

**eSpace IAD101H/102H/104H Integrated
Access Device
V300R001C04**

Quick Start

Issue 03

Date 2012-06-11

HUAWEI TECHNOLOGIES CO., LTD.



Huawei Technologies Co., Ltd. provides customers with comprehensive technical support and service. For any assistance, please contact our local office or company headquarters.

Huawei Technologies Co., Ltd.

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

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

Copyright © Huawei Technologies Co., Ltd. 2010-2012. 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.

The product described in this manual may include copyrighted software of Huawei Technologies Co., Ltd and possible licensors. Customers shall not in any manner reproduce, distribute, modify, decompile, disassemble, decrypt, extract, reverse engineer, lease, assign, or sublicense the said software, unless such restrictions are prohibited by applicable laws or such actions are approved by respective copyright holders under licenses.

Trademarks and Permissions



HUAWEI

, HUAWEI



and are trademarks or registered trademarks of Huawei Technologies Co., Ltd.

Other trademarks, product, service and company names mentioned are the property of their respective owners.

Notice

Some features of the product and its accessories described herein rely on the software installed, capacities and settings of local network, and may not be activated or may be limited by local network operators or network service providers. Thus the descriptions herein may not exactly match the product or its accessories you purchase.

Huawei Technologies Co., Ltd reserves the right to change or modify any information or specifications contained in this manual without prior notice or obligation.

NO WARRANTY

THE CONTENTS OF THIS MANUAL ARE PROVIDED "AS IS". EXCEPT AS REQUIRED BY APPLICABLE LAWS, NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE MADE IN RELATION TO THE ACCURACY, RELIABILITY OR CONTENTS OF THIS MANUAL.

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO CASE SHALL HUAWEI TECHNOLOGIES CO., LTD BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, OR LOST PROFITS, BUSINESS, REVENUE, DATA, GOODWILL OR ANTICIPATED SAVINGS.

Import and Export Regulations

Customers shall comply with all applicable export or import laws and regulations and will obtain all necessary governmental permits and licenses in order to export, re-export or import the product mentioned in this manual including the software and technical data therein.

Contents

1 Packing List	4
2 Safety Precautions	5
3 Installation	7
4 Manual Configuration (CLI)	8
4.1 Logging In Through Telnet.....	8
4.2 Connecting to NGN/IP PBX (SIP)	9
4.3 Accessing NGN/IP PBX (MGCP).....	14
4.4 Connecting to the IMS (SIP)	19
4.5 Accessing Network Through the IAD	24
5 Configuration (EMS)	26
6 FAQs	28
7 Technical Specifications and Environment Requirements	30

1 Packing List

After you unpack the product package, check the items in the following table. If the items in the package are different from those in the table, contact the sales person.

Item	Quantity
eSpace IAD101H/102H/104H	1
Power supply adapter	1
Network cable	1
CD-ROM	1
Quick Start	1
Certificate	1

2 Safety Precautions

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

Basic Requirements

- Follow the requirements of the manufacturer to install the device.
- Do not disassemble the device. Contact the specified maintenance station if the faults occur on the device.
- Any company or person cannot change the design of the structure, security, or performance without permission.
- Comply with the related laws and regulations, and respect the legal rights of others when using this device.

Usage Notice

- Use the accessories shipped with the product and the recommended accessories, such as the power supply adapters and batteries. The power supply voltage must meet the requirement on the input voltage of the device.
- Keep the power plug clean and dry to avoid the electric shock and other potential risks.
- Keep your hands dry when plugging in or out the device cable.
- Stop the device and turn off the power before plugging in or out the device cable.
- In the lightning weather, turn off the power and remove all the cables from the device, such as the power cable, network cable, and phone cable. Otherwise, the device may be damaged by the lightning.
- If you do not need to use the device for a long time, turn off the power and remove the power plug.
- Keep the water and other liquids away from the device. If the liquid accidentally flows into the device, turn off the power immediately and remove all the cables from the device, such as the power cables and network cables. Contact the specified maintenance station if faults occur.
- Do not use the damaged or aged cables.
- If exceptions occur, for example, the device is smoking, the sound is abnormal, or the device turns smelly, stop using the device and turn off the power immediately. Remove all the cables connected to the device, such as the power cables and network cables. Contact the specified maintenance station when faults occur.
- Prevent the objects (such as the metal) getting into the device from the heat dissipation hole.

- Avoid scratch or wear and tear on the device shell. Otherwise, the dropped paint may cause allergy or device exceptions. For example, short circuit may be caused if the paint drops into the host.
- Keep children away from the device and accessories to avoid the dangerous behaviors such as swallowing.

Cleaning Notice

- Before you clean the device, stop the device and turn off the power. Remove all the cables connected to the device, such as the power cables and network cables.
- When you clean the device, do not use the liquid cleaner or spray cleaner to clean the device shell. Use the soft cloth to wipe and clean the shell.

Environment Requirements

- Keep the device dry when storing, transporting, and using the device.
- Avoid the collision when storing, transporting, and using the device.
- Place the device in the indoor environment with good ventilation and without direct and strong sunlight.
- Keep the device clean to avoid dust.
- Do not place any object on the device to avoid the overheating of the device or damage caused by extrusion.
- Clear the space with the radius of over 10 cm around the device for heat dissipation.
- Keep the device away from the heat sources or exposed fire, such as the electrical heater or candle.
- Keep the device away from the appliance with the strong magnetic field or intensive electric field, such as the microwave oven, fridge, or mobile phone.

