

# Enterprise Switch

# User Guide

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# 1 Enterprise Switches

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## 1.1 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

- Before using enterprise switches, plan resources on and off the cloud by referring to [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 [Use Direct Connect or VPN to Communicate at Layer 3](#).

### Notes and 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. Log in to the management console.
2. Click  in the upper left corner and select the desired region and project.
3. On the console homepage, choose **Networking > Enterprise Switch**.  
The **Enterprise Switch** page is displayed.
4. In the upper right corner of the page, click **Buy**.  
The page for buying an enterprise switch is displayed.

5. Configure parameters as prompted. For details, see [Table 1-1](#).

**Table 1-1** Parameter descriptions

Parameter	Description	Example Value
Billing Mode	<p>Mandatory</p> <p>Enterprise switches can be billed on a yearly/monthly or pay-per-use basis.</p> <ul style="list-style-type: none"><li>• If you buy a yearly/monthly enterprise switch, you need to make a one-off payment for the enterprise switch in your selected period.</li><li>• If you buy a pay-per-use enterprise switch, your enterprise switch is billed by the second, and settled by the hour. If the usage is less than an hour, you are billed based on the actual duration consumed.</li></ul> <p><b>NOTE</b> The yearly/monthly billing mode is available only in regions <b>LA-Santiago</b> and <b>AF-Johannesburg</b>.</p>	Pay-per-use
Region	<p>Mandatory</p> <p>Select the region nearest to you to ensure the lowest latency possible.</p>	LA-Santiago
Active AZ	<p>Mandatory</p> <p>Enterprise switches are deployed in active/standby mode. Select the AZ where the active node is deployed.</p> <p>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.</p>	AZ1
Standby AZ	<p>Mandatory</p> <p>Enterprise switches are deployed in active/standby mode. Select the AZ where the standby node is deployed.</p> <p>A standby AZ is used for backup and disaster recovery. Set the standby AZ to be different from the active AZ.</p>	AZ2

Parameter	Description	Example Value
Specifications	<p>Mandatory</p> <p>Currently, the following enterprise switch specifications are supported:</p> <ul style="list-style-type: none"><li>• Basic<ul style="list-style-type: none"><li>- Maximum Bandwidth: 3 Gbit/s</li><li>- Maximum PPS: 500,000</li><li>- Connected Subnets: 1</li></ul></li><li>• Standard<ul style="list-style-type: none"><li>- Maximum Bandwidth: 5 Gbit/s</li><li>- Maximum PPS: 1,000,000</li><li>- Connected Subnets: 3</li></ul></li><li>• Enhanced<ul style="list-style-type: none"><li>- Maximum Bandwidth: 10 Gbit/s</li><li>- Maximum PPS: 2,000,000</li><li>- Connected Subnets: 6</li></ul></li></ul> <p>The specifications cannot be changed after the enterprise switch is created.</p>	Enhanced
VPC	<p>Mandatory</p> <p>VPC that the enterprise switch belongs to.</p> <p>If <b>Tunnel Connection</b> is set to <b>Direct Connect</b> or <b>VPN</b>, the VPC is set to the one that the Direct Connect virtual gateway or VPN gateway belongs to by default.</p>	vpc-01
Tunnel Subnet	<p>Mandatory</p> <p>Subnet of the VPC that the enterprise switch belongs to. It is the local tunnel subnet.</p> <p>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.</p>	subnet-01

Parameter	Description	Example Value
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, that is the local and remote tunnel IP addresses. The two IP addresses must be different.	Automatically assign IP address
Name	Mandatory Enter the name of the enterprise switch. The name: <ul style="list-style-type: none"><li>• Must contain 1 to 64 characters.</li><li>• Can contain letters, digits, underscores (_), hyphens (-), and periods (.).</li></ul>	esw-01
Description	Optional Enter the description of the enterprise switch in the text box as required.	-

6. Click **Next**.
7. 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](#).

# 1.2 Viewing Details of an Enterprise Switch

## Scenarios

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

## Procedure

1. Log in to the management console.
2. Click  in the upper left corner and select the desired region and project.
3. On the console homepage, choose **Networking > Enterprise Switch**.  
The **Enterprise Switch** page is displayed.




4. Click the name of the target enterprise switch.  
You can view the basic information about the enterprise switch.

## 1.3 Modifying an Enterprise Switch

### Scenarios

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

### Procedure

1. Log in to the management console.
2. Click  in the upper left corner and select the desired region and project.
3. On the console homepage, choose **Networking > Enterprise Switch**.  
The **Enterprise Switch** page is displayed.
4. Click the name of the target enterprise switch.  
The enterprise switch details page is displayed.
5. Click  next to the enterprise switch name or description and enter the new name or description.
6. Click .

