

**eSpace EGW1520 Enterprise Gateway
V100R001C01
Product Documentation**

Issue **01**
Date **2012-05-15**

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



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://www.huawei.com>

Email: support@huawei.com

1 Library Information

About This Chapter

This topic describes the basic information about the EGW1520 document package, including the reader information and change history.

1.1 Library Overview

This topic describes the main contents of each document in the library and the intended audience and defines each type of audience.

1.2 Conventions

This topic describes the conventions in the document.

1.3 Change History

Updates between document issues are cumulative. Therefore, the latest document issue contains all updates made in previous issues.

1.1 Library Overview

This topic describes the main contents of each document in the library and the intended audience and defines each type of audience.

Library Structure

[Table 1-1](#) describes all documents in the package.

Table 1-1 Library Structure

Topic	Description
Safety Precautions	The precautions for using and maintaining products.
Overview	This section describes the product position, networking, appearance, functions, technical parameters, and Regulatory Compliance Information.
Installation	This section describes how to install EGW1520.

Topic	Description
Features and Implementation	This section describes EGW1520 features and how to implement them.
Quick Configuration	This topic describes how to quickly configure the EGW1520. After the EGW1520 is configured, it provides Internet access and basic voice services.
Diagnosis modes	This section describes diagnosis modes for the EGW1520.
System Management	This section describes how to manage and maintain EGW1520 in different modes.
Security Maintenance	This section describes the concept and methods for maintaining the EGW1520.
Troubleshooting	The troubleshooting processes of common faults and provides typical troubleshooting cases of EGW1520.
Reference	This section describes Web parameter reference, TR-069 parameter reference and how to Customizing Voice Prompts for the Switchboard.
Glossary	All terms in the product documentation.

Intended Audience

Table 1-2 describes the engineers that the documents are intended for.

Table 1-2 Definition of the intended audience






Intended Audience	Definition
Maintenance Engineer	Maintenance engineers have veteran experience in telecommunications and databases, and are responsible for adjusting service data configurations, rectifying faults, and upgrading services.
Technical support Engineer	Technical support engineers provide detailed technical support for the equipment.

1.2 Conventions

This topic describes the conventions in the document.

Symbol Conventions

The following symbols may be found in this document. They 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 that, if not avoided, could cause device damage, data loss, and performance degradation, or unexpected results.
 TIP	Indicates a tip that may help you solve a problem or save your time.
 NOTE	Provides additional information to emphasize or supplement important points of the main text.

General Conventions

Convention	Description
Times New Roman	Normal paragraphs are in Times New Roman.
Boldface	Names of files, directories, folders, and users are in boldface . For example, log in as user root .
<i>Italic</i>	Book titles are in <i>italics</i> .
Courier New	Terminal display is in Courier New.

Command Conventions

Convention	Description
Boldface	The keywords of a command line are in boldface .
<i>Italic</i>	Command arguments are in <i>italic</i> .
[]	Items (keywords or arguments) in square brackets [] are optional.
{ x y ... }	Alternative items are grouped in braces and separated by vertical bars. One is selected.
[x y ...]	Optional alternative items are grouped in square brackets and separated by vertical bars. One or none is selected.
{ x y ... } *	Alternative items are grouped in braces and separated by vertical bars. A minimum of one or a maximum of all can be selected.

Convention	Description
[x y ...] *	Alternative items are grouped in braces and separated by vertical bars. Several or none can be selected.

GUI Conventions

Convention	Description
Boldface	Buttons, menus, parameters, tabs, window, and dialog titles are in boldface . For example, click OK .
>	Multi-level menus are in boldface and separated by the ">" signs. For example, choose File > Create > Folder .

Keyboard Operation

Format	Description
Key	Press the key. For example, press Enter and press Tab .
Key 1+Key 2	Press the keys concurrently. For example, pressing Ctrl+Alt+A means the three keys should be pressed concurrently.
Key 1, Key 2	Press the keys in turn. For example, pressing Alt, A means the two keys should be pressed in turn.

Mouse Operation

Action	Description
Click	Select and release the primary mouse button without moving the pointer.
Double-click	Press the primary mouse button twice continuously and quickly without moving the pointer.
Drag	Press and hold the primary mouse button and move the pointer to a certain position.

1.3 Change History

Updates between document issues are cumulative. Therefore, the latest document issue contains all updates made in previous issues.

Updates in draft Issue 01 (2012-03-14)

First commercial release.

2 Safety Precautions

Pay attention to the following precautions when installing and using the device.

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.

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.

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.

Environment Protection

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

3 Overview

About This Chapter

This section describes the product position, networking, appearance, functions, technical parameters, and Regulatory Compliance Information.

[3.1 Product Positioning and Features](#)

This topic describes the product positioning and features of the eSpace EGW1520.

[3.2 Application Scenarios](#)

[3.3 Architecture](#)

This topic describes the appearanceports, and indicators of the EGW1520.

[3.4 Functions and Features](#)

The EGW1520 provides rich functions and features to support voice services and data services.

[3.5 Operation and Maintenance](#)

Users can manage the EGW1520 in the web management system and use the eSpace element management system (EMS) to operate and maintain the EGW1520.

[3.6 Technical Specifications, Standards, and Authentications](#)

This topic describes the technical specifications, standards, and authentications of the EGW1520.

3.1 Product Positioning and Features

This topic describes the product positioning and features of the eSpace EGW1520.

3.1.1 Product Positioning

eSpace EGW1500 is a multi-service access gateway that integrates applications such as voice, data, and broadband connections and provides 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.

3.1.2 Highlights

This topic describes the product highlights of the EGW1520. With various services and ports, the EGW1520 features cost-effectiveness, high reliability and security, easy deployment, and simplified maintenance.

High Reliability and Security

The EGW1520's reliability reaches 99.99%, the mean time between failures (MTBF) is over 50 years, and the mean time to restore (MTTR) is less than 3 minutes.

The EGW1520 provides various mechanism such as dual-homing, power-off survival, local survival, 3G access backup, and QoS to ensure the device reliability, and uses advanced technologies such as VPN, URL filtering, NAT, and DMZ to improve network security.

Integration of Multiple Services

The EGW1520 integrates various functions such as broadband access, voice, routing, security, wireless, firewall, 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 EGW1520 uses an advanced hardware platform and software architecture to provide users with the integrated network solution with a minimum investment.

Various Ports

The EGW1520 provides various uplink ports for different networking scenarios, including WAN, ADSL, USB, and FXO ports. The EGW1520 also provides diversified user ports such as Wi-Fi, LAN, FXS port to set up flexible office networks.

Easy Installation and Maintenance

The EGW1520 is a relatively small box that can be placed on a desk or mounted on a wall. The EGW1520 provides standard external ports that are clearly marked to facilitate installation and cable connection. The EGW1520 uses standard connection parts and does not require a dedicated installation tool.

Users can view and configure devices on Web pages. The web management system provides step-by-step configuration guide for quick installation.

Efficient Remote Maintenance

The EGW1520 ensures the security of remote access. Users can access the EGW1520 through an uplink port (WAN, ADSL, or 3G) to perform remote configuration and maintenance.

The EGW1520, complying with the TR-069 protocol, connects to the network management server (such as the eSpace EMS) to enable management functions such as the software version upgrade, configuration file backup and recovery, and device status monitoring.

3.2 Application Scenarios

EGW1520 supports two application scenarios.

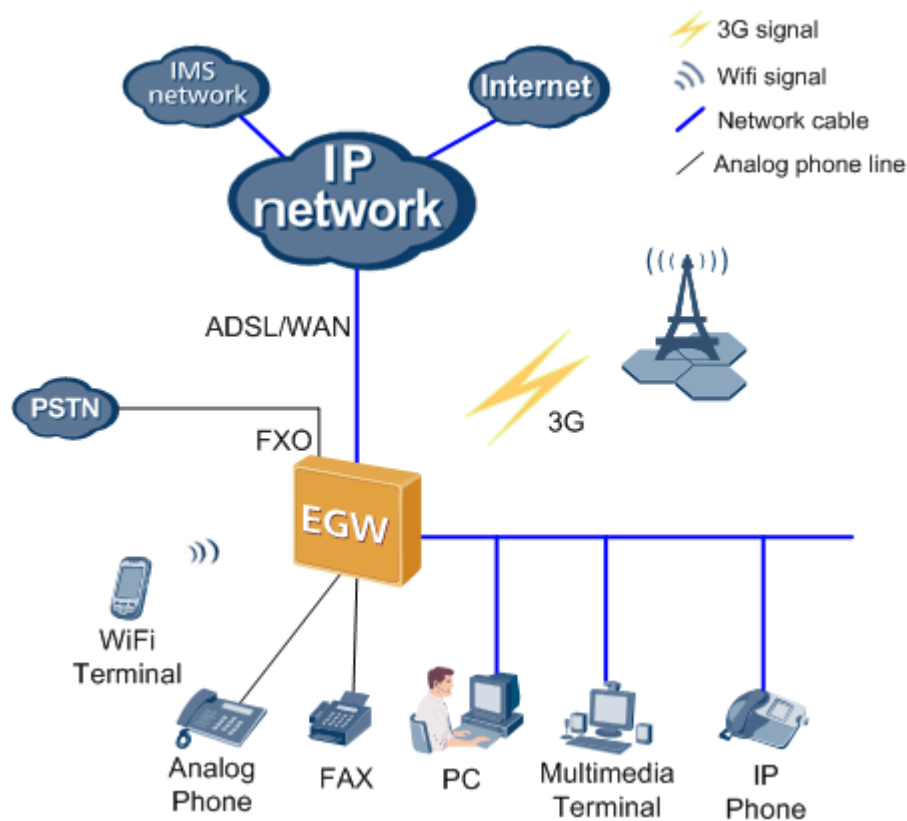
- The EGW1520 provides a small-capacity solution integrating voice and broadband services for small enterprises or SOHO users.
- The EGW1520 provides a comprehensive access solution for small branches by integrating with the eSpace UC solution.

3.2.1 Application of EGW1520 in SOHOs

The EGW1520 provides a small-capacity solution integrating voice and broadband services for small enterprises or SOHO users.

Figure 3-1 shows the networking mode for the application of the EGW1520 in SOHOs.

Figure 3-1 Application of the EGW1520 in SOHOs



Uplink Mode

The EGW1520 supports three uplink access modes, namely, Asymmetric Digital Subscriber Line (ADSL), Wide Area Network (WAN), and 3G, as shown in Figure 3-1.

The EGW1520 usually connects to an IP network through ADSL or WAN ports. When neither ADSL or WAN port is available, users can use USB-based 3G data cards 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 up each other.

Voice Application

The EGW1520 supports the IP PBX function. Users can use different terminals (such as analog phones, fax machines, and IP phones) to connect to the EGW1520 for internal communication. In addition, the EGW1520 acts as an agent to register users with the IMS or NGN to implement outgoing calls and provide voice services.

The FXO/LINE port supports the power-off survival function. When the EGW1520 encounters a power failure, the analog phone can be connected to the PSTN through the FXO/LINE port. In this way, the call function is still available even when the EGW1520 is powered off.

Data Application

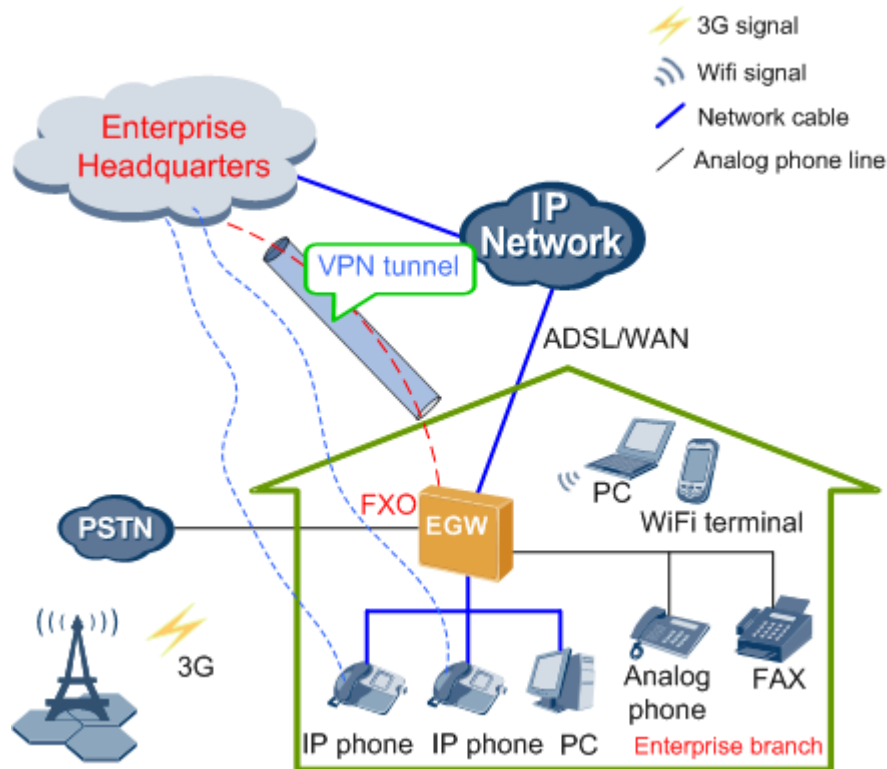
The EGW1520 can be used to set up an enterprise network in LAN or WLAN mode. LAN users use the EGW1520 to connect to the Internet to use various services. The EGW1520 also supports various data functions, such as WLAN, DNS, VLAN, DHCP, static routing, QoS, NAT, VPN, URL filtering, DMZ, analog server, and MAC address filtering.

3.2.2 Enterprise Branch

The EGW1520 integrates various eSpace UC solutions and is deployed in small-sized enterprise branches. As the network ingress, the EGW1520 provides a comprehensive access solution for enterprise branches.

[Figure 3-2](#) shows the networking mode for the application of the EGW1520 in enterprise branches.

Figure 3-2 Application of the EGW1520 in enterprise branches



Uplink Mode

The EGW1520 supports three uplink access modes, namely, ADSL, WAN, and 3G, as shown in [Figure 3-2](#).

The EGW1520 usually connects to an IP network through ADSL or WAN ports. When neither ADSL or WAN port is available, users can use USB-based 3G data cards 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 up each other.

Voice Application

Users within the enterprise branches are registered with the SIP server on the central node of the headquarters. The user numbers are allocated and synchronized to the EGW1520 by the data synchronization server. In the eSpace UC solution, the SIP server on the central node of the headquarters controls incoming and outgoing calls of enterprise branch users and provides voice services for these users.

The EGW1520 supports the trunking gateway function to process incoming and outgoing calls for the local PSTN. This function helps reduce enterprises' toll call costs.

The FXO1/LINE port supports the power-off survival function. When the EGW1520 encounters a power failure, the analog phone can be connected to the PSTN through the FXO1/LINE port. In this way, the call function is still available even when the EGW1520 is powered off.

Local Survival

The EGW1520 registers with the active and standby servers at the same time. If the active and standby SIP servers are both faulty, the EGW1520 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 EGW1520 exits the local survival mode.

Data Application

The EGW1520 can be used to set up an enterprise network in LAN or WLAN mode. LAN users use the EGW1520 to connect to the Internet to use various services. The EGW1520 also supports various data functions, such as WLAN, DNS, VLAN, DHCP, static routing, QoS, NAT, VPN, URL filtering, DMZ, analog server, and MAC address filtering.

3.3 Architecture

This topic describes the appearance, ports, and indicators of the EGW1520.

3.3.1 Appearance

EGW1520 is a box-shaped device that can be placed on a desk or mounted on the wall.

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

Figure 3-3 EGW1520 appearance



3.3.2 Ports and Buttons

This topic describes the EGW1520 ports and buttons.

[Figure 3-4](#) shows the EGW1520 ports and buttons.

Figure 3-4 EGW1520 ports

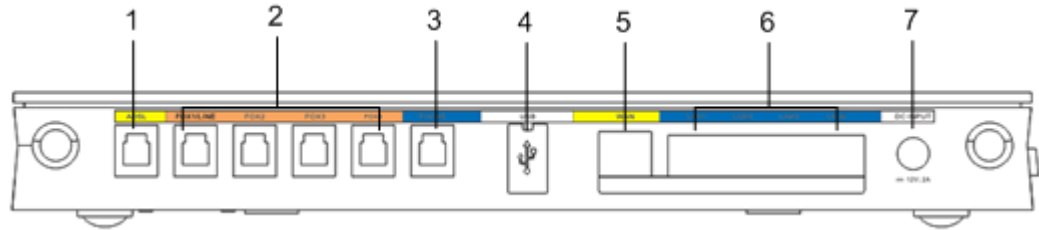


Figure 3-5 EGW1520 buttons

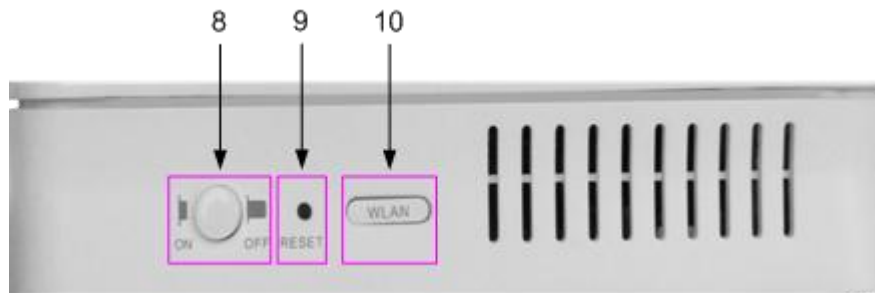


Table 3-1 describes the EGW1520 ports.

Table 3-1 EGW1520 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	FXO1-4	4	FXO port RJ-11	Enables phones connected to the EGW1520 to make calls. Enables the phone connected to PHONE1 to access the PSTN when the EGW1520 is powered off.
3	PHONE	1	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 only one analog phone. User line length (diameter is 0.4 mm) is equal to or less than 1 km. PHONE ports are only used indoors. Ports specifications

SN	Label	Quantity	Physical Port and Attribute	Function
				<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 EGW1520's ringing power is 50Vrms.
4	USB	1	USB port USB 2.0	Uses a 3G data card to connect to the 3G network.
5	WAN	1	WAN port RJ-45 MDI-X 10/100/1000 Base-TX Outdoor network port	Connects to the broadband network in WAN mode.
6	LAN1-4	4	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/2 A	1	Power supply port	Connects to the power supply adapter to provide power for the EGW1520. Requirement: 12 V DC, 2 A.
8	ON/OFF	1	Power switch	Switch for powering on and powering off the EGW1520.
9	RESET	1	Reset button	Restores the factory settings if this button is held down for more than six seconds. Restarts the EGW1520 if this button is held down less than six seconds.
10	WLAN	1	Wi-Fi control button	Enables the WiFi Protected Setup (WPS) function if this button is held down for more than six seconds. NOTE With the WPS function, the Wi-Fi terminal starts to authenticate the WPS. If the authentication exceeds two minutes, the function is not enabled. Enables or disables the WLAN function if this button is held down for less than six seconds.

3.3.3 Indicators

This topic describes the EGW1520 indicators.

Figure 3-6 shows the names of EGW1520 indicators.

Figure 3-6 Names of the EGW1520 indicators



Table 3-2 describes the indicators on the EGW1520 front panel.

Table 3-2 Indicators on the EGW1520 front panel

Indicator	Indication	Description
POWER	Indicates the power status.	Steady on: The EGW1520 is powered on. Off: The EGW1520 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 EGW1520 is powered off or the ADSL connection has not been established.
INTERNET	Indicates the WAN or 3G connection status.	Steady on: The EGW1520 works in routing mode and is connected to the WAN, but no data is transmitted. Blinking: The EGW1520 works in routing mode and is connected to the WAN, and data is being transmitted. Off: The EGW1520 works in bridge mode, works in routing mode and is not connected to the WAN, or is not powered on.
WLAN	Indicates the WLAN power or communication status.	Steady on: The WLAN has been enabled but no data is transmitted. Blinking: The WLAN is enabled and data is being transmitted. Off: The EGW1520 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 idle status. Blinking: At least one VoIP user is working. Off: The EGW1520 is powered off or the VoIP user failed to be registered with the SIP server.

Indicator	Indication	Description
PHONE	Indicates the phone status.	Steady on: The analog phone is picked up. Off: The EGW1520 is powered off or the analog phone is hung up.

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

Table 3-3 EGW1520 indicators on the network port

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

3.4 Functions and Features

The EGW1520 provides rich functions and features to support voice services and data services.

3.4.1 Voice Features

Voice Access

SIP Trunk

The SIP trunk supports the registration mode and static mode.

The EGW1520 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 to the IMS or NGN network using the SIP trunk, the EGW1520 processes internal calls and the SIP signaling for outer-office calls.

Common Mode

When functioning as a device on the access layer, the EGW1520 can register with the IMS or NGN network using the SIP trunk and process SIP signalings. When functioning as a small IP-PBX device, the EGW1520 accepts registration of IP phones and supports call control and protocol processing.

- A maximum of 20 SIP users can be registered.
- The EGW1520 provides four foreign exchange station (FXS) ports, connecting to a maximum of four POTS users.

- The EGW1520 supports a maximum of eight concurrent voice calls made by SIP users and POTS users. The maximum number of POTS users 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 EGW1520 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

The EGW1520 is used together with the eSpace UC solution. In UC mode, the EGW1520 can be registered with multiple SIP servers at the same time. Phones connecting to the EGW1520 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 EGW1520 is disconnected from the active and standby SIP servers, the EGW1520 automatically enters the local survival mode and functions as the local SIP server to accept registration of internal users. The EGW1520 processes all calls.

The EGW1520 can function as the local PSTN landing gateway, implementing local incoming and outgoing calls and helping reduce toll call fees.

Connecting to the PSTN Network

The EGW1520 provides one FXO port used to connect to the PSTN network. An intra-office user dials the outgoing prefix and an outer-office user's number to make an outgoing call through the FXO port. An outer-office user dials the number that the PSTN carrier allocates to the FXO port to make an incoming call. The EGW1520 supports the switchboard and dedicated line functions. By default, the switchboard function is enabled.

- The EGW1520 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.

Voice Services

This topic describes the voice services supported by the EGW1520. [Table 3-4](#) lists these voice services.

Table 3-4 Voice services

Type	Service
Voice service	Calling line identification presentation (CLIP)
	Switchboard service

Type	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
	Call back on busy (CBB)
	Voice message
	Message notification
Message retrieval	
CLIR 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

Voice QoS

This topic describes the voice QoS policies supported by the EGW1520.

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 EGW1520 enables the CNG function on the receiver end. The EGW1520 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 EGW1520 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 area spillover, or error codes. 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

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

Reliability

The EGW1520 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 for emergencies, which is used to avoid SIP server breakdown. Functioning as a voice access device in small branches, the EGW1520 can register with two SIP servers at the same time. When the active SIP server is faulty, the EGW1520 switches services to the standby SIP server. When the active SIP server is recovered, the EGW1520 switches services to the active SIP server.

Power-off Survival

The EGW1520 provides an FXO port for power-off survival. When the EGW1520 is powered off, the POTS phone connected to the PHONE port is automatically connected to the FXO

port to access the PSTN, which allows the EGW1520 to still support basic voice services during power-off.

Local Survival

Functioning as a voice access device in small branches, the EGW1520 supports local survival.

When the EGW1520 detects that the central node in the headquarters is disconnected from the SIP server, the EGW1520 processes local calls.

3.4.2 Data Features

The EGW1520 provides rich data services to meet requirements of different users.

ADSL

The EGW1520 can connect to an upstream network through the 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 EGW1520 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 service and the data service must use the same ADSL Permanent Virtual Circuits (PVC) channel.
- The EGW1520 can connect to an IP network through the ADSL or WAN port. The ADSL and WAN ports cannot be used at the same time or back each other up.

WAN Port

The EGW1520 can connect to an IP network through the WAN port. The ADSL and WAN ports cannot be used at the same time or back each other up.

- The EGW1520 provides a 10/100/1000 Mbit/s self-adaptive WAN port.
- The EGW1520 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 EGW1520 can connect to an IP network through the ADSL or WAN port. The ADSL and WAN ports cannot be used at the same time or back each other up.

3G

Generally, the EGW1520 connects to an IP network through the ADSL or WAN port. If a 3G data card is inserted into the USB port, the EGW1520 can also connect to a 3G network using the 3G data card. The 3G network connection supports voice (except the fax service) and data services.

- The EGW1520 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 network connection can be used as a backup network connection when no ADSL or WAN connection is available, and does not support fax, DMZ host, and virtual server functions.

Static Routes

Users can manually configure static routes on the EGW1520. Proper static routes improve the network performance and ensure that important network application obtain required bandwidth.

LAN Ports

Terminals such as PCs and IP phones can connect to the EGW1520 through LAN ports to establish 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 EGW1520 provides eight 10/100Mbit/s self-adaptive LAN ports.
- The default IP address for accessing the EGW1520 through LAN ports is 192.168.1.1 and the default the subnet mask is 255.255.255.0.
- The EGW1520 can function as a DHCP server and assign IP addresses to data terminals such as PCs and IP phones connected to the EGW1520 through LAN ports.

WLAN

The EGW1520 supports Wi-Fi services and wireless networking. It provides an integrated network solution that covers both wired and wireless networking for small enterprises.

- IEEE 802.11b/g/n is supported.
- A maximum of 16 Wi-Fi terminals can connect to the EGW1520 at the same time.
- Four Service Set Identifiers (SSIDs) can be configured and the EGW1520 supports SSID broadcasting or hiding.
- The MAC address filtering function is supported. A maximum of 16 MAC addresses can be added to the list of MAC addresses that are allowed to connect to the EGW1520.
- The Wi-Fi bridging function is not supported.

DNS

DNS allows users to specify meaningful domain names for network devices. The EGW1520 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 logical LANs, that is, multiple VLANs. Each VLAN is a broadcast domain. Hosts in the same VLAN communicate with each other the same as they are in the same LAN. Hosts in different VLANs cannot

communicate with each other directly. The EGW1520 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 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 EGW1520 can function as a DHCP server, DHCP relay, or DHCP client.

- As a DHCP server, the EGW1520 provides a configurable address pool. In the default address pool, IP addresses ranges from 192.168.1.2 to 192.168.1.254.
- As a DHCP relay, the EGW1520 complies with RFC3361.
- As a DHCP client, the EGW1520 supports Option42/43/60/61/66/67/120/125/150.

3.4.3 QoS

The EGW1520 provides a complete QoS mechanism to ensure that core services are allocated with sufficient bandwidth resources.

QoS policies can be customized to ensure precedence of core services. In addition, the EGW1520 limits bandwidth for common services (such as web-based upload) and saves it for core services (such as voice streams). The EGW1520 supports the following Diff-Serv-based QoS technologies: priority mark, congestion management, and traffic policing.

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

3.4.4 Security

The EGW1520 provides rich security functions to ensure the security of calls and transferred data.

NAT

NAT is the 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 the public IP address to access a public network. NAT works in the transport layer, and is transparent to the application layer.

This brings a great challenge SIP applications. The EGW1520 supports SIP Application Layer Gateway (ALG) that solves the SIP NAT traversal problem.

Incoming Packet Filtering

If the firewall is enabled on the LAN or WAN side, all packets sent to the EGW1520 through LAN ports or the WAN port are blocked. The incoming packet filtering function allows specific packets to access the EGW1520. For example, if the firewall is enabled on the LAN side, voice and data packets cannot access the EGW1520 through LAN ports. Users can configure the incoming packet filtering function to allow voice packets to access the EGW1520.

Outgoing Packet Filtering

By default, the EGW1520 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 sending certain data frames.

URL Filtering

The EGW1520 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.
- Partial match and full match are supported.
- Filtering rules that use wildcard characters are not supported. For example, users cannot use the asterisk (*) to represent full match.

Virtual Server

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

This function is not supported when the 3G access mode is used.

DMZ

The virtual server function allows external networks to access servers on private networks. If there are many services running on private network servers, multiple virtual servers must be configured. The configuration process is complicated. The DMZ function simplifies the configuration process. Only IP addresses of the DMZ servers must be configured.

- One DMZ host is supported.
- This function is not supported when the 3G access mode is used.

IPSec VPN

The EGW1520 can function as the access gateway for a small branch, and connect to the headquarters through the IPSec VPN channel, implementing secure access.

The EGW1520 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 EGW1520 can use the IP address of the peer device as the ID.

Configuration File Encryption

The EGW1520 encrypts the configuration file and sensitive data such as user names and passwords in the file.

The EGW1520 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 the WLAN
- User name and password for connecting to the 3G network
- TR-069 ACS user name and password
- SIP user name and password
- Password for connecting to the NTP server
- Password in the VPN shared key mode

The configuration file cannot be modified manually.

HTTPS

Users can safely transmit information between the web browser and EGW1520 using HTTPS protocol.

3.5 Operation and Maintenance

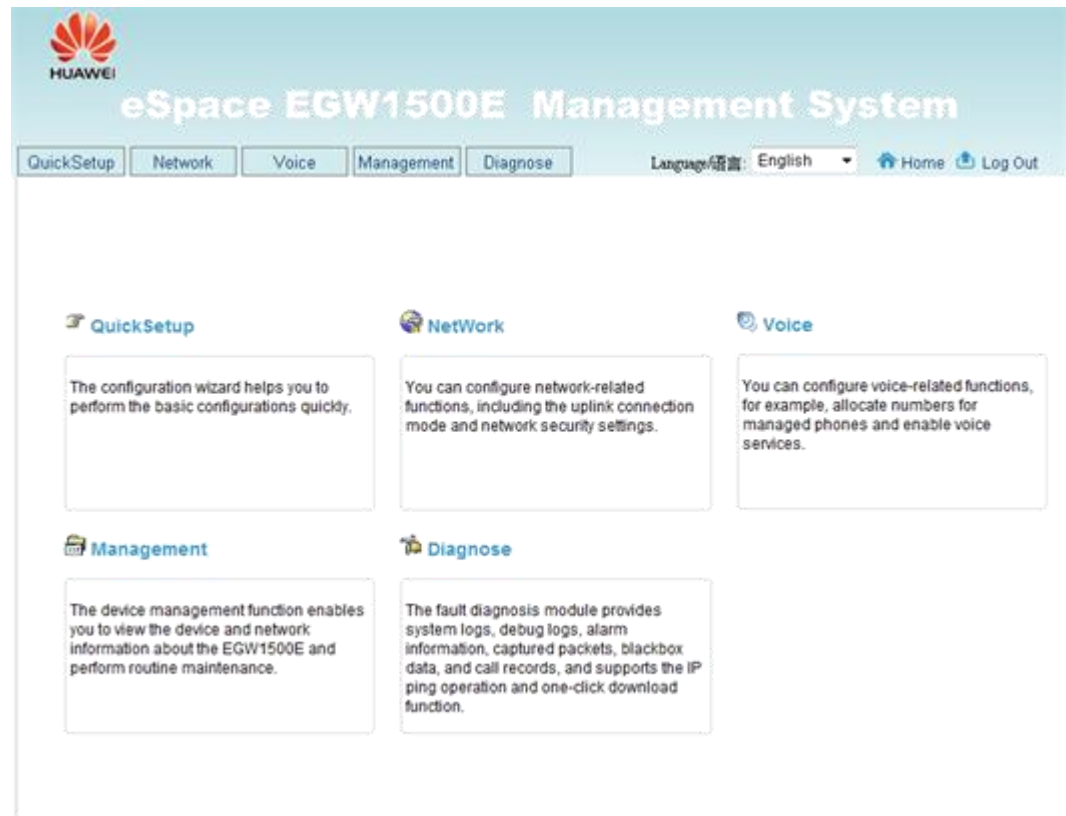
Users can manage the EGW1520 in the web management system and use the eSpace element management system (EMS) to operate and maintain the EGW1520.

3.5.1 Web-based Management

Users can configure, diagnose, and upgrade the EGW1520 in the web management system. The HTTPS and HTTP protocols are supported.

[Figure 3-7](#) shows the main page of the EGW1520 web management system.

Figure 3-7 Main page of the EGW1520 web management system



3.5.2 Unified Network Management

TR-069 is a DSL forum technical specification entitled CPE WAN Management Protocol (CWMP). It defines an application layer protocol for remote management of end-user devices. Huawei eSpace EMS uses TR-069 to manage and maintain the EGW1520 remotely.

TR-069 is used to upgrade versions, back up files, and restore configurations. Huawei eSpace EMS supports the following data models:

- TR-98 data model
- TR-104 data model

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

3.6 Technical Specifications, Standards, and Authentications

This topic describes the technical specifications, standards, and authentications of the EGW1520.

3.6.1 Technical Specifications

This topic describes EGW1520 technical specifications such as dimensions, weight, power supply, consumption, and running environment.

EGW1520 parameter table show in [Table 3-5](#) is displayed.

Table 3-5 EGW1520 parameters

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

3.6.2 Standards

This topic describes the standards that the EGW1520 complies with.

Table 3-6 Standards compliance

Service Name	Standard Name	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)
	Seamless Rate Adaption	ITU-T G.992.3 (01/2005)
	Encapsulation: PPPoE and PPPoA	PPPoE-RFC 2516 (February 1999)

Service Name	Standard Name	Standard Version
		PPPoA-RFC 2364 (July 1998)
WiFi	IEEE 802.11 b/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 Internet Protocol v4 (RFC 791)	IP Version 4-RFC 791 (September 1981)
	ARP Address Resolution Protocol (RFC 826)	RFC 826 (November 1982)
	ICMP Internet Control Message Protocol (RFC792)	RFC 792 (September 1981)
	TCP Transmission Control Protocol (RFC793)	RFC 792 (September 1981)
	UDP User Datagram Protocol (RFC768)	RFC 768 (August 1980)
	RTP Real-Time Protocol (RFC 3550) (RFC 3551)	RTP Version 2-RFC 3550 (July 2003) RFC 3551 (July 2003)
	RTCP Real Time Control Protocol (RFC 3550)	RTCP-RFC 3550 (July 2003)
	An Ethernet Address Resolution Protocol (RFC 826)	RFC 826 (November 1982)
	A Standard for the Transmission of IP Datagrams over Ethernet Networks (RFC 894)	RFC 894 (April 1984)
	A 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 2.0-RFC 3261 (June

Service Name	Standard Name	Standard Version
		2002)
	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)

Service Name	Standard Name	Standard Version
	TR-104	TR-104 (September 2005)

4 Installation

About This Chapter

EGW1520 is a box-shaped device. This topic describes how to install EGW1520.

4.1 Checking the Installation Environment

Before installation, check the installation environment.

4.2 Unpacking Check

You need to check the received equipment according to the packing list and check whether all the materials (such as hosts, cables, and CD-ROMs) are complete and undamaged.

4.3 Preparing Installation Tools

This topic describes the tools for installing the EGW1520 on the wall. If you want to install the EGW1520 on a horizontal surface, place it on the surface.

4.4 Installing EGW1520

Install EGW1520 on a horizontal surface or on the wall.

4.5 Connecting Cables

This topic describes how to connect cables for the EGW1520.

4.6 Powering On the EGW1520

After cables are connected, press the power button to power on the EGW1520. View the indicators and verify that the EGW1520 is working properly.

4.1 Checking the Installation Environment

Before installation, check the installation environment.

Table 4-1 lists the major check items in the installation environment.

Table 4-1 Major check items in the installation environment

Item	Requirement
Damppr	Working humidity: 5%-95% relative humidity (RH), no condensing. The

Item	Requirement
oof	dehumidifier devices such as air conditioners with the dehumidifier function and special dehumidifiers must be installed in the equipment room where the relative humidity is higher than 95%. Water seepage, dripping, and dew condensation are forbidden in the room.
Dustproof	If the equipment room is close to a dust source, such as a coal mine, a country road or a farmland, install aluminum alloy windows and fireproofing doors.
Lightproof	Place the device in an environment without direct and strong sunlight.
Interference-proof	Prevent interference caused by other radio devices such as WLAN APs within 50 m. Place the device at the center of the working area by considering the WLAN coverage range. Install the antennas vertically to get the best WLAN performance.
AC power	Stable AC power supply (220 V) must be provided indoors and meets power supply requirements (600 W).
Heat dissipation	Place the device in an environment with good ventilation and without heat sources. Leave more than 10 cm space for heat dissipation at the top and all four sides of the device.

4.2 Unpacking Check

You need to check the received equipment according to the packing list and check whether all the materials (such as hosts, cables, and CD-ROMs) are complete and undamaged.

Table 4-2 Packing list

Item	Quantity	Remarks
eSpace EGW1520 including antennas	1	-
Power supply adapter	1	12V,2A
Asymmetric digital subscriber line (ADSL) splitter	1	-
Analog phone line	3	-
Straight-through network cable	1	A straight-through network cable is 2 meters long.
Swell fixtures	2	Swell fixtures are used to install the EGW1520 on the wall.
Document and CD-ROM	1	<i>eSpace EGW1520 Enterprise Gateway Product Documentation and Copyright Notice</i>

Item	Quantity	Remarks
		<i>& Warranty Disclaimer and Written Offer.</i>
<i>eSpace EGW1520 Enterprise Gateway Quick Start</i>	1	<i>Qualification Card and Declaration on Hazardous Substances in Electronic Information Products.</i>

 **NOTE**

If any material is damaged or lost, contact the local merchant.

4.3 Preparing Installation Tools

This topic describes the tools for installing the EGW1520 on the wall. If you want to install the EGW1520 on a horizontal surface, place it on the surface.

Table 4-3 Installation tools

Phillips screwdriver 	Claw hammer 
Hammer drill 	Level ruler 

4.4 Installing EGW1520

Install EGW1520 on a horizontal surface or on the wall.

Context

Installing EGW1520 on a horizontal surface is easy. You only need to place it on the surface and leave 10 cm space around for heat dissipation. This topic describes how to install EGW1520 on the wall.



NOTE

When installing EGW1520 on the wall, do not drop it to prevent damage.

Procedure

Step 1 Mark installation holes on the wall.

Mark an installation hole, and use a level ruler to measure a distance of 150 mm and mark the second hole.

Step 2 Drill holes.

Choose a drill bit (diameter 4mm) on EGW1520's rear panel. Drill two holes on the marked positions.

Step 3 Fix the swell fixtures.

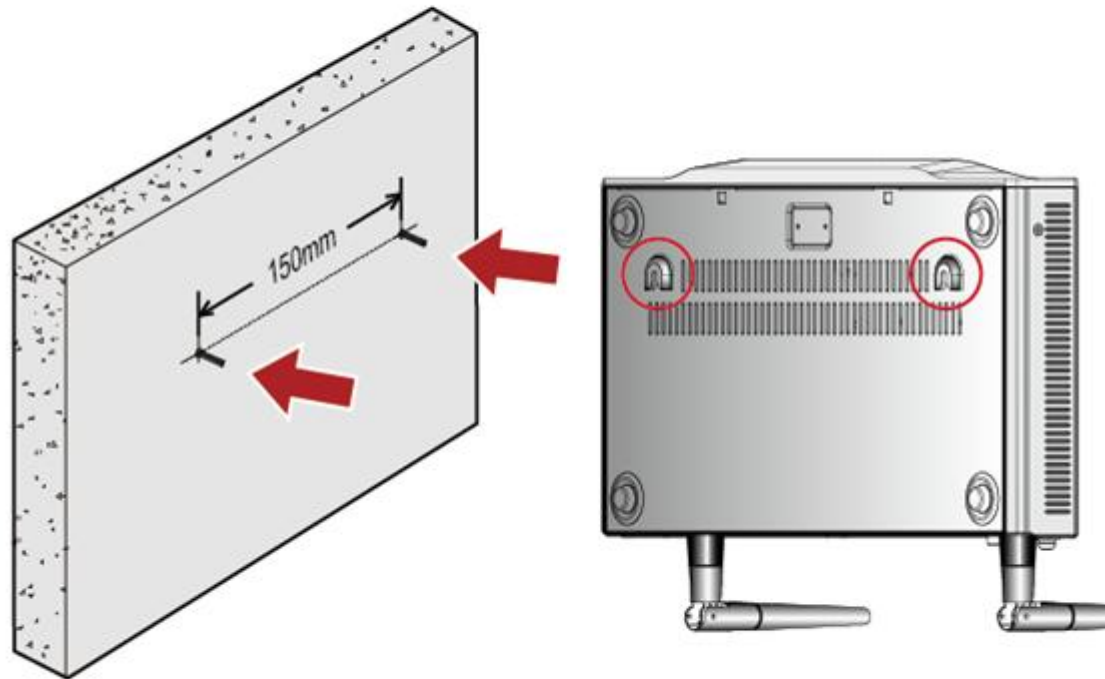
Use a claw hammer to strike the two M4 swell fixtures to the holes, and use a Phillips screwdriver to tighten them. Ensure that 5 mm of the swell fixtures is exposed for mounting EGW1520.

Step 4 Mount EGW1520 on the wall.

Mount EGW1520 to the exposed swell fixtures.

[Figure 4-1](#) shows how to mount EGW1520 on the wall.

Figure 4-1 Mounting EGW1520 on the wall



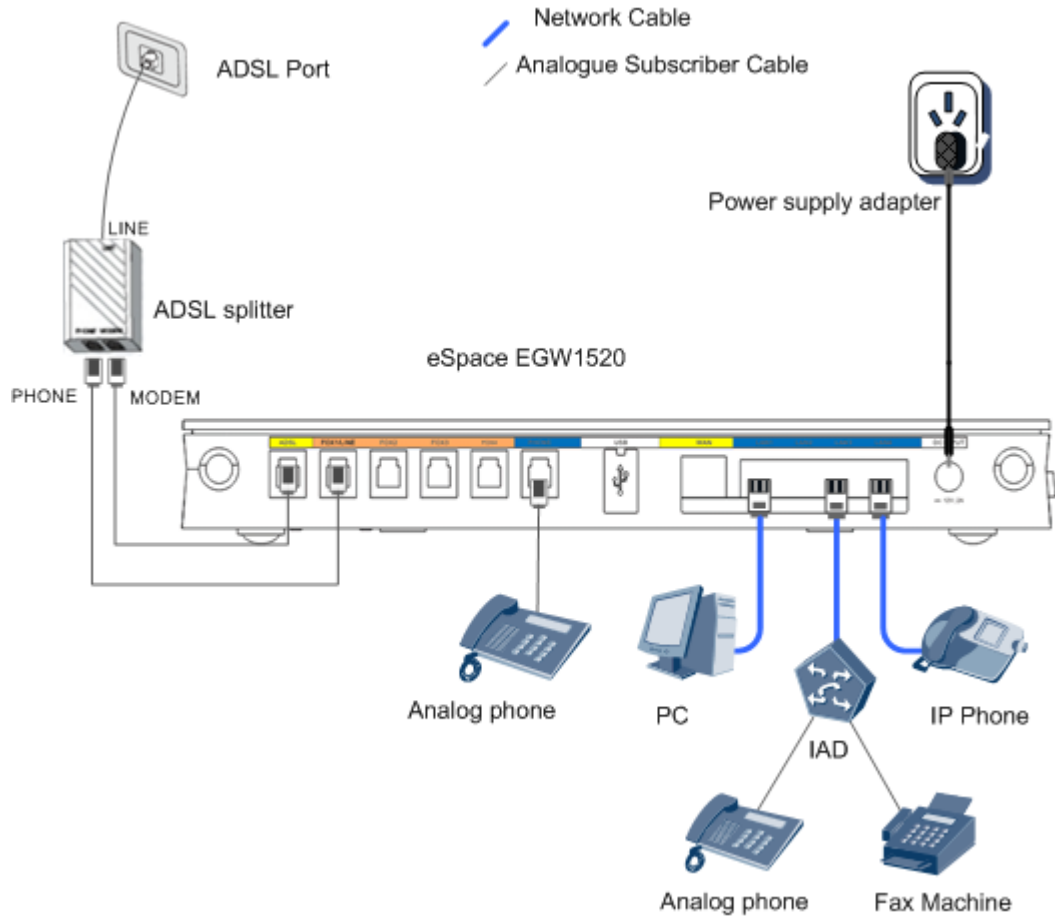
----End

4.5 Connecting Cables

This topic describes how to connect cables for the EGW1520.

Select a cable connection mode based on the site requirements. [Figure 4-2](#) and [Figure 4-3](#) show the cable connection modes.

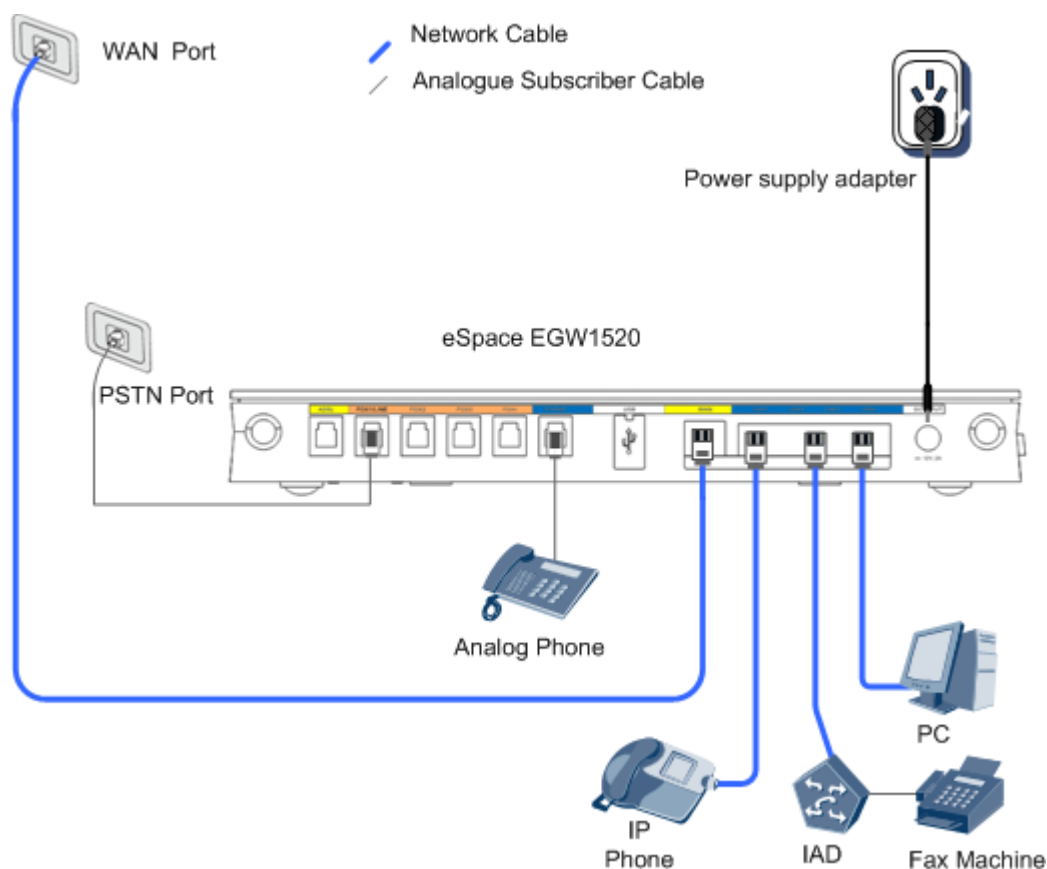
Figure 4-2 ADSL access



NOTE

The ADSL splitter separates voice and data signals. You can connect the splitter to ADSL and FXO ports of the EGW1520 or connect ADSL ports on user devices to the ADSL port of the EGW1520.

Figure 4-3 WAN access



NOTE

- The EGW 1520 provides four LAN interfaces, which can connect to terminals such as computers and IP phones. To use more than four LAN interfaces, connect the EGW 1520 to an Ethernet switch or hub.
- The EGW 1520 provides one POTS interfaces (PHONE), which can connect to analog phones or fax machines. To use more than one POTS interfaces, connect the EGW 1520 to an IAD.

4.6 Powering On the EGW1520

After cables are connected, press the power button to power on the EGW1520. View the indicators and verify that the EGW1520 is working properly.

NOTE

Before pressing the power button, ensure that all cables are connected correctly to the ports.

Figure 4-4 shows the location of the power button. If the POWER indicator is on, the EGW1520 works properly.

