory	Description	Default Value
gerrit_disk_size	Number	Yes	The size of the data disk attached to the Gerrit server. The unit is GB. Value range: 10 to 32768. The default value is 500 .	500
jenkins_eip_size	Number	Yes	The bandwidth size of the Elastic IP (EIP) bound to the Jenkins server. The EIP is billed by bandwidth. The unit is Mbit/s. Value range: 1 to 2000. The default size is 10 Mbit/s.	10
gerrit_eip_size	Number	Yes	The bandwidth size of the Elastic IP (EIP) bound to the Gerrit server. The EIP is billed by bandwidth. The unit is Mbit/s. Value range: 1 to 2000. The default size is 10 Mbit/s.	10
bucket_name	String	Yes	The name of the OBS bucket for storing compiled code. The name must be globally unique in OBS. It must include 3 to 63 characters and can include only lowercase letters, digits, hyphens (-), and periods (.). It cannot be an IP address.	build-system-based-on-jenkins-demo

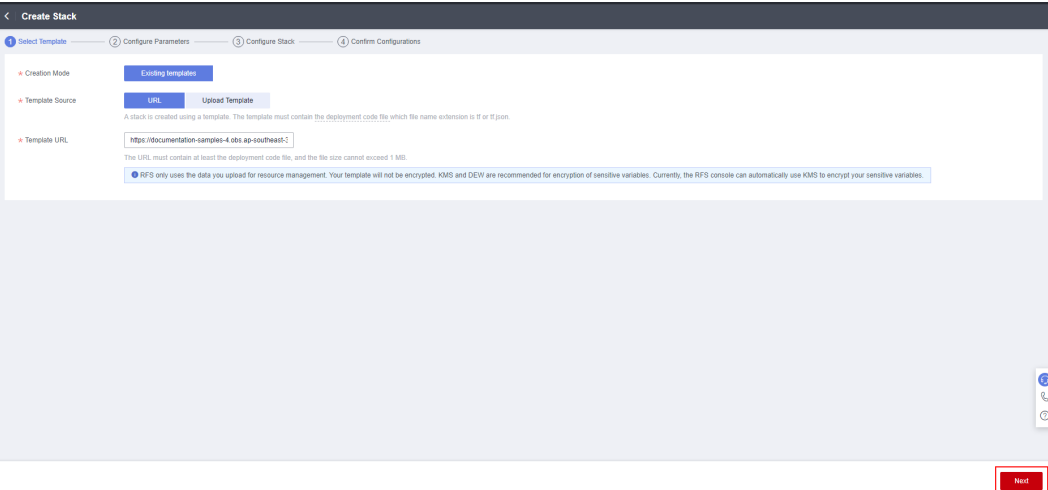
Step 1 Log in to Huawei Cloud Solution Best Practices and choose **Source Code Compilation with Jenkins**. Click **Deploy** to switch to the **Create Stack** page.

Figure 3-8 Selecting a solution



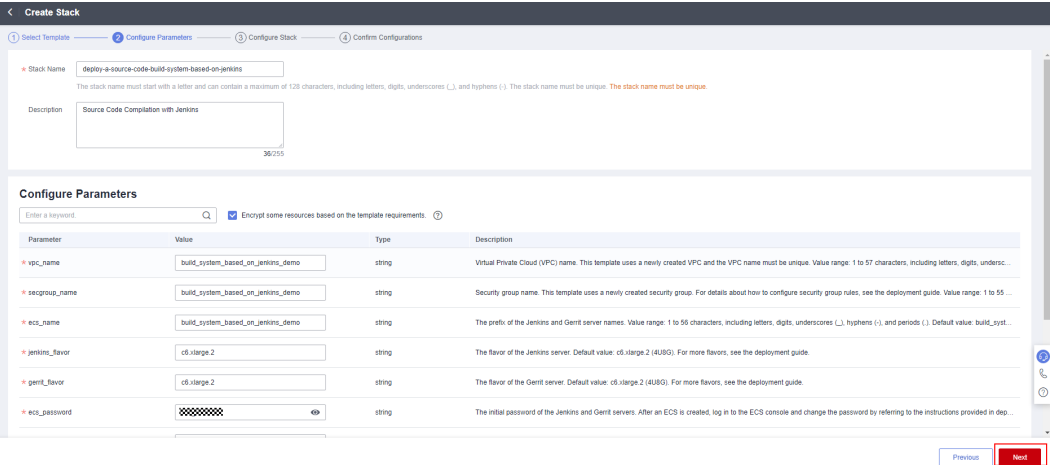
Step 2 On the **Select Template** page, click **Next**.