Environment Protection

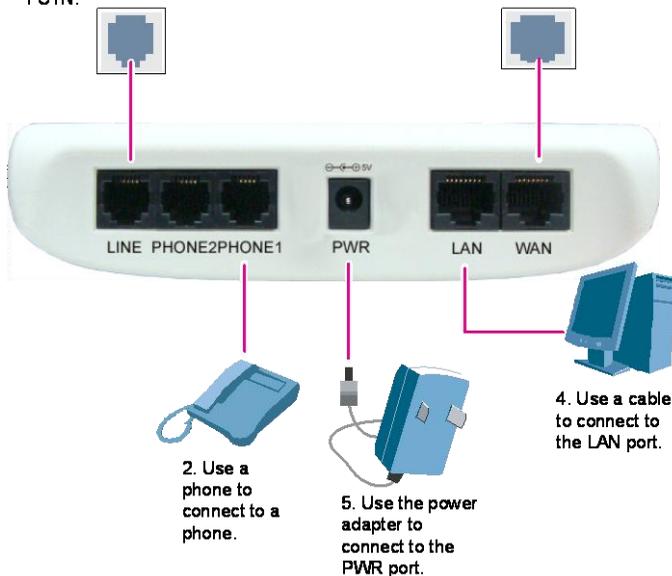
- Do not discard the obsolete devices or batteries randomly. Discard them at the specified recycle station.
- Comply with the local laws and regulations on processing the device package materials, consumed batteries, and obsolete devices, and support the recycling.

3 Installation

The eSpace Integrated Access Device 101H/102H/104H (eSpace IAD101H/102H/104H) is the case-shaped device. You only need to connect cables.

3. Connect the power-off survival port for only IAD101H&102H. Use a phone line to connect to the phone port, thus accessing the PSTN.

1. Used for connecting to the uplink device. Use a cable to connect to the network adapter of the uplink device (such as switch and route).



NOTE

The IAD101H/102H/104H installation is similar. The IAD102H is taken as an example.

4 Manual Configuration (CLI)

About This Chapter

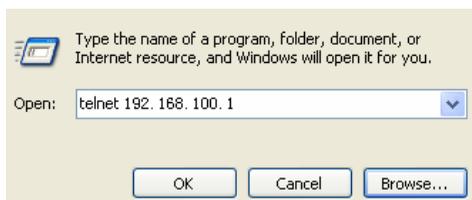
You can use the CLI to configure all eSpace Integrated Access Device (IAD) functions. The chapter describes how to configure about typical scenes and advanced parameters by using the command line (CLI). In addition, some titles are marked with (SIP) or (MGCP) to indicate that these service configurations can be implemented over SIP or MGCP.

4.1 Logging In Through Telnet

The LAN port IP address of the IAD101H/102H/104H is 192.168.100.1 and 1.1.1.1 by default. You can access the command line interface (CLI) of the IAD through Telnet. For the IAD104H, serial port is an alternative access. The CLI includes an interactive Help feature. You can enter a ? to obtain help and press Spacebar to complete a command name.

Procedure

- Step 1** Connect the network port of the PC to of the IAD101H/102H/104H by a network cable, and then set IP addresses of the PC and IAD in the same network segment. For example, the default IP address of the IAD is 192.168.100.1, the PC address of the PC can be set to 192.168.100.2, and the subnet mask to 255.255.255.0. Ensure that you can ping **192.168.100.1** successfully.
- Step 2** Choose **Start > Run**, and enter "telnet" + a blank space + the actual IP address of the IAD network port in the **Run** dialog box. Then click **OK**.



- Step 3** After a connection is established, enter user name **root** and password **admin** to log in to the IAD.

When you operate on the command line interface, you can enter a question mark (?) to obtain help, press Spacebar to complete a command name, and press the arrow key ↑ to show history commands.

**NOTE**

If you cannot access the IAD by the preceding method, set the IP address of your PC to the same IP address segment as "1.1.1.1" and the subnet mask to 255.255.255.0. If you can ping 1.1.1.1 successfully, enter **telnet 1.1.1.1** in the **Run** dialog box to log in to the IAD.

----End

P.S. How to Log In to the IAD104H

Connect your PC to the IAD through a serial cable. Choose **Start > Programs > Accessories > Communication > HyperTerminal**, input a name and select an icon in the **Connection Description**, and select "COM1" in the **Connect To** dialog box (If logging in to the CLI fails, select COM2). In the **COM1 Properties** dialog box, click **Restore Defaults** and click **OK**. Press **Enter** on the HyperTerminal interface. After the welcome interface is displayed. Enter the user name (**root** by default) and password (**admin** by default).

4.2 Connecting to NGN/IP PBX (SIP)

The users of the IAD101H/102H/104H register with the softswitch (for example, Softx3000 and SoftCo) to implement the voice service. After configuring the softswitch data, configure the IAD101H/102H/104H data to use the voice service, including basic call and fax services.

Data Preparation

In this example, the SoftCo functions as the softswitch. You can obtain the connection data and other network data such as the default gateway between the IAD and the SoftCo from the network carrier or network administrator. The following describes how to enable the voice function for an IAD101H/102H/104H user.

