Enterprise Switch

User Guide

Issue	01
Date	2026-09-15

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1 Permissions Management

1.1 Creating an IAM User and Granting Enterprise Switch Permissions

This section describes how to use IAM to implement fine-grained permissions control for your enterprise switch resources. With IAM, you can:

- Create IAM users for employees based on the organizational structure of your enterprise. Each IAM user has their own security credentials, providing access to enterprise switch resources.
- Grant only the permissions required for users to perform a specific task.

If your account does not require individual IAM users, skip over this section.

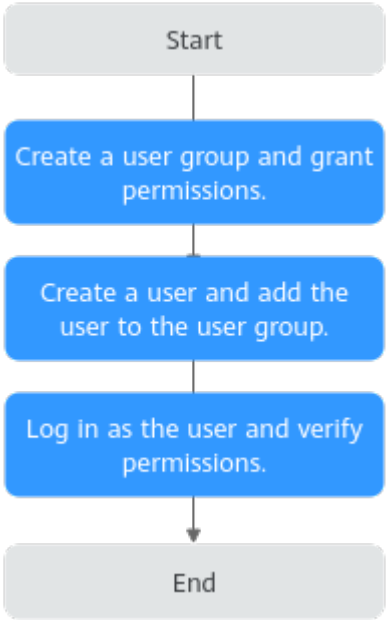
Figure 1-1 shows the procedure for granting permissions.

Prerequisites

You have learned about the permissions supported by Enterprise Switch and choose policies or roles according to your requirements. Enterprise Switch uses the same system permissions as VPC. For details, see **Permissions Management**. For permissions of other cloud services, see **System Permissions**.

Process Flow

Figure 1-1 Process for granting Enterprise Switch permissions



1. **Create a user group and assign permissions**.

   Create a user group on the IAM console, and assign the **Tenant Guest** policy to the group.

2. **Create a user and add the user to the user group**.

   Create a user on the IAM console and add the user to the group created in **1**.

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

   Log in to the Enterprise Switch console as the created user, switch to the authorized region, and verify the user permissions.

   Click **Service List** and choose **Enterprise Switch**. Then click **Buy** in the upper right corner. If the enterprise switch fails to be created, the **Tenant Guest** permission has taken effect.

2 Enterprise Switches

2.1 Buying an Enterprise Switch

Scenarios

This section describes how to buy an enterprise switch. An enterprise switch allows Layer 2 communication between an on-premises data center and a VPC based on VPN or Direct Connect.

Prerequisites

- You have planned the resources required both on the cloud and on premises. For details about resource planning, see **How Enterprise Switches Work**.
- An enterprise switch establishes a Layer 2 network based on a Layer 3 network between an on-premises data center and a VPC created by Direct Connect or VPN. You need to create a Direct Connect or VPN connection first by referring to **Step 1: Use Direct Connect or VPN to Communicate at Layer 3**.

Constraints

- The switch in an on-premises data center must support VXLAN because the enterprise switch needs to establish a VXLAN tunnel to the data center at Layer 2.
- The local tunnel subnet must have three IP addresses reserved for the enterprise switch.

Procedure

1. Go to the **Buy Enterprise Switch** page.
2. Configure the parameters as prompted. For details, see **Table 2-1**.

Table 2-1 Parameters for creating an enterprise switch

Parameter	Description	Example Value
Billing Mode	Mandatory An enterprise switch can be billed on a pay-per-use basis. Pay-per-use is a postpaid payment mode. Your enterprise switch is billed by the second but settled by the hour. If the usage is less than an hour, you are billed based on the actual duration consumed.	Pay-per-use
Region	Mandatory Select the region nearest to you to ensure the lowest latency possible.	EU-Dublin
Active AZ	Mandatory Enterprise switches are deployed in active/standby mode. Select the AZ where the active node is deployed. An active AZ carries traffic. You can set the AZ to the one where your ECSs that need to communicate with an on-premises data center are deployed to ensure quick and uninterrupted access to ECSs.	AZ1
Standby AZ	Mandatory Enterprise switches are deployed in active/standby mode. Select the AZ where the standby node is deployed. A standby AZ is used for backup and disaster recovery. The standby AZ must be different from the active AZ.	AZ2

