

**Solution as code**

# **Accessing OBS with an Nginx Reverse Proxy**

**Issue** 1.0  
**Date** 2024-08-08



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

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

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# 1 Solution Overview

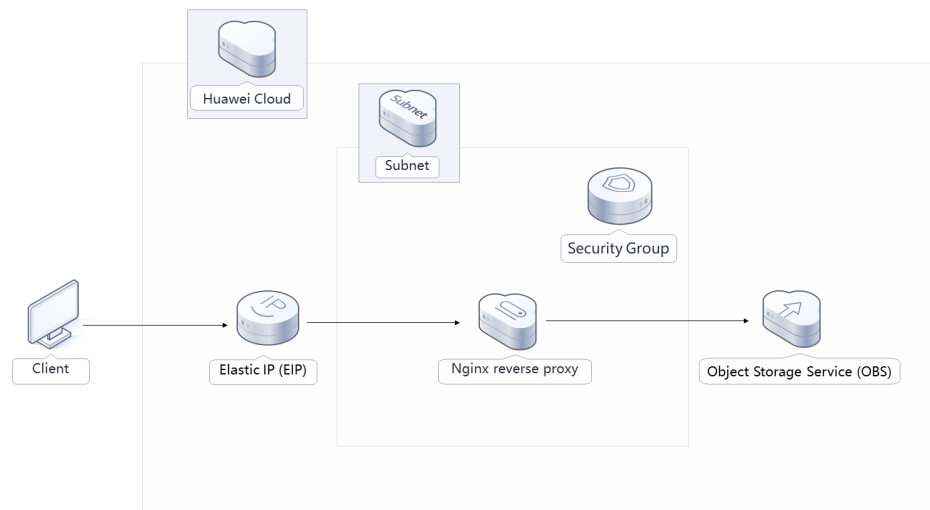
## Scenarios

This solution deploys an Nginx reverse proxy on a cloud server, so that resources stored in an Object Storage Service (OBS) bucket can be accessed from a fixed IP address. With a reverse proxy configured, only the proxy server's IP address is exposed. The actual OBS domain name is hidden to enhance data security.

## Solution Architecture

The following figure shows the architecture of this solution.

Figure 1-1 Solution architecture



This solution will:

- Create a Flexus X Instance (FlexusX) for setting up an Nginx reverse proxy.

- Apply for an EIP and bind it to the newly created FlexusX instance. With the EIP bound, you can download the Nginx installation package on the FlexusX instance and provide access to external systems.
- Create a security group and configure access rules to secure the Nginx reverse proxy.

## Advantages

- High security and reliability  
Only the proxy server's IP address is exposed. The actual OBS domain name is hidden to enhance data security.
- Open source and custom development  
This solution is open-source and free for commercial use. You can also make custom development based on source code.
- Easy deployment  
You can set up an Nginx reverse proxy with a few clicks.

## Constraints

- Before deploying this solution, ensure that you have created a Huawei ID with access to the target region and enabled Huawei Cloud services. and sufficient balance for purchasing the resources listed in [2 Resource Planning and Costs](#).
- If you select the yearly/monthly billing mode, ensure that your account has sufficient balance. If you do not have sufficient balance, you can go to the [Billing Center](#) to manually pay for the order.
- You have obtained the region and name of the OBS bucket you want to configure a proxy for.

# 2 Resource Planning and Costs

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

**Table 2-1** Resource planning and costs (pay-per-use)

Huawei Cloud Service	Example Configuration	Estimated Monthly Cost
Flexus X Instance	<ul style="list-style-type: none"><li>• Region: AP-Singapore</li><li>• Billing Mode: Pay-per-use</li><li>• Specifications: FlexusX   Performance mode (disabled)   x1.1u.2g   1 vCPU   2 GiB</li><li>• Image: CentOS 7.6 64bit</li><li>• System Disk: High I/O   100 GiB</li><li>• Quantity: 1</li></ul>	\$28.8 USD
Elastic IP (EIP)	<ul style="list-style-type: none"><li>• Pay-per-use (by bandwidth): \$0.03 USD/5 Mbit/s/hour</li><li>• Region: AP-Singapore</li><li>• Billed By: Bandwidth</li><li>• Routing Type: Dynamic BGP</li><li>• Bandwidth: 5 Mbit/s</li><li>• Quantity: 1</li></ul>	\$93.6 USD
<b>Total</b>	-	\$122.40 USD

**Table 2-2** Resource planning and costs (yearly/monthly)

Huawei Cloud Service	Example Configuration	Estimated Monthly Cost
Flexus X Instance	<ul style="list-style-type: none"><li>● Region: AP-Singapore</li><li>● Billing Mode: Yearly/Monthly</li><li>● Specifications: FlexusX   Performance mode (disabled)   x1.1u.2g   1 vCPU   2 GiB</li><li>● Image: CentOS 7.6 64bit</li><li>● System Disk: High I/O   100 GiB</li><li>● Quantity: 1</li></ul>	\$23.44 USD
Elastic IP (EIP)	<ul style="list-style-type: none"><li>● Region: AP-Singapore</li><li>● Billing Mode: Yearly/Monthly</li><li>● Routing Type: Dynamic BGP</li><li>● Billed By: Bandwidth</li><li>● Bandwidth: 5 Mbit/s</li><li>● Required Duration: 1 month</li><li>● Quantity: 1</li></ul>	\$57.00 USD
<b>Total</b>	-	\$80.44 USD