Table 4-1 Connection data between the IAD and the Softswitch (for example, SoftCo)

Item	Value	Parameter and Value on the IAD
Control protocol used between the softswitch and the IAD	SIP protocol	Protocol mode: SIP
IP address of the softswitch	192.169.1.40/255.255.25.5.0	IP address of the SIP server: 192.169.1.70

Item	Value	Parameter and Value on the IAD
IP address of the IAD	192.169.1.62/255.255.25.5.0	IP address of the IAD: 192.169.1.62/255.255.255.0 NOTE The IAD must be able to ping the SIP server.
SIP signaling port number on the softswitch	5060	Server port number: 5060
SIP signaling port number on the IAD	5060	local port: 5060
SIP user A	<ul style="list-style-type: none"> • Device ID (eid): 8900 • User number (dn): 8900 • Authentication type: authbyeid (based on password) • Authentication password: 1234 	<ul style="list-style-type: none"> • User ID for port 0: 8900 • Password for port 0: 1234 NOTE <ul style="list-style-type: none"> • The user ID is the same as the device ID on the softswitch, that is, the EID on the SoftCo. • The user password on the IAD is the same as the authentication password on the softswitch. The password may be used when the softswitch authenticates registered users. Contact the network carrier or softswitch administrator to determine whether to set the password and the specific password.
SIP user B	<ul style="list-style-type: none"> • Device ID (eid): 8901 • User number (dn): 8901 • Authentication type: authbyeid (based on password) • Authentication password: 1235 	User ID for port 1: 8901

Table 4-2 Other network information

Item	Data
IP address of the DNS server	192.169.1.50

Item	Data
IP address of the uplink gateway	192.169.1.1 NOTE The gateway IP address must be in the same network segment as the IAD IP address. Contact the network administrator to obtain the gateway IP address.

Procedure

Step 1 Enter the global configuration mode of the command line interface (CLI).

Open the CLI by using the user name **root** and password **admin**, and then run the following commands.

Enter the privilege mode.

```
TERMINAL>enable
```

Enter the global configuration mode.

```
TERMINAL#configure terminal
```



NOTE

- If configuring the IAD will take a long time, modify the timeout interval to prevent frequent automatic exit. (The default interval is five minutes and the maximum interval is 255 minutes.) For example, set the timeout interval to 15 minutes.

```
TERMINAL(config)#terminal timeout 15
```

- After the configuration is complete, run the **exit** command to exit the CLI to prevent failure to re-open the CLI within the preset timeout interval.
- After you exit the system, the timeout interval is reset to five minutes.

Step 2 Set the protocol mode.

Run the **display protocol-mode** command to view the current protocol mode. If the SIP mode is not used, run the **protocol-mode sip** command to change the mode.

Step 3 Set the IAD IP address.

There are three modes for obtaining an IP address: static, DHCP, and PPPoE. By default, the IP address of the IAD is **192.168.100.1** after being connected to the network. You can also use other methods for obtaining the IP address:

- static mode:

Run the **ipaddress static***ip-address subnet-mask default-gateway* command to set a fixed IP address. For example,

```
TERMINAL(config)#ipaddress static 192.169.1.62 255.255.255.0
192.169.1.1
```

- DHCP mode:

Run the **ipaddress dhcp** command to obtain an IP address through DHCP. (A DHCP server is required.) For example,

```
TERMINAL(config)#ipaddress dhcp
```

- PPPoE mode:

A PPPoE server is required. The user name and password must be the same as those on the PPPoE server. The command format is as follows:

- Run the **pppoe username user-name password password** command to set the PPPoE user name and password.
- Run the **ipaddress pppoe** command to obtain an IP address through PPPoE.
- Run **display pppoe** to view the configuration of pppoe on the IAD.

For example,

```
TERMINAL(config)#ipaddress pppoe
```

```
TERMINAL(config)#pppoe username iad password *****
```

To view the IAD IP address, run the **display ipaddress** command.



NOTE

- When the DHCP or PPPoE mode is used, the IAD may take about eight minutes to restart if the IAD cannot obtain the IP address in DHCP or PPPoE mode. Verify that the DHCP or PPPoE server is available and the server information is correct.
- Changing the IP address may disconnect the Telnet connection. Then, you should establish the Telnet connection by using a new IP address.

Step 4 (Optional) Configure the DNS.

If the DNS server is available on the network, you can configure the DNS server on the IAD so that the IAD can access other devices according to domain names.

1. Set the IP address of the DNS server

The command is **dns server ip-address**. For example:

```
TERMINAL(config)#dns server 191.168.10.50
```

2. (Optional) set a domain name suffix

The IAD automatically adds the domain name suffix to a domain name. The command is **dns domain-name domain-name**. For example, run the following command to set the domain suffix to **tele.com**:

```
TERMINAL(config)#dns domain-name tele.com
```

In this case, if the domain name of the SIP server is set to **softco**, the IAD sends **softco.tele.com** to the DNS server to obtain the IP address of the SIP server.

Run the **display dns** command to view the DNS status.

Step 5 Configure the SIP server.

Run the **sip server index address ip-address** command to configure the IP address of the SIP server.

```
TERMINAL(config)#sip server 0 address 192.169.1.40
```

**NOTE**

There are three modes to obtain the IP address of the SIP server, consisting of STATIC, DNS and DHCP.

- If the DNS is configured, you can set the domain name of the SIP server in static mode or select the DNS mode to configure the SIP server. For details, see the Manual Configuration (CLI) in the CD-ROM.
- If the IP address of the SIP server is obtained in DHCP mode, you can configure the SIP server in DHCP mode.

By default, the IAD registers with the server whose *index* is **0**. If the server is faulty, the IAD registers with standby server 1. If standby server 1 is faulty, the IAD registers with standby server 2. You can run the **sip server-autoswitch enable** command to enable automatic switch between servers. The server whose index is 0 is the active server, the servers whose indexes are 1 and 2 are standby servers. If the active server has been restored when the IAD registers with a standby server, the IAD re-registers with the active server.

Step 6 Configure the SIP user.**NOTE**

For details about mapping between user cable colors and ports, see in the Appendix.

Run the **sip user port-number id** command, where *port-number* is **0** and *id* is **88880008** (the **ID** must have been set on the SIP server; otherwise, the user cannot register with the SIP server).

```
TERMINAL(config)#sip user 0 id 8900
```

```
TERMINAL(config)#sip user 0 id 8901
```

Run the **display sip attribute port-number** command to view the configuration result.

