

# Alibaba Cloud Smart Access Gateway

## Product Introduction

Issue: 20190627

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# Generic conventions

Table -1: Style conventions

Style	Description	Example
	This warning information indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.	 <b>Danger:</b> Resetting will result in the loss of user configuration data.
	This warning information indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.	 <b>Warning:</b> Restarting will cause business interruption. About 10 minutes are required to restore business.
	This indicates warning information, supplementary instructions, and other content that the user must understand.	 <b>Notice:</b> Take the necessary precautions to save exported data containing sensitive information.
	This indicates supplemental instructions, best practices, tips, and other content that is good to know for the user.	 <b>Note:</b> You can use Ctrl + A to select all files.
>	Multi-level menu cascade.	Settings > Network > Set network type
<b>Bold</b>	It is used for buttons, menus, page names, and other UI elements.	Click OK.
<code>Courier</code> font	It is used for commands.	Run the <code>cd / d C :/ windows</code> command to enter the Windows system folder.
<i>Italics</i>	It is used for parameters and variables.	<code>bae log list --instanceid Instance_ID</code>
[ ] or [a b]	It indicates that it is a optional value, and only one item can be selected.	<code>ipconfig [-all -t]</code>

Style	Description	Example
<b><code>{}</code> or <code>{a b}</code></b>	It indicates that it is a required value, and only one item can be selected.	<code>swich {stand   slave}</code>



# Contents

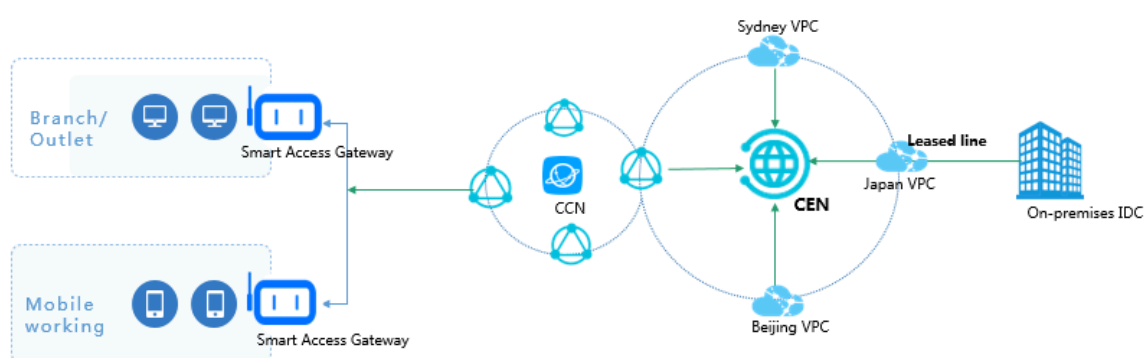
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# 1 What is Smart Access Gateway?

Smart Access Gateway is an all-in-one solution for connecting local branches to the Alibaba Cloud. With Smart Access Gateway, enterprises can access Alibaba Cloud through the Internet using a fully encrypted connection, allowing businesses to experience a more intelligent, more reliable, and more secure network. Both Smart Access Gateway and Smart Access Gateway (Software) are provided. Smart Access Gateway is a physical device used for site-to-site connection by using a leased line, a broadband link, or a 4G link. Smart Access Gateway (Software) is used for point-to-site connection.



## Components

- Smart Access Gateway instance

A Smart Access Gateway instance is the logic mapping of a Smart Access Gateway device or a Smart Access Gateway (Software) client. You can operate the device or the software client by managing the instance in the console.

- Smart Access Gateway device

Smart Access Gateway provides devices that are used by local branches to access. After you complete the payment, Alibaba Cloud sends the device to you. You can view the delivery status of the device, and then configure and manage the device through the console. For more information, see [Device overview](#).



### Note:

Only Smart Access Gateway corresponds to a device.

- **Alibaba Cloud network client**

End users of Smart Access Gateway (Software) can achieve mobile access to an intranet through an Alibaba Cloud network client.

- **Cloud Connect Network**

Cloud Connect Network (CCN) is another important component of Smart Access Gateway. It is a device access matrix composed of Alibaba Cloud distributed Smart Access Gateways.

