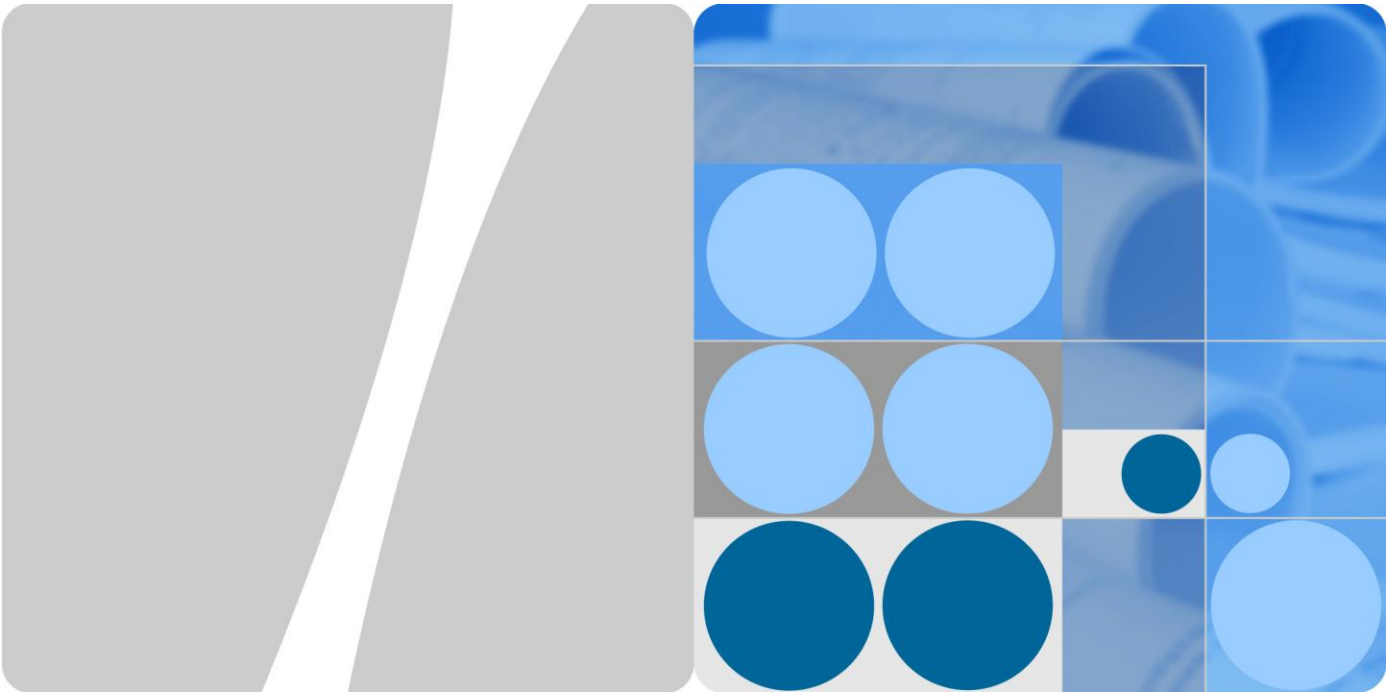

SmartAX MA5600T

Upgrade Guide

Issue 05

Date 2014-03-14

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About This Document

Purpose

This document describes how to upgrade the software of the MA5600T series in terms of the following aspects: upgrade precautions, upgrade process, preparations, pre-upgrade check, upgrade operations, rollback, upgrade verification, and common troubleshooting.

Related Versions

The following table lists the product versions related to this document.

Product Name	Version
MA5600T series	V800R008 and later versions

Intended Audience

This document is intended for:

- Technical support engineers
- Maintenance engineers

Symbol Conventions

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

Symbol	Description
	**DANGER** indicates a hazard with a high level or medium level of risk which, if not avoided, could result in death or serious injury.
	**WARNING** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

Symbol	Description
CAUTION	**CAUTION** indicates a potentially hazardous situation that, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results.
TIP	**TIP** indicates a tip that may help you solve a problem or save time.
NOTE	**NOTE** provides additional information to emphasize or supplement important points of the main text.

Change History

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

Issue 05 (2014-03-14)

Compared with issue 04 (2013-12-18), , this issue has the following changes:

- 3.2 Unpacking and Packing
- 9 Common Troubleshooting

Issue 04 (2013-12-18)

Compared with issue 03 (2013-09-18), this issue modifies the patch loading policy from the V800R007 version to the target version.

Issue 03 (2013-09-18)

Compared with issue 02 (2013-07-25), this issue deletes the precautions.

Issue 02 (2013-07-25)

Compared with issue 01 (2013-05-03), this issue has the following changes:

- 3.1 Preparing Files and Materials Required for the Upgrade
- 3.4 Stopping the Automatic Saving Function
- 6.4 Starting the Automatic Saving Function

Issue 01 (2013-05-03)

This issue is the first official release.

Contents

1 Before You Start

Before you start an upgrade, read this topic carefully to ensure a successful upgrade.

CAUTION

- Read the release notes of the target version to obtain information about the target version.
- The upgrade must be performed by trained engineers only.
- Ensure stable power supply for an upgrade. Power-off during an upgrade will cause unexpected results.

1.1 Upgrade Scenarios and Modes

This topic describes the upgrade scenarios and upgrade modes. You can select an appropriate upgrade scenario and upgrade mode based on actual network conditions.

Upgrade Scenario

You can upgrade the device software using the U2000 or command line interface (CLI). The following table lists the differences between the two scenarios.

Scenario	Characteristics	Maximum Upgrade Efficiency
Upgrade using the U2000	Supports remote upgrade of devices in batches.	200 devices/day
Upgrade through CLI	Supports remote upgrade of a single device.	40 devices/day

This document describes how to remotely upgrade software of devices through CLI.

Upgrade Modes

There are two upgrade modes: upgrade with service interruption (common upgrade) and upgrade without service interruption (hitless upgrade).

When the software of a device is upgraded in the hitless mode, services are not interrupted or the interruption time is acceptable for terminal users. The following table lists the differences between the upgrade modes.

Item	Upgrade with Service Interruption	Upgrade Without Service Interruption
Environmental requirements	Single control board or active and standby control boards	Active and standby control boards
Version requirements	All versions	Base version V800R011C00 or a later version
Upgrade process	The control boards are upgraded at the same time.	The standby control board is upgraded first. Then, the original active control board is upgraded after an active/standby switchover.
Service impact	Service on the control board and service boards are interrupted.	Only services on service boards are interrupted.

For details on operation differences between the two upgrade modes, see "6.3 Activating Package Files".

1.2 Upgrade Impact

This topic describes the upgrade impact on services and NE management. Knowing the upgrade impact helps you plan an upgrade appropriately.

Impact on the System During the Common Upgrade

- **Impact on Services**

  Services will be interrupted during the necessary system restart after an upgrade. The service interruption lasts 15-50 minutes, depending on the original system configurations.

  The Table 1-1 lists the time required for each upgrade step. The data is obtained in lab tests and therefore is for reference only.

  NOTE

  The time required from the system restart to the recovery of control boards, service boards, and services is related to the configured data volume.

Table 1-1 Time required for each upgrade step

Procedure	Time Required (Unit: Minute)
Load the combined package file.	**SCUB/SCUF/SCUL/SCUN control board:**

Procedure	Time Required (Unit: Minute)
	The time required for loading the combined package file depends on the device environment and size of the package file. • Single control board: It takes 20 minutes for loading a combined package file of 60 MB at a rate of 3 MB/min. • Dual control boards: It takes 40 minutes for loading a combined package file of 60 MB at a rate of 1.5 MB/min.
	SCUH control board: The time required for loading the combined package file depends on the device environment and size of the package file. • Single control board: It takes 4 minutes for loading a combined package file of 100 MB at a rate of 25 MB/min. • Dual control boards: It takes 8 minutes for loading a combined package file of 100 MB at a rate of 12.5 MB/min.
Restart the system and wait until the control board recovers.	10 minutes
Restart the system and wait until the service boards recover.	25 minutes
Restart the system and wait until the services recover.	40 minutes

- **Impact on NE management**

  The NE will fail to connect to the NMS during the system restart after an upgrade from an earlier version. After the system is restarted, the NMS needs to synchronize data with the NE.

Impact on the System During the Hitless Upgrade

Services will be interrupted during the necessary board restart after an upgrade. The service interruption lasts 5-10 minutes, depending on the original system configurations.