Step 7 (Optional) Synchronize the system time with the SNTP server time.

This provides log and alarm records with an accurate time for reference.

Choose the SNTP server:

- You can configure a computer as the SNTP server where the Windows Time service is enabled. The computer must be always on. To check whether the Windows Time service is enabled on a computer, choose **Control Panel > Management Tools > Services**.

**NOTE**

If you configure a computer as the SNTP server, make sure the firewall of the computer is closed.

- If the SIP server provides the SNTP service, you can configure the SIP server as the SNTP server.

Synchronize the system time with the SNTP server time:

1. Run the **sntp server address ip-address** command to set the IP address for an SNTP server.

**NOTE**

If the DNS is configured, you can run the **sntp server name** *domain-name* command to set the SNTP server domain name.

2. Run the **sntp interval**<0-3600> command to set the synchronization interval. If the synchronization interval is 0, the system time of the IAD does not synchronize with the SNTP server time.
3. Run the **sntp time-zone** {+ <0-13> | - <1-12>} command to set the time zone. For example, to set the Beijing time, which is in the time zone GMT+8.

```
TERMINAL(config)#sntp time-zone + 8
```

You can run the **display sntp** command to view the SNTP server status.

```
TERMINAL(config)#display sntp
-----
SNTP server           : 191.168.10.44
Local time zone      : +8
Synchronization interval : 2Sec.
state                 : available
-----
```

Step 8 Run the **write** command to save the settings.

The command is:

```
TERMINAL(config)#write
```

----End

4.3 Accessing NGN/IP PBX (MGCP)

The users of the IAD101H/102H/104H register with the softswitch (for example, Softx3000 and SoftCo) to implement the voice service. After configuring the softswitch data, configure the IAD101H/102H/104H data to use the voice service, including basic call and fax services.

Data Plan

In this example, the Softx3000 functions as the MGC server. You can obtain the connection data between the IAD and the Softx3000 from the network carrier or network administrator. The following data is for reference only.

Table 4-3 Connection data between the IAD and the Softx3000

Item	Parameter Value	Parameter and Value on the IAD
Control protocol used between the SoftX3000 and the IAD	MGCP protocol	Protocol mode: MGCP

Item	Parameter Value	Parameter and Value on the IAD
IP address of the IFMI board on the SoftX3000	192.169.1.70/255.255.25.5.0	IP address of the MGC server: 192.169.1.70
IP address of the IAD	192.169.1.62/255.255.25.5.0	IP address of the IAD: 192.169.1.62/255.255.255.0 NOTE The IAD must be able to ping the MGC server.
Domain name of the IAD	shenzhen	MG domain name: shenzhen
MGCP local UDP port number on the Softx3000	2727	MGC port number: 2727
MGCP local UDP port number on the IAD	2427	MG port number: 2427
Encryption algorithm	MD5	Authentication mode: HW-Mode
Encryption key	12345678	Key: 12345678
Number of the user A (whose device ID is 0)	6540000	User number for port 0: 6540000
Number of the user B (whose device ID is 1)	6540001	User number for port 1: 6540001

Table 4-4 Other network information

Item	Data
IP address of the DNS server	192.169.1.50
IP address of the uplink gateway	192.169.1.1 NOTE The gateway IP address must be in the same network segment as the IAD IP address. Contact the network administrator to obtain the gateway IP address.

Procedure

Step 1 Enter the global configuration mode of the command line interface (CLI).

Open the CLI by using the user name **root** and password **admin**, and then run the following commands.

Enter the privilege mode.

```
TERMINAL>enable
```

Enter the global configuration mode.

```
TERMINAL#configure terminal
```



NOTE

- If configuring the IAD will take a long time, modify the timeout interval to prevent frequent automatic exit. (The default interval is five minutes and the maximum interval is 255 minutes.) For example, set the timeout interval to 15 minutes.

```
TERMINAL(config)#terminal timeout 15
```

- After the configuration is complete, run the **exit** command to exit the CLI to prevent failure to re-open the CLI within the preset timeout interval.
- After you exit the system, the timeout interval is reset to five minutes.

Step 2 Set the protocol mode.

Run the **display protocol-mode** command to view the current protocol mode. If not MGCP mode, run the **protocol mode mgcp** command to change the mode.

Step 3 Set the IAD IP address.

There are three modes for obtaining an IP address: static, DHCP, and PPPoE. By default, the IP address of the IAD is **192.168.100.1** after being connected to the network. You can also use other methods for obtaining the IP address:

- static mode:

Run the **ipaddress staticip-address subnet-mask default-gateway** command to set a fixed IP address. For example,

```
TERMINAL(config)#ipaddress static 192.169.1.62 255.255.255.0
192.169.1.1
```

- DHCP mode:

Run the **ipaddress dhcp** command to obtain an IP address through DHCP. (A DHCP server is required.) For example,

```
TERMINAL(config)#ipaddress dhcp
```

- PPPoE mode:

A PPPoE server is required. The user name and password must be the same as those on the PPPoE server. The command format is as follows:

- Run the **pppoe usernameuser-namepasswordpassword** command to set the PPPoE user name and password.
- Run the **ipaddress pppoe** command to obtain an IP address through PPPoE.
- Run **display pppoe** to view the configuration of pppoe on the IAD.

For example,

```
TERMINAL(config)#ipaddress pppoe
TERMINAL(config)#pppoe username iad password *****
```

To view the IAD IP address, run the **display ipaddress** command.



NOTE

- When the DHCP or PPPoE mode is used, the IAD may take about eight minutes to restart if the IAD cannot obtain the IP address in DHCP or PPPoE mode. Verify that the DHCP or PPPoE server is available and the server information is correct.
- Changing the IP address may disconnect the Telnet connection. Then, you should establish the Telnet connection by using a new IP address.