Figure 3-9 Select Template



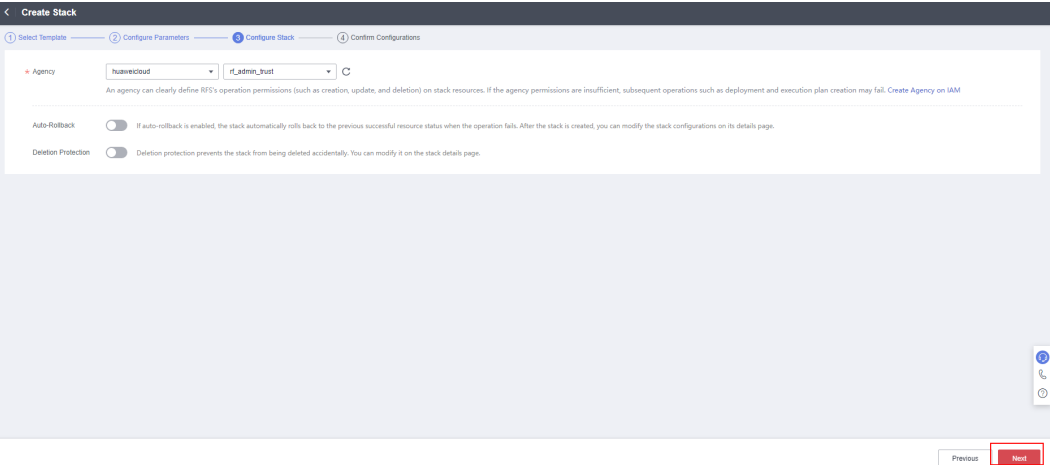
Step 3 On the **Configure Parameters** page, enter a stack name, configure parameters based on [Table 3-1](#), and click **Next**.

Figure 3-10 Configure Parameters



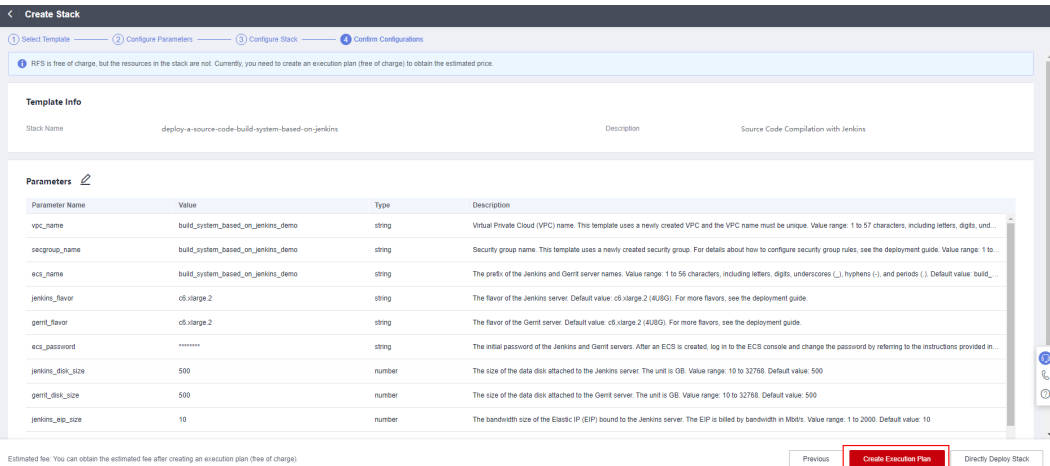
Step 4 On the **Configure Stack** page, select the **rf_admin_trust** agency and click **Next**.

Figure 3-11 Configure Stack



Step 5 On the **Confirm Configurations** page, confirm the configurations and click **Create Execution Plan**.

Figure 3-12 Confirm Configurations



Step 6 In the displayed **Create Execution Plan** dialog box, enter an execution plan name and click **OK**.

Figure 3-13 Create Execution Plan

Create Execution Plan

• Before deploying a stack, you can create an execution plan to preview the stack information and check its configurations to evaluate the impact on running resources.

• RFS is free of charge, but the resources in the stack are not. After the execution plan is created, a stack (occupies the stack quota) for which no resource is enabled is generated, and the estimated price is displayed in the execution plan details.

★ Execution Plan Name

executionPlan_20230321_1945_83hv

Description

Enter a description of the execution plan.

0/255

OK

Cancel

Step 7 Wait until the status of the execution plan changes to **Available**, and then click **Deploy** in the **Operation** column. In the displayed dialog box, click **Execute**.

Figure 3-14 Execution plan created

deploy-a-source-code-bu...