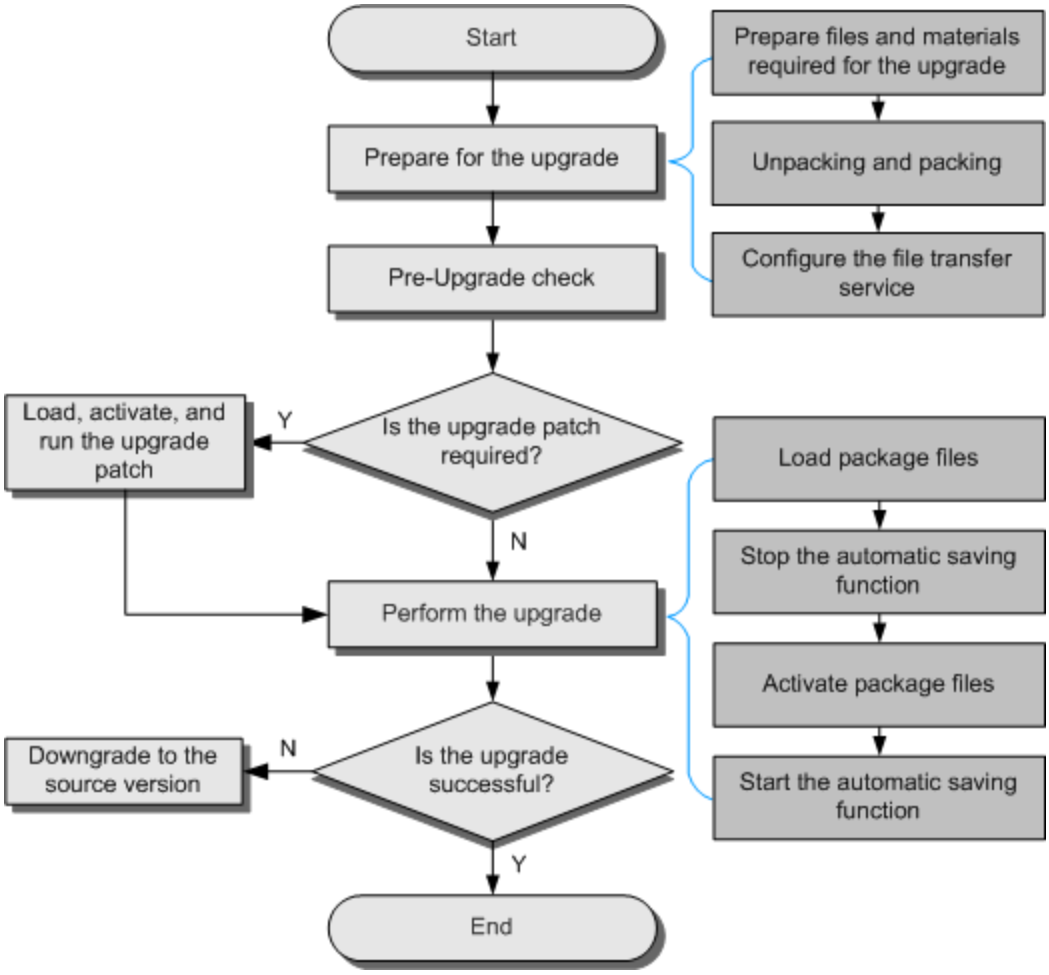
2 Upgrade Process

This topic describes the upgrade process. Adhere to the upgrade process when performing an upgrade. If any exceptions occur during an upgrade, stop the upgrade and contact Huawei technical support engineers.

CAUTION

Activating package files affects services. Therefore, it is advised to perform the operation in early morning when the device carries minimum traffic.

Figure 2-1 Upgrade process



3 Preparing for the Upgrade

This topic describes the upgrade preparations, which involve obtaining required files and materials, repacking package files, configuring file transfer service.

3.1 Preparing Files and Materials Required for the Upgrade

This topic describes how to prepare files and materials required for the upgrade.

Context

CAUTION

- The combined package file includes the control board package file and IO board package file. The combined package file obtained must match the control board type. Any mismatch may cause faults to the control board hardware.
- Ensure that the combined package file and the patch file of the source version are available in case of any necessary system downgrade. For a source version that does not support a combined package file, ensure that the control board package file and the IO board package file of the source version are available.

Procedure

Step 1 Download the software packages for the source version and target version from http://support.huawei.com.

For example, to download the software package for MA5600V800RxxxCxxSPCxxx, visit http://support.huawei.com/support/, and obtain the software package file corresponding to the control board type from **Software Center** > **Version Software** > **Access Network Product Line** > **Optical Access** > **MA5600T Series** > **SmartAX MA5600T** > **SmartAX MA5600T V800Rxxx** > **SmartAX MA5600T RxxxCxxSPCxxx**.

Step 2 Use a tool to query the MD5 value. Ensure that the MD5 value of the downloaded software package is consistent with that in the released file **Hash Checksum**. For details on how to use this tool, see 10.2 Verifying the Software Integrity.

NOTE

The **Hash Checksum** file is **SmartAX MA5600T V800RxxxCxxSPCxxx Hash Checksum.zip**, where V800RxxxCxxSPCxxx is the target version number.

Step 3 Decompress the downloaded software package, and select the files required for the upgrade.

Table 3-1 lists the files required for the upgrade.

Table 3-1 Files required for the upgrade

No.	File Description	File Name	Function
1	(Optional) Upgrade patch files	• Hot patch: HPxxxx • Control board patch: SPHxxx	Used for space expansion or solving upgrade-related issues of certain earlier versions. For details, see Table 5-1.
2	Combined package file	V800RxxxCxx[SPxxxx]_wholepackage[(SPCx00)]_zzzz.bin **NOTE** Content in the square brackets [ ] is optional, V800RxxxCxx[SPxxxx] is the target version number, SPCx00 is the baseline version number, and zzzz is the control board type.	Differentiated by control board, the combined package file includes software files of all boards, internal database upgrade tool files, and hot patch package files, and is used for cross-R version upgrade or downgrade.
3	(Optional) Voice package file	V800RxxxCxx[SPCxxx]_viocepackage[(SPCx00)]_zzzz.bin **NOTE** Content in the square brackets [ ] is optional, V800RxxxCxx[SPCxxx] is the target version number, SPCx00 is the baseline version number, and zzzz is the control board type.	The voice package file includes the voice file and SIP service logic file and is required only when the voice service is newly deployed in the multiservice access node (MSAN) scenario. There are two types of voice package files: common and customized. Select a required voice package file based on actual conditions.

Step 4 Prepare materials for the upgrade.

Table 3-2 lists the materials required for the upgrade.

Table 3-2 Materials required for the upgrade

No.	Item	Remarks
1	A PC running Windows XP or Windows 7 OS	-
2	Reference documents for the upgrade	-

No.	Item	Remarks
3	A tool used to query the MD5 value	For details on how to use this tool, see 10.2 Verifying the Software Integrity.
4	Unpacking&packing tool	Please obtain the unpacking&packing tool contained in the software of the target version. For details, see 3.2 Unpacking and Packing.
5	A file transfer tool installed on a laptop	For details on how to use this tool, see 10.3 Guide to the File Transfer Tool.
6	IP address, user name, and password of the device to be upgraded	-
7	Telnet tool	-
8	Network cable and serial cable	-
9	Board spare parts, Phillips screwdriver (with a 2# head)	Ensure that, for each board used on the network, at least one spare board is available, so that a board can be replaced quickly if it fails.

----End

3.2 Unpacking and Packing

This topic describes how to repack a package file using the unpacking&packing tool. If a package file is too large, repack the package file into a file of a smaller size before an upgrade so that it will not exceed the maximum file size supported by the control board. This not only prevents file loading failures but also improves file loading efficiency.

Context

The following table lists the maximum size of the combined package file or IO board package file supported by different control boards of different versions.

CAUTION

- If the package file repacked according to live-network devices still exceeds the maximum file size listed in the following table, load the package file using the smart mode.
- When the smart loading mode is selected, the system will automatically select the software to be loaded based on the device hardware configurations. In this case, you do not need to repack the package file.

Control Board	Target Version	Supported Maximum File Size
SCUB/SCUF/SCUL	V800R007	60 MB for the IO board package file
	V800R008 and later versions	44 MB for the IO board packet file; 71 MB for the combine package file
SCUN	All versions	80 MB for the combined package file
MCUD/MCUD1/MCUE	All versions	180 MB for the combined package file
SCUH/SCUV	All versions	no file size limit

Procedure

Step 1 Decompress the unpacking&packing tool file.

Step 2 Execute the file **Pack.exe** decompressed.

Step 3 Click the **Packet & Unpacket** tab.

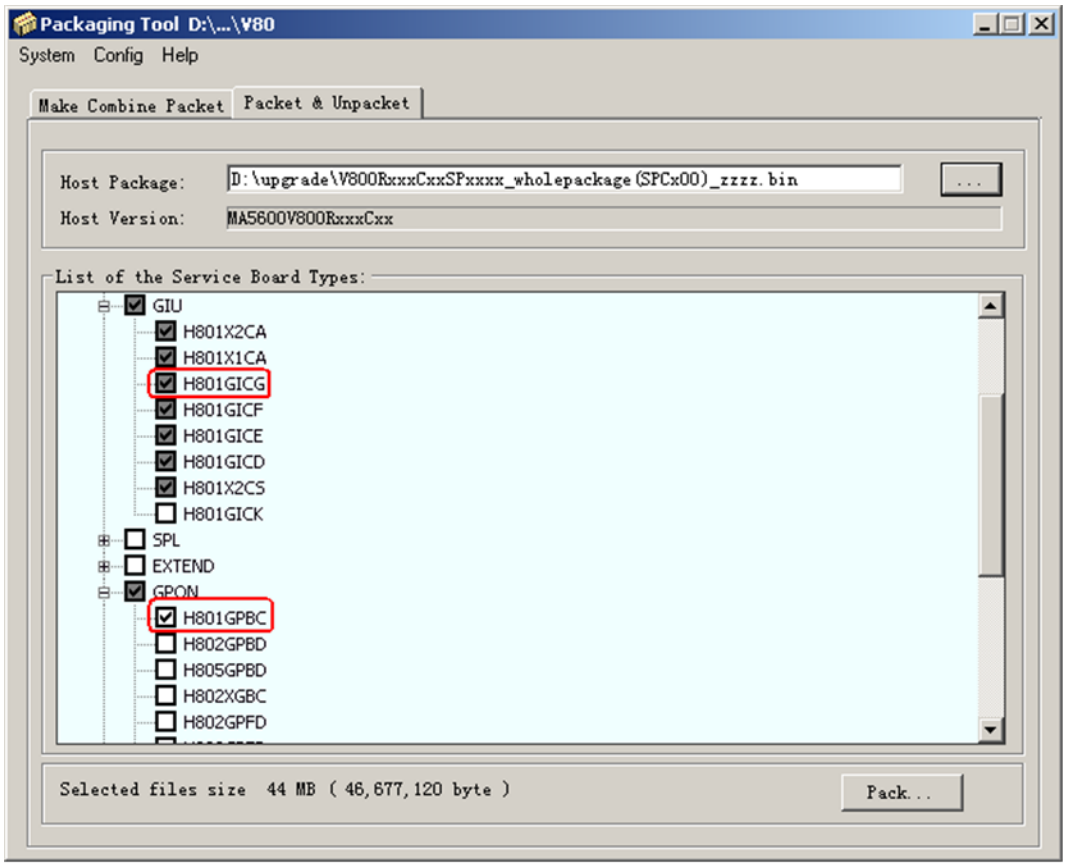
Step 4 Click the button. In the dialog box that is displayed, select the package file to be unpacked, and click **Open**.