Figure 4-4 Power button



Check the indicator status after the device is powered on. [Table 4-4](#) and [Table 4-5](#) describe the indicators and what they mean.

Table 4-4 Indicators on the EGW1520 front panel

Indicator	Indication	Description
POWER	Indicates the power status.	Steady on: The EGW1520 is powered on. Off: The EGW1520 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 EGW1520 is powered off or the ADSL connection has not been established.
INTERNET	Indicates the WAN or 3G connection status.	Steady on: The EGW1520 works in routing mode and is connected to the WAN, but no data is transmitted. Blinking: The EGW1520 works in routing mode and is connected to the WAN, and data is being transmitted. Off: The EGW1520 works in bridge mode, works in routing mode and is not connected to the WAN, or is not powered on.
WLAN	Indicates the WLAN power or communication status.	Steady on: The WLAN has been enabled but no data is transmitted. Blinking: The WLAN is enabled and data is being transmitted. Off: The EGW1520 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 idle status. Blinking: At least one VoIP user is working. Off: The EGW1520 is powered off or the VoIP user failed to be registered with the SIP server.
PHONE	Indicates the phone status.	Steady on: The analog phone is picked up. Off: The EGW1520 is powered off or the analog phone is hung up.

Table 4-5 EGW1520 indicators on the network port

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

5 Quick Configuration (UC Mode)

This topic describes how to quickly configure the EGW1520 in UC mode. After the EGW1520 is configured, it provides Internet access and basic voice services.

[Table 5-1](#) describes the EGW1520 configuration items.

Table 5-1 Quick configuration (UC mode)

Configuration Item		Description
Country	<ul style="list-style-type: none"> • China • Ireland • New Zealand • Other 	Select the country where you are.

Internet access	Internet access mode	ADSL or WAN.
	WLAN function	Configure the WLAN function and set a password to access the WLAN.
Voice configuration	Data synchronization server	Set data synchronization server parameters, such as the IP address, port number, and synchronization key.
	SIP server	Set parameters of the SIP server at the headquarters. The parameters include the address and port number.
	FXO	Set an outgoing prefix and determine whether to delete the outgoing prefix for outgoing calls.

Prerequisites

You have logged in to the web management system. For the login operations, see [7.7.1 Web Management](#).

Procedure

- Step 1** On the web management system, choose **Quick Setup** from the navigation tree.
The page shown in [Figure 5-1](#) is displayed.

Figure 5-2 Selecting a country




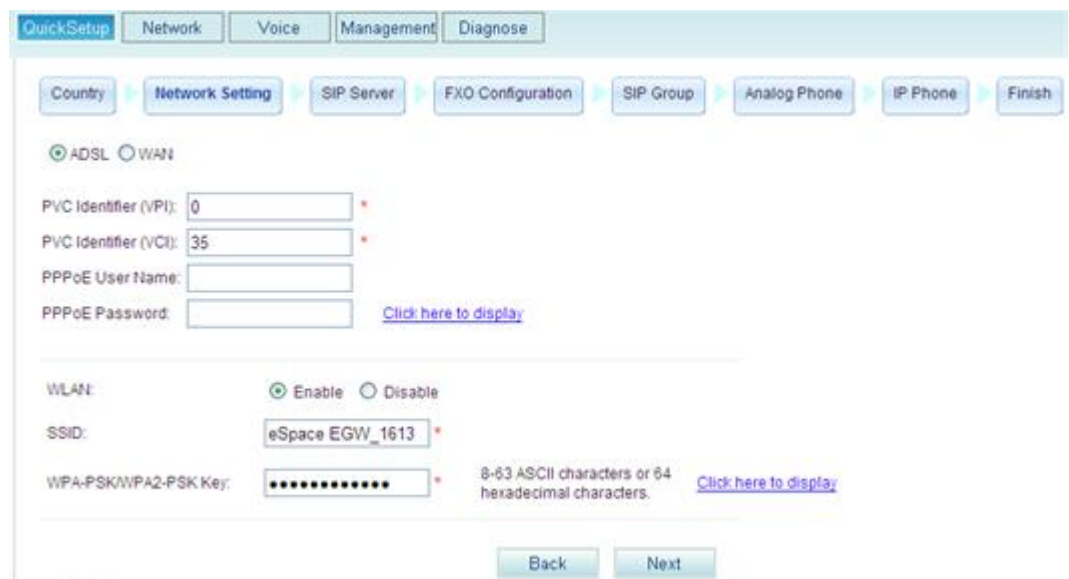
- Step 2** Select the country where you are, and click  .
The page shown in [Figure 5-2](#) is displayed.

Figure 5-3 Configuring the network



- Step 3** Configure the network.

After you click one of the following links, the corresponding configuration procedure is displayed.

- [ADSL](#)
- [WAN](#)

If ADSL is selected, the configuration procedure is as follows:

1. Set parameters according to [Table 5-2](#).

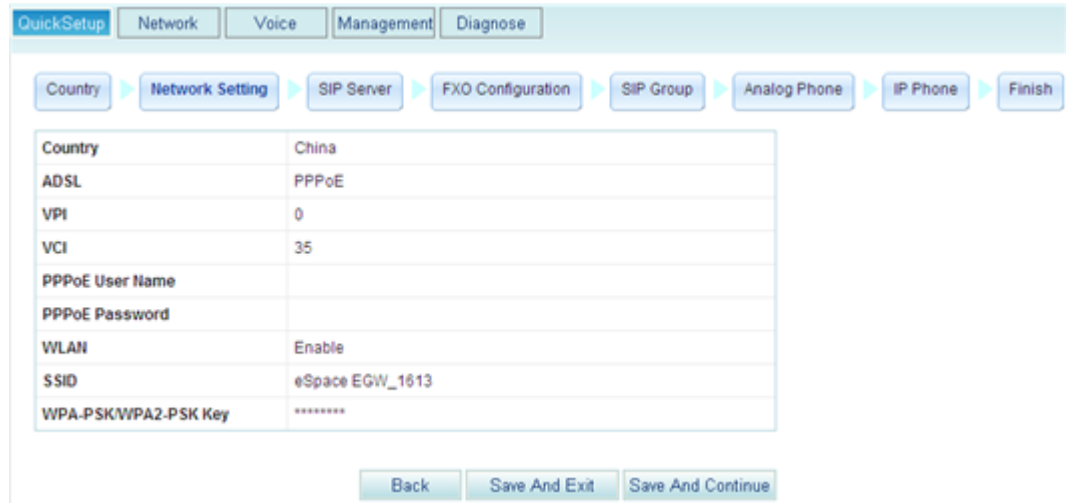
Table 5-2 Network parameters

Parameter	Description
PVC Identifier (VPI)	Virtual path identifier (VPI). The value is provided by the network carrier.
PVC Identifier (VCI)	Virtual channel identifier (VCI). The value is provided by the network carrier.
PPPoE user name	User name used to access the network. The value is provided by the network carrier.
PPPoE Password	Password used to access the network. The value is provided by the network carrier.
WLAN	Whether to enable the WLAN function. This function is enabled by default.
SSID	ID of the EGW1520. The ID is displayed on a Wi-Fi terminal after the terminal finds the EGW1520.
WPA-PSK/WPA2-PSK Key	Password used to access the WLAN. The password is encrypted through Wi-Fi protected access II-pre-shared key (WPA2-PSK) and WPA-PSK. The EGW1520 uses the PSK to encrypt all communication, which prevents unauthorized listening and access.

2. Click  .


The page shown in [Figure 5-3](#) is displayed.

Figure 5-4 Network configuration complete



3. Click 

 **NOTE**

To save the configuration and exit, click 

If WAN is selected, the configuration procedure is as follows:

1. Click **WAN** on the page shown in [Figure 5-2](#). Set parameters according to [Table 5-3](#).

Table 5-3 Network parameters

Parameter	Description
PPPoE	Indicates that Point-to-Point Protocol over Ethernet (PPPoE) is used. <ul style="list-style-type: none"> • PPPoE User Name: user name used to access the network. The value is provided by the network carrier. • PPPoE Password: password used to access the network. The value is provided by the network carrier.
Static IP	Indicates that the static IP address of the EGW1520 is used. The setting must be the same as that on the Broadband Remote Access Server (BRAS) of the network carrier. <ul style="list-style-type: none"> • WAN IP Address: IP address used to access the network. The value is provided by the network carrier. • WAN Subnet mask: subnet mask. The value is provided by the network carrier. The default value is 255.255.255.0. • WAN gateway IP Address: IP address of the gateway. The value is provided by the network carrier. • Primary DNS server: IP address of the primary DNS server. The value is provided by the network carrier. • Secondary DNS server: IP address of the secondary DNS

Parameter	Description
	server. The value is provided by the network carrier.
DHCP	As a DHCP client, the EGW1520 obtains the IP address from the DHCP server. The IP address must be the same as that on the BRAS of the network carrier.
WLAN	Indicates whether to enable the WLAN function. This function is enabled by default.
SSID	Indicates the ID of the EGW1520. The ID is displayed on a Wi-Fi terminal after the terminal finds the EGW1520.
WPA-PSK/WPA2-PSK Key	Indicates the password to access the WLAN. The password is encrypted through Wi-Fi protected access II-pre-shared key (WPA2-PSK) and WPA-PSK. The EGW1520 uses the PSK to encrypt all communication, which prevents unauthorized listening and access.


- Click  .
The page shown in [Figure 5-4](#) is displayed.

Figure 5-5 Configuration result



- Click  .

 **NOTE**

To save the configuration and exit, click



Step 4 Configure the voice.


- Click **Enable** for **UC Mode**, and click  .
The page shown in [Figure 5-5](#) is displayed.

Figure 5-6 Configuring the SIP server when the UC mode is enabled



NOTE

UC Mode is set to **Disable** before the device is delivered. The synchronized user data is cleared when the system changes from the UC mode to the common mode.

- Set parameters according to [Table 5-4](#).

Table 5-4 SIP server parameters

Parameter	Description
IP	IP address of the data synchronization server. The value is provided by the enterprise IT administrator.
Port	Port number of the data synchronization server. The value is provided by the enterprise IT administrator. If it is not provided, use the default value 8098.
DataSync Key	Data synchronization key. When the EGW1520 synchronizes data with the data synchronization server, the synchronization keys of the EGW1520 and the data synchronization server must be the same. Otherwise, the EGW1520 denies data synchronization. The value is a string of 1 to 32 characters that can be digits, letters, and special characters. For the detailed configuration rule, contact the enterprise IT administrator.
Working Mode	<ul style="list-style-type: none"> Master: active server. The server that is added first is the active server. Slave: standby server.
OptionInterval	Interval for sending heartbeat detection messages to the active and standby server. The value ranges from 30 to 150, in seconds. The default value 90 is recommended.

Parameter	Description
Address Type	IP address or DNS mode. The value is provided by the enterprise IT administrator.
IP/Domain	IP address or DNS domain name of the SIP server. The value is provided by the enterprise IT administrator.
DNS Type	<p>IP address parsing mode of the DNS. This parameter is valid when Address Type is set to Domain.</p> <ul style="list-style-type: none"> SRV: A domain name can be mapped to multiple IP addresses. The two IP addresses of the highest priority are used as the IP addresses of the active and standby SIP servers. <p>NOTE If you set DNS Type to SRV, you do not need to configure the standby SIP server.</p> <ul style="list-style-type: none"> HOST: One domain name corresponds to one IP address. To perform switchover between the active and standby servers, two SIP servers need to be configured.
Server Type	SIP network type inside the enterprise. Generally, set the network type to NGN if the eSpace U1900 is used or IMS if the eSpace U2900 is used. For details, contact the enterprise IT administrator.
Port	Port number of the SIP server. The value is provided by the enterprise IT administrator. If it is not provided, use the default value 5060.
Expiration Time	Interval for the registration group to register POTS users in the group with the SIP server. The value ranges from 0 to 14400, in seconds. The default value 360 is recommended.


3. Click  .
The page shown in [Figure 5-6](#) is displayed.

Figure 5-7 Setting an outgoing prefix




4. Click , and set parameters according to [Table 5-5](#).

Table 5-5 FXO prefix parameters

Parameter	Description
Prefix	Outgoing prefix for the FXO port. The value is a number of 1 to 30 digits. An intra-office user can dial the outgoing prefix to make an outgoing call through the FXO port. For details, see Description . The outgoing prefix must be the same as that set on the SIP server at the headquarters.
Property	<ul style="list-style-type: none"> Remove: The outgoing prefix is deleted for outgoing calls. Assume that the outgoing prefix is 0 and the number of an outer-office user is 12345678. To call this user, an intra-office user dials 012345678. Retain: The outgoing prefix is not deleted for outgoing calls. This mode is applicable to the situation where the outgoing prefix is the same as the first digit in the outer-office number. Assume that the outgoing prefix is 1 and the number of an outer-office user is 12345678. To call this user, an intra-office user dials 12345678. <p>NOTE The number that the PSTN carrier allocates to the FXO port is displayed to the called party.</p>

 **NOTE**

To reset the outgoing prefix parameters after the configuration, select the configuration items and click

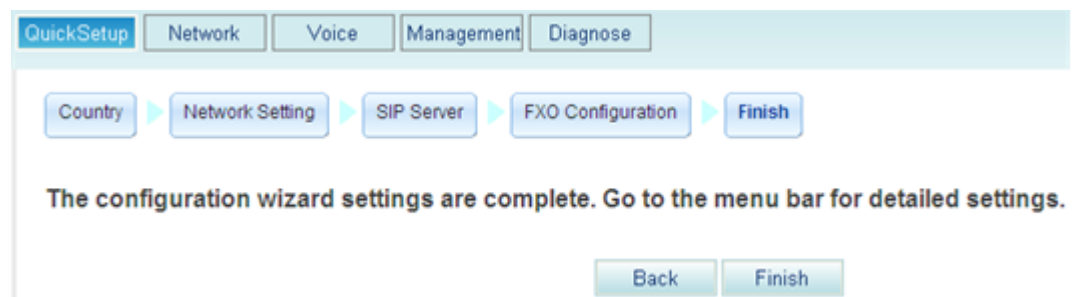


to delete the original settings.

5. Click .

The page shown in [Figure 5-7](#) is displayed.

Figure 5-8 Configuration complete



6. Click  to finish the settings.

----End

6 Quick Configuration (Common Mode)

This topic describes how to quickly configure the EGW1520 in common mode. After the EGW1520 is configured, it provides Internet access and basic voice services.

[Table 6-1](#) describes the EGW1520 configuration items.

Table 6-1 Quick configuration (common mode)

Configuration Item		Description
Country	<ul style="list-style-type: none">• China• Ireland• New Zealand• Other	Select the country where you are.
Internet access	Internet access mode	ADSL or WAN.
	WLAN function	Configure the WLAN function and set a password to access the WLAN.
Voice	SIP server	Set SIP server parameters, such as the address and port number.
	FXO	Set an outgoing prefix and determine whether to delete the outgoing prefix for outgoing calls.
	Registration group	Set phone registration group parameters, such as the registration type and mode.
	Analog phone	Set analog phone parameters, such as the internal number and external number.
	IP phone	Set IP phone parameters, such as the internal number and external number.

Prerequisites

You have logged in to the web management system. For the login operations, see [7.7.1 Web Management](#).

Procedure

- Step 1** On the web management system, choose **Quick Setup** from the navigation tree.
The page shown in [Figure 6-1](#) is displayed.

Figure 6-2 Selecting a country




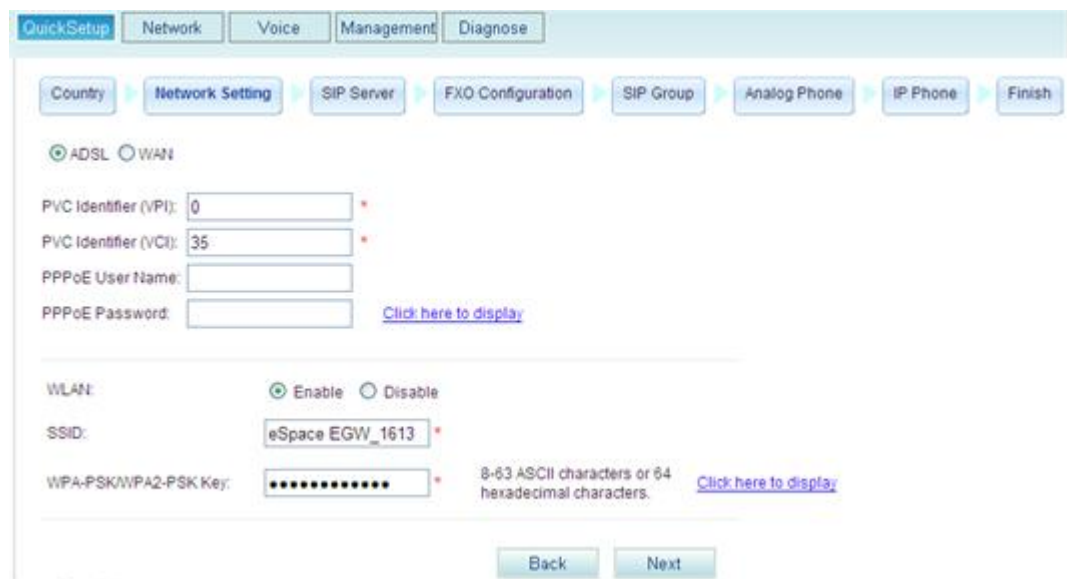
- Step 2** Select the country where you are, and click  .
The page shown in [Figure 6-2](#) is displayed.

Figure 6-3 Configuring the network



- Step 3** Configure the network.

After you click one of the following links, the corresponding configuration procedure is displayed.

- [ADSL](#)
- [WAN](#)

If ADSL is selected, the configuration procedure is as follows:

1. Set parameters according to [Table 6-2](#).

Table 6-2 Network parameters


Parameter	Description
PVC Identifier (VPI)	Virtual path identifier (VPI). The value is provided by the network carrier.
PVC Identifier (VCI)	Virtual channel identifier (VCI). The value is provided by the network carrier.
PPPoE user name	User name used to access the network. The value is provided by the network carrier.
PPPoE Password	Password used to access the network. The value is provided by the network carrier.
WLAN	Whether to enable the WLAN function. This function is enabled by default.
SSID	ID of the EGW1520. The ID is displayed on a Wi-Fi terminal after the terminal finds the EGW1520.
WPA-PSK/WPA2-PSK Key	Password used to access the WLAN. The password is encrypted through Wi-Fi protected access II-pre-shared key (WPA2-PSK) and WPA-PSK. The EGW1520 uses the PSK to encrypt all communication, which prevents unauthorized listening and access.

2. Click  .


The page shown in [Figure 6-3](#) is displayed.

Figure 6-4 Network configuration complete



3. Click 

 **NOTE**

To save the configuration and exit, click 

If WAN is selected, the configuration procedure is as follows:

1. Click **WAN** on the page shown in [Figure 6-2](#). Set parameters according to [Table 6-3](#).

Table 6-3 Network parameters

Parameter	Description
PPPoE	<p>Indicates that Point-to-Point Protocol over Ethernet (PPPoE) is used.</p> <ul style="list-style-type: none"> • PPPoE User Name: user name used to access the network. The value is provided by the network carrier. • PPPoE Password: password used to access the network. The value is provided by the network carrier.
Static IP	<p>Indicates that the static IP address of the EGW1520 is used. The setting must be the same as that on the Broadband Remote Access Server (BRAS) of the network carrier.</p> <ul style="list-style-type: none"> • WAN IP Address: IP address used to access the network. The value is provided by the network carrier. • WAN Subnet mask: subnet mask. The value is provided by the network carrier. The default value is 255.255.255.0. • WAN gateway IP Address: IP address of the gateway. The value is provided by the network carrier. • Primary DNS server: IP address of the primary domain name server (DNS) server. The value is provided by the network carrier. • Secondary DNS server: IP address of the secondary DNS

Parameter	Description
	server. The value is provided by the network carrier.
DHCP	As a DHCP client, the EGW1520 obtains the IP address from the DHCP server. The IP address must be the same as that on the BRAS of the network carrier.
WLAN	Indicates whether to enable the WLAN function. This function is enabled by default.
SSID	Indicates the ID of the EGW1520. The ID is displayed on a Wi-Fi terminal after the terminal finds the EGW1520.
WPA-PSK/WPA2-PSK Key	Indicates the password used to access the WLAN. The password is encrypted through Wi-Fi protected access II-pre-shared key (WPA2-PSK) and WPA-PSK. The EGW1520 uses the PSK to encrypt all communication, which prevents unauthorized listening and access.


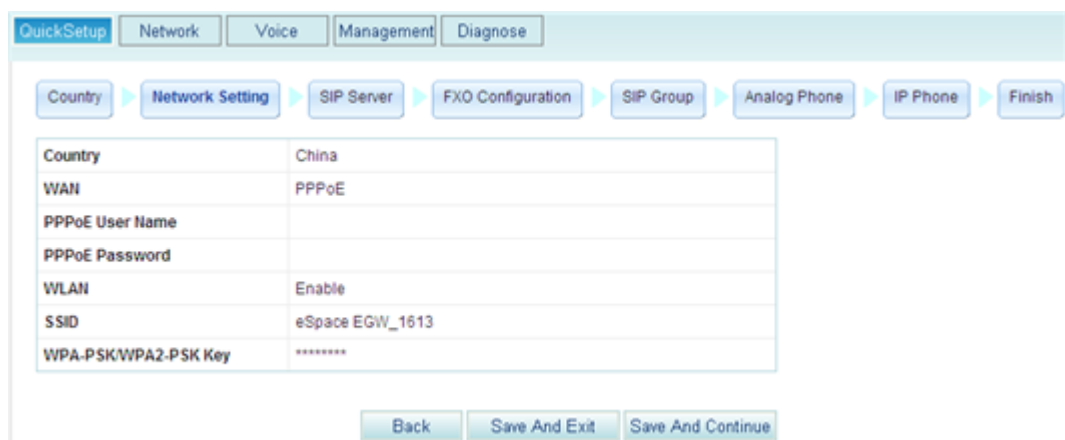
- Click  .
The page shown in [Figure 6-4](#) is displayed.

Figure 6-5 Configuration result



- Click  .



NOTE

To save the configuration and exit, click



Step 4 Configure the voice.


- Click  .
The page shown in [Figure 6-5](#) is displayed.

Figure 6-6 Adding an SIP server



NOTE

UC Mode is set to **Disable** before the device is delivered. The synchronized user data is cleared when the system changes from the UC mode to the common mode.

2. Set parameters according to [Table 6-4](#).

Table 6-4 SIP server parameters

Parameter	Description
Working Mode	<ul style="list-style-type: none"> • Master: active server. The server that is added first is the active server. • Slave: standby server.
Recovery	Whether to enable the failback function. When the active server fails, resources and services will be automatically switched to the standby server. If this function is enabled, resources and services will be automatically switched back to the original active server after the original active server has been recovered.
OptionInterval	Interval for sending the option messages to the active server. The value ranges from 10 to 900, in seconds. The default value 60 is recommended. NOTE The option messages are sent to the active server only, and therefore this parameter is valid only for the active server.
Address Type	IP address or DNS mode. The value is provided by the network carrier.
IP/Domain	IP address or DNS domain name of the SIP server. The value is provided by the network carrier.
DNS Type	IP address parsing mode of the DNS. This parameter is valid when Address Type is set to Domain . <ul style="list-style-type: none"> • SRV: A domain name can be mapped to multiple IP addresses. The two IP addresses of the highest priority are used as the IP addresses of the active and standby SIP servers. NOTE If you set DNS Type to SRV , you do not need to configure the standby SIP server. <ul style="list-style-type: none"> • HOST: One domain name corresponds to one IP address. To

Parameter	Description
	perform switchover between the active and standby servers, two SIP servers need to be configured.
Server Type	SIP network type. The value is provided by the network carrier.
Port	Port number of the SIP server. The value is provided by the network carrier. The default value 5060 is recommended.
Expiration Time	Timeout interval for the registration group to register with the SIP server. The value ranges from 0 to 14400, in seconds. The default value 360 is recommended.


3. Click  .
The page shown in [Figure 6-6](#) is displayed.

Figure 6-7 Setting an outgoing prefix




4. Click  , and set parameters according to [Table 6-5](#).

Table 6-5 FXO parameters

Parameter	Description
Prefix	<p>Outgoing prefix for the FXO port. The value is a number of 1 to 30 digits. An intra-office user can dial the outgoing prefix to make an outgoing call through the FXO port.</p> <p>NOTE</p> <ul style="list-style-type: none"> A maximum of 16 outgoing prefixes can be configured for the FXO port on the EGW1520. An intra-office user can use any one of the outgoing prefixes to make an outgoing call through the FXO port. The outgoing prefix cannot conflict with internal numbers and emergency numbers. If an internal number is the same as the outgoing prefix plus an outer-office number, the internal user is connected.
Property	<ul style="list-style-type: none"> Remove: The outgoing prefix is deleted for outgoing calls. Assume that the outgoing prefix is 0 and the number of an outer-office user is 12345678. To call this user, an intra-office user dials 012345678. Retain: The outgoing prefix is not deleted for outgoing calls. This

Parameter	Description
	<p>mode is applicable to the situation where the outgoing prefix is the same as the first digit in the outer-office number.</p> <p>Assume that the outgoing prefix is 1 and the number of an outer-office user is 12345678. To call this user, an intra-office user dials 12345678.</p> <p>NOTE The number that the PSTN carrier allocates to the FXO port is displayed to the called party.</p>



NOTE

To reset the outgoing prefix parameters after the configuration, select the configuration items and click



to delete the original settings.

- Click .

The page shown in [Figure 6-7](#) is displayed.

Figure 6-8 Configuring a registration group



NOTE

Configure a registration group when the softswitch is required for intra-office users to make outgoing calls.

- Click , and set parameters according to [Table 6-6](#).

Table 6-6 Registration group parameters

Parameter	Description
Register Type	<p>Registration type. The value is provided by the network carrier.</p> <ul style="list-style-type: none"> • Single: Only one user can exist in the registration group. The value of Register Type is Single for the NGN network. • Group: Multiple users can exist in the registration group. • Wildcard: Wildcard registration group. This registration group registers with the IMS or NGN based on certain wildcard rules, which are provided by the network carrier.
Authentication	<p>Authentication mode used when a registration group registers with the IMS or NGN. The value is provided by the network carrier.</p>

Parameter	Description
Password	Authentication password used when a registration group registers with the IMS or NGN. The value is provided by the network carrier.
Sip Trunk ID	SIP trunk ID used when a registration group registers with the IMS or NGN. The value is provided by the network carrier.
Sip Trunk Name	User name used when a registration group registers with the IMS or NGN. The value is provided by the network carrier.
IMS Domain	IMS domain name used when a registration group registers with the IMS. The value is provided by the network carrier.


7. Click  .
The page shown in [Figure 6-8](#) is displayed.

Figure 6-9 Configuring an analog phone



8. Click , and set parameters according to [Table 6-7](#).

Table 6-7 Analog phone parameters

Parameter	Description
Port	Port number used by the analog phone to access the EGW1520. Value 1 indicates the PHONE1 port on the EGW1520, value 2 indicates the PHONE2 port, and the rest can be deduced by analogy. NOTE You are advised to use the PHONE1 port because it supports the power-off survival function.
Internal No	The internal number is used for the calls between intra-office subscribers. The value is a number of 1 to 30 digits, which can be user-defined. It cannot conflict with any service prefixes, emergency numbers, outer-office numbers, or other intra-office numbers.
Registration Group	Registration group ID that is used when a POTS phone registers with the IMS/NGN network.
External No	External number for outgoing and incoming calls. The value is provided by the network carrier. This parameter is valid after you set

Parameter	Description
	<p>the SIP Group parameter. The external number cannot conflict with any service prefixes, emergency numbers, outer-office numbers, or other intra-office numbers.</p> <p>NOTE The external number must correspond to Sip Trunk ID. Registration Group bound to External No must correspond to Sip Trunk ID. If Sip Trunk ID starts with +, change + to 00 when you configure External No.</p>


9. Click  .
The page shown in [Figure 6-9](#) is displayed.

Figure 6-10 Configuring an IP Phone




10. Click  , and set parameters according to [Table 6-8](#).

Table 6-8 IP phone parameters

Parameter	Description
Internal No	The internal number is used for the calls between intra-office subscribers. The value is a number of 1 to 30 digits, which can be user-defined. It cannot conflict with any service prefixes, emergency numbers, outer-office numbers, or other intra-office numbers.
Authentication	Authentication mode used when a SIP user registers with the EGW1520. The value must be the same as that configured on the IP phone.
Password	Authentication password used when a SIP user registers with the EGW1520. The value must be the same as that configured on the IP phone.
Registration Group	Registration group ID that is used when an IP phone registers with the IMS/NGN network. NOTE If the required registration group does not exist, choose Voice > SIP Server .

Parameter	Description
	and click the Registration Group tab to add it.
External No	<p>External number for outgoing and incoming calls. The value is provided by the network carrier. This parameter is valid after you set the Registration Group parameter. The external number cannot conflict with any service prefixes, emergency numbers, outer-office numbers, or other intra-office numbers.</p> <p>NOTE The external number must correspond to Sip Trunk ID. Registration Group bound to External No must correspond to Sip Trunk ID. If Sip Trunk ID starts with +, change + to 00 when you configure External No.</p>

 **NOTE**

- To add IP phones in batches, click  and proceed as prompted.
- To change the configuration of a saved IP phone, select the IP phone and reset it.

11. Click .

The page shown in [Figure 6-10](#) is displayed.

Figure 6-11 Configuration complete



12. Click  to finish the configuration.

----End

7 Feature Description and Implementation

About This Chapter

This topic describes EGW1520 features and feature implementation.

7.1 Feature List

This topic describes EGW1520 features.

7.2 Connection Modes

The EGW1520 connects to the IP network using an ADSL or a WAN port. The ADSL and WAN ports cannot be used at the same time or back each other up. If the ADSL and WAN ports are unavailable, you can insert a 3G data card to the universal serial bus (USB) port to access the 3G network.

7.3 Voice (UC Mode)

In the eSpace UC solution, the EGW1520 is deployed at a small branch of an enterprise to provide network access functions for the small branch. Phones at the branch are registered with the SIP server on the central node at the headquarters. Numbers of the branch users are allocated by the SIP server at the headquarters and synchronized by the EGW1520 with the data synchronization server. The EGW1520 can also function as a trunking gateway to implement incoming and outgoing call functions through the FXO port for the local PSTN.

7.4 Voice(Common Mode)

EGW1520 can function as a SIP trunk access device or a small-scale Internet protocol-private branch exchange (IP-PBX). It provides basic voice services and supplementary services.

7.5 Data

This topic describes EGW1520 data features and how to configure the features.

7.6 Security

This topic describes EGW1520 security features.

7.7 Operations and Maintenance

The EGW1520 can be managed on web pages or in TR-069 mode.

7.1 Feature List

This topic describes EGW1520 features.

Access Mode

ADSL	Description	The EGW1520 uses an Asymmetric Digital Subscriber Line (ADSL) port to connect to the upstream network. ADSL is an asymmetric transmission technology. It enables high-speed data transmission over analog telephone lines by using idle high frequencies and several modulation methods.
	Specification	<ul style="list-style-type: none"> • Modes for connecting to Internet: route and bridge. • Support for the static IP address and obtaining IP addresses by means of DHCP, PPPoE, PPPoA, and IPoA. • Point-to-Point Protocol (PPP) authentication modes: Password Authentication Protocol (PAP) and Challenge Handshake Authentication Protocol (CHAP). • ADSL Seamless Rate Adaptation (SRA). <p>Standards supported by ADSL:</p> <ul style="list-style-type: none"> • ITU-T G.992.1 Annex A • ITU-T G.992.3 (ADSL 2) Annex Annex A, L and M • ITU-T G.992.5 (ADSL 2+) Annex A • ITU-T G.992.5 (ADSL 2+) Annex M
	Limitation	<ul style="list-style-type: none"> • The voice service and the data service must use the same ADSL Permanent Virtual Circuits (PVC) channel. • The EGW1520 connects to the IP network using an ADSL or a WAN port. The ADSL and WAN ports cannot be used at the same time or back each other up.
	Related Topics	7.2.1 ADSL
WAN	Description	The EGW1520 uses a WAN port to connect to the upstream network. The ADSL and WAN ports cannot be used at the same time or back each other up.
	Specification	<ul style="list-style-type: none"> • One 10/100/1000 Mbit/s self-adaptive WAN port. • Modes of obtaining IP addresses: static IP address configuration, DHCP server, and PPPoE. • Standards supported by the WAN port: <ul style="list-style-type: none"> – MAC Address (IEEE 802.3) – Internet Protocol v4 (RFC 791) – Address Resolution Protocol (RFC 826) – Internet Control Message Protocol (RFC 792) – An Ethernet Address Resolution Protocol (RFC 0826)

		<ul style="list-style-type: none"> - A Standard for the Transmission of IP Datagrams over Ethernet Networks (RFC894) - A Standard for the Transmission of IP Datagrams over IEEE 802 Networks (RFC1042) - DHCP (RFC 2131) TCP Transmission Control Protocol (RFC793) - UDP User Datagram Protocol (RFC768)
	Limitation	<ul style="list-style-type: none"> • The WAN port supports half-duplex and full-duplex self adaptation, but cannot be forced to use full duplex or half duplex. • The EGW1520 connects to the IP network using an ADSL or a WAN port. The ADSL and WAN ports cannot be used at the same time or back each other up. • IPv6 is not supported.
	Related Topics	7.2.2 WAN
3G	Description	Generally, the EGW1520 connects to the IP network using an ADSL or a WAN port. When the ADSL or WAN port is unavailable, the EGW1520 can use a 3G data card (based on the USB port) to access the 3G network to transmit voice and data (excluding the fax service).
	Specification	One USB port (for 3G data cards).
	Limitation	<ul style="list-style-type: none"> • The EGW1520 supports the following 3G data cards: <ul style="list-style-type: none"> TD SCDMA <ul style="list-style-type: none"> - Huawei ET302 with the software version of 11.100.05.00.00 - Huawei ET127 with the software version of 11.101.01.36.00 WCDMA <ul style="list-style-type: none"> - Huawei K3765 with the software version of 11.126.03.06.00 - Huawei E176G with the software version of 11.126.03.02.00 • The 3G network supports the backup function and does not support the fax service, Demilitarized Zone (DMZ) host, and virtual servers.
	Related Topics	7.2.3 3G

Voice

Voice access	UC mode	Description	<p>The EGW1520 is combined with the eSpace UC solution. In UC mode, the EGW1520 can be registered with multiple SIP servers at the same time. Phones connecting to the EGW1520 are registered with the server on the central node of the headquarters. All calls are processed by the server of the headquarters.</p> <p>When the EGW1520 is disconnected from both the active and standby SIP servers, it automatically switches to the local survival mode. It then functions as a local SIP server to register internal users and process calls.</p> <p>The EGW1520 can function as a landing gateway for the local PSTN to process incoming and outgoing calls, which reduces the enterprise's toll call costs.</p>
		Specification	<ul style="list-style-type: none"> • A maximum of 20 SIP users. • One FXS port, connecting to one POTS user. • A maximum of 8-channel users (SIP users and POTS users) can simultaneously initiate calls. Standards supported by voice service: <ul style="list-style-type: none"> – G.711 A, G.711 u, G.729, G.726, and G.722 – SIP (RFC 3261–3265) – SIP Session Timers (RFC 4028) – SDP (RFC 2327) – RTP or RTCP – RFC 2833
		Limitation	None.
		Related Topics	Description Configuration
	Common mode	Description	As an access layer device, the EGW1520 registers with the softswitch (NGN/IMS) through a SIP trunk and cooperates with the softswitch to process SIP signaling interaction. The EGW1520 can also function as a small-scale Internet Protocol Private Branch Exchange (IP PBX), implementing functions such as IP Phone user registration, call control, and protocol processing.
		Specification	<ul style="list-style-type: none"> • A maximum of 20 SIP users. • One FXS port, connecting to one POTS user. • A maximum of 8-channel users (SIP users and POTS users) can simultaneously initiate calls. Standards supported by voice service: <ul style="list-style-type: none"> – G.711 A, G.711 u, G.729, G.726, and G.722

			<ul style="list-style-type: none"> - SIP (RFC 3261–3265) - SIP Session Timers (RFC 4028) - SDP (RFC 2327) - RTP or RTCP - RFC 2833
		Limitation	For details, see Service Conflicts .
		Related Topics	7.4.1 Voice Access and IP PBX
FXO port		Description	EGW1520 provides four foreign exchange office (FXO) ports used to connect to PSTN networks. An intra-office user dials the outgoing prefix and an outer-office user's number to make an outgoing call through an FXO port. An outer-office user dials the number that the PSTN network carrier allocates to the FXO port to make an incoming call. EGW1520 supports the switchboard, DDI, and dedicated line functions. By default, the switchboard function is enabled.
		Specification	Four FXO ports..
		Limitation	<ul style="list-style-type: none"> • The FXO port supports only the one-stage dialing mode. • Each FXO port allows one user to make an outgoing or incoming call through the FXO port at the same time.
		Related Topics	Description .
Dual homing		Description	Dual homing is a disaster recovery mechanism for emergency communication, for example, in case of a SoftSwitch breakdown. Functioning as a voice access device, the EGW1520 can register with two SIP servers at the same time. When the active SIP server is faulty, the EGW1520 switches services to the standby SIP server. When the active SIP server is recovered, the EGW1520 switches services back to it.
		Specification	<ul style="list-style-type: none"> • Two SIP servers, working in active/standby mode. • IP addresses of two SIP servers with the highest priority: obtained using the Domain Name System Service (DNS SRV).
		Limitation	The priority for obtaining SIP server IP addresses using the DNS SRV must be configured on the DNS Server.
		Related Topics	For details on how to configure the priority, see SIP Server in Adding Voice Users .
Power-off		Description	The EGW1520 provides a PSTN Power-off survival port

survival	on	with an RJ-11 connector. When a power off occurs, the analog phone that connects to the PHONE1 port can make outgoing calls using the PSTN emergency line.
	Specifica tion	One PSTN Power-off survival port.
	Limitatio n	<ul style="list-style-type: none"> • The Power-off survival function is available only when a power off occurs. • Only the Analog Phone that connects to the PHONE port supports Power-off survival function.
	Related Topics	7.4.3 Power-off Survival
Voice quality	Descripti on	Voice quality technologies are used by the EGW1520 to ensure voice transmission quality and service effectiveness.
	Specifica tion	<p>Voice quality technologies: voice activity detection (VAD), comfort noise generator (CNG), echo cancellation (EC), packet loss compensation, and jitter buffer.</p> <ul style="list-style-type: none"> • VAD The EGW1520 detects silent periods in voice signal streams, and removes data from the silent periods to conserve bandwidth resources without reducing service quality. • CNG The CNG is used with the VAD. When the VAD function is enabled and no packet is sent during the silent periods, the listener may consider that the call has been disconnected. To avoid this situation, the EGW1520 enables the CNG function on the receiver end. The CNG technology complies with RFC 3389. • EC An echo is quickly transmitted to a listener during a local call because the end-to-end delay is short, and the listener may not hear the echo. However, the end-to-end delay is long during an international call, and the EC must be enabled. The EGW1520 EC technology complies with ITU-T G.168. • Packet loss compensation Packets are often lost on the connectionless IP network as a result of network congestion, buffer overflow, or error codes. A packet loss compensation 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 With this function, received packets can be cached

		and then retrieved and processed to remove jitter.
	Limitation	N/A
	Related Topics	7.4.5 Voice Parameters
Fax service	Description	Fax is a form of telegraphy for the transmission of fixed images, with or without halftones, to be reproduced at another location in hard copy form. In ITU-RV.662, faxing is defined as a form of telecommunication for the reproduction at a distance of graphic documents in the form of other graphic documents geometrically similar to the original.
	Specification	Standards supported by fax service: <ul style="list-style-type: none"> • One FXS ports for fax machines • T.30 • T.38 • V.17/V.21/V.27/V.29/V.34
	Limitation	N/A
	Related Topics	7.4.4 Fax Service
DigitMap	Description	The digitmap is a dialing rule used by the EGW1520 to detect and report digit events received on a termination. The digitmap can be used to eliminate the post-dial delay. NOTE The post-dial delay is the time interval between "end of dialing" by a user and the reception (by the same user) of the call progress signaling generated by the exchange serving this customer. The call progressing signals can be a dial tone, a recorded announcement, or the abandoning of the call.
	Specification	Maximum length of the data field that can be configured by a user: 128 bytes.
	Limitation	N/A
	Related Topics	For details, see Table 7-29 and Table 7-31 .
Codec	Description	A codec is a device or computer program capable of encoding or decoding audio signals to improve the network usage and user capacity.
	Specification	<ul style="list-style-type: none"> • G.711 A/u, G.729, G.726, and G.722. • Multiple codecs used at the same time. • Adjustable priority for codecs. • Adjustable packetization interval for codecs.

		<ul style="list-style-type: none"> A maximum of 4-channel G.711, 4-channel G.729, 2-channel G.726, or 2-channel G.722.
	Limitation	A codec cannot be automatically switched during a conversation, but it can be switched through signaling negotiation.
DTMF	Description	Dual tone multi-frequency (DTMF) is the signal to the phone company that you generate when you press an ordinary telephone's touch keys.
	Specification	<ul style="list-style-type: none"> DTMF detection and generation. RFC 2833.
	Limitation	The encryption function of RFC 2833 is not supported.
Call record	Description	There is a record for each incoming or outgoing call.
	Specification	<ul style="list-style-type: none"> A maximum of 5000 latest records. Records of call start time, call end time, calling number, and called number.
	Limitation	Call records can be downloaded from the web management system but cannot be viewed directly on it.
	Related Topics	9.8 Downloading Call Records
Gain adjustment	Description	The gain can be adjusted to enhance useful signals when signals are not strong enough on the line and affected by other electrical noises.
	Specification	Send and receive gain is adjustable from -96 dB to +32 dB.
	Limitation	N/A
	Related Topics	7.4.5 Voice Parameters
Supplementary services	Description	To modify or supplement basic communication services, provide supplementary services with basic communication services.
	Specification	For details about supplementary services supported by the EGW1520, see Configuring and Using Voice Services .
	Limitation	For details, see Service Conflicts .
	Related Topics	Enabling Voice Services Configuring and Using Voice Services

Data

LAN	Description	Terminals like computers and IP phones that connect to the EGW1520 LAN ports can set up a small local area network (LAN) to enable the following services and functions: file management, application sharing, printer sharing, schedule, email, and fax.
	Specification	<ul style="list-style-type: none"> • Four 10/100 Mbit/s self-adaptive LAN ports. • Default IP address of LAN ports: 192.168.1.1; subnet mask: 255.255.255.0. • DHCP server function, allocating IP addresses to computers and IP phones that connect to LAN ports. • Standards supported by LAN ports: <ul style="list-style-type: none"> - MAC Address (IEEE 802.3) - IPv4 Internet Protocol v4 (RFC 791) - ARP Address Resolution Protocol (RFC 826) - ICMP Internet Control Message Protocol (RFC 792) - An Ethernet Address Resolution Protocol (RFC 0826) - A Standard for the Transmission of IP Datagrams over Ethernet Networks (RFC 0894) - A Standard for the Transmission of IP Datagrams over IEEE 802 Networks (RFC 1042) - DHCP (RFC 2131), TCP Transmission Control Protocol (RFC 793) - UDP User Datagram Protocol (RFC 768)
	Limitation	<ul style="list-style-type: none"> • The LAN port supports half-duplex and full-duplex self adaptation, but cannot be forced to use full duplex or half duplex. • IPv6 is not supported.
	Related Topics	7.5.1 LAN
DHCP	Description	DHCP is a protocol for dynamically managing and configuring users in a centralized manner. It uses the Client/Server 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 EGW1520 can function as a DHCP server, DHCP relay, or DHCP client.
	Specification	<ul style="list-style-type: none"> • As a DHCP server, the EGW1520 can configure an IP address pool. The default IP address ranges from 192.168.1.2 to 192.168.1.254.