Delete

Update TemplateParameter

Basic Information

Resources

Outputs

Events

Template

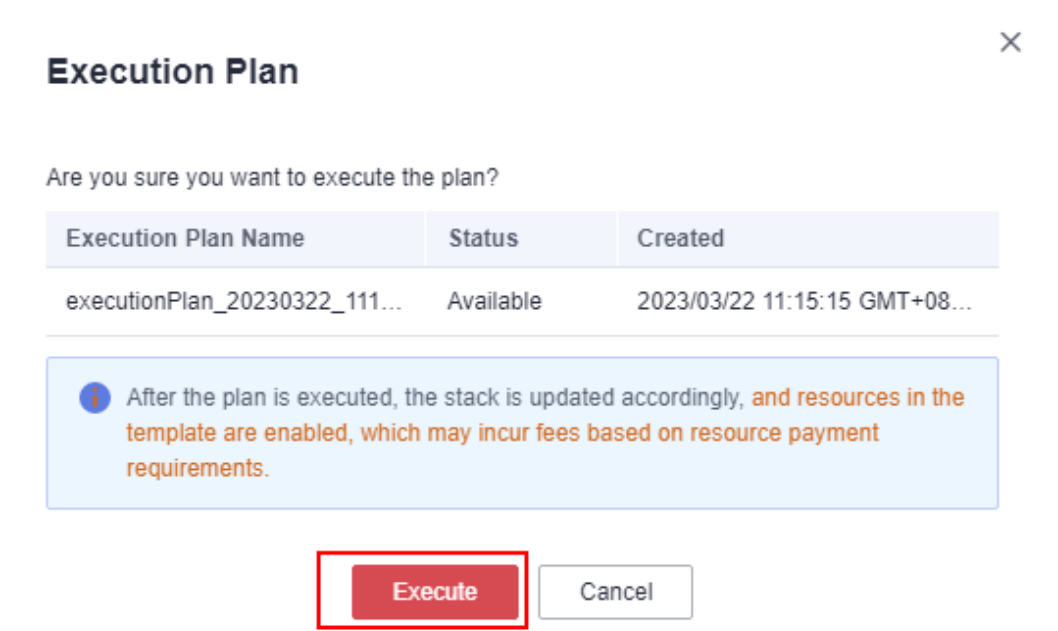
Execution Plans

Deploy

Enter a keyword

Execution Plan Name/ID	Status	Estimated Price ⓘ	Created	Description	Operation
<div>○</div> executionPlan_20230322_1115_aq3 7d8114c9-8bca-4727-8437-583da39c5c2b	Available	View Details	2023/03/22 11:15:15 GMT+08:00	--	Details Deploy

Figure 3-15 Confirming the execution plan



Step 8 Wait until the deployment is successful and click the **Events** tab to view details.

Figure 3-16 Resources created

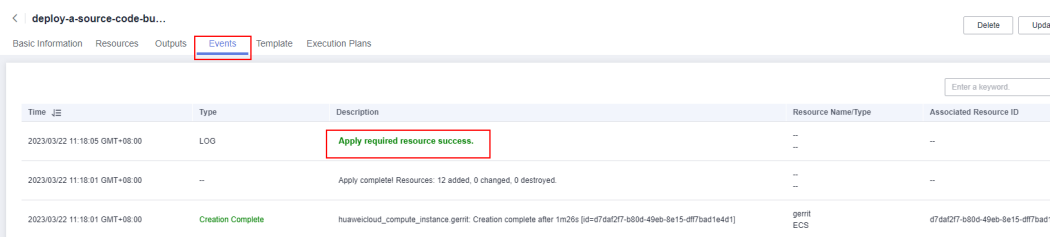
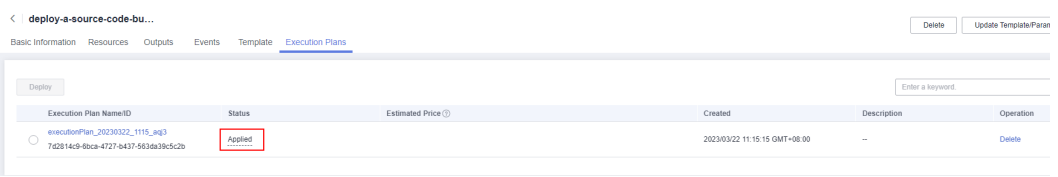


Figure 3-17 Deployment completed



----End

3.3 Getting Started

(Optional) Modifying Security Group Rules

NOTICE

- This solution uses port 50000 to communicate with the Jenkins master node. By default, the VPC subnet created in this solution allows access from port 50000. Configure an IP address whitelist by referring to [Modifying a Security Group Rule](#).

A security group is a collection of access control rules for cloud resources, such as cloud servers, containers, and databases, to control inbound and outbound traffic. Cloud resources associated with the same security group have the same security requirements and are mutually trusted within a VPC.

You can modify the security group policy, for example, by adding, modifying, or deleting a TCP port, as follows:

- Adding a security group rule: [Add an inbound rule](#) and enable a TCP port if needed.
- Modifying a security group rule: Inappropriate security group settings can be a serious security risk. You can [modify security group rules](#) to ensure the network security of your ECSs.
- Deleting a security group rule: If the source or destination IP address of an inbound or outbound security group rule changes, or a port does not need to be enabled, you can [delete the security group rule](#).

Accessing Gerrit and Creating a Code Repository

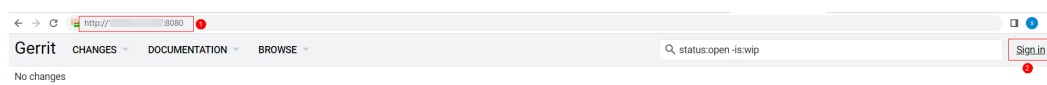
Step 1 On the **Outputs** tab of the stack, copy the Gerrit access address.