# 3 Procedure

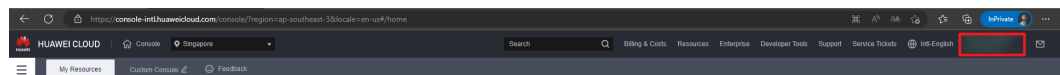
- [3.1 Preparations](#)
- [3.2 Quick Deployment](#)
- [3.3 Getting Started](#)
- [3.4 Quick Uninstallation](#)

## 3.1 Preparations

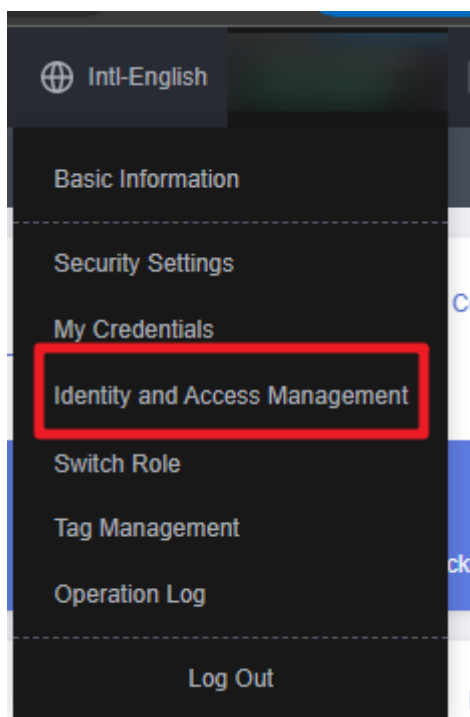
### Creating the rf\_admin\_trust Agency

- Step 1** Log in to the [Huawei Cloud console](#), click on your account name, and choose **Identity and Access Management**.

Figure 3-1 Huawei Cloud console

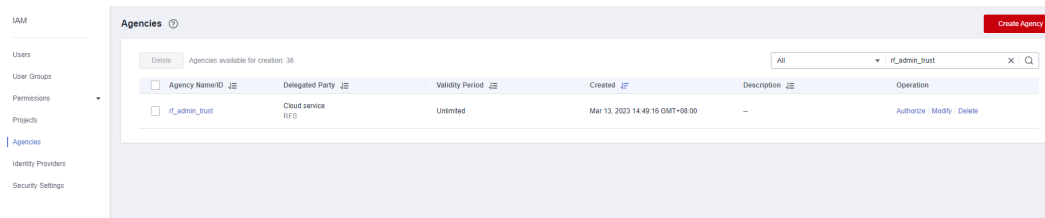


**Figure 3-2** Identity and Access Management



**Step 2** In the navigation pane, choose **Agencies** and search for **rf\_admin\_trust**.

**Figure 3-3** Agency list



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

**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** Creating an agency

Agencies / Create Agency

\* Agency Name

\* 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

\* Validity Period

Description   
0/255

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

**Figure 3-5** Selecting a policy/role

Authorize Agency

1 Select Policy/Role 2 Select Scope 3 Finish

Assign selected permissions to rf\_admin\_trust1. Create Policy

View Selected (1) Copy Permissions from Another Project

Policy/Role Name	Type
<input type="checkbox"/> DME 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** Selecting a scope

Authorize Agency

1 Select Policy/Role 2 Select Scope 3 Finish

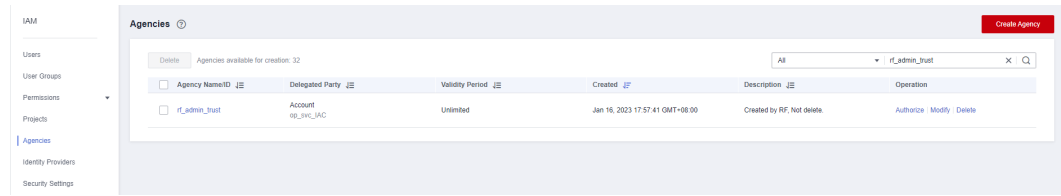
**i** The following are recommended scopes for the permissions you selected. Select the desired scope requiring minimum authorization.

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 displayed in the agency list.