		<ul style="list-style-type: none"> As a DHCP relay, the EGW1520 complies with RFC 3361. As a DHCP client, the EGW1520 supports Option42/43/60/61/66/67/120/125/150.
	Limitation	N/A
	Related Topics	7.5.2 DHCP
WLAN	Description	The EGW1520 allows Wi-Fi services to connect to the wireless network. This provides small enterprises with a network solution integrating wired and wireless technologies.
	Specification	<ul style="list-style-type: none"> IEEE802.11b, IEEE802.11g, and IEEE802.11n are supported. <ul style="list-style-type: none"> IEEE802.11b, with the maximum transmission rate of 11 Mbit/s and frequency of 2.4 GHz IEEE802.11g, with the maximum transmission rate of 54 Mbit/s and frequency of 2.4 GHz (compatible with IEEE802.11b) IEEE802.11n, with the maximum transmission rate of 300 Mbit/s and Multi-Input Multi-Output (MIMO) supported A maximum of 16 WiFi terminals can be connected. Four service set identifiers (SSIDs) are supported and SSID broadcast and hiding are supported. <ul style="list-style-type: none"> The default value of the primary SSID is eSpace EGW_XXXX. Three subordinate SSIDs are eSpace EGW_XXXX_S1, eSpace EGW_XXXX_S2, and eSpace EGW_XXXX_S3. XXXX is the last four bits in the WLAN MAC address. A maximum of 16 MAC addresses can be filtered. Wi-Fi authentication standards: <ul style="list-style-type: none"> 64 bit or 128 bit Wired Equivalent Privacy (WEP) WPA-PSK, WPA2-PSK, and Combination of WPA-PSK and WPA2-PSK Maximum transmit power: <ul style="list-style-type: none"> 802.11b/g/n (SISO): 16±2 dBm 802.11n (MIMO): 18±2 dBm Wi-Fi Protected Setup (WPS)
	Limitation	Wi-Fi bridging is not supported.
	Related Topics	7.5.3 WLAN

DNS	Description	The DNS specifies meaningful names for devices on a network. The DNS server defines the mapping between domain names and devices' IP addresses. The EGW1520 can function as a DNS client to resolve domain names on the DNS server.
	Specification	N/A
	Limitation	N/A
	Related Topics	7.5.4 DNS
Static route	Description	The static route can improve the network performance and ensure the bandwidth for critical networks. The static route cannot adjust to network topology changes. When a network fault occurs or the network topology changes, the static route may become unreachable, resulting in connection failure. If the static route is unreachable, the static route must be modified manually.
	Specification	A maximum of 32 static routes.
	Limitation	N/A
	Related Topics	7.5.5 Static Route
VLAN	Description	The VLAN technology divides a LAN to multiple virtual LANs (VLANs). Each VLAN is a broadcast domain. Communication between hosts in a VLAN is the same as that in a LAN. VLANs cannot communicate with each other directly. The EGW1520 supports port-based VLANs. LAN ports are assigned to different VLANs, which separates users and creates virtual work groups.
	Specification	A maximum of four ports used to assign VLANs
	Limitation	The VLAN ports support only the port-based VLANs.
	Related Topics	7.5.8 VLAN
QoS	Description	The EGW1520 provides a comprehensive quality of service (QoS) mechanism. QoS policies can be customized to ensure precedence of core services. In addition, the EGW1520 limits bandwidth for ordinary services (such as web upload) and saves it for core services (such as voice streams). The EGW1520 supports the following Diff-Serv-based QoS technologies: priority mark, congestion management, and traffic policy.
	Specification	<ul style="list-style-type: none"> • VLAN Tag marked with 802.1p/q priorities. • DSCP priority. • Upstream and downstream traffic limits are supported.
	Limitation	3G port does not support QoS.
	Related	7.5.9 QoS

	Topics	
Voice packet priority	Description	Voice packets can be placed in the priority queue for prior forwarding.
	Specification	N/A
	Limitation	N/A
	Related Topics	7.5.9 QoS
Layer 2 switch	Description	When the EGW1520 is in Bridge mode, it has the layer 2 switch function. Computers that are connected to the EGW1520 can use the dialing software to access the IP network.
	Specification	N/A
	Limitation	N/A
	Related Topics	7.2.1 ADSL
NTP	Description	Network Time Protocol (NTP) is a protocol for time synchronization. It enables a device to synchronize time with its server or clock source (such as a quartz clock or Global Positioning System). NTP provides accurate time correction (time difference over a LAN smaller than 1 millisecond; time difference over a WAN smaller than tens of milliseconds), and prevents protocol attacks by means of encryption. The EGW1520 is used as the NTP client to synchronize the time with that of the NTP server.
	Specification	Two NTP servers, working in active/standby mode.
	Limitation	The EGW1520 does not save the time. After the EGW1520 restarts, the time is restored to the factory setting and needs to be synchronized with the NTP server.
	Related Topics	9.1 Configuring the System Time

Security

VPN	Description	Virtual Private Network (VPN) is a virtual network established based on the existing public network. A VPN is used for an enterprise or customer group. EGW1520, used as an access gateway for a small-scale branch network, can connect to the headquarters network using IPSec VPN tunnels.
	Specification	<ul style="list-style-type: none"> EGW1520 can connect to the headquarters using IPSec VPN tunnels. EGW1520 uses IPSec to set up site-to-site tunnels with the

		headquarters. As the initiator of VPN tunnels, EGW1520 uses the peer IP address or fully qualified domain name (FQDN) as the ID for IKE negotiation.
	Limitation	<ul style="list-style-type: none"> • A maximum of 6 IPsec VPN tunnels are supported. • The throughput of the IPsec VPN tunnel is not lower than 2 Mbit/s. • A maximum of 32 concurrent connections are supported in an IPsec VPN.
	Related Topics	7.5.6 VPN
NAT	Description	Network address translation (NAT) is the 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 IP addresses and prevents the attack from other networks, hiding and protecting computers on the private network.
	Specification	A maximum of 1024 NAT table entries.
	Limitation	N/A
	Related Topics	7.6.1 NAT 7.2.1 ADSL 7.2.2 WAN
SIP ALG	Description	NAT enables one or more private hosts to use a public IP address to connect to a public network. NAT works in the transport layer, which is transparent to the application layer, so it is difficult for the SIP application to traverse the NAT device. The EGW1520 supports the SIP application level gateway (ALG), which solves the NAT traversal problem for SIP.
	Specification	N/A
	Limitation	N/A
	Related Topics	7.6.1 NAT
Incoming packet filter	Description	If the firewall on the LAN or WAN side is enabled, all the packets transmitted through LAN or WAN ports to the EGW1520 will be blocked. You can configure the incoming packet filtering function to allow specified packets to be transmitted to the EGW1520.
	Specification	N/A
	Limitation	N/A
	Related Topics	7.6.2 Incoming Packet Filter

Outgoing packet filter	Description	The system allows all packets to be sent to the upstream network through the LAN ports. You can configure the outgoing packet filter to prevent certain packets from being sent to the upstream network using the LAN ports.
	Specification	N/A
	Limitation	N/A
	Related Topics	7.6.3 Outgoing Packet Filter
MAC address filter	Description	If the ADSL service is in Bridge mode, you can configure MAC address filter to prevent the ADSL port from forwarding certain data frames.
	Specification	N/A
	Limitation	N/A
	Related Topics	7.6.4 MAC Address Filter
URL filter	Description	The EGW1520 uses the URL filter to limit users' access to specified websites.
	Specification	<ul style="list-style-type: none"> • Maximum number of URLs to be filtered at the same time: 100 • Maximum length of each URL: 128 bytes • Full match and partial match
	Limitation	Wildcards, for example, using * for full match, are not allowed in filtering rules.
	Related Topics	7.6.5 URL Filter
Virtual server	Description	A virtual server enables external users to access internal servers on the private network. You can configure a public server on the private network to provide web access and FTP download services.
	Specification	N/A
	Limitation	This function cannot be enabled when the EGW1520 connects to the 3G network.
	Related Topics	7.6.6 Virtual Server
DMZ	Description	A virtual server enables external users to access internal servers on the private network. When multiple services are running on internal servers, several virtual servers must be configured, which makes the configuration complicated. To simplify the configuration, configure only the IP addresses for internal servers

		in the DMZ. Because all ports are open in the DMZ, it increases the security risk for internal servers.
	Specification	Only one internal server in the DMZ is supported.
	Limitation	This function cannot be enabled when the EGW1520 connects to the 3G network.
	Related Topics	7.6.7 DMZ
Configuration file encryption	Description	The EGW1520 can encrypt sensitive information in configuration files, such as user name and password.
	Specification	The EGW1520 can encrypt user names and passwords for: <ul style="list-style-type: none"> • Logging in to the web management system • PPPoE • PPPoA • WLAN • Accessing the 3G network • TR-069 ACS • SIP user • NTP Server
	Limitation	Manual modification on the configuration file is not supported.
	Related Topics	9.2 Managing the Configuration File
HTTPS	Description	The web browser interacts with the EGW1520 using HTTPS, which ensures user information security.
	Specification	N/A
	Limitation	N/A
	Related Topics	7.7.1 Web Management

Operations and Maintenance

Web	Description	The EGW1520 provides web management system for users to easily configure, diagnose, and upgrade the EGW1520.
	Specification	<ul style="list-style-type: none"> • HTTPS • HTTP
	Limitation	<ul style="list-style-type: none"> • Operating system: Windows XP or later • Browser: Microsoft Internet Explorer 6.0 or later • Resolution: 1024 x 768 or higher

	Related Topics	7.7.1 Web Management Web parameters reference
TR-069	Description	Technical Report 069 (TR-069) is a technical specification developed by the DSL Forum. TR-069 is short for CPE WAN Management Protocol (CWMP). As an application-layer protocol for remotely managing end devices, TR-069 enables the Application Control Server (ACS) to remotely manage and maintain the EGW1520.
	Specification	<ul style="list-style-type: none">• TR-069• TR-098• TR-104
	Limitation	N/A
	Related Topics	7.7.2 TR-069 TR-069 parameters reference

7.2 Connection Modes

The EGW1520 connects to the IP network using an ADSL or a WAN port. The ADSL and WAN ports cannot be used at the same time or back each other up. If the ADSL and WAN ports are unavailable, you can insert a 3G data card to the universal serial bus (USB) port to access the 3G network.

7.2.1 ADSL

The EGW1520 uses an ADSL port to connect to the upstream network. The ADSL uses high frequencies that are not used by voice phone calls and several modulation methods to achieve high-speed data transmission over twisted-pair copper phone lines.

Description

This topic describes the principle, implementation, specification, and limitation for the EGW1520 to connect to the upstream network by using the ADSL.

Principle

Using the frequency-division multiplexing (FDM) technology, the ADSL divides a regular telephone line into three separate channels for the telephone, upstream link, and downstream link. Using the discrete multi-tone (DMT) technology, the ADSL divides the frequency band from 0 kHz to 1.1 MHz on the telephone line into 256 sub frequency bands, each of which occupies a 4.3 kHz bandwidth.

- 4 kHz or lower: Provides traditional telephone services.
- 20 kHz to 138 kHz: Transmits upstream signals.
- 138 kHz to 1.1 MHz: Transmits downstream signals.

Telephone signals are transmitted at the frequency band from 0 kHz to 4 kHz, while signals of ADSL services are transmitted at other frequency bands.

ADSL in practical application are deployed as follows:

- On the service provider side, connect the telephone lines that have enabled the ADSL service to a digital subscriber line access multiplexer (DSLAM).
- On the user side, use an ADSL modem to connect telephone and data lines.

The ADSL uses high frequency signals. To prevent noise disturbance to calls, splitters are required on the service provider side and the user side to separate data signals from audio signals.

ADSL2

The ADSL2 improves the initialization state machine's performance by reducing the frame overhead. In addition, the ADSL2 uses higher modulation rate, improved coding gain, and enhanced signal processing methods. Compared with the ADSL, the ADSL2 takes advantage in rate and coverage. Its maximum downstream rate is 12 Mbit/s and maximum upstream rate is 1 Mbit/s.

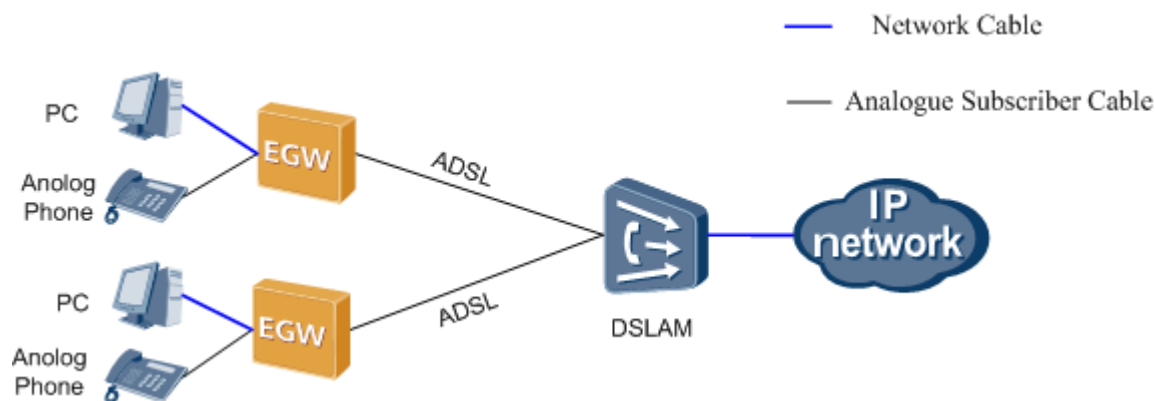
ADSL2+

In addition to basic ADSL2 features, the ADSL2+ extends ADSL2's downstream frequency band, which increases the downstream rate within a short distance. Two ADSL2 standards specify downstream frequency bands to 0 kHz–1.1 MHz and 0 kHz–552 kHz, while the ADSL2+ specifies the downstream frequency band to 0 kHz–2.2 MHz. This increases the ADSL2+ downstream rate to 24 Mbit/s within 1.5 km. The ADSL2's upstream rate, depends on the line condition (basically, it is 1 Mbit/s).

Implementation

The EGW1520 functions as a modem on the ADSL network to modulate and demodulate ADSL signals. After being connected to a remote DSLAM, the EGW1520 connects users to the IP network. [Figure 7-1](#) shows the ADSL network.

Figure 7-1 ADSL network diagram



Specification

- Modes for connecting to Internet: route and bridge.

- Support for the static IP address and obtaining IP addresses by means of DHCP, PPPoE, PPPoA, and IPoA.
- Point-to-Point Protocol (PPP) authentication modes: Password Authentication Protocol (PAP) and Challenge Handshake Authentication Protocol (CHAP).
- ADSL Seamless Rate Adaptation (SRA).

Standards supported by ADSL:

- ITU-T G.992.1 Annex A
- ITU-T G.992.3 (ADSL 2) Annex Annex A, L and M
- ITU-T G.992.5 (ADSL 2+) Annex A
- ITU-T G.992.5 (ADSL 2+) Annex M

Limitation

- The voice service and the data service must use the same ADSL Permanent Virtual Circuits (PVC) channel.
- The EGW1520 connects to the IP network using an ADSL or a WAN port. The ADSL and WAN ports cannot be used at the same time or back each other up.

Basic Configuration

This topic describes the basic configuration of the ADSL. After the ADSL is configured and ADSL connection is set up, EGW1520 users can connect to the IP network to access the Internet or IP Multimedia Subsystem/Next Generation Network (IMS/NGN).

Prerequisite

You have logged in to the web management system. For details, see [7.7.1 Web Management](#).

Background

For the principle, implementation, specification, and limitation of the ADSL, see [Description](#).

EGW1520 ADSL basic configuration contains the following operations:

1. Add an ATM interface. For details, see [Adding an ATM Interface](#).
2. Add an ADSL service for the new ATM interface. For details, see [Adding an ADSL Service](#).



NOTE

- ADSL services can be added only for ATM interfaces. Therefore, you must add an ATM interface before adding an ADSL service.
- Before deleting an ATM interface, you must delete the ADSL service that is associated with the interface.

Adding an ATM Interface

Step 1 On the web management system, choose **Network** > **ADSL** from the navigation tree.

The page shown in [Figure 7-2](#) is displayed.

Figure 7-2 Adding an ATM interface (1)



Step 2 Click [Add ATM Interface](#).

The page shown in [Figure 7-3](#) is displayed.

Figure 7-3 Adding an ATM interface (2)

The screenshot displays the 'ATM PVC Configuration' page. At the top, there are two tabs: 'Service Configuration' and 'Advanced Configuration'. The main heading is 'ATM PVC Configuration'. Below this, several configuration sections are visible:

- PVC Identifier (VPI):** A text input field containing the value '0'.
- PVC Identifier (VCI):** A text input field containing the value '35'.
- DSL Latency:** Two radio button options: 'Path0' (checked) and 'Path1' (unchecked).
- DSL Link Type:** Three radio button options: 'EoA (EoA is for PPPoE, IPoE, and Bridge)' (checked), 'PPPoA', and 'IPoA'.
- Connection Mode:** Two radio button options: 'Default Mode-Single Service over One Connection' (checked) and 'VLAN MUX Mode-Multiple VLAN Services over One Connection'.
- Encapsulation Mode:** A dropdown menu showing 'LLC/SNAP-BRIDGING'.
- Service Category:** A dropdown menu showing 'UBR Without PCR'.
- IP QoS Scheduler Algorithm:** Two radio button options: 'Strict Priority' (checked) and 'Weighted Fair Queuing'. Under 'Weighted Fair Queuing', there is a 'Weight of Default Queue' input field with the value '1' and an 'MPAAL Group Precedence' dropdown menu with the value '8'.

At the bottom right of the configuration area, there are two buttons: 'Back' and 'Save'.

Step 3 Set parameters according to [Table 7-1](#).

Table 7-1 Parameter description (1)

Parameter	Description
PVC Identifier (VPI)	Indicates the virtual path identifier. The value is provided by the network carrier.
PVC Identifier (VCI)	Indicates the virtual channel identifier. The value is provided by the network carrier.
DSL Latency	Indicates the ADSL latency channel. Normally, the value is Path0 . The setting must be the same as that on the Digital Subscriber Line Access Multiplexer (DSLAM), which is provided by the network

Parameter	Description
	carrier.
DSL Link Type	<p>Indicates the ADSL connection type. The options are as follows:</p> <ul style="list-style-type: none"> • EoA: Ethernet over ATM, including Point-to-Point Protocol over Ethernet over ATM (PPPoEoA), IP over Ethernet over ATM (IPoEoA), and bridge. • PPPoA: Point-to-Point Protocol over ATM • IPoA: Internet Protocol over ATM <p>The setting on the EGW1520 must be the same as that on the DSLAM, which is provided by the network carrier. The following Adding an ADSL Service uses EoA as an example.</p>
Connection Mode	<p>Indicates the ADSL connection mode. The options are as follows:</p> <ul style="list-style-type: none"> • Default Mode: Packets that are sent from the ADSL port do not carry any VLAN tags. • VLAN MUX Mode: Packets that are sent from the ADSL port can carry VLAN tags. <p>The setting on the EGW1520 must be the same as that on the DSLAM, which is provided by the network carrier.</p> <p>NOTE When DSL Link Type is set to PPPoA or IPoA, this parameter is unavailable.</p>
Encapsulation Mode	<p>Indicates the mode for encapsulating packets. The setting on the EGW1520 must be the same as that on the DSLAM, which is provided by the network carrier.</p>
Service Category	<p>Indicates the service type. This parameter limits the rate of upstream packets that are sent from the ADSL port.</p> <ul style="list-style-type: none"> • UBR Without PCR: Neither the unspecified bit rate (UBR) nor the peak cell rate (PCR) is limited. • UBR With PCR: The UBR is not limited but the PCR is limited. • CBR: The constant bit rate (CBR) is used. • Non Realtime VBR: The non-real-time variable bit rate (VBR) is used. • Non Realtime VBR: The real-time VBR is used.
IP QoS Scheduler Algorithm	<p>Indicates the QoS rule for scheduling upstream packets that are sent from the ADSL port. The options are as follows:</p> <ul style="list-style-type: none"> • Strict Priority: The priority-based QoS rule is used. Packets in a queue with a low priority are not sent until packets in the queue with a higher priority have been sent. The priority of the default queue is 8. Packets matching no QoS rule are placed in the default queue. • Weighted Fair Queuing: The Weighted Fair Queuing (WFQ)-based QoS rule is used. Packets are classified based on precedence. The precedence of a packet determines the bandwidth for sending the packet out of the queue. A higher precedence indicates a higher bandwidth. <p>NOTE</p>

Parameter	Description
	For features and configurations of the EGW1520 QoS, see QoS .

Step 4 Click  to save the settings.
----End

Adding an ADSL Service

NOTE

The operations for [Adding an ADSL Service](#) vary with the ADSL connection type. This topic describes the ADSL connection of the EoA type. For parameters for configuration other ADSL connection types, see [Web Parameters Reference](#) .

Step 1 On the web management system, choose **Network** > **ADSL** from the navigation tree.
The page shown in [Figure 7-4](#) is displayed.

Figure 7-4 Adding an ADSL service (1)




Step 2 Click  .
The page shown in [Figure 7-5](#) is displayed.

Figure 7-5 Adding an ADSL service (2)

Service Configuration | Advanced Configuration

ADSL Service Interface Configuration

Select ATM Interface: atm0

Back Next

Step 3 Select an ADSL port.

Step 4 Click .

The page shown in [Figure 7-6](#) is displayed.

Figure 7-6 Adding an ADSL service (3)

Service Configuration | Advanced Configuration

Service Configuration

Select Service Type:

PPPoE
 IPoE
 Bridging

Enter Service Description: pppoe_0_0_35

Back Next

Step 5 Select a service type and define the service description. You can also retain the default service description.

 **NOTE**

- The service type varies according to network carriers.
- If **Bridging** is selected, EGW1520 functions as a bridge and does not provide the route and voice functions.

The EGW1520 supports the following ADSL service types (to access the configuration procedure of a service type, click the corresponding link):

- [PPPoE](#)
- [IPoE](#)
- [Bridging](#)

If you select **PPPoE** as the service type, the procedure is as follows:


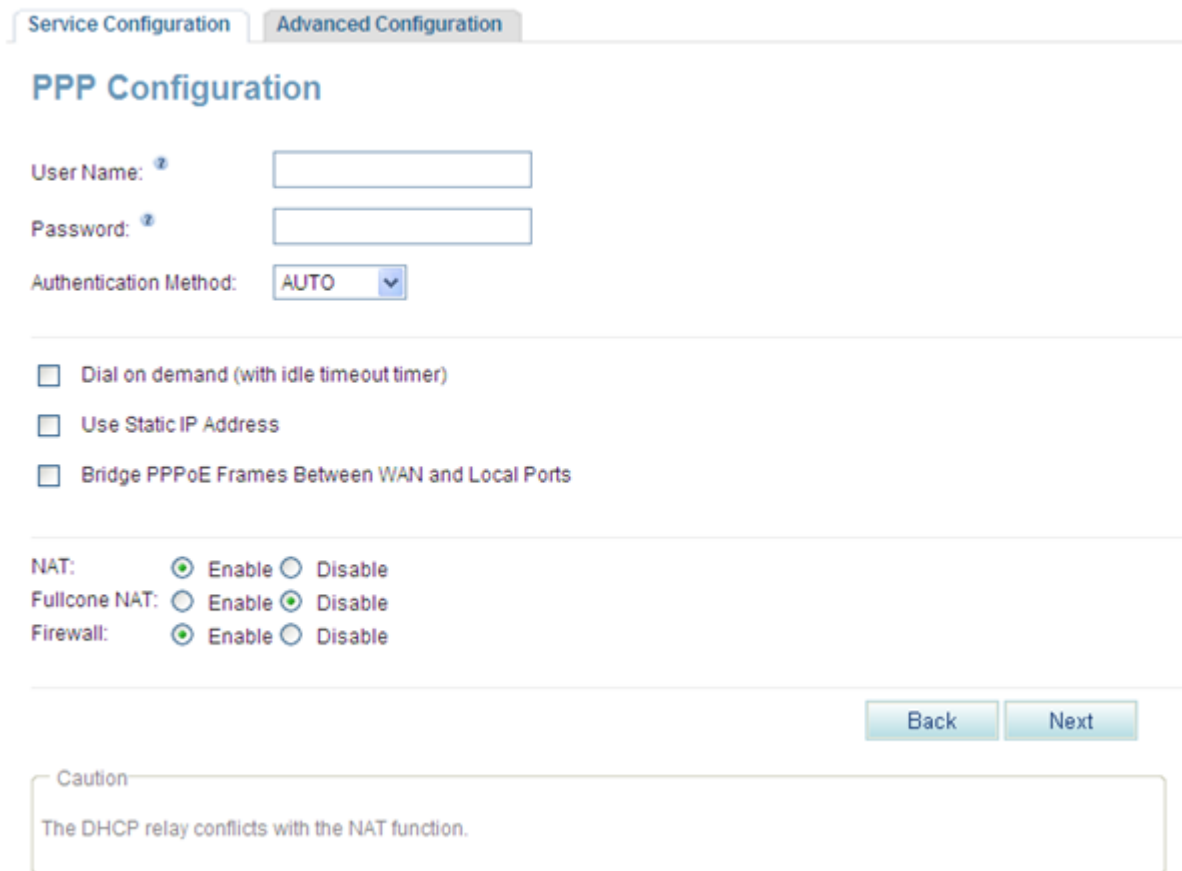
1. Click  in [Figure 7-6](#).
The page shown in [Figure 7-7](#) is displayed.

Figure 7-7 Adding an ADSL service (4)



2. Set parameters according to [Table 7-2](#).

Table 7-2 Parameter description (2)

Parameter	Description
Username	The value is provided by the network carrier.
Password	The value is provided by the network carrier.
Authentication Method	The options are as follows: <ul style="list-style-type: none"> • AUTO: The system automatically selects the Password Authentication Protocol (PAP) or Challenge Handshake

Parameter	Description
	<p>Authentication Protocol (CHAP) as required.</p> <ul style="list-style-type: none"> • PAP: The PAP is used. • CHAP: The CHAP is used. <p>The value is provided by the network carrier. The recommended value is AUTO.</p>
Dial on demand (with idle timeout timer)	Dial on demand is applicable to the Internet service charged by time. When this function is enabled, the EGW1520 sets up a dialing connection only when there are Internet access requests. If the EGW1520 does not receive any Internet access requests within a specified period, the ADSL connection is disconnected automatically.
Use Static IP Address	The static IP address assigned by the network carrier is used.
Bridge PPPoE Frames Between WAN and Local Ports	PCs and other terminals that connect to the EGW1520 can still use the PPPoE dialing function when the EGW1520 functions as a route.
NAT	Indicates whether to enable the network address translation (NAT) function which allows EGW1520 users to access the Internet with private IP addresses. The default value Enable is recommended.
Fullcone NAT	Indicates whether to enable the full cone NAT function. The default value Disable is recommended.
Firewall	Indicates whether to enable the firewall function. If the firewall function is enabled, the firewall will block all downstream packets that are sent from the ADSL port. The default value Enable is recommended.


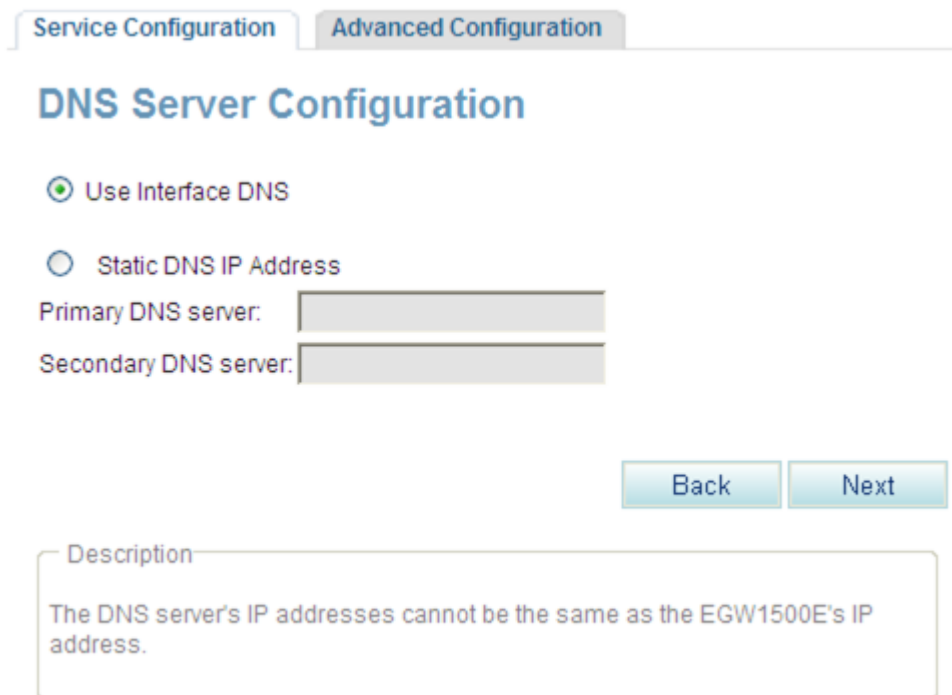
3. Click  .
The page shown in [Figure 7-8](#) is displayed.

Figure 7-8 Adding an ADSL service (5)



Service Configuration Advanced Configuration

DNS Server Configuration

Use Interface DNS

Static DNS IP Address

Primary DNS server:

Secondary DNS server:

Back Next

Description

The DNS server's IP addresses cannot be the same as the EGW1500E's IP address.

4. Configure a DNS server.

The system provides the following methods for configuring a DNS server:

- Select a port that connected to a DNS server.
- Configure a static DNS server whose IP address is provided by the network carrier.

If the IP address of the DNS is provided, users can select the second method.

5. Click  .

The page shown in [Figure 7-9](#) is displayed.

Figure 7-9 Adding an ADSL service (6)

Setup - Summary

Connection Type	PPPoE
NAT	Enabled
Full Cone NAT	Disabled
Firewall	Enabled
Quality Of Service	Enabled

Description

Make sure that the settings below match the settings provided by your ISP.

6. Check whether the configurations are correct. If yes, click to save the configurations. If no, click to modify the configurations.

If you select **IPoE** as the service type, the procedure is as follows:

1. Click **IPoE** in [Figure 7-6](#).
The page shown in [Figure 7-10](#) is displayed.

Figure 7-10 Adding an ADSL service (7)

Service Configuration

Select Service Type:

PPPoE
 IPoE
 Bridging

Enter Service Description:


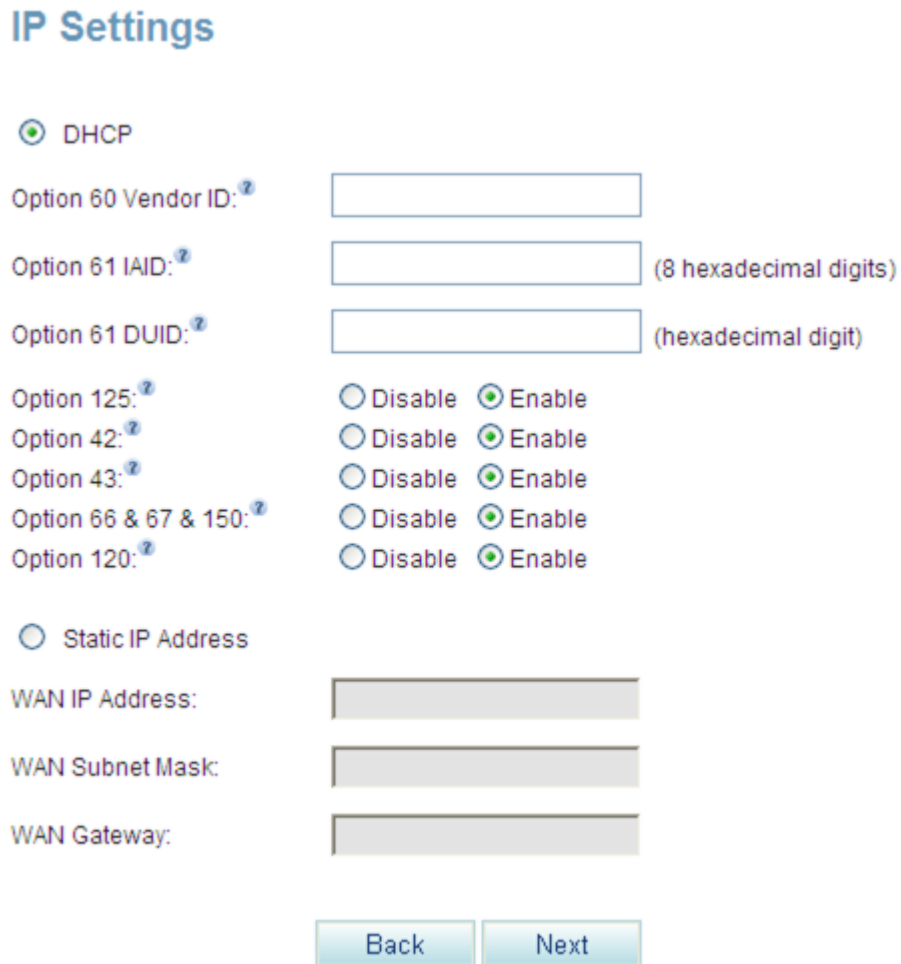
2. Click  .
The page shown in [Figure 7-11](#) is displayed.

Figure 7-11 Adding an ADSL service (8)



IP Settings

DHCP

Option 60 Vendor ID:

Option 61 IAID: (8 hexadecimal digits)

Option 61 DUID: (hexadecimal digit)

Option 125: Disable Enable

Option 42: Disable Enable

Option 43: Disable Enable

Option 66 & 67 & 150: Disable Enable

Option 120: Disable Enable

Static IP Address

WAN IP Address:

WAN Subnet Mask:

WAN Gateway:

3. Set the IP address.
Select either of the following modes for setting the IP address based on the parameters provided by carriers:
 - DHCP mode
 - Static mode
 Set parameters according to [Table 7-3](#).

Table 7-3 Parameter description (3)

Parameter	Description
DHCP	The EGW1520 functions as the DHCP client and obtains the IP address using the DHCP server. The setting must be the same as that on the Broadband Remote Access Server

Parameter	Description
	(BRAS) of the network carrier.
Option 60 Vendor ID	Indicates the ID of the DHCP client manufacturer.
Option 61 IAID	Indicates the identity association identifier of the DHCP client. The IAID and DUID compose of the client ID. The MAC address and DHCP client ID are used to identify a DHCP client. When the same client requests IP addresses at different times, the DHCP server allocates the same IP address to it.
Option 61 DUID	Indicates the unique DHCP client identifier. The IAID and DUID compose of the client ID. The MAC address and DHCP client ID are used to identify a DHCP client. When the same client requests IP addresses at different times, the DHCP server allocates the same IP address to it.
Option 125	Indicates the option for the client manufacturer. It is used to provide the DHCP server with information such as the manufacturer name, OUI, device model, device SN for the DHCP server. The information can be used in TR-069. By default, this value is enabled.
Option 42	Indicates the NTP server option. It is used to allocate the NTP server's IP addresses to the client. By default, this value is enabled.
Option 43	Indicates the option for the manufacturer's specified information. It is used to allocate ACS URL to the client. The information can be used in TR-069. By default, this value is enabled.
Option 66 & 67 & 150	<ul style="list-style-type: none"> • 66: TFTP server domain option, used to allocate the TFTP server's domain name to the client. • 67: File name option, used to allocate the file name to the client. • 150: TFTP server IP address option, used to allocate the TFTP server's IP address to the client. <p>By default, this value is enabled.</p>
Option 120	Indicates the SIP server option. It is used to allocate the SIP server's IP address or domain name to the client. By default, this value is enabled.
Static IP Address	Set the static IP address for the EGW1520. The setting must be the same as that on the BRAS of the network carrier.
WAN IP Address	Indicates the IP address. The value is provided by the network carrier.
WAN Subnet Mask	Indicates the subnet mask. The value is provided by the network carrier. The default value is 255.255.255.0 .
WAN Gateway	Indicates the gateway IP address. The value is provided by the network carrier.


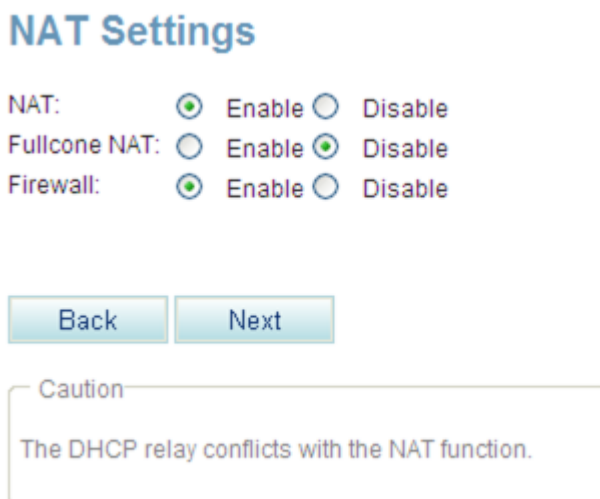
4. Click  .
The page shown in [Figure 7-12](#) is displayed.

Figure 7-12 Adding an ADSL service (9)



5. Set parameters according to [Table 7-4](#).

Table 7-4 Parameter description (4)

Parameter	Description
NAT	Indicates whether to enable the network address translation (NAT) function which allows EGW1520 users to access the Internet with private IP addresses. The default value Enable is recommended.
Fullcone NAT	Indicates whether to enable the full cone NAT function. The default value Disable is recommended.
Firewall	Indicates whether to enable the firewall function. If the firewall function is enabled, the firewall will block all downstream packets that are sent from the ADSL port. The default value Enable is recommended.

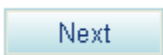
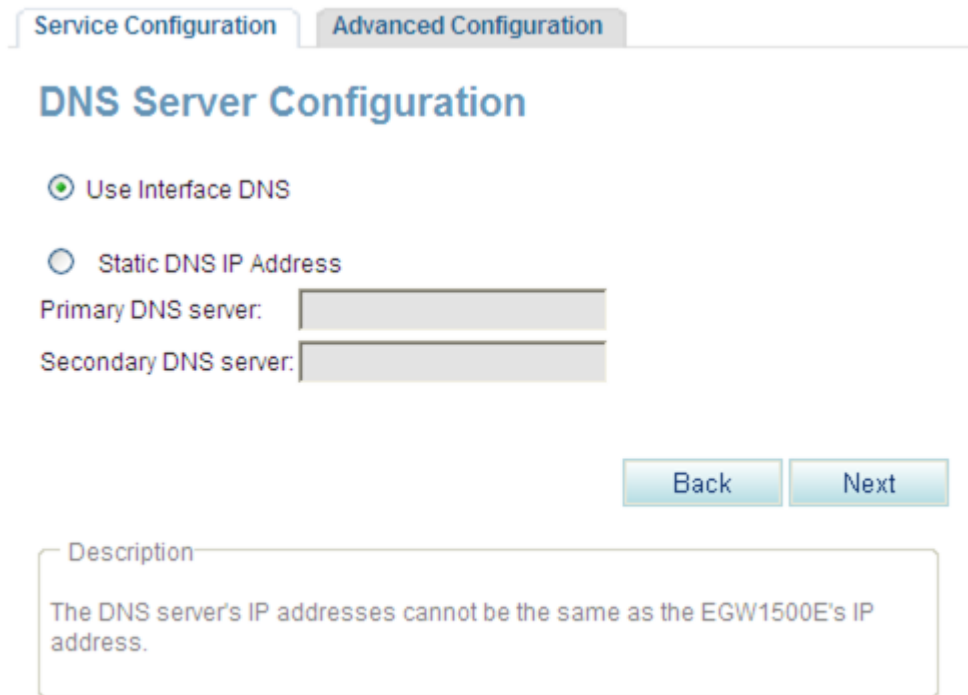
6. click  .
The page shown in [Figure 7-13](#) is displayed.

Figure 7-13 Adding an ADSL service (10)



Service Configuration Advanced Configuration

DNS Server Configuration

Use Interface DNS

Static DNS IP Address

Primary DNS server:

Secondary DNS server:

Back Next

Description

The DNS server's IP addresses cannot be the same as the EGW1500E's IP address.

7. Configure a DNS server.

The system provides the following methods for configuring a DNS server:

- Select a port that connected to a DNS server.
- Configure a static DNS server whose IP address is provided by the network carrier.

If the IP address of the DNS is provided, users can select the second method.

8. Click  .

The page shown in [Figure 7-14](#) is displayed.

Figure 7-14 Adding an ADSL service (11)

Setup - Summary

Connection Type	IPoE
NAT	Enabled
Full Cone NAT	Disabled
Firewall	Enabled
Quality Of Service	Enabled

Description

Make sure that the settings below match the settings provided by your ISP.

9. Check whether the configurations are correct. If yes, click to save the configurations. If no, click to modify the configurations.

If you select **Bridging** as the service type, the procedure is as follows:

1. Click **Bridging** in Figure 7-6.
The page shown in Figure 7-15 is displayed.

Figure 7-15 Adding an ADSL service (12)

Service Configuration

Select Service Type:

PPPoE

IPoE

Bridging

Enter Service Description:


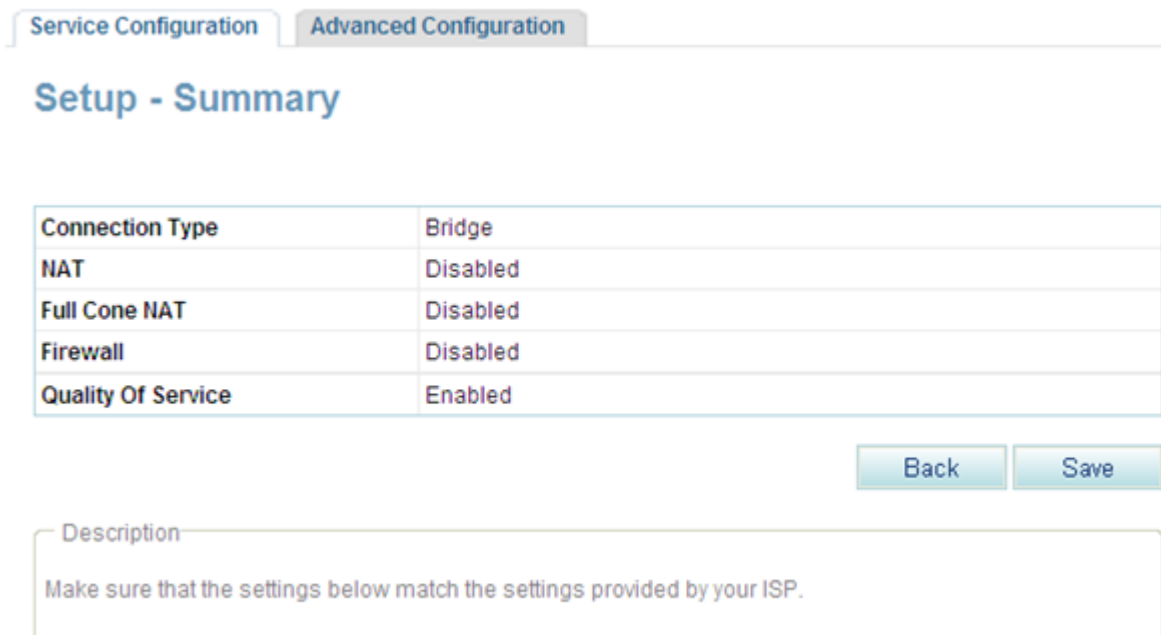
2. Click  .
The page shown in [Figure 7-16](#) is displayed.

Figure 7-16 Adding an ADSL service (13)





Connection Type	Bridge
NAT	Disabled
Full Cone NAT	Disabled
Firewall	Disabled
Quality Of Service	Enabled

Back Save

Description

Make sure that the settings below match the settings provided by your ISP.

3. Check whether the configurations are correct. If yes, click  to save the configurations. If no, click  to modify the configurations.

----End

Verification

To verify that the ADSL connection is set up, proceed as follows:

Step 1 Choose **Management > Status**. The **Network** page is displayed.

Step 2 Check the value of **Status**.

If the value of **Status** is **Connected**, the ADSL connection is set up. If the value is not **Connected**, verify that the configuration is correct.

----End

Advanced Configurations

This topic describes how to set advanced ADSL parameters. Only network administrators can change the advanced parameter settings. To ensure the normal running of the EGW1520, you are advised to use the default settings.

Prerequisites

You have logged in to the web management system. For details, see [7.7.1 Web Management](#).

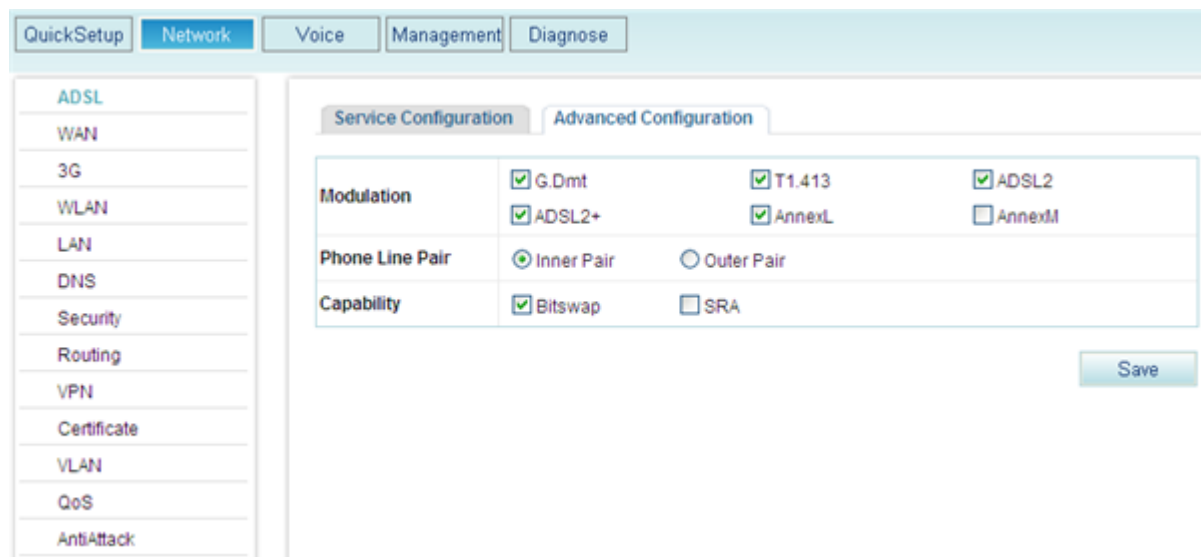
Configuration Procedure

Step 1 On the web management system, choose **Network** > **ADSL** from the navigation tree.

Step 2 Click the **Advanced Configuration** tab.

The page shown in [Figure 7-17](#) is displayed.

Figure 7-17 ADSL advanced configurations



Step 3 Set parameters according to [Table 7-5](#).

Table 7-5 Parameter description

Parameter	Description
Modulation	<p>Indicates the ADSL modulation mode, which is provided by the network carrier and must be compatible with the Digital Subscriber Line Access Multiplexer (DSLAM). The options are as follows:</p> <ul style="list-style-type: none"> • G.Dmt: It is an International Telecommunications Union (ITU) standard for ADSL, also known as G.992.1. It delivers data at rates up to 8 Mbit/s downstream and 896 kbit/s upstream. By default, this value is selected. • T1.413: It is created by the American National Standards Institute (ANSI) Telecommunications Committee. It defines the minimum requirements for satisfactory performance of ADSL systems using the Discrete Multi-Tone (DMT) line code. The maximum downstream data rate is 8 Mbit/s. By default, this value is selected. • ADSL2: It is the second-generation ADSL standard, including ADSL2 (G.992.3) and no-splitter ADSL2 (G.992.4). Compared with the first-generation ADSL standard, the ADSL2 standard is better in

Parameter	Description
	<p>the access distance and transmission performance aspects, and is improved in stability and anti-noise capabilities. It delivers data at rates up to 12 Mbit/s downstream and 1.0 Mbit/s upstream. By default, this value is selected.</p> <ul style="list-style-type: none"> • ADSL2+: The ADSL2+ extends the capability of the ADSL2. It increases the number of subcarriers by increasing the number of downstream bits. It delivers data at rates up to 24 Mbit/s downstream and 1.0 Mbit/s upstream. The maximum transmission distance is 6.5 km. By default, this value is selected. • AnnexL: It is an ITU standard for ADSL, also known as G.992.3. It delivers data at rates up to 12 Mbit/s downstream and 1.0 Mbit/s upstream. By default, this value is selected. • Annex M: It contains all new features of ADSL2+. Annex M delivers data at rates up to 24 Mbit/s downstream and 3.5 Mbit/s upstream. By default, this value is not selected.
Phone Line Pair	<p>Indicates the phone line pair. The default value is Inner pair.</p> <ul style="list-style-type: none"> • Inner pair: inner pair among the four internal phone lines. • Outer pair: outer pair among the four internal phone lines.
Capability	<p>Indicates the DSL service capability.</p> <ul style="list-style-type: none"> • Bitswap: bit exchange capability. If this value is specified, EGW1520 allows simple bit control for automatically adjusting line rates. By default, this value is selected. • SRA: seamless rate adaptation capability. If this value is specified, EGW1520 can change connection rates when services are transmitted continuously or when there is no bit error. By default, this value is not selected.

Step 4 Click  to save the settings.

----End

7.2.2 WAN

The EGW1520 uses a WAN port to connect to the upstream network. The FE mode, however, cannot be used with the ADSL mode at the same time and cannot function as a backup of the ADSL mode.

Description

This topic describes the principle, implementation, specification, and limitation for using a WAN port to connect the EGW1520 to the upstream network.

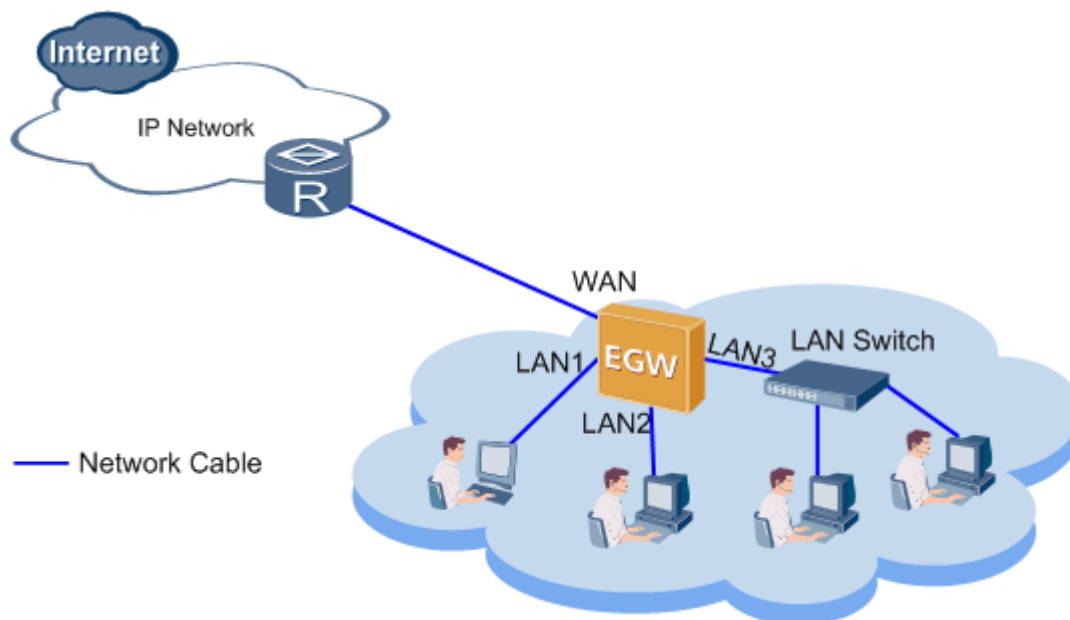
Principle

The EGW1520 complies with IEEE802.3u 100Base-T.

Implementation

The EGW1520 has a WAN port. After being configured and connected, the WAN port connects users to the IP network. The IP network connects users to the Internet, IP Multimedia Subsystem (IMS), or Next Generation Network (NGN), as shown in [Figure 7-18](#).