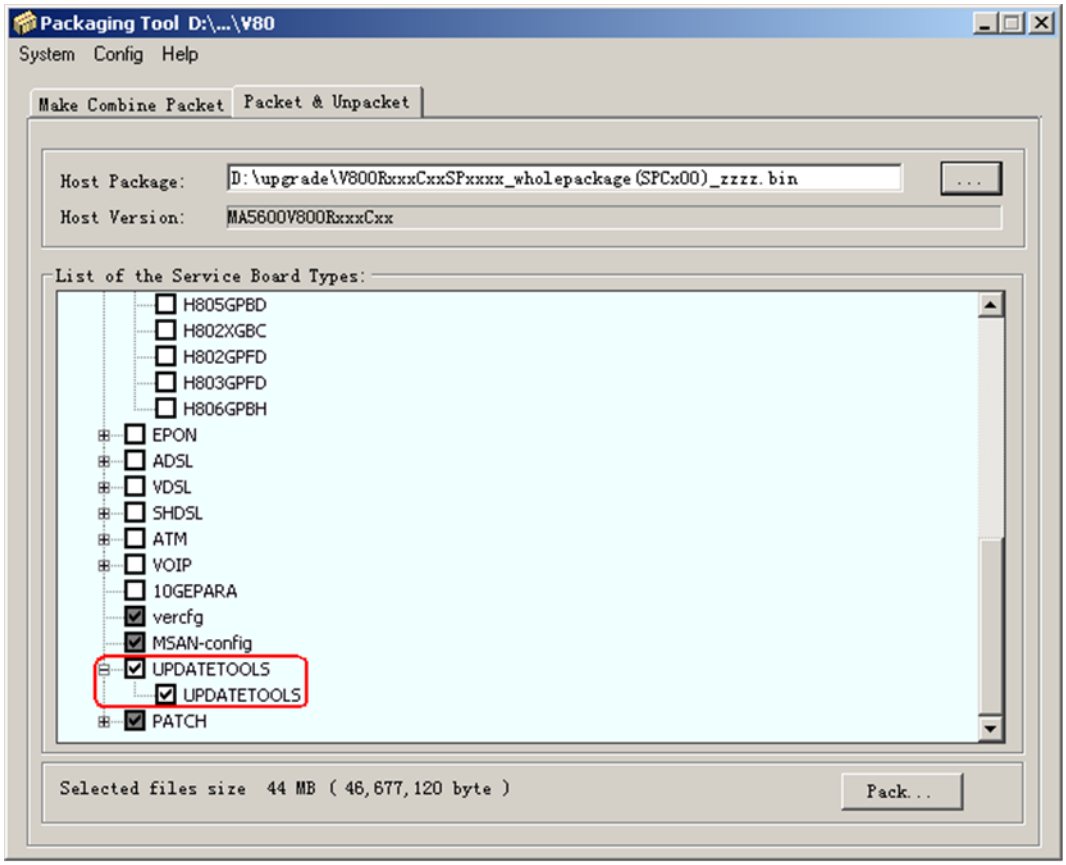
Step 5 Deselect unnecessary boards. Reserve the board software that has been used and will be used.

For example, boards used in the current environment are H801GPBC and H801GICG boards, so select only these boards.

CAUTION

- When the internal database is used for the upgrade, ensure that **UPDATETOOLS** is selected.
- Some boards in **INTERFACE** and **GIU** can be selected according to actual conditions.





Step 6 Click **Pack**. In the dialog box that is displayed, select the directory for saving the package file to generate a new package file.

Step 7 Click **Save**. After the new package file is generated, the system displays "The operation that package the host package is successful." Click **OK**.

----End

3.3 Configuring the File Transfer Service

This topic describes how to configure the file transfer service between the device to be upgraded and file server, so that upgrade software package files can be loaded to the device from the file server.

Prerequisites

Before configuring the file transfer service, ensure that network communication between the file server and device to be upgraded is normal.

Context

- The FTP, TFTP, and SFTP file transfer protocols are supported for file transfer between the file server and the device. The SFTP protocol is recommended.

- This topic uses the SFTP mode as an example to describe how to upload files required for the upgrade to the device from the file server.

Procedure

Step 1 Install the SFTP tool on the file server.

Step 2 Remotely log in to the device to be upgraded. (The SSH login mode is recommended.)

Step 3 Use the **ssh sftp clear** command to clear the SFTP settings in the system.

Step 4 Use the **ssh sftp set** command to set the user name and password for logging in to the SFTP server.

----End

Example

For example, set the user name and password for logging in to the SFTP server.

```
Huawei(config)#ssh sftp clear
Huawei(config)#ssh sftp set
 User Name(<=40 chars):testUser  //SFTP server user name
 User Password(<=40 chars):     //SFTP server password
  Listening Port(0--65535):22
```

3.4 Stopping the Automatic Saving Function

The automatic saving function needs to be stopped before the upgrade, so that the upgrade operation will not conflict with the automatic saving operation.

Procedure

Step 1 Run the **autosave interval off** command to disable periodic automatic saving or run the **autosave time off** command to disable scheduled automatic saving.

----End

4 Pre-Upgrade Check

This topic describes how to check device information before an upgrade, including the software version, patch version, board status, ONU status, CPU usage, and service traffic volume at upstream ports.

Procedure

Step 1 Run the **display version** command to query the device version. Ensure that the device version is the source version to be upgraded.

Step 2 Run the **display patch all** command to query the current patches. Check whether the current patches meet the requirements of the source version. If not, refer to 5 (Optional) Loading, Activating, and Running the Upgrade Patch.

Step 3 Run the **display board** command to query the status of boards on the device to be upgraded. Ensure that the status of all the boards on the device is normal.

Step 4 Run the **display board** ***frameid/slotid*** command to query the status of the ONUs connected to the boards on the device. Ensure that the ONU status is normal.

Step 5 Run the **display cpu** command to query the CPU usage of the active control board. Ensure that the CPU usage is below 80%.

Step 6 Run the **display port traffic** command to query the service traffic volume of upstream ports. The traffic volume before the upgrade will be compared with that after the upgrade.

----End

Example

For example, query information about the device to be upgraded, including the software version, patch version, board status, ONU status, CPU usage, and service traffic volume at upstream ports. In this example:

- The service board is in slot 0/3.
- The active control board is in slot 0/9.
- The upstream board is in slot 0/19, and the upstream port is 0/19/0.

```
huawei(config)#display version

huawei(config)#display patch all
```

```
huawei(config)#display board 0

huawei(config)#display board 0/3

huawei(config)#display cpu 0/9

huawei(config-if-giu-0/19)#display port traffic 0
```

5 (Optional) Loading, Activating, and Running the Upgrade Patch

For devices of certain earlier versions, an upgrade patch needs to be loaded before upgrading the devices to the target version.

Prerequisites

If patch HP1020 has been installed on the device of V800R006C02, delete the patch first. Otherwise, upgrade patch loading fails.

Context

Upgrade patches are released with software versions. Table 5-1 lists the loading procedure for patches of different versions.

NOTE

Versions that are not listed in Table 5-1 do not require an upgrade patch and can be upgraded to the target version directly.

Table 5-1 Patch loading procedure

Device To Be Upgraded	Loading Procedure
Versions from MA5600 V800R006C02SPC100 to V800R006C02SPC122	1. Load the expansion patch. • SCUB/SCUF/SCUL: HP1016 • SCUN: HP1023, HP1033 2. Load patch SPH129.
Versions from MA5600 V800R006C02SPC123 to V800R006C02SPC128	1. Load the expansion patch. • SCUB/SCUF/SCUL: none • SCUN: HP1023, HP1033 2. Load patch SPH129.
MA5600 V800R006C02SPC129 and later versions	Load the expansion patch. • SCUB/SCUF/SCUL: none • SCUN: HP1033

Device To Be Upgraded	Loading Procedure
Versions from MA5600 V800R007C00SPC300 to V800R007C00SPC312	1. Load the expansion patch. • SCUB/SCUF/SCUL: HP3008 • SCUN: HP3009 2. Load patch SPH313. 3. Load patch HP3038.
MA5600V800R007C00SPC313 and later versions	Load patch HP3038.
Versions from MA5600 V800R007C01SPC100 to V800R007C01SPC312.	1. Load patch SPH313. 2. Load patch HP1038. **CAUTION** If any patch among patches SPH301–SPH305 has been installed, delete the patch and then load patch SPH313.
MA5600V800R007C01SPC313 and later versions	Load patch HP1038.