Figure 3-7 Agency list

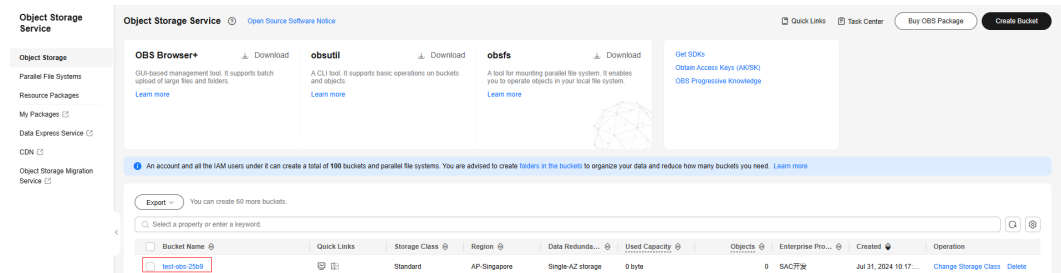


----End

## Obtaining the Bucket Access Domain Name

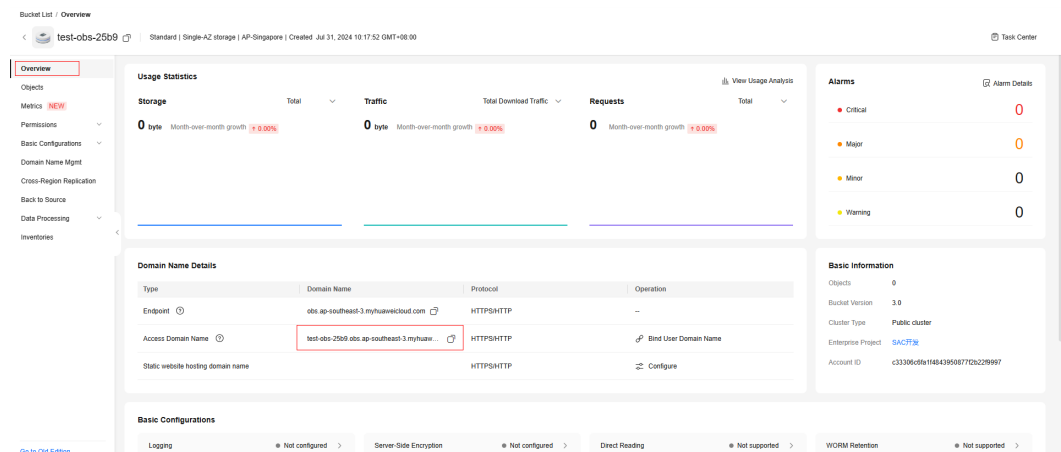
**Step 1** Log in to **OBS Console** and click the name of the OBS bucket you want to configure a reverse proxy for.

Figure 3-8 OBS Console



**Step 2** In the navigation pane, choose **Overview** to obtain the access domain name.

Figure 3-9 Obtaining the access domain name



----End

## 3.2 Quick Deployment

This section describes how to quickly deploy this solution.

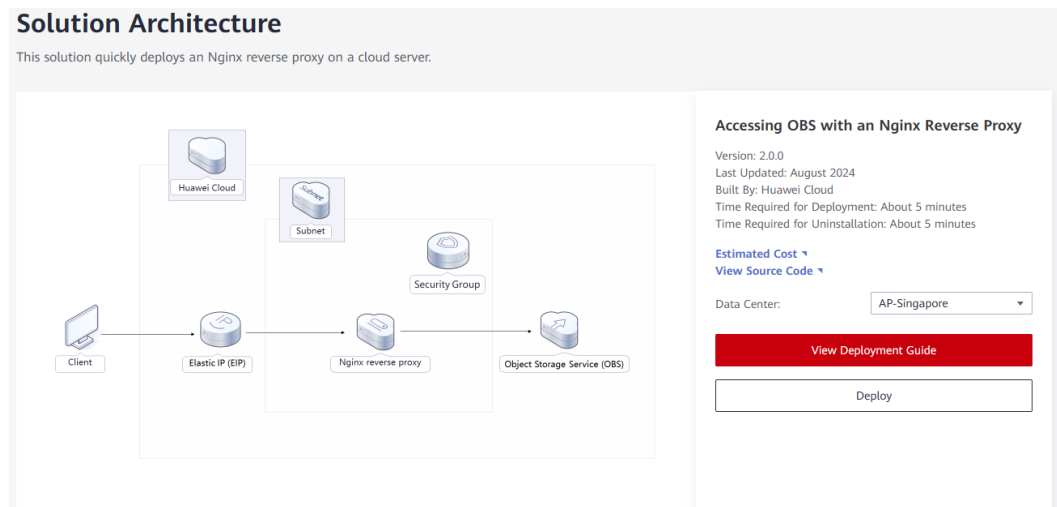
**Table 3-1** Parameters required for deploying this solution

Parameter	Type	Mandatory	Description	Default Value
vpc_name	String	Yes	VPC name. This template uses a newly created VPC and the VPC name must be unique. The name can contain 1 to 55 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).	accessing-obs-through-nginx-demo
secgroup_name	String	Yes	Security group name. This template uses a newly created security group. To modify security group rules, see <a href="#">(Optional) Modifying Security Group Rules</a> . The name can contain 1 to 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).	accessing-obs-through-nginx-demo
ecs_name	String	Yes	Cloud server name in the <code>{ecs_name}_ecs</code> format. It must be unique. The name can contain 1 to 60 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).	accessing-obs-through-nginx-demo
ecs_flavor	String	Yes	Instance flavor of ECS or FlexusX. The flavor ID format of a FlexusX instance is x1.?u.?g. For example, the flavor ID of a FlexusX instance with 2 vCPUs and 4 GiB memory is x1.2u.4g. For details about FlexusX instance flavors, see the console. For details about ECS flavors, see <a href="#">A Summary List of x86 ECS Specifications</a> .	x1.1u.2g

Parameter	Type	Mandatory	Description	Default Value
ecs_password	String	Yes	Initial password of the cloud server. The password can contain 8 to 26 characters, including at least three of the following character types: uppercase letters, lowercase letters, digits, and special characters (!@\$%^&_+[]{};./?). Passwords cannot contain any username or the username spelled backwards. The administrator is <b>root</b> .	Left blank
charging_mode	String	Yes	Billing mode. The value can be <b>prePaid</b> (yearly/monthly) or <b>postPaid</b> (pay-per-use).	postPaid
charging_unit	String	Yes	Billing period unit. This parameter is mandatory when <b>charging_mode</b> is set to <b>prePaid</b> . The value can be <b>year</b> or <b>month</b> .	month
charging_period	String	Yes	Billing period. This parameter is mandatory when <b>charging_mode</b> is set to <b>prePaid</b> . The value is in the range of <b>1</b> to <b>3</b> when <b>charging_unit</b> is set to <b>year</b> and in the range of <b>1</b> to <b>9</b> when <b>charging_unit</b> is set to <b>month</b> .	1
bandwidth_size	String	Yes	EIP bandwidth size. This template uses billing by bandwidth. The value is in the range of 1 to 2,000 Mbit/s.	5
access_domain_name	String	Yes	Access domain name of the OBS bucket you want to configure a proxy for. To obtain it, see <a href="#">Obtaining the Bucket Access Domain Name</a> .	Left blank