You can add multiple Smart Access Gateway devices to a CCN instance and then attach the CCN instance to a Cloud Enterprise Network (CEN) instance to connect the local branches to the Alibaba Cloud.

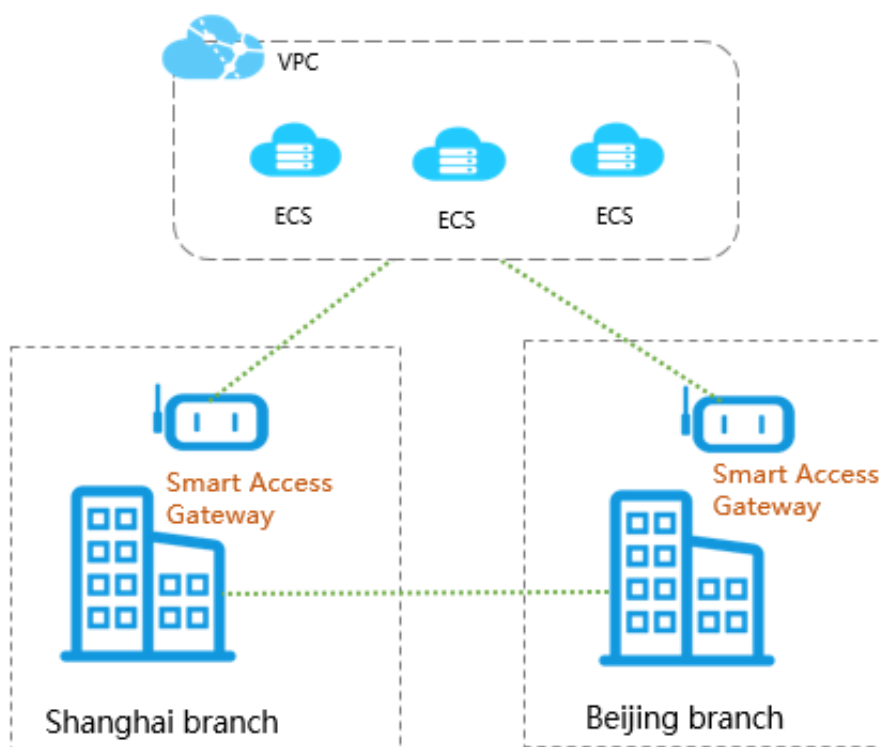
The CCN instance and the Smart Access Gateway instances to be added must be in the same area. If the CCN areas and CEN areas are the same, the local branch can directly access Alibaba Cloud without additional configurations required. For more information, see [Cloud Connect Network](#).

- **Express Cloud Connect**

Express Cloud Connect is a service for connecting to the cloud that features high reliability, high performance, high speed and low latency. It is based on the capabilities of Smart Access Gateway and built-in routing encapsulation technology, and is integrated with one or more physical connections provided by carriers. For more information, see [#unique\\_6](#).

## Scenarios of Smart Access Gateway

Smart Access Gateway connects organizations (such as local data centers, branches, and outlets) to Alibaba Cloud, allowing you to implement highly scalable services and easily establish a hybrid cloud.



### Scenarios of Smart Access Gateway (Software)

Smart Access Gateway (Software) enables Alibaba Cloud network clients to access Alibaba Cloud through dial-up. It is suitable for the following scenarios:

- Mobile working and remote O&M.
- Test before purchasing a device.

