

**eSpace EGW1500E Enterprise Gateway
V100R001C07**

Product Description

Issue **04**
Date **2012-07-18**

Copyright © Huawei Technologies Co., Ltd. 2012. 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



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 the warranty of any kind, express or implied.

Huawei Technologies Co., Ltd.

Address: Huawei Industrial Base
Bantian, Longgang
Shenzhen 518129
People's Republic of China

Website: <http://enterprise.huawei.com>

Contents

1 Product Positioning and Highlights	1
1.1 Product Positioning	1
1.2 Highlights.....	1
2 Application Scenarios	3
2.1 SOHO Application	3
2.2 Enterprise Branch Application	5
3 Architecture	7
3.1 Appearance	7
3.2 Ports and Buttons	8
3.3 Indicators.....	10
4 Functions and Features	12
4.1 Voice Features	12
4.1.1 Voice Access	12
4.1.2 Voice Services	13
4.1.3 Voice QoS	15
4.1.4 Reliability.....	15
4.2 Data Features.....	16
4.3 QoS.....	18
4.4 Security	18
5 Operation and Maintenance	21
5.1 Web-based Management	21
5.2 Unified Network Management.....	22
6 Technical Specifications, Standards, and Certificates	23
6.1 Technical Specifications.....	23
6.2 Standards.....	24
6.3 Certificates	28
A Glossary	29

1 Product Positioning and Highlights

About This Chapter

This topic describes the product positioning and highlights of the eSpace EGW1500E.

1.1 Product Positioning

Huawei eSpace EGW1500 series are multi-service access gateways that integrate applications such as voice, data, and broadband connections and provide a complete access solution. It is an optimal choice for Small Office Home Office (SOHO) users and small enterprises to establish an integrated office network.

1.2 Highlights

This topic describes the product highlights of the EGW1500E. Providing various services and ports, the EGW1500E features cost-effectiveness, high reliability and security, easy deployment, and simplified maintenance.

1.1 Product Positioning

Huawei eSpace EGW1500 series are multi-service access gateways that integrate applications such as voice, data, and broadband connections and provide a complete access solution. It is an optimal choice for Small Office Home Office (SOHO) users and small enterprises to establish an integrated office network.

The eSpace EGW1500 provides multiple uplink ports for networks in different uplink modes. It also provides user ports to establish flexible office networks.

1.2 Highlights

This topic describes the product highlights of the EGW1500E. Providing various services and ports, the EGW1500E features cost-effectiveness, high reliability and security, easy deployment, and simplified maintenance.

High Reliability and Security

The EGW1500E's reliability reaches 99.99%. The mean time between failures (MTBF) is over 30000 hours, and the mean time to repair (MTTR) is less than 30 minutes.

The EGW1500E provides various mechanisms such as dual-homing, power-off survival, local survival, 3G connection, and QoS to ensure the reliability, and uses advanced technologies such as VPN, URL filtering, NAT, and DMZ to enhance network security.

Multi-Service Integration

The EGW1500E integrates various functions such as broadband access, voice, routing, security, wireless network, firewall, voice mail and VPN. Multiple services can be deployed on the same node, which significantly reduces the initial investment and long-term maintenance costs of the enterprise network. The EGW1500E uses an advanced hardware platform and software architecture to provide users with an integrated network solution with a minimum investment.

Various Ports

The EGW1500E provides various uplink ports for different networking scenarios, including WAN, ADSL, USB, and FXO ports. The EGW1500E also provides diversified user ports such as Wi-Fi, LAN, and FXS ports to set up flexible office networks.

Easy Installation and Maintenance

The EGW1500E is a box-shaped device that can be placed on a desk or mounted on a wall. The EGW1500E provides standard external ports that are clearly marked to facilitate installation and cable connection. The EGW1500E uses standard connection parts and does not require a dedicated installation tool.

Users can configure the EGW1500E on web pages. The web management system provides step-by-step configuration guidance for quick installation.

Efficient Remote Maintenance

The EGW1500E ensures the remote access security. Users can access the EGW1500E through an uplink port (WAN, ADSL, or 3G) to perform remote configuration and maintenance.

The EGW1500E, complying with the TR-069 protocol, connects to the Element Management System (EMS) server (such as the eSpace EMS) to enable the remote configuration and maintenance functions, such as software version upgrade, configuration file backup and restoration, and device status monitoring.

2 Application Scenarios

About This Chapter

The EGW1500E supports the following application scenarios:

- Functions as a gateway to provide the Internet access and small-capacity voice services for small enterprises or Small Office Home Office (SOHO) users.
- Integrates with the eSpace UC solution to provide a comprehensive access solution for small branches.

2.1 SOHO Application

The EGW1500E provides a small-capacity solution integrating voice and broadband services for small enterprises or SOHO users.

2.2 Enterprise Branch Application

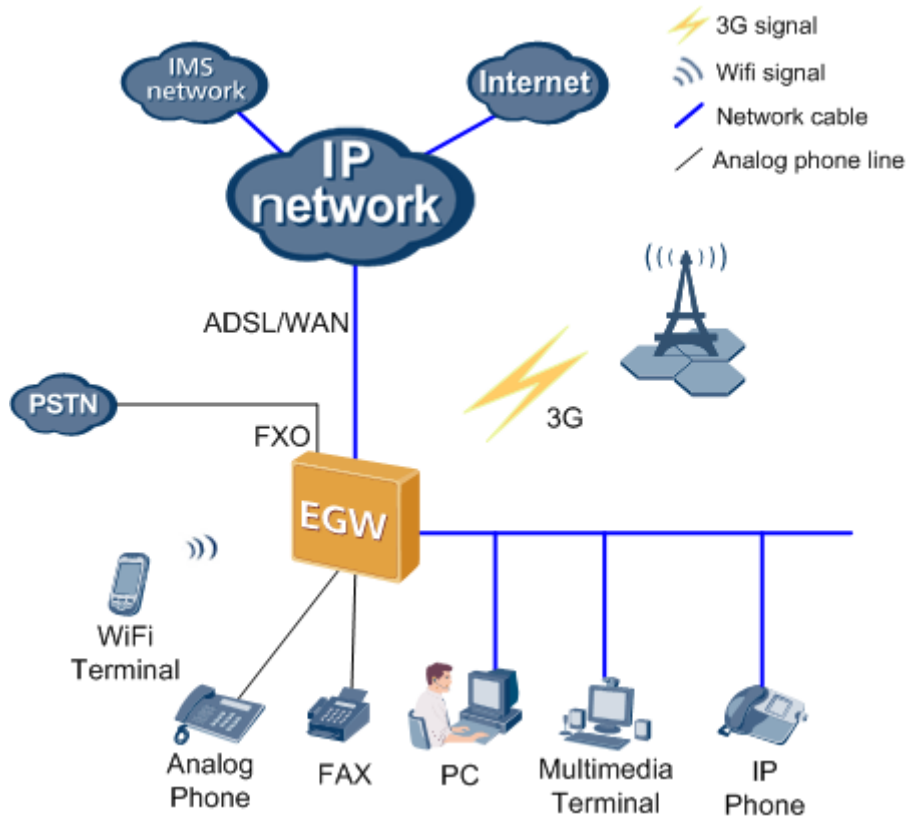
The EGW1500E can be integrated with the eSpace UC solution and deployed in small-sized enterprise branches. As the network ingress, the EGW1500E provides a comprehensive access solution for enterprise branches.

2.1 SOHO Application

The EGW1500E provides a small-capacity solution integrating voice and broadband services for small enterprises or SOHO users.

[Figure 2-1](#) shows the application of the EGW1500E in SOHOs.

Figure 2-1 Application of the EGW1500E in SOHOs



Uplink Modes

The EGW1500E supports three uplink access modes: Asymmetric Digital Subscriber Line (ADSL), Wide Area Network (WAN), and 3G, as shown in Figure 2-1.

The EGW1500E can connect to an IP network through an ADSL or a WAN port. When neither an ADSL nor a WAN port is available, users can use a USB-based 3G data card to connect to a 3G network to transmit voice and data streams (excluding fax data).

NOTE

The ADSL and WAN connections are two parallel modes, which cannot be used together or back each other up.

Voice Application

The EGW1500E supports the IP PBX function. Users can use different terminals (such as analog phones, fax machines, and IP phones) to connect to the EGW1500E for internal communication. In addition, the EGW1500E acts as an agent to register users with the IP Multimedia Subsystem (IMS) or Next Generation Network (NGN) to implement outgoing calls and provide voice services.

The PHONE1 port supports the power-off survival function. When the EGW1500E encounters a power failure, the analog phone connected to the PHONE1 port can be connected to the PSTN through the FXO port. In this way, the call function is still available even when the EGW1500E is powered off.