Parameter	Description	Example Value
Specifications	Mandatory Currently, the following enterprise switch specifications are supported: • Small – Maximum Bandwidth: 3 Gbit/s – Maximum PPS: 500,000 – Connected Subnets: 1 • Medium – Maximum Bandwidth: 5 Gbit/s – Maximum PPS: 1,000,000 – Connected Subnets: 3 • Large – Maximum Bandwidth: 10 Gbit/s – Maximum PPS: 2,000,000 – Connected Subnets: 6 The specifications cannot be changed after the enterprise switch is created. **NOTICE** **The supported enterprise switch specifications vary by region. See the supported specifications on the console.**	Large
VPC	Mandatory VPC that the enterprise switch belongs to.	vpc-01
Tunnel Subnet	Mandatory Subnet of the VPC that the enterprise switch belongs to. It is the local tunnel subnet. Local and remote tunnel subnets communicate with each other at Layer 3 over Direct Connect or VPN. Enterprise switches allow communications between cloud and on-premises networks at Layer 2 based on the Layer 3 network between tunnel subnets.	subnet-01
Local Tunnel IP Address	Mandatory IP address in the local tunnel subnet, which can be automatically assigned or manually specified. If an enterprise switch establishes a VXLAN tunnel with an on-premises data center at Layer 2, each end of the VXLAN tunnel requires a tunnel IP address (the local and remote tunnel IP addresses). The two IP addresses must be different.	Automatically assign IP address

Parameter	Description	Example Value
Name	Mandatory Enter the name of the enterprise switch. The name: • Must contain 1 to 64 characters. • Can contain letters, digits, underscores (_), hyphens (-), and periods (.).	esw-01
Description	Optional Enter the description of the enterprise switch in the text box as required.	-

3. Click **Next**.
4. On the displayed page, confirm the enterprise switch information and click **Submit**.

   This operation takes 3 to 6 minutes to complete. If the status is **Running**, the enterprise switch is created.

Follow-Up Operations

After an enterprise switch is created, you need to create a Layer 2 connection and configure a remote tunnel gateway. For details, see **Getting Started**.

2.2 Viewing Details of an Enterprise Switch

Scenarios

This section describes how to view basic information about an enterprise switch.

Procedure

1. Go to the **Enterprise Switch** page.
2. Locate the enterprise switch and view its details.

2.3 Modifying an Enterprise Switch

Scenarios

This section describes how to change the name and description of an enterprise switch.

Procedure

1. Go to the **Enterprise Switch** page.

   Locate the enterprise switch you want to modify.

2. Click  next to the enterprise switch name or description and enter a name or description.
3. Click .

2.4 Deleting an Enterprise Switch

Scenarios

You can delete an enterprise switch to release resources and reduce costs if it is no longer required.

Notes and Constraints

An enterprise switch with Layer 2 connections associated cannot be deleted. To delete such an enterprise switch, delete the Layer 2 connections first. For details, see **Deleting a Layer 2 Connection**.

Procedure

1. Go to the **Enterprise Switch** page.

   Locate the enterprise switch you want to delete.
2. In the upper right corner of the enterprise switch details page, click **Delete**.

   A confirmation dialog box is displayed.
3. Click **OK**.

   This operation takes 10 to 60 seconds to complete. If the **Delete** button is staying inactive after the Layer 2 connections are deleted, refresh the page.

3 Layer 2 Connections

3.1 Creating a Layer 2 Connection

Scenarios

After an enterprise switch is created, you need to create a Layer 2 connection to enable the local Layer 2 connection subnet and the remote VXLAN switch to communicate at Layer 2.