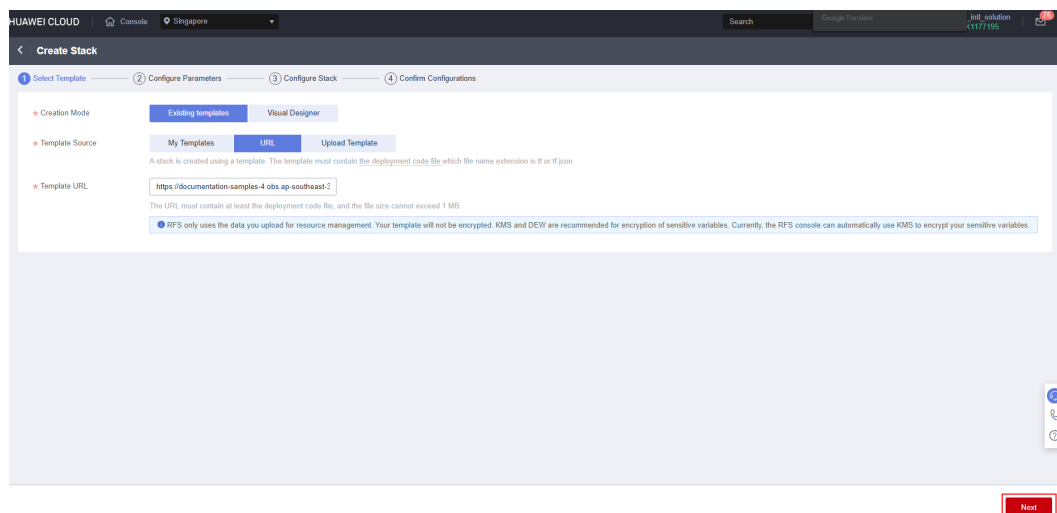
**Step 1** Visit [Practical Application of Huawei Cloud Solutions](#), search for **Accessing OBS with an Nginx Reverse Proxy**, and click the solution card displayed. Under the solution architecture, choose a region in the data center area and click **Deploy**.

Figure 3-10 Selecting a solution



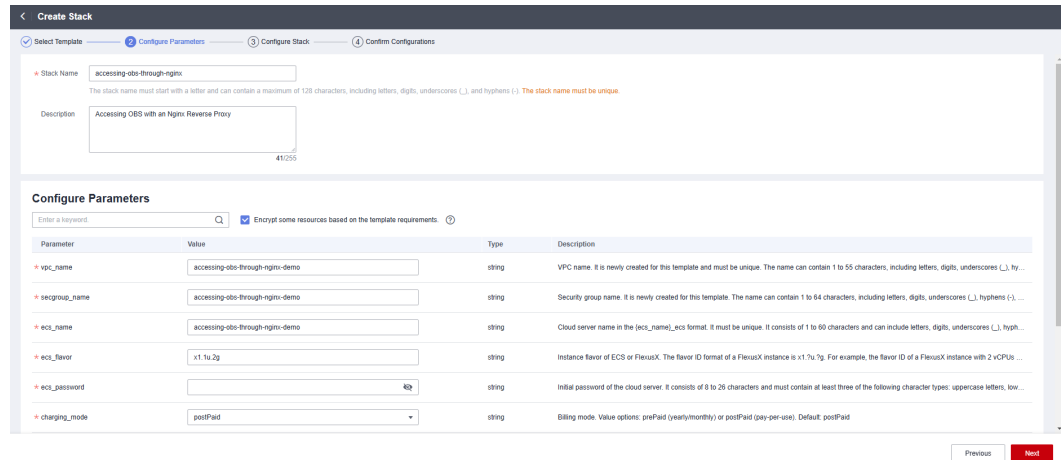
Step 2 On the **Select Template** page, click **Next**.

Figure 3-11 Selecting a template



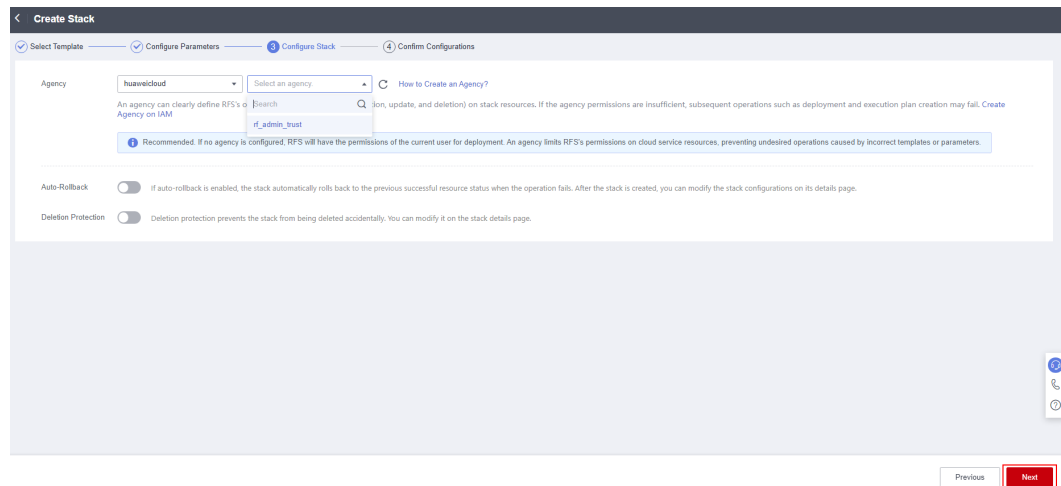
Step 3 On the **Configure Parameters** page, enter a stack name, configure parameters based on [Table 3-1](#), and click **Next**.