Figure 7-18 WAN network diagram



Specification

- One 10/100/1000 Mbit/s self-adaptive WAN port.
- Modes of obtaining IP addresses: static IP address configuration, DHCP server, and PPPoE.
- Standards supported by the WAN port:
 - MAC Address (IEEE 802.3)
 - Internet Protocol v4 (RFC 791)
 - Address Resolution Protocol (RFC 826)
 - Internet Control Message Protocol (RFC 792)
 - An Ethernet Address Resolution Protocol (RFC 0826)
 - A Standard for the Transmission of IP Datagrams over Ethernet Networks (RFC894)
 - A Standard for the Transmission of IP Datagrams over IEEE 802 Networks (RFC1042)
 - DHCP (RFC 2131) TCP Transmission Control Protocol (RFC793)
 - UDP User Datagram Protocol (RFC768)

Limitation

- The WAN port supports half-duplex and full-duplex self adaptation, but cannot be forced to use full duplex or half duplex.

- The EGW1520 connects to the IP network using an ADSL or a WAN port. The ADSL and WAN ports cannot be used at the same time or back each other up.
- IPv6 is not supported.

Configuration

The EGW1520 uses a WAN port to connect to the IP network. Users can access the Internet, IP Multimedia Subsystem (IMS), or Next Generation Network (NGN) over the IP network.

Prerequisite

You have logged in to the web management system. For details, see [7.7.1 Web Management](#).

Background

For the principle, implementation, specification, and limitation for using a WAN port to connect the EGW1520 to the upstream network, see [Description](#).

Procedure

Step 1 On the web management system, choose **Network** > **WAN** from the navigation tree.

The page shown in [Figure 7-19](#) is displayed.

Figure 7-19 Configuring the WAN connection (1)



Step 2 Click

Add

The page shown in [Figure 7-20](#) is displayed.

Figure 7-20 Configuring the WAN connection (2)

Service Configuration

Select Service Type:

- PPPoE
 IPoE

Enter Service Description:

Back

Next

Step 3 Select a service type and define the service description. You can also use the default service description.



NOTE

The service type varies according to network carriers.

The EGW1520 supports the following WAN service types (to access the configuration procedure of a service type, click the corresponding link):

- [PPPoE](#)
- [IPoE](#)

If you select **PPPoE** as the service type, the procedure is as follows:


1. Click  in [Figure 7-20](#).
The page shown in [Figure 7-21](#) is displayed.

Figure 7-21 Configuring the WAN connection (3)

PPP Configuration

User Name:

Password:

Authentication Method: AUTO

Dial on demand (with idle timeout timer)

Use Static IP Address

Bridge PPPoE Frames Between WAN and Local Ports

NAT: Enable Disable

Fullcone NAT: Enable Disable

Firewall: Enable Disable

Back
Next

Caution

The DHCP relay conflicts with the NAT function.

2. Set parameters according to [Table 7-6](#).

Table 7-6 Parameter description (1)

Parameter	Description
Username	The value is provided by the network carrier.
Password	The value is provided by the network carrier.
Authentication Method	<p>The options are as follows:</p> <ul style="list-style-type: none"> AUTO: The system automatically selects the Password Authentication Protocol (PAP) or Challenge Handshake Authentication Protocol (CHAP) as required. PAP: The PAP is used. CHAP: The CHAP is used. <p>The value is provided by the network carrier. The recommended value is AUTO.</p>
Dial on demand	Dial on demand is applicable to the Internet service charged by time. When this function is enabled, the EGW1520 sets up a dialing connection only when there are Internet access requests. If the EGW1520 does not receive any Internet access requests within a specified period, the WAN connection is disconnected

Parameter	Description
	automatically.
Use Static IP Address	The static IP address assigned by the network carrier is used.
Bridge PPPoE Frames Between WAN and Local Ports	The default value is recommended.
NAT	Indicates whether to enable the network address translation (NAT) function which allows EGW1520 users to access the Internet with private IP addresses.
Fullcone NAT	Indicates whether to enable the full cone NAT function. The default value Disable is recommended.
Firewall	Indicates whether to enable the firewall function. If the firewall function is enabled, the firewall will block all downstream packets that are sent from the WAN port. By default, this value is Enabled . You can configure relevant parameters to enable packets to pass the firewall.


- Click  .
The page shown in [Figure 7-22](#) is displayed.

Figure 7-22 Configuring the WAN connection (4)

DNS Server Configuration

Use Interface DNS

Static DNS IP Address

Primary DNS server:

Secondary DNS server:

Description

The DNS server's IP addresses cannot be the same as the EGW1500E's IP address.

- Configure a DNS server.
The system provides the following configuration methods:

- Select a WAN port. Then the DNS server where the port resides is used.
- Set the static IP address for the DNS server. The IP address is provided by the network carrier.

This method is available when you know the IP address of the DNS server.

5. Click .

The page shown in [Figure 7-23](#) is displayed.

Figure 7-23 Configuring the WAN connection (5)

Setup - Summary



Connection Type	PPPoE
NAT	Enabled
Full Cone NAT	Disabled
Firewall	Enabled
Quality Of Service	Enabled





Description

Make sure that the settings below match the settings provided by your ISP.

6. Check whether the configurations are correct. If yes, click  to save the configurations. If no, click  to modify the configurations.

If you select **IPoE** as the service type, the procedure is as follows:

1. Click **IPoE** in [Figure 7-20](#).

The page shown in [Figure 7-24](#) is displayed.

Figure 7-24 Configuring the WAN connection (6)

Service Configuration

Select Service Type:

PPPoE

IPoE

Enter Service Description:

Back

Next

2. Click .

The page shown in [Figure 7-25](#) is displayed.

Figure 7-25 Configuring the WAN connection (7)

IP Settings

DHCP

Option 60 Vendor ID:

Option 61 IAID: (8 hexadecimal digits)

Option 61 DUID: (hexadecimal digit)

Option 125: Disable Enable

Option 42: Disable Enable

Option 43: Disable Enable

Option 66 & 67 & 150: Disable Enable

Option 120: Disable Enable

Static IP Address

WAN IP Address:

WAN Subnet Mask:

WAN Gateway:

- Set parameters according to [Table 7-7](#).

Table 7-7 Parameter description (2)

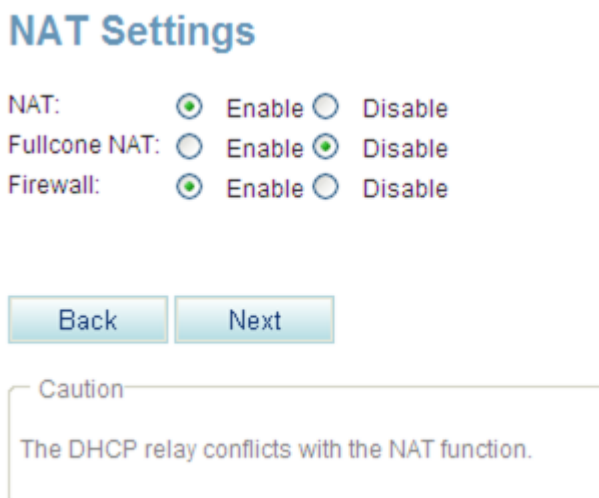
Parameter	Description
DHCP	The EGW1520 functions as the DHCP client and obtains the IP address using the DHCP server. The setting must be the same as that on the Broadband Remote Access Server (BRAS) of the network carrier.
Option 60 Vendor ID	Indicates the ID of the DHCP client manufacturer.
Option 61 IAID	Indicates the identity association identifier of the DHCP client. The IAID and DUID compose of the client ID. The MAC address and DHCP client ID are used to identify a DHCP client. When the same client requests IP addresses at different times, the DHCP server allocates the same IP address to it.
Option 61 DUID	Indicates the unique DHCP client identifier. The IAID and

Parameter	Description
	DUID compose of the client ID. The MAC address and DHCP client ID are used to identify a DHCP client. When the same client requests IP addresses at different times, the DHCP server allocates the same IP address to it.
Option 125	Indicates the option for the client manufacturer. It is used to provide the DHCP server with information such as the manufacturer name, OUI, device model, device SN for the DHCP server. The information can be used in TR-069. By default, this value is enabled.
Option 42	Indicates the NTP server option. It is used to allocate the NTP server's IP addresses to the client. By default, this value is enabled.
Option 43	Indicates the option for the manufacturer's specified information. It is used to allocate ACS URL to the client. The information can be used in TR-069. By default, this value is enabled.
Option 66 & 67 & 150	<ul style="list-style-type: none"> 66: TFTP server domain option, used to allocate the TFTP server's domain name to the client. 67: File name option, used to allocate the file name to the client. 150: TFTP server IP address option, used to allocate the TFTP server's IP address to the client. By default, this value is enabled.
Option 120	Indicates the SIP server option. It is used to allocate the SIP server's IP address or domain name to the client. By default, this value is enabled.
Static IP Address	Set the static IP address for the EGW1520. The setting must be the same as that on the BRAS of the network carrier.
WAN IP Address	Indicates the IP address. The value is provided by the network carrier.
WAN Subnet Mask	Indicates the subnet mask. The value is provided by the network carrier. The default value is 255.255.255.0 .
WAN Gateway	Indicates the gateway IP address. The value is provided by the network carrier.

4. Click  .

The page shown in [Figure 7-26](#) is displayed.

Figure 7-26 Configuring the WAN connection (8)



- Set parameters according to [Table 7-8](#).

Table 7-8 Parameter description (3)

Parameter	Description
NAT	Indicates whether to enable the network address translation (NAT) function which allows EGW1520 users to access the Internet with private IP addresses. The default value Enable is recommended.
Fullcone NAT	Indicates whether to enable the full cone NAT function. The default value Disable is recommended.
Firewall	Indicates whether to enable the firewall function. If the firewall function is enabled, the firewall will block all downstream packets that are sent from the WAN port. By default, this value is Enabled . You can configure relevant parameters to enable packets to pass the firewall.


- Click  .
The page shown in [Figure 7-27](#) is displayed.

Figure 7-27 Configuring the WAN connection (9)

DNS Server Configuration

Use Interface DNS

Static DNS IP Address

Primary DNS server:

Secondary DNS server:

Back

Next

Description

The DNS server's IP addresses cannot be the same as the EGW1500E's IP address.

7. Configure a DNS server.

The system provides the following configuration methods:

- Select a WAN port. Then the DNS server where the port resides is used.
- Set the static IP address for the DNS server. The IP address is provided by the network carrier.

This method is available when you know the IP address of the DNS server.

8. Click  .

The page shown in [Figure 7-28](#) is displayed.

Figure 7-28 Configuring the WAN connection (10)

Setup - Summary

Connection Type	IPoE
NAT	Enabled
Full Cone NAT	Disabled
Firewall	Enabled
Quality Of Service	Enabled

Description

Make sure that the settings below match the settings provided by your ISP.

9. Check whether the configurations are correct. If yes, click to save the configurations. If no, click to modify the configurations.

----End

Verification

To verify that the WAN connection is set up, proceed as follows:

Step 1 Choose **Management > Status**. The **Network** page is displayed.

Step 2 Check the value of **Status**.

If the value of **Status** is **Connected**, the WAN connection is set up. If the value is not **Connected**, verify that the configuration is correct.

----End

7.2.3 3G

Normally, the EGW1520 uses an ADSL or a WAN port to connect to the IP network. When the ADSL or WAN port cannot be used, insert a 3G card to the USB port to connect the EGW1520 to the 3G network. The 3G network connects the EGW1520 to the IP network. The 3G network supports voice and data services, but does not support the fax service.

Description

This topic describes the principle, implementation, specification, and limitation for connecting the EGW1520 to the upstream network through the 3G network.

Principle

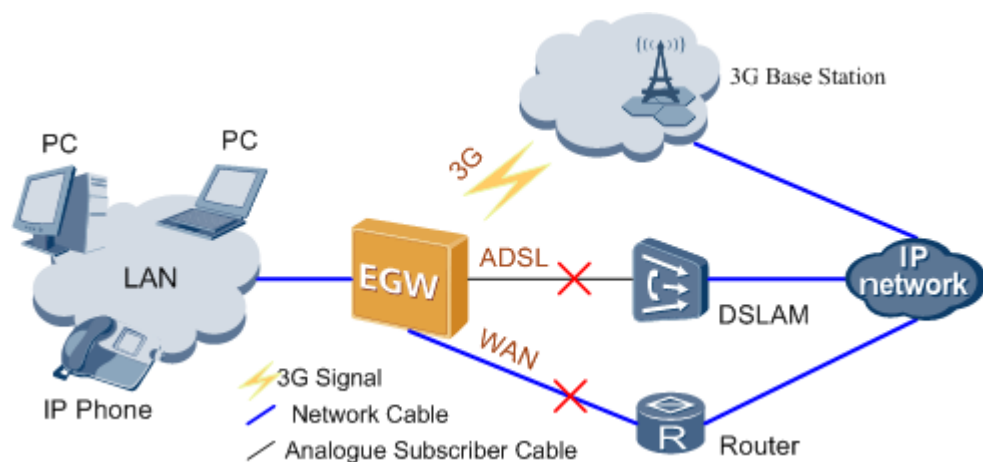
The EGW1520 has a USB port. After you insert a 3G card to the USB port, the EGW1520 is connected to the 3G network.

Implementation

Normally, the EGW1520 uses an ADSL or a WAN port to connect to the IP network. When the ADSL or WAN port is not available, you can use a 3G card to enable audio and data services (fax service not supported), as shown in [Figure 7-29](#).

When the ADSL or WAN port is available, the EGW1520 automatically switches to the ADSL or WAN port to connect to the IP network.

Figure 7-29 3G network



Specification

One USB port (for 3G data cards).

Limitation

- The EGW1520 supports the following 3G data cards:
 - TD SCDMA
 - Huawei ET302 with the software version of 11.100.05.00.00
 - Huawei ET127 with the software version of 11.101.01.36.00
 - WCDMA
 - Huawei K3765 with the software version of 11.126.03.06.00
 - Huawei E176G with the software version of 11.126.03.02.00
- The 3G network supports the backup function and does not support the fax service, Demilitarized Zone (DMZ) host, and virtual servers.

Configuration

This topic describes how to configure the connection to the IP network through 3G.

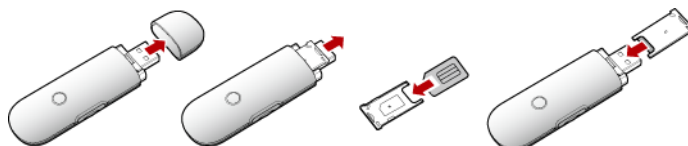
Prerequisite

Huawei K3765 3G data card has been inserted.

After WAN cable or ADSL cable is connected, 3G data card can be connected to the EGW1520 to achieve network backup. The procedure for enabling the 3G network connection is as follows:

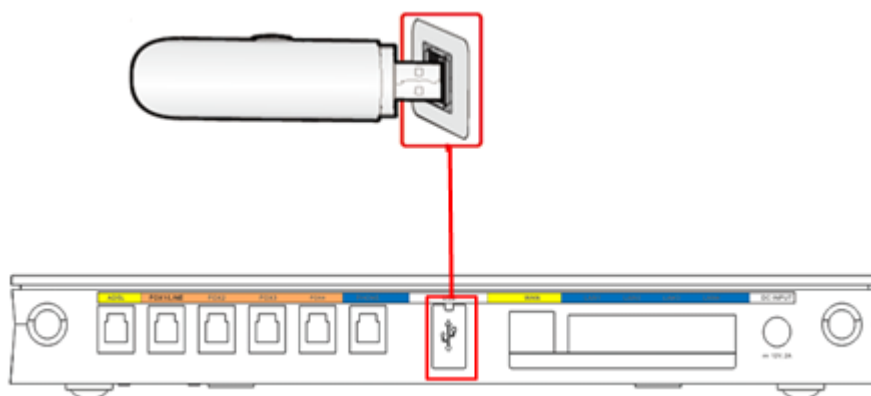
1. Draw the 3G data card cap, and insert the SIM card, as shown in [Figure 7-30](#).

Figure 7-30 Inserting the SIM card



2. Insert the 3G data card into the USB port on the EGW1520, as shown in [Figure 7-31](#).

Figure 7-31 Inserting the 3G data card



Logging In to the Web Management System

You have logged in to the web management system. For details, see [Logging In to the Web Management System](#).

Background

For details about the principle, implementation, specification, and limitation for connecting the EGW1520 to the upstream network through the 3G network, see [Description](#).

Procedure

- Step 1** On the web management system, choose **Network > 3G** from the navigation tree.

The page shown in [Figure 7-32](#) is displayed.


Figure 7-32 3G Configuration (1)



Table 7-9 describes the parameters.

Table 7-9 Parameter description (1)

Parameter	Description
ISP	Indicates the carrier name, such as China Unicom.
Signal Intensity	Indicates the signal strength.
SIM Card Status	Indicates the SIM card status. The options are as follows: <ul style="list-style-type: none"> Ready: The SIM card is available. No Device: No data card exists or the data card is not detected properly. PUK Need: If you enter incorrect PIN codes for three consecutive times, the SIM card is locked. To unlock the SIM card, contact network carriers. Unlocking: The PIN code is entered and the SIM card is being unlocked.
IMEI	Indicates the serial number of the data card.
SYS Mode	Indicates the connection mode, such as WCDMA.
Connection Status	Indicates the current network connection status.
IP Address	Indicates the IP address obtained on the 3G network.
Connection Duration	Indicates the network connection duration.

Step 2 Click the  .

The page shown in [Figure 7-33](#) is displayed.

Figure 7-33 3G Configuration (2)

3G Configuration

Backup Mode: Manual Auto

WCDMA

Dial String: *

Access Point Name:

TD SCDMA

Dial String: *

Access Point Name:

> SIM Configuration

Description

When the ADSL or WAN port is restored, EGW1500E connects to the ADSL or WAN port automatically.

Step 3 Set parameters according to [Table 7-10](#).

Table 7-10 Parameter description (2)

Parameter	Description
Backup Mode	<p>Backup modes are as follows:</p> <ul style="list-style-type: none"> • Manual: When the ADSL or WAN port is disconnected, you are required to connect the EGW1520 to the 3G network manually. • Automatic: When the ADSL or WAN port is disconnected, the EGW1520 connects to the 3G network automatically. <p>NOTE When the ADSL or WAN port is available, the EGW1520 automatically switches to the ADSL or WAN port to connect to the IP network.</p>
WCDMA	<p>Set WCDMA parameters.</p> <ul style="list-style-type: none"> • Dial String: Enter the dial string, such as *99# for China Unicom. • Access Point Name: Enter the access point name, such as 3gnet for China Unicom.

Parameter	Description
TD SCDMA	Set TD SCDMA parameters. <ul style="list-style-type: none">• Dial String: Enter the dial string, such as *99# for China Mobile.• Access Point Name: Enter the access point name, such as cmnet for China Mobile.

Step 4 Click  .

Step 5 Click the **SIM Configuration** .

The page shown in [Figure 7-34](#) is displayed.

Figure 7-34 SIM Configuration tab page

3G Configuration

Backup Mode: Manual Auto

WCDMA

Dial String: *

Access Point Name:

TD SCDMA

Dial String: *

Access Point Name:

SIM Configuration

PIN Lock: Enable Disable

PinCode:

Reconfirm:

Network Mode: 3G Preferred 3G Only 2G Only



Description

When the ADSL or WAN port is restored, EGW1500E connects to the ADSL or WAN port automatically.

Step 6 Set parameters according to [Table 7-11](#).

Table 7-11 Parameter description (3)

Parameter	Description
PIN Lock	<ul style="list-style-type: none"> Enable: You must enter a PIN code in the SIM Card State text box on the 3G Status tab page when a SIM card is inserted again or is recovered from power-off. Obtain the PIN code from network carriers. This improves SIM card security. <p>NOTE</p> <p>If you enter incorrect PIN codes for three consecutive times, the SIM card is locked. To unlock the SIM card, contact network carriers.</p> <ul style="list-style-type: none"> Disable: A PIN code is not required when a SIM card is inserted

Parameter	Description
	<p>again or is recovered from a power-off.</p> <p>Click  to save the settings.</p>
Network Mode	<ul style="list-style-type: none"> • 3G Preferred: Use 3G in preference and use 2G only when 3G is unavailable. • 3G Only: Use only 3G. • 2G Only: Use only 2G. <p>Click  to save the settings.</p>

----End

Verification

To verify that the 3G backup function takes effect, proceed as follows:

- Step 1** Disconnect the ADSL port or WAN port.
- Step 2** Click the **3G Configuration** tab, and verify that the value of **Connection Status** is **Connected**. If the value is **Disconnected**, check the 3G configurations.



NOTE

If you set the 3G backup mode to **Manual**, connect the EGW1520 to the 3G network manually when the ADSL or WAN port is disconnected.

- Step 3** Use the Microsoft Internet Explorer on a computer to browse an external web page.

----End

If you can browse web pages and make calls, the 3G backup is effective. If the 3G backup is ineffective, contact the network carrier.

7.3 Voice (UC Mode)

In the eSpace UC solution, the EGW1520 is deployed at a small branch of an enterprise to provide network access functions for the small branch. Phones at the branch are registered with the SIP server on the central node at the headquarters. Numbers of the branch users are allocated by the SIP server at the headquarters and synchronized by the EGW1520 with the data synchronization server. The EGW1520 can also function as a trunking gateway to implement incoming and outgoing call functions through the FXO port for the local PSTN.

7.3.1 Voice Access

This topic describes the voice function provided by the EGW1520 in the eSpace UC solution.

Description

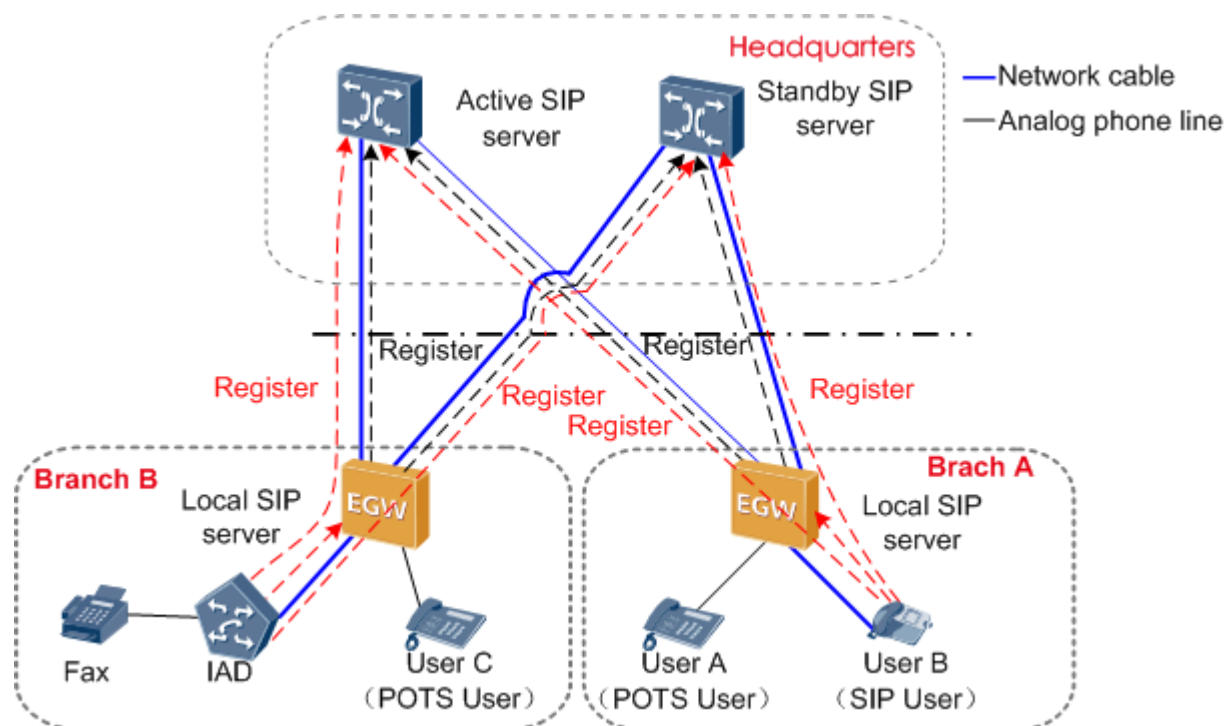
This topic describes the registration and call process when the EGW1520 functions as the voice access device.

Registration with Multiple Servers and Call Process

In UC mode, the EGW1520 can register with multiple SIP servers (both the active and standby SIP servers) simultaneously. The EGW1520 registers POTS users to the SIP server at the central node. SIP users (such as IP phone and IAD users) use SIP to directly register with the SIP server at the central node. All calls are processed by the SIP server at the central node.

Figure 7-35 shows the registration with multiple servers.

Figure 7-35 Registration with multiple servers



When the EGW1520 registers with multiple SIP servers, the call processes are as follows:

- User A calls user B.
 1. User A sends a call request to the SIP server at the central node through the EGW1520.
 2. The SIP server processes the request and then transfers the call to user B.
 3. User B picks up the phone and the call is set up.
- User B calls user C.
 1. User B sends a call request to the SIP server in at the headquarters' central node through the EGW1520.
 2. The SIP server processes the request and then transfers the call to user C.
 3. User C picks up the phone and the call is set up.
- User C calls an external user of the enterprise.

1. User C sends a call request to the SIP server in at the headquarters' central node through the EGW1520.
2. The SIP server processes the request and transfers the call the IMS/NGN or PSTN network.
3. The external user picks up the phone and the call is set up.

Local Survival

The EGW1520 supports the local survival function. When the EGW1520 is disconnected from the primary and secondary SIP servers, it automatically switches to the local survival mode. In this mode, the EGW1520 functions as a local SIP server for internal users to register with. All calls connected to the EGW1520 are processed by the EGW1520. Outgoing calls are made through the FXO port.

The EGW1520 sends heartbeat detection messages to both the active and standby servers. When either server recovers, the EGW1520 automatically disables the local survival mode.

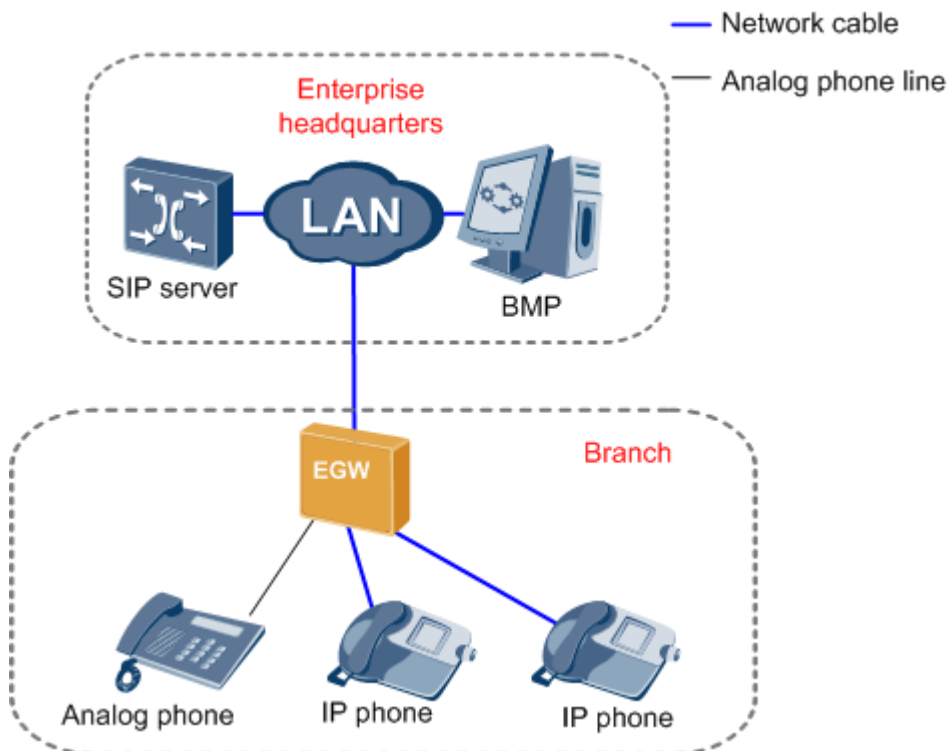
Data Synchronization

In UC mode, you do not need to configure internal user numbers on the EGW1520. All user numbers are allocated and synchronized to the EGW1520 by the data synchronization server such as the BMP.

Users can only view phone number information on the web page of the EGW1520. They cannot change the information.

Figure 7-36 shows the typical network of data synchronization.

Figure 7-36 Typical network of data synchronization



Before the configuration, collect the user quantity in a branch and apply to the enterprise IT administrator for number allocation. Then the SIP server allocates user numbers and the EGW1520 synchronizes the user numbers with the data synchronization server.

The data synchronization mechanism is as follows:

- The EGW1520 initiates data synchronization. The EGW1520 sends a data synchronization request to the data synchronization server when the EGW1520 restarts, data synchronization server information on the EGW1520 changes, or the EGW1520 switches from the local survival mode to another mode.
- The data synchronization server initiates data synchronization. The data synchronization server regularly sends data synchronization requests to the EGW1520 to ensure user data consistency between them.

Specification

- A maximum of 20 SIP users.
- One FXS port, connecting to one POTS user.
- A maximum of 8-channel users (SIP users and POTS users) can simultaneously initiate calls. Standards supported by voice service:
 - G.711 A, G.711 u, G.729, G.726, and G.722
 - SIP (RFC 3261–3265)
 - SIP Session Timers (RFC 4028)
 - SDP (RFC 2327)
 - RTP or RTCP
 - RFC 2833

Configuration

In UC mode, all phones connected to the EGW1520 are registered with the SIP server at the headquarters. Before the configuration, apply to the enterprise IT administrator for number allocation.

Prerequisite

- You have logged in to the web management system. For details, see [7.7.1 Web Management](#).
- The EGW1520 has connected to the uplink network. For details, see [7.2 Connection Modes](#).



NOTE

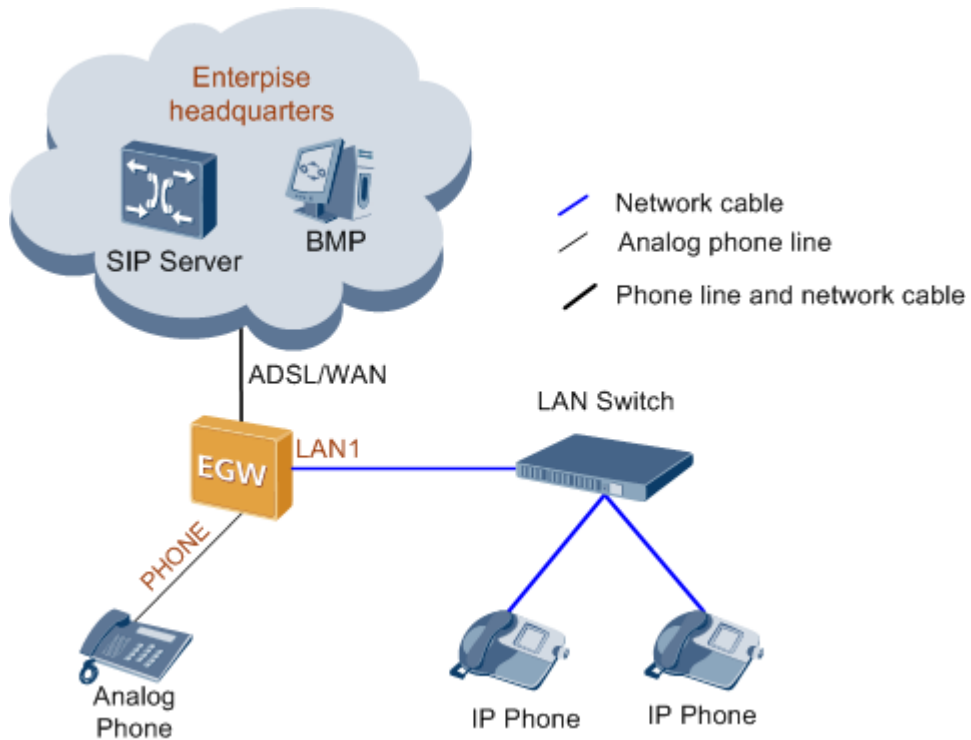
Before the configuration, collect the user quantity in a branch and apply to the enterprise IT administrator for number allocation.

Example

Network Plan Example

[Figure 7-37](#) shows the network in which the EGW1520 connects to the SIP server at the headquarters.

Figure 7-37 EGW1520 network



Analog phones are connected to the PHONE ports of the EGW1520, and IP phones are connected to the EGW1520 through the switch. You can also use network cables to connect IP phones to LAN ports of the EGW1520.

Data Plan Example

Table 7-12 describes the server information to be obtained from the enterprise IT administrator.

Table 7-12 Headquarters server information

Server Information	Example
Information about the SIP server at the headquarters' central node	<ul style="list-style-type: none"> Address type: IP address Address: 192.169.10.90 Network type: IMS
Information about the data synchronization server (BMP)	<ul style="list-style-type: none"> IP address: 192.169.10.99 Port number: 8098

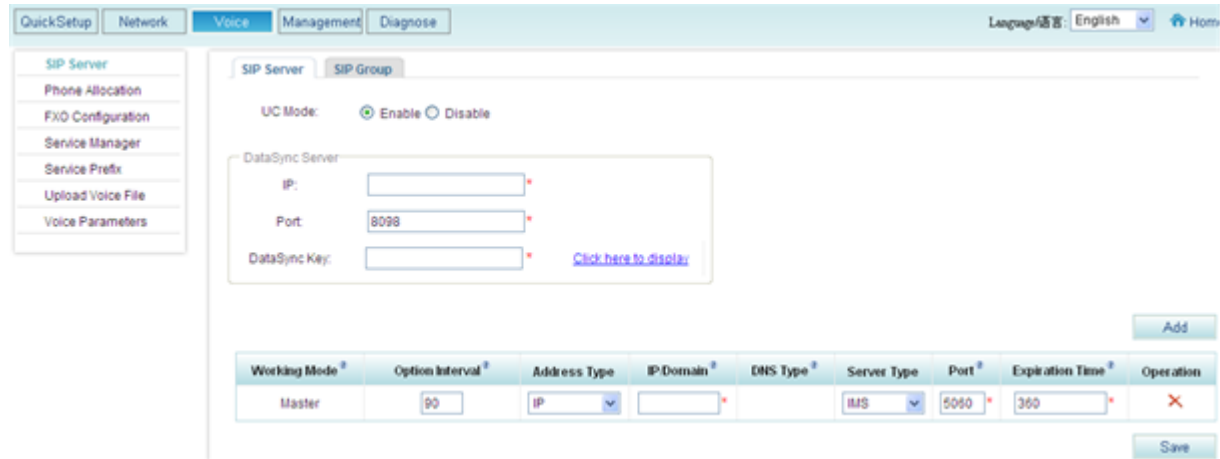
Procedure

- Step 1** On the web management system, choose **Voice > SIP Server** from the navigation tree.
- Step 2** Click **Enable** for **UC Mode**.

Step 3 Click .

The page shown in [Figure 7-38](#) is displayed.

Figure 7-38 Configuring a registration server

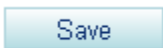


Step 4 Set parameters according to [Table 7-13](#).

Table 7-13 Registration server parameters

Parameter	Description
IP	IP address of the data synchronization server (such as the BMP). The value is provided by the enterprise IT administrator.
Port	Port number of the data synchronization server (such as the BMP). The value is provided by the enterprise IT administrator. If it is not provided, use the default value 8098.
DataSync Key	Data synchronization key. When the EGW1520 synchronizes data with the data synchronization server, the synchronization keys of the EGW1520 and the data synchronization server must be the same. Otherwise, the EGW1520 denies data synchronization. The value is a string of 1 to 32 characters that can be digits, letters, and special characters. For the detailed configuration rule, contact the enterprise IT administrator.
Working Mode	<ul style="list-style-type: none"> Master: active server. The server that is added first is the active server. Slave: standby server.
Option Interval	Interval for sending heartbeat detection messages to the active and standby server. The value ranges from 30 to 150, in seconds. The default value 90 is recommended. NOTE In UC mode, the EGW1520 sends heartbeat detection messages to both the active and standby servers.

Parameter	Description
Address Type	Address type of the SIP server. The options are IP address or domain name. The value is provided by the enterprise IT administrator.
IP/Domain	IP address or DNS domain name of the SIP server. The value is provided by the enterprise IT administrator. NOTE If you select Domain , configure the DNS server when configuring the WAN uplink mode.
DNS Type	IP address parsing mode of the DNS. This parameter is valid when Address Type is set to Domain . <ul style="list-style-type: none"> SRV: A domain name can be mapped to multiple IP addresses. The two IP addresses of the highest priority are used as the IP addresses of the active and standby SIP servers. NOTE If you set DNS Type to SRV , you do not need to configure the standby SIP server. <ul style="list-style-type: none"> HOST: One domain name corresponds to one IP address. To perform switchover between the active and standby servers, two SIP servers need to be configured.
Server Type	SIP network type inside the enterprise. Generally, set the network type to NGN if the eSpace U1900 is used or IMS if the eSpace U2900 is used. For details, contact the enterprise IT administrator.
Port	Port number of the SIP server. The value is provided by the network carrier. The default value 5060 is recommended.
Expiration Time	Interval for the registration group to register POTS users in the group with the SIP server. The value ranges from 0 to 14400, in seconds. The default value 360 is recommended.

Step 5 Click  to save the settings.

 **NOTE**

After the enterprise IT administrator allocates numbers to users connected to the EGW1520 on the SIP server at the headquarters, and the EGW1520 synchronizes data with the data synchronization server, you can choose **Voice > Phone Allocation** to query the allocated user numbers. If the user numbers cannot be found, query again after you restart the EGW1520 or the EGW1520 synchronizes data with the data synchronization server.

Step 6 Register IP phones with the SIP server at the headquarters.

See the IP phone manual to configure the IP address and internal number of the IP phone, IP address of the SIP server at the headquarters, and IP address of the EGW1520 to register the IP phone with the SIP server and the EGW1520.

Step 7 Configure the VPN tunnel.

VPN ensures secure communication between branches and headquarters. For details about VPN configuration, see [7.5.6 VPN](#).

----End

Verification

- Use a POST or IP phone connected to the EGW1520 to call a phone number outside the enterprise. Verify that the call is set up successfully.
- Use a POST phone to call an IP phone that is connected to the same EGW1520 with the POST phone. Verify that the call is set up successfully.

7.3.2 FXO Port

The topic describes the principle, specification, and limitation, and implementation for the FXO port on the EGW1520 in UC mode.

Description

The EGW1520 provides four FXO ports used to connect to PSTN networks, allowing voice users on the EGW1520 to communicate with PSTN users.

Principle

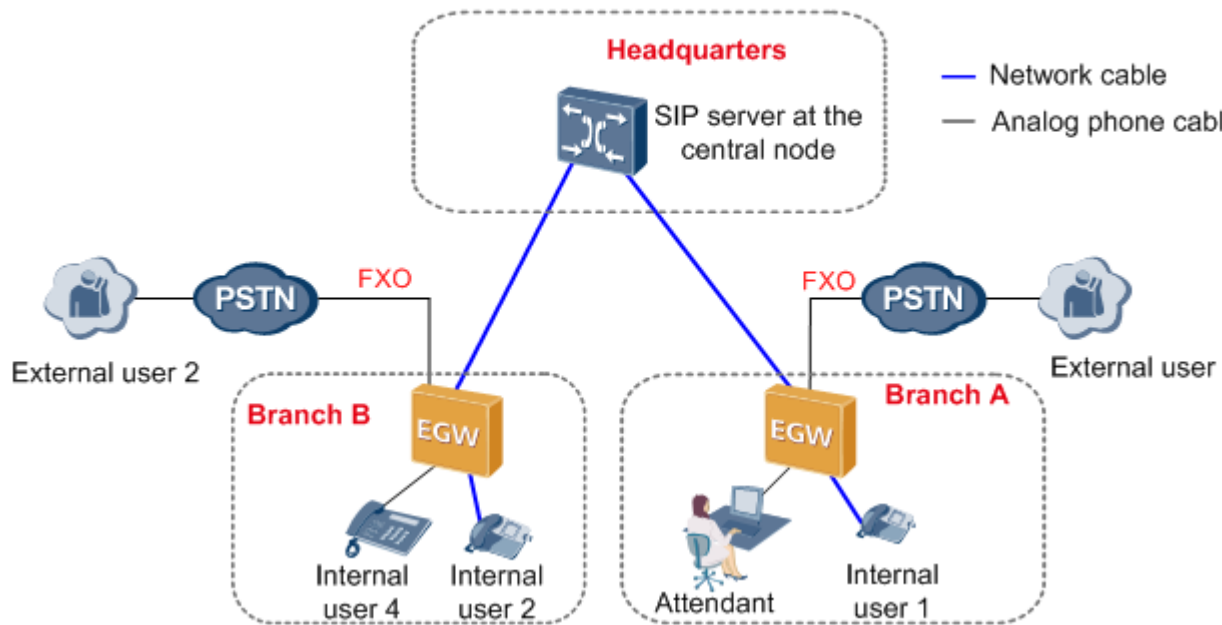
The EGW1520 provides an FXO port for connecting to the PSTN network. An external user dials the number that the PSTN carrier allocates to the FXO port to make an incoming call. An internal user dials the outgoing prefix and an external user's number to make an outgoing call through an FXO port. During an outgoing call, the EGW1520 functions as the PSTN landing gateway, implementing local outgoing calls and helping reduce toll call fees.

The EGW1520 supports the switchboard, DDI, and dedicated line functions. By default, the switchboard function is enabled.

Implementation for the Switchboard

[Figure 7-39](#) shows the application scenario for the switchboard.

Figure 7-39 Application scenario for the switchboard



The call process for the switchboard is as follows:

Outgoing call

1. An internal user dials the outgoing prefix for the FXO port (for example, **0571**) and the number of an external user.
2. The SIP server at the headquarters determines the location of the number based on the outgoing prefix, and sends the outgoing prefix and the external user's number to the landing gateway in the corresponding branch.
3. The landing gateway in the branch automatically queries an idle non-dedicated FXO port for the user to make the outgoing call.

NOTE

A non-dedicated FXO port is a port for which the dedicated line is not configured. For details about the dedicated line, see [Implementation for the Dedicated Line](#).

4. The external user answers the call.

NOTE

The number that the PSTN network carrier allocates to the FXO port is displayed to the called party.

5. One party hangs up the phone to end the call.

Incoming call

1. An external user dials the number that the PSTN network carrier allocates to the FXO port, that is, the switchboard number.
The external user hears an announcement, for example, "Thanks for calling XX company. Please dial the extension number. To query numbers, dial 9. End the number with a pound key."

- The external user dials an extension number (internal number of any internal user) or dials 9 (to connect to the preset attendant number) as prompted, and presses the pound key (#).



NOTE

If the extension number does not belong to the branch where the switchboard is located, the EGW1520 sends the number to the SIP server at the headquarters. The SIP server at the headquarters automatically queries the corresponding internal user.

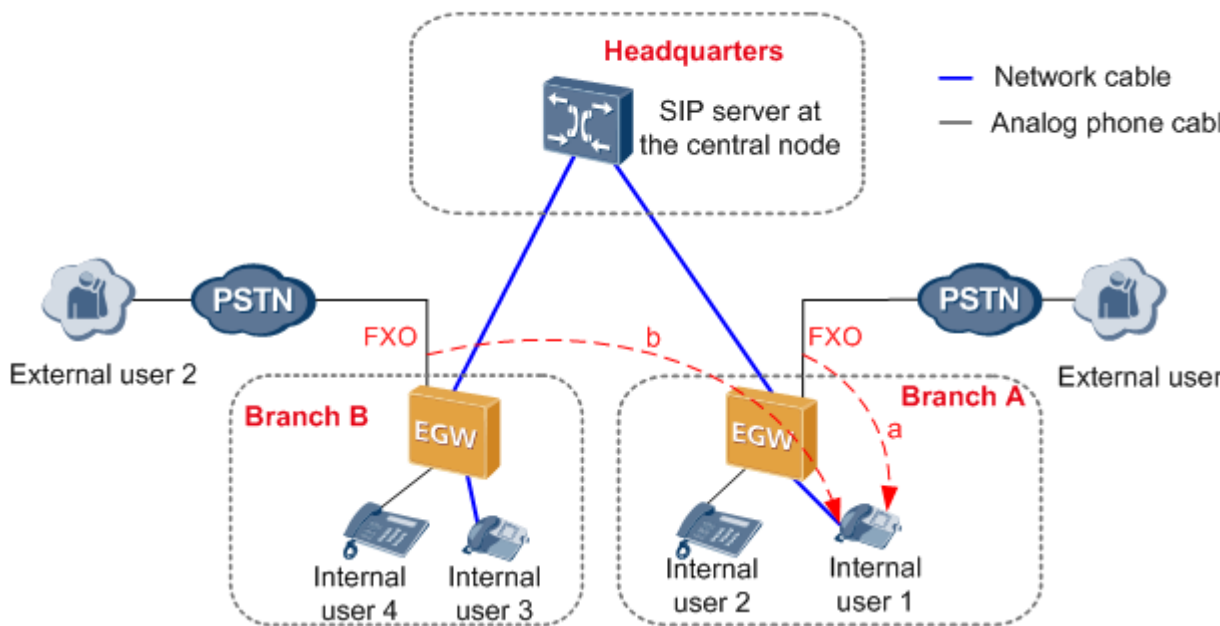
- The internal user or attendant answers the call.
- One party hangs up the phone to end the call.

Implementation for the DDI

The DDI binds an internal user to an FXO port. When an external user makes an incoming call to the internal user through the FXO port, the call is directly connected to the internal user. After the DDI is configured for an FXO port, other users can still make outgoing calls through the FXO port.

Figure 7-40 shows the application scenario for the DDI.

Figure 7-40 Application scenario for the DDI



NOTE

A DDI user can be bound to an FXO port in the same branch or in another branch as shown in Figure 7-40.

The call process for the DDI is as follows:

Outgoing call

- An internal user dials the outgoing prefix for the FXO port (for example, **0571**) and the number of an external user.

2. The SIP server at the headquarters determines the location of the number based on the outgoing prefix, and sends the outgoing prefix and the external user's number to the landing gateway in the corresponding branch.
3. The landing gateway in the branch automatically queries an idle non-dedicated FXO port for the user to make the outgoing call.



NOTE

A non-dedicated FXO port is a port for which the dedicated line is not configured. For details about the dedicated line, see [Implementation for the Dedicated Line](#).

4. The external user answers the call.



NOTE

The number that the PSTN network carrier allocates to the FXO port is displayed to the called party.

5. One party hangs up the phone to end the call.

Incoming call

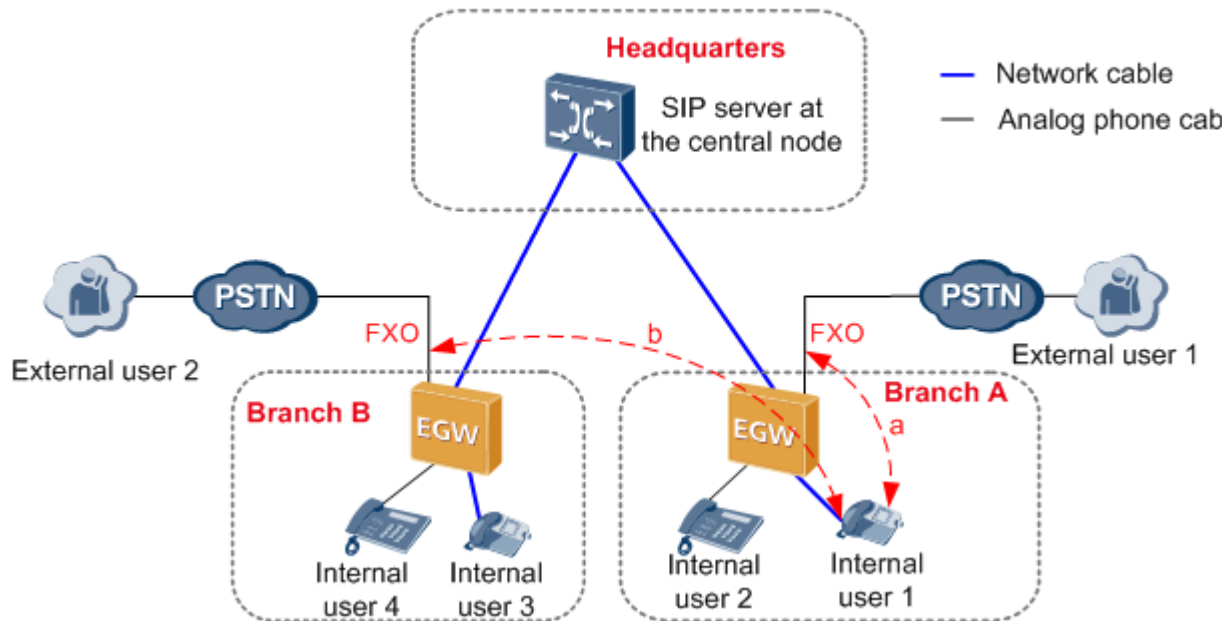
1. An external user dials the number that the PSTN network carrier allocates to the FXO port.
2. The phone of the DDI user bound to the FXO port (for example, internal user 1 in [Figure 7-40](#)) rings.
3. The DDI user answers the call.
4. One party hangs up the phone to end the call.