Notes and Constraints

- Each Layer 2 connection connects a local and a remote Layer 2 connection subnet. Each enterprise switch supports a maximum of six Layer 2 connections.
- The Layer 2 connections of an enterprise switch can share a tunnel IP address, but their tunnel VNIs must be unique. A tunnel VNI is the identifier of a tunnel.
- If a Layer 2 connection connects a local Layer 2 connection subnet to an enterprise switch, the local Layer 2 connection subnet must have two IP addresses reserved as active and standby interface IP addresses. The two IP addresses cannot be used by any local resources and must be different from the IP addresses in the remote Layer 2 connection subnet.

Procedure

1. Go to the **Enterprise Switch** page.

   Locate the target enterprise switch.
2. In the lower right part of the enterprise switch details page, click **Create Connection**.

   The page for creating a Layer 2 connection is displayed.
3. Configure the parameters as prompted. For details, see **Table 3-1**.

Table 3-1 Parameters for creating a Layer 2 connection

Parameter	Description	Example Value
Enterprise Switch	Name of the enterprise switch. You do not need to set this parameter.	l2cg-01
VPC	VPC that is associated with the enterprise switch, which is the VPC that the local tunnel subnet belongs to. You do not need to set this parameter.	vpc-01
Layer 2 Connection Subnet	Mandatory Select the layer 2 connection subnet in the VPC. This Layer 2 connection subnet is used to communicate with the Layer 2 connection subnet in an on-premises data center at Layer 2. ● The local and remote Layer 2 connection subnets can overlap, but the IP addresses of the servers that need to communicate in the local and remote subnets must be different. Otherwise, the communication fails. ● A VPC subnet that has been used by a Layer 2 connection cannot be used by any other Layer 2 connections or enterprise switches.	subnet-02
Interface IP Address	Mandatory IP addresses in the VPC subnet that are connected to the enterprise switch, including active and standby interface IP addresses. The IP addresses can be automatically assigned or manually specified.	Automatically assign
Remote Access Information > Tunnel VNI	Mandatory Network identifier of the VXLAN tunnel used by an on-premises data center to connect to an enterprise switch, which is used to uniquely identify the VXLAN. For the same VXLAN tunnel, the on-premises data center and the cloud must use the same tunnel VNI.	10001
Remote Access Information > Tunnel IP Address	Mandatory IP address of the VXLAN tunnel used by the on-premises data center to connect to the enterprise switch.	-

Parameter	Description	Example Value
Remote Access Information > Tunnel Port	Port number of the VXLAN tunnel used by the on-premises data center to connect to the enterprise switch. Port **4789** is used by default. You do not need to set this parameter.	4789
Name	Mandatory Enter the name of the Layer 2 connection. The name: • Must contain 1 to 64 characters. • Can contain letters, digits, underscores (_), hyphens (-), and periods (.).	l2conn-01

4. Click **Create**.

   This operation takes 20 to 60 seconds to complete. If the status is **Not connected** or **Connected**, the Layer 2 connection is created.

3.2 Viewing Details of a Layer 2 Connection

Scenarios

This section describes how to view the basic information and topology of a Layer 2 connection, including the local and remote Layer 2 connection subnets, and local and remote tunnel IP addresses.

Procedure

1. Go to the **Enterprise Switch** page.

   Locate the target enterprise switch.
2. In the lower part of the enterprise switch details page, view the basic information and topology of a Layer 2 connection.

3.3 Modifying a Layer 2 Connection Name

Scenarios

This section describes how to change the name of a Layer 2 connection.

Procedure

1. Go to the **Enterprise Switch** page.

   Locate the target enterprise switch.
2. In the lower part of the enterprise switch details page, locate the Layer 2 connection.

3. Click  next to the Layer 2 connection name and enter a new name.
4. Click .

3.4 Deleting a Layer 2 Connection

Scenarios

You can delete a Layer 2 connection if it is not needed anymore.

Notes and Constraints

Layer 2 connections to be deleted cannot be in the **Creating** status.

Procedure

1. Go to the **Enterprise Switch** page.
   Locate the target enterprise switch.
2. In the lower part of the enterprise switch details page, locate the Layer 2 connection.
3. Click **Delete Connection**.
   A confirmation dialog box is displayed.
4. Click **OK**.
   This operation takes 10 to 30 seconds to complete.