Step 4 Set the registered domain.

Run **mgcp mg-domain-name** *name*. The *name* of the IAD, which is registered on the MGC server, is iad001.

```
TERMINAL(config)#mgcp mg-domain-name iad001
```

You can run **undo mgcp mg-domain-name** to delete the registered domain of the IAD.

Step 5 (Optional) Configure the DNS.

Run **dns server** *ip-address* to set the IP address of the DNS server. Then the IAD can access other network devices according to their domain names.

You can also run **dns domain-name** *domain-name* to set the domain name suffix that indicates where the IAD is located. The IAD automatically adds the domain name suffix when accessing other network devices according to domain names. For example, if the domain name suffix is set to **tele.com**, and the domain name of the MGC server is **softco**, the IAD automatically sends the **softco.tele.com** domain name to the DNS server for parsing when accessing the MGC server. (Note: The IP address corresponding to the domain name must be set on the DNS server so that the domain name can be parsed successfully.)

You can run **display dns** to view the status of the DNS.

Step 6 Configure the MGC server.

Run **mgcp mgc index address** *ip-address*. The index is **1**, and the IP address is **191.168.10.20**.

```
TERMINAL(config)#mgcp mgc 1 address 191.168.10.20
```



NOTE

- If the DNS is configured, you can run **mgcp mgc index address** *domain-name* to set the address of the MGC server.
- You can set the *index* to 2 to configure a backup MGC server. The IAD registers to the MGC server of *index* 1; if the registration fails, the IAD registers to the MGC server of *index* 2 to ensure the normal running of the service.

Run **display mgcp attribute** to view the configuration result.

Step 7 (Optional) Synchronize the system time with the SNTP server time.

This provides log and alarm records with an accurate time for reference.

Choose the SNTP server:

- You can configure a computer as the SNTP server where the Windows Time service is enabled. The computer must be always on. To check whether the Windows Time service is enabled on a computer, choose **Control Panel > Management Tools > Services**.



NOTE

If you configure a computer as the SNTP server, make sure the firewall of the computer is closed.

- If the SIP server provides the SNTP service, you can configure the SIP server as the SNTP server.

Synchronize the system time with the SNTP server time:

1. Run the **sntp server address** *ip-address* command to set the IP address for an SNTP server.



NOTE

If the DNS is configured, you can run the **sntp server name** *domain-name* command to set the SNTP server domain name.

2. Run the **sntp interval***<0-3600>* command to set the synchronization interval. If the synchronization interval is 0, the system time of the IAD does not synchronize with the SNTP server time.
3. Run the **sntp time-zone** {+ *<0-13>* | - *<1-12>*} command to set the time zone. For example, to set the Beijing time, which is in the time zone GMT+8.

```
TERMINAL(config)#sntp time-zone + 8
```

You can run the **display sntp** command to view the SNTP server status.

```
TERMINAL(config)#display sntp
```

```
-----
SNTP server           : 191.168.10.44
Local time zone       : +8
Synchronization interval : 2Sec.
state                 : available
-----
```

Step 8 (Optional) Configure the MG authentication information.

Run **mgcp authentication** to prevent illegal MG devices from registering with the MGC server.

Step 9 Run the following command to save your settings:

```
TERMINAL(config)#write
```

----End

4.4 Connecting to the IMS (SIP)

The IAD101H/102H/104H can connect to the IMS directly or through SoftSwitch. If the IAD connects to the IMS through SoftSwitch, configure the IAD according to the scenario where the IAD connects to the IP PBX. This topic describes the scenario where IAD users directly register with the IMS. After configuring data on the IMS, configure the IAD101H/102H/104H so that the IAD101H/102H/104H can provide voice services, including basic call and fax services.

Data Plan

You can obtain the connection data between the IAD and the IMS from the network carrier or network administrator. The following describes how to enable the voice function for an IAD101H/102H/104H user.

Table 4-5 Connection data between the IAD and the IMS

Item	Value	Parameter and Value on the IAD
Control protocol used between the IMS and the IAD	SIP protocol	Protocol mode: SIP
IP address of the SBC server	192.169.1.40/255.255.255.0	IP address of the SIP server: 192.169.1.40 NOTE The IP address of the SIP server is the IP address of the P-CSCF or SBC. Set the parameter based on the site requirements.
IP address of the IAD	192.169.1.62/255.255.255.0	IP address of the IAD: 192.169.1.62/255.255.255.0 NOTE The IAD must be able to ping the SIP server.
SIP signaling port number on the IAD	5060	Server port number: 5060
SIP signaling port number on the IAD	5060	Local port number: 5060
Domain name of the IAD	abc.def.com	User domain name: abc.def.com NOTE The user domain name must be unique.

Item	Value	Parameter and Value on the IAD
Wildcard group A	<ul style="list-style-type: none"> • IMPU: +8657143210000 • IMPI: +8657143210000@abc.def.com • Password: 654321 • User numbers: +8657143210001 and +8657143210002 	Wildcard group information: <ul style="list-style-type: none"> • IMPU: +8657143210000 • IMPI: +8657143210000@abc.def.com • Password: 654321
SIP user A	<ul style="list-style-type: none"> • IMPU: +8657143210001 • IMPI: +8657143210001@abc.def.com • Password: 123456 	<ul style="list-style-type: none"> • User ID: +8657143210001 • User name: +8657143210001@abc.def.com • Password: 123456
SIP user B	<ul style="list-style-type: none"> • IMPU: +8657143210002 • IMPI: +8657143210002@abc.def.com • Password: 123457 	<ul style="list-style-type: none"> • User ID: +8657143210002 • User name: +8657143210002@abc.def.com • Password: 123457

Table 4-6 Other network information

Item	Data
IP address of the DNS server	192.169.1.50
IP address of the uplink gateway	192.169.1.1 NOTE The gateway IP address must be in the same network segment as the IAD IP address. Contact the network administrator to obtain the gateway IP address.