Data Application

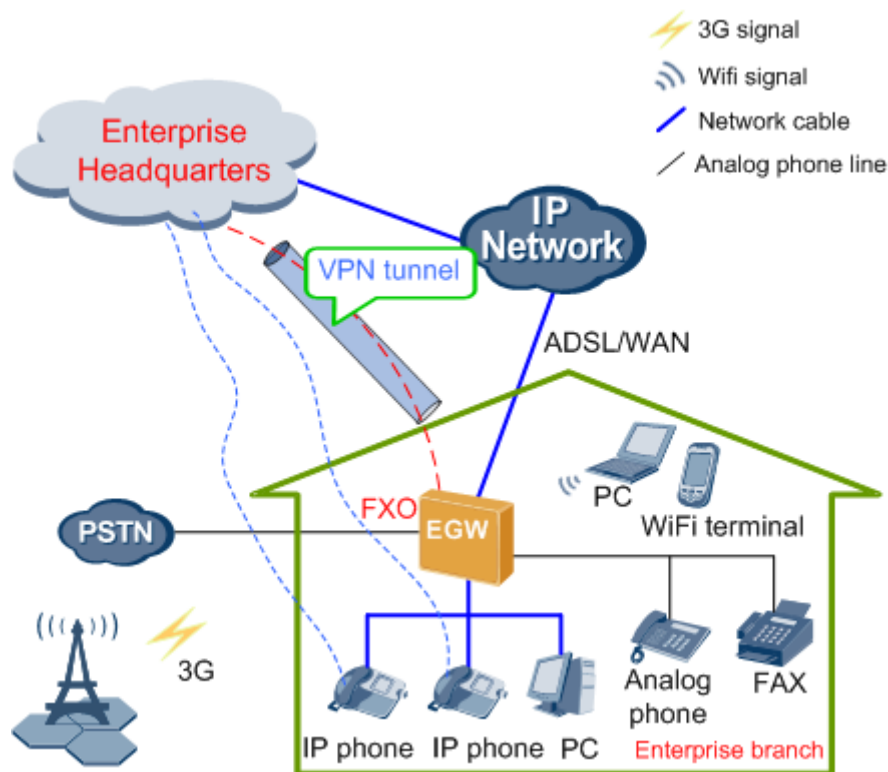
The EGW1500E can be used to set up an enterprise network in LAN or WLAN mode. LAN users use the EGW1500E to connect to the Internet to use various services. The EGW1500E also supports various data functions, such as WLAN, DNS, VLAN, Dynamic Host Configuration Protocol (DHCP), static routing, Quality of Service (QoS), Network Address Translation (NAT), Virtual Private Network (VPN), URL filtering, Demilitarized Zone (DMZ), virtual server, and MAC address filtering.

2.2 Enterprise Branch Application

The EGW1500E can be integrated with the eSpace UC solution and deployed in small-sized enterprise branches. As the network ingress, the EGW1500E provides a comprehensive access solution for enterprise branches.

Figure 2-2 shows the application of the EGW1500E in enterprise branches.

Figure 2-2 Application of the EGW1500E in enterprise branches



Uplink Modes

The EGW1500E supports three uplink access modes: ADSL, WAN, and 3G, as shown in Figure 2-2.

The EGW1500E can connect to an IP network through an ADSL or a WAN port. When neither an ADSL nor a WAN port is available, users can use a USB-based 3G data card to connect to a 3G network to transmit voice and data streams (excluding fax data).



NOTE

The ADSL and WAN connections are two parallel modes, which cannot be used together or back each other up.

Voice Application

Users within the enterprise branches are registered with the SIP server on the central node at the headquarters. The user numbers are allocated and synchronized to the EGW1500E by the data synchronization server. In the eSpace UC solution, the SIP server on the central node at the headquarters controls incoming and outgoing calls of enterprise branch users and provides voice services for these users.

The EGW1500E can function as the local PSTN trunking gateway to process incoming and outgoing calls for the local PSTN. This helps an enterprise reduce toll call fees.

The PHONE1 port supports the power-off survival function. When the EGW1500E encounters a power failure, the analog phone connected to the PHONE1 port can be connected to the PSTN through the FXO port. In this way, the call function is still available even when the EGW1500E is powered off.

Local Survival

The EGW1500E registers with the active and standby SIP servers at the same time. If the active and standby SIP servers are both faulty, the EGW1500E switches to the local survival mode to process intra-office calls as a local server. When the active or standby SIP server is restored, the EGW1500E exits the local survival mode.

Data Application

The EGW1500E can be used to set up an enterprise network in LAN or WLAN mode. LAN users use the EGW1500E to connect to the Internet to use various services. The EGW1500E also supports various data functions, such as WLAN, DNS, VLAN, DHCP, static routing, QoS, NAT, VPN, URL filtering, DMZ, virtual server, and MAC address filtering.

3 Architecture

About This Chapter

This topic describes the appearance, ports, and indicators of the EGW1500E.

3.1 Appearance

The EGW1500E is a box-shaped device that can be placed on a desk or mounted on a wall.

3.2 Ports and Buttons

This topic describes EGW1500E ports and buttons.

3.3 Indicators

This topic describes EGW1500E indicators.

3.1 Appearance

The EGW1500E is a box-shaped device that can be placed on a desk or mounted on a wall.

Its dimensions (H x W x D) are 35 mm x 305 mm x 175 mm, as shown in [Figure 3-1](#).

Figure 3-1 EGW1500E appearance



3.2 Ports and Buttons

This topic describes EGW1500E ports and buttons.

Figure 3-2 and Figure 3-3 shows the EGW1500E ports and buttons.

Figure 3-2 EGW1500E ports

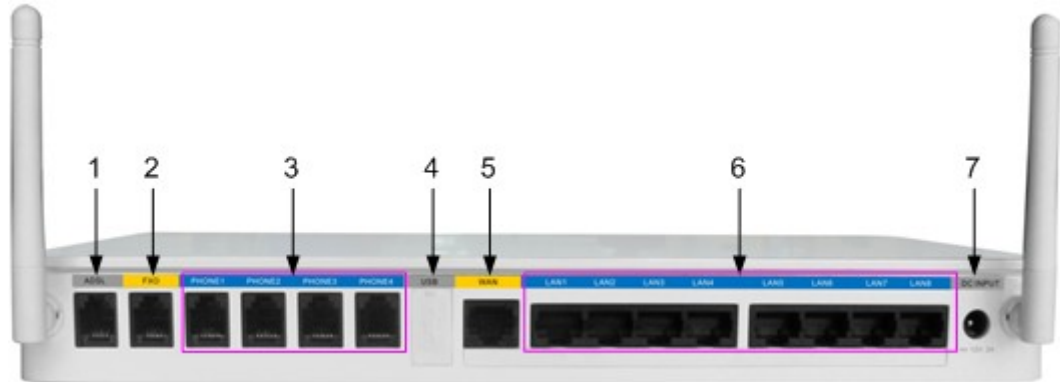


Figure 3-3 EGW1500E buttons

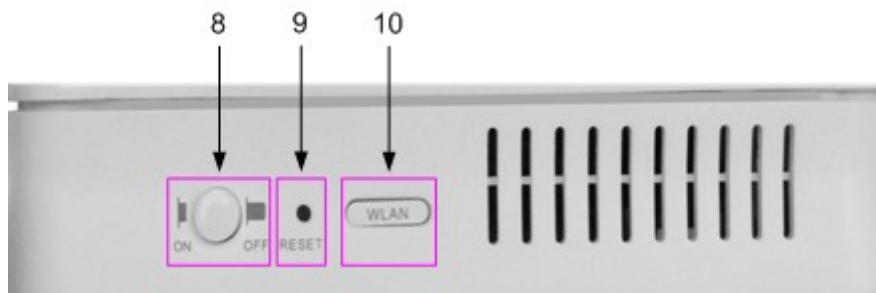


Table 3-1 describes the EGW1500E ports.

Table 3-1 EGW1500E ports and buttons

SN	Label	Quantity	Physical Port and Attribute	Function
1	ADSL	1	ADSL port RJ-11	Connects to the peer Digital Subscriber Line Access Multiplexer (DSLAM) through a telephone line to access the broadband network.
2	FXO	1	FXO port RJ-11	Enables phones connected to the EGW1500E to make calls. Enables the phone connected to PHONE1 to access the PSTN when the EGW1500E is powered off.

