NE40E&CX600&PTN6900 M2 V800R011C10SPC100

Upgrade Guide

Issue 01

Date 2019-09-30

Huawei Technologies Co., Ltd.

About This Document

Purpose

This document provides instructions on upgrading a router to V800R011C10SPC100.

Intended Audience

This document is intended for:

- System maintenance engineers
- Data configuration engineers
- Network monitoring engineers

Symbol Conventions

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

Symbol	Description
⚠ DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
NOTICE	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
📖 NOTE	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

Change History

Issue	Date	Description
01	2019-09-30	This issue is the first official release.

Contents

1 Before You Start

1.1 Upgrade Notes for Versions

This document provides instructions on how to upgrade the NE40E-M2, CX600-M2, and PTN 6900-M2 series products.

The NE40E-M2E is used as an example to describe the upgrade procedure.

1.1.1 Upgrade Notes for the NE40E