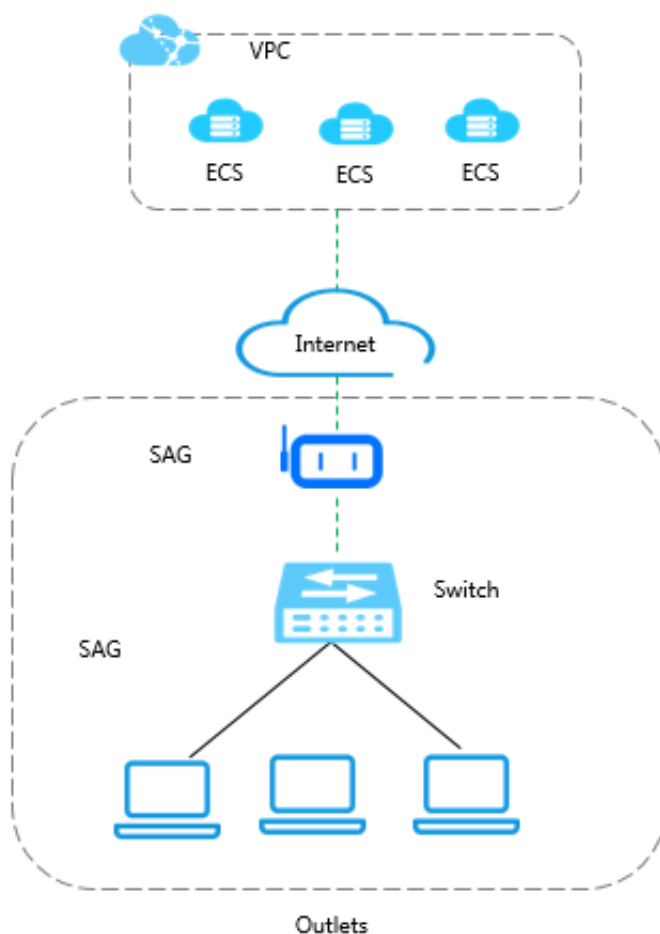
## 2 Smart Access Gateway device

### 2.1 Device overview

Smart Access Gateway provides two types of devices to meet different demands. The SAG-100WM device is suitable for connecting small branches and outlets to Alibaba Cloud through inline mode, and the SAG-1000 device is suitable for connecting the headquarters to Alibaba Cloud to meet the networking demands of large networks.