## 1.4 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. Log in to the management console.
2. Click  in the upper left corner and select the desired region and project.
3. On the console homepage, choose **Networking > Enterprise Switch**.  
The **Enterprise Switch** page is displayed.
4. Click the name of the target enterprise switch.  
The enterprise switch details page is displayed.



5. In the upper right corner of the enterprise switch details page, click **Delete**.  
A confirmation dialog box is displayed.
6. Click **Yes**.  
This operation takes 10 to 30 seconds to complete.

# 2 Layer 2 Connections

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## 2.1 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. Log in to the management console.
2. Click  in the upper left corner and select the desired region and project.
3. On the console homepage, choose **Networking** > **Enterprise Switch**.  
The **Enterprise Switch** page is displayed.
4. Click the name of the target enterprise switch.  
The enterprise switch details page is displayed.
5. In the lower right part of the enterprise switch details page, click **Create Connection**.

The page for creating a Layer 2 connection is displayed.

6. Configure the parameters as prompted. For details, see [Table 2-1](#).

**Table 2-1** Parameter descriptions

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, that is, the VPC that the local tunnel subnet belongs to. You do not need to set this parameter.	vpc-01
Layer 2 Connection Subnet	<p>Mandatory</p> <p>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.</p> <ul style="list-style-type: none"><li>• 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.</li><li>• A VPC subnet that has been used a Layer 2 connection cannot be used by any other Layer 2 connections or enterprise switches.</li></ul>	subnet-01
Interface IP Address	<p>Mandatory</p> <p>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.</p>	Automatically assign
Remote Access Information > Tunnel VNI	<p>Mandatory</p> <p>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.</p>	10001
Remote Access Information > Tunnel IP Address	<p>Mandatory</p> <p>IP address of the VXLAN tunnel used by the on-premises data center to connect to the enterprise switch.</p>	-

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 <b>4789</b> 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: <ul style="list-style-type: none"><li>• Must contain 1 to 64 characters.</li><li>• Can contain letters, digits, underscores (_), hyphens (-), and periods (.).</li></ul>	l2conn-01

7. 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.

## 2.2 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. Log in to the management console.
2. Click  in the upper left corner and select the desired region and project.
3. On the console homepage, choose **Networking > Enterprise Switch**.  
The **Enterprise Switch** page is displayed.
4. Click the name of the target enterprise switch.  
The enterprise switch details page is displayed.
5. In the lower part of the enterprise switch details page, view the basic information and topology of a Layer 2 connection.

## 2.3 Modifying a Layer 2 Connection Name

### Scenarios

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

## Procedure

1. Log in to the management console.
2. Click  in the upper left corner and select the desired region and project.
3. On the console homepage, choose **Networking > Enterprise Switch**.  
The **Enterprise Switch** page is displayed.
4. Click the name of the target enterprise switch.  
The enterprise switch details page is displayed.
5. In the lower part of the enterprise switch details page, locate the Layer 2 connection.
6. Click  next to the Layer 2 connection name and enter a new name.
7. Click .

## 2.4 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. Log in to the management console.
2. Click  in the upper left corner and select the desired region and project.
3. On the console homepage, choose **Networking > Enterprise Switch**.  
The **Enterprise Switch** page is displayed.
4. Click the name of the target enterprise switch.  
The enterprise switch details page is displayed.
5. In the lower part of the enterprise switch details page, locate the Layer 2 connection to be deleted.
6. Click **Delete Connection**.  
A confirmation dialog box is displayed.
7. Click **Yes**.  
This operation takes 10 to 30 seconds to complete.

# 3 Permissions Management

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## 3.1 Creating a User and Granting 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.
- Entrust an account or a cloud service to perform professional and efficient O&M on your enterprise switch resources.

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

IAM can be used free of charge. You pay only for the resources in your account. For more information about IAM, see [IAM Service Overview](#).

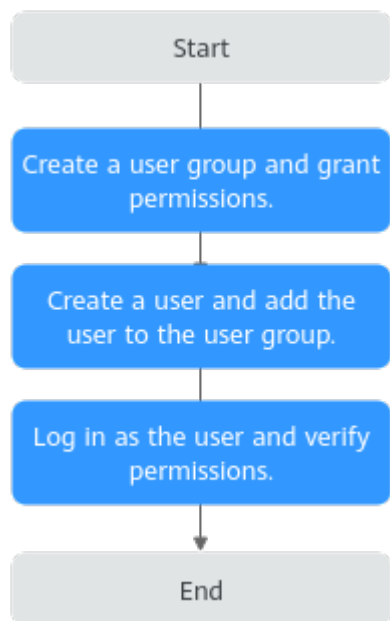
[Figure 3-1](#) shows the procedure for granting permissions.