Figure 3-12 Configuring parameters



**Step 4** On the **Configure Stack** page, select the **rf\_admin\_trust** agency, which is optional, and click **Next**.

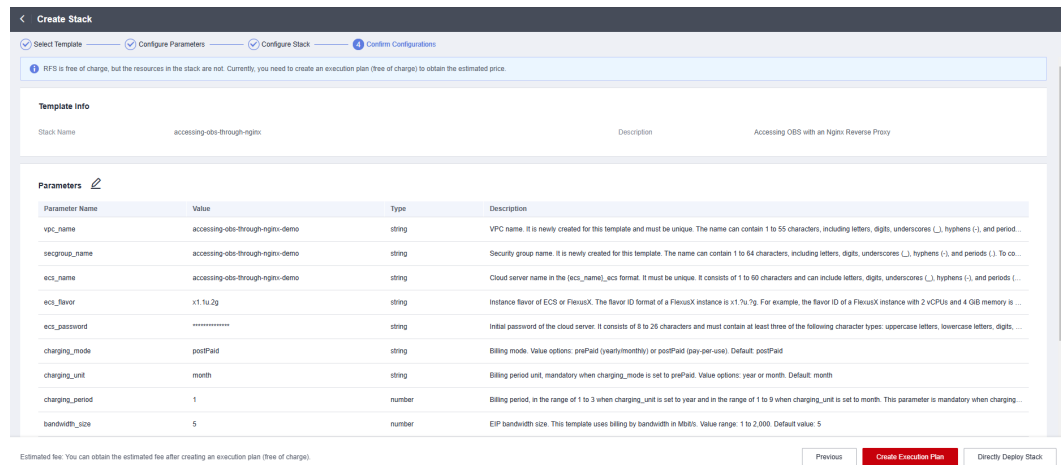
Figure 3-13 Advanced settings



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

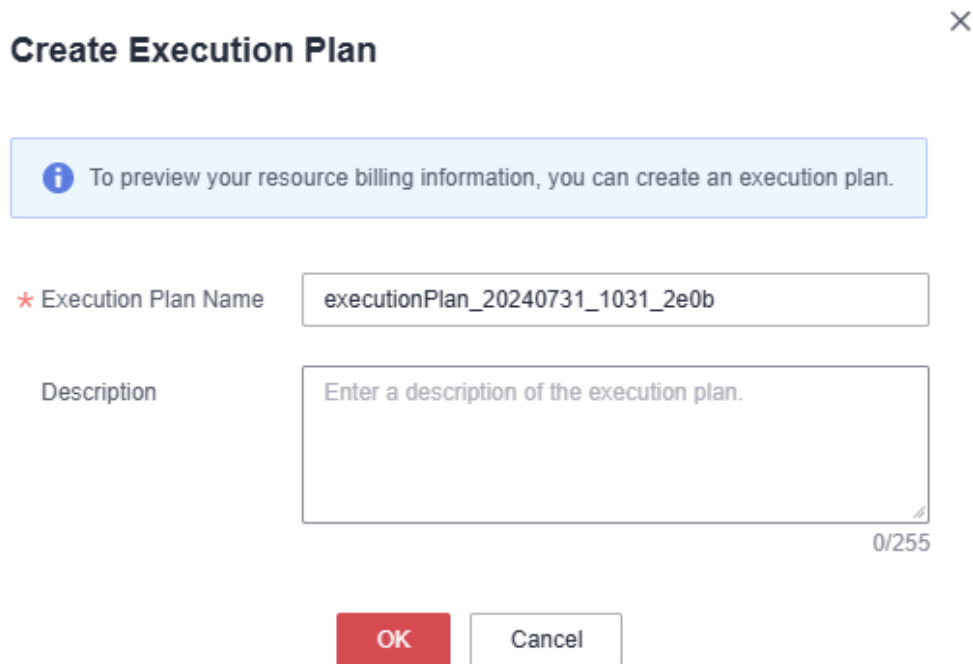


**Figure 3-14** Confirming configurations

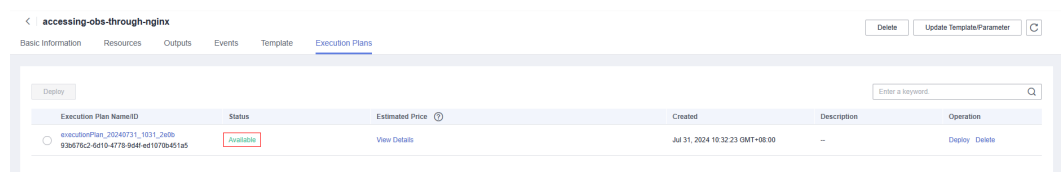


**Step 6** In the displayed **Create Execution Plan** dialog box, enter an execution plan name and click **OK**.

**Figure 3-15** Creating an execution plan

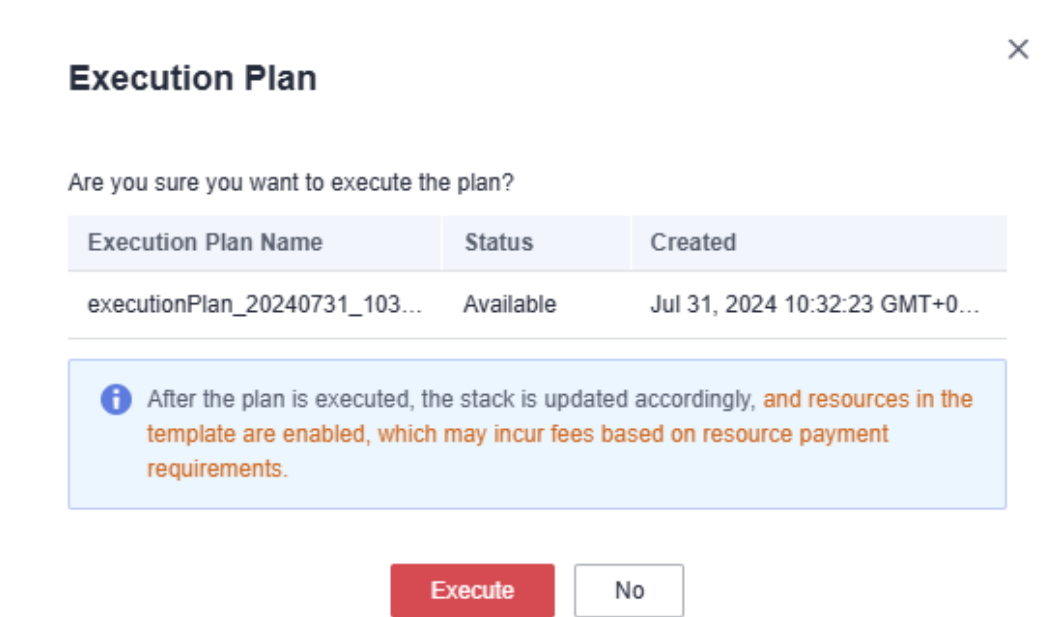


**Figure 3-16** Execution plan created



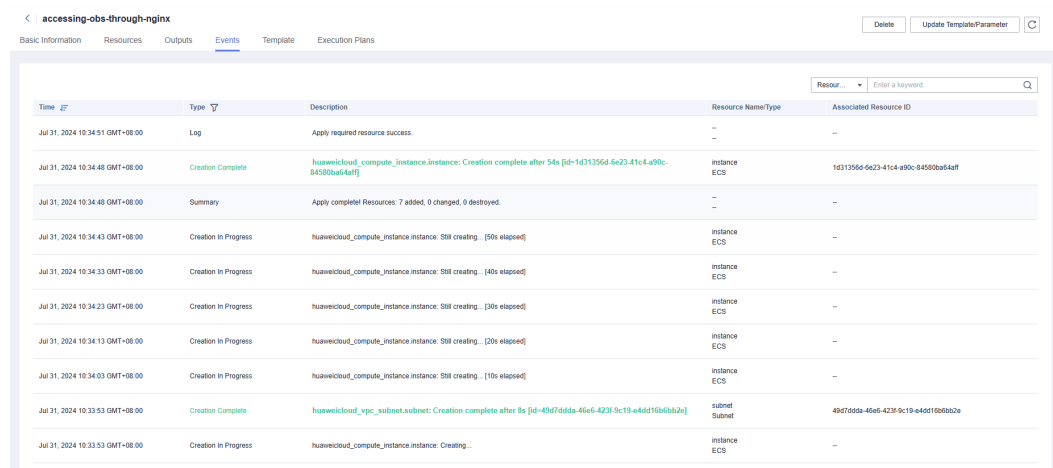
**Step 7** Click **Deploy**. In the displayed dialog box, click **Execute**.

**Figure 3-17** Executing the plan



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