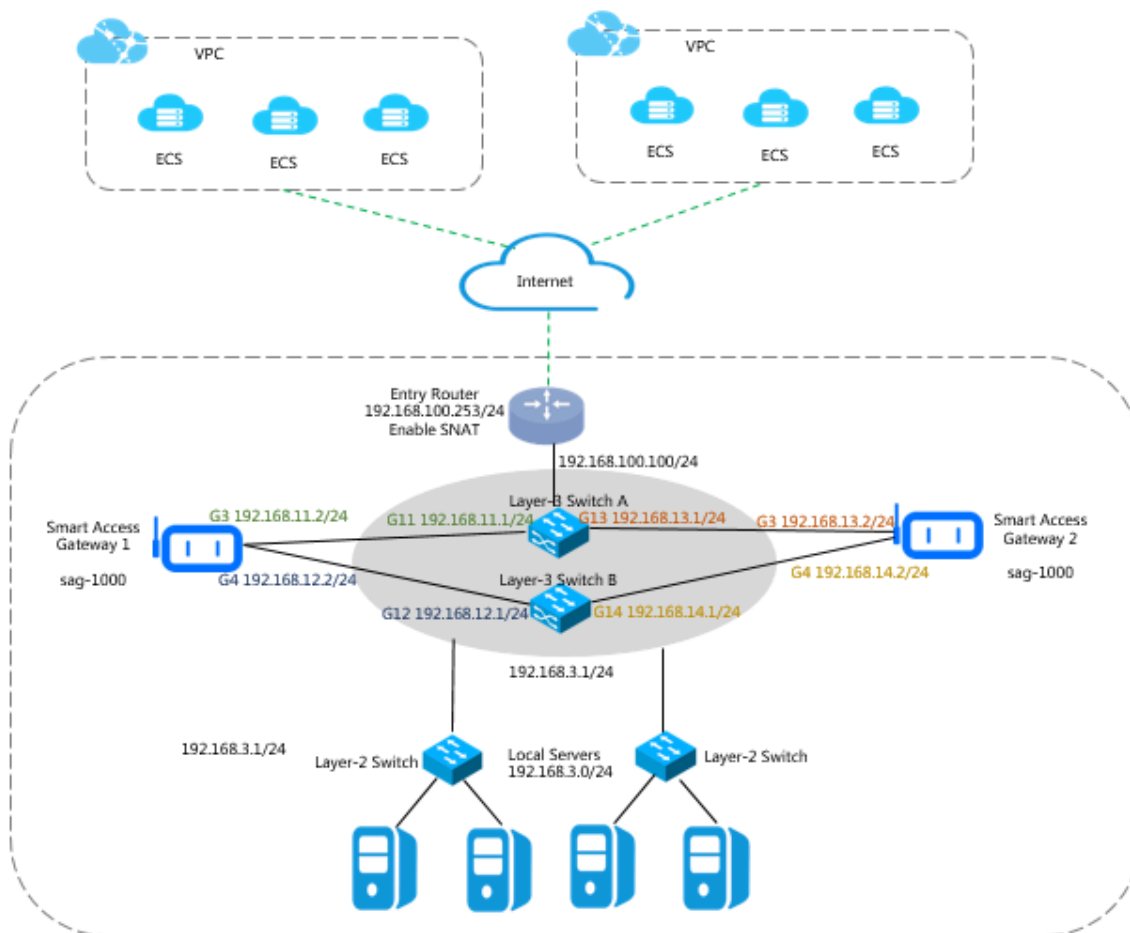
#### SAG-100WM

The SAG-100WM device is suitable for connecting small branches and outlets to Alibaba Cloud through the inline mode. It supports WAN and 4G dual-link backup. For more information, see [SAG-100WM overview](#).



## SAG-1000

The SAG-1000 device is suitable for connecting the headquarters to Alibaba Cloud. It meets the networking demands of large networks and adopts the one-arm mode which does not change the current network configurations. For more information, see [SAG-1000 overview](#).



## 2.2 SAG-100WM

SAG-100WM devices are suitable for connecting small branches and outlets to Alibaba Cloud through inline mode.

### Specifications

Property	SAG-100WM
Operating environment	Indoor environment (no fan provided)
Operating temperature	0°C–45°C
Storage temperature	-40°C–70°C

Property	SAG-100WM
Power	12 V DC
Power consumption	12 W
Network interface	Two GE/FE RJ45 WAN ports
	Three GE/FE RJ45 LAN ports
Wi-Fi	IEEE 802.11 b/g/n, 2.4 G 150 Mbps, 20 terminals, 100m2 coverage
4G LTE (Mainland China)	LTE FDD: B1, B3, B5, B8
	LTE TDD: B38, B39, B40, B41
	WCDMA: B1, B5, B8
	TD SCDMA: B34, B39
	GSM: B3, B8
	CDMA EVDO/1X: 800M
4G LTE (Outside China)	LTE FDD: B1, B3, B5, B8
	WCDMA: B1, B5, B8
	GSM: B3, B8
USB	USB 2.0, 500ma

### Accessories

After receiving the Smart Access Gateway device, check that the following items are provided:

- A Smart Access Gateway device
- A power cable



#### Note:

If any item is missing or damaged, contact Alibaba Cloud after-sales personnel.

### Front panel

The following is an overview about a Smart Access Gateway device of the Type 1 category. (Types 2, although different in appearance, possess the same functions as Type 1 devices.)

- **Front panel:** There are five LED indicators on the front panel.

LED indicator	Description
LTE	Indicates whether the device communication is normal: <ul style="list-style-type: none"><li>- Flickering: Data transmission is normal.</li><li>- Off: No card is inserted.</li></ul>
WAN	Indicates the Ethernet status of the device: <ul style="list-style-type: none"><li>- On: The device is connected to the Ethernet.</li><li>- Flickering: Data transmission is normal.</li><li>- Off: The device is not connected to the Ethernet.</li></ul>
WIFI	Indicates the WIFI connection status of the device: <ul style="list-style-type: none"><li>- On: The WLAN is enabled.</li><li>- Flickering: Data transmission is normal.</li><li>- Off: The WLAN is not enabled.</li></ul>
RUN	Indicates the status of the Smart Access Gateway device: <ul style="list-style-type: none"><li>- On: The device is powered on.</li><li>- Flickering: Data transmission is normal.</li><li>- Off: The device is not powered on.</li></ul>
CLOUD	Indicates whether the device is connected to Alibaba Cloud: <ul style="list-style-type: none"><li>- On: The device is connected to the CEN.</li><li>- Off: The device is not connected to the CEN.</li></ul>

- **Rear panel:** There is one reset button, one SIM slot, one USB port, two WAN ports, three LAN ports, and a power interface on the rear panel of Smart Access Gateway:

- **RESET button**

To restore the Smart Access Gateway to its default configurations, press and hold the reset button for five seconds while the device is powered on.

The default administration IP address of the Smart Access Gateway device is 192.168.0.1.

- **SIM slot**

Insert a SIM card into the slot.