Procedure

Step 1 Copy the patch file to the SFTP directory.

Step 2 Run the **load patch** command to load the patch file.

Step 3 Run the **patch active** command to activate the patch file.

Step 4 Run the **patch run** command to run the patch file.

Step 5 After all patches are loaded, run the **display patch** command to query the patch status. Ensure that all the patches are running.

----End

Example

For example, load, activate, and run the patch file HPxxxx. In this example:

- The SFTP file transfer mode is used.
- The IP address of the file transfer server is **x.x.x.x**.

```
huawei(config)#load patch sftp x.x.x.x HPxxxx
huawei(config)#patch activate HPxxxx
huawei(config)#patch run HPxxxx
huawei(config)#display patch all
```

6 Performing the Upgrade

This topic describes how to upgrade the device software to the target version.

6.1 Saving and Backing Up the System Configuration Data

Save and back up the system configuration data before loading package files, so that data can be restored if a software downgrade is required when exceptions occur during the upgrade.

Procedure

Step 1 Run the **save** command to save the database and configuration files.

CAUTION

During a new deployment, the database file must also be saved before you load the combined package file.

Step 2 Run the **backup data** command to back up the database file to the file server.

Step 3 Run the **backup configuration** command to back up the configuration file to the file server.

----End

Example

For example, save and back up the database file and configuration file to the file server. In this example:

- The SFTP file transfer mode is used.
- The IP address of the file transfer server is **x.x.x.x**.
- The backup database file is named as **db_scu_old.dat**.
- The backup configuration file is named as **config_old.txt**.

```
huawei(config)#save

huawei(config)#backup data Sftp x.x.x.x db_scu_old.dat
  Please save database file before backup, or the database file that is backed
up may be not the lastest one. Are you sure to continue? (y/n)[n]: y

huawei(config)#backup configuration Sftp x.x.x.x config_old.txt
  Please save configuration file before backup, or the configuration file
backuped may be not the latest. Are you sure to continue? (y/n)[n]:y
```

6.2 Loading Package Files

This topic describes how to load the combined package file and voice package file (optional) to the to-be-upgraded device through CLI.

Context

You can load the combined package file using either of the following methods:

- Method 1: Use the unpacking&packing tool to unpack the combined package file, repack the combined package file into a file of a smaller size, and then load the file. For detailed operations, see 3.2 Unpacking and Packing.
- Method 2: Use the smart loading mode to load the combined package file automatically. In the smart loading mode, software files are loaded on an as-needed basis.

CAUTION

To load the combined package file in the smart loading mode, the following conditions must be met:

- The source version is MA5600V800R008 or later.
- The FTP/SFTP transfer mode must be used and the FTP/SFTP server supports the resumable loading function.
- The upgrade does not require board software to be loaded in advance for future capacity expansion.

The voice package file is required only when the voice service is newly deployed in the MSAN scenario.

Procedure

Step 1 Copy the combined package file and voice package file (optional) to the SFTP directory.

Step 2 Run the **load packetfile** command to load the combined package file.

NOTE

- You can run the **display progress load** command to query the loading progress. In the SFTP loading mode, the loading progress remains unchanged for a period of time when it reaches 99%. The period ranges from 20 minutes to 30 minutes, depending on the file size.
- If the loading fails, refer to File loading fails for handling.

Step 3 (Optional) Run the **load packetfile** command to load the voice package file.

----End

Example

For example, load the combined package file and voice package file of the target version MA5600V800RxxxCxxSPCxxx. In this example:

- The SFTP file transfer mode is used.
- The IP address of the file transfer server is **x.x.x.x**.
- The original combined package file is named as **V800RxxxCxxSPxxxx_wholepackage(SPCx00)_zzzz.bin**.
- The new combined package file (generated after unpacking&packing) is named as **V800RxxxCxxSPxxxx_wholepackage(SPCx00)_zzzz_new.bin**.
- The voice package file is named as **V800RxxxCxxSPCxxx_voicepackage(SPCx00)_zzzz.bin**.

Load the combined package file.

- Method 1: Use the unpacking&packing tool to unpack the combined package file, repack the combined package file into a file of a smaller size, and then load the file.

```
MA5600T(config)#load packetfile sftp x.x.x.x
V800RxxxCxxSPxxxx_wholepackage(SPCx00)_zzzz_new.bin
  The new packet file will overwrite the old one
  Rollback function will be disabled
  Be sure that the system needn't this function
  Are you sure to load new packet file? (y/n)[n]:y
```

- Method 2: Use the smart loading mode to load the combined package file automatically.

```
MA5600T(config)#load packetfile smart sftp x.x.x.x
V800RxxxCxxSPxxxx_wholepackage(SPCx00)_zzzz.bin
  The new packet file will overwrite the old one
  Rollback function will be disabled
  Be sure that the system needn't this function
  Are you sure to load new packet file? (y/n)[n]:y
```

Load the voice package file.

```
MA5600T(config)#load packetfile sftp x.x.x.x
V800RxxxCxxSPCxxx_voicepackage(SPCx00)_zzzz.bin
  The new packet file will overwrite the old one
  Rollback function will be disabled
  Be sure that the system needn't this function
  Are you sure to load new packet file? (y/n)[n]:y
```

6.3 Activating Package Files

The combined package file and voice package file need to be activated after being loaded so that the package files can take effect.

Context

The method for activating the combined package file in an upgrade with service interruption differs from that in an upgrade without service interruption. For details, see 1.1 Upgrade Scenarios and Modes.

WARNING

Resetting the system interrupts the remote connection, but the connection will recover in a few minutes. If you still fail to log in to the device after 15 minutes, the system may be abnormal due to an upgrade failure. In this case, connect to the device through a serial port.

Procedure

- **Upgrade with service interruption**

1. Run the **reboot system** command to reset the system and activate the combined package file.

- **Upgrade without service interruption**

1. Run the **upgrade issu** command to upgrade the device software and activate the combined package file.

----End

Example

- **Reset the system and activate the combined package file in an upgrade with service interruption.**

```
huawei(config)#reboot system
  Please check whether data has saved, the unsaved data will lose if reboot
system, are you sure to reboot system? (y/n)[n]: y
```

- **Activate the combined package file in an upgrade without service interruption.**

```
huawei(config)#upgrade issu
  Software upgrades will lead to business interruption, continue? (y/n)[n]:y
```

6.4 Starting the Automatic Saving Function

After the upgrade succeeds, start the automatic saving function.

Procedure

Step 1 Run the **autosave interval on** command to enable periodic automatic saving or run the **autosave time on** command to enable scheduled automatic saving.

----End

7 Verifying the Upgrade

When the upgrade is complete, verify the upgrade results to ensure that the device runs normally.

Context

If all items listed in Table 7-1 meet the criteria, the upgrade is successful.

Table 7-1 Post-upgrade verification checklist

No.	Check Item	Criterion	Result
1	Device version and main control board information	The version information after the upgrade is correct.	
2	IO board package file	The board software versions after the upgrade are correct.	
3	Board status	All the boards are in normal state.	
4	Service port status	The service-provisioning ports are activated.	
5	Service traffic volume of upstream ports	The service traffic volume of upstream ports is close to that before the upgrade.	

Procedure

Step 1 Run the **display version** command to query version information about the device software and control board. Ensure that the device version and control board version are consistent with those in the *Release Notes*.

Step 2 Run the **display io-packetfile information** command to query information about the IO board package file. Ensure that the board version information is consistent with that in the *Release Notes*.

Step 3 Run the **display board** command to query the board status. Ensure that the status of all boards is normal.

Step 4 Run the **display board** ***frameid/slotid*** command to sample-check the port status. Ensure that the service-provisioning ports are activated.

Step 5 Run the **display port traffic** command to query the service traffic volume of upstream ports. Ensure that the service traffic volume of upstream ports is close to that before the upgrade.

----End

Example

For example, verify the upgrade results after a device is upgraded. In this example:

- Two control boards are configured in slots 0/9 and 0/10.
- The service board is in slot 0/5.
- The upstream board is in slot 0/19, and the upstream port is 0/19/0.

```
huawei(config)#display version
huawei(config)#display version 0/9
huawei(config)#display version 0/10

huawei(config)#display io-packetfile information

huawei(config)#display board 0

huawei(config)#display board 0/5

huawei(config-if-giu-0/19)#display port traffic 0
```

8 Downgrade to the Source Version

After an upgrade, you can upgrade the software to the source version if the system cannot recover from abnormalities.

Context

CAUTION

Versions earlier than MA5600V800R008 do not support downgrade by loading the combined package file. Therefore, the control board package file and IO board package file need to be loaded respectively during the downgrade. The loading method is the same as that for loading the combined package file. Before loading the IO board package file, use the unpacking&packing tool to repack the file if necessary. For detailed operations, see 3.2 Unpacking and Packing.

Procedure

Step 1 Obtain the combined package file of the source version, repack the file using the unpacking&packing tool, and put the file to the SFTP directory.

Step 2 Obtain the database file that has been backed up before the upgrade, and put it to the SFTP directory.

CAUTION

You must use the database file of the source version that is backed up before the upgrade. Otherwise, configuration data may be lost.