Implementation for the Dedicated Line

The dedicated line binds an internal user to an FXO port and sets the FXO port to be a dedicated port. When an external user makes an incoming call to the internal user through the FXO port, the call is directly connected to the internal user. Only the internal user can use the FXO port to make outgoing calls.

[Figure 7-41](#) shows the application scenario for the dedicated line.

Figure 7-41 Application scenario for the dedicated line



NOTE

A dedicated user can be bound an FXO port in the same branch or in another branch as shown in [Figure 7-41](#).

The call process for the dedicated line is as follows:

Outgoing call

- If the external user and the FXO port that the dedicated user is bound to are not in the same branch, the call process is similar to that for the switchboard. For details, see [Flow of Outgoing Calls Through the Switchboard](#).
- If the external user and the FXO port that the dedicated user is bound to are in the same branch, the call process is as follows:
 1. A dedicated user (for example, internal user 1 in [Figure 7-41](#)) dials the FXO outgoing prefix (configurable, for example, 0) and an external user's number.
 2. The SIP server at the headquarters sends the outgoing prefix and the external user's number to the landing gateway in the branch where the FXO port bound to the dedicated user is located.
 3. The EGW1520 automatically queries the FXO port bound to the user for the user to make the outgoing call.

NOTE

If the bound FXO port is unavailable (for example, no phone line is connected to the FXO port), the EGW1520 automatically queries a non-dedicated idle FXO port for the user to make the outgoing call.

4. The external user answers the call.

NOTE

The number that the PSTN network carrier allocates to the FXO port is displayed to the called party.

5. One party hangs up the phone to end the call.

Incoming call

1. An external user dials the number that the PSTN network carrier allocates to the FXO port.
2. The phone of the dedicated user bound to the FXO port (for example, internal user 1 in [Figure 7-41](#)) rings.
3. The dedicated user answers the call.
4. One party hangs up the phone to end the call.

Specification

Four FXO ports..

Limitation

- The FXO port supports only the one-stage dialing mode.
- Each FXO port allows one user to make an outgoing or incoming call through the FXO port at the same time.

Configuring an Outgoing Prefix

This topic describes how to configure an outgoing prefix for the FXO port on the EGW1520. After the outgoing prefix is configured, an intra-office user can dial the outgoing prefix and the number of an outer-office user to make an outgoing call through the FXO port.

Prerequisite

You have logged in to the web management system. For details, see [7.7.1 Web Management](#).

Principle

The outgoing call prefix must match the outgoing call prefix configured on the SIP server at the central node. Based on whether the SIP server at the center node deletes the outgoing prefix, the outgoing prefix configuration is classified into the following modes. For details about the configuration modes, contact the IT administrator at the enterprise headquarters.

- The SIP server at the central node does not delete the outgoing prefix.
Configure an outgoing prefix (such as 0571) for each branch to identify the area where a branch is located. The outgoing prefix for each branch must be unique. For example, the outgoing prefixes of branch A and branch B are 0571 and 0755 respectively. If user D dials 057112345678, the SIP server at the headquarters determines that the number belongs to branch A according to the prefix and sends the number 057112345678 to the EGW1520 at branch A.
- The SIP server at the central node deletes the outgoing prefix.
Configure at least two outgoing prefixes for each branch. One prefix identifies the area where the branch is located and the other prefix is the same as a prefix on the SIP server at the central node. For example, the outgoing prefixes of branch A are 0571 and 0. When user D dials 057112345678, the SIP server at the headquarters receives the number, deletes the prefix 0571, adds the new prefix 0, and sends the new number 012345678 to the EGW1520 at branch A.

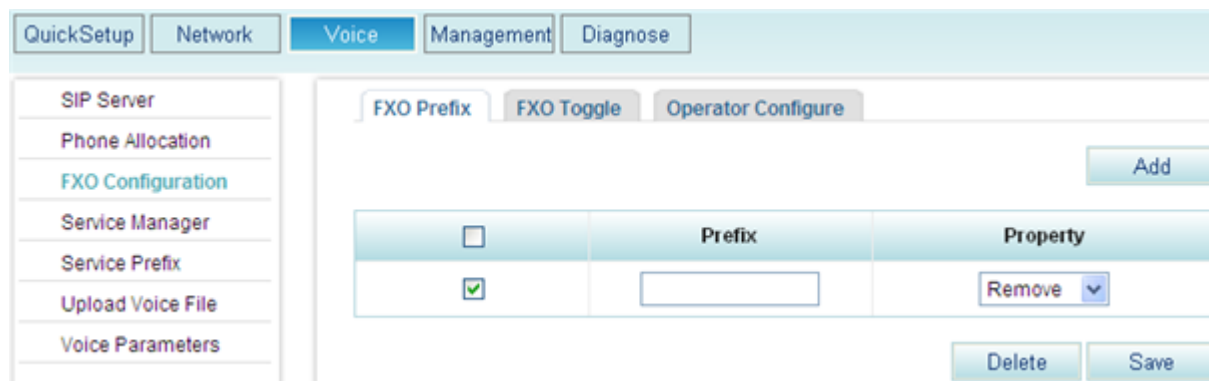
Procedure

Step 1 On the web management system, choose **Voice > FXO Configuration**.

Step 2 Click  .

The page shown in [Figure 7-42](#) is displayed.


Figure 7-42 Configuring an outgoing prefix for the FXO port



Step 3 Set parameters according to [Table 7-14](#).

Table 7-14 FXO prefix parameters

Parameter	Description
Prefix	<p>Outgoing prefix for the FXO port. The value is a number of 1 to 30 digits. An intra-office user can dial the outgoing prefix to make an outgoing call through the FXO port. For details, see Description.</p> <p>NOTE</p> <ul style="list-style-type: none"> • A maximum of 16 outgoing prefixes can be configured for the FXO port on the EGW1520. • The outgoing prefix must not conflict with internal numbers and emergency numbers. Once an outgoing prefix plus an outer-office number are the same as an internal number, the call will fail to be made towards the outer-office user. Instead, the internal user is connected.
Property	<ul style="list-style-type: none"> • Remove: The outgoing prefix is deleted for outgoing calls. • Retain: The outgoing prefix is not deleted for outgoing calls. This mode is applicable to the situation where the outgoing prefix is the same as the first digit in the outer-office number. <p>NOTE</p> <p>The number that the PSTN network carrier allocates to the FXO port is displayed to the called party.</p>

Step 4 Click  to save the settings.

----End

Verification

Step 1 An internal user dials the outgoing prefix for the FXO port (for example, **0571**) and the number of an external user.

Step 2 The external user answers the call.

----End

Verify that the call is set up successfully; otherwise, check the configuration.

Configuring the Switchboard

This topic describes how to configure the switchboard on the EGW1520.

Prerequisite

You have logged in to the web management system. For details, see [7.7.1 Web Management](#).

Background

For details about the application scenario and call process for the switchboard, see [Description](#).



NOTE

- The switchboard function conflicts with the DDI and dedicated line functions. If the DDI or dedicated line function is enabled, choose **Voice > FXO Configuration** and delete the binding number on the **FXO Toggle** tab page before configuring the switchboard function.
- By default, the switchboard function is enabled on the EGW1520. The following only describes how to configure attendant numbers. If you do not need to configure attendants, skip the following steps.
- Default voice prompts are loaded on the EGW1520 before delivery. To customize voice prompts, see [Customizing Voice Prompts for the Switchboard](#).

Procedure



NOTE

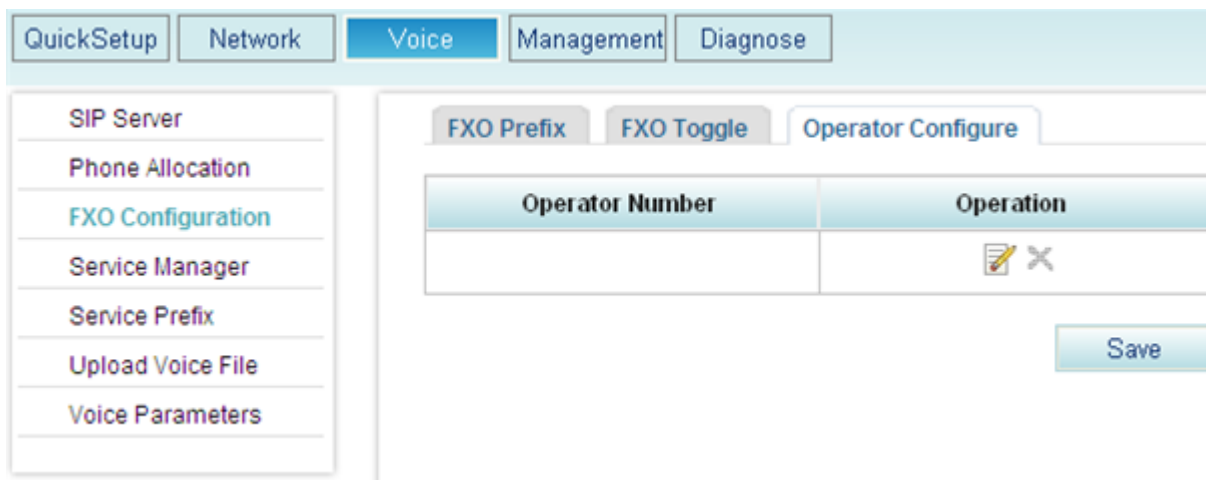
If you want to make an outgoing call, configure an outgoing prefix when you configure the switchboard. For the configuration method, see [Configuring an Outgoing Prefix](#).

Step 1 On the web management system, choose **Voice > FXO Configuration**.

Step 2 Click the **Operator Configure** tab.

The page shown in [Figure 7-43](#) is displayed.

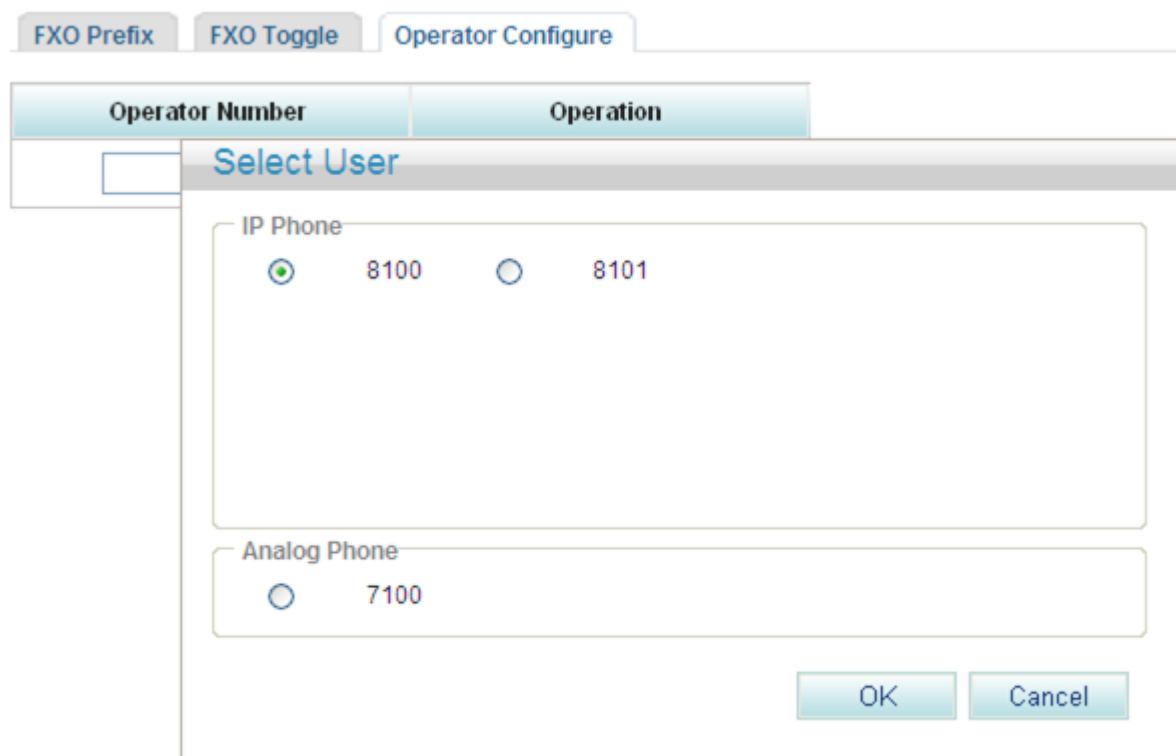
Figure 7-43 Configuring an attendant





Step 3 Click .

The page shown in [Figure 7-44](#) is displayed.

Figure 7-44 Selecting a user



Step 4 Select an internal number as the attendant number, and click .

Step 5 Click  to save the settings.

----End

Verification

Verification Incoming call

Incoming call

Step 1 An outer-office user dials the number that the PSTN network carrier allocates to the FXO port, that is, the switchboard number.

Step 2 The outer-office user dials an extension number (internal number) or dials 9 (to connect to the preset attendant number) as prompted, and presses the pound key (#).

Step 3 The intra-office user or attendant answers the call.

----End

Verify that the call is set up successfully; otherwise, check the configuration.

Outgoing call

Outgoing call

Step 1 An internal user dials the outgoing prefix for the FXO port (for example, **0**) and the external user number.

Step 2 The external user answers the call.

----End

Verify that the call is set up successfully; otherwise, check the configuration.

Verify that the call is set up successfully; otherwise, check the configuration.

Configuring the DDI and Dedicated Line

This topic describes how to configure the DDI and dedicated line on the EGW1520.

Prerequisite

You have logged in to the web management system. For details, see [7.7.1 Web Management](#).

Background

For details about the application scenario and call process for the DDI and dedicated line, see [Description](#).

NOTE

The priority of the DDI or dedicated line is higher than that of the switchboard. When the DDI or dedicated line is configured, the switchboard automatically becomes invalid.

Procedure

 **NOTE**

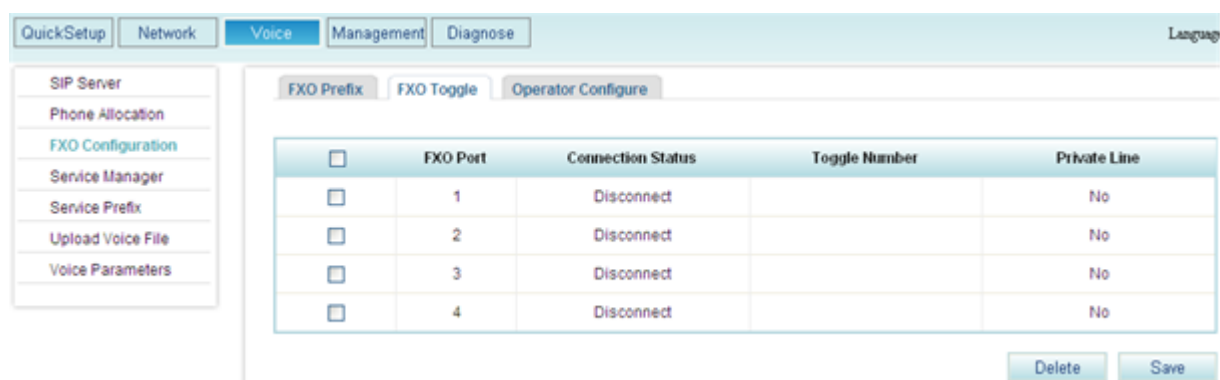
If you want to make an outgoing call, configure an outgoing prefix when you configure the DDI and dedicated line. For the configuration method, see [Configuring an Outgoing Prefix](#).

Step 1 On the web management system, choose **Voice > FXO Configuration** from the navigation tree.

Step 2 Click the **FXO Toggle** tab.

The page shown in [Figure 7-45](#) is displayed.


Figure 7-45 Configuring the FXO binding number



Step 3 Select the FXO port you want to configure, set parameters according to [Table 7-15](#).

Table 7-15 Configuring the DDI and dedicated line

Parameter	Description
Toggle Number	Internal number bound to the FXO port, which can be an internal number in the local or other branch.
Private Line	Indicates whether to enable the dedicated line function.

Step 4 Click  to save the settings.

----End

Verification

Incoming call

Step 1 An external user dials the number that the PSTN network carrier allocates to the FXO port.

Step 2 The phone of the internal user whose number is bound to the FXO port rings.

Step 3 The internal user answers the call.

----End

Verify that the call is set up successfully; otherwise, check the configuration.

Outgoing call

Step 1 An internal user dials the outgoing prefix for the FXO port (for example, **0**) and the external user number.

Step 2 The external user answers the call.

----End

Verify that the call is set up successfully; otherwise, check the configuration.

7.3.3 Power-off Survival

The FXO1 port of the EGW1520 can be used as a power-off survival port. When the EGW1520 is powered off, the analog phone connected to the PHONE port can be connected to the PSTN through the FXO1 port.

Principle and Implementation

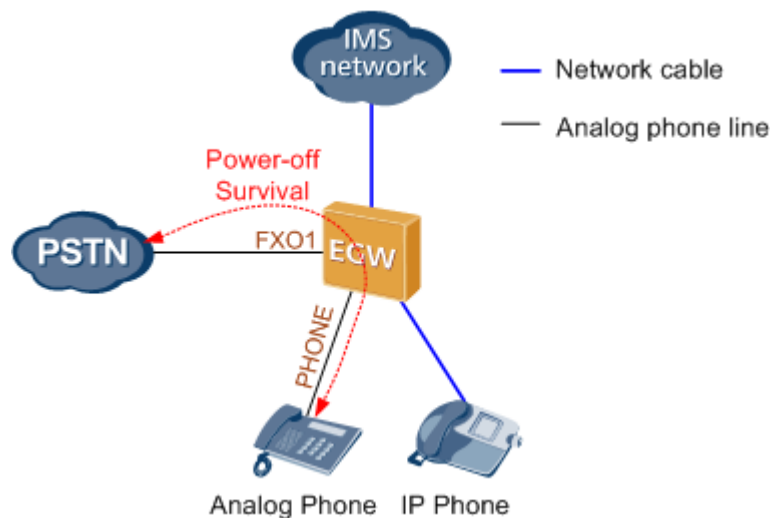
When the EGW1520 is powered off, the PHONE port automatically connects to the FXO1 port.

Generally, the EGW1520 power-off survival function is available once the cables are connected. You do not need to configure the function on the web management system. The cables are connected as follows:

- The FXO1 port on the EGW1520 has been connected to the PSTN.
- An analog phone has been connected to the PHONE port on the EGW1520.

When the EGW1520 is powered off, it automatically connects the analog phone connected to the PHONE port to the PSTN, as shown in [Figure 7-46](#).

Figure 7-46 Power-off survival



 **NOTE**

- When the power-off survival function is enabled, the number of the analog phone connected to the PHONE port changes from the external number to the FXO1 port number, and the dialing rule changes from the EGW1520 dialing rule to the PSTN dialing rule.
- After the power-off survival function is enabled, the ongoing call does not end after the EGW1520 powers on again, but the voice services cannot be used until the call ends.
- After the power-off survival function is enabled, the FXO switchboard, DDI, and dedicated line functions cannot be used.

To verify that the power-off survival function is enabled, perform the following steps:

1. Cut the power supply of the EGW1520.
2. Use an analog phone that is connected to the PHONE port to call an external number.

If the call is connected, the power-off survival function is enabled. If the call is disconnected, check the connections between the PHONE port and the analog phone, and between the EGW1520 FXO1 port and the PSTN.

Specification

One PSTN Power-off survival port.

Limitation

- The Power-off survival function is available only when a power off occurs.
- Only the Analog Phone that connects to the PHONE port supports Power-off survival function.

7.3.4 Fax Service

The EGW1520 supports fax service.

Fax is a form of telegraphy for the transmission of fixed images with a view to their reproduction in a permanent form. In ITU-RV.662, faxing is defined as a form of telecommunication for the reproduction at a distance of graphic documents in the form of other graphic documents geometrically similar to the original.

Description

This topic describes the principle, implementation, specification, and limitation of the fax service.

By transmission rate, faxes are divided into low-speed faxes (≤ 14.4 kbit/s) and high-speed faxes (> 14.4 kbit/s).

Low-speed faxes on an IP network are divided into transparently transmitted faxes (using G.711A or G.711u) and T.38 faxes. High-speed faxes, however, can only use G.711A or G.711u featuring low compression rate due to the requirement for high quality.

The EGW1520 supports T.38 and transparent fax.

Principle

The fax service establishes a voice channel and switches the voice channel to a fax channel, including the IP address, port, codec, and channel types (audio, fax, and data).

The voice channel is switched to a fax channel after the access device detects fax signals. The access device checks fax signals to determine whether the current fax is a high-speed or low-speed fax, and then delivers the fax signals to the NGN or IMS.

The EGW1520 supports T.38 and transparent fax.

Transparent fax: Fax signals are transmitted transparently as G.711 packets. G.711 faxes feature low delay and simple implementation, but they occupy a high bandwidth (fixed at 64 kbit/s) and are easily affected by network conditions. Therefore, G.711 faxes are recommended on a good network condition and not recommended when network jitter or packet loss frequently occur. G.711 faxes are applicable to high-speed and low-speed faxes.

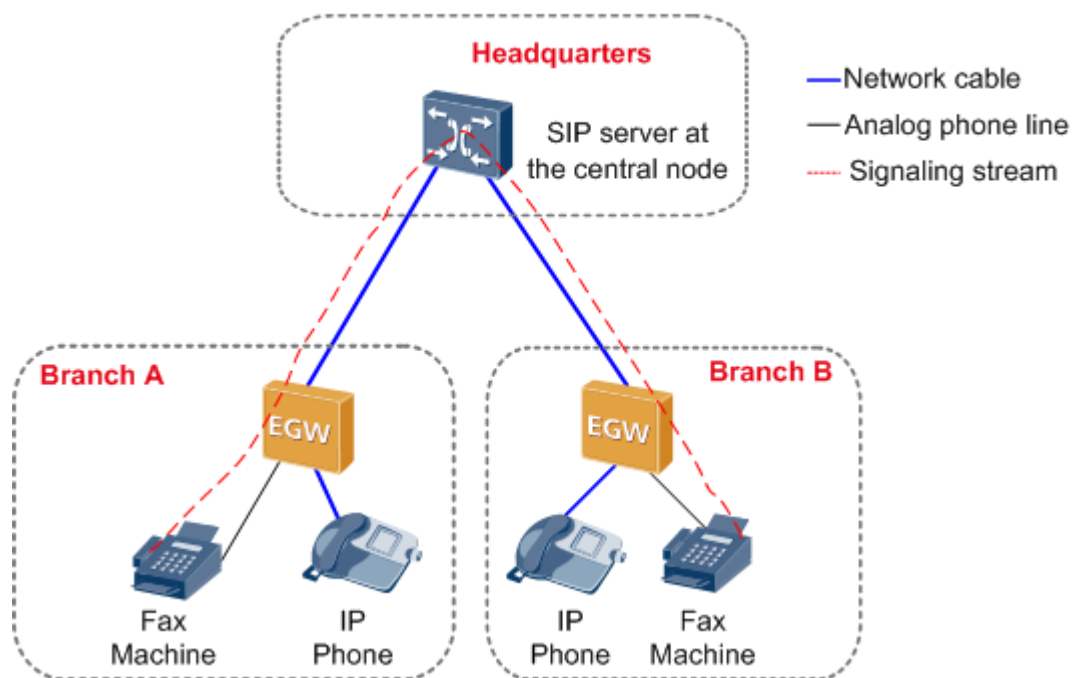
T.38 fax: T.30 fax signals are converted to T.38 packets for transmission on a packet switching network. T.38 faxes occupy a low bandwidth, provide high reliability with redundant frames and forward error checking (FEC), and are slightly affected by the network condition. However, the implementation is complicated. T.38 faxes are applicable only to low-speed fax services due to delay generated by the packet switching network.

Implementation

EGW1520 internal faxing

The EGW1520 can access a fax machine through an FXS port. When two internal fax machines communicate with each other, the SIP server at the central center controls the fax call process. [Figure 7-47](#) shows the network diagram.

Figure 7-47 EGW1520 internal faxing

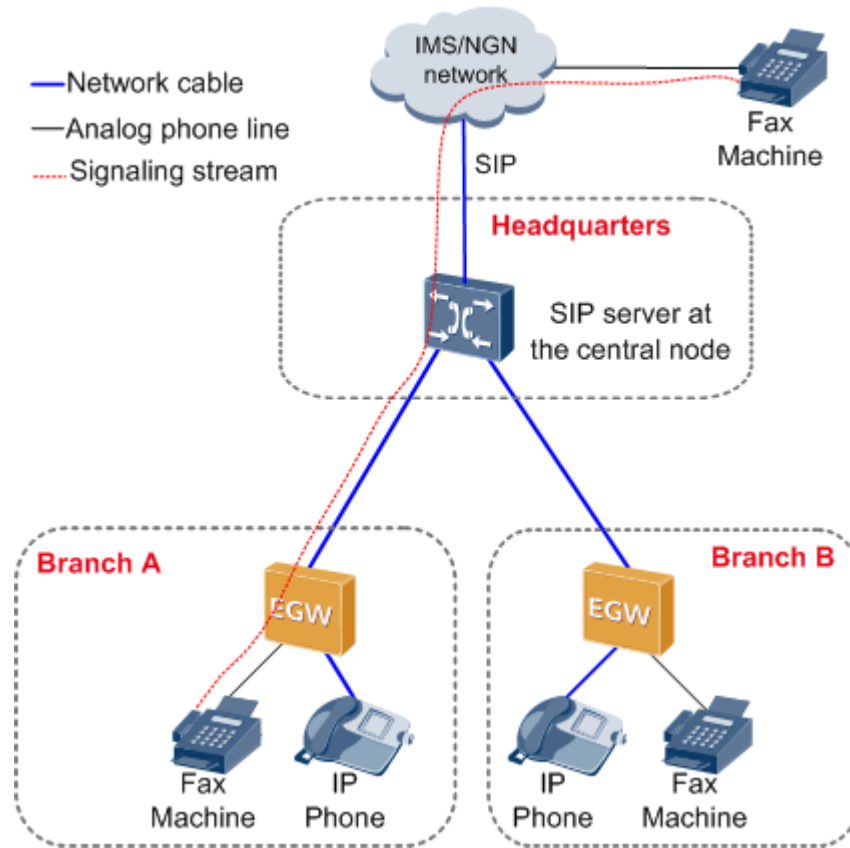


The SIP server at the central node controls call signaling. The EGW1520 detects fax signals. The process for making a fax call is similar to that for making a call between two internal phones. After a call is made, the EGW1520 checks the fax signals and negotiates with the called and calling users about the fax media information. After the negotiation is successful, the voice channel is switched to the fax channel. Then the fax call is established. After the fax call is complete, the EGW1520 detects the fax ending signals and switches to the voice channel.

EGW1520 external faxing

When an internal fax machine communicates with an external fax machine, the fax service can be implemented through FXO ports or softswitch. The SIP server at the central node controls the external fax call process implemented through FXO ports. The softswitch (IMS/NGN) controls the external fax call process implemented through the softswitch. [Figure 7-48](#) shows the network diagram when the softswitch is used.

Figure 7-48 EGW1520 external faxing



The NGN or IMS controls call signaling. The EGW1520 detects fax signals and encodes and decodes IP voice packets. After a fax call is established, fax media streams are transmitted over an IP network. The process for making a fax call is similar to that for making a call between an internal phone and an external phone. After the fax call is complete, the EGW1520 detects the fax ending signals and sends them to the NGN or IMS. The NGN or IMS negotiates with the calling and called users about the fax media information. After the negotiation is successful, the EGW1520 switches to the fax channel according to the NGN or IMS's signaling to establish a fax call. After the fax call is complete, the EGW1520 detects the fax ending signals and sends them to the NGN or IMS. Then the NGN or IMS switches to the voice channel.

Specification

Standards supported by fax service:

- One FXS ports for fax machines
- T.30
- T.38
- V.17/V.21/V.27/V.29/V.34

Limitation

N/A

Configuring the Fax Service

Generally, the EGW1520 faxing function is available once the cables are connected, you do not need to configure the function on the web management system. This topic describes how to set the advanced parameters for faxing.

Prerequisites

You have logged in to the web management system. For details, see [7.7.1 Web Management](#).

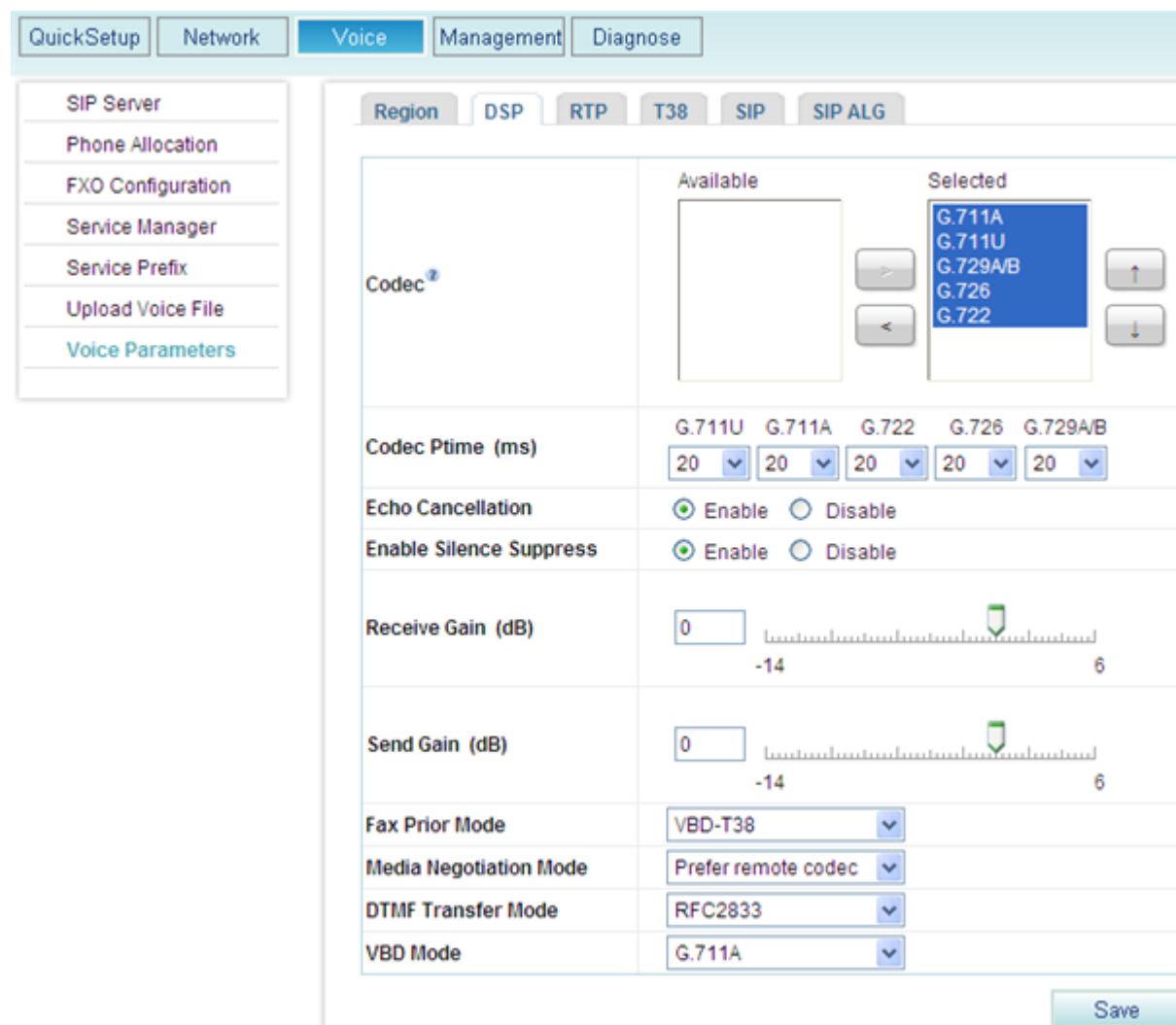
Configuring the Priority

Step 1 On the web management system, choose **Voice > Voice Parameters** from the navigation tree.

Step 2 Click the **DSP** tab.

The page shown in [Figure 7-49](#) is displayed.

Figure 7-49 DSP tab page



Step 3 Set parameters according to [Table 7-16](#).

Table 7-16 DSP parameters

Parameter	Description
Codec	DSP codec type. If multiple options are selected, the system sends messages based on the specified codec rank. By default, all options are selected. NOTE Compared with other codec types, G729, G726, and G722 consume more DSP resources.
Codec Ptime (ms)	For each codec type, you can change the duration of packaging voice streams to 10 ms, 20 ms, or 30 ms. The default value is 20 ms.
Echo Cancellation	Indicates the echo cancellation switch. The options are Enable and Disable , and the default value is Enable . The high-speed transparent transmission mode has the echo processing mechanism. You are advised to disable the echo cancellation function for the high-speed transparent transmission mode and enable this function for low-speed transparent transmission mode.
Enable Silence Suppress	Indicates the silence suppression switch. The options are Enable and Disable . The default value is Enable , which indicates that the system sends silence packets if no voice packet is available.
Receive Gain (dB)	Indicates the receiving gain of DSP chips. The value ranges from -14 to 6. The default value is 0 .
Send Gain (dB)	Indicates the sending gain of DSP chips. The value ranges from -14 to 6. The default value is 0 .
Fax Prior Mode	Indicates the fax transmission mode. The options are as follows: <ul style="list-style-type: none"> T38: Only T38 is supported. VBD: Only voice band data (VBD) is supported. T38-VBD: Both T38 and VBD are supported, and T38 has a higher priority. VBD-T38: Both T38 and VBD are supported, and VBD has a higher priority. The default value is VBD-T38 .
Media Negotiation Mode	Indicates the priority used in media negotiation. <ul style="list-style-type: none"> Prefer remote codec: During media negotiation, the codec priority at the remote end is preferred. Prefer local codec: During media negotiation, the codec priority at the local end is preferred. The default value is Prefer remote codec .
DTMF Transfer Mode	Indicates the transmission mode in a session. <ul style="list-style-type: none"> RFC2833: RFC2833 transmission mode. Transfer: transparent transmission mode. Dialing tones are

Parameter	Description
	transmitted transparently as voice signals. The default value is RFC2833 .
VBD Mode	Indicates the codec type for transparent transmission. The options are G711A and G711U , and the default value is G711A .

Step 4 Click  to save the settings.

----End

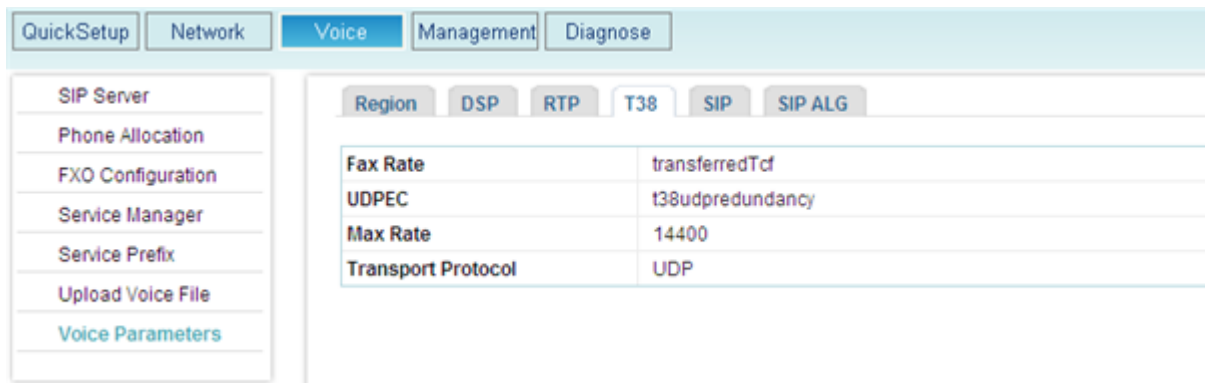
Viewing T38 Fax Parameters

Step 1 On the web management system, choose **Voice > Voice Parameters** from the navigation tree.

Step 2 Click the **T38** tab.

The page shown in [Figure 7-50](#) is displayed.

Figure 7-50 T38 tab page



Step 3 Set parameters according to [Table 7-17](#).

Table 7-17 T.38 fax parameters

Parameter	Description
Fax Rate	Indicates the faxing rate mode. Value transferredTcf indicates remote training mode.
UDPEC	Indicates the UDP redundancy correction capability. The EGW1520 supports t38udpredundancy . If the redundancy correction capability is carried in fax negotiation signals, the EGW1520 uses the redundancy technology to send T38 data when the peer end also supports redundancy.
Max Rate	Indicates the maximum faxing rate. If the maximum faxing rate at the peer end is smaller than that at the local end, use the smaller

Parameter	Description
	one; otherwise, use the value of this parameter.
Transport Protocol	Indicates the transmission protocol. The EGW1520 supports UDP.

----End

7.3.5 Voice Parameters

This topic describes how to set voice parameters. Only network administrators can change the parameter settings. To ensure the normal running of the EGW1520, you are advised to use the default settings.

Prerequisites

You have logged in to the web management system. For details, see [7.7.1 Web Management](#).

Configuring the Region

On the **Region** tab page, specify analog phone standards in different countries. Dialing tones and signal tone frequency vary according to area and country. Configure the parameters based on requirement.

Step 1 On the web management system, choose **Voice > Voice Parameters** from the navigation tree.

The page shown in [Figure 7-51](#) is displayed.

Figure 7-51 Region tab page

The screenshot displays the 'Region' configuration page. At the top, there are navigation tabs: QuickSetup, Network, Voice (selected), Management, and Diagnose. Below these, there is a sub-navigation bar with tabs: Region (selected), DSP, RTP, T38, SIP, and SIP ALG. On the left side, a vertical menu lists various configuration options: SIP Server, Phone Allocation, FXO Configuration, Service Manager, Service Prefix, Upload Voice File, and Voice Parameters (highlighted in blue). The main content area shows a table of parameters for the selected country (China):


Current Country	China	▼
Slic Gain RX (dB) [?]	0	*
Slic Gain TX (dB) [?]	0	*
FlashHook Max (ms) [?]	350	*
FlashHook Min (ms) [?]	80	*
OnHook Min (ms) [?]	350	*
OffHook Min (ms) [?]	50	*

At the bottom right of the parameter table is a 'Save' button. Below the table is a 'Description' field containing the text: 'Select a country for the EGW1500E to match with the country's analog phone standards.'

Step 2 Set parameters according to [Table 7-18](#).

Table 7-18 Region parameters

Parameter	Description
Current Country	Country name.
Slic Gain RX (dB)	Receiving gain of an analog phone. The value ranges from -12 dB to +6 dB.
Slic Gain TX (dB)	Sending gain of an analog phone. The value ranges from -12 dB to +6 dB.
FlashHook Max (ms)	Maximum interval for pressing the hook flash button. The value ranges from 0 to 1000, in milliseconds. If the hook flash button is not pressed within the duration specified by this parameter, the call will end.
FlashHook Min (ms)	Minimum interval for pressing the hook flash button. The value ranges from 0 to 1000, in milliseconds. If the interval is smaller than the value of this parameter, the hook flash operation does not take effect.
OnHook Min (ms)	Minimum interval for confirming hang-up. The value ranges from 0 to 2000, in milliseconds. If the hang-up interval is smaller than the value of this parameter, the hang-up operation does not take effect.
OffHook Min (ms)	Minimum interval for confirming pickup. The value ranges from 0 to 2000, in milliseconds. If the pickup interval is smaller than the value of this parameter, the pickup operation does not take effect.

Step 3 Click  to save the settings.

----End

Configuring the DSP

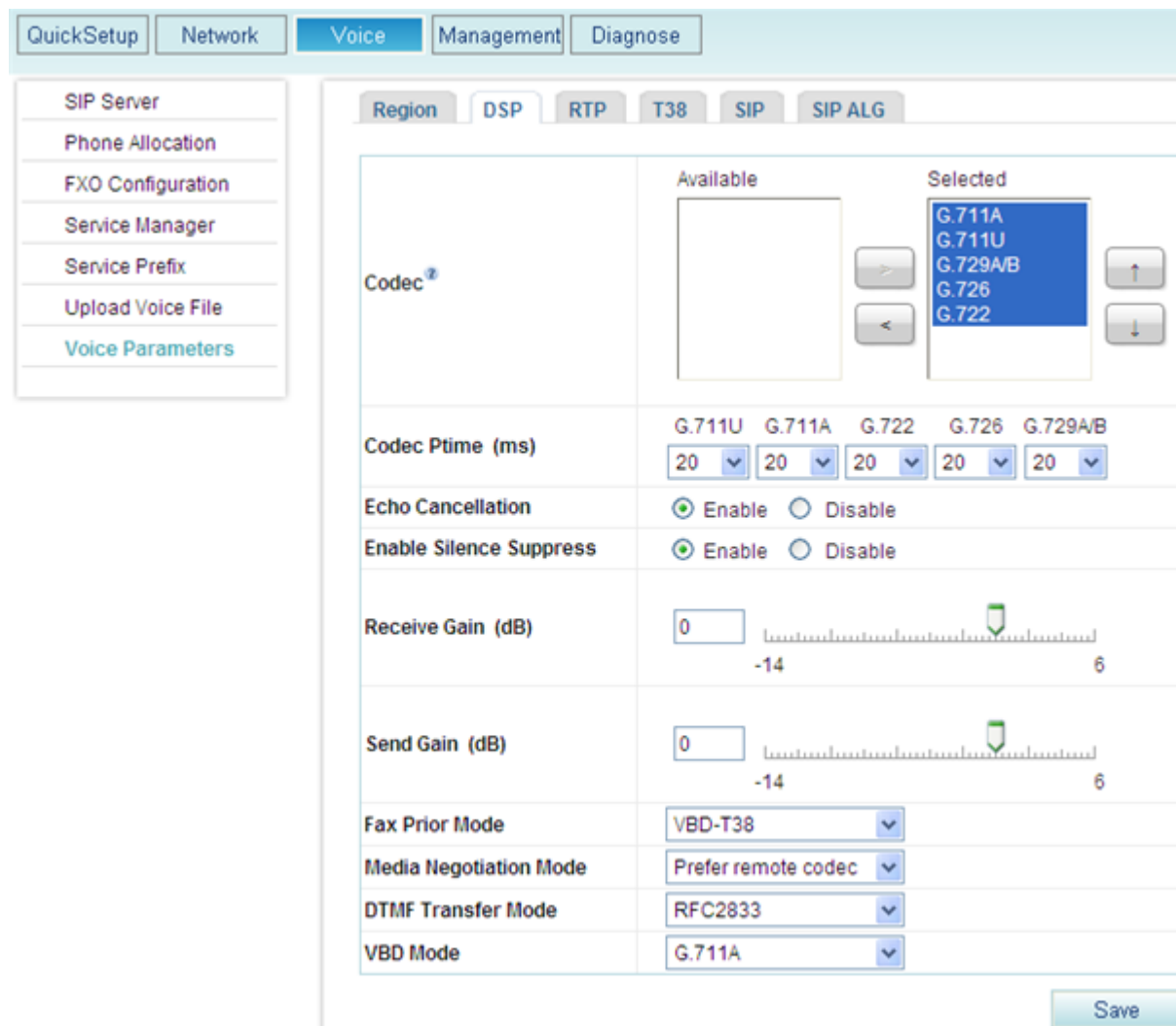
On the **DSP** tab page, configure voice quality information about DSP chips, such as codec type, noise and echo cancellation, silence suppression, and gains.

Step 1 On the web management system, choose **Voice > Voice Parameters** from the navigation tree.

Step 2 Click the **DSP** tab.

The page shown in [Figure 7-52](#) is displayed.

Figure 7-52 DSP tab page




Step 3 Set parameters according to [Table 7-19](#).

Table 7-19 DSP parameters

Parameter	Description
Codec	DSP codec type. If multiple options are selected, the system sends messages based on the specified codec rank. By default, all options are selected. NOTE Compared with other codec types, G729, G726, and G722 consume more DSP resources.
Codec Ptime (ms)	For each codec type, you can change the duration of packaging voice streams to 10 ms, 20 ms, or 30 ms. The default value is 20 ms.
Echo Cancellation	Echo cancellation switch. The options are Enable and Disable , and the default value is Enable .

Parameter	Description
Enable Silence Suppress	Silence suppression switch. The options are Enable and Disable . The default value is Enable , which indicates that the system sends silence packets if no voice packet is available.
Receive Gain (dB)	Receiving gain of DSP chips. The value ranges from -14 to 6. The default value is 0 .
Send Gain (dB)	Sending gain of DSP chips. The value ranges from -14 to 6. The default value is 0 .
Fax Prior Mode	Fax transmission mode. The options are as follows: <ul style="list-style-type: none"> • T38: Only T38 is supported. • VBD: Only voice band data (VBD) is supported. • T38-VBD: Both T38 and VBD are supported, and T38 has a higher priority. • VBD-T38: Both T38 and VBD are supported, and VBD has a higher priority. The default value is VBD-T38 .
Media Negotiation Mode	Priority used in media negotiation. <ul style="list-style-type: none"> • Prefer remote codec: During media negotiation, the codec priority at the remote end is preferred. • Prefer local codec: During media negotiation, the codec priority at the local end is preferred. The default value is Prefer remote codec .
DTMF Transfer Mode	Transmission mode in a session. <ul style="list-style-type: none"> • RFC283: RFC2833 transmission mode. • Transfer: transparent transmission mode. Dialing tones are transmitted transparently as voice signals. The default value is RFC2833 .
VBD Mode	Codec type for transparent transmission. The options are G711A and G711U , and the default value is G711A .

Step 4 Click  to save the settings.

----End

Configuring RTP

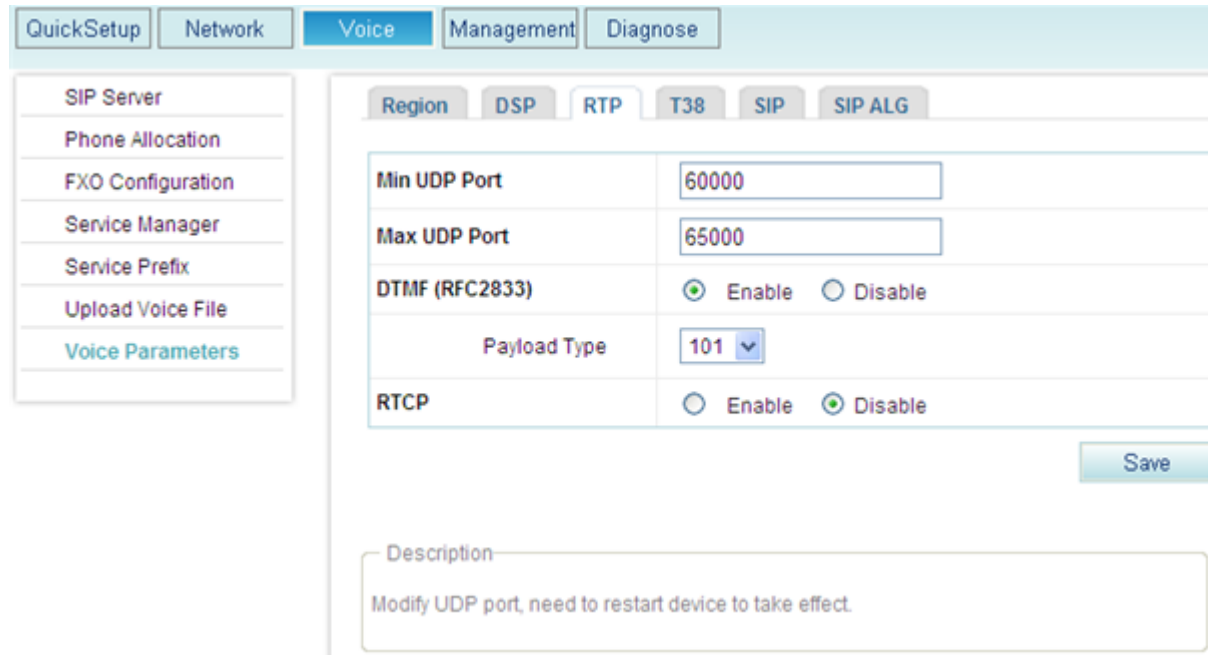
On the **RTP** tab page, set the parameters used for playing voices on analog phones such as the maximum and minimum media port numbers.