- **USB interface**

Currently, you cannot use a 4G USB to access the Internet.

- **WAN port**

The WAN port is used for accessing the Internet. It supports SNAT forwarding, dynamic IP, static IP, and PPoE.

- **LAN port**

LAN ports are used for connecting local clients and can be connected to the switch through configured routes.

- **DC power socket**

The power interface is on the far right side of the panel. The power supply must be 12-V DC power supply.



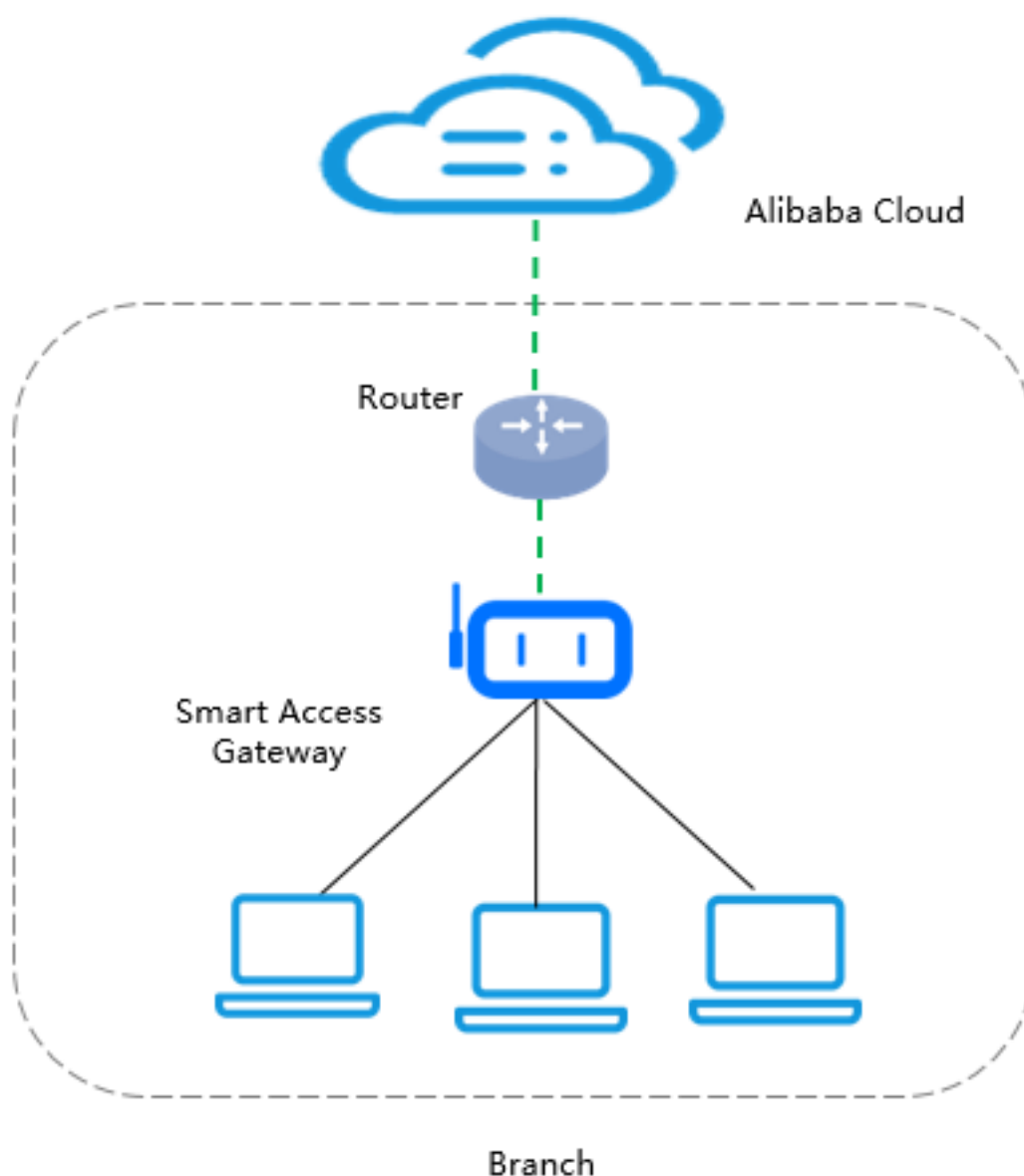
**Note:**

We recommend that you use the original power cable.