SN	Label	Quantity	Physical Port and Attribute	Function
3	PHONE1-4	4	POTS port RJ-11	<ul style="list-style-type: none"> Connects to analog phones and fax machines. PHONE1 supports power-off survival. One PHONE port can connect to only one analog phone. User line length (diameter: 0.4 mm) is equal to or less than 1 km. PHONE ports are only used indoors. <p>Ports specifications</p> <ul style="list-style-type: none"> The feed voltage is -48 V DC when an analog phone is in the on-hook state. The supply current is 25 mA when an analog phone is in the off-hook state. The value of the EGW1500E's ringing power is 50Vrms.
4	USB	1	USB port USB 2.0	Uses a 3G data card to connect to a 3G network.
5	WAN	1	WAN port RJ-45 MDI-X 10/100Base-TX Outdoor network port	Connects to the broadband network in WAN mode.
6	LAN1-8	8	LAN port RJ-45 MDI-X 10/100Base-TX Indoor network port	Connects to Ethernet devices such as local computers and IP phones to establish a LAN. When LAN ports connect to IP phones, they are only used indoors.
7	12 V DC, 2 A	1	Power supply port	Connects to the power supply adapter to provide power for the EGW1500E.
8	ON/OFF	1	Power switch	Switch for powering on and off the EGW1500E.
9	RESET	1	Reset button	Restores the factory settings if this button is held down for more than 6 seconds. Restarts the EGW1500E if this button is held down less than 6 seconds.

SN	Label	Quantity	Physical Port and Attribute	Function
10	WLAN	1	Wi-Fi control button	<p>Enables the Wi-Fi Protected Setup (WPS) function if this button is held down for more than 6 seconds.</p> <p>NOTE</p> <p>With the WPS function, the Wi-Fi terminal starts to authenticate the WPS. If the authentication lasts for more than 2 minutes, the function is not enabled.</p> <p>Enables or disables the WLAN function if this button is held down for less than 6 seconds.</p>

3.3 Indicators

This topic describes EGW1500E indicators.

Figure 3-4 shows the EGW1500E indicators.

Figure 3-4 EGW1500E indicators

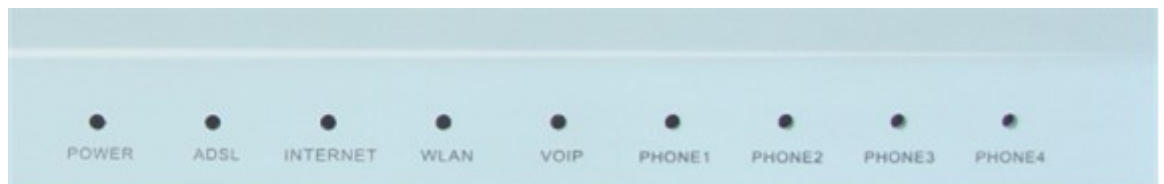


Table 3-2 describes the indicators on the EGW1500E front panel.

Table 3-2 Indicators on the EGW1500E front panel

Indicator	Indication	Description
POWER	Indicates the power status.	Steady on: The EGW1500E is powered on. Off: The EGW1500E is powered off.
ADSL	Indicates the ADSL connection status.	Steady on: The ADSL connection has been established and activated. Blinking: The ADSL connection is being activated. Off: The EGW1500E is powered off or the ADSL connection has not been established.
INTERNET	Indicates the WAN or 3G	Steady on: The EGW1500E works in routing mode and is connected to the WAN, but no data is being transmitted.

Indicator	Indication	Description
	connection status.	Blinking: The EGW1500E works in routing mode and is connected to the WAN, and data is being transmitted. Off: The EGW1500E works in bridge mode, works in routing mode but is disconnected from the WAN, or is powered off.
WLAN	Indicates the WLAN power or communication status.	Steady on: The WLAN has been enabled, but no data is being transmitted. Blinking: The WLAN has been enabled, and data is being transmitted. Off: The EGW1500E is powered off or the Wi-Fi function is disabled.
VOIP	Indicates the VoIP status.	Steady on: At least one VoIP user is registered with the SIP server and is in the idle state. Blinking: At least one VoIP user is working. Off: The EGW1500E is powered off or no VoIP user has been registered with the SIP server.
PHONE	Indicates the phone status.	Steady on: The analog phone is picked up. Off: The EGW1500E is powered off or the analog phone is hung up.

In addition to the indicators on the front panel, each network port has an indicator, as shown in [Table 3-3](#).

Table 3-3 EGW1500E network port indicators

Indicator	Description
Network port indicator	Steady on: The network port is properly connected. Off: The network port is disconnected. Blinking: Data is being transmitted.

4 Functions and Features

About This Chapter

With diversified functions and features, the EGW1500E provides users with various voice and data services.

4.1 Voice Features

4.2 Data Features

The EGW1500E provides various data services to meet requirements of different users.

4.3 QoS

The EGW1500E provides a complete QoS mechanism to ensure that core services are allocated with sufficient bandwidth.

4.4 Security

The EGW1500E provides various mechanisms to ensure the security of calls and transmitted data.

4.1 Voice Features

4.1.1 Voice Access

SIP Trunk

The SIP trunk supports the registration mode and static mode.

The EGW1500E supports only the SIP trunk in the registration mode. The SIP trunk sends a registration message to the SIP server to set up a dynamic link.

After being registered with the IMS or NGN network using the SIP trunk, the EGW1500E processes internal calls and SIP signaling for outer-office calls.

Common Mode

When functioning as a device on the access layer, the EGW1500E can register with the IMS or NGN network using the SIP trunk and process SIP signaling. When functioning as a small

IP-PBX device, the EGW1500E provides various functions, such as IP phone registration, call control, and protocol processing.

- A maximum of 20 SIP users can be registered.
- The EGW1500E provides four foreign exchange station (FXS) ports, connecting to a maximum of four POTS users.
- The EGW1500E supports a maximum of eight concurrent voice calls made by SIP users and POTS users. The maximum number of POTS calls varies according to codec standard:
 - Four concurrent POTS calls for G.711 and G.729
 - Two concurrent POTS calls for G.726 and G.722

The EGW1500E voice services comply with the following standards:

- G.711A, G.711u, G.729, G.726, and G.722
- SIP (RFC 3261-3265)
- SIP Session Timers (RFC 4028)
- SDP (RFC 2327)
- RTP/RTCP
- RFC2833

UC Mode

In UC mode, the EGW1500E can be registered with multiple SIP servers at the same time. Phones connecting to the EGW1500E are registered with the SIP server on the central node at the headquarters. All calls are processed by the SIP server at the headquarters.

When the EGW1500E is disconnected from the active and standby SIP servers, the EGW1500E automatically enters the local survival mode and functions as the local SIP server to implement internal user registration and process all calls.

The EGW1500E can function as the local PSTN trunking gateway to process incoming and outgoing calls for the local PSTN. This helps an enterprise reduce toll call fees.

Connecting to the PSTN Network

The EGW1500E provides one FXO port used to connect to the PSTN. An intra-office user dials the outgoing prefix and an inter-office user's number to make an outgoing call through the FXO port. An inter-office user dials the number that the PSTN carrier allocates to the FXO port to make an incoming call. The EGW1500E supports the switchboard and private line functions. By default, the switchboard function is enabled.

- The EGW1500E supports one FXO port.
- The FXO port supports only the one-stage dialing mode.
- Only one call can be made through the FXO port at a time.

4.1.2 Voice Services

This topic describes voice services supported by the EGW1500E. [Table 4-1](#) lists the voice services.

Table 4-1 Voice services

Type	Service
Voice service	Calling line identification presentation (CLIP)
	Switchboard service
	Private line service
	Call pickup
	Call waiting
	Three-way calling
	Call forwarding unconditional (CFU)
	Call forwarding busy (CFB)
	Call forwarding on no reply (CFNR)
	Anonymous call
	Called number presentation
	Called number presentation restriction
	Do not disturb (DND)
	Night service
	Call hold
	Malicious caller identification
	Call history
	Call transfer
	Outgoing call barring (OCB)
	Call back on busy (CBB)
	Voice message
	Message notification
Message retrieval	
Anonymous call rejection	
Automatic call rejection	
Fax service	T.30 and T.38 fax services
Fixed mobile convergence (FMC) service	Simultaneous ringing
	Sequential ringing
	Call switch
	Voice message

4.1.3 Voice QoS

This topic describes voice QoS policies supported by the EGW1500E.

VAD

Voice activity detection (VAD) is a technology used in speech coding and speech recognition where the presence or absence of human speech is detected. The VAD avoids unnecessary coding and transmission of silence packets in Voice over Internet Protocol (VoIP) applications, saving computation and network bandwidth.

CNG

Comfort noise generator (CNG) is used with VAD. When the VAD function is enabled and no packets are sent during the silent period, the listener may think that the call has disconnected. To avoid this, the EGW1500E enables the CNG function on the receiver end. The EGW1500E CNG technology complies with RFC3389.

EC

Echo cancellation (EC) is a process of removing echo from a voice communication to improve voice quality on a telephone call. In addition to improving subjective quality, this process increases the capacity achieved through silence suppression by preventing echo from traveling across a network. The EGW1500E EC technology complies with ITU-T G.168.

PLC

Packets are often lost on the connectionless IP network as a result of network congestion, buffer overflow, or bit error. A packet loss compensation (PLC) algorithm is used to minimize the effects of packet loss. Lost frames can be reconstructed during decoding based on the voice context, which ensures the quality of the received voice.