**Figure 3-18** Resources created



----End

## 3.3 Getting Started

### (Optional) Modifying Security Group Rules

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 security group rules, for example, by adding, modifying, or deleting a TCP port, as follows:

- Adding a security group rule: [Add an inbound rule](#) to enable a TCP port if needed.
- Modifying a security group rule: Inappropriate security group settings can be a serious security risk. You can [modify a security group rule](#) to ensure 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 needs to be disabled, [delete the security group rule](#).

## (Optional) Configuring an OBS Bucket Policy

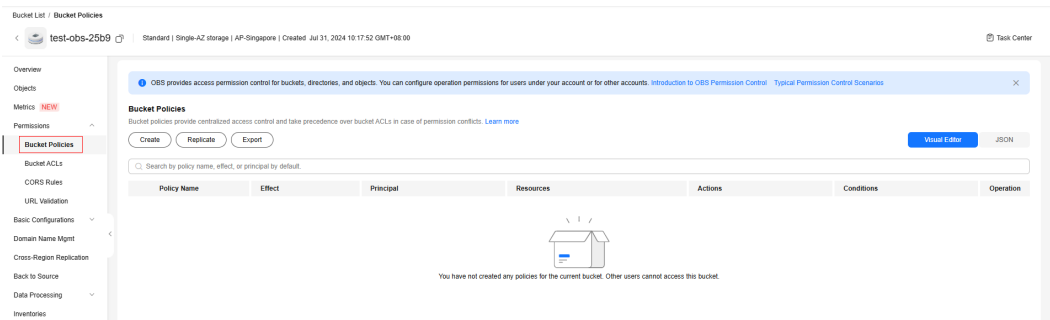
### NOTE

If your bucket is public read or you want others to [add a signature in the URL](#) when accessing objects in your private bucket, skip the following steps.