Step 3 Load the combined package file, voice package file (optional), and database of the source version.

1. Run the **load packetfile** command to load the combined package file of the source version.

NOTE

- You can run the **display progress load** command to query the loading progress. In the SFTP loading mode, the loading progress remains unchanged for a period of time when it reaches 99%. The period ranges from 20 minutes to 30 minutes, depending on the file size.
- If the loading fails, refer to File loading fails for handling.

2. (Optional) Run the **load packetfile** command to load the voice package file.
3. Run the **load data** command to load the backup database of the source version.
4. Run the **reboot system** command to reset the system.

Step 4 Verify the downgrade results. Ensure that the version information after the downgrade is consistent with that before the upgrade. Pay attention to the patch version.

----End

Example

For example, roll back the software version to the MA5600V800RxxxCxxSPxxxx version (the control board is zzzz). In this example:

- The SFTP file transfer mode is used.
- The IP address of the file transfer server is **x.x.x.x**.
- The new combined package file (after unpacking&packing) is named as **V800RxxxCxxSPxxxx_wholepackage(SPCx00)_zzzz_new.bin**.
- The voice package file is named as **V800RxxxCxxSPCxxx_voicepackage(SPCx00)_zzzz.bin**.
- The database file that is backed up before the upgrade is **db_scu_old.dat**.

```
huawei(config)#load packetfile sftp x.x.x.x
V800RxxxCxxSPxxxx_wholepackage(SPCx00)_zzzz_new.bin
  The new packet file will overwrite the old one
  Rollback function will be disabled
  Be sure that the system needn't this function
  Are you sure to load new packet file? (y/n)[n]:y

MA5600T(config)#load packetfile sftp x.x.x.x
V800RxxxCxxSPCxxx_voicepackage(SPCx00)_zzzz.bin
  The new packet file will overwrite the old one
  Rollback function will be disabled
  Be sure that the system needn't this function
  Are you sure to load new packet file? (y/n)[n]:y

huawei(config)#load data sftp x.x.x.x db_scu_old.dat all
  The new database will overwrite the old one
  Rollback function will be disabled
  Be sure that the system needn't this function
  It's irreversible. Are you sure to load new database? (y/n)[n]:y

huawei(config)#reboot system
  Please check whether data has saved, the unsaved data will lose if reboot
system, are you sure to reboot system? (y/n)[n]:y
```

9 Common Troubleshooting

This topic provides methods for handling common exceptions that occur during or after the upgrade.

NOTE

If a problem cannot be solved using the provided handling methods, record the operations, collect related error information, and contact Huawei technical support engineers for help.

1. **File loading fails.**

No.	Error Message	Handling Methods
1	Failed to transfer the file	• Check whether the network cable is connected properly. If not, reconnect the network cable and verify that the SFTP/FTP/TFTP server can be pinged from the device. • Check whether the SFTP/FTP/TFTP server directory is correct. If not, enter a correct directory and save the file to the directory. • Check whether the IP address of the SFTP/FTP/TFTP server is correct. If not, enter a correct IP address. • Check whether the file name is correct. If not, enter a correct file name. • Load files by TFTP or SFTP (recommended) because firewalls of some networks filter out FTP packets.
2	The packet file is incorrect	• If a patch needs to be loaded to the device before the upgrade, check whether a patch has been loaded. If not, load a patch to the device. • Check whether the file size exceeds the limit. If yes, repack the file. • Check whether the entered file name is correct. If not, enter a correct file name. • If the file is correct, contact Huawei technical support engineers to check whether the package file is abnormal. • Load files by TFTP or SFTP (recommended) because firewalls of some networks filter out FTP

No.	Error Message	Handling Methods
		packets.
3	User name, password, or configuration of the file server is incorrect	The user name and password of the device are inconsistent with those of the SFTP/FTP server. Reconfigure the user name and password of the SFTP/FTP server.

2. **The device fails to start up from a reset.**

   Obtain a backup control board, back up the software data, and go onsite to handle the problem. Check the indicators on the board, and reload the software through a serial port. If the loading fails, perform a version downgrade. If the downgrade fails, replace the control board and reload the software.

3. **Loading and backup operations fail during an upgrade task.**

   Record the causes, and check the device version and status. After verifying that the device version is correct and the device status is normal, perform the loading and backup operations again.

4. **The service board can start normally, but the version fails to be upgraded.**

   Check whether the BIOS file of the board matches the software version. If not, upgrade the BIOS version and then upgrade the device again. If yes, directly upgrade the device again.

5. **The service board fails to start.**

   Obtain a backup service board, back up the software data, and go onsite to handle the problem.

6. **All or part of service data is lost.**

   If all service data is lost, reload the database. If part of the service data is lost, configure it manually to restore the services.

7. **Services are unavailable after an upgrade.**

   Check whether service data is lost, whether the connection to the upstream device is normal, and whether operations have been performed on the upstream device. If no exception occurs but the services cannot recover, perform a version downgrade.

10 Appendix

10.1 Upgrade Checklist

You are advised to record the entire upgrade process using the following table.

Office Name		Upgrade Time	
Source Version		Target Version	
Upgrade Personnel	Carrier personnel: Huawei personnel:		
Is the Upgrade Successful			
Upgrade Checklist		**Conclusion**	**Exception Handling**
Pre-upgrade Check			
Upgrade Procedure Check			
Post-upgrade Verification			

10.2 Verifying the Software Integrity

Verify the software integrity by checking the MD5 value using a tool.

Context

NOTE

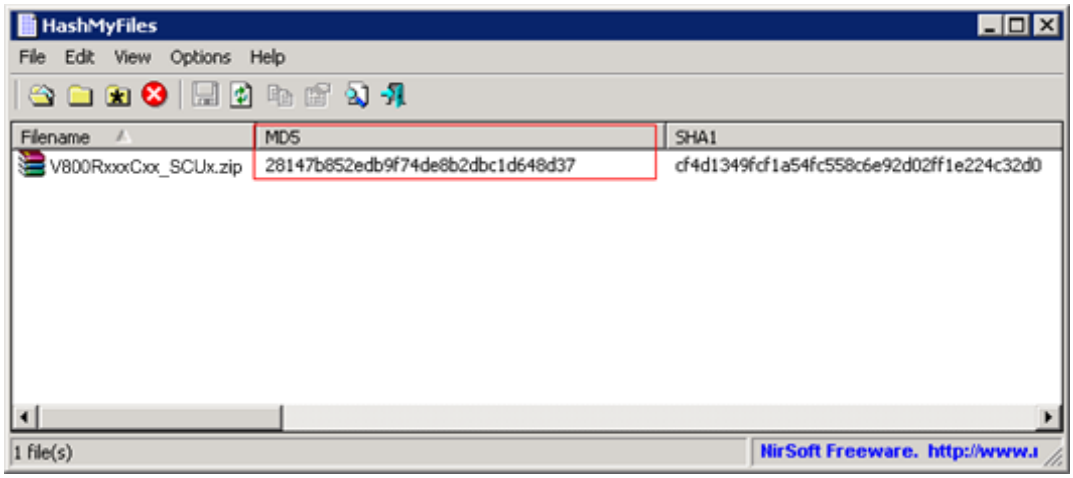
This topic uses the **HashMyFiles.exe** software as an example to describe how to verify the MD5 value. You can obtained the **HashMyFiles.exe** software from *http://www.nirsoft.net/utils/hash_my_files.html*.

Procedure

Step 1 Double-click **HashMyFiles.exe**.

Step 2 Choose **File** > **Add Files** from the main menu. In the window that is displayed, select the file to be verified.

Step 3 Compare the MD5 value obtained from **HashMyFiles.exe** with that in the released file **Hash Checksum**. If these two values are the same, the software is correct.



----End

10.3 Guide to the File Transfer Tool

This topic describes how to use the SFTP/FTP/TFTP file transfer tool.

Context

NOTE

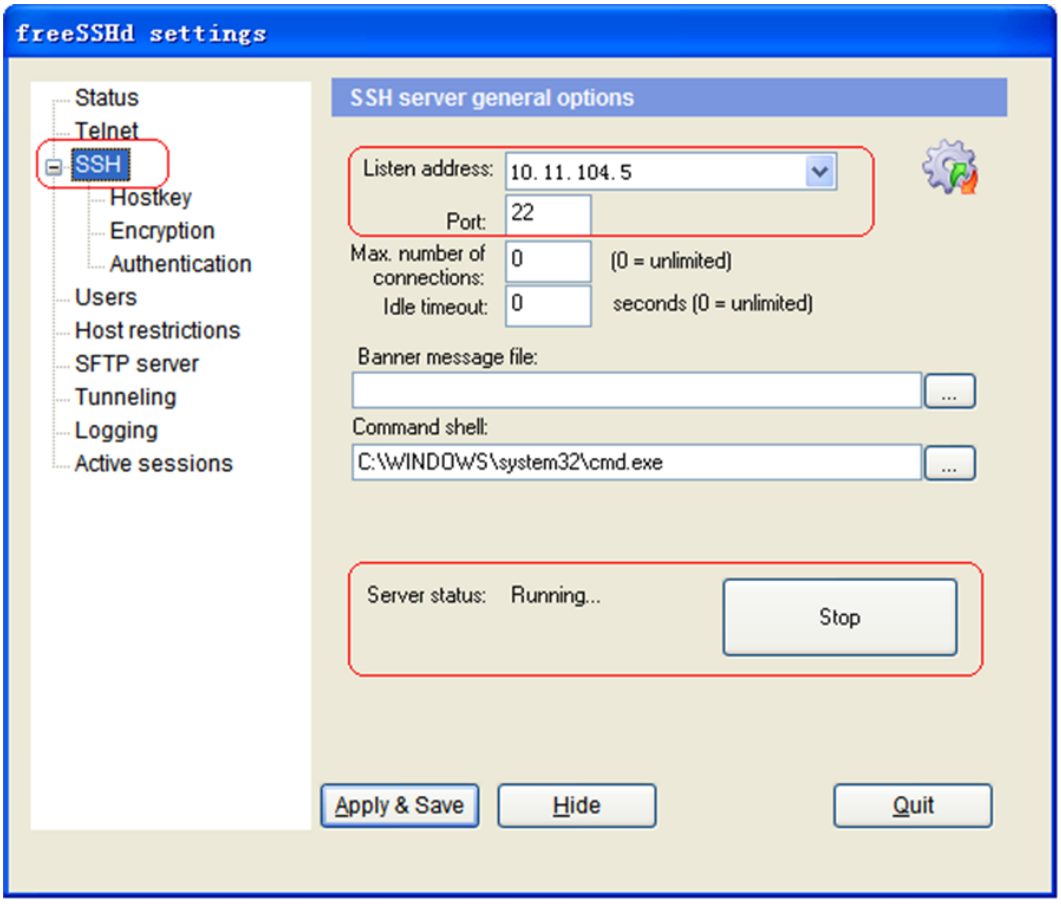
In this topic, a third-party file transfer tool is used as an example. To obtain the related tool, visit the corresponding website.