Jitter Buffer

When the jitter buffer function is enabled, received packets can be buffered and then retrieved and processed to remove jitter.

4.1.4 Reliability

The EGW1500E provides various technologies to ensure voice communication reliability.

Multi-SIP Registration-DR Mechanism in a Small Branch

Multi-SIP registration is a disaster recovery (DR) mechanism that ensures service continuity in emergencies such as SIP server breakdown. Functioning as a voice access device in small branches, the EGW1500E can register with two SIP servers at the same time. When the active SIP server is faulty, the EGW1500E switches services to the standby SIP server. When the active SIP server is restored, the EGW1500E switches services back to the active SIP server.

Power-off Survival

The EGW1500E provides an FXO port for power-off survival. When the EGW1500E is powered off, the analog phone connected to the PHONE port is automatically connected to the FXO port to access the PSTN. In this way, basic voice services are still available even when the EGW1500E is powered off.

Local Survival

Functioning as a voice access device in small branches, the EGW1500E supports local survival.

When the EGW1500E detects that it is disconnected from the SIP server on the central node at the headquarters, the EGW1500E processes local calls.

4.2 Data Features

The EGW1500E provides various data services to meet requirements of different users.

ADSL

The EGW1500E can connect to an uplink network through an ADSL port. ADSL is an asymmetric transmission technology. It uses high frequencies that are not used by voice phone calls and several modulation methods to achieve high-speed data transmission.

- The routing and bridging connection types are supported.
- The EGW1500E can use a static IP address or use DHCP or Point-to-Point Protocol over Ethernet (PPPoE) to obtain a dynamic IP address.
- Two Point-to-Point Protocol (PPP) authentication modes are supported, including Password Authentication Protocol (PAP) and Challenge Handshake Authentication Protocol (CHAP).
- The ADSL Seamless Rate Adaptation (SRA) technology is supported.
- The voice and data services use the same ADSL Permanent Virtual Circuit (PVC) channel.
- The EGW1500E can connect to an IP network through an ADSL or a WAN port. The ADSL and WAN ports cannot be used at the same time or back each other up.

WAN Port

The EGW1500E can connect to an IP network through a WAN port.

- The EGW1500E provides a 10/100/1000 Mbit/s self-adaptive WAN port.
- The EGW1500E can use a static IP address or use DHCP or PPPoE to obtain a dynamic IP address.
- The WAN port automatically chooses a work mode between the full-duplex and half-duplex modes. The duplex mode cannot be manually configured.
- The EGW1500E can connect to an IP network through an ADSL or a WAN port. The ADSL and WAN ports cannot be used at the same time or back each other up.

3G

Generally, the EGW1500E connects to an IP network through an ADSL or a WAN port. When neither an ADSL nor a WAN port is available, users can use a USB-based 3G data card to connect to a 3G network to transmit voice and data streams (excluding fax data).

- The EGW1500E supports the following 3G data cards:
 - Time Division-Synchronous Code Division Multiple Access (TD-SCDMA) data cards:
 - Huawei ET302 (software version: 11.100.05.00.00)
 - Huawei ET127 (software version: 11.101.01.36.00)
 - Wideband Code Division Multiple Access (WCDMA) data cards:
 - Huawei K3765 (software version: 11.126.03.06.00)
 - Huawei E176G (software version: 11.126.03.02.00)
- The 3G connection can be used as a backup network connection when no ADSL or WAN connection is available. However, it does not support fax, DMZ host, and virtual server functions.

Static Route Routing Capability

Users can manually configure static routes on the EGW1500E. Proper static routes improve the network performance and allocate sufficient bandwidth to important network applications.

LAN Port

Terminals such as PCs and IP phones can connect to the EGW1500E through LAN ports to join a small LAN. Functions such as file management, application sharing, printer sharing, scheduling in a work group, email, and fax can be implemented in the LAN.

- The EGW1500E provides eight 10/100 Mbit/s self-adaptive LAN ports.
- The default IP address and subnet mask for accessing the EGW1500E through LAN ports is 192.168.1.1 and 255.255.255.0.
- The EGW1500E can function as a DHCP server and assign IP addresses to data terminals such as PCs and IP phones connected to the EGW1500E through LAN ports.

WLAN

The EGW1500E supports Wi-Fi services and wireless networking. It provides an integrated wired and wireless access solution for small enterprises.

- IEEE 802.11b/g/n is supported.
- A maximum of 16 Wi-Fi terminals can connect to the EGW1500E at the same time.
- Four Service Set Identifiers (SSIDs) can be configured and the SSID broadcasting or hiding function is supported.
- The MAC address filtering function is supported. A maximum of 16 MAC addresses can be filtered.
- The Wi-Fi bridging function is not supported.

DNS

DNS allows users to specify meaningful domain names for network devices. The EGW1500E can function as a DNS client and use DNS servers to resolve domain names.

VLAN

The VLAN technology is used to divide a LAN into multiple virtual LANs (VLANs). Each VLAN is a broadcast domain. Hosts in the same VLAN communicate with each other in the same way as they are in a physical LAN. Hosts in different VLANs cannot communicate with each other directly. The EGW1500E supports port-based VLANs. LAN ports are added to different VLANs so that users are separated and virtual work groups are created.

- A maximum of eight VLANs can be created.
- Only port-based VLANs are supported.

DHCP

DHCP is a protocol for dynamically managing and configuring users in a centralized manner. It uses the Client/Server (C/S) structure. A DHCP client sends the DHCP server a request to apply for parameter settings, including the IP address, subnet mask, and default gateway. The EGW1500E can function as a DHCP server, DHCP relay, or DHCP client.

- As a DHCP server, the EGW1500E provides a configurable address pool. The default address pool ranges from 192.168.1.2 to 192.168.1.254.
- As a DHCP relay, the EGW1500E complies with RFC3361.
- As a DHCP client, the EGW1500E supports Option42/43/60/61/66/67/120/125/150.

4.3 QoS

The EGW1500E provides a complete QoS mechanism to ensure that core services are allocated with sufficient bandwidth.

QoS policies can be customized to ensure precedence of core services. In addition, the EGW1500E limits bandwidth for common services (such as the web-based upload service) and saves it for core services (such as voice services). The EGW1500E supports the following Diff-Serv-based QoS technologies: priority mark, congestion management, and traffic policing.

- The 802.1p/q priority can be marked with VLAN tags.
- The Differentiated Services Code Point (DSCP) priority can be marked with tags.
- The bandwidth control can be performed on uplink data streams.
- Voice packets can be listed in the queue of high priority packets and be transferred preferentially.

4.4 Security

The EGW1500E provides various mechanisms to ensure the security of calls and transmitted data.

NAT

Network Address Translation (NAT) is a process of converting a private IP address in an IP packet header to a public IP address. This function enables computers with private IP addresses to connect to a public network. NAT solves the problem of insufficient public IP

addresses and prevents attacks from other networks, hiding and protecting computers on the private network.

A maximum of 1024 NAT entries are supported.

SIP ALG

NAT is the technology for converting private IP addresses to public IP addresses, and allows one or more hosts on the private network to use the same public IP address to access a public network. NAT works in the transport layer, and is transparent to the application layer. This may cause that data for SIP applications cannot be transmitted. The EGW1500E supports SIP Application Layer Gateway (ALG) that solves the SIP NAT traversal problem.

Incoming Packet Filtering

If the firewall function is enabled on LAN ports or the WAN port, all packets sent to the EGW1500E through LAN ports or the WAN port are blocked. The incoming packet filtering function allows specific packets to be sent to the EGW1500E. For example, if the firewall is enabled on LAN ports, voice and data packets sent to the EGW1500E through LAN ports are blocked. Users can configure the incoming packet filtering function to allow voice packets to be sent to the EGW1500E.

Outgoing Packet Filtering

By default, the EGW1500E does not block any outgoing packets sent from LAN ports. Users can configure the outgoing packet filtering function to prevent specific packets from being sent from LAN ports.

MAC Address Filtering

If the ADSL service type is set to **Bridge**, users can configure the MAC address filtering function to prevent the ADSL port from forwarding certain data frames.

URL Filtering

The EGW1500E supports URL filtering, controlling the access to URLs effectively.

- A maximum of 100 URLs can be filtered.
- The maximum length of a URL is 128 bytes.
- Fuzzy match and full match are supported.
- Wildcard characters are not supported in filtering rules. For example, users cannot use the asterisk (*) to represent full match.

Virtual Server

The virtual server function allows devices on external networks to access servers on private networks. These servers can provide services such as web access and FTP download, functioning as public servers on private networks.

This function is unavailable when the 3G access mode is used.

DMZ

If there are many services to be provided, multiple virtual servers must be configured, which involves a complicated configuration process. The Demilitarized Zone (DMZ) function simplifies the configuration process. Only the IP address of the DMZ host needs to be configured.

- One DMZ host is supported.
- This function is unavailable when the 3G access mode is used.