Figure 3-18 Gerrit access address

Name	Type	Value	Description
Gerrit_access_address	string	http://119.0.173.173:8080	--
Jenkins_access_address	string	http://190.92.210.73:8080	--
Notice	string	After this solution is deployed, the compilation environment with Jenkins is set.	--

Step 2 Paste the Gerrit access address to the address bar of a browser and click **Sign in**.

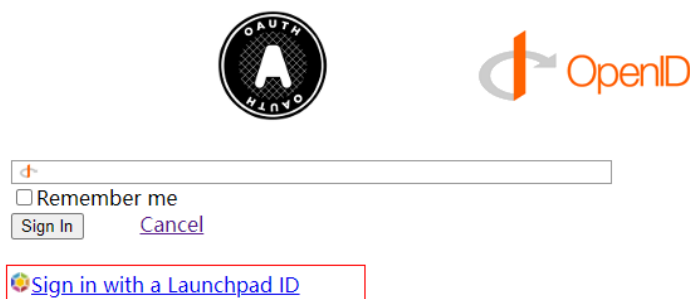
Figure 3-19 Accessing Gerrit



Step 3 Click **Sign in with a Launchpad ID**.

Figure 3-20 Signing in to Gerrit (1)

Sign In to Gerrit Code Review at 121.36.42.21



The image shows the Gerrit login page. At the top, there are two logos: a circular 'AUTH' logo with a large 'A' and the 'OpenID' logo. Below the logos is a text input field. Underneath the input field is a checkbox labeled 'Remember me'. Below the checkbox are two buttons: 'Sign In' and 'Cancel'. Below these buttons is a link that says 'Sign in with a Launchpad ID'.

What is OpenID?

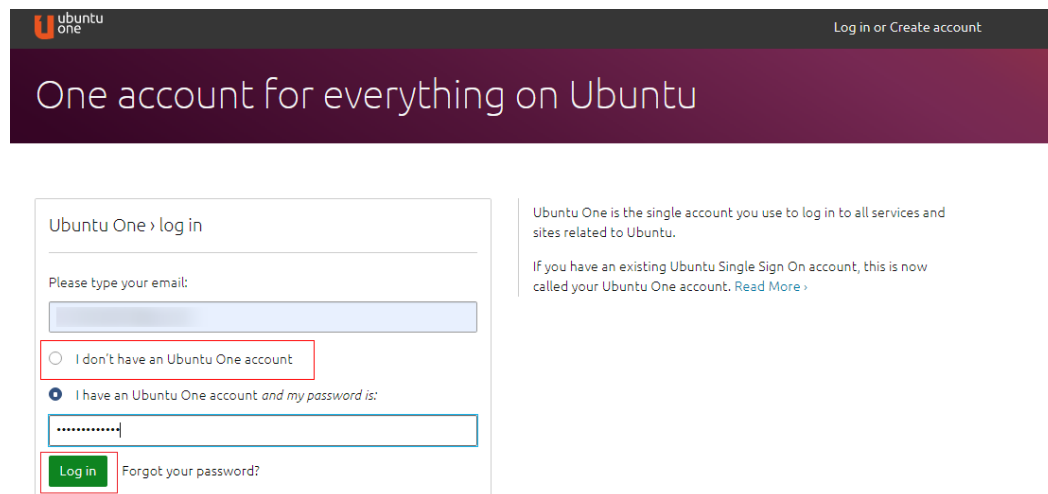
OpenID provides secure single-sign-on, without revealing your passwords to this website.

There are many OpenID providers available. You may already be member of one!

[Get OpenID](#)

- Step 4** On the Ubuntu One page, enter an email address and password to log in. (If you do not have an account, click **Log in or Create account** in the upper right corner to create an account.)

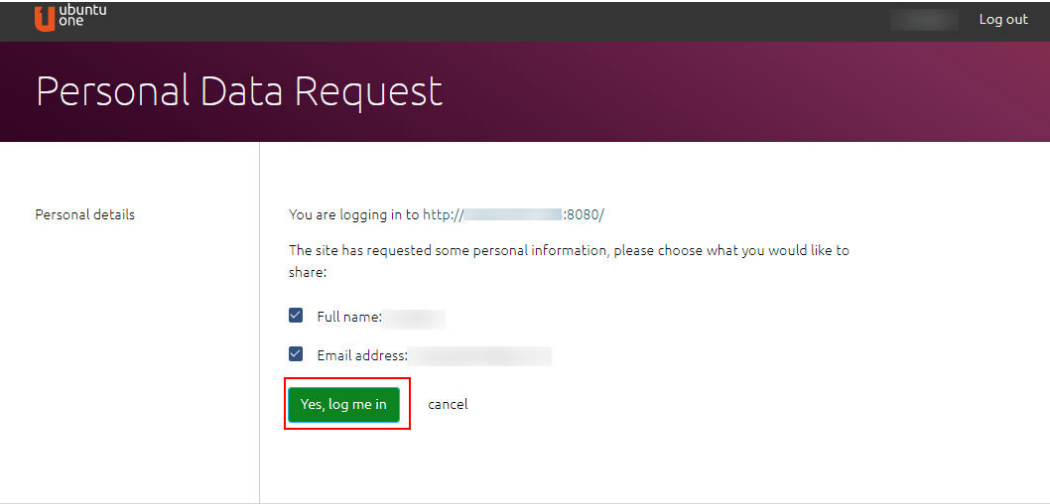
Figure 3-21 Signing in to Gerrit (2)