Procedure

Step 1 Enter the global configuration mode of the command line interface (CLI).

Open the CLI by using the user name **root** and password **admin**, and then run the following commands.

Enter the privilege mode.

```
TERMINAL>enable
```

Enter the global configuration mode.

```
TERMINAL#configure terminal
```



NOTE

- If configuring the IAD will take a long time, modify the timeout interval to prevent frequent automatic exit. (The default interval is five minutes and the maximum interval is 255 minutes.) For example, set the timeout interval to 15 minutes.

```
TERMINAL(config)#terminal timeout 15
```

- After the configuration is complete, run the **exit** command to exit the CLI to prevent failure to re-open the CLI within the preset timeout interval.
- After you exit the system, the timeout interval is reset to five minutes.

Step 2 Set the protocol mode.

Run the **protocol-mode sip** command to set the mode.

Step 3 Set the IAD IP address.

There are three modes for obtaining an IP address: static, DHCP, and PPPoE. By default, the IP address of the IAD is **192.168.100.1** after being connected to the network. You can also use other methods for obtaining the IP address:

- static mode:

Run the **ipaddress static***ip-address subnet-mask default-gateway* command to set a fixed IP address. For example,

```
TERMINAL(config)#ipaddress static 192.169.1.62 255.255.255.0  
192.169.1.1
```

- DHCP mode:

Run the **ipaddress dhcp** command to obtain an IP address through DHCP. (A DHCP server is required.) For example,

```
TERMINAL(config)#ipaddress dhcp
```

- PPPoE mode:

A PPPoE server is required. The user name and password must be the same as those on the PPPoE server. The command format is as follows:

- Run the **pppoe username***user-name password**password* command to set the PPPoE user name and password.
- Run the **ipaddress pppoe** command to obtain an IP address through PPPoE.
- Run **display pppoe** to view the configuration of pppoe on the IAD.

For example,

```
TERMINAL(config)#ipaddress pppoe  
TERMINAL(config)#pppoe username iad password *****
```

To view the IAD IP address, run the **display ipaddress** command.

**NOTE**

- When the DHCP or PPPoE mode is used, the IAD may take about eight minutes to restart if the IAD cannot obtain the IP address in DHCP or PPPoE mode. Verify that the DHCP or PPPoE server is available and the server information is correct.
- Changing the IP address may disconnect the Telnet connection. Then, you should establish the Telnet connection by using a new IP address.

Step 4 (Optional) Configure the DNS.

If the DNS server is available on the network, you can configure the DNS server on the IAD so that the IAD can access other devices according to domain names.

1. Set the IP address of the DNS server

The command is **dns serverip-address**. For example:

```
TERMINAL(config)#dns server 191.168.10.50
```

2. (Optional) set a domain name suffix

The IAD automatically adds the domain name suffix to a domain name. The command is **dns domain-name domain-name**. For example, run the following command to set the domain suffix to **tele.com**:

```
TERMINAL(config)#dns domain-name tele.com
```

In this case, if the domain name of the SIP server is set to **softco**, the IAD sends **softco.tele.com** to the DNS server to obtain the IP address of the SIP server.

Run the **display dns** command to view the DNS status.

Step 5 Configure the SIP server and the user domain name.

Run the **sip serverindexaddress ip-addressdomainuser-domain-name** command to configure the IP address of the SIP server and user domain name.

```
TERMINAL(config)#sip server 0 address 192.169.1.40 domain abc.def.com
```

**NOTE**

There are three modes to obtain the IP address of the SIP server, consisting of STATIC, DNS and DHCP.

- If the DNS is configured, you can set the domain name of the SIP server in static mode or select the DNS mode to configure the SIP server. For details, see the Manual Configuration (CLI) in the CD-ROM.
- If the IP address of the SIP server is obtained in DHCP mode, you can configure the SIP server in DHCP mode.

By default, the IAD registers with the server whose *index* is **0**. If the server is faulty, the IAD registers with standby server 1. If standby server 1 is faulty, the IAD registers with standby server 2. You can run the **sip server-autoswitch enable** command to enable automatic switch between servers. The server whose index is 0 is the active server, the servers whose indexes are 1 and 2 are standby servers. If the active server has been restored when the IAD registers with a standby server, the IAD re-registers with the active server.

Step 6 Set the SIP software parameters.

For details about parameter settings, see the **sip soft-parameter** command in the *eSpace IAD Product Documentation*. The following describes the common settings for connecting to the IMS network.

```

TERMINAL(config)#advanced
TERMINAL(advanced-config)#sip soft-parameter auth-username name
/*The user name, not user ID, is used in authentication.*/
TERMINAL(advanced-config)#sip soft-parameter new-service-mode local
/*The IAD sends the Invite message to the SoftSwitch, and processes
the hookflash event.*/
TERMINAL(advanced-config)#sip soft-parameter support-telurl on
/*Enable the TelURL based on the requirements on the IMS side. The Tel
URL is an address format using the SIP protocol, which differs from
SIP URL.*/
TERMINAL(advanced-config)#exit

```

Step 7 (Optional) Configure the wildcard groups.