Procedure

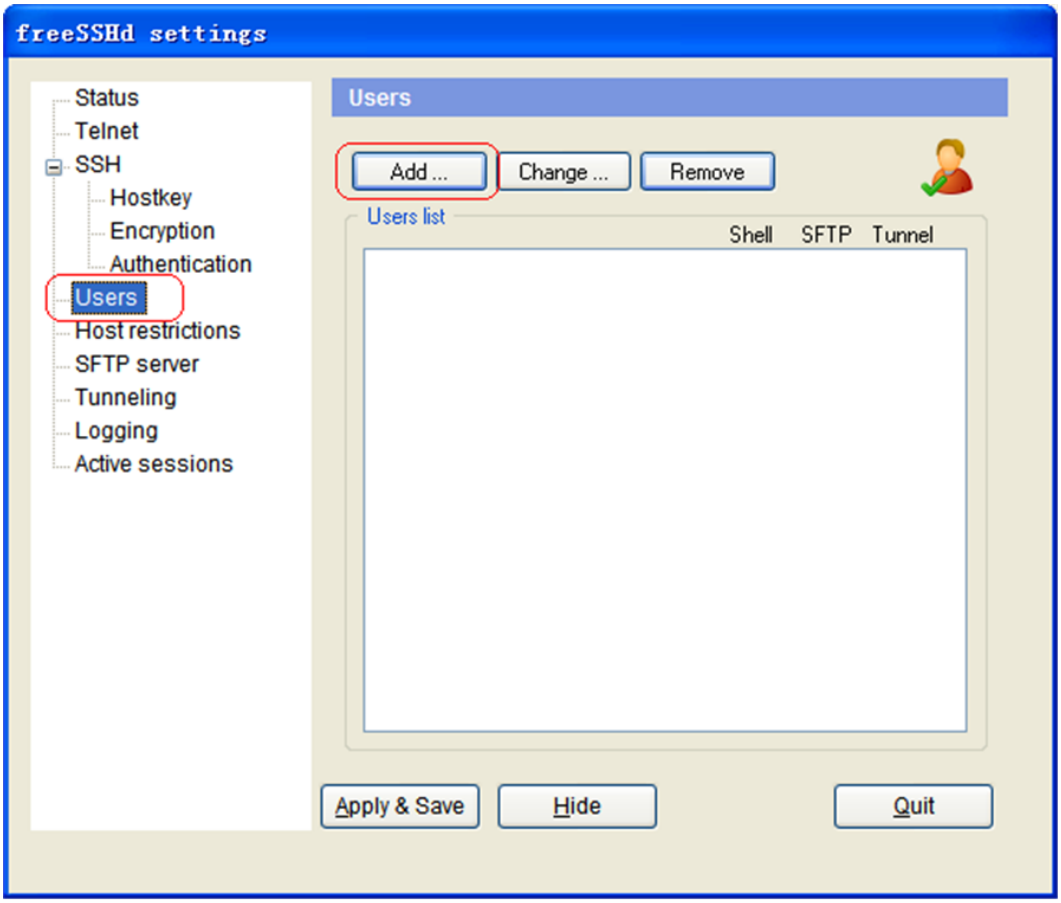
- **Data transfer with the device using SFTP**

1. Double-click the **freeSSHd.exe** file. The **freeSSHd settings** dialog box is displayed.
2. Click the **SSH** node in the navigation tree on the left.

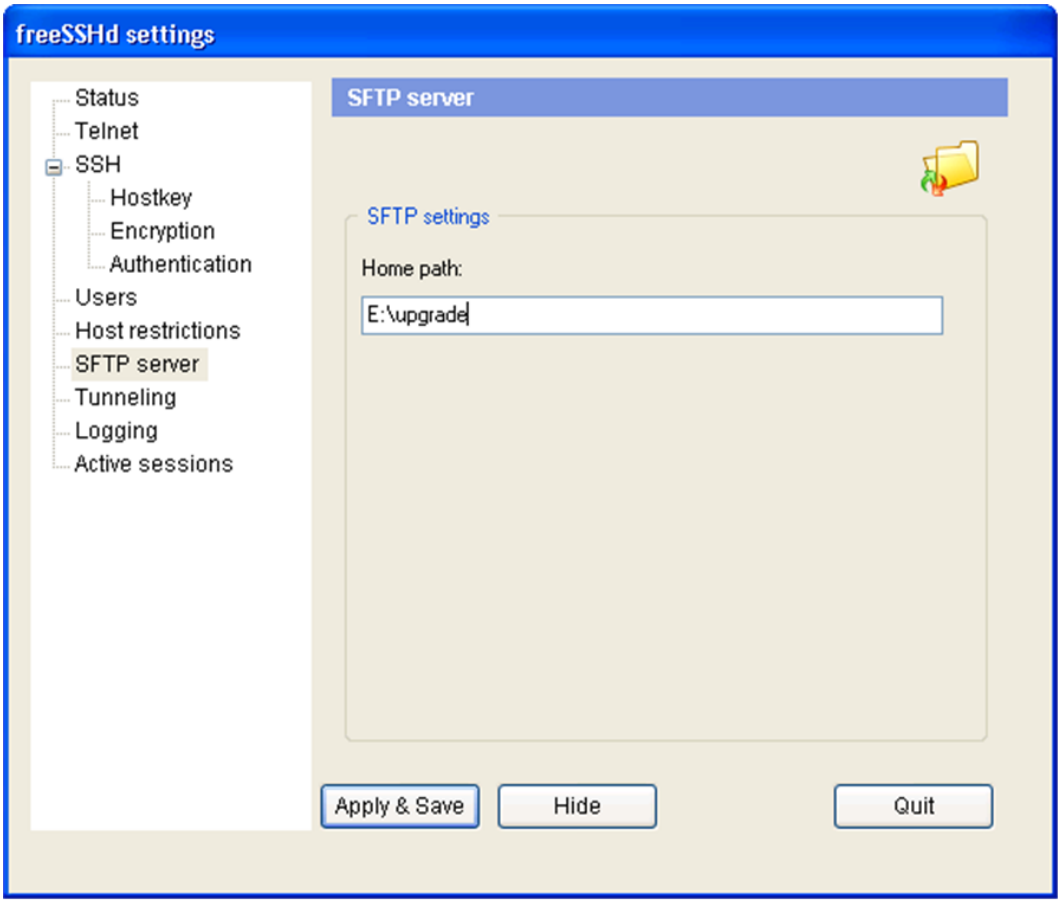
3. On the right pane, set **Listen address** to the IP address of the server where the backup file is located.