The image shows the Ubuntu One login page. At the top, there is a dark header with the 'ubuntu one' logo on the left and 'Log in or Create account' on the right. Below the header is a large purple banner with the text 'One account for everything on Ubuntu'. Below the banner is a login form. The form has a title 'Ubuntu One > log in'. Below the title is a text input field with the placeholder 'Please type your email:'. Below the input field are two radio buttons. The first radio button is labeled 'I don't have an Ubuntu One account'. The second radio button is labeled 'I have an Ubuntu One account and my password is:'. Below the second radio button is a password input field with a masked password '.....'. Below the password input field is a green 'Log in' button. To the right of the 'Log in' button is a link that says 'Forgot your password?'. To the right of the login form is a text block that says 'Ubuntu One is the single account you use to log in to all services and sites related to Ubuntu. If you have an existing Ubuntu Single Sign On account, this is now called your Ubuntu One account. [Read More >](#)'.

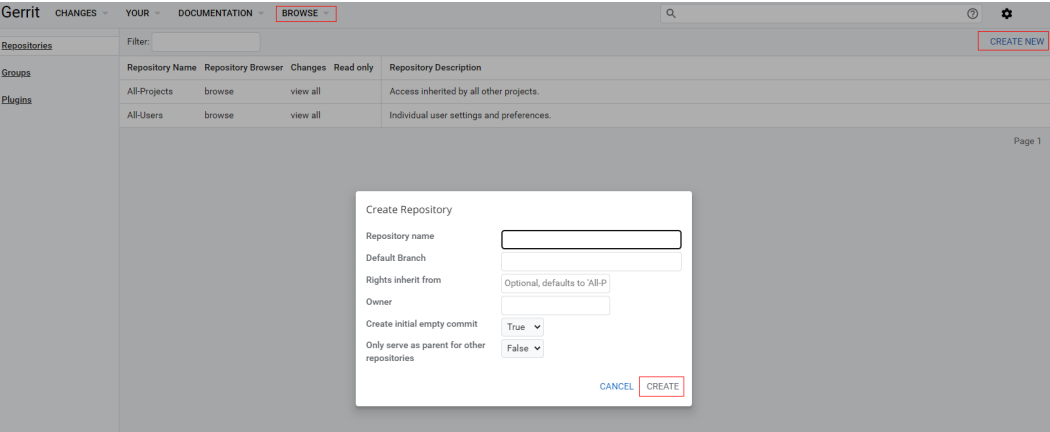
- Step 5** On the displayed page, click **Yes, log me in**.

Figure 3-22 Signing in to Gerrit (3)



Step 6 Choose **BROWSE > Repositories > CREATE NEW**, specify **Repository name** and **Default Branch**, and click **CREATE**.

Figure 3-23 Creating a code repository



----End

Accessing Jenkins and Configuring Plugins

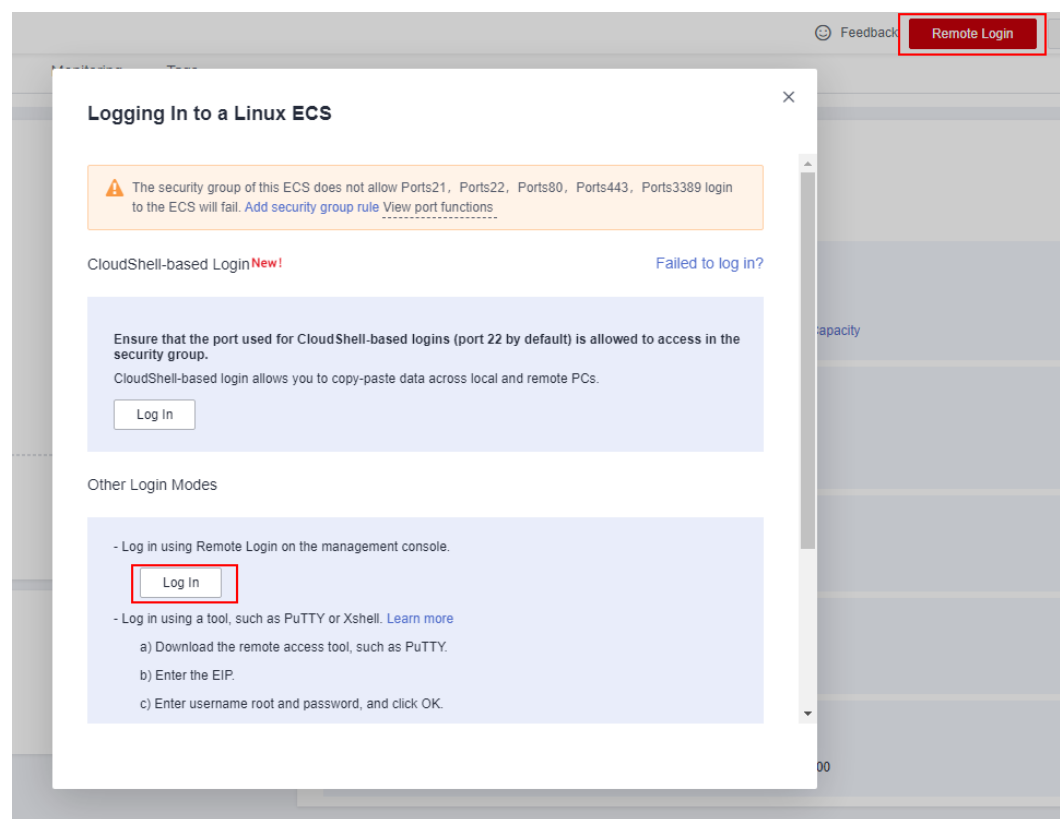
Step 1 On the **Resources** tab of the stack, click the created Jenkins server.