The IAD supports the function of registering with the SIP server on the IMS network as the wildcard groups. A wildcard group functions as a substitute for the SIP users belonged to the group on the IMS network. To configure the wildcard group, proceed as follows:

1. Run the **sip groupuser** command to add a wildcard group. The wildcard group attributes are as follows: The ID is 0, IMS Public User Identity (IMPU) is +862821010000, IMS Private User Identity (IMPI) is +862821010000@abc.def.com, and password for authentication is 123456.

```

TERMINAL(config)#sip groupuser 0 impu +862821010000 impi
+862821010000@abc.def.com password 123456

```

2. Allocate two SIP users configured on the IAD to the wildcard group whose ID is 0.

```

TERMINAL(config)#sip user 0 groupid 0
TERMINAL(config)#sip user 1 groupid 0

```

3. Run the **display sip groupuser all** command to view the registration result of the wildcard group.

If **registration state** is set to **registered**, the wildcard group is registered successfully, and the SIP number in the wildcard group can be used.

If the wildcard group is registered unsuccessfully, check the network connection between the IAD and the IMS and check whether the IMPU, IMPI, and password for authenticating the wildcard group have been set in the IMS. If the SIP number in the wildcard group cannot be used to make calls, check whether the user number is configured in the corresponding wildcard group in the IMS.

Step 8 Configure the SIP user.



NOTE

For details about mapping between user cable colors and ports, see in the Appendix.

Run the **sip user** command to configure SIP users for port 0 and port 1.

```

TERMINAL(config)#sip user 0 id +8657143210001 password 123456 name
+8657143210001@abc.def.com

```

```
TERMINAL(config)#sip user 1 id +8657143210002 password 123457 name
+8657143210002@abc.def.com
```

**NOTE**

The SIP user information on the IAD can be registered with the SIP server only after the SIP user information has been configured on the SIP server.

Run the **display sip attributeport-number** command to view the configuration result.

After the registration is successful, two registered users can talk with each other. For example, if the phone connected to port 1 dials **21010300**, the phone connected to port **0** rings.

**NOTE**

Number +8657143210002 consists of country code +86, area code 571, and local number **43210002**. To make a local call, dial 21010300. The dialing rule is configured on the IMS side.

Step 9 Run the **write** command to save the settings.

The command is:

```
TERMINAL(config)#write
```

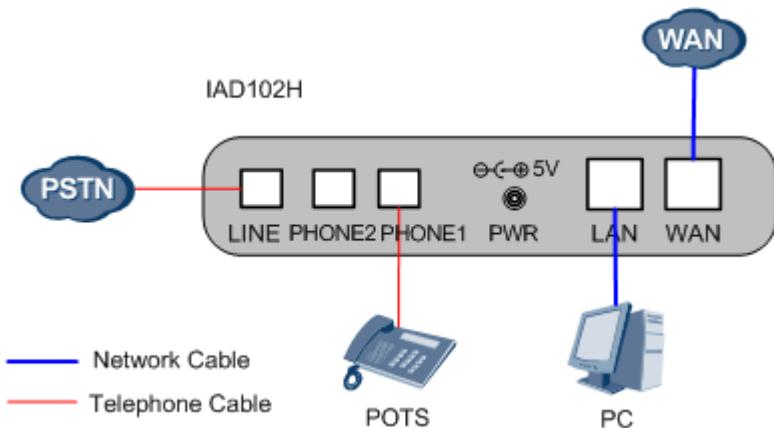
----End

4.5 Accessing Network Through the IAD

A PC can access the network through the IAD101H, IAD102H, and IAD104H.

For example, to configure a PC to access the network through the IAD102H, do as follows:

1. Connect the PC to the LAN port of the IAD, and the WAN port to the uplink, as shown below.



2. Select **Obtain an IP address automatically** on the PC that is connected to the LAN port of the IAD. The IAD then allocates a LAN IP address to the PC, such as 192.168.100.10.

**NOTE**

To access network by the preceding method, ensure that the IAD is in the NAT (Network Address Translation) mode. Run **display nat** in the global configuration mode to check that whether the IAD is in the NAT mode. If the CLI does not display that `NAT is started`, run **nat enable** to enter the NAT mode.

5 Configuration (EMS)

If multiple IADs are available on the network, you can use the Unified Communication Element Management System (UCEMS) to configure all IADs. To use the UCEMS to configure and upgrade IADs in a unified manner, you must set the UCEMS connection parameters on IADs.

CLI Mode

Step 1 Log in to the CLI management system. For details, see *eSpace IAD Product Documentation*.

Step 2 Set the IP address or domain name of the UCEMS server.

- You can run the **nms primary** command to set the IP address of the UCEMS server. For example:

```
TERMINAL(config)#nms primary 192.168.1.201
```

If two UCEMS servers are available on the live network, you can run the **nms primary ip-addresssecondary ip-address** command to set the IP addresses of both UCEMS servers. The two servers will work in the active and standby mode. For example:

```
TERMINAL(config)#nms primary 192.168.1.201 secondary 192.168.1.55
```

- You can also run the **nms domain** command to set the domain name of the UCEMS server.

In this mode, only one UCEMS server can be configured.

NOTE

If the DNS mode is used, ensure that the DNS server is available on the network, and the DNS server is configured.

Step 3 (Optional) Set other parameters according to [Table 4-1](#). You are advised to retain the default values.

Table 5-1 UCEMS parameter setting commands

Operation	Command	Default Value
Set the access switch of the UCEMS	nms access	on
Set the domain name of the UCEMS	nms domain	ucems.com

Operation	Command	Default Value
Set the parameters for handshake between the IAD and the UCEMS	nms handshake	<ul style="list-style-type: none"> • switch: on • interval: 30
Set the parameters for communication between the IAD and the UCEMS	nms	<ul style="list-style-type: none"> • getcom: public • setcom: private • trapcom: public • trapport: 162 • register: on
Set the physical serial number (which consists of 1 to 64 characters)	physical-serial-num	Unique physical serial number of each IAD.

Step 4 Run the **write** command to save the settings.