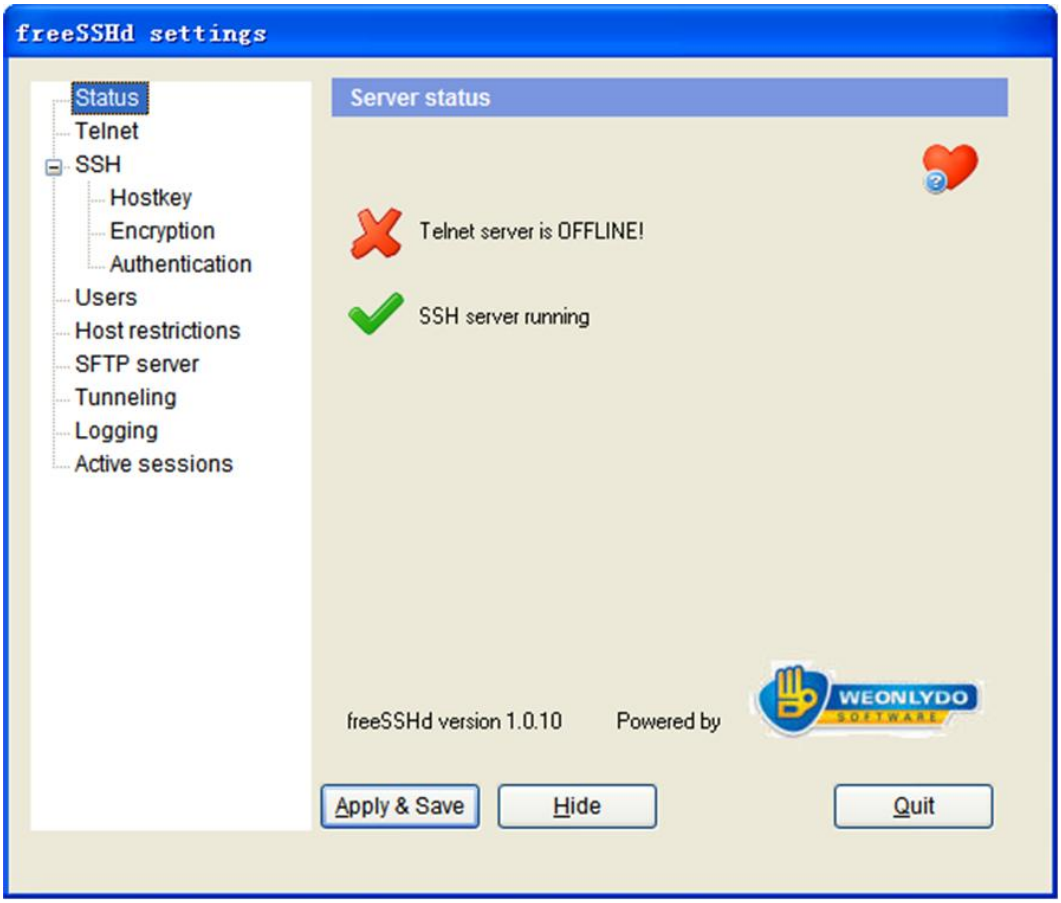
4. Click the **Users** node. On the right pane, click **Add** to add a user. Ensure that the user name and password of the user added using the SFTP tool are consistent with those configured on the device.



5. Click the **SFTP server** node. On the right pane, set the file address, and click **Apply&Save**.



6. Click the **Status** node, and check whether SSH is started.

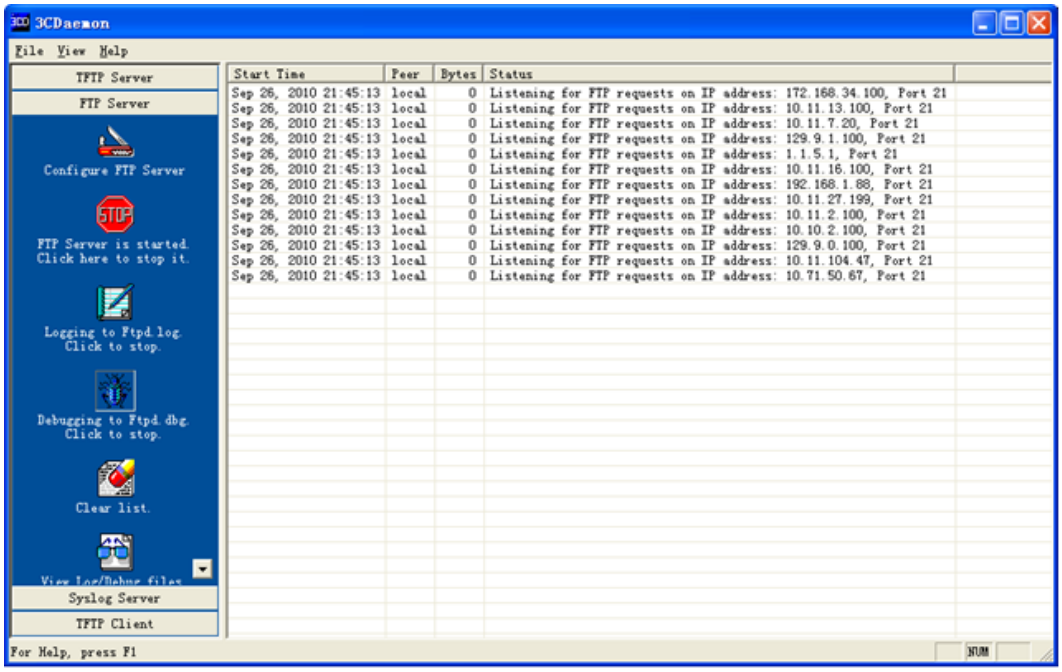


7. Set the SSH user name and password on the device. The user name and password must be consistent with those configured on the SFTP server.

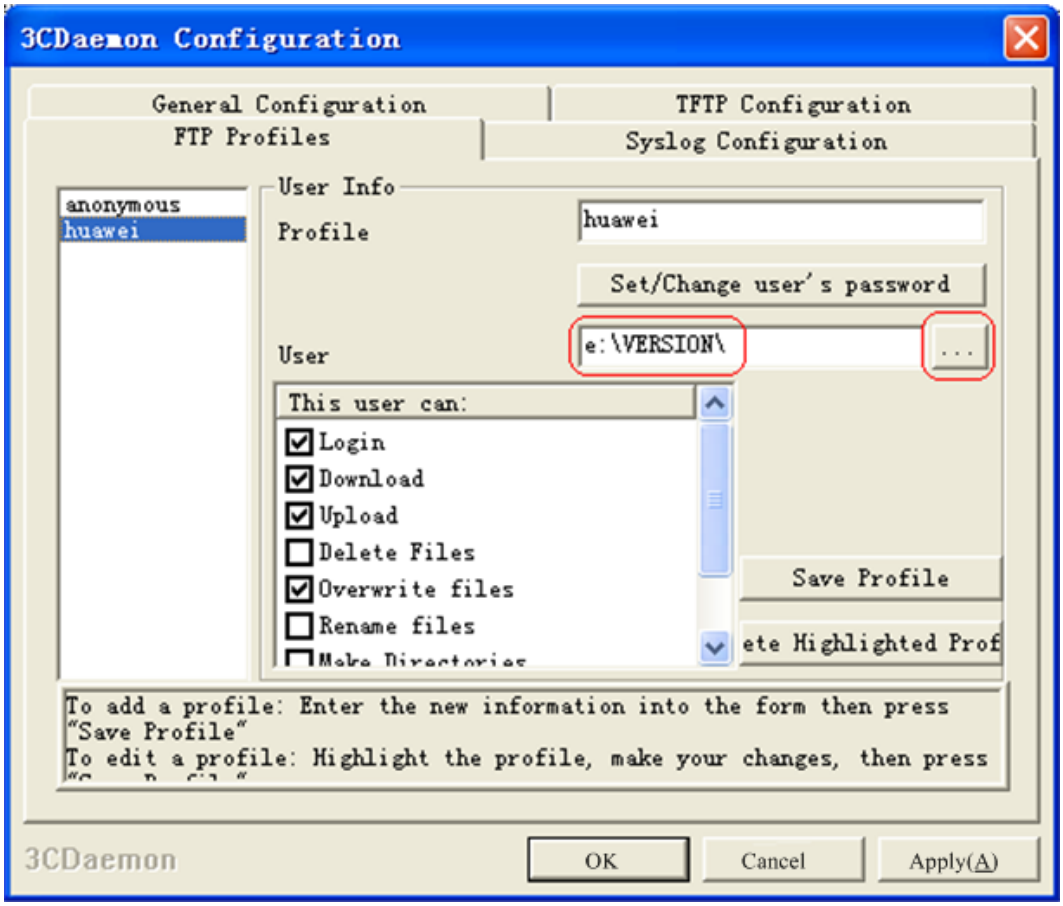
```
huawei(config)#ssh sftp set
  User Name(<=40 chars):huawei
  User Password(<=40 chars):
  Listening Port(0--65535):22
```

- **Data transfer with the device using FTP**

1. Double-click **3CDaemon.exe** to display the configuration dialog box.



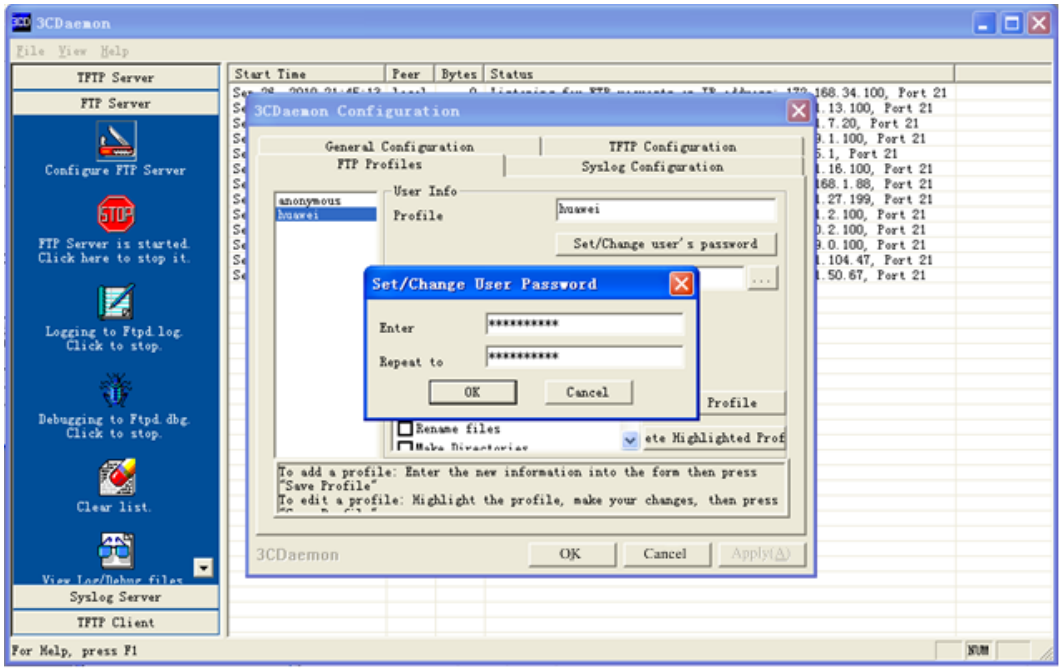
2. On the **FTP Server** tab, click **Configure FTP Server**.
3. In the **3CDaemon Configuration** dialog box that is displayed, click ... . Then, in the dialog box that is displayed, select the path of the file to be loaded.