Figure 3-24 Accessing the Jenkins server

Cloud Product Name	Physical Resource Name/ID	Logical Name	Resource Type	Resource Status
Elastic Cloud Server	build_system_based_on_jenkins_demo-gentl 61a69302-6295-4076-9a97-28a99999a9a9	gentl	huaweicloud_compute_instance	Creation Complete
Elastic Cloud Server	build_system_based_on_jenkins_demo-jenkins 96f200c9-6895-4487-8c38-0c4627c7c1206	jenkins	huaweicloud_compute_instance	Creation Complete
Virtual Private Cloud	build_system_based_on_jenkins_demo_secgroup 8ac389d5-6a35-49bc-9978-8d3188890900	secgroup	huaweicloud_networking_secgroup	Creation Complete
Virtual Private Cloud	-- 521a393186a-4f57-6a6b-a70a7c761e7	allow_gentl	huaweicloud_networking_secgroup_rule	Creation Complete
Virtual Private Cloud	-- 05ae43-c319-4d7c-99b3-10c233c34269	allow_http1	huaweicloud_networking_secgroup_rule	Creation Complete
Virtual Private Cloud	-- d5e484a2-d0c6-418f-b04f-48a54891752f	allow_jenkins	huaweicloud_networking_secgroup_rule	Creation Complete
Virtual Private Cloud	-- 5056a96-8537-4993-4209-e10e4d050a3	allow_ping	huaweicloud_networking_secgroup_rule	Creation Complete

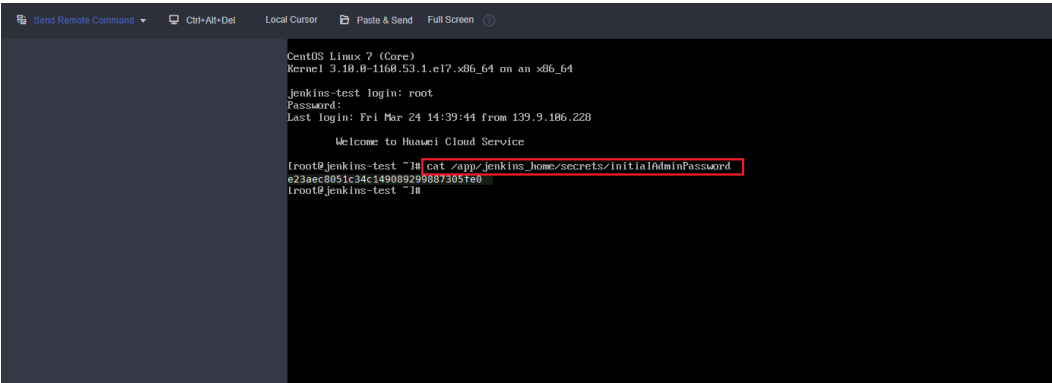
Step 2 Click **Remote Login**. In **Other Login Modes** area, click **Log In**. For more login modes, see [ECS Help Center](#).

Figure 3-25 Logging in to the Jenkins server



Step 3 Run `cat /app/jenkins_home/secrets/initialAdminPassword` to obtain the login password of user **admin** and copy the password.

Figure 3-26 Obtaining the password of user admin for logging in to the Jenkins server