## Networking mode

The SAG-100WM device connects local clients to Alibaba Cloud through inline mode. The network topology is unchanged for this device.





## 2.3 SAG-1000

The SAG-1000 device is suitable for connecting the headquarters to Alibaba Cloud. It meets the networking demands of large networks and adopts the one-arm mode which does not change the current network configurations.

### Specifications

Property	SAG-1000
Casing	Metal, matte black, mountable
Size	1 U, halfwidth
Operating environment	Indoors
Operating temperature	0°C–45°C

Property	SAG-1000
Storage temperature	-40°C–70°C
Power supply	12 V DC (Power adapter and power cable included)
Power consumption	<60 W
Interface	Two SFP optical ports
	The number of electric ports varies by manufacturer. Generally, four or six GE/FE RJ45 electric ports are provided.

## Accessories

After receiving the Smart Access Gateway device, check that the following items are provided:

- A Smart Access Gateway device
- A power cable



### Note:

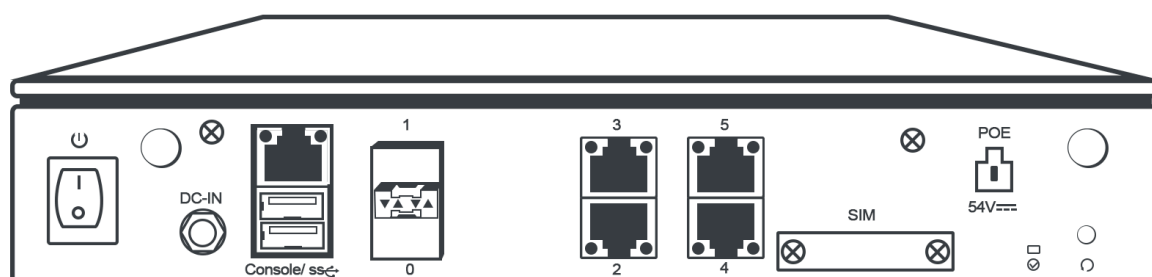
If any item is missing or damaged, contact Alibaba Cloud after-sales personnel.