Step 1 On the web management system, choose **Voice > Voice Parameters** from the navigation tree.

Step 2 Click the **RTP** tab.

The page shown in [Figure 7-53](#) is displayed.

Figure 7-53 RTP tab page




Step 3 Set parameters according to [Table 7-20](#).

Table 7-20 RTP parameters

Parameter	Description
Min UDP Port	Minimum media port number used for playing voices on analog phones.
Max UDP Port	Maximum media port number used for playing voices on analog phones.
DTMF (RFC2833)	Whether RFC2833 is used for encryption. The options are Enable and Disable . Payload Type: payload for RFC2833 used for encryption. The value must be unique on the EGW1520. It is recommended that you set this parameter to the payload type of the softswitch. If the parameter value is different from that on the softswitch, call connections may fail to be set up.
RTCP	Whether to enable the RTCP function. The options are Enable and Disable . The default value is Disable .

 **NOTE**

After changing the UDP port number, restart the device to make the configuration take effect.

Step 4 Click  to save the settings.

----End

Viewing T38 Fax Parameters

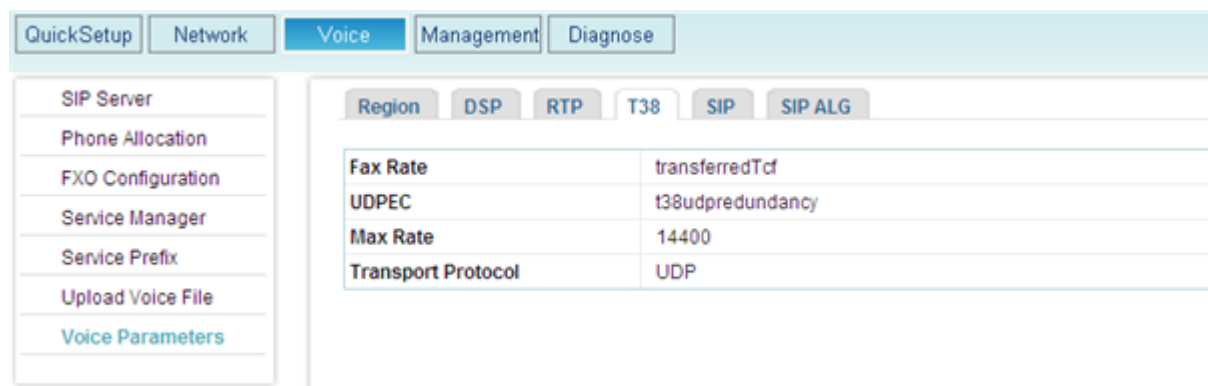
On the **T38** tab page, you can view T.38 fax parameters.

Step 1 On the web management system, choose **Voice > Voice Parameters** from the navigation tree.

Step 2 Click the **T38** tab.

The page shown in [Figure 7-54](#) is displayed.

Figure 7-54 T38 tab page



Step 3 Set parameters according to [Table 7-21](#).

Table 7-21 T38 fax parameters

Parameter	Description
Fax Rate	Faxing rate mode. Value transferredTcf indicates remote training mode.
UDPEC	UDP redundancy correction capability. The EGW1520 supports t38udpredundancy . If the redundancy correction capability is carried in fax negotiation signals, the EGW1520 uses the redundancy technology to send T38 data when the peer end also supports redundancy.
Max Rate	Maximum faxing rate. If the maximum faxing rate at the peer end is smaller than that at the local end, use the smaller one; otherwise, use the value of this parameter.
Transport Protocol	Transmission protocol. The EGW1520 supports UDP.

----End

Configuring SIP

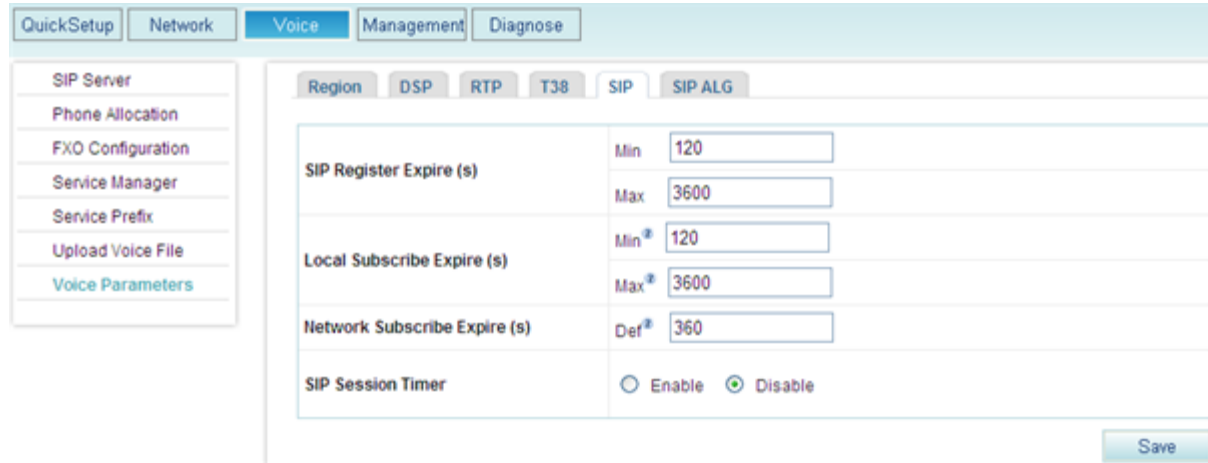
On the **SIP** tab page, configure the timeout interval for local SIP users to register with the EGW1520.

Step 1 On the web management system, choose **Voice > Voice Parameters** from the navigation tree.

Step 2 Click the **SIP** tab.

The page shown in [Figure 7-55](#) is displayed.


Figure 7-55 SIP tab page



Step 3 Set parameters according to [Table 7-22](#).

Table 7-22 SIP parameters

Parameter	Description
SIP Register Expire (s)	Timeout interval for local SIP users to register with the EGW1520. <ul style="list-style-type: none"> Min: Minimum timeout interval for local SIP users to register with the EGW1520. The default value is 120. Max: Maximum timeout interval for local SIP users to register with the EGW1520. The default value is 3600.
Local Subscribe Expire (s)	Timeout interval for local SIP users to subscribe to a service (such as voice message and voice mailbox) with the EGW1520 <ul style="list-style-type: none"> Min: Minimum timeout interval for local SIP users to subscribe to a service with the EGW1520. The default value is 120. Max: Maximum timeout interval for local SIP users to subscribe to a service with the EGW1520. The default value is 3600.
Network Subscribe Expire (s)	Default timeout interval for the EGW1520 to subscribe to a service with the NGN or IMS.
SIP Session Timer	Whether to use the session timer. The session timer is disabled by default. When the session timer is enabled, the two parties can check the conversation status using the update or reinvite signaling.

Step 4 Click  to save the settings.

----End

Configuring SIP ALG

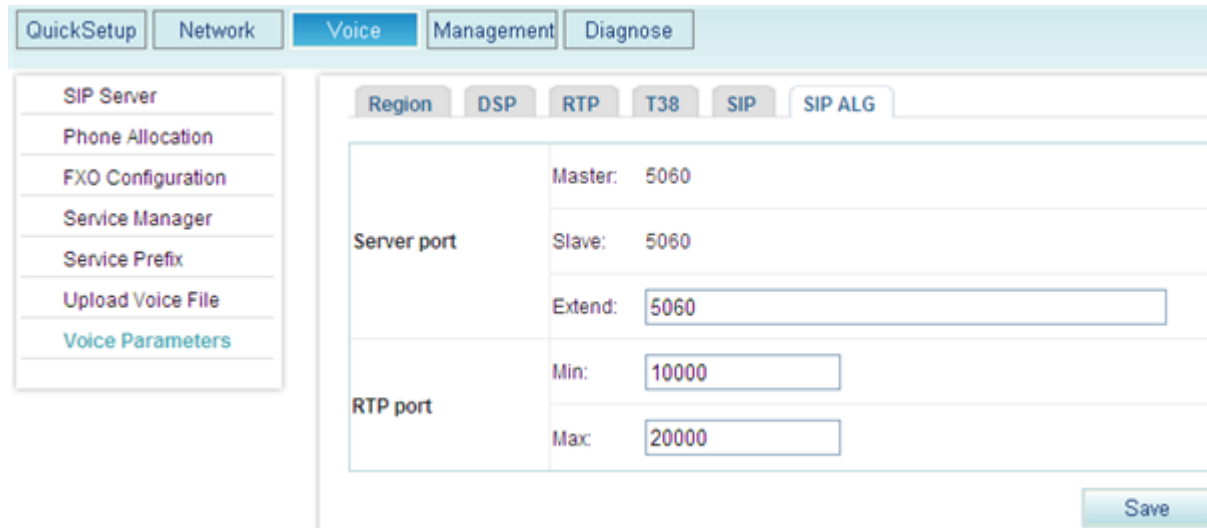
On the **SIP ALG** tab page, configure SIP servers in an outer office.

Step 1 On the web management system, choose **Voice > Voice Parameters** from the navigation tree.

Step 2 Click the **SIP ALG** tab.

The page shown in [Figure 7-56](#) is displayed.


Figure 7-56 SIP ALG tab page



Step 3 Set parameters according to [Table 7-23](#).

Table 7-23 SIP ALG parameters

Parameter	Description
Server port	<ul style="list-style-type: none"> Master: Port number used by the active SIP server to send and receive packets. Slave: Port number used by the standby SIP server to send and receive packets. Extended: Extended port number used by the SIP ALG to send and receive packets.
RTP port	<ul style="list-style-type: none"> Min: Minimum media port that can be used by the RTP server. Max: Maximum media port that can be used by the RTP server.

Step 4 Click  to save the settings.

----End

7.4 Voice(Common Mode)

EGW1520 can function as a SIP trunk access device or a small-scale Internet protocol-private branch exchange (IP-PBX). It provides basic voice services and supplementary services.

7.4.1 Voice Access and IP PBX

This topic describes the SIP trunk access and IP-PBX functions of EGW1520.

Description

The EGW1520 is deployed at the headquarters of an enterprise to connect to IADs, fax machines, IP phones, multimedia soft terminals, and WiFi terminals to implement voice user registration, call control, and protocol processing and provide rich voice services for enterprise users. In addition, the EGW1520 can work as a SIP trunk device to register users with the softswitch (NGN/IMS) and cooperate with the softswitch to process SIP signaling interaction, so that enterprise users can use services provide by the softswitch.

Working Principle (SIP Trunk)

A SIP trunk is a SIP link between a SIP trunk device and the SIP server. When an intra-office user calls an outer-office user, the SIP trunk device sends a message to the SIP server through the trunk. Then, the SIP server responds to the message and sets up the call between the two users. All the signaling and media streams between the SIP trunk and SIP server are transmitted over an IP network.

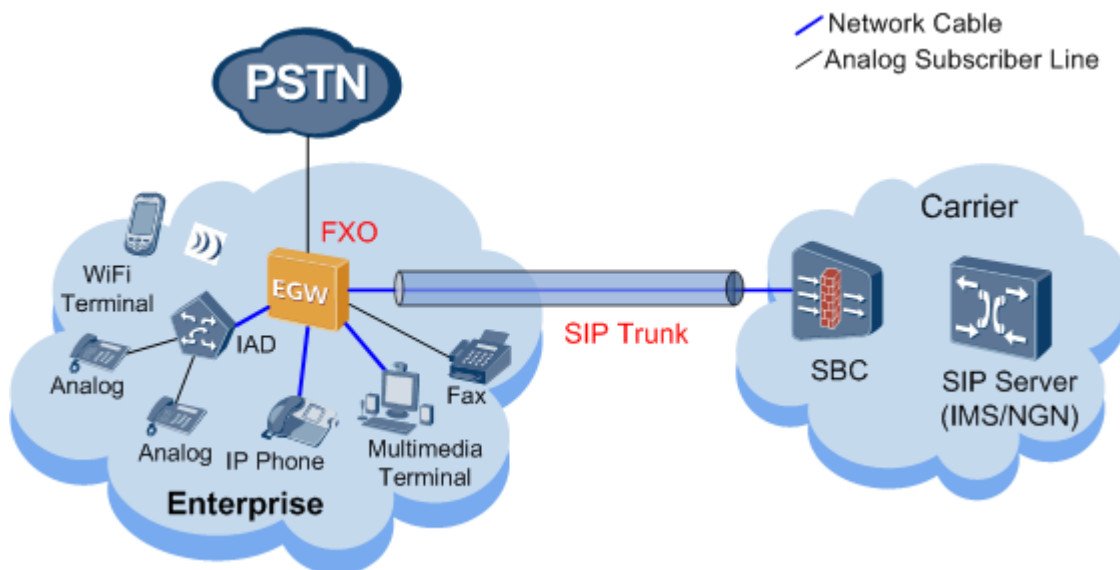
SIP trunks usually function in the following modes:

- Registration mode
The IP address of the SIP server is configured on the SIP trunk device. The SIP trunk device sends a SIP REGISTER registers to the SIP server to create a dynamic SIP trunk link.
- Static mode
A SIP trunk device and a SIP server are equivalent NEs. The static IP address of the device is configured on the server and the static IP address of the server is configured on the device. A static SIP trunk is created between the device and the server.

As a SIP trunk device, the EGW1520 supports the SIP trunk in registration mode. Intra-office calls are processed by the EGW1520. When there are outer-office calls, the EGW1520 cooperates with the softswitch (IMS/NGN) through the SIP trunk to process the SIP signaling interaction.

[Figure 7-57](#) shows the networking where the EGW1520 functions as a SIP trunk device.

Figure 7-57 Connecting to the IMS/NGN through a SIP trunk



EGW1520's registration and calling process is as follows:

1. The EGW1520 uses SIP Trunk to send a registration request to the softswitch (NGN/IMS). The softswitch (NGN/IMS) processes the registration request. If the authentication is successful, the softswitch (NGN/IMS) sends the success notification to the EGW1520. If the authentication fails, the softswitch (NGN/IMS) sends the failure notification to the EGW1520. When the registration is successful, EGW1520's SIP users can make or receive calls.
2. When an intra-office user makes a call, the EGW1520 analyzes the called number. If the called user is an intra-office user, the EGW1520 enables the called user's Analog phone to ring or sends a SIP message to the called user's SIP phone. The softswitch (NGN/IMS) does not process SIP messages for intra-office calls. If the called user is an outer-office user, the EGW1520 sends SIP requests to the softswitch (NGN/IMS). The EGW1520 cooperates with the softswitch to process the SIP signaling interaction.

NOTE

The called and calling users of an intra-office call are connected to the same the EGW1520. The called and calling users of an inter-office call are connected to different EGW1520s.

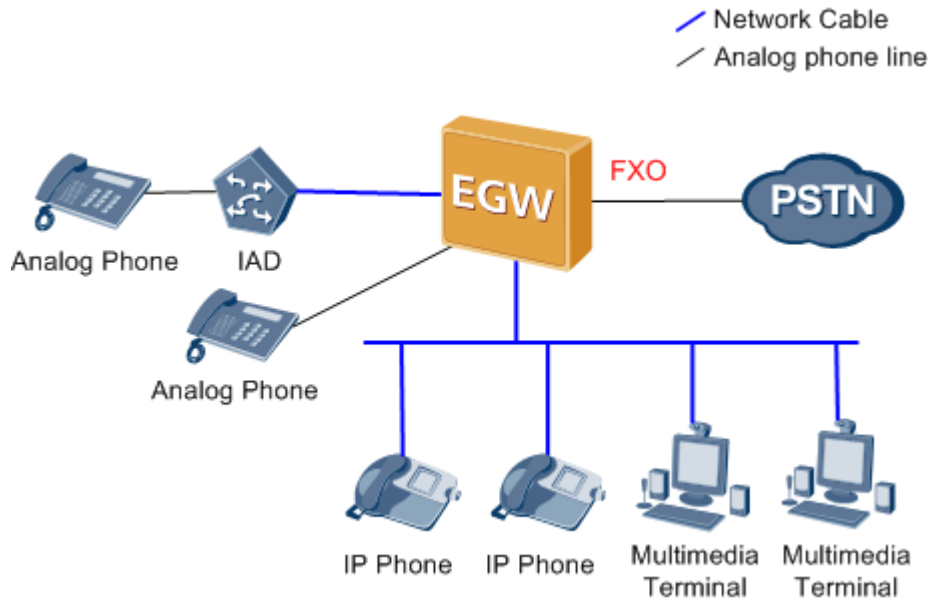
3. When receiving a call, the EGW1520 analyzes the called number. If the called user belongs to the EGW1520, the EGW1520 enables the called user's Analog phone to ring or sends a SIP message to the called user's SIP phone. If the called user is using a SIP phone, the EGW1520 also sends a SIP response to the peer device. If the called user does not belong to the EGW1520, the call fails and the EGW1520 sends a SIP response to the peer device.

Working Principle (IP-PBX)

When the EGW1520 connects to the PSTN as an IP-PBX, it implements call control, protocol processing, and voice functions on its own. Outgoing calls are made through FXO ports of the EGW1520.

Figure 7-58 shows the network diagram when the EGW1520 functions as an IP-PBX.

Figure 7-58 IP-PBX network diagram



The EGW1520 allocates numbers to POTS and SIP users. Each number is unique.

The EGW1520 can accept SIP users' registration. When receiving a registration request from a SIP user, the EGW1520 authenticates the SIP user. If the authentication is successful, the EGW1520 sends the success notification to the SIP user. If the authentication fails, the EGW1520 sends the failure notification to the SIP user. When the registration is successful, EGW1520's SIP users can make or receive calls.

NOTE

POTS users who are allocated numbers by the EGW1520 do not require registration. The registration is successful after pots users allocate numbers.

- The EGW1520 analyzes the called number when an intra-office user initiates a call. If the call is an inter-office call and the prefix of the called number matches the outgoing call prefix range configured on the EGW1520, the call is made through an FXO port. If the call is an intra-office call, the EGW1520 enables the user's POTS phone to ring or sends an SIP message to the user's SIP phone or soft terminal. The EGW1520 process calls made between intra-office users.
- When the EGW1520 receives a call from an outer-office user, it analyzes the called number. If the called user connects to the EGW1520, the EGW1520 enables the called user's POTS phone to ring or sends a SIP message to the called user's SIP phone or soft terminal. If the called user is not connected to the EGW1520, the call fails and EGW1520 sends a response to the calling user through the SIP server.

Specification

- A maximum of 20 SIP users.
- One FXS port, connecting to one POTS user.
- A maximum of 8-channel users (SIP users and POTS users) can simultaneously initiate calls. Standards supported by voice service:

- G.711 A, G.711 u, G.729, G.726, and G.722
- SIP (RFC 3261–3265)
- SIP Session Timers (RFC 4028)
- SDP (RFC 2327)
- RTP or RTCP
- RFC 2833

Limitation

For details, see [Service Conflicts](#).

Adding Voice Users

The EGW1520 provides the IP private branch exchange (PBX) function. This function enables internal phones (analog phones and IP phones) to connect to each other. The EGW1520 can also serve as an agent to register users with the IP Multimedia Subsystem (IMS) or Next Generation Network (NGN) so that users can call external parties.

Prerequisite

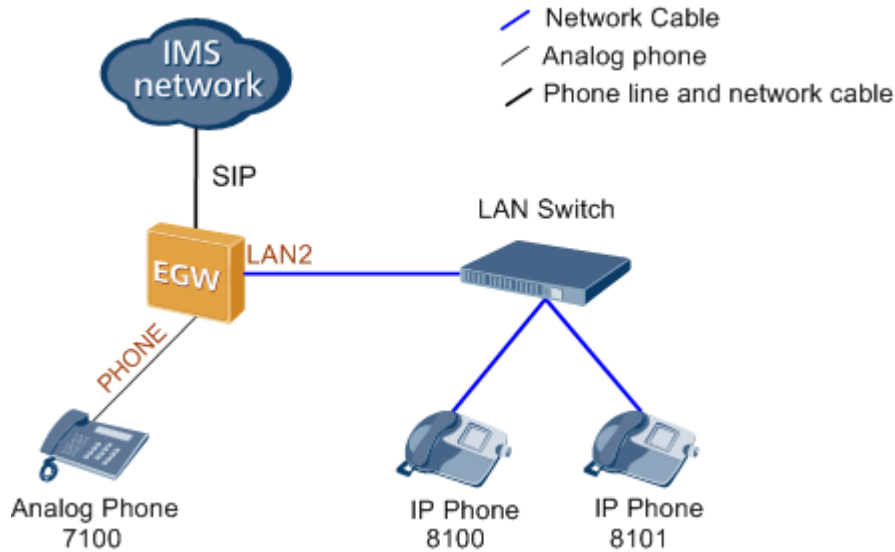
- You have logged in to the web management system. For details, see [7.7.1 Web Management](#).
- The EGW1520 has connected to the uplink network. For details, see [7.2 Connection Modes](#).
- You have configured the LAN information on the EGW1520. For details, see [Configuration](#).

Example

Network Plan Example

The following assumes that the EGW1520 is connected to the IMS, as shown in [Figure 7-59](#).

Figure 7-59 EGW1520 network



Analog phones are connected to the PHONE ports of the EGW1520, and IP phones are connected to the EGW1520 through the switch. You can also use network cables to connect IP phones to LAN ports of the EGW1520.

Data Plan Example

Table 7-24 shows the user number plan.

Table 7-24 Number plan example

Phone Type/Port	Internal No	External No	Registration Group
Analog phone/PHONE	7100	008675599997100	0
IP phone/LAN2 (through the switch)	8100	008675599998100	1
IP phone/LAN2 (through the switch)	8101	008675599998101	1

Parameters in Table 7-24 are described as follows:

- Phone Type/Port: Analog phones use ports PHONE, and IP phones use logic ports on the EGW1520 by using IP addresses.
- Internal No: This parameter is user-defined and configured on EGW1520 for making internal calls.
- External No: The parameter value is determined by the network carrier. In this example, the format of the calling number sent to the IMS is *country code+area code+phone number*.
- Registration Group: This parameter is specified by the EGW1520 administrator. The EGW1520 registers external numbers with the IMS or NGN in groups. Each external number must belong to a registration group. If numbers are registered with the IMS,

multiple numbers can be in the same registration group. If numbers are registered with the NGN, each number is in a unique registration group.

Table 7-25 lists registration information on the IMS or NGN.

Table 7-25 Registration information on the IMS or NGN

Registration Information	Example
SIP Server	<ul style="list-style-type: none"> Address Type: IP IP Domain: 192.169.10.90 Server Type: IMS
SIP Group	<ul style="list-style-type: none"> RegisterType: Group Authentication: MD5 Password: egw Sip Trunk ID: +8675599997100. The value is provided by the carrier. Sip Trunk Name: +8675599997100. The value is provided by the carrier. IMS Domain: huawei

Procedure

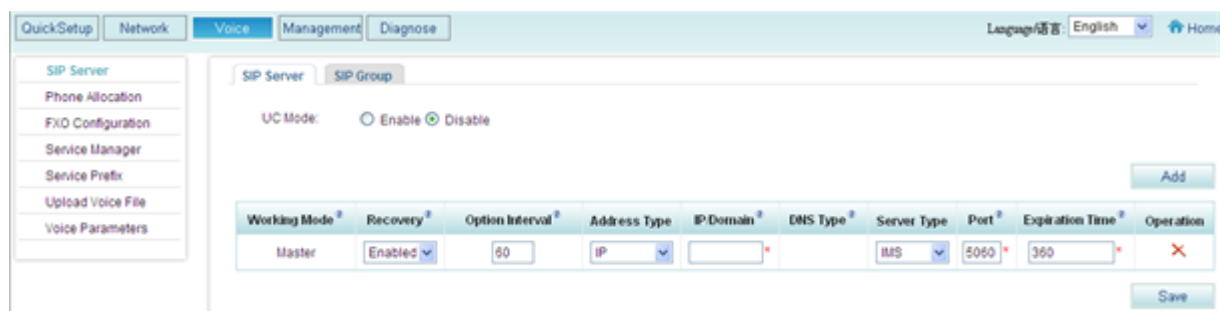
Step 1 Configure the Session Initiation Protocol (SIP) server.

1. On the web management system, choose **Voice > SIP Server** from the navigation tree.

2. Click  .

The page shown in Figure 7-60 is displayed.

Figure 7-60 SIP Server tab page



NOTE

UC Mode is set to **Disable** before the device is delivered. The synchronized user data is cleared when the system changes from the UC mode to the common mode.

3. Set parameters according to Table 7-26.

Table 7-26 Parameter description (1)

Parameter	Description
Working Mode	<ul style="list-style-type: none"> Master: active server. The server that is added first is the active server. Slave: standby server.
Recovery	Whether to enable the failback function. When the active server fails, resources and services will be automatically switched to the standby server. If this function is enabled, resources and services will be automatically switched back to the original active server after the original active server has been recovered.
OptionInterval	Interval for sending the option messages to the active server. The value ranges from 10 to 900, in seconds. The default value 60 is recommended. NOTE The option messages are sent to the active server only, and therefore this parameter is valid only for the active server.
Address Type	Address type. The options are IP and Domain .
IP/Domain	IP address or DNS domain name of the SIP server. The value is provided by the network carrier.
DNS Type	Mode for the DNS server to parse the IP address. This parameter is valid when Address Type is set to Domain . <ul style="list-style-type: none"> SRV: A domain name is configured to parse multiple IP address. The two IP addresses with the highest priorities are the IP addresses of the active SIP server and standby SIP server. NOTE If you set DNS Type to SRV , you do not need to configure the standby SIP server. <ul style="list-style-type: none"> HOST: One domain name corresponds to one IP address. To perform switchover between the active and standby servers, two SIP servers need to be configured.
Server Type	SIP network type. The value is provided by the network carrier.
Port	Port number of the SIP server. The value is provided by the network carrier. The default value 5060 is recommended.
Expiration Time	Time when the registration period expires. The value is negotiated by the EGW1520 and the SIP server. The value ranges from 0 to 14400, in seconds. The default value 360 is recommended.

4. Click  to save the settings.

Step 2 Configure a registration group.



NOTE

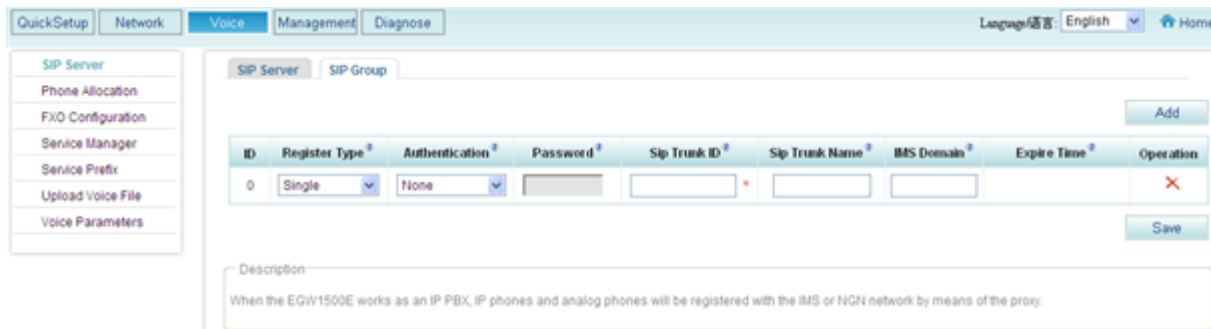
User numbers use a registration group to register with the IMS or NGN. After a registration group is configured, intra-office user can make outgoing calls controlled by the softswitch.

1. On the web management system, choose **Voice > SIP Server** from the navigation tree.
2. Click the **SIP Group** tab.

3. Click  .

The page shown in [Figure 7-61](#) is displayed.

Figure 7-61 SIP Group tab page



4. Set parameters according to [Table 7-27](#).

Table 7-27 Parameter description (2)

Parameter	Description
Register Type	Registration type. This parameter is specified by the peer SIP server. <ul style="list-style-type: none"> • Single: Only one user can exist in the registration group. The value of Register Type is Single for the NGN network. • Group: Multiple users can exist in the registration group. • Wildcard: Wildcard registration group. This registration group registers with the IMS or NGN based on certain wildcard rules, which are provided by the network carrier.
Authentication	Authentication mode used when a registration group registers with the IMS or NGN. The value is provided by the network carrier.
Password	The value is provided by the network carrier.
Sip Trunk ID	The value is provided by the network carrier.
Sip Trunk Name	The value is provided by the network carrier.
IMS Domain	The value is provided by the network carrier.
Expiration Time	Time when the SIP group expires. The value is negotiated by the EGW1520 and the SIP server. The EGW1520 must be registered with the SIP server at least once before the expiration time to ensure that the SIP server can exchange information with the EGW1520.

5. Click  to save the settings.

Step 3 Configure an analog phone.

1. On the web management system, choose **Voice > Phone Allocation**.
The page shown in [Figure 7-62](#) is displayed.

Figure 7-62 Configuring an analog phone




2. Click  .
The page shown in [Figure 7-63](#) is displayed.

Figure 7-63 Setting analog phone parameters



3. Set parameters according to [Table 7-28](#).

Table 7-28 Parameter description (5)

Parameter	Description
Port	Port number used by the analog phone to access the EGW1520.
Internal No	The internal number is used for the calls between intra-office subscribers. The value is a number of 1 to 30 digits, which can be user-defined. It cannot conflict with any service prefixes, emergency numbers, outer-office numbers, or other intra-office numbers. NOTE Table 7-30 lists Ireland's and New Zealand's emergency numbers.
User Name	A string of 1-64 characters, which can be user-defined. For example, Jack.
Registration Group	Registration group ID that is used when a POTS phone registers with the IMS/NGN network.

Parameter	Description
	<p>NOTE</p> <p>If the required registration group does not exist, choose Voice > SIP Server, and click the SIP Group tab to add it.</p>
External No	<p>External number for outgoing and incoming calls. The value is provided by the network carrier. This parameter is valid after you set the Registration Group parameter. The external number cannot conflict with any service prefixes, emergency numbers, outer-office numbers, or other intra-office numbers.</p> <p>NOTE</p> <ul style="list-style-type: none"> • Registration Group bound to External No must correspond to Sip Trunk ID. If Sip Trunk ID starts with +, you need to change + to 00 when you configure External No. • Table 7-30 lists Ireland's and New Zealand's emergency numbers.
Digitmap	<p>A dialing rule, which determines whether the range and length of the dialed number comply with the dialing rule. This parameter is valid after you set the Registration Group parameter. The EGW1520 allows users to dial numbers that are defined in the digitmap to make calls quickly. If the dialed number length is the same as that defined in the digitmap, the EGW1520 stops collecting digits and initiates the call, which reduces the connection duration. To configure digitmaps, use either of the following methods:</p> <ul style="list-style-type: none"> • Enter a single digitmap containing a maximum of 32 characters. • Enter multiple digitmaps containing a maximum of 128 characters and separate them with vertical bars (). <p>The default digitmap is [XABCD*#].T [XABCD*#][XABCD*].#. See Table 7-31.</p>
User State	<p>User status (read only). The options are as follows:</p> <ul style="list-style-type: none"> • Idle: The user is registered and idle. • Busy: The user is registered and busy. • Locked: The user is locked. For example, the user picks up the phone and does not dial numbers within a certain period. • Idle But Failed Register to IMS/NGN: Internal numbers are registered and idle, but external numbers failed to be registered. • Busy But Failed Register to IMS/NGN: Internal numbers are registered and busy, but external numbers failed to be registered.

4. Click  to save the settings.

Step 4 Configure IP phones.

You can use either of the following methods to add IP phones:

- [Add IP phones one by one](#)
- [Add IP phones in batches](#)

You are advised to add multiple IP phones in batches.

To add IP phones one by one, proceed as follows:

1. On the web management system, choose **Voice > Phone Allocation**.
2. Click the **IP Phone** tab.


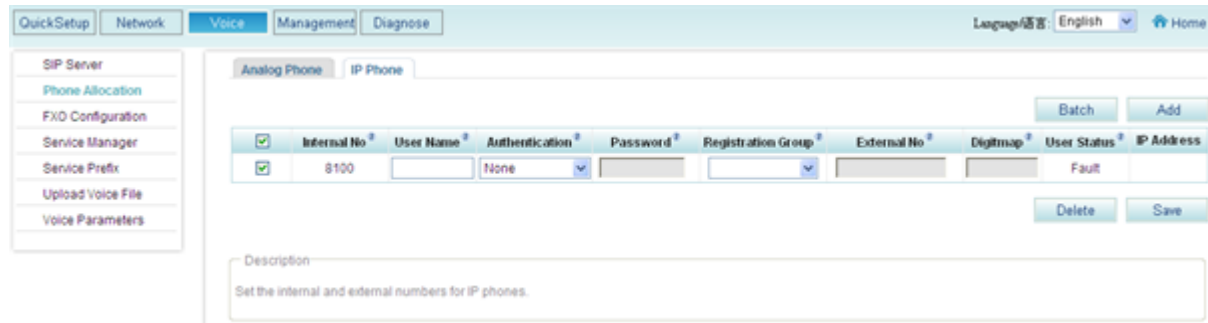
3. Click  .
The page shown in [Figure 7-64](#) is displayed.

Figure 7-64 Configuring an IP Phone



4. Set parameters according to [Table 7-29](#).

Table 7-29 Parameter description (3)

Parameter	Description
Internal No	The internal number is used for the calls between intra-office subscribers. The value is a number of 1 to 30 digits, which can be user-defined. It cannot conflict with any service prefixes, emergency numbers, outer-office numbers, or other intra-office numbers. NOTE Table 7-30 lists Ireland's and New Zealand's emergency numbers.
User Name	A string of 1-64 characters, which can be user-defined. For example, Jack.
Authentication	Authentication mode used when a SIP user registers with the EGW1520. The value must be the same as that set on the SIP terminal.
Password	Authentication password used when a SIP user registers with the EGW1520. The value must be the same as that set on the SIP terminal.
Registration Group	Registration group ID that is used when an IP phone registers with the IMS/NGN network. NOTE If the required registration group does not exist, choose Voice > SIP Server , and click the SIP Group tab to add it.
External No	External number for outgoing and incoming calls. The value is provided by the network carrier. This parameter is valid after you

Parameter	Description
	<p>set the Registration Group parameter. The external number cannot conflict with any service prefixes, emergency numbers, outer-office numbers, or other intra-office numbers.</p> <p>NOTE</p> <ul style="list-style-type: none"> • Registration Group bound to External No must correspond to Sip Trunk ID. If Sip Trunk ID starts with +, you need to change + to 00 when you configure External No. • Table 7-30 lists Ireland's and New Zealand's emergency numbers.
Digitmap	<p>A dialing rule, which determines whether the range and length of the dialed number comply with the dialing rule. This parameter is valid after you set the Registration Group parameter. The EGW1520 allows users to dial numbers that are defined in the digitmap to make calls quickly. If the dialed number length is the same as that defined in the digitmap, the EGW1520 stops collecting digits and initiates the call, which reduces the connection duration. To configure digitmaps, use either of the following methods:</p> <ul style="list-style-type: none"> • Enter a single digitmap containing a maximum of 32 characters. • Enter multiple digitmaps containing a maximum of 128 characters and separate them with vertical bars (). <p>The default digitmap is [XABCD*#.T][XABCD*#][XABCD*].#.</p> <p>Table 7-31 lists digitmap rules.</p>
User State	<p>User status. The options are as follows:</p> <ul style="list-style-type: none"> • Fault: The user failed to be registered. • Idle: The user is registered and idle. • Busy: The user is registered and busy. • Locked: The user is locked. For example, the user picks up the phone and does not dial numbers within a certain period. • Idle But Failed Register to IMS/NGN: Internal numbers are registered and idle, but external numbers failed to be registered. • Busy But Failed Register to IMS/NGN: Internal numbers are registered and busy, but external numbers failed to be registered.
IP Address	IP address of the IP phone on the LAN.

Table 7-30 Emergency numbers in different countries

Country	Emergency Call Numbers
China	110, 119
Ireland	999, 112

Country	Emergency Call Numbers
New Zealand	111

Table 7-31 Digitmap rules

Parameter	Description
0-9, *, #, A, B, C, D	Characters that can be dialed.
X	The parameter can be any number from 0 to 9.
. (dot)	The parameter can be any value.
T	Dialing timeout. For example, X.T indicates that the IAD considers that the dialing ends when the dialing times out after the user dials some digits.
[]	Subset of the matching characters. For example, [1-357-9] indicates any number among 1, 2, 3, 5, 7, 8, and 9.
X.T	If the user stops dialing digits and the dialing times out, the EGW1520 considers that the dialing ends.
X.#	The EGW1520 considers that the dialing ends when the user presses the pound key (#).

5. Click  to save the settings.



NOTE

To change the configuration of a saved IP phone, select the IP phone and reset it.

To add IP phones in batches, proceed as follows:

1. On the web management system, choose **Voice > Phone Allocation**.
2. Click the **IP Phone** tab.

3. Click  .



The page shown in [Figure 7-65](#) is displayed.

Figure 7-65 Adding IP phones in batches

4. Set parameters according to [Table 7-32](#).

Table 7-32 Parameter description (4)

Parameter	Description
Internal No	The internal number is used for the calls between intra-office subscribers. The value is a number of 1 to 30 digits, which can be user-defined. It cannot conflict with any service prefixes, emergency numbers, outer-office numbers, or other intra-office numbers. NOTE Table 7-30 lists Ireland's and New Zealand's emergency numbers.
Increment	Number increasing step.
Amount	Count of numbers. A maximum of 20 numbers can be configured.

5. Click .
6. Set parameters according to [Table 7-29](#).
7. Click  to save the settings.

Step 5 Register the IP phones with the EGW1520.

Set IP addresses and internal numbers of the IP phones, and IP address of the SIP server (EGW1520) to register the IP phones with the EGW1520. For details, see related IP phone manuals.

 **NOTE**

IP phones support signaling encryption but cannot be set to the forced encryption mode. The forced encryption mode will affect the communication.

----End

Verification

- Verify internal numbers.
Use the analog phone and IP phone to call each other by dialing internal numbers.
- Verify external numbers.
 - Use an analog or IP phone and a mobile phone to call each other on the EGW1520.
 - Use the analog phone and IP phone to call each other by dialing external numbers on the EGW1520.

Enabling Voice Services

A user can configure and use voice services only after the voice services are enabled.

Context

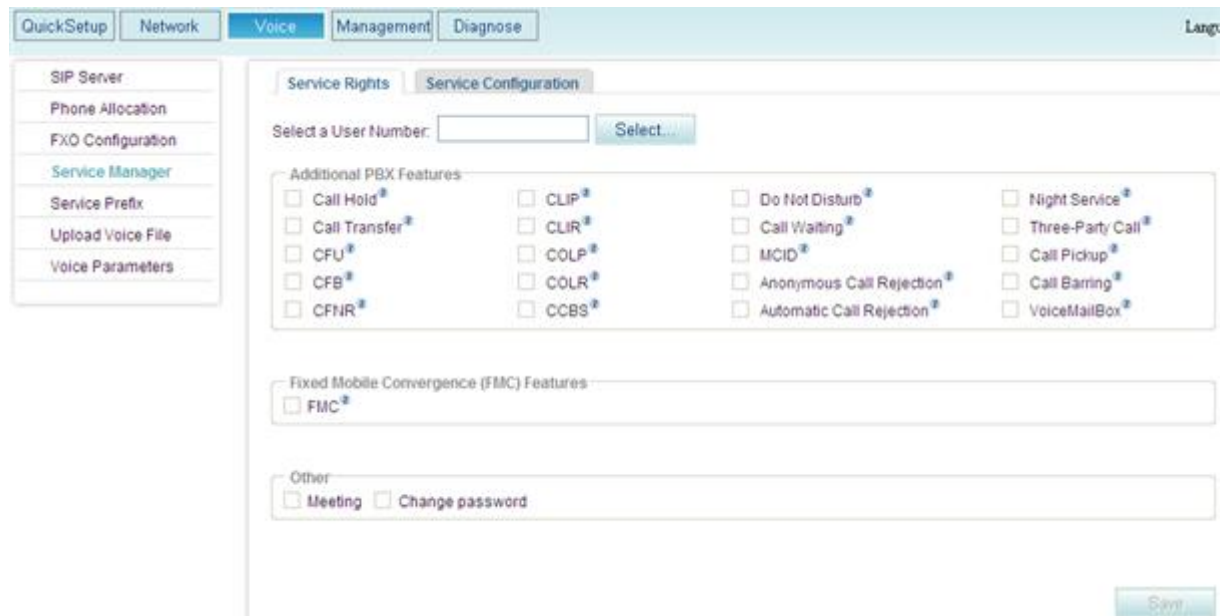
By default, the call hold, call transfer, Call Forwarding Unconditional (CFU), Call Forwarding on Busy (CFB), Call Forwarding on No Reply (CFNR), and Calling Line Identity Presentation (CLIP), Do not Disturb (DND), and call waiting services are enabled.

Procedure

Step 1 On the web management system, choose **Voice > Service Manager** from the navigation tree.

The page shown in [Figure 7-66](#) is displayed.

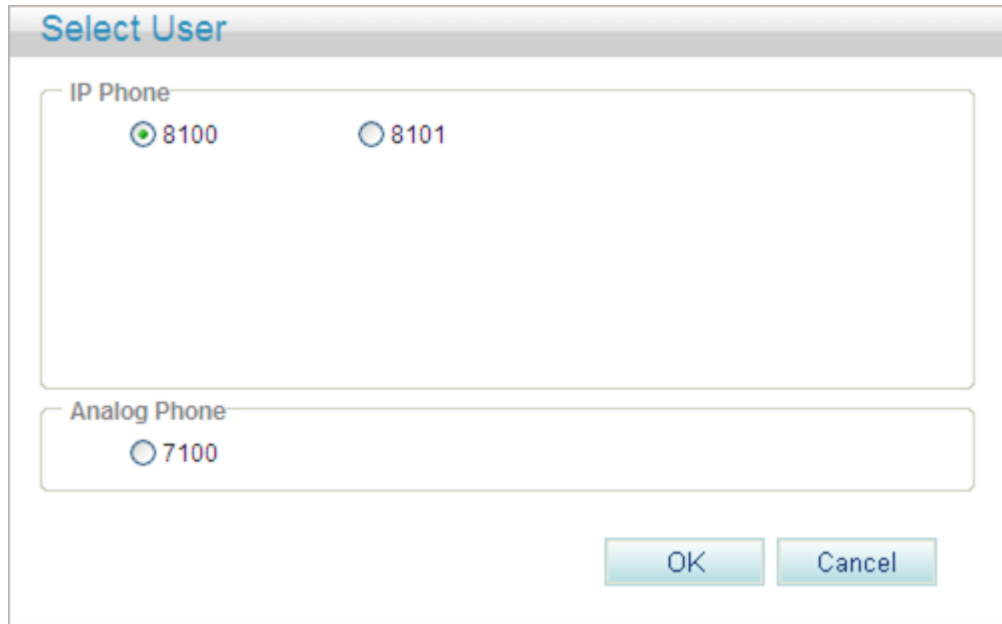
Figure 7-66 Service Rights tab page (1)



Step 2 Click [Select...](#).

The page shown in [Figure 7-67](#) is displayed.

Figure 7-67 Selecting a user

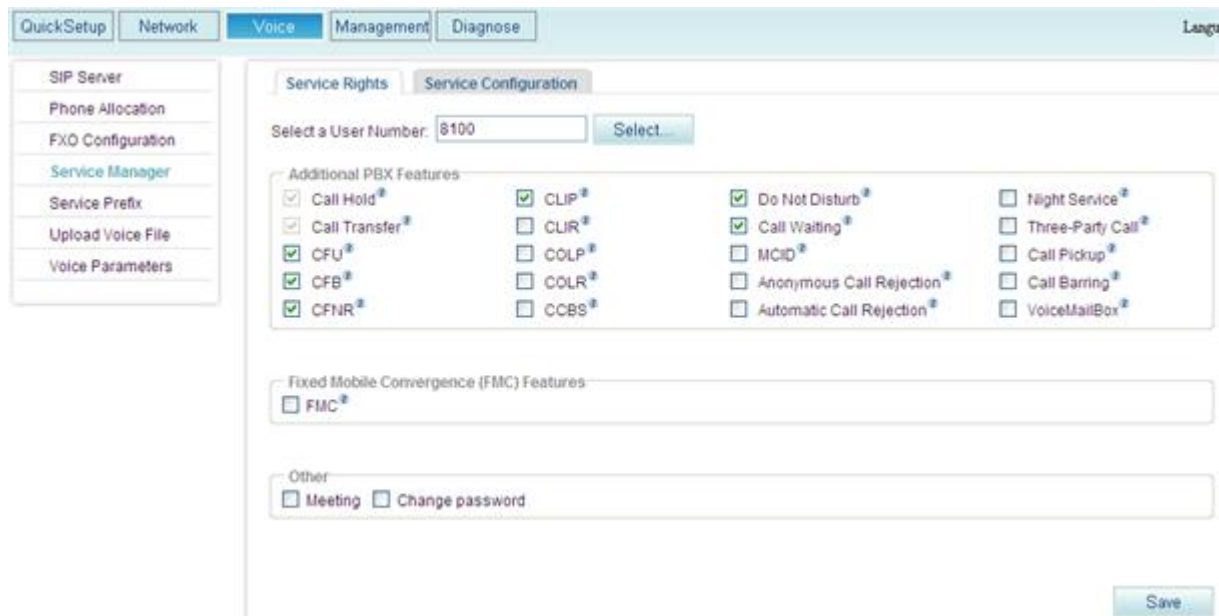


Step 3 Select a user number.

Step 4 Click .

The page shown in [Figure 7-68](#) is displayed.

Figure 7-68 Service Rights tab page (2)



Step 5 Select the services that you want to enable.

Step 6 Click  .
----End

Configuring and Using Voice Services

This topic describes how to use and configure voice services that are provided by the EGW1520.




?1.Service Conflicts

The EGW1520 supports multiple voice services which may conflict with each other. This topic describes the conflicts between services.

Figure 7-69 shows the conflicts between services.

Figure 7-69 Service conflicts

Voice Service	CFU	CFNR	CFB	CLIP	CLIR	COLP	COLR	CCBS	CW	ACR	CRJ	DND	NS	VoiceMailBox	FMC-Simultaneous Ringing
CFU	CFU	CFU						CFU	CFU	ACR	CRJ	DND	CFU		CFU
CFNR	CFU									ACR	CRJ	DND	NS		
CFB	CFU							CFB	CW	ACR	CRJ	DND	NS		CFB
CLIP					CLIR							DND			
CLIR					CLIR							DND			
COLP							COLR								
COLR							COLR								
CCBS	CFU		CFB						CW	ACR	CRJ	DND	NS		
CW	CFU		CW						CW			DND	NS		
ACR	ACR	ACR	ACR					ACR			CRJ	DND	ACR		ACR
CRJ	CRJ	CRJ	CRJ					CRJ		CRJ		DND	CRJ		CRJ
DND	DND	DND	DND	DND	DND			DND	DND	DND	DND	DND	DND		DND
NS	CFU	NS	NS					NS	NS	ACR	CRJ	DND			NS
VoiceMailBox															
FMC-Simultaneous Ringing	CFU		CFB							ACR	CRJ	DND	NS		
FMC-Sequential Ringing	CFU	CFNR	CFB						CW	ACR	CRJ	DND	NS		
FMC-Voicemail															

-  A service conflicts with another service, and they can not exist at the same time
-  CFU A service conflicts with another service, and the service name of the higher priority level is d
-  No conflict



NOTE

- [Glossary](#) shows complete service names.
- You cannot set conflicting services at the same time on the web management system.