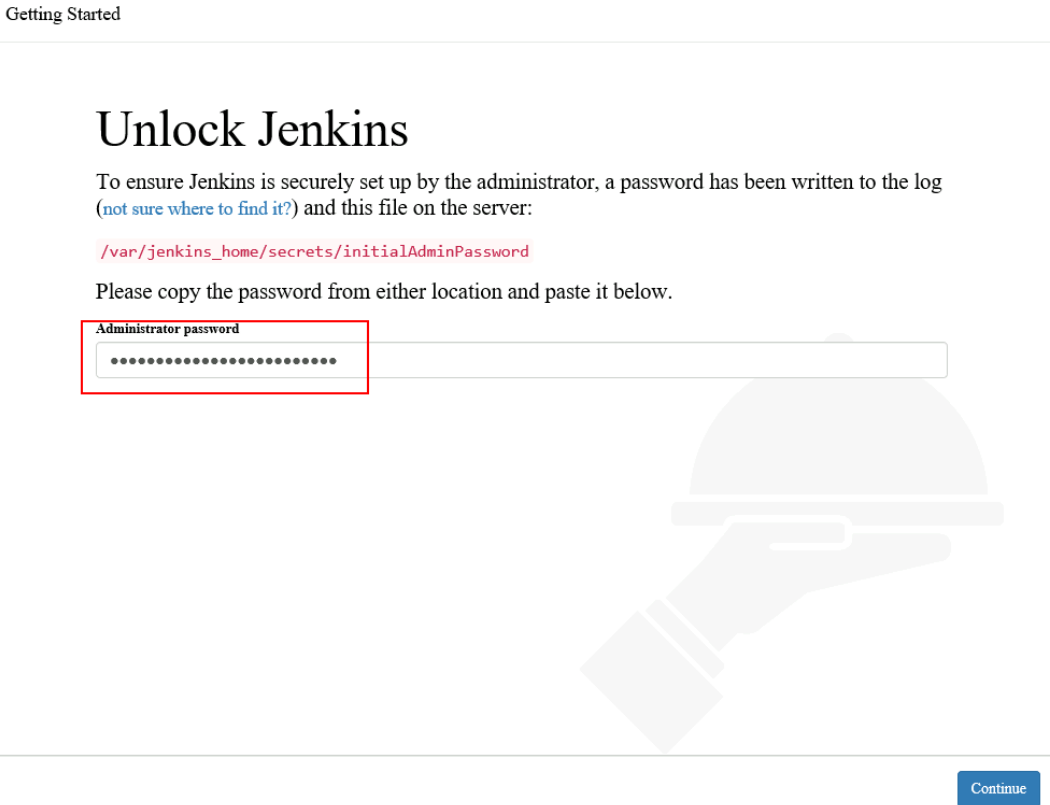
Step 4 On the **Outputs** tab of the stack, copy the Jenkins access address.

Figure 3-27 Jenkins access address



Step 5 Paste the Jenkins access address into the address bar of a browser, enter the password obtained in [Step 3](#), and click **Continue**.

Figure 3-28 Logging in to Jenkins



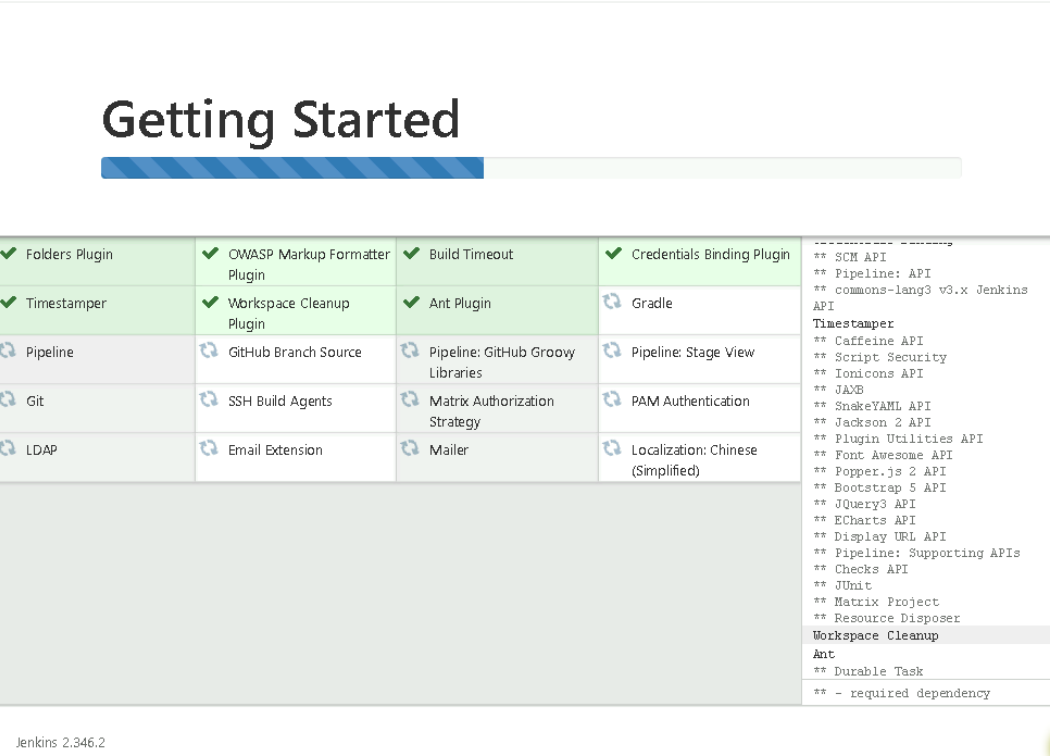
Step 6 Install plugins by selecting, for example, **Install suggested plugins**.