### 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 3-1** 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 **VPCReadOnlyAccess** 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 **VPCReadOnlyAccess** permission has taken effect.
  - Choose any other service in the **Service List**. If a message appears indicating that you have insufficient permissions to access the service, the **VPCReadOnlyAccess** policy has already taken effect.

# 4 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](#)

**Table 4-1** Enterprise switch metrics

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



ID	Name	Description	Value Range	Monitored Object	Monitoring Interval (Raw Data)
down_bandwidth	Inbound bandwidth	Network traffic per second going into the enterprise switch Unit: bit/s	$\geq 0$	Enterprise switch	1 minute
up_stream	Outbound Traffic	Network traffic going out of the enterprise switch Unit: byte	$\geq 0$	Enterprise switch	1 minute
down_stream	Inbound Traffic	Network traffic going into the enterprise switch Unit: byte	$\geq 0$	Enterprise switch	1 minute
up_pps	Outbound PPS	Packets per second going out of the enterprise switch Unit: packet/s	$\geq 0$	Enterprise switch	1 minute
down_pps	Inbound PPS	Packets per second going into the enterprise switch Unit: packet/s	$\geq 0$	Enterprise switch	1 minute

## Dimensions

The metric measurement dimension of an enterprise switch is **instance\_id**.

Key	Value
instance_id	Enterprise switch

## 4.2 Viewing Metrics

### Scenarios

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

### Procedure

**Step 1** Log in to the management console.

**Step 2** Click **Service List**. Under **Management & Governance**, click **Cloud Eye**.

The **Cloud Eye** console is displayed.

**Step 3** In the left navigation pane, choose **Cloud Service Monitoring > Enterprise Switch**.

The enterprise switch list is displayed.

**Step 4** In the enterprise switch list, locate the row that contains the enterprise switch and click **View Metric** in the **Operation** column.

The metrics are displayed.

**Step 5** View metrics of the enterprise switch.

 **NOTE**

For details about querying metrics, see [Querying Cloud Service Monitoring Metrics](#).

----End

## 4.3 Creating Alarm Rules

### Scenarios

This section describes how to create alarm rules and notifications for enterprise switches.

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.

If you create an alarm rule for a metric, you can timely know metric exceptions and rectify the exceptions.

### Procedure

**Step 1** Log in to the management console.

**Step 2** Click **Service List**. Under **Management & Governance**, click **Cloud Eye**.

The **Cloud Eye** console is displayed.

**Step 3** In the left navigation pane, choose **Cloud Service Monitoring > Enterprise Switch**.

The enterprise switch list is displayed.

**Step 4** In the enterprise switch list, locate the row that contains the enterprise switch and click **Create Alarm Rule** in the **Operation** column.

The **Create Alarm Rule** page is displayed.

**Step 5** On the **Create Alarm Rule** page, configure parameters as prompted.

 **NOTE**

For details about the parameters on the **Create Alarm Rule** page, see [Creating an Alarm Rule](#).

----End

## 4.4 Storing Monitoring Data to OBS Buckets

### Scenarios

This section describes how to configure OBS for enterprise switches to store their historical monitoring data.

Raw monitoring data of metrics is kept for only two days on Cloud Eye. For permanent data storage, enable Object Storage Service (OBS), and store raw monitoring data to OBS buckets.

### Procedure

**Step 1** Log in to the management console.

**Step 2** Click **Service List**. Under **Management & Governance**, click **Cloud Eye**.

The **Cloud Eye** console is displayed.

**Step 3** In the left navigation pane, choose **Cloud Service Monitoring > Enterprise Switch**.

The enterprise switch list is displayed.

**Step 4** In the enterprise switch list, locate the row that contains the enterprise switch and click **Configure Storage** in the **Operation** column.

The **Configure Storage** page is displayed.

**Step 5** On the **Configure Storage** page, configure parameters as prompted.

----End

# A Change History

Released on	Description
2023-11-17	This issue is the sixth official release. Modified the following content: Added support for the yearly/monthly billing mode in <a href="#">Buying an Enterprise Switch</a> .
2023-02-27	This issue is the fifth official release. Modified the following content: Added basic enterprise switches in <a href="#">Buying an Enterprise Switch</a> .
2022-12-02	This issue is the third official release. Modified the following content: Added parameters related to enterprise switch specifications in <a href="#">Buying an Enterprise Switch</a> .
2022-07-22	This issue is the second official release. Modified the following content: <ul style="list-style-type: none"><li>• Added standard enterprise switches in <a href="#">Buying an Enterprise Switch</a>.</li><li>• Added <a href="#">Monitoring</a> about monitoring the network status of enterprise switches using Cloud Eye.</li></ul>
2022-04-20	This issue is the first official release.