IPSec VPN

The EGW1500E can function as an access gateway for a small branch and connect to the headquarters through an IP Security (IPSec) VPN channel, implementing secure access.

The EGW1500E uses IPSec to establish a VPN channel to the headquarters in Site-to-Site tunnel encapsulation mode. As the initiator of the VPN channel, the EGW1500E can use the peer device's IP address as the peer device ID.

Configuration File Encryption

The EGW1500E encrypts the configuration file and sensitive data such as user names and passwords in the file.

The EGW1500E encrypts the following items:

- User name and password for logging in to the web management page
- PPPoE user name and password
- PPPoA user name and password
- Password for connecting to a WLAN
- User name and password for connecting to a 3G network
- TR-069 ACS user name and password
- SIP user name and password
- Password for connecting to an NTP server
- VPN shared key

The configuration file cannot be manually modified.

HTTPS

Users can use a web browser to interact with the EGW1500E using HTTPS, which ensures user information security.

5 Operation and Maintenance

About This Chapter

Users can manage the EGW1500E in the web management system and operate and maintain the EGW1500E in the eSpace element management system (EMS).

[5.1 Web-based Management](#)

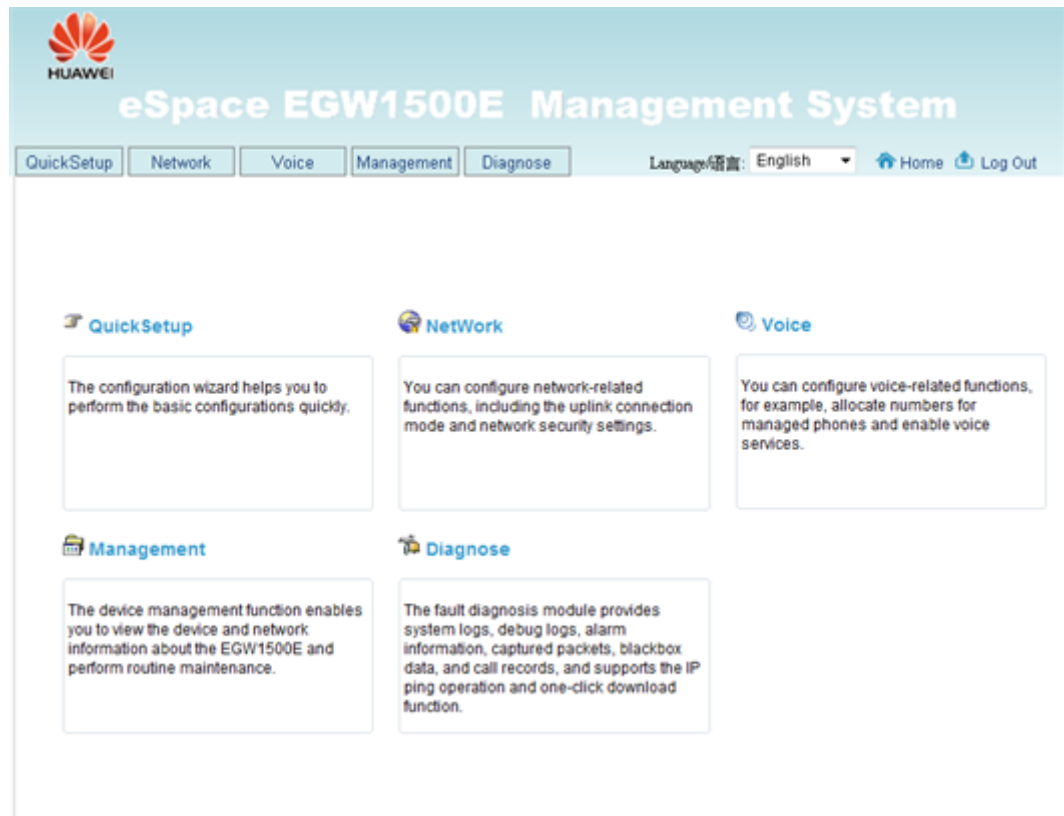
[5.2 Unified Network Management](#)

5.1 Web-based Management

Users can configure, diagnose, and upgrade the EGW1500E in the web management system. The HTTPS and HTTP protocols are supported.

[Figure 5-1](#) shows the main page of the EGW1500E web management system.

Figure 5-1 Main page of the EGW1500E web management system



5.2 Unified Network Management

TR-069 is a digital subscriber line (DSL) forum technical specification entitled CPE WAN Management Protocol (CWMP). It defines an application layer protocol for remote management of terminals on the user side. Huawei eSpace EMS uses TR-069 to manage and maintain the EGW1500E remotely.

The EGW1500E uses the TR-069 protocol to connect to the eSpace EMS to enable remote configuration and maintenance, including upgrading devices, backing up and restoring files, and monitoring device status and performance. The EGW1500E supports the following data models:

- TR-098
- TR-104

For details about Huawei eSpace EMS, see the *eSpace EMS Documentation*.

6 Technical Specifications, Standards, and Certificates

About This Chapter

This topic describes the technical specifications, standards, and certificates of the EGW1500E.

6.1 Technical Specifications

This topic describes EGW1500E technical specifications, such as dimensions, weight, power supply, power consumption, and running environment.

6.2 Standards

This topic describes standards that the EGW1500E complies with.

6.3 Certificates

This topic describes the certificates on the EGW1500E.

6.1 Technical Specifications

This topic describes EGW1500E technical specifications, such as dimensions, weight, power supply, power consumption, and running environment.

Table 6-1 describes EGW1500E parameters.

Table 6-1 EGW1500E parameters

Item	Specification
Dimensions (H x W x D)	35 mm x 305 mm x 175 mm
Weight	1 kg (device weight, without the power adapter and other accessories)
Maximum power	24 W
Power supply	12 V DC, 2 A

Item	Specification
Power supply adapter	Input: 100 – 240 V AC, 1.0 A, 50 or 60 Hz Output: +12 V DC, 2 A
Maximum transmit power of Wi-Fi	802.11b/g/n (SISO): 16±2 dBm 802.11n (MIMO): 18±2 dBm
Long-term operating temperature	0°C - 40°C
Long-term operating humidity	5% - 95% (non-condensing)
Altitude	≤ 4 km
Atmospheric pressure	70 - 106 kPa

6.2 Standards

This topic describes standards that the EGW1500E complies with.

Table 6-2 Standards compliance

Service Name	Standard
ADSL/ADSL2/ADSL2+/Annex M	ITU-T G.992.1 Annex A
	ITU-T G.992.3 (ADSL 2) Annex A, L, and M
	ITU-T G.992.5 (ADSL 2+) Annex A/M
	Seamless Rate Adaption
	Encapsulation: PPPoE and PPPoA
Wi-Fi	IEEE 802.11b/g/n
Timing	NTP (RFC 1305)
SIP protocol	RFC 3323
	RFC 3325
	RFC 3515 – Refer method
	RFC 3891 – Replaces header
	RFC 3261
	RFC 3262
	RFC 3264
	RFC 3455

Service Name	Standard
SIP session timers	RFC 4028
SIP locating servers	RFC 3263 for SIP over UDP
P-CSCF discovery	DHCP method – RFC 3361
	DNS Client
CLIP/CLIR	RFC 3323
	RFC 3325
Message waiting indication	RFC 3842
	RFC 3265
Event notification	RFC 3265
NAT traversal	NAT Traversal (RFC 3947)
Codec	G.711 A-Law
	G.711 μ -Law
	G.729 Annex A (must include annexb=no)
	G.729 Annex B
	G.726 (optional)
	G.722
Fax	T.38
	T.30 over G.711
Comfort noise generation	RFC 3389
Echo cancellation	G.168
DTMF	RFC 2833
CPE provisioning	TR-069
	TR-104

Table 6-3 Standards compliance

Service Name	Standard	Standard Version
ADSL/ADSL2/ ADSL2+/Anne x M	ITU-T G.992.1 Annex A	ITU-T G.992.1 (06/1999)
	ITU-T G.992.3 (ADSL 2) Annex A, L, and M	ITU-T G.992.3 (01/2005)
	ITU-T G.992.5 (ADSL 2+) Annex A/M	ITU-T G.992.5 (01/2005)