7.2.Call Hold

If a user configures the call holding service, the user can suspend a call and resume it as required. The call holding duration is not limited.

Configuring the Service

After enabling the call holding service, users can directly use it without configuration.

Using the Service

Assume that user A is an EGW1520's voice user. During a call with user B, user A can:

1. Press **Hold** or the hook flash button (for example, the R/Recall key) to suspend the call.
User B hears the music-on-hold.
2. Press **Hold** or the hook flash button (for example, the R/Recall key) to resume the call.



NOTE

The operations may differ on IP phones of different models. For details, see the related IP phone user guide.

7.3.Call Transfer

The call transfer service allows a user to quit a call in progress and transfer it to a third party.

Configuring the Service

After enabling the call transfer service, users can directly use it without configuration.

Using the Service

Assume that user A, an EGW1520 voice user who has enabled the call transfer service, is in a call with user B.

User A wants to transfer the call to user C.

- When using an analog phone, user A can:
 1. Press the hook flash button and dial user C's number after hearing a dialing tone.
User B hears a waiting tone.
 2. Select an operation from the following:
 - Hang up the phone directly.
 - If user C is connected, user C's phone rings and user B hears the Ring Back Tone (RBT). After picking up the phone, user C talks with user B.
 - If user C cannot be connected, user B hears a busy tone.
 - Hang up the phone after user C is connected.

User C's phone rings and user B hears the RBT. After picking up the phone, user C talks with user B.

- Hang up the phone after user C answers the call.

User B talks with user C.

- Talk with user B again.

If user C is busy or does not respond, user A can press the hook flash button or wait 20 seconds to talk with user B again.

- When using an IP phone, user A can use one of the following modes:
 - Unattend mode
- 1. User A presses the transfer key, dials the user C's number, and presses the send key.
 - User A's phone hangs up automatically, user B hears the RBT, and user C's phone rings. The process goes to step 2.
 - If user C is disconnected, the conversation between user A and user B resumes.
- 2. User C picks up the phone and talks with user B.
 - Attend mode



NOTE

In this mode, user A must use a SIP phone that supports multiple lines, for example, Polycom.

1. User A presses another idle line key (the indicator is off), for example, line 2.
The conversation between user A and user B is held, and user B hears a waiting tone.
2. User A dials the user C's number and presses the send key.
 - User A hears the RBT and user C's phone rings. The process goes to step 3.
 - If user C is busy, user A hears a busy tone. After pressing the line key that connects to user B (line 1), user A resumes the conversation with user B.
3. User C picks up the phone and talks with user B.
The conversation between user A and user C occupies another line (line 2 in the preceding example).
4. User A presses the transfer key, dials the user C's number, and presses the send key.
User A's phone hangs up automatically, and user B talks with user C.
 - Semi-attend mode



NOTE

In this mode, user A must use a SIP phone that supports multiple lines, for example, Polycom.

The procedure for user A to transfer a call in semi-attend mode is similar to that of attend mode. The only difference lies in that step 4 does not exist. In semi-attend mode, when user A hears the RBT (indicating that user C is connected), the call is transferred to user C.

?4.Call Forwarding Unconditional

After a user enables and configures the Call Forwarding Unconditional (CFU) service, all calls to the user will be forwarded to a preset number.

Precautions

The CFU service conflicts with some other services. For details, see [Service Conflicts](#).

Configuring the Service

Web mode

NOTE

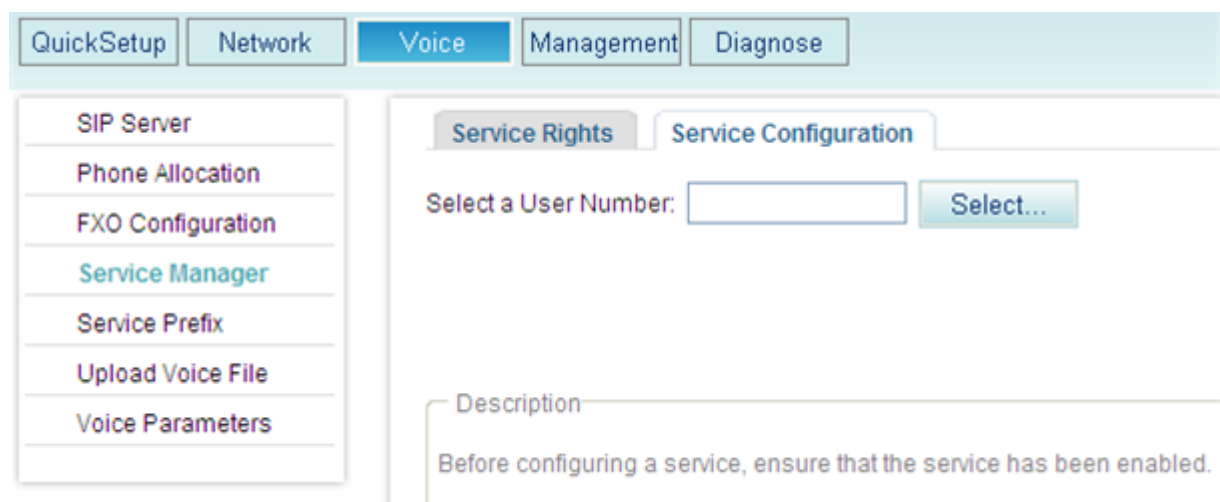
Before configuring a service, ensure that the service has been enabled. For details on how to enable voice services, see [Enabling Voice Services](#). By default, the CFU service is enabled.

Step 1 On the web management system, choose **Voice > Service Manager** from the navigation tree.

Step 2 Click the **Service Configuration** tab.

The page shown in [Figure 7-70](#) is displayed.

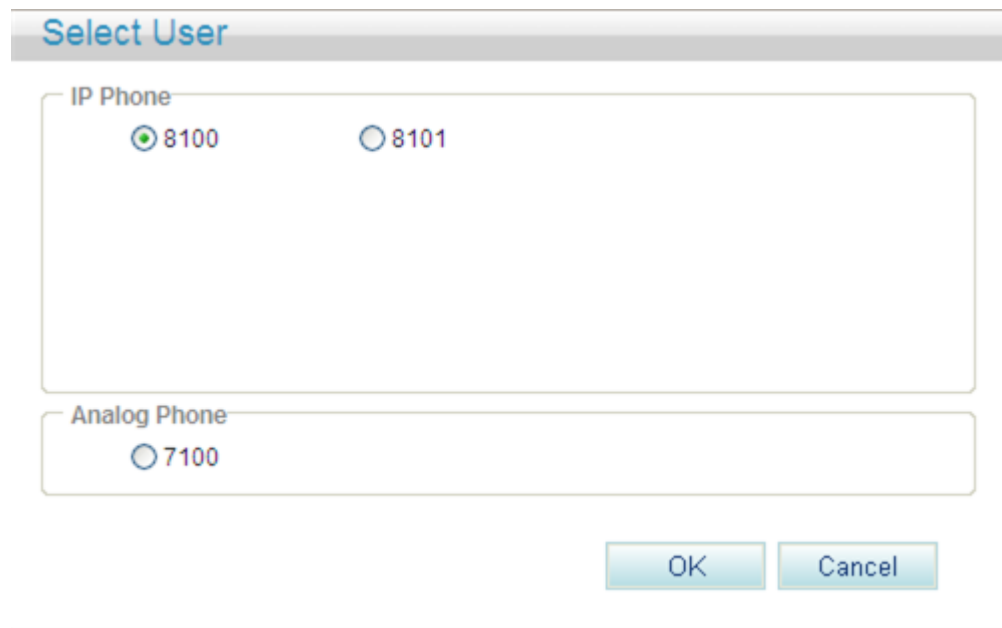
Figure 7-70 Configure Service tab page (1)



Step 3 Click  .

The page shown in [Figure 7-71](#) is displayed.

Figure 7-71 Selecting a user



The screenshot shows a 'Select User' dialog box. It has a title bar with the text 'Select User'. Below the title bar, there are two sections. The first section is labeled 'IP Phone' and contains two radio buttons. The first radio button is selected and is labeled '8100'. The second radio button is labeled '8101'. The second section is labeled 'Analog Phone' and contains one radio button labeled '7100'. At the bottom right of the dialog, there are two buttons: 'OK' and 'Cancel'.

Step 4 Select a user number, and click



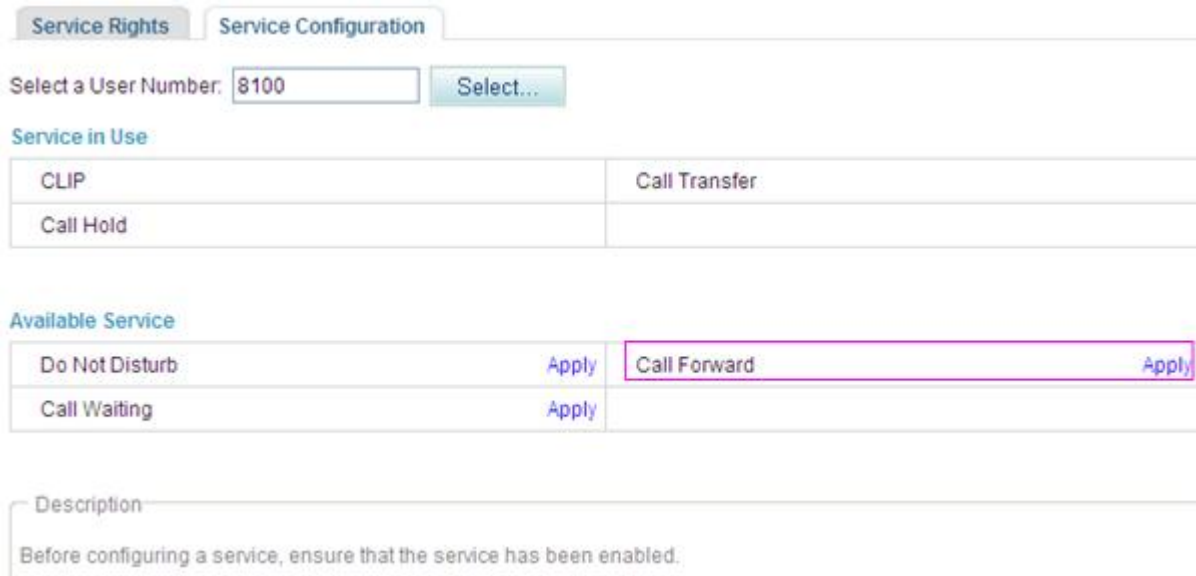
The procedure varies according to whether you have configured any forwarding services before.

- [Without forwarding services before](#)
- [With forwarding services before](#)

If you have not configured any forwarding services before, the page shown in [Figure 7-72](#) is displayed after you click



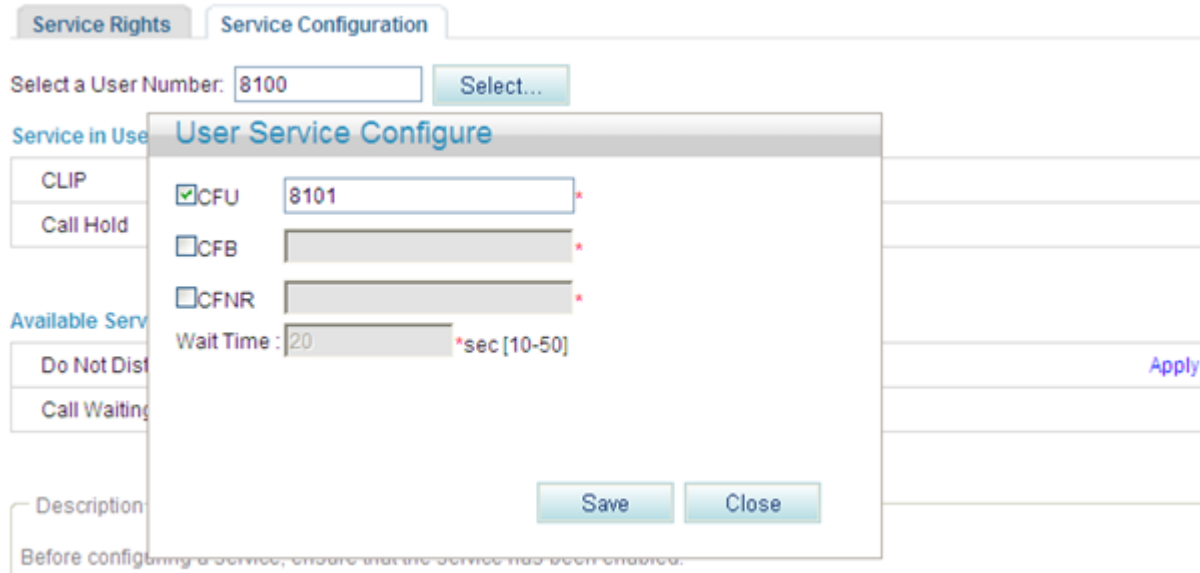
Figure 7-72 Without forwarding services before (1)



The procedure is as follows:

1. Click **Apply**.
The page shown in [Figure 7-73](#) is displayed.

Figure 7-73 Without forwarding services before (2)




2. Select **CFU** and enter the forwarded-to number.
3. Click  .
[Figure 7-74](#) shows the configuration result.

Figure 7-74 Configuration result

The screenshot shows a web interface for service configuration. At the top, there are two tabs: 'Service Rights' and 'Service Configuration'. Below the tabs, there is a field 'Select a User Number:' with the value '8100' and a 'Select...' button. The main content is divided into two sections: 'Service in Use' and 'Available Service'. The 'Service in Use' section contains a table with two rows: 'Call Forward' and 'Call Transfer'. The 'Call Forward' row has 'Configure' and 'Cancel' buttons, and the 'CLIP' label. The 'Call Transfer' row has the 'Call Hold' label. The 'Available Service' section contains a table with two rows: 'Do Not Disturb' and 'Call Waiting'. The 'Do Not Disturb' row has an 'Apply' button, and the 'Call Waiting' row has an 'Apply' button. At the bottom, there is a 'Description' section with the text: 'Before configuring a service, ensure that the service has been enabled.'

 **NOTE**

To modify service configurations, click **Configure** corresponding to the service.

If you have configured forwarding services before, the page shown in [Figure 7-75](#) is displayed .

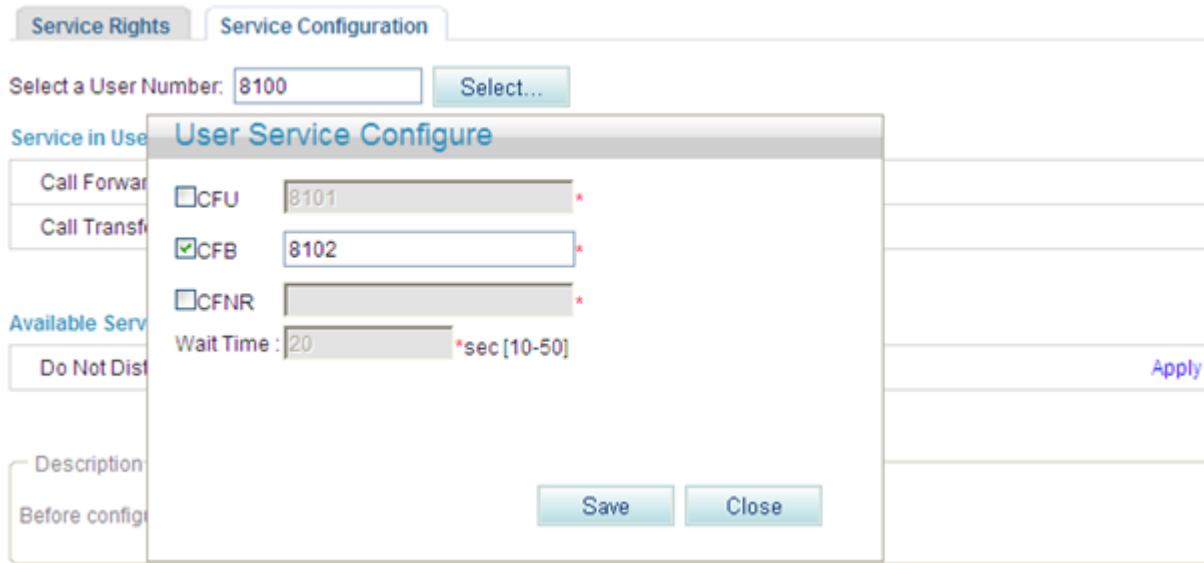
Figure 7-75 With forwarding services before (1)

This screenshot is identical to Figure 7-74, showing the 'Service Configuration' page. It includes the 'Service Rights' and 'Service Configuration' tabs, the 'Select a User Number:' field with '8100', and the 'Service in Use' and 'Available Service' tables. The 'Service in Use' table highlights the 'Call Forward' row with a pink border, and the 'Available Service' table highlights the 'Do Not Disturb' row with a pink border. The 'Description' section at the bottom contains the text: 'Before configuring a service, ensure that the service has been enabled.'

The procedure is as follows:

1. Click **Configure**.
The page shown in [Figure 7-76](#) is displayed.

Figure 7-76 With forwarding services before (2)

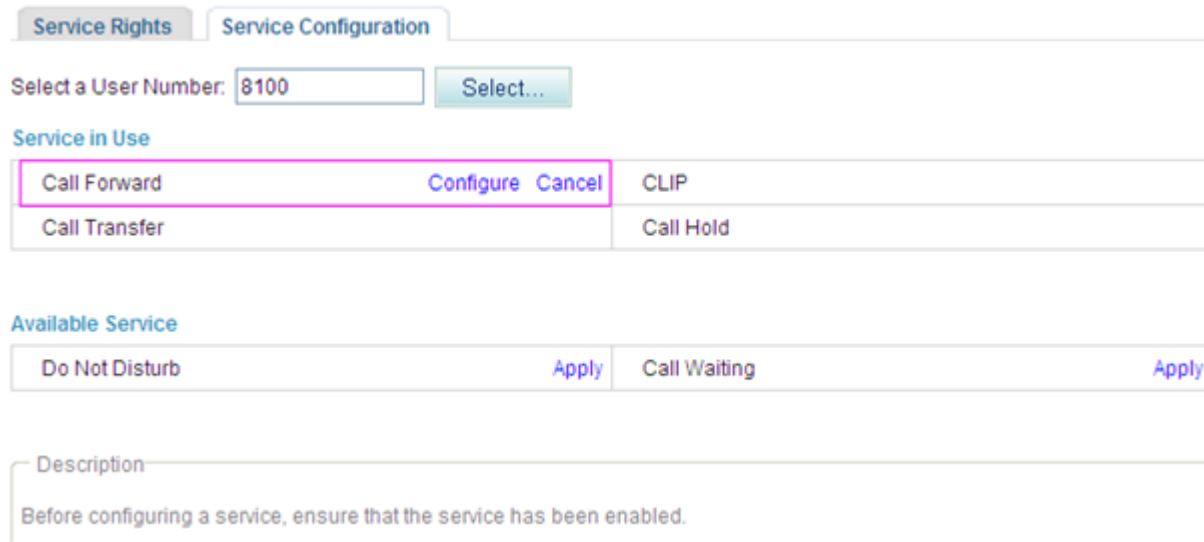


2. Select **CFU** and enter the forwarded-to number.

3. Click .

[Figure 7-77](#) shows the configuration result.

Figure 7-77 Configuration result



 **NOTE**

To modify service configurations, click **Configure** corresponding to the service.

----End

Service prefix dialing mode

In addition to the preceding web mode, you can also dial a prefix to configure the service. For example, pick up the phone and dial default service prefix ***21*number#**. The *number* is forwarded number. To change the service prefix, see [Changing Service Prefixes](#).

Using the Service



CAUTION

- A call can be forwarded only twice consecutively.

For example, user A can forward a call to user B and user B can forward the call to user C. User C, however, cannot forward the call to others.

- A call cannot be forwarded in a loop.

For example, user A can forward a call to user B but user B cannot forward the call to user A.

If user A has enabled and configured the CFU service, user A's calls are forwarded to the preset number.

Canceling the Service

Web mode

Click **Cancel** on the **Service Configuration** tab page, as shown in [Figure 7-78](#).

Figure 7-78 Canceling the service

Service in Use	
Call Forward	Configure Cancel CLIP
Call Transfer	Call Hold

Available Service	
Do Not Disturb	Apply Call Waiting
	Apply

Description
Before configuring a service, ensure that the service has been enabled.

Service prefix dialing mode

A user picks up the phone and dials default service prefix **#21#**. To change the service prefix, see [Changing Service Prefixes](#).

7.5.Call Forwarding on Busy

If a user configures the call forwarding on busy (CFB) service and is busy, all incoming calls are forwarded to a preset number.

Precautions

- A call can be forwarded only twice consecutively. For example, user A can forward a call to user B and user B can forward the call to user C. User C, however, cannot forward the call to others.
- A call cannot be forwarded in a loop. For example, user A can forward a call to user B but user B cannot forward the call to user A.
- The CFB service conflicts with some other services. For details, see [Service Conflicts](#).

Configuring the Service

Web mode

NOTE

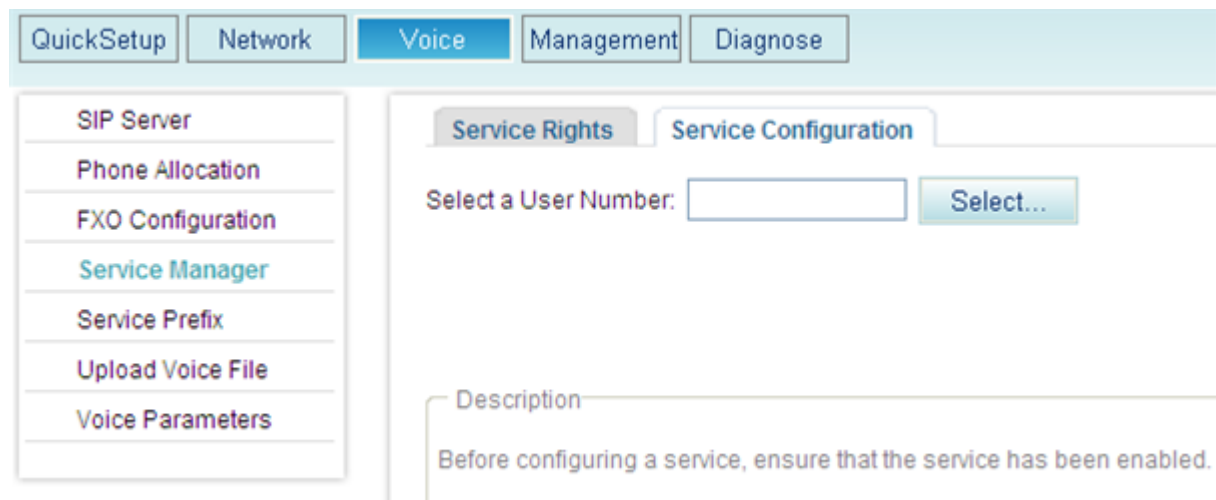
Before configuring a service, ensure that the service has been enabled. For details on how to enable voice services, see [Enabling Voice Services](#). By default, the CFB service is enabled.

Step 1 On the web management system, choose **Voice > Service Manager** from the navigation tree.

Step 2 Click the **Service Configuration** tab.

The page shown in [Figure 7-79](#) is displayed.

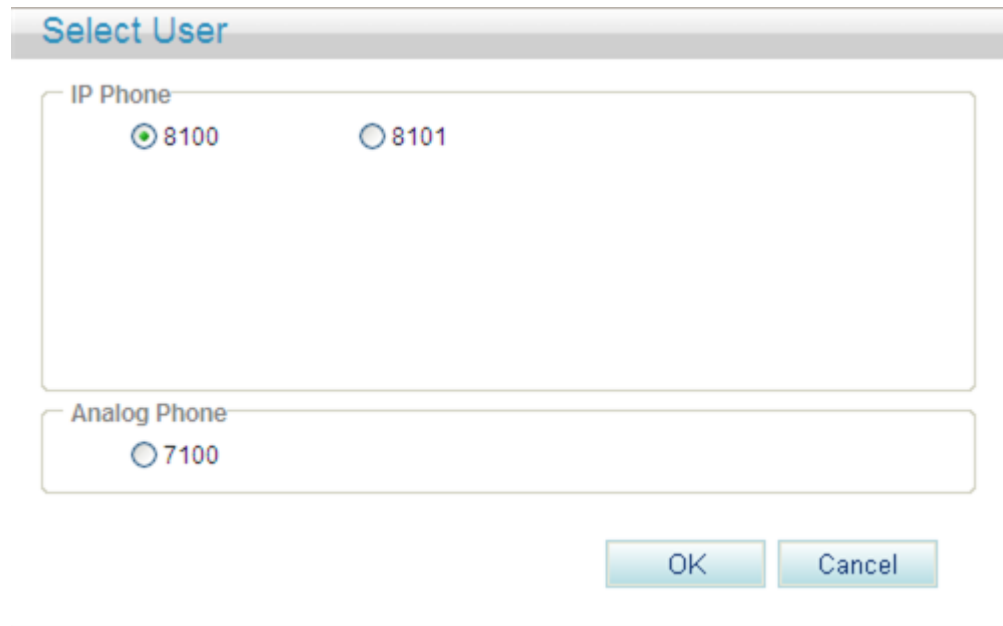
Figure 7-79 Configure Service tab page



Step 3 Click .

The page shown in [Figure 7-80](#) is displayed.

Figure 7-80 Selecting a user



The screenshot shows a 'Select User' dialog box. It has a title bar with the text 'Select User'. Below the title bar, there are two sections. The first section is labeled 'IP Phone' and contains two radio buttons: one for '8100' (which is selected) and one for '8101'. The second section is labeled 'Analog Phone' and contains one radio button for '7100'. At the bottom right of the dialog, there are two buttons: 'OK' and 'Cancel'.

Step 4 Select a user number, and click



The procedure varies according to whether you have configured any forwarding services before.

- [Without forwarding services before](#)
- [With forwarding services before](#)

If you have not configured any forwarding services before, the page shown in [Figure 7-81](#) is displayed after you click



Figure 7-81 Without forwarding services before (1)

The screenshot shows a web interface with two tabs: 'Service Rights' and 'Service Configuration'. Under 'Service Configuration', there is a field 'Select a User Number:' with the value '8100' and a 'Select...' button. Below this, there are two sections: 'Service in Use' and 'Available Service'. The 'Service in Use' section contains a table with two rows: 'CLIP' and 'Call Hold', with 'Call Transfer' listed to the right. The 'Available Service' section contains a table with two rows: 'Do Not Disturb' and 'Call Waiting', each with an 'Apply' button. The 'Call Forward' service is highlighted with a purple border and has its own 'Apply' button. At the bottom, there is a 'Description' box with the text: 'Before configuring a service, ensure that the service has been enabled.'

The procedure is as follows:

1. Click **Apply**.
The page shown in [Figure 7-82](#) is displayed.

Figure 7-82 Without forwarding services before (2)

This screenshot is similar to Figure 7-81 but includes a modal dialog box titled 'User Service Configure'. The dialog box has a title bar and contains the following fields: 'CFU' (unchecked checkbox), 'CFB' (checked checkbox) with a text input field containing '8102', 'CFNR' (unchecked checkbox), and 'Wait Time' (input field containing '20' with a unit '*sec [10-50]'). There are 'Save' and 'Close' buttons at the bottom of the dialog. The background interface is partially obscured by the dialog box.


2. Select **CFB** and enter the forwarded-to number.
3. Click  .
[Figure 7-83](#) shows the configuration result.

Figure 7-83 Configuration result

The screenshot shows a web interface with two tabs: 'Service Rights' and 'Service Configuration'. Below the tabs, there is a 'Select a User Number' field containing '8100' and a 'Select...' button. The 'Service in Use' section contains a table with two rows: 'Call Forward' (with 'Configure' and 'Cancel' buttons) and 'Call Transfer'. The 'Available Service' section contains a table with two rows: 'Do Not Disturb' (with an 'Apply' button) and 'Call Waiting' (with an 'Apply' button). A 'Description' box at the bottom contains the text: 'Before configuring a service, ensure that the service has been enabled.'

 **NOTE**

To modify service configurations, click **Configure** corresponding to the service.


If you have configured forwarding services before, the page shown in [Figure 7-84](#) is displayed after you click .

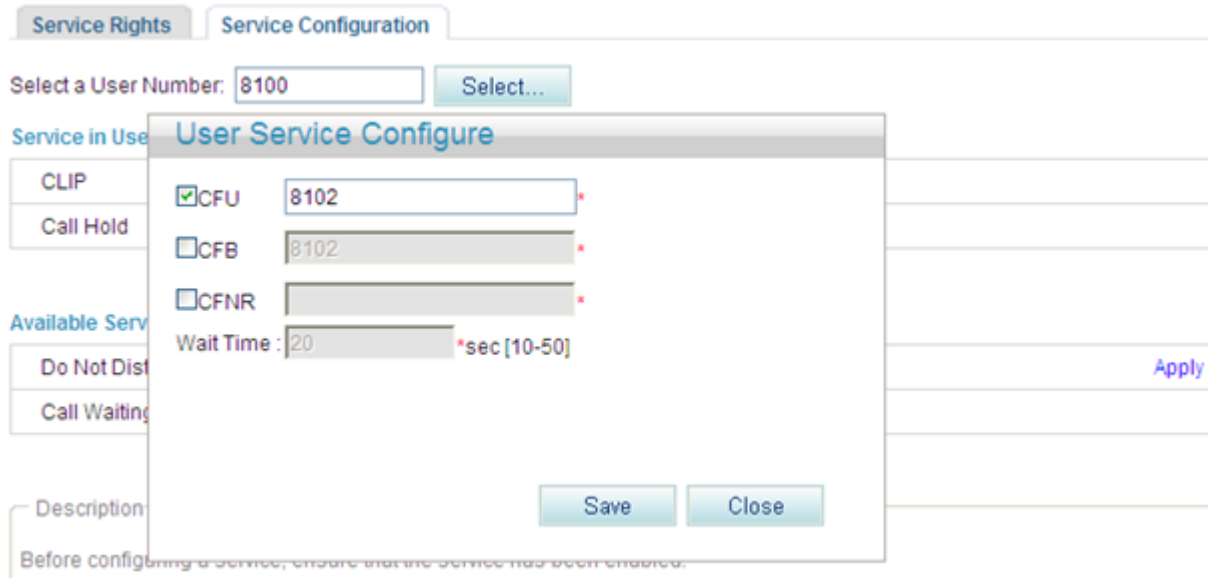
Figure 7-84 With forwarding services before (1)

This screenshot is identical to Figure 7-83, showing the 'Service Configuration' page with the 'Service in Use' and 'Available Service' sections.

The procedure is as follows:

1. Click **Configure**.
The page shown in [Figure 7-85](#) is displayed.

Figure 7-85 With forwarding services before (2)



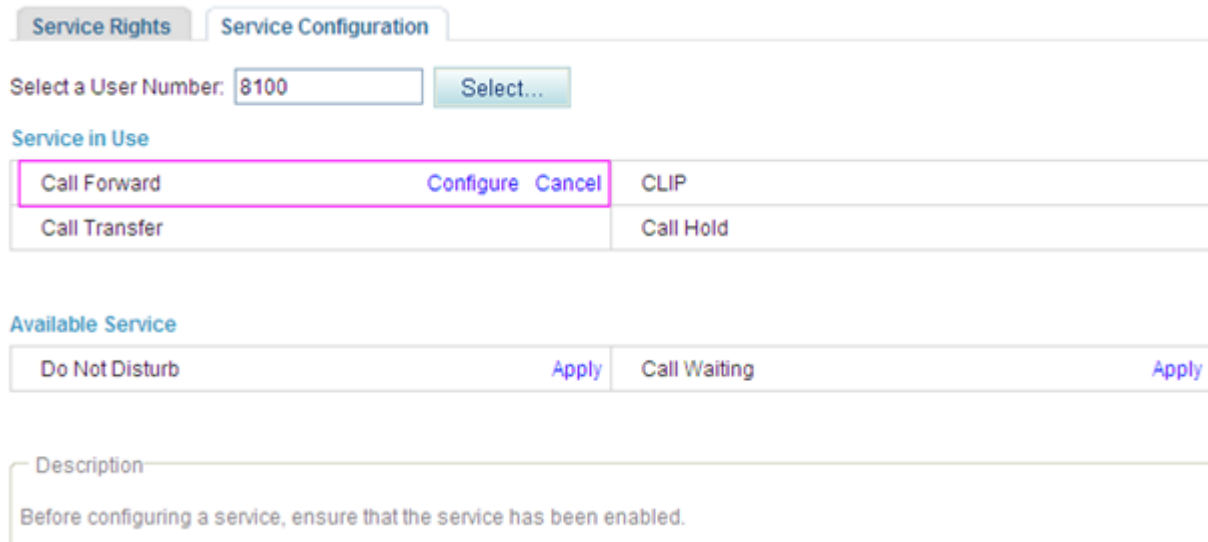
2. Select **CFB** and enter the forwarded-to number.



3. Click .

Figure 7-86 shows the configuration result.

Figure 7-86 Configuration result



NOTE

To modify service configurations, click **Configure** corresponding to the service.

----End

Service prefix dialing mode

A user picks up the phone and dials *67*number#, where *number* is the forwarded-to number and *67* is the default service prefix. To change the service prefix, see [Changing Service Prefixes](#).

Using the Service

Assume that user A has the CFB service right and configures the CFB service (forward calls to user C). If user A is busy, the call is forwarded to user C.

Canceling the Service

Web mode

Click **Cancel** on the **Service Configuration** tab page, as shown in [Figure 7-87](#).

Figure 7-87 Canceling the service

The screenshot shows a web interface with two tabs: 'Service Rights' and 'Service Configuration'. Under 'Service Configuration', there is a 'Select a User Number' field with '8100' and a 'Select...' button. Below this is a 'Service in Use' table:

Service in Use		
Call Forward	Configure Cancel	CLIP
Call Transfer		Call Hold

Below the table is an 'Available Service' section with two items: 'Do Not Disturb' with an 'Apply' button, and 'Call Waiting' with an 'Apply' button. At the bottom, there is a 'Description' box containing the text: 'Before configuring a service, ensure that the service has been enabled.'

Service prefix dialing mode

A user picks up the phone and dials default service prefix #67#. To change the service prefix, see [Changing Service Prefixes](#).

?6.Call Forwarding on No Reply

If a user configures the call forwarding on no reply (CFNR) service and does not answer a call for a specified period (20s by default), the call is automatically forwarded to a preset number.

Precautions

- A call can be forwarded only twice consecutively. For example, user A can forward a call to user B and user B can forward the call to user C. User C, however, cannot forward the call to others.
- A call cannot be forwarded in a loop. For example, user A can forward a call to user B but user B cannot forward the call to user A.

- The CFNR service conflicts with some other services. For details, see [Service Conflicts](#).

Configuring the Service

Web mode

NOTE

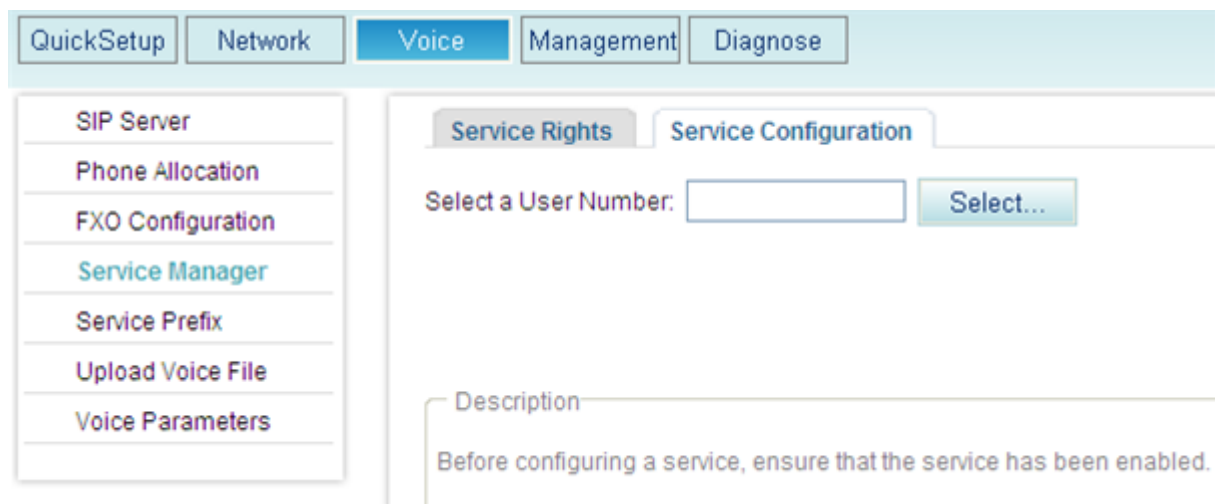
Before configuring a service, ensure that the service has been enabled. For details on how to enable voice services, see [Enabling Voice Services](#).

Step 1 On the web management system, choose **Voice > Service Manager** from the navigation tree.

Step 2 Click the **Service Configuration** tab.

The page shown in [Figure 7-88](#) is displayed.

Figure 7-88 Configure Service tab page



Step 3 Click  .

The page shown in [Figure 7-89](#) is displayed.

Figure 7-89 Selecting a user

The screenshot shows a 'Select User' dialog box. It has a title bar with the text 'Select User'. Below the title bar, there are two sections. The first section is labeled 'IP Phone' and contains two radio buttons: one selected (with a green dot) for the number '8100' and one unselected for the number '8101'. The second section is labeled 'Analog Phone' and contains one unselected radio button for the number '7100'. At the bottom right of the dialog, there are two buttons: 'OK' and 'Cancel'.

Step 4 Select a user number.

Step 5 Click .

The procedure varies according to whether you have configured any forwarding services before.

- [Without forwarding services before](#)
- [With forwarding services before](#)


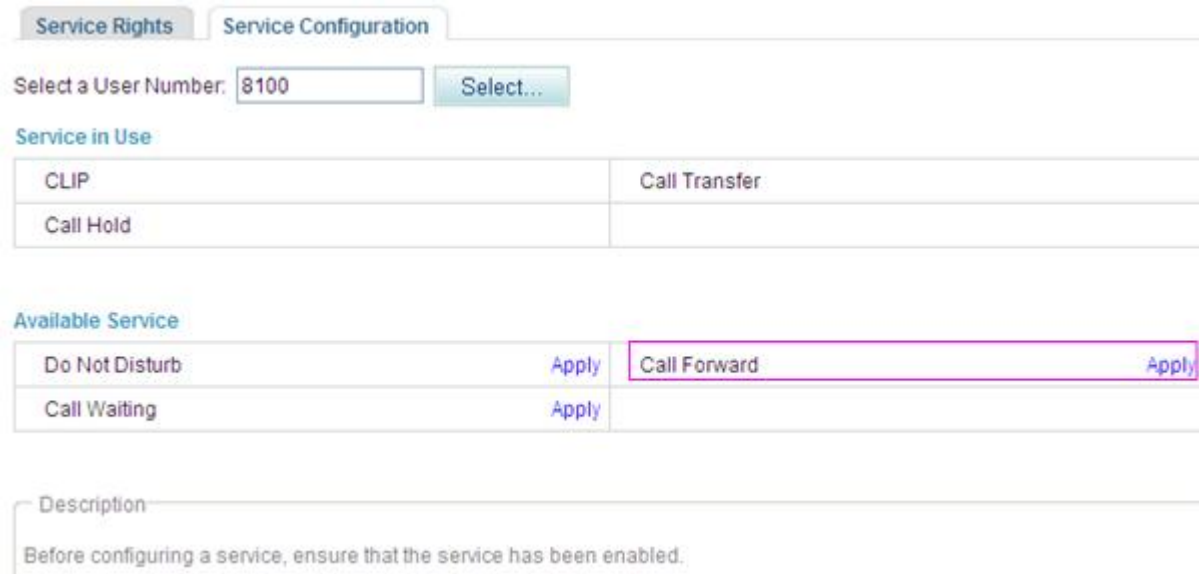
If you have not configured any forwarding services before, the page shown in [Figure 7-90](#) is displayed after you click .

Figure 7-90 Without forwarding services before (1)



Service Rights Service Configuration

Select a User Number:

Service in Use

CLIP	Call Transfer
Call Hold	

Available Service

Do Not Disturb	<input type="button" value="Apply"/>	Call Forward	<input type="button" value="Apply"/>
Call Waiting	<input type="button" value="Apply"/>		

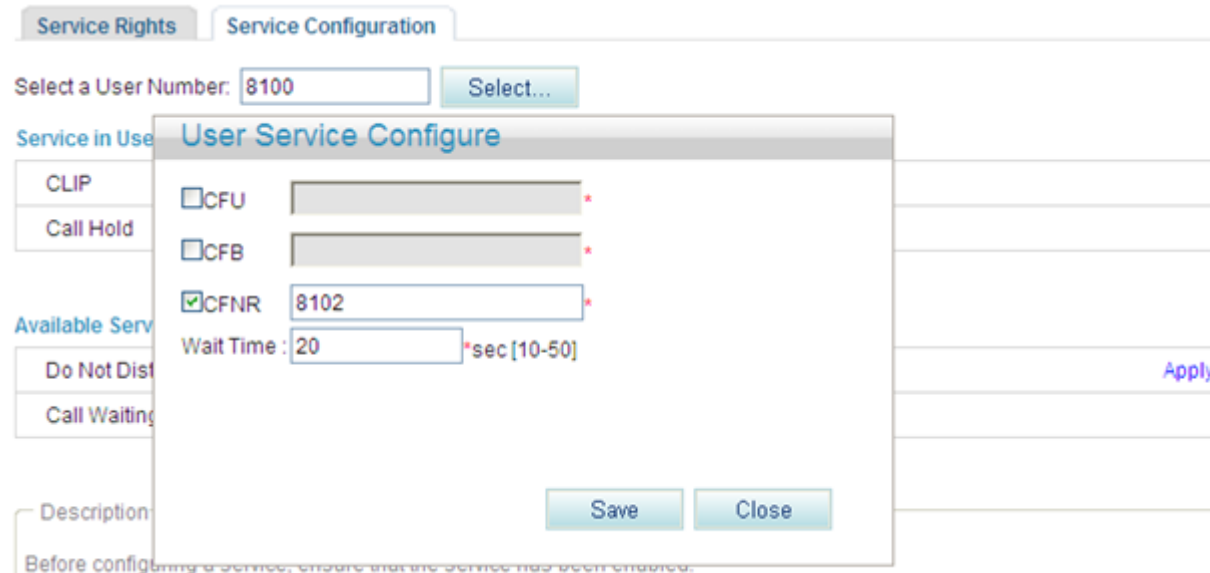
Description

Before configuring a service, ensure that the service has been enabled.

The procedure is as follows:

1. Click **Apply**.
The page shown in [Figure 7-91](#) is displayed.

Figure 7-91 Without forwarding services before (2)



Service Rights Service Configuration

Select a User Number:

Service in Use

CLIP	
Call Hold	

Available Service

Do Not Disturb			
Call Waiting			

Description

Before configuring a service, ensure that the service has been enabled.

User Service Configure

CFU

CFB

CFNR

Wait Time : *sec [10-50]

2. Select **CFNR**, and enter the forwarded-to number and waiting duration before forwarding (unit: second).

3. Click .
[Figure 7-92](#) shows the configuration result.

Figure 7-92 Configuration result

The screenshot shows a web interface with two tabs: 'Service Rights' and 'Service Configuration'. Below the tabs, there is a 'Select a User Number' field containing '8100' and a 'Select...' button. The 'Service in Use' section contains a table with two rows: 'Call Forward' (with 'Configure' and 'Cancel' buttons) and 'Call Transfer'. The 'Available Service' section contains a table with two rows: 'Do Not Disturb' (with an 'Apply' button) and 'Call Waiting' (with an 'Apply' button). A 'Description' box at the bottom states: 'Before configuring a service, ensure that the service has been enabled.'

NOTE

To modify service configurations, click **Configure** corresponding to the service.

If you have configured forwarding services before, the page shown in [Figure 7-93](#) is displayed after you click .

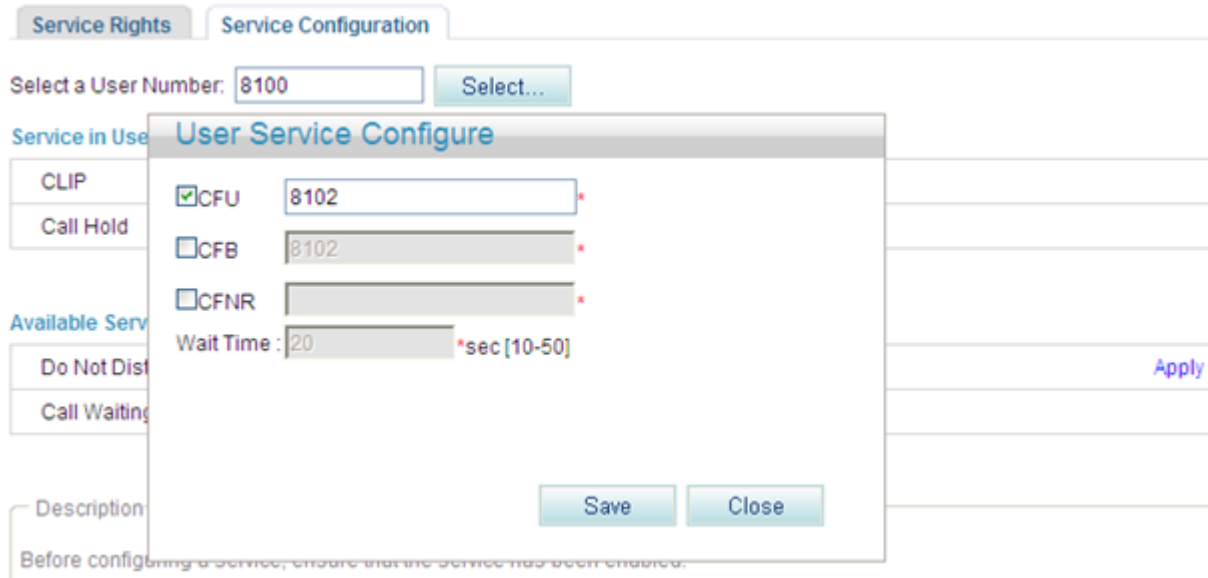
Figure 7-93 With forwarding services before (1)

This screenshot is identical to Figure 7-92, showing the 'Service Configuration' interface with the 'Service in Use' and 'Available Service' sections. The 'Call Forward' row in the 'Service in Use' table is highlighted with a pink border.