If you do not want URLs containing a signature to access resources in your private bucket, configure the following bucket policy that allows only the IP address of the Nginx proxy server to access your bucket.

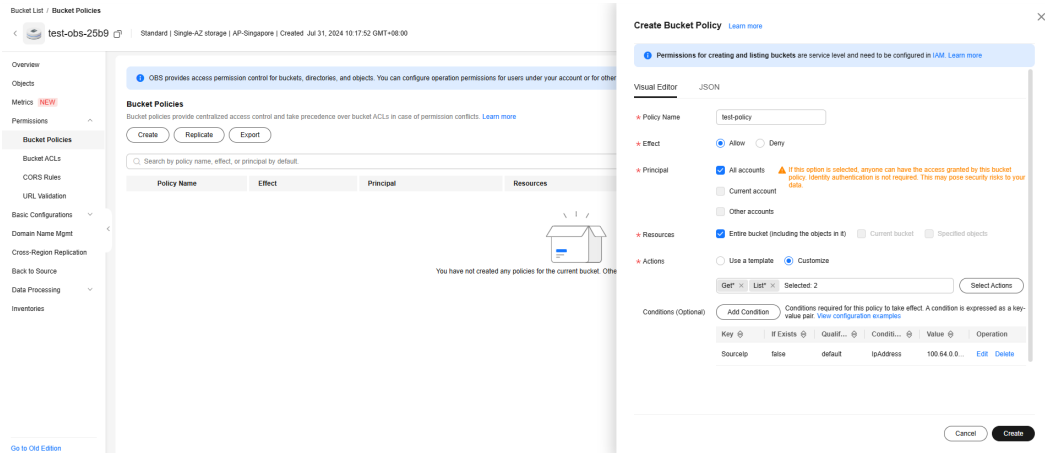
- Step 1** Log in to [OBS Console](#). In the bucket list, click the target bucket and choose **Permissions** > **Bucket Policy** from the navigation pane.

**Figure 3-19** Going to the bucket policy page



- Step 2** Click **Create**.

**Figure 3-20** Creating a custom policy

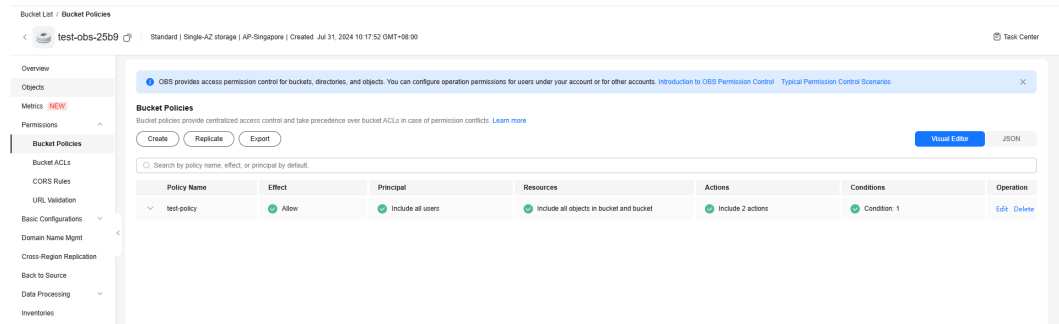


**Step 3** Configure the parameters listed in [Figure 3-21](#) and click **Next** and then **Create** to complete the policy creation. If the bucket and ECS are in the same region, set the value of **SourceIp** for condition operator **IpAddress** to **100.64.0.0/10,214.0.0.0/7, Private IP address of the ECS**. If the bucket and ECS are in different regions, set the value of **SourceIp** for condition operator **IpAddress** to **EIP of the ECS**.

**Figure 3-21** Bucket policy parameters

Parameter	Description	
Policy View	Select Visual editor.	
Policy Name	Custom	
Policy Content	Effect	Select Allow.
	Principal	<ul style="list-style-type: none"> <li>Principal: Select Anonymous user.</li> <li>User Policy: Select Include specified users.</li> </ul>
	Resource	<ul style="list-style-type: none"> <li>Resource: Select both Current bucket and Objects in bucket.</li> <li>Resource Policy: Select Include specified resources.</li> </ul>
	Actions	<ul style="list-style-type: none"> <li>Select Get* and List*.</li> <li>Operation Strategy: Select Include selected.</li> </ul>
	Conditions	<ul style="list-style-type: none"> <li>Conditional Operator: Select IpAddress.</li> <li>Key: Select SourceIp.</li> <li>Value:                             <ul style="list-style-type: none"> <li>If the ECS uses a public DNS, the value is as follows: Elastic IP address of the ECS</li> <li>If the ECS uses a Huawei Cloud private DNS, the value is as follows: 100.64.0.0/10,214.0.0.0/7, Private IP address of the ECS</li> </ul> </li> </ul> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p><b>NOTE:</b>                      The value must contain three IP addresses (CIDR blocks) that are separated with commas (.).                      IP addresses in the range starting with 100 or 214 are for ECSs to access OBS through an internal network.</p> </div>

Figure 3-22 Bucket policy created



----End

## Verifying the Reverse Proxy Settings

**Step 1** In Google Chrome, access OBS resources with an address containing the ECS EIP and the absolute path of the object name, for example, **http://ECS EIP/Absolute path of the object name**.