Service Name	Standard	Standard Version
	Seamless Rate Adaption	ITU-T G.992.3 (01/2005)
	Encapsulation: PPPoE and PPPoA	PPPoE-RFC 2516 (February 1999) PPPoA-RFC 2364 (July 1998)
Wi-Fi	IEEE 802.11b/g/n	IEEE 802.11b-1999 IEEE 802.11g-2003 IEEE 802.11n-2009
IP requirements	MAC Address (IEEE 802.3)	IEEE 802.3-2002
	IPv4 (RFC 791)	IP Version 4-RFC 791 (September 1981)
	ARP (RFC 826)	RFC 826 (November 1982)
	ICMP (RFC792)	RFC 792 (September 1981)
	TCP (RFC793)	RFC 792 (September 1981)
	UDP (RFC768)	RFC 768 (August 1980)
	RTP (RFC 3550 and RFC 3551)	RTP Version 2-RFC 3550 (July 2003) RFC 3551 (July 2003)
	RTCP (RFC 3550)	RTCP-RFC 3550 (July 2003)
	Ethernet Address Resolution Protocol (RFC 826)	RFC 826 (November 1982)
	Standard for the Transmission of IP Datagrams over Ethernet Networks (RFC 894)	RFC 894 (April 1984)
	Standard for the Transmission of IP Datagrams over IEEE 802 Networks (RFC 1042)	RFC 1042 (February 1988)
	DHCP (RFC 2131)	RFC 2131 (March 1997)
VLAN tagging 802.1 p/q	IEEE802.1 Q-2003	
Timing	NTP (RFC 1305)	NTP Version 3-RFC1305 (March 1992)
SIP protocol	RFC 3323	RFC 3323 (November 2002)
	RFC 3325	RFC 3325 (November 2002)
	RFC 3515 – Refer method	RFC 3515 (April 2003)
	RFC 3891 – Replaces header	RFC 3891 (September 2004)
	RFC 3261	SIP Version 2-RFC 3261 (June 2002)

Service Name	Standard	Standard Version
	RFC 3262	RFC 3262 (June 2002)
	RFC 3264	RFC 3264 (June 2002)
	RFC 3455	RFC 3455 (January 2003)
SIP session timers	RFC 4028	RFC 4028 (April 2005)
SIP locating servers	RFC 3263 for SIP over UDP	RFC 3263 (June 2002)
P-CSCF discovery	DHCP method – RFC 3361	RFC 3361 (August 2002)
	DNS Client	DNS for IPv4
CLIP/CLIR	RFC 3323	RFC 3323 (November 2002)
	RFC 3325	RFC 3325 (November 2002)
Message waiting indication	RFC 3842	RFC 3842 (August 2004)
	RFC 3265	RFC 3265 (June 2002)
Event notification	RFC 3265	RFC 3265 (June 2002)
NAT traversal	NAT Traversal (RFC 3947)	NAT for IPv4-RFC 3947 (January 2005)
Codec	G.711 A-Law	None
	G.711 μ -Law	None
	G.729 Annex A (must include annexb=no)	None
	G.729 Annex B	None
	G.726 (optional)	None
	G.722	None
Fax	T.38	ITU-T T.38 (09/2005)
	T.30 over G.711	ITU-T T.30 (09/2005)
Comfort noise generation	RFC 3389	RFC 3389 (September 2002)
Echo cancellation	G.168	ITU-T G.168 (08/2004)
DTMF	RFC 2833	RFC 2833 (May 2000)
CPE provisioning	TR-069	TR-069 v1.1, Amendment 2 (December 2007)
	TR-104	TR-104 (September 2005)

6.3 Certificates

This topic describes the certificates on the EGW1500E.

Table 6-4 Certificates on the EGW1500E

Certificate	Icon
CE-CETECOM	
China compulsory certificate (CCC)	
Restriction of hazardous substances (RoHS)	
Waste electrical and electronic equipment (WEEE)	
Wireless fidelity (Wi-Fi)	
Registration, evaluation, authorization and restriction of chemicals (REACH)	N/A

A Glossary

Numerics

3G

See [3rd generation](#).

3rd generation (3G)

The third generation of digital wireless technology, as defined by the International Telecommunications Union (ITU). Third generation technology is expected to deliver data transmission speeds between 144 kbit/s and 2 Mbit/s, compared to the 9.6 kbit/s to 19.2 kbit/s offered by second generation technology.

A

ACS

See [Application Control Server](#).

ADSL

asymmetric digital subscriber line

Application Control Server (ACS)

A subsystem of the Media Entertainment Middleware (MEM), used for providing a service control interface for the Electronic Program Guide (EPG) server.

D

DHCP

See [Dynamic Host Configuration Protocol](#).

DMZ

See [demilitarized zone](#).

DNS

See [domain name service](#).

DSCP

See [differentiated services code point](#).

Dynamic Host Configuration Protocol (DHCP)

A client-server networking protocol. A DHCP server provides configuration parameters specific to the DHCP client host requesting, generally, information required by the host to participate on the Internet network. DHCP also provides a mechanism for allocation of IP addresses to hosts.

demilitarized zone (DMZ)

A buffer area between an insecure system and the secure system and is used to solve the problem that the external network equipped with a firewall cannot access the internal network server. The DMZ is located between the internal network and the external network. In the DMZ, some public server facilities, such as the enterprise Web server and FTP server, can be located. The DMZ effectively protects the internal network.

differentiated services code point (DSCP)	According to the QoS classification standard of the Differentiated Service (Diff-Serv), the type of services (ToS) field in the IP header consists of six most significant bits and two currently unused bits, which are used to form codes for priority marking. Differentiated services code point (DSCP) is the six most important bits in the ToS. It is the combination of IP precedence and types of service. The DSCP value is used to ensure that routers supporting only IP precedence can be used because the DSCP value is compatible with IP precedence. Each DSCP maps a per-hop behavior (PHB). Therefore, terminal devices can identify traffic using the DSCP value.
domain name service (DNS)	A hierarchical naming system for computers, services, or any resource connected to the Internet or a private network. It associates various information with domain names assigned to each of the participants. The DNS distributes the responsibility of assigning domain names and mapping those names to IP addresses by designating authoritative name servers for each domain.
F	
FXO	foreign exchange office
H	
HTTPS	See Hypertext Transfer Protocol Secure .
Hypertext Transfer Protocol Secure (HTTPS)	An HTTP protocol that runs on top of transport layer security (TLS) and Secure Sockets Layer (SSL). It is used to establish a reliable channel for encrypted communication and secure identification of a network web server. For details, see RFC2818.
I	
IEEE	See Institute of Electrical and Electronics Engineers .
IP	Internet Protocol
IP Security (IPSec)	A protocol family defined by the Internet Engineering Task Force (IETF). By authenticating and encrypting each IP packet of a data stream, this protocol family provides high quality, interoperable, and cryptology-based security for IP packets.
IPSec	See IP Security .
IPv4	See Internet Protocol version 4 .
Institute of Electrical and Electronics Engineers (IEEE)	A society of engineering and electronics professionals based in the United States but boasting membership from numerous other countries. The IEEE focuses on electrical, electronics, computer engineering, and science-related matters.
Internet Protocol version 4 (IPv4)	The current version of the Internet Protocol (IP). IPv4 utilizes a 32bit address which is assigned to hosts. An address belongs to one of five classes (A, B, C, D, or E) and is written as 4 octets separated by periods and may range from 0.0.0.0 through to 255.255.255.255. Each IPv4 address consists of a network number, an optional subnetwork number, and a host number. The network and subnetwork numbers together are used for routing, and the host number is used to address an individual host

within the network or subnetwork.

indicator Description of a performance feature collected from the managed devices by the performance collector.

L

LAN See [local area network](#).

local area network (LAN) A network formed by the computers and workstations within the coverage of a few square kilometers or within a single building. It features high speed and low error rate. Ethernet, FDDI, and Token Ring are three technologies used to implement a LAN. Current LANs are generally based on switched Ethernet or Wi-Fi technology and running at 1,000 Mbit/s (that is, 1 Gbit/s).

N

NAT See [Network Address Translation](#).

NTP Network Time Protocol

Network Address Translation (NAT) An IETF standard that allows an organization to present itself to the Internet with far fewer IP addresses than there are nodes on its internal network. The NAT technology, which is implemented in a router, firewall or PC, converts private IP addresses (such as in the 192.168.0.0 range) of the machine on the internal private network to one or more public IP addresses for the Internet. It changes the packet headers to the new address and keeps track of them via internal tables that it builds. When packets come back from the Internet, NAT uses the tables to perform the reverse conversion to the IP address of the client machine.

P

PBX private branch exchange

POTS See [plain old telephone service](#).

PPPoA Point-to-Point Protocol over ATM

PPPoE Point-to-Point Protocol over Ethernet

PSTN See [public switched telephone network](#).