Run the **display nms** command to view status of the IAD registering to the UCEMS.

```
TERMINAL#display nms
```

```
the config is IP /*It indicates that the address of the UCEMS has
set through a domain name.*/
```

```
-----
-----
type                IP address        status
primary             192.168.1.201    normal
secondary           <unconfig>       unconfiged
-----
-----
```

```
get community      : *****
set community      : *****
trap community     : *****
trap port          : 162
nms access value   : Enable
register nms ip    : 192.168.1.201
register state     : succeed
handshake          : on
handshake time    : 30 S
register switch    : on
```

If the "register state" field displays "succeed", it indicates that the IAD has registered to the UCEMS successfully.

----End

6 FAQs

1. Q: How do I log in to the IAD management system?
A: Use a network cable to connect a PC to the LAN port on the IAD, enter **telnet 192.168.100.1** in the **Run** dialog box, and enter the user name **root** and password (**admin** by default).
2. Q: What are the default IP address, user name, and password used to log in to the IAD?
A: The default IP address of the LAN port is **192.168.100.1**. The default user name is **root**, and the default password is **admin**.
3. Q: How do I log in to the IAD if I forget the password?
Log in to the IAD through telnet: use the user name **system** and password **login** to log in to the IAD, and run the **restore vendor-config** command in the global configuration mode. Restart the IAD for the settings to take effect. When the device restarts, use the default IP address **192.168.100.1**, user name **root**, and password **admin** to log in.



NOTE

If you forget the password of the **system** user, see the *eSpace IAD Troubleshooting Guide*.

4. Q: How do I restore the IAD to factory settings?
A: Log in to the CLI, and run the **enable** and **configure terminal** commands in sequence to enter the global configuration mode. Then run the **restore vendor-config** command. Restart the IAD for the settings to take effect.
5. Q: How to restart the IAD?
A: Log in to the CLI, and run the **enable** and **configure terminal** commands in sequence to enter the global configuration mode. Then run the **reboot** command.
6. Q: How do I view the IP address of the IAD?
A: Use a network cable to connect a PC to the LAN port on the IAD, and enter **telnet 192.168.100.1** in the **Run** dialog box to log in to the IAD. The default user name is **root**, and the default password is **admin**. In the privilege mode, run the **display ipaddress** command to display the IP address. For details, see the *eSpace IAD Product Documentation*.
7. Q: How do I change the IP address of the IAD?
A: For details, see **Maintenance > Changing IP address** in the *eSpace IAD Product Documentation*.
8. Q: How do I view the MAC address of the IAD?

- A: Log in to the CLI, and run the **enable** and **configure terminal** commands in sequence to enter the global configuration mode. Then run the **display mac-address** command.
9. Q: How do I view the physical sequence number of the IAD?
A: Log in to the CLI, and run the **enable** and **configure terminal** commands in sequence to enter the global configuration mode. Then run the **display physical-serial-num** command.
10. Q: How do I view the elabel of the IAD?
A: Log in to the CLI, and run the **enable** and **configure terminal** commands in sequence to enter the global configuration mode. Then run the **display elabel** command.
11. Q: How do I view the software version of the IAD?
A: Log in to the CLI, and run the **enable** and **configure terminal** commands in sequence to enter the global configuration mode. Then run the **display version** command.
12. Q: How do I change the protocol?
– A: To change to the SIP mode, log in to the CLI, run the **enable** and **configure terminal** commands in sequence to enter the global configuration mode, and run the **protocol-mode sip** command.
– To change to the MGCP mode, log in to the CLI, run the **enable** and **configure terminal** commands in sequence to enter the global configuration mode, and run the **protocol-mode mgcp** command.
13. Q: How do I view the system information?
A: For details, see **Maintenance > Viewing the System Information** in the *eSpace IAD Product Documentation*.
14. Q: How do I set the VLAN priority on the IAD?
A: For details, see *Configuring the VLAN in the eSpace IAD Product Documentation*.
15. Q: How do I set the fax function on the IAD?
A: For details, see *Configuration in the eSpace IAD Product Documentation*.
16. Q: How do I enable the pulse dialing function?
A: Log in to the CLI, and run the **enable**, **configure terminal**, and **advanced** commands to enter the advanced mode. Then run the **pstnport attribute set 0 enable** command. If port 0 needs to be connected to the DTMF phone, run the **pstnport attribute set 0 disable** command to disable the pulse dialing function.

7 Technical Specifications and Environment Requirements

To ensure that the IAD101H/102H/104H runs normally, the IAD101H/102H/104H must meet conditions such as the power supply, temperature, and humidity.

Item	Specification
Power consumption	IAD101H: 4.9 W IAD102H: 6.1 W IAD104H: 7.4 W
Power supply adapter	Input: 100 V-240 V AC Output: 5V DC (IAD101H/102H) Output: 12V DC (IAD104H)
Feeder voltage	IAD101H: -48V IAD102H: -48V IAD104H: -42V
Virtual value of ringing voltage	IAD101H: 40Vrms IAD102H: 40Vrms IAD104H: 45Vrms
Working temperature	0 ℃-40 ℃
Working humidity	5%-95% (no condensing)
Dimensions	IAD101H/102H: 146 mm (depth) x 190mm (width) x 36 mm (height) IAD104H: 234 mm (depth) x 170 mm (width) x 36 mm (height)
Weight	<500 g
Subscriber line distance (the subscriber line diameter is 0.4 mm and the phone is not paralleled)	IAD101H: ≤4.0 km IAD102H: ≤4.0 km IAD104H: ≤2.0 km

Item	Specification
Number of paralleled phones (subscriber line distance is smaller than or equal to 2.0 km and the subscriber line diameter is 0.4 mm)	≤ 3