## Type 1 (size: 250×193×44mm)

- Front panel

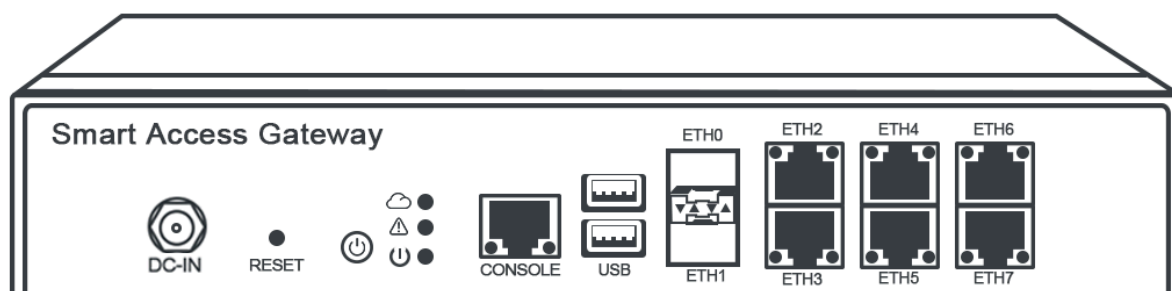


- Rear panel



**Type 2 (size: 241×220×44mm)**

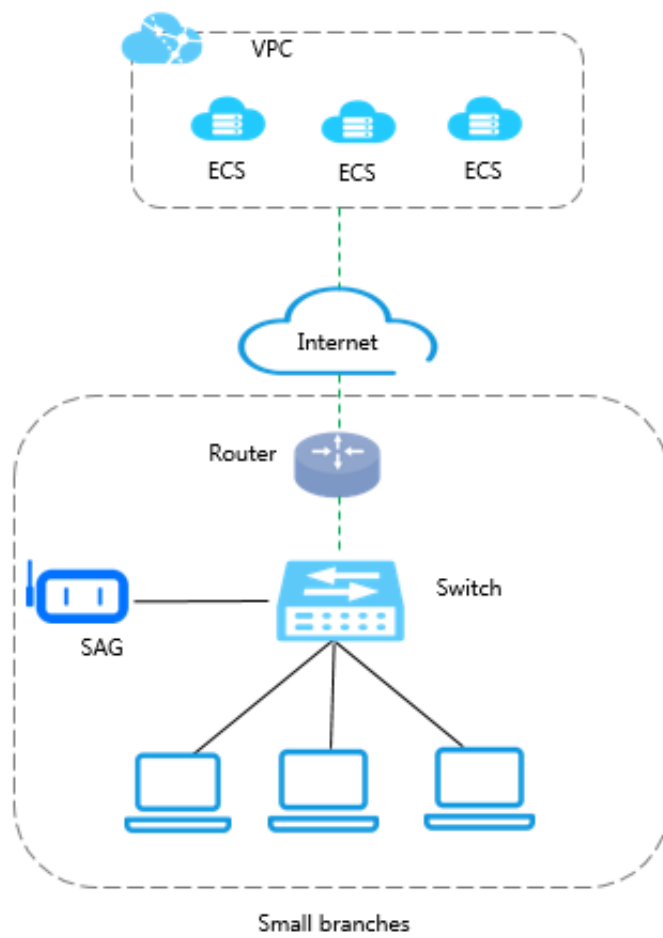
- Front panel



- Rear panel

**Networking mode**

The SAG-1000 Smart Access Gateway device is connected to the switch through one-arm mode. This means it can connect local clients to Alibaba Cloud without changing the current network topology.



## 3 Features

Smart Access Gateway provides devices of two models. The following table describes the differences in functionality between the device models:

Feature	Functions	Description	SAG-100WM	SAG-1000	Related documents
Basic connectivity	Static IP address for port	Configure a static IP address for the port.	√	√	<a href="#">SAG-100WM configuration guide</a> <a href="#">SAG-1000 configuration guide</a>
	PPPoE connections through WAN port	Access the Internet through broadband (dial-up mode).	√	×	<a href="#">SAG-100WM configuration guide</a>
	4G support	Access the Internet by using a 4G connection.	√ Built-in LTE	√ External LTE	<a href="#">SAG-100WM configuration guide</a> <a href="#">Configuration guide</a>
	LAN port DHCP	A newly established site automatically obtains the IP address.	√	×	<a href="#">SAG-100WM configuration guide</a>
	WIFI access	Access the Internet through Wi-Fi.	√	×	<a href="#">SAG-100WM configuration guide</a>

Feature	Functions	Description	SAG-100WM	SAG-1000	Related documents
	Static routing	Existing on-premises networks are connected through static routing.	√	√	<a href="#">SAG-100WM configuration guide</a> <a href="#">SAG-1000 configuration guide</a>
	OSPF	Support OSPF protocol.	×	√	<a href="#">SAG-1000 web configuration</a>
	Internet SNAT	Access the Internet through the inline networking mode.	√	×	<a href="#">SAG-100WM inline configuration tutorial</a>
	Cross-region access to VPC	Access from one point to connect target VPCs around the globe through the intranet.	√	√	<a href="#">Cross-border access to VPC</a>
	Access control	Allow or forbid IP addresses in access control list (ACL) rules to access the Internet or intranet.	√	√	<a href="#">Configure an access control list</a>
Configuration	ZTP (Zero Touch Provisioning)	Zero-configuration deployment.	√	×	-

Feature	Functions	Description	SAG-100WM	SAG-1000	Related documents
Networking mode	Inline mode	A newly established site uses Smart Access Gateway as the egress by which to access Alibaba Cloud.	√	×	<a href="#">SAG-100WM inline configuration tutorial</a>
	One-arm mode	An existing site accesses Alibaba Cloud through SAG without changing the existing network architecture.	×	√	<a href="#">SAG-1000 dual-device one-arm mode configuration tutorial</a>
High availability	Physical connection backup	Add SAG as the backup link of an existing physical connection.	×	√	-
	Dual-link backup-WAN + 4G	An SAG instance uses dual links formed by broadband and 4G to access the Internet.	√	Coming soon	<a href="#">Link-level high availability configurations</a>