4. Click **Set/Change user's password**.
5. In the dialog box that is displayed, enter the password and click **OK**.

CAUTION

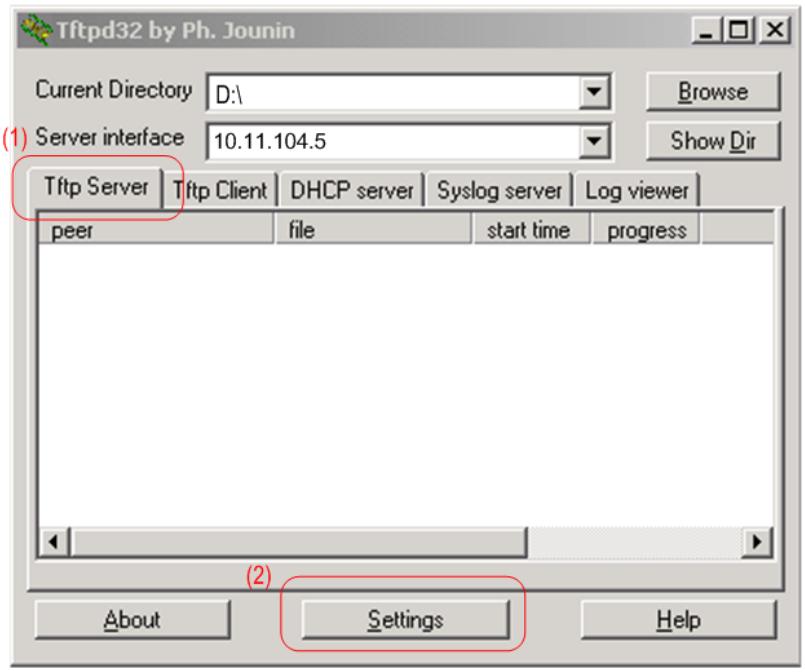
The user name and password of the FTP client must be the same as the user name and password of the FTP server. Run the **ftp set** command to configure the user name and password of the FTP client.



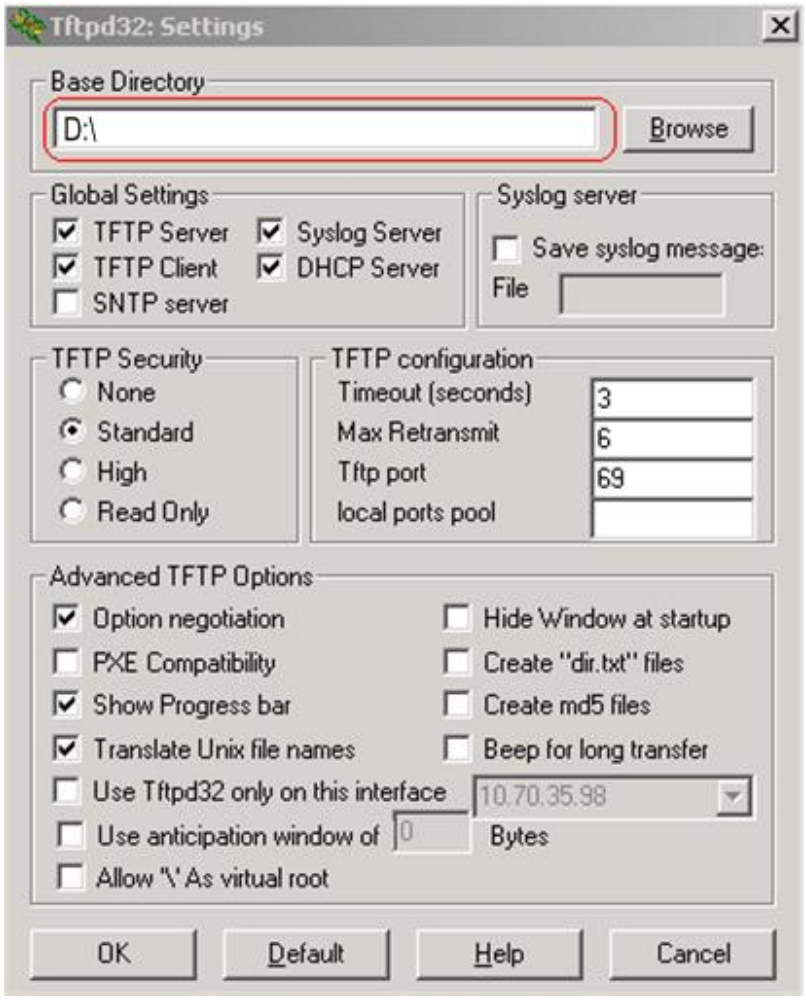
6. Click **OK** to complete the FTP service configuration.

- **Data transfer with the device using TFTP**

1. Double-click **tftpd32.exe** to display the configuration dialog box.
2. Click the **Tftp Server** tab, and then click **Settings**. The **tftpd32: Settings** dialog box is displayed.



3. In the **tftpd32: Settings** dialog box, click the **Browse** button. In the window that is displayed, select the directory for the file to be loaded.



4. Click **OK** to complete the configuration of the TFTP service.

----End

10.4 Alarms and Events

During the upgrade, the system generates alarms and events. Some can be automatically cleared but some cannot.

NOTE

The following alarms and events generated are lab data and are for reference only.

Alarms

Fault Alarm	Quantity	Description	Supports Automatic Clearance or Not	Clear Alarm
The	1	This fault alarm	YES	The

Fault Alarm	Quantity	Description	Supports Automatic Clearance or Not	Clear Alarm
communication between the board and the control board fails **NOTE** This alarm is generated for the standby control board.		is reported after the active control board starts up. A clear alarm is reported after the active/standby bulk backup on the standby control board is complete.		communication of the board with the control board recovers **NOTE** This alarm is generated for the standby control board.
The communication between the board and the control board fails **NOTE** This alarm is generated for the service board.	About 5 (depending on the actual number of boards)	This fault alarm is reported after the active control board starts up. A clear alarm is reported after the services on the service boards are recovered following a successful upgrade.	YES	The communication of the board with the control board recovers **NOTE** This alarm is generated for the service board.
The communication of the EMU with the host is abnormal **NOTE** This alarm is generated for fan monitoring.	1	This fault alarm is reported after the active control board starts up. A clear alarm is reported after the fans function properly following a successful upgrade.	YES	The communication of the EMU with the host recovers **NOTE** This alarm is generated for fan monitoring.
The communication of the EMU with the host is abnormal **NOTE** This alarm is generated for	1	This fault alarm is reported after the active control board starts up. A clear alarm is reported after the power	YES	The communication of the EMU with the host recovers **NOTE** This alarm is generated for power supply

Fault Alarm	Quantity	Description	Supports Automatic Clearance or Not	Clear Alarm
power supply monitoring.		supply monitoring functions properly following a successful upgrade.		monitoring.
The upstream Ethernet port connection failure recovers or the state of it is normal	About 5 (depending on the number of upstream ports that are not connected to a device)	If a port on the upstream board is not connected to a device, a clear alarm is reported after the active control board starts up and then a fault alarm is reported.	YES	-
The upstream Ethernet port connection fails or the state of it is abnormal	About 5 (depending on the number of upstream ports that are not connected to a device)	If a port on the upstream board is not connected to a device, a clear alarm is reported after the active control board starts up and then a fault alarm is reported.	NO	-

Events

Event	Quantity	Description
Backing up files starts from the host to the maintenance terminal	1	This event is generated when the backup operation starts.
Backing up files is successful from the host to the	1	This event is generated when the backup operation ends.

Event	Quantity	Description
maintenance terminal		
The loading starts	2	This event is generated when the loading operation starts.
The loading is successful	2	This event is generated when the loading operation ends.
Auto-load start	About 10 (depending on the actual number of boards and EMUs)	This event is generated when an automatic upgrade of a board or EMU starts after the device is successfully upgraded.
Auto-load Complete	About 10 (depending on the actual number of boards and EMUs)	This event is generated when an automatic upgrade of a board or EMU ends after the device is successfully upgraded.
The managing user of the equipment logout or logon	Uncertain	This event is generated when multiple users log in to or log out of a device concurrently by using the serial port or telnet.
The system batch hot backup starts	1	This event is generated when the batch hot backup between active and standby control boards starts following the standby control board recovery.
The system batch hot backup is complete	1	This event is generated when the batch hot backup between active and standby control boards ends following the standby control board recovery.
Normal system startup	1	This event is generated two minutes after the upgraded device starts up.
The Layer 3 interface link is in the up state	About 2 (depending on the actual number of connected Layer 3 interfaces)	This event is generated when a Layer 3 interface is initialized and its link recovers after the device is upgraded.