4 Cloud Eye Monitoring

4.1 Supported Metrics

Description

This section describes metrics reported by enterprise switches to Cloud Eye as well as their namespaces, metrics, and dimensions. You can use the Cloud Eye management console or APIs to obtain the metrics and alarms generated for enterprise switches.

Namespace

SYS.ESW

Monitoring Metrics

With Cloud Eye, you can monitor the network status of enterprise switches.

Table 4-1 Enterprise switch metrics

ID	Name	Description	Value Range	Unit	Conversion Rule	Monitored Object (Dimension)	Monitoring Interval (Raw Data)
up_bandwidth	Outbound Bandwidth	Network traffic per second going out of the enterprise switch	≥ 0	bit/s	1024 (IEC)	instance_id	1 minute

ID	Name	Description	Value Range	Unit	Conversion Rule	Monitored Object (Dimension)	Monitoring Interval (Raw Data)
down_bandwidth	Inbound bandwidth	Network traffic per second going into the enterprise switch	≥ 0	bit/s	1024 (IEC)	instance_id	1 minute
up_stream	Outbound Traffic	Network traffic going out of the enterprise switch	≥ 0	byte	1024 (IEC)	instance_id	1 minute
down_stream	Inbound Traffic	Network traffic going into the enterprise switch	≥ 0	byte	1024 (IEC)	instance_id	1 minute
up_pps	Outbound PPS	Packets per second going out of the enterprise switch	≥ 0	pps	N/A	instance_id	1 minute
down_pps	Inbound PPS	Packets per second going into the enterprise switch	≥ 0	pps	N/A	instance_id	1 minute

Dimensions

The metric measurement dimension of an enterprise switch is **instance_id**.

Key	Value
instance_id	Enterprise switch ID. You can obtain the enterprise switch ID on the cloud service monitoring page of the **Cloud Eye console**.

4.2 Viewing Metrics

Scenarios

This section describes how to view metrics for an enterprise switch.

Procedure

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

Step 2 In the navigation pane on the left, choose **Cloud Service Monitoring**.

On the **Cloud Service Monitoring** page, click **Enterprise Switch ESW** in the **Dashboard** column and go to the **Details** page.

Step 3 On the **Details** page, view the cloud service details under the **Overview** tab and the **Resources** tab, respectively.

Step 4 On the **Overview** tab, perform the following operations:

1. View information under **Resource Overview**, **Alarm Statistics**, and **Key Metrics**. For details, see **Table 4-2**.

   Table 4-2 Cloud service monitoring overview

Module	Description
Resource Overview	You can view the resource data of the current cloud service in the current dimension, including **Total Resources**, **Resources With Alarms**, and **Resources With Alarms in the Last 7 Days**.
Alarm Statistics	You can view the alarm severity details and resource group alarms generated in the last seven days. The alarm severity details include statistics on critical, major, minor, and warning alarms.
Key Metrics	You can view monitoring details of key metrics recommended by the cloud service.

2. In the upper left corner of the **Details** page, select **Resources** to view corresponding monitoring details or select another cloud service to switch to its dashboard.

Step 5 On the **Resources** tab, perform the following operations:

- Click **Export Data** to export cloud service monitoring data. For details, see **How Can I Export Monitoring Data?**
- Locate an instance and click **View Metric** to view the instance metrics and HTTP status codes.
- Locate an instance and choose **More** > **Create Alarm Rule** in the **Operation** column to create an alarm rule for the instance. For details about the parameters, see **Creating an Alarm Rule**.

- Locate an instance and choose **More** > **View Alarm Rule** in the **Operation** column to view the alarm rules created for the instance.

----End

4.3 Event Monitoring

Overview

Event monitoring provides event data reporting, query, and alarm reporting. You can create alarm rules for both system events and custom events. When there are specified events, you will receive alarm notifications.