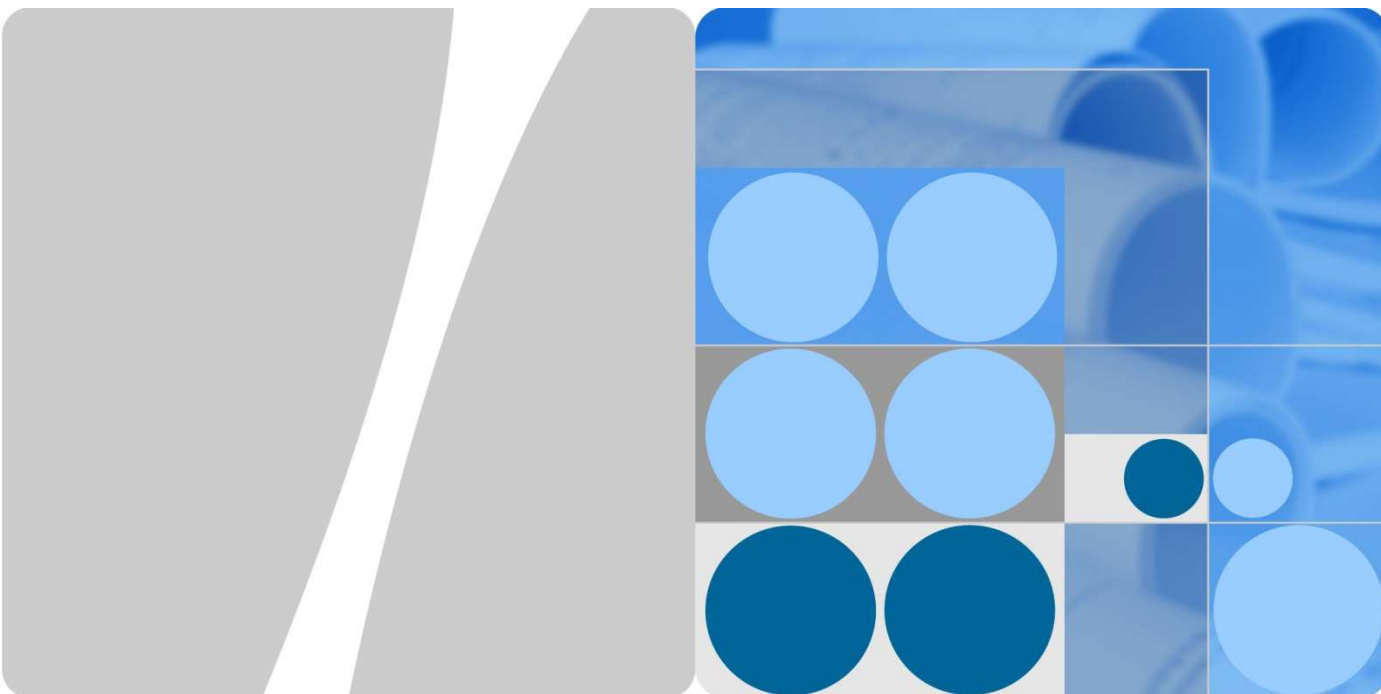
plain old telephone service (POTS) The basic telephone service provided through the traditional cabling such as twisted pair cables.

public switched telephone network (PSTN) A telecommunications network established to perform telephone services for the public subscribers. Sometimes it is called POTS.

Q

QoS See [quality of service](#).

quality of service (QoS)	A commonly-used performance indicator of a telecommunication system or channel. Depending on the specific system and service, it may relate to jitter, delay, packet loss ratio, bit error ratio, and signal-to-noise ratio. It functions to measure the quality of the transmission system and the effectiveness of the services, as well as the capability of a service provider to meet the demands of users.
S	
SIP	Session Initiation Protocol
U	
UC	unified communication
URL	uniform resource locator
V	
VLAN	virtual local area network
VPN	virtual private network
VoIP	See voice over IP .
voice over IP (VoIP)	An IP telephony term for a set of facilities used to manage the delivery of voice information over the Internet. VoIP involves sending voice information in a digital form in discrete packets rather than by using the traditional circuit-committed protocols of the public switched telephone network (PSTN).
W	
WAN	See wide area network .
WLAN	See wireless local area network .
wide area network (WAN)	A network composed of computers which are far away from each other which are physically connected through specific protocols. WAN covers a broad area, such as a province, a state or even a country.
wireless local area network (WLAN)	A hybrid of the computer network and the wireless communication technology. It uses wireless multiple address channels as transmission media and carries out data interaction through electromagnetic wave to implement the functions of the traditional LAN.



Huawei eSpace EGW1500E Enterprise Gateway

Compliance and Safety Manual

Issue **02**
Date **2012-10-15**

Copyright © Huawei Technologies Co., Ltd. 2012 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 the warranty of any kind, express or implied.

Huawei Technologies Co., Ltd.

Address: Huawei Industrial Base
Bantian, Longgang
Shenzhen 518129
People's Republic of China

Website: <http://enterprise.huawei.com>

About This Document

Intended Audience

This document describes Electromagnetic Compatibility (EMC) and other safety standards compliance and information about the ESpace EGW1500E enterprise gateway.






This document provides the general safety guidelines for handling, installing or operating the eSpace EGW1500E enterprise gateway.

This document is intended for:

- Maintenance engineers
- Technical support engineers
- Installation engineers
- Network planning engineers

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 DANGER	Indicates a hazard with a high level of risk, which if not avoided, will result in death or serious injury.
 WARNING	Indicates a hazard with a medium or low level of risk, which if not avoided, could result in minor or moderate injury.
 CAUTION	Indicates a potentially hazardous situation, which if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
 TIP	Indicates a tip that may help you solve a problem or save time.
 NOTE	Provides additional information to emphasize or supplement important points of the main text.

Change History

Changes between document issues are cumulative. Therefore, the latest document issue contains all the changes in previous issues.

Contents

1 Regulatory Compliance Statement	1-1
2 Regulatory Compliance Information	2-2
2.1 Regulatory Compliance Standards	2-3
2.2 European Directives Compliance	2-5
2.3 USA Regulatory Compliance	2-6
2.3.1 FCC Part 15.....	2-6
2.3.2 FCC Part 68.....	2-7
2.4 Canada Regulatory Compliance	2-8
2.4.1 RSS-Gen & RSS-210 statement.....	2-8
2.4.1 RSS-102 statement.....	2-8
2.5 CISPR 22 Compliance	2-8
2.6 China RoHS hazardous substance table	2-8
3 Safety Information	3-1
3.1 Basic Requirements	3-2
3.2 Usage Notice	3-2
3.3 Cleaning Notice.....	3-3
3.4 Environment Protection.....	3-3

Tables

Table 2-1 Regulatory compliance standards	2-3
Table 2-2 SOC, FIC and USOC information	2-7

1 Regulatory Compliance Statement

About This Chapter

This chapter provides the certification details for eSpace EGW1500E.

2 Regulatory Compliance Information

About This Chapter

- 2.1 Regulatory Compliance Standards
- 2.2 European Regulatory Compliance
- 2.3 U.S.A Regulatory Compliance
- 2.4 Canada Regulatory Compliance
- 2.5 CISPR 22 Compliance
- 2.6 China RoHS hazardous substance table

2.1 Regulatory Compliance Standards

eSpace EGW1500E comply with the standards listed in Table 2-1.

Table 2-1 Regulatory compliance standards

Discipline	Standards
EMC	<ul style="list-style-type: none"> • CISPR22 Class B • CISPR24 • EN55022 Class B • EN50024 • ETSI EN 301 489 Class B • CFR 47 FCC Part 15 Class B • ICES 003 Class B • AS/NZS CISPR22 Class B • GB9254 Class B • CNS 13438 Class B • IEC61000-3-2 • IEC61000-3-3 • EN61000-3-2 • EN61000-3-3
Safety	<ul style="list-style-type: none"> • IEC 60950-1 • EN 60950-1 • UL 60950-1 • CSA C22.2 No 60950-1 • AS/NZS 60950.1 • BS EN 60950-1 • GB4943
Telecom	<ul style="list-style-type: none"> • FCC Part68(CFR47) • IC CS-03
RF	<ul style="list-style-type: none"> • ETSI EN 300 328(for 2.4 GHz WLAN product) • CRF47 FCC Part15 Subpart C • RSS-GEN • RSS-210

Discipline	Standards
Health	<ul style="list-style-type: none"> • ICNIRP Guideline • 1999-519-EC • EN 62311 • OET Bulletin 65 • IEEE Std C95.1 • RSS-102
Environmental protection	<ul style="list-style-type: none"> • 2002/95/EC & 2011/65/EU (RoHS) • EC NO. 1907/2006 (REACH) • 2002/96/EC (WEEE)
<p>Note:</p> <p>EMC: electromagnetic compatibility</p> <p>NEBS: Network Equipment Build Standard</p> <p>RF: radio frequency</p> <p>CISPR: International Special Committee on Radio Interference</p> <p>EN: European Standard</p> <p>ETSI: European Telecommunications Standards Institute</p> <p>CFR: Code of Federal Regulations</p> <p>FCC: Federal Communication Commission</p> <p>IEC: International Electrotechnical Commission</p> <p>AS/NZS: Australian/New Zealand Standard</p> <p>VCCI: Voluntary Control Council for Interference</p> <p>CNS: Chinese National Standard</p> <p>UL: Underwriters Laboratories</p> <p>CSA: Canadian Standards Association</p> <p>BS: British Standard</p> <p>IS: Indian Standard</p> <p>GR: general requirement</p> <p>FDA: Food and Drug Administration</p> <p>BTS: base transceiver station</p> <p>GSM: Global System for Mobile communications</p> <p>WLAN: wireless local area network</p> <p>ICNIRP: International Commission on Non-Ionizing Radiation Protection</p> <p>OET: Office of Engineering Technology</p> <p>IEEE: Institute of Electrical and Electronics Engineers</p> <p>RoHS: restriction of the use of certain hazardous substances</p>	

2.2 European Directives Compliance

eSpace EGW1500E complies with the following European directives and regulations.