Figure 3-23 Using a fixed IP address to access OBS resources

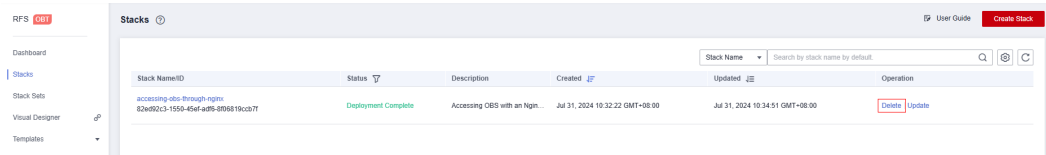


----End

## 3.4 Quick Uninstallation

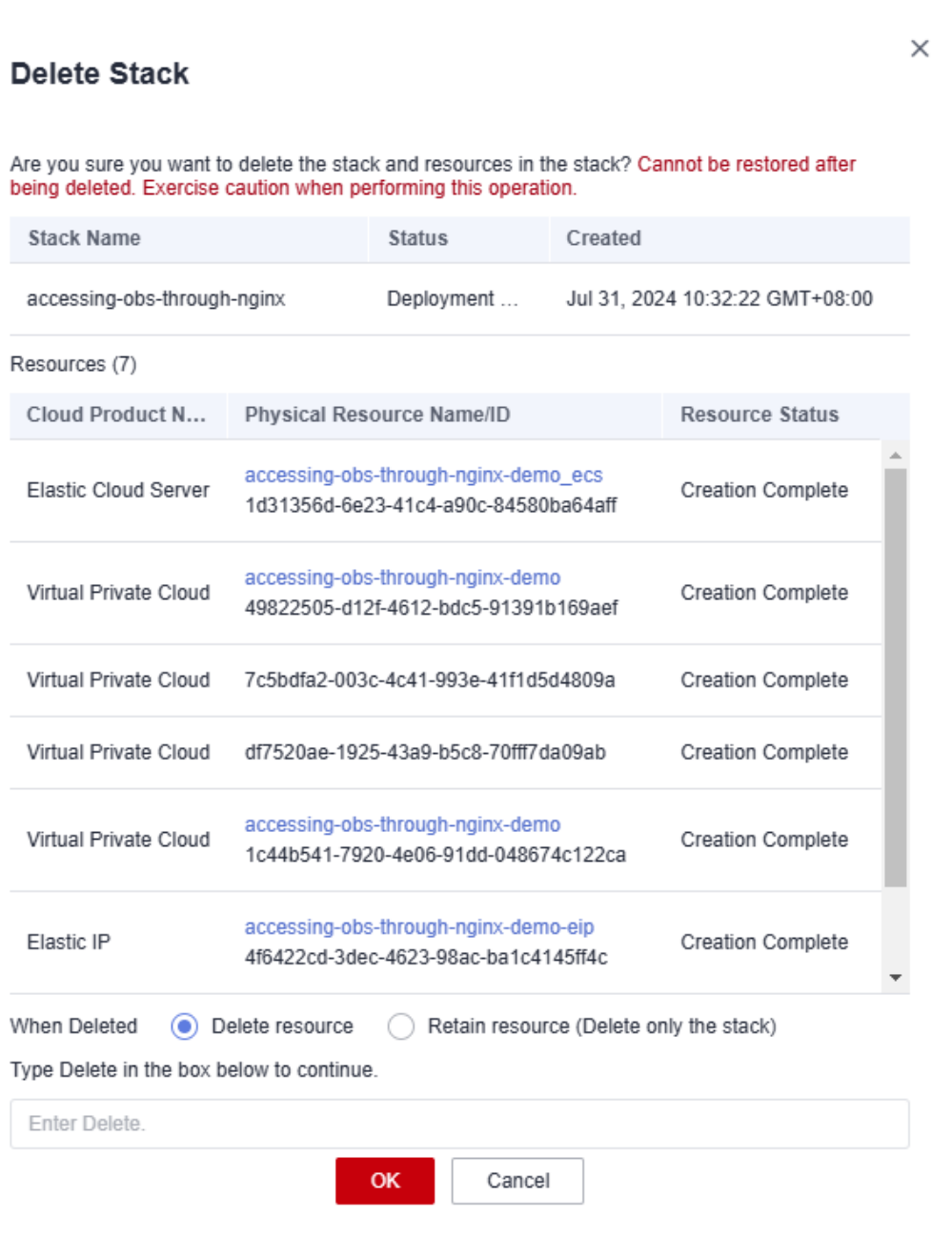
**Step 1** Click **Delete** in the row of the solution stack.

Figure 3-24 Deleting the stack



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

Figure 3-25 Confirming the stack deletion



----End

# 4 Appendix

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## Terms

The following explain relevant cloud services.

- **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.
- **Virtual Private Cloud (VPC)**: VPC allows you to isolate online resources with virtual private networks. It enables your cloud resources to securely communicate with each other, the Internet, and on-premises networks.
- **Elastic Cloud Server (ECS)**: ECS provides secure, scalable, on-demand compute resources, enabling you to flexibly deploy applications and workloads.
- **Flexus X Instance (FlexusX)**: FlexusX is a next-generation flexible cloud server service designed for small- and medium-sized enterprises (SMEs) and developers. FlexusX provides functions similar to what ECS provides. It supports flexible vCPU/memory ratios, performance mode, and live specification change.

# 5 Change History

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Released On	Change History
2022-12-30	This issue is the first official release.
2023-02-28	Revised the procedure.
2023-07-30	Supported Flexus X Instance.