Feature	Functions	Description	SAG-100WM	SAG-1000	Related documents
	Dual-device cold backup	The two devices share the bandwidth and operate in active /standby mode. This means if the active device fails , traffic is immediately directed to the standby device.	√	×	<a href="#">Device-level high availability configurations</a>
	Dual-device hot backup	The two devices share the bandwidth and are online at the same time . Automatic detection and automatic switching are performed.	×	√	<a href="#">Device-level high availability configurations</a>



Feature	Functions	Description	SAG-100WM	SAG-1000	Related documents
	ECC + In	The two devices share the bandwidth and are online at the same time . Automatic detection and automatic switching are performed.	×	√	<a href="#">Device-level high availability configurations</a>
Security	VPN encryption	The connection is encrypted .	√	√	-
	Access control	Intranet ACL management .	√	√	-
	Offline device locking	Anti-theft , offline locking.	√	√	<a href="#">Lock an offline device</a>
Operation and maintenance	Remote reboot	Reboot the device on the console.	√	√	<a href="#">Reboot through the console</a>
	Remote software upgrading	Upgrade the software version on the console.	√	√	<a href="#">Upgrade the software version</a>
	Query the traffic	Query used traffic.	√	√	<a href="#">Monitor traffic</a>

Feature	Functions	Description	SAG-100WM	SAG-1000	Related documents
Monitoring	Device level monitoring	Send notifications if both the active and standby IPsec links of an SAG device fail.	√	√	<a href="#">Create an event alert</a>
	Link level monitoring	Send notifications when the device is online.	√	√	<a href="#">Create an event alert</a>

## 4 Benefits

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Smart Access Gateway is highly intelligent, secure, and reliable, and a unified management platform is provided for you to manage the gateway device.

### Intelligent

With highly automatic configurations and zero touch provisioning (ZTO), Smart Access Gateway automatically adapts the network topology changes.

### Reliable

Nearby access within a city through the Internet is implemented. Additionally, multiple local branches can access the Alibaba Cloud through the device-level or link-level active/standby mode.

- Device-level disaster recovery

Dual-device active/standby mode is implemented so that the traffic is immediately distributed to the standby device when the active device fails.

- Link-level disaster recovery

Each gateway device implements dual-link sealed access. The optimal link is automatically detected and assigned to be the active link. Traffic is distributed to the standby link when the active link fails.

### Secure

The local branches and the Alibaba Cloud are connected through an encrypted private network and the transmission over the Internet is also encrypted.

- Data encryption

Both IKE and IPsec protocols are used to encrypt the transmitted data to guarantee data security.

- Anti-replay

The data source is authenticated to prevent replay attacks.

- Anti-tampering


The data is authenticated through multiple ways.

**Centralized management**

The Alibaba Cloud console provides a central platform for managing and configuring Smart Access Gateway.

## 5 Limits

The following table describes the maximum limits of different functions of Smart Access Gateway.

Item	Limit
The number of Smart Access Gateway instances under each account	500
The number of CCN instances under each account	10
The number of private CIDR blocks per Smart Access Gateway instance	5
The number of CCN instances that can be attached to one Smart Access Gateway instance	1
The number of CEN instances that can be attached to one CCN instance	1
The number of access control lists associated with a Smart Access Gateway instance	1
	 <b>Note:</b> This limit cannot be adjusted.
The number of terminals that can connect to the SAG-100WM device through Wi-Fi	20

## 6 Terms

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Term	Description
Smart Access Gateway	Smart Access Gateway (SAG) is a one-stop solution for connecting local branches to the Alibaba Cloud. With Smart Access Gateway, enterprises can securely access Alibaba Cloud over the Internet, and enjoy a more intelligent and reliable connection.
Smart Access Gateway	<p>A hardware gateway device that is used by local clients to access Alibaba Cloud.</p> <p>You can purchase a gateway device by creating a Smart Access Gateway instance on the Alibaba Cloud console. Alibaba Cloud then delivers the device to the address you provided. You can view the delivery status and manage the device on the Smart Access Gateway console.</p>
Cloud Connect Network (CCN)	<p>A device access matrix composed of Alibaba Cloud distributed access gateways.</p> <p>To connect local branches to Alibaba Cloud, you can add multiple Smart Access Gateway devices to a CCN instance and then attach the CCN instance to a Cloud Enterprise Network (CEN) instance.</p>