- 2004/108/EC (EMC)
- 2006/95/EC (low voltage)
- 1999/5/EC (R&TTE)
- 2002/95/EC & 2011/65/EU (RoHS)
- EC NO. 1907/2006 (REACH)
- 2002/96/EC (WEEE)

eSpace EGW1500E complies with Directive 2002/95/EC, 2011/65/EU and other similar regulations from the countries outside the European Union, on the RoHS in electrical and electronic equipment. The device does not contain lead, mercury, cadmium, and hexavalent chromium and brominated flame retardants (Polybrominated Biphenyls (PBB) or Polybrominated Diphenyl Ethers (PBDE)) except for those exempted applications allowed by RoHS directive for technical reasons.

Product complies with Regulation EC NO. 1907/2006 (REACH) and other similar regulations from the countries outside the European Union. Huawei will notify to the European Chemical Agency (ECHA) or the customer when necessary and regulation requires.

Product complies with Directive 2002/96/EC on waste electrical and electronic equipment (WEEE). Huawei is responsible for recycling its end-of-life devices, and please contact Huawei local service center when recycling is required. Huawei strictly complies with the EU Waste Electrical and Electronic Equipment Directive (WEEE Directive) and electronic waste management regulations enacted by different countries worldwide. In addition, Huawei has established a system for recycling and reuse of electronic wastes, and it can provide service of dismantling and recycling for WEEE. By Huawei recycling system, the waste can be handled environmentally and the resource can be recycled and reused fully, which is also Huawei WEEE stratagem in the word. Most of the materials in product are recyclable, and our packaging is designed to be recycled and should be handled in accordance with your local recycling policies.

In accordance with Article 11(2) in Directive 2002/96/EC (WEEE), products were marked with the following symbol: a cross-out wheeled waste bin with a bar beneath as below:



2.3 USA Regulatory Compliance

2.3.1 FCC Part 15

2.3.2 FCC Part 68

2.3.1 FCC Part 15

eSpace EGW1500E complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device does not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

If this device is modified without authorization from Huawei, the device may no longer comply with FCC requirements for Class B digital devices. In that a case, your right to use the device may be limited by FCC regulations. Moreover, you may be required to correct any interference to radio or television communications at your own expense.

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This device generates, uses and radiates radio frequency energy. If it is not installed and used in accordance with the instructions, it may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user may take one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Reinforce the separation between the device and receiver.
- Connect the device into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or TV technician for assistance.



WARNING

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.



CAUTION

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user authority to operate the equipment.

2.3.2 FCC Part 68

eSpace EGW1500E complies with Part 68 of the FCC rules and the requirements adopted by the Administrative Council on Terminal Attachments (ACTA). On the bottom of the chassis is a label that contains, among other information, the FCC registration number and ringer equivalence number (REN) for this equipment. On request, this number must be provided to the telephone company.

Table 2-3 lists the service order code (SOC), facility interface code (FIC) and Universal Service Order Code (USOC).

Table 2-2 SOC, FIC and USOC information

Interface Type	SOC	FIC	Jack Type (USOC)
ADSL		Metallic	RJ-11C
FXO	9.0F	02LS2	RJ-11C

eSpace EGW1500E that bears labeling identification complies with:

- FCC Rules and Regulations 47 CFR Part 68
- TIA/EIA/IS-968, Technical Criteria for Terminal Device to Prevent Harms to the Telephone Network, July 2001, as adopted by the ACTA.

A plug and jack used to connect this device to the premises wiring and telephone network must comply with the FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug are provided with this device. The plug is designed to connect to a compatible modular jack that is also compliant with the applicable FCC Part 68 rules and requirements.

The REN is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company.

If this device causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. If advance notice is not practical, the telephone company will notify the customer as soon as possible. In this case, you will be advised of your right to file a complaint with the FCC.

The telephone company may make changes in its facilities, device, operations or procedures that could affect the operation of the device. If this happens, the telephone company will provide advance notice so that you make necessary modifications to maintain uninterrupted service.

If this device causes any trouble, contact Futurewei Technologies, Inc for repairs or warranty information. If the device causes harm to the telephone network, the telephone company may request that you disconnect the device until the problem is resolved.

Connection to party-line service is subject to state tariffs. Contact the state public utility commission, public service commission, or corporation commission for information.

2.4 Canada Regulatory Compliance

2.3.1 RSS-GEN and RSS-210

2.3.2 RSS-102

2.4.1 RSS-Gen & RSS-210 statement

This device complies with Industry Canada licence-exempt RSS standard(s).

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

2.4.1 RSS-102 statement

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

2.5 CISPR 22 Compliance

eSpace EGW1500E complies with CISPR 22 for Class B by the ITE.

2.6 China RoHS hazardous substance table

This products described in this guide complies with the Chinese RoHS

部件名称	产品中有害物质或元素的名称及含量					
	镉	铅	汞	六价铬	多溴联苯	多溴联苯醚
Frame	○	×	○	○	○	○
Alloy Parts	○	×	○	○	○	○
Power Adapter	○	×	○	○	○	○
Metal Fittings	○	○	○	○	○	○
PCBA	○	×	○	○	○	○
Capacitor	○	×	○	○	○	○
Other electronics	○	×	○	○	○	○

Screen	○	○	○	○	○	○
Solder	○	×	○	○	○	○
Cable	×	×	○	○	○	○
Plastic and Polymer	○	×	○	○	○	×
Label	○	○	○	○	○	○
Battery	○	○	○	○	○	○

3 Safety Information

About This Chapter

Pay attention to following precautions when installing and using the device. The following table lists the contents of this chapter.

Title	Description
3.1 Basic Requirement	Information about the basic requirement
3.2 Usage Notice	Information about the usage notice
3.3 Clean Notice	Information about the clean notice.
3.4 Environment Protection	Information about the environment protection

3.1 Basic Requirements

- Keep the device dry when storing, transporting, and using the device.
- Take care to avoid collision when storing, transporting, and using the device.
- The installation instructions provided should be followed.
- In the event of a fault, contact the maintenance personnel. Do not open the device.
- Any company or person cannot change the design of the structure or security without permission.
- Any changes to the device must be carried out by an authorized and suitably qualified person with the permission of manufacturer.
- This device must be used in compliance with the legal and regulatory requirements of the country in which it is being used. Please respect the legal rights of others when using this device.

3.2 Usage Notice

- This device should be installed by a suitably qualified person.
- The device must be far away from heat sources. Do not place any objects on the device. Ensure that the heat dissipation vents on are not blocked.
- DO NOT Drop the device from a height of 80 cm or greater; this may damage the device.
- In the event of an electrical storm / lightning, turn off the power to the device and remove cables to avoid damage to the device.
- All the phone cables are only used indoors, or the lightning may damage the device.
- Keep the power plug clean and dry to avoid risk of electric shock and other potential risk.
- Use the power supply adapter provided with this product.
- When using this device with mains power, the power socket should be located close to the device and should be easily accessible.
- Keep your hands dry when plugging in or out the device cable.
- When the device is not in use, the power should be turned off and the mains power cable should be disconnected from the mains supply.
- Keep water and other liquids away from the device. In the event of liquid coming into contact with the device, disconnect from the power immediately. Remove all cables, including network connections and power cables and contact your maintenance personnel.
- Never use damaged or old cables.
- In the event of unusual behavior, such as smoke emitting from the device, unusual noises or smells, disconnect from the mains power supply immediately, remove all the cables connected to the device and contact an authorized maintenance personnel.
- Care should be taken to prevent foreign objects from entering the device, with particular attention being paid to the heat dissipation hole.
- Please keep this device and accessories away from children.
- The antennas and 3G USB label used for this device must be installed to provide a safety distance of at least 20 cm from all persons.

- Do not use the device where use of wireless devices is prohibited or may cause interference or danger such as hospitals.
- The radio waves generated by the device may interfere with the operation of electronic medical devices. Use electrical medical device under the guidance of the professionals or contact its manufacturer for the restrictions on the use of the device.

3.3 Cleaning Notice

- Before cleaning, the device should be shut down and disconnected from the mains power supply, removing all power and network cables.
- Clean using a soft, dry cloth. Do not use liquid or aerosol cleaners on this device.

3.4 Environment Protection

Please comply to all legal and environmental requirements when disposing of obsolete devices and packaging.