Namespace

SYS.ESW

Monitoring Events

Table 4-3 Monitoring events supported by Enterprise Switch

Event Source	Namespace	Event Name	Event ID	Event Severity	Description	Solution	Impact
Enterprise Switch	SYS.ESW	IP Address Conflict	IPConflict	Major	Layer 2 interconnection scenario: A cloud server and an on-premises server that need to communicate use the same IP address.	Check the ARP and switch information to locate the servers that have the same IP address and change the IP address.	The communications between the on-premises and cloud servers may be abnormal.

4.4 Creating an Alarm Rule

Scenarios

The alarm function provides you with the alarm service for monitoring data. You can create an alarm rule to configure the conditions that trigger an alarm and determine whether to send notifications when there is an alarm. After creating alarm rules for important metrics, you can know exceptions in a timely manner and rectify the faults quickly.

You can create alarm rules and alarm notifications for specific events, such as IP address conflicts. This helps you receive timely alarm notifications and respond to exceptions effectively.

If you disable **Alarm Notifications** when creating an alarm rule, no alarm notification will be sent. You can view the status changes of alarm rules using the alarm records function of Cloud Eye.

This section describes how to create alarm rules to monitor **metrics** and **events**.

Creating an Alarm Rule to Monitor a Metric

1. Log in to the **Cloud Eye console**.
2. In the navigation pane, choose **Alarm Management** > **Alarm Rules**.
3. On the displayed page, click **Create Alarm Rule** in the upper right corner.
4. On the **Create Alarm Rule** page, configure parameters as needed.
   a. **Configure basic information about the alarm rule.**.
      - **Name**: Enter a name for the alarm rule, which can be customized or automatically generated by the system.
      - **Description**: (Optional) Describe the alarm rule.
   b. **Configure alarm content parameters.**
      - **Alarm Type**: Select **Metric**.
      - **Cloud Product**: Select a service name.
      - **Resource Level**: Select the resource level of the monitored object. This parameter is only available if **Alarm Type** is set to **Metric**. The value can be **Cloud product** (recommended) or **Specific dimension**.
      - **Monitoring Scope**: Select **All resources**, **Resource groups**, or **Specific resources** that the alarm rule will apply to.
      - **Method**: Select **Associate template** or **Configure manually**.
      - **Alarm Policy**: Specify the policy for triggering an alarm.
   c. **Configure alarm notification parameters.**
      To send alarm notifications by email, SMS, HTTP, or HTTPS, enable **Alarm Notifications**.

   For details about more parameters, see **Creating an Alarm Rule and Notifications**.
5. Click **Create**.
   For more information about Enterprise Switch monitoring rules, see **Cloud Eye User Guide**.

Creating an Alarm Rule to Monitor an Event

1. Log in to the **Cloud Eye console**.
2. In the navigation pane, choose **Event Monitoring**.

3. Click **Create Alarm Rule** in the upper right corner to go to the **Create Alarm Rule** page.

   NOTE

   If you want to create an alarm rule for a specific event, locate the event in the event list and click **Create Alarm Rule** in the **Operation** column. On the displayed **Create Alarm Rule** page, required parameters have been configured for that event.

4. On the **Create Alarm Rule** page, configure parameters as needed.

   a. **Configure the alarm rule name and description.**

      - **Name**: Enter a name for the alarm rule, which can be customized or automatically generated by the system.
      - **Description**: (Optional) Describe the alarm rule.

   b. **Configure alarm content parameters.**

      - **Alarm Type**: Select **Event**.
      - **Event Type**: **System event** or **Custom event**. Select **System event**.
      - **Event Source**: Select the cloud service for which the event is generated. Select **Enterprise Switch**.
      - **Monitoring Scope**: The resources to which the alarm rule applies. **All resources** is selected by default.
      - **Method**: Select **Associate template** or **Configure manually**.
      - **Alarm Policy**: Specify the policy for triggering an alarm.

   c. **Configure alarm notification parameters.**

      To send alarm notifications by email, SMS, HTTP, or HTTPS, enable **Alarm Notifications**.

   For more information, see **Creating an Alarm Rule and Notification for Event Monitoring**.

5. Click **Create**.

   For more information about Enterprise Switch monitoring rules, see **Cloud Eye User Guide**.