Figure 3-29 Customize Jenkins



Figure 3-30 Installing plugins

Getting Started



Step 7 Wait until the plugins are installed. Then create an admin user or click **Skip and continue as admin**. In this example, we click **Skip and continue as admin**.

Figure 3-31 Continue as an admin

Getting Started

Create First Admin User

Username:

Password:

Confirm password:

Full name:

E-mail address:

Jenkins 2.346.2

[Skip and continue as admin](#) [Save and Continue](#)

Step 8 On the **Instance Configuration** page, configure the Jenkins URL and click **Save and Finish**.

Figure 3-32 Configuring the Jenkins URL

Getting Started

Instance Configuration

Jenkins URL:

The Jenkins URL is used to provide the root URL for absolute links to various Jenkins resources. That means this value is required for proper operation of many Jenkins features including email notifications, PR status updates, and the `BUILD_URL` environment variable provided to build steps.

The proposed default value shown is **not saved yet** and is generated from the current request, if possible. The best practice is to set this value to the URL that users are expected to use. This will avoid confusion when sharing or viewing links.

Jenkins 2.346.2 Not now Save and Finish

Step 9 Wait until the Jenkins setup is complete and click **Start using Jenkins**.

Figure 3-33 Jenkins setup completed

Getting Started

Jenkins is ready!

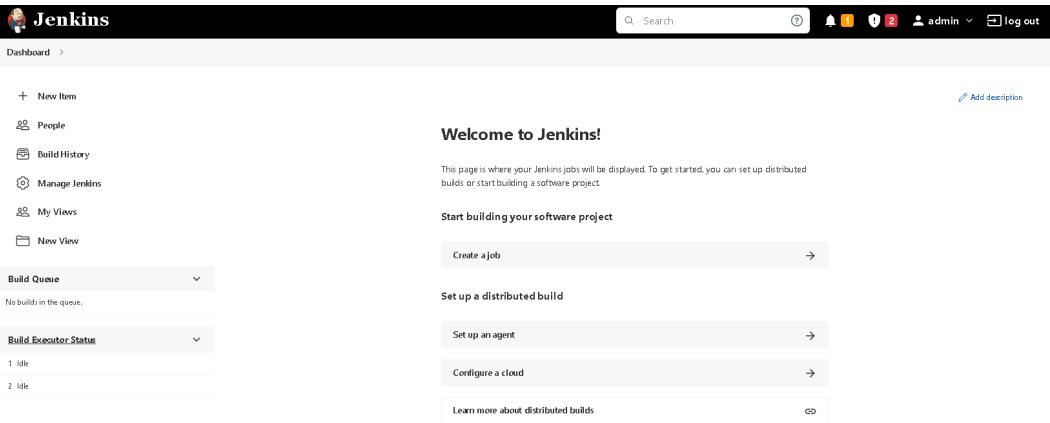
You have skipped the **setup of an admin user**.

To log in, use the username: "admin" and the administrator password you used to access the setup wizard.

Your Jenkins setup is complete.

Start using Jenkins

Figure 3-34 Accessing Jenkins



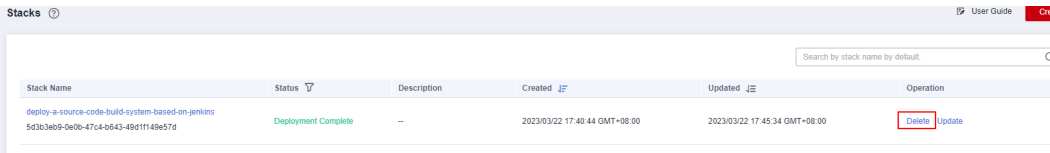
Step 10 **Configure the HuaweiCloud ECS plugin** to automatically create Huawei Cloud ECSs as the slave nodes of the Jenkins cluster.

----End

3.4 Quick Uninstallation

Step 1 Click **Delete** in the row where the solution stack is.

Figure 3-35 Deleting the stack



Step 2 Enter **Delete** and click **OK**.

Figure 3-36 Confirming the deletion

×

Delete Stack

Are you sure you want to delete the stack and resources in the stack? Stack and resources cannot be restored after being deleted. Exercise caution when performing this operation.

Stack Name	Status	Created
deploy-a-source-code-build-s...	Deployment ...	2023/03/22 17:40:44 GMT+08:00

Enter Delete to delete the stack and resources.

Delete

OK

Cancel

----End

4 Appendix

Terms

- **Elastic Cloud Server (ECS):** ECS provides secure, scalable, on-demand compute resources, enabling you to flexibly deploy applications and workloads.
- **Elastic IP (EIP):** EIP provides static public IP addresses and scalable bandwidths that enable your cloud resources to communicate with the Internet. You can easily bind an EIP to an ECS, BMS, virtual IP address, NAT gateway, or load balancer, enabling immediate Internet access.
- **Object Storage Service(OBS):** Object Storage Service (OBS) provides stable, secure, efficient, and easy-to-use cloud storage that lets you store virtually any volume of unstructured data in any format and access it from anywhere using REST APIs.

5 Change History

Released On	Description
2023-04-30	This issue is the first official release.