The procedure is as follows:

1. Click **Configure**.
The page shown in [Figure 7-94](#) is displayed.

Figure 7-94 With forwarding services before (2)



2. Select **CFNR**, and enter the forwarded-to number and waiting duration before forwarding.




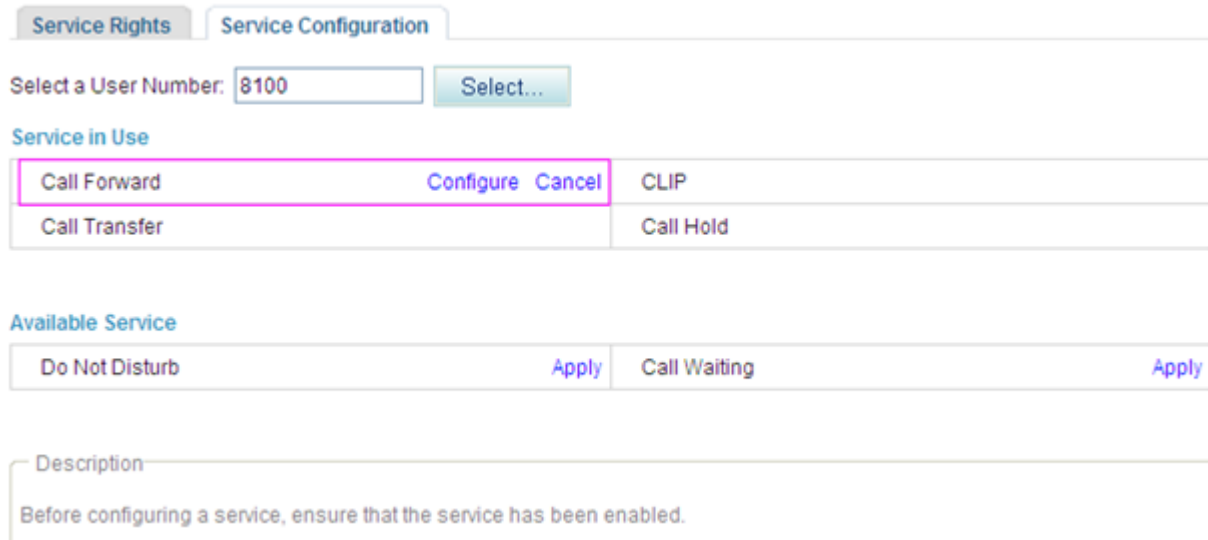
3. Click .
- [Figure 7-95](#) shows the configuration result.

Figure 7-95 Configuration result



 **NOTE**

To modify service configurations, click **Configure** corresponding to the service.

----End

Service prefix dialing mode

A user picks up the phone and dials ***61*number*time#**, where *number* is the forwarded-to number, *time* is set as waiting duration, and ***61*** is the default service prefix. To change the service prefix, see [Changing Service Prefixes](#).

Using the Service

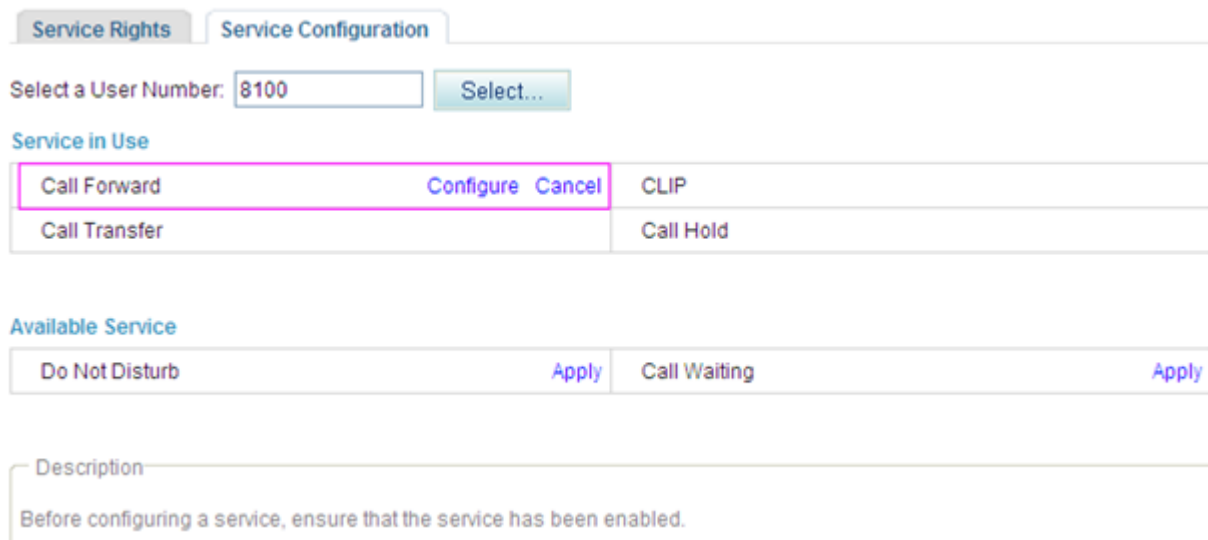
Assume that user A has enabled and configured the CFNR service (forward calls to user C). If user A does not answer a call, the call is forwarded to user C.

Canceling the Service

Web mode

Click **Cancel** on the **Service Configuration** tab page, as shown in [Figure 7-96](#).

Figure 7-96 Canceling the service



Service prefix dialing mode

A user picks up the phone and dials default service prefix **#61#**. To change the service prefix, see [Changing Service Prefixes](#).

?7.Calling Line Identity Presentation

If a user configures the calling line identity presentation (CLIP) service, the calling number is displayed on the user's phone when a call is received.

Precautions

The CLIP service conflicts with some other services. For details, see [Service Conflicts](#).

Configuring the Service

After enabling the CLIP service, users can directly use it without configuration.

Using the Service

Assume that user A has the CLIP service right. When user B calls user A, user B's number is displayed on user A's phone.

NOTE

If user B has enabled the calling line identity restriction (CLIR) service, user B's number will not be displayed on user A's phone.

?8.Calling Line Identity Restriction

If a calling user configures the calling line identity restriction (CLIR) service, the calling number is not displayed on the called user's phone even if the called user has enabled the CLIP service.

Precautions

The CLIR service conflicts with some other services. For details, see [Service Conflicts](#).

Configuring the Service

NOTE

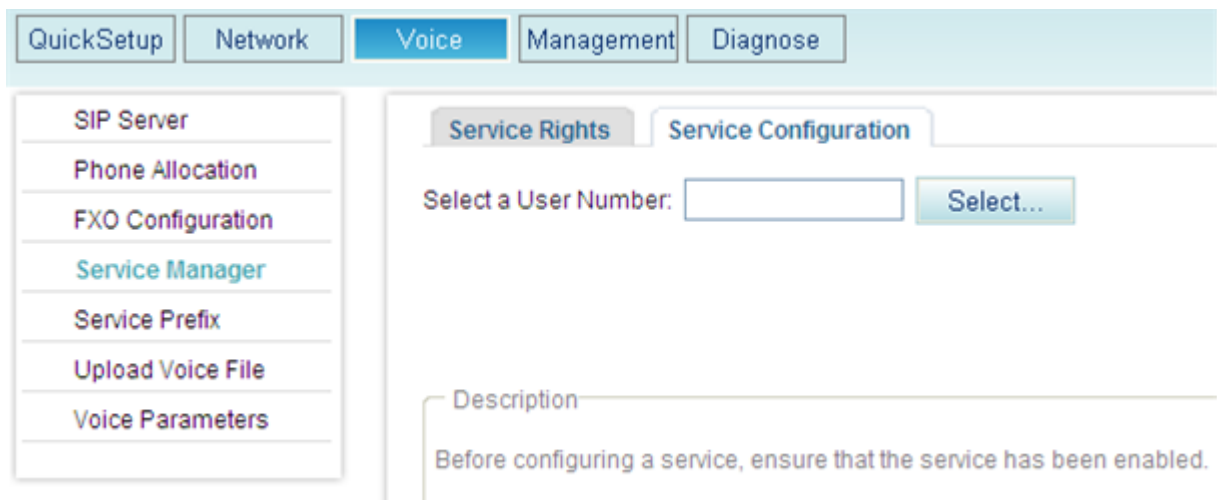
Before configuring a service, ensure that the service has been enabled. For details on how to enable voice services, see [Enabling Voice Services](#).

Step 1 On the web management system, choose **Voice > Service Manager** from the navigation tree.

Step 2 Click the **Service Configuration** tab.

The page shown in [Figure 7-97](#) is displayed.

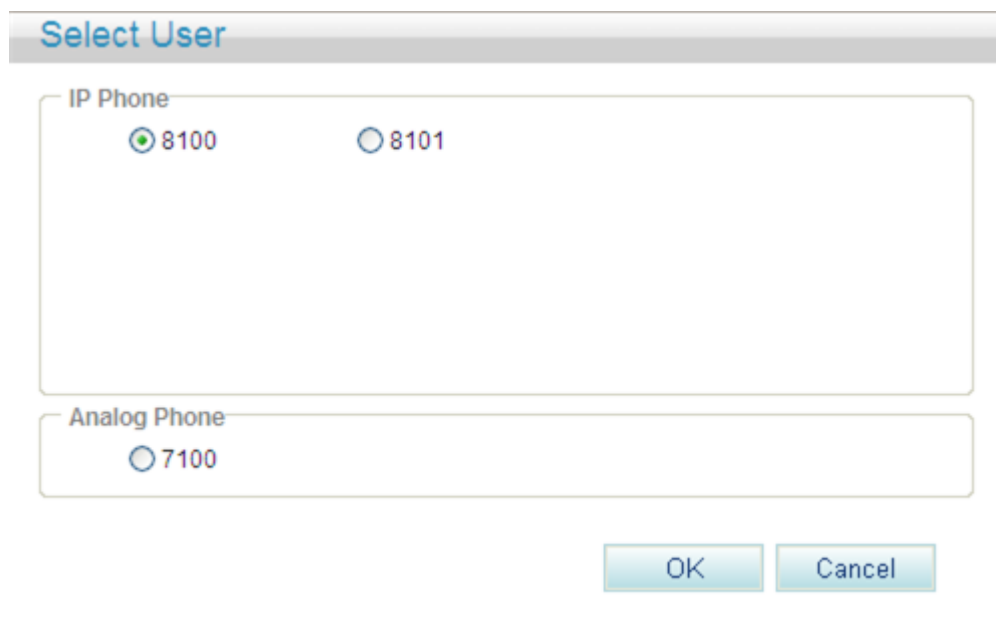
Figure 7-97 Configure Service tab page (1)




Step 3 Click .

The page shown in [Figure 7-98](#) is displayed.

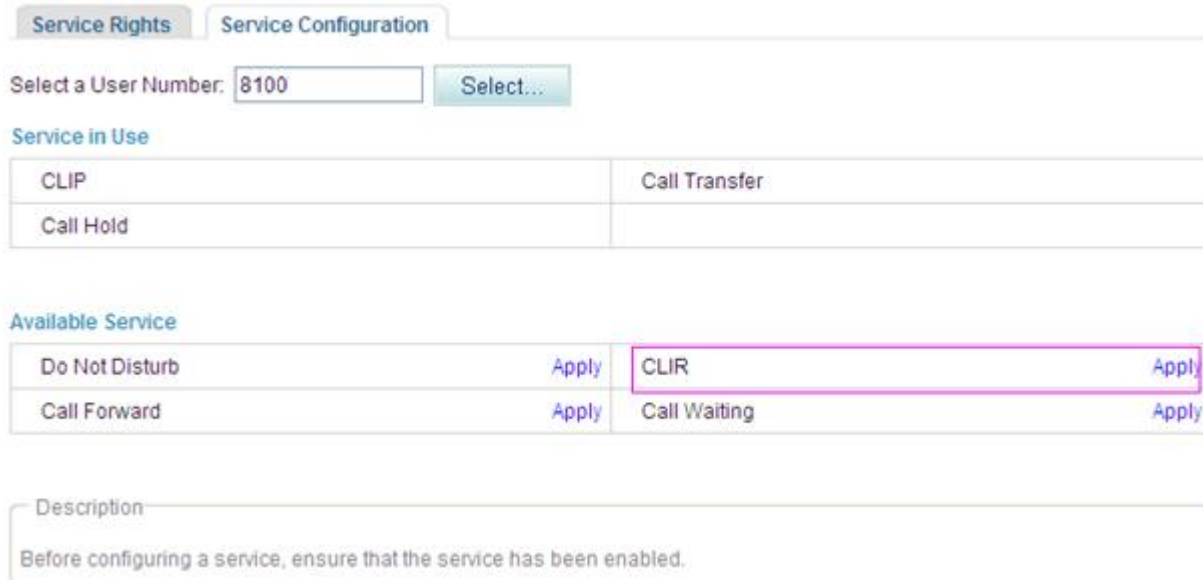
Figure 7-98 Selecting a user



Step 4 Select a user number, and click .

The page shown in [Figure 7-99](#) is displayed.

Figure 7-99 Configure Service tab page (2)



Service Rights | Service Configuration

Select a User Number:

Service in Use

CLIP	Call Transfer
Call Hold	

Available Service

Do Not Disturb	<input type="button" value="Apply"/>	CLIR	<input type="button" value="Apply"/>
Call Forward	<input type="button" value="Apply"/>	Call Waiting	<input type="button" value="Apply"/>

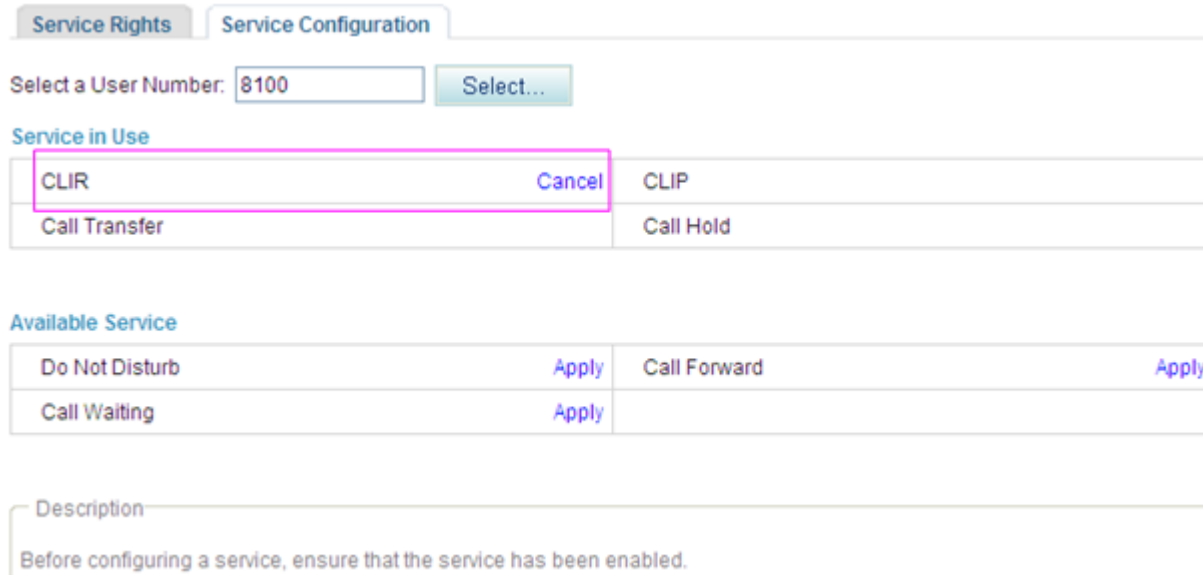
Description

Before configuring a service, ensure that the service has been enabled.

Step 5 Click **Apply**.

Figure 7-100 shows the configuration result.

Figure 7-100 Configuration result



Service Rights | Service Configuration

Select a User Number:

Service in Use

CLIR	<input type="button" value="Cancel"/>	CLIP
Call Transfer		Call Hold

Available Service

Do Not Disturb	<input type="button" value="Apply"/>	Call Forward	<input type="button" value="Apply"/>
Call Waiting	<input type="button" value="Apply"/>		

Description

Before configuring a service, ensure that the service has been enabled.

----End

Using the Service

If user A has the CLIR service right, the called user's phone does not display user A's number when user A calls the user.

Canceling the Service

Click **Cancel** on the **Service Configuration** tab page, as shown in [Figure 7-101](#).

Figure 7-101 Canceling the service

The screenshot shows a web interface with two tabs: 'Service Rights' and 'Service Configuration'. Under 'Service Configuration', there is a field 'Select a User Number:' with the value '8100' and a 'Select...' button. Below this is a section titled 'Service in Use' containing a table:

Service in Use	
CLIR	Cancel
Call Transfer	Call Hold

Below the 'Service in Use' table is an 'Available Service' section with another table:

Available Service	
Do Not Disturb	Apply
Call Forward	Apply
Call Waiting	Apply

At the bottom, there is a 'Description' box with the text: 'Before configuring a service, ensure that the service has been enabled.'

?9.Connected Line Identification Presentation

If a user configures the Connected Line Identification Presentation (COLP) service and receives a call, the user's phone displays the called number or forwarded-to number.

Precautions

The COLP service conflicts with some other services. For details, see [Service Conflicts](#).

Configuring the Service

After enabling the COLP service, users can directly use it without configuration. For details on how to enable voice services, see [Enabling Voice Services](#).

Using the Service

Assume that user A has the COLP service right and user B has enabled the call forwarding service (forward to user C). When user A calls user B, the call is forwarded to user C and user A's phone displays user C's number.



NOTE

Only the specified phone models support the COLP service, such as Polycom and Snom.

?10.Connected Line Identity Restriction

If a user configures the Connected Line Identification Restriction (COLR) service and receives a call, the user's number is not displayed on the calling user's phone.

Precautions

The COLR service conflicts with some other services. For details, see [Service Conflicts](#).

Configuring the Service

After enabling the COLR service, users can directly use it without configuration. For details on how to enable voice services, see [Enabling Voice Services](#).

Using the Service

Assume that user B has enabled the call forwarding service (forward to user C) and user C has the COLR service right. When user A calls user B, user A's phone does not display user C's number even if user A has enabled the COLP service.

If the COLR service is set by the called user, the calling user's phone model is specified, such as Polycom and Snom.

?11.Call Completion on Busy Subscriber

If user A configures the call completion on busy subscriber (CCBS) service and user B calls user A but user A is busy, user B can select callback upon busy as prompted. Then the EGW1520 calls user A when user A is idle. After user A picks up the phone, the EGW1520 calls user B. Then user B picks up the phone and talks with user A.

Precautions

The CCBS service conflicts with some other services. For details, see [Service Conflicts](#).

Configuring the Service

Web mode



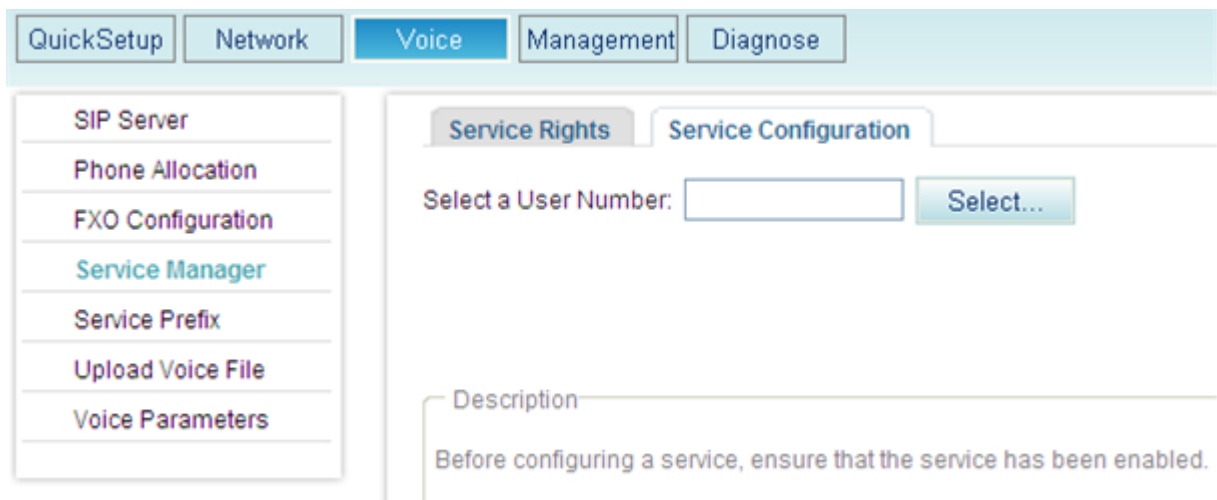
Before configuring a service, ensure that the service has been enabled. For details on how to enable voice services, see [Enabling Voice Services](#).

Step 1 On the web management system, choose **Voice > Service Manager** from the navigation tree.

Step 2 Click the **Service Configuration** tab.

The page shown in [Figure 7-102](#) is displayed.

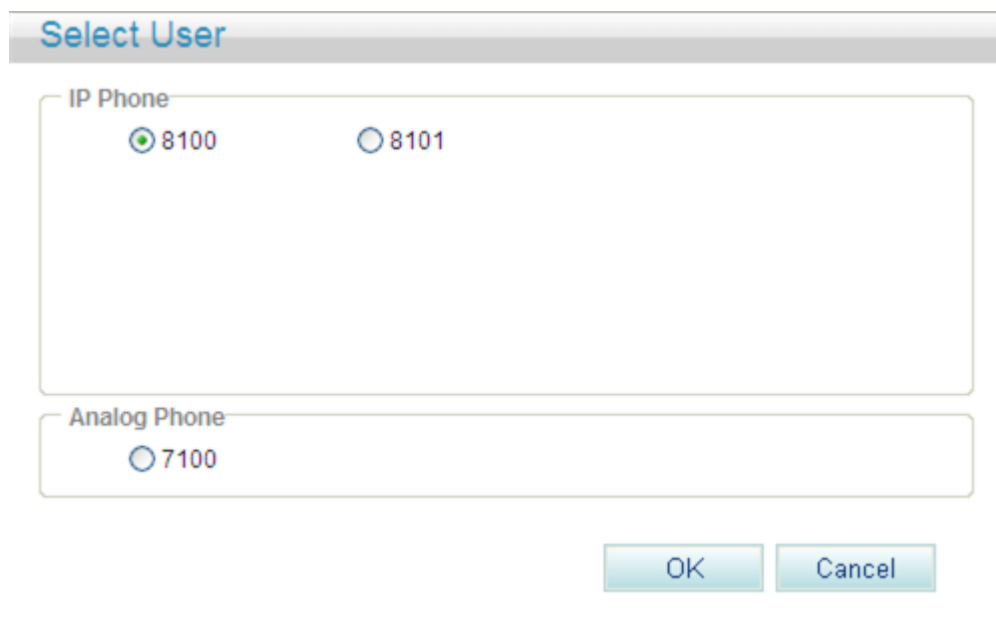
Figure 7-102 Configure Service tab page (1)

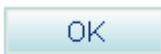


Step 3 Click .

The page shown in [Figure 7-103](#) is displayed.

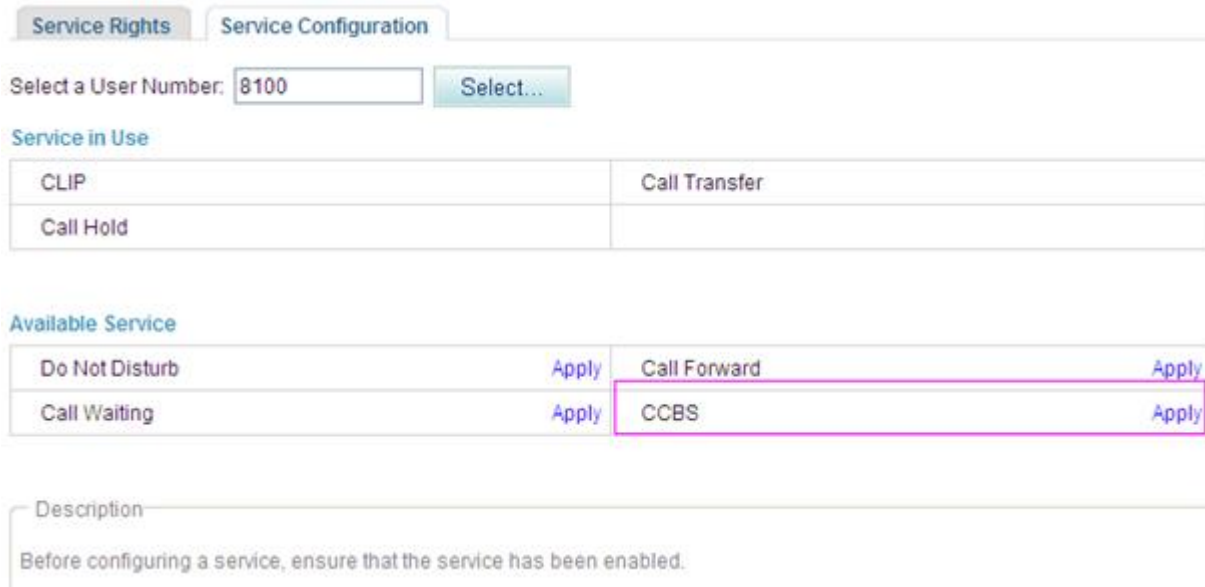
Figure 7-103 Selecting a user



Step 4 Select a user number, and click .

The page shown in [Figure 7-104](#) is displayed.

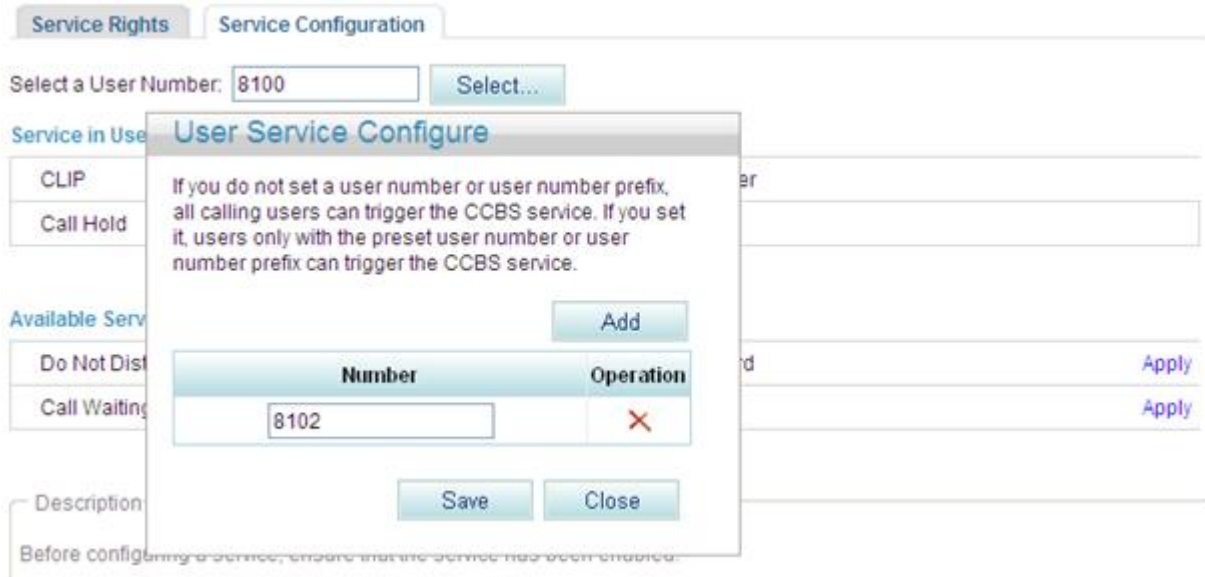
Figure 7-104 Configure Service tab page (2)




Step 5 Click **Apply**.

The page shown in [Figure 7-105](#) is displayed.

Figure 7-105 Configure Service tab page (3)



Step 6 Click  to set the user number or user number prefix for triggering the CCBS service.

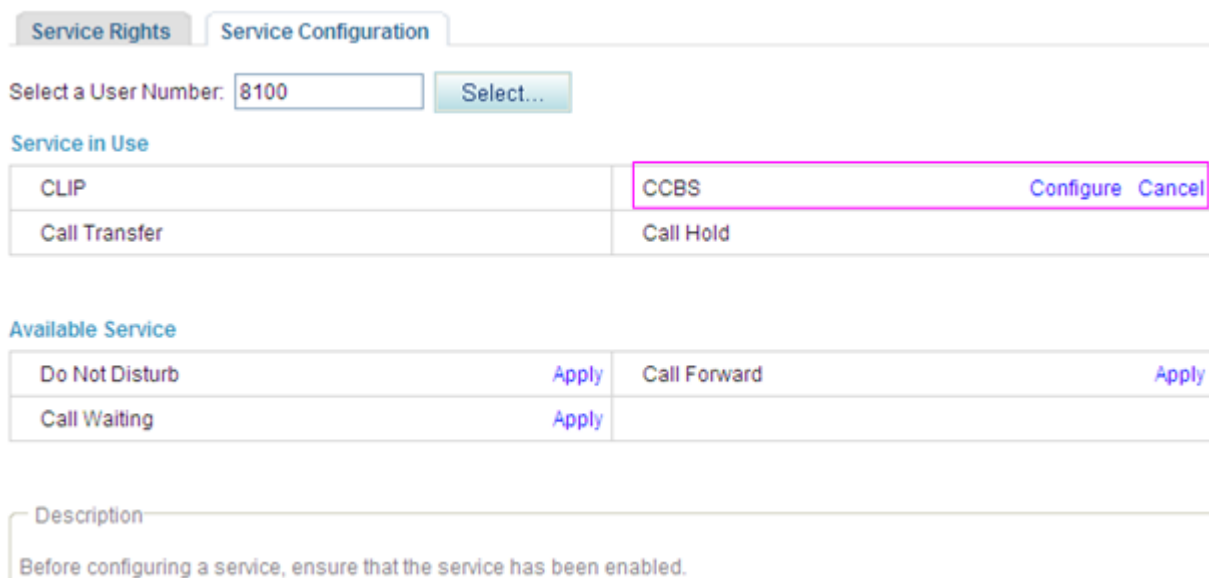
 **NOTE**

If you do not set a user number or user number prefix, all calling users can trigger the CCBS service. If you set it, only users with the preset user number or user number prefix can trigger the CCBS service.

Step 7 Click  .

Figure 7-106 shows the configuration result.

Figure 7-106 Configuration result



Service Rights Service Configuration

Select a User Number:

Service in Use

CLIP	CCBS Configure Cancel
Call Transfer	Call Hold

Available Service

Do Not Disturb Apply	Call Forward Apply
Call Waiting Apply	

Description

Before configuring a service, ensure that the service has been enabled.

----End

Service prefix dialing mode

A user picks up the phone and dials service prefix *37#, where *37# is the default service prefix. To change the service prefix, see [Changing Service Prefixes](#).

Using the Service

Assume that user A has enabled and configured the CCBS service.

If user A configures the CCBS service and user B calls user A but user A is busy, user B can select callback upon busy as prompted. Then the EGW1520 calls user A when user A is idle. After user A picks up the phone, the EGW1520 calls user B. Then user B picks up the phone and talks with user A.

Canceling the Service

Web mode

Click **Cancel** on the **Service Configuration** tab page, as shown in [Figure 7-107](#).

Figure 7-107 Canceling the service

The screenshot shows a web interface with two tabs: 'Service Rights' and 'Service Configuration'. Under 'Service Configuration', there is a field 'Select a User Number:' with the value '8100' and a 'Select...' button. Below this is a section titled 'Service in Use' containing a table:

CLIP	CCBS	Configure	Cancel
Call Transfer	Call Hold		

Below the 'Service in Use' table is a section titled 'Available Service' containing another table:

Do Not Disturb	Apply	Call Forward	Apply
Call Waiting	Apply		

At the bottom, there is a 'Description' section with the text: 'Before configuring a service, ensure that the service has been enabled.'

Service prefix dialing mode

A user picks up the phone and dials default service prefix **#37#**. To change the service prefix, see [Changing Service Prefixes](#).

?12.Do Not Disturb

After a user enables the Do Not Disturb (DND) service, the EGW1520 will block all incoming calls to the user.

NOTE

If a user uses an IP phone and enables the DND function on the IP phone, the user will not receive any calls even if the DND service is not enabled on the EGW1520. For details on how to enable the DND function on an IP phone, see the IP phone user guide.

Precautions

The DND service conflicts with some other services. For details, see [Service Conflicts](#).

Configuring the Service

Web mode

NOTE

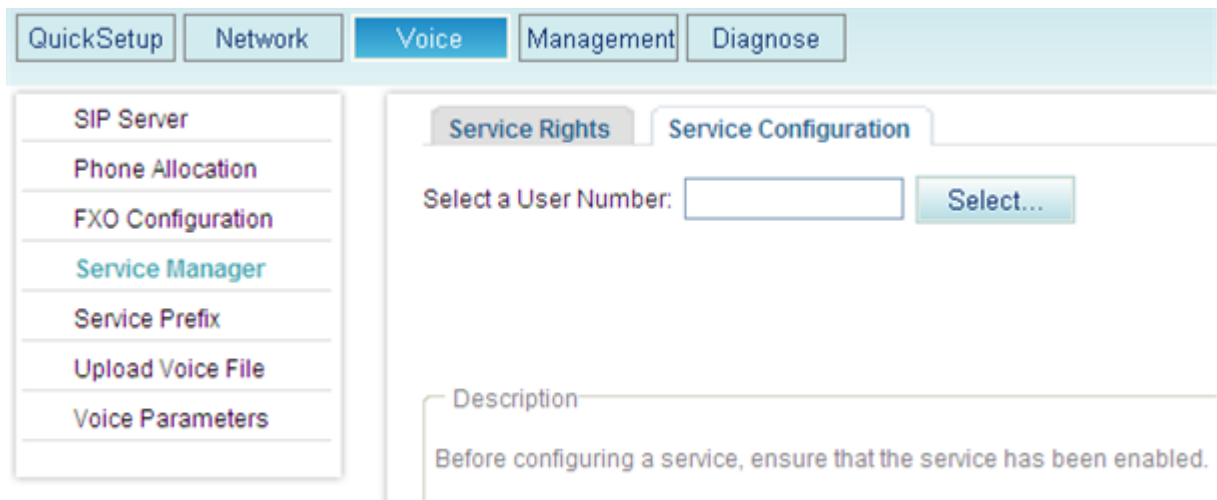
Before configuring a service, ensure that the service has been enabled. For details on how to enable voice services, see [Enabling Voice Services](#). By default, the DND service is enabled.

Step 1 On the web management system, choose **Voice > Service Manager** from the navigation tree.

Step 2 Click the **Service Configuration** tab.

The page shown in [Figure 7-108](#) is displayed.

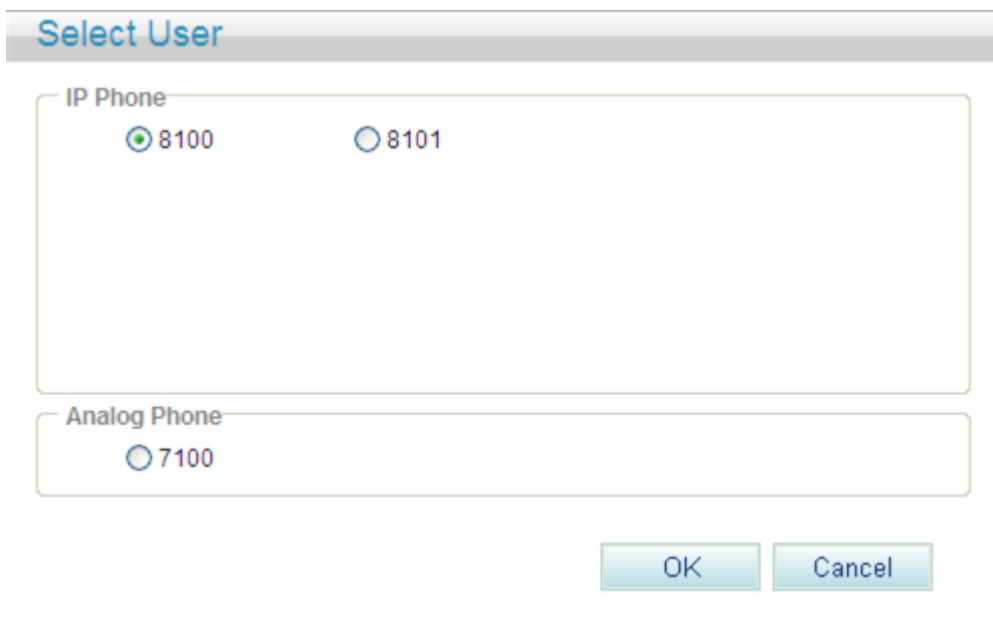
Figure 7-108 Configure Service tab page (1)



Step 3 Click .

The page shown in [Figure 7-109](#) is displayed.

Figure 7-109 Selecting a user



Step 4 Select a user number.

Step 5 Click .

The page shown in [Figure 7-110](#) is displayed.

Figure 7-110 Configure Service tab page (2)

Service Rights | Service Configuration

Select a User Number:

Service in Use

CLIP	Call Transfer
Call Hold	

Available Service

Do Not Disturb	<input type="button" value="Apply"/>	Call Forward	<input type="button" value="Apply"/>
Call Waiting	<input type="button" value="Apply"/>		

Description

Before configuring a service, ensure that the service has been enabled.

Step 6 Click **Apply**.

[Figure 7-111](#) shows the configuration result.

Figure 7-111 Configuration result

Service Rights | Service Configuration

Select a User Number:

Service in Use

Do Not Disturb	<input type="button" value="Cancel"/>	CLIP
Call Transfer		Call Hold

Available Service

Call Forward	<input type="button" value="Apply"/>	Call Waiting	<input type="button" value="Apply"/>
--------------	--------------------------------------	--------------	--------------------------------------

Description

Before configuring a service, ensure that the service has been enabled.

----End

Service prefix dialing mode

In addition to the preceding web mode, you can also dial a prefix to configure the service. For example, pick up the phone and dial default service prefix *56#. To change the service prefix, see [Changing Service Prefixes](#).

Using the Service

Assume that user A has enabled and configured the DND service. When other users call user A, they will hear the DND announcement but user A can still make calls.

Canceling the Service

Web mode

Click **Cancel** on the **Service Configuration** tab page, as shown in [Figure 7-112](#).

Figure 7-112 Canceling the service

The screenshot shows a web interface with two tabs: 'Service Rights' and 'Service Configuration'. Below the tabs, there is a 'Select a User Number' field containing '8100' and a 'Select...' button. The 'Service in Use' section contains a table with two rows: 'Do Not Disturb' and 'Call Transfer'. The 'Do Not Disturb' row has a 'Cancel' button highlighted with a red box. The 'Available Service' section contains a table with two rows: 'Call Forward' and 'Call Waiting'. The 'Call Forward' row has an 'Apply' button, and the 'Call Waiting' row has an 'Apply' button. Below the tables, there is a 'Description' section with the text: 'Before configuring a service, ensure that the service has been enabled.'

Service prefix dialing mode

Pick up the phone and dial the default service prefix #56#. To change the service prefix, see [Viewing and Changing Service Prefixes](#).

?13.Call Waiting

When a user that uses the call waiting service in a conversation receives a new call, the user can follow the phone prompt to suspend or end the original call within 15 seconds to answer the new called user.

Precautions

The call waiting service conflicts with some other services. For details, see [Service Conflicts](#).

Configuring the Service

Web mode

 **NOTE**

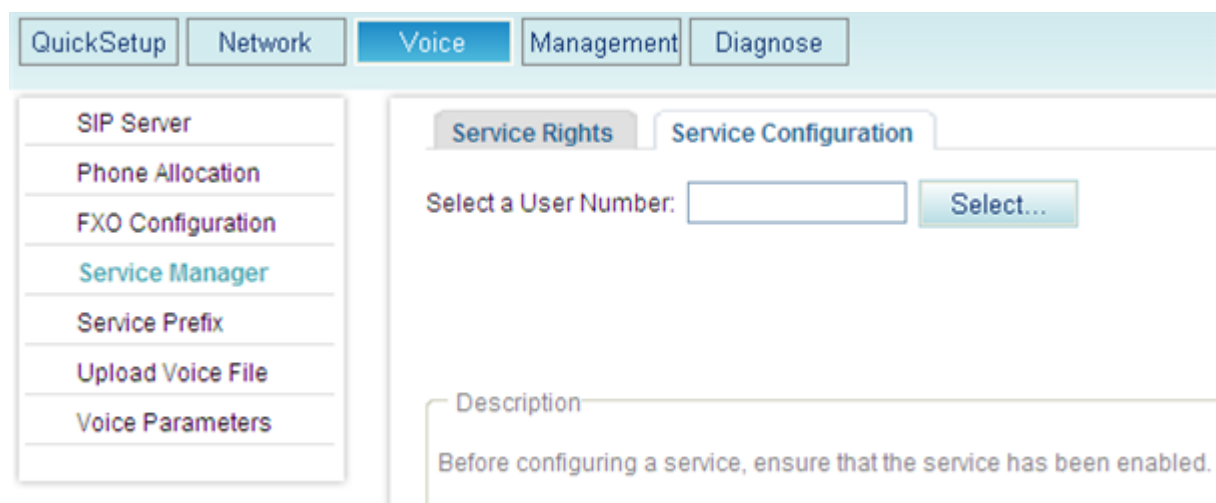
Before configuring a service, ensure that the service has been enabled. For details on how to enable voice services, see [Enabling Voice Services](#). By default, the call waiting service is enabled.

Step 1 On the web management system, choose **Voice > Service Manager** from the navigation tree.

Step 2 Click the **Service Configuration** tab.

The page shown in [Figure 7-113](#) is displayed.

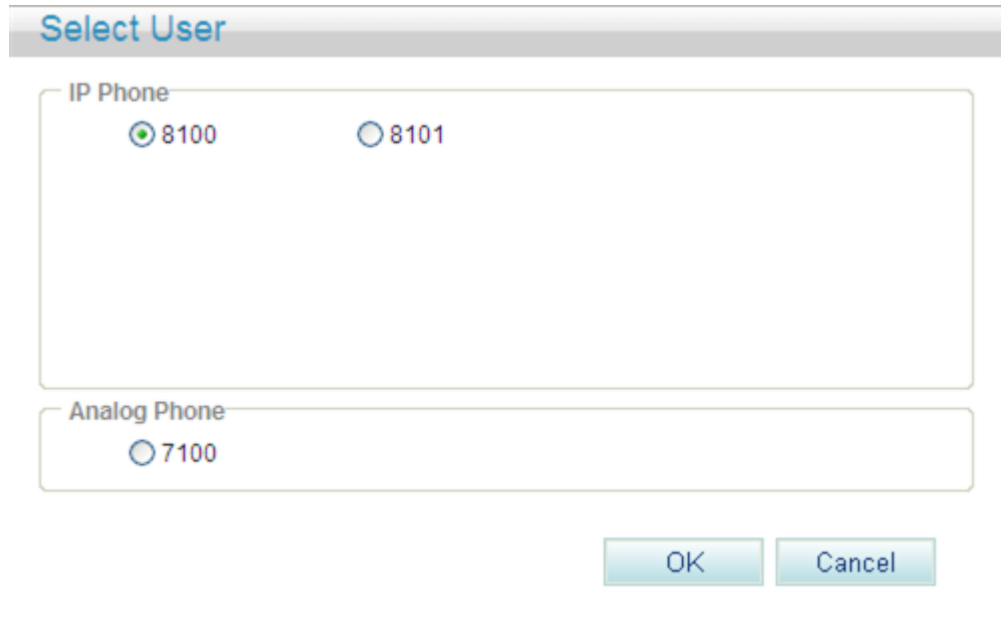
Figure 7-113 Configure Service tab page (1)



Step 3 Click  .

The page shown in [Figure 7-114](#) is displayed.

Figure 7-114 Selecting a user

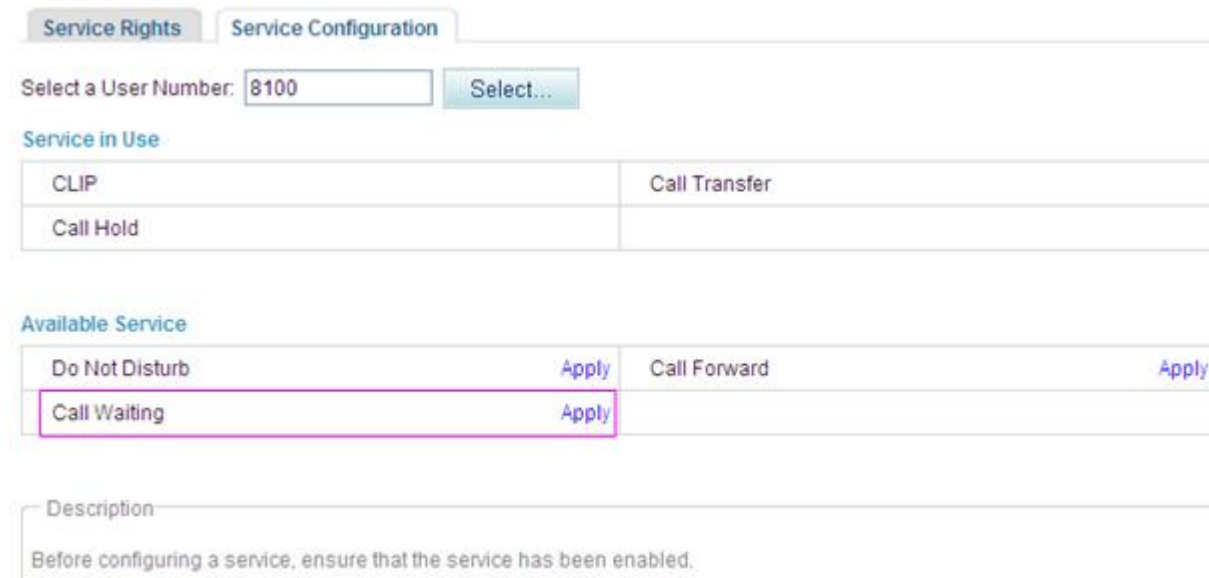


Step 4 Select a user number.

Step 5 Click .

The page shown in [Figure 7-115](#) is displayed.

Figure 7-115 Configure Service tab page (2)



Step 6 Click **Apply**.

[Figure 7-116](#) shows the configuration result.

Figure 7-116 Configuration result

Service Rights Service Configuration

Select a User Number:

Service in Use

Call Waiting	<input type="button" value="Cancel"/>	CLIP
Call Transfer		Call Hold

Available Service

Do Not Disturb	<input type="button" value="Apply"/>	Call Forward	<input type="button" value="Apply"/>
----------------	--------------------------------------	--------------	--------------------------------------

Description

Before configuring a service, ensure that the service has been enabled.

----End

Service prefix dialing mode

In addition to the preceding web mode, you can also dial a prefix to configure the service. For example, pick up the phone and dial default service prefix *43#. To change the service prefix, see [Changing Service Prefixes](#).

Using the Service

Assume that user A is talking with user B. User C calls user A and user A listens to a prompt tone which indicates that a new call is received. The process of using the service varies according to the phone that user A uses.

NOTE

The call waiting service is unavailable if user A is using the night service.

- When using an analog phone, user A can:
 - Press the hook flash button to suspend the call with user B for a while. Press 2 after hearing a dial tone to talk with user C.
 - Press the hook flash button to end the call with user B. Press 1 to talk with user C.
 - Reject user C's call.
 - Method 1: Continue the conversation with user B. The prompt tone automatically disappears after 15 seconds and user C hears a busy tone.
 - Method 2: Press the hook flash button and press 0.
- When using an IP phone, user A can:
 1. The indicator corresponding to another line on the IP phone turns on.
 2. To talk with user C, user A presses the key representing user C's call.

During the call with user C, if user A presses the key representing user B's call, the call with user B resumes and the call with user C is held.

Canceling the Service

Web mode

Click **Cancel** on the **Service Configuration** tab page, as shown in [Figure 7-117](#).

Figure 7-117 Canceling the service

The screenshot shows a web interface with two tabs: 'Service Rights' and 'Service Configuration'. Under 'Service Configuration', there is a 'Select a User Number' field with '8100' and a 'Select...' button. Below this is a 'Service in Use' section with a table:

Service in Use	
Call Waiting	Cancel
Call Transfer	Call Hold

Below the table is an 'Available Service' section with a table:

Available Service	
Do Not Disturb	Apply
Call Forward	Apply

At the bottom, there is a 'Description' box containing the text: 'Before configuring a service, ensure that the service has been enabled.'

Service prefix dialing mode

Pick up the phone and dial the default service prefix **#43#**. To change the service prefix, see [Viewing and Changing Service Prefixes](#).

7.14. Malicious Caller Identification

After acknowledging a malicious call, a user can press the hook flash button and dial an access code to record the calling user information to the system for subsequent query and download.

Precautions

- The EGW1520 supports a maximum of 512 malicious call records.
- A user can save a maximum of 25 malicious call records.

Configuring the Service

After enabling the Malicious Caller Identification (MCID) service, users can directly use it without configuration. For details on how to enable voice services, see [Enabling Voice Services](#).

Using the Service

Record a malicious call.

Assume that user A has the right to use the MCID service. To record a malicious call from user B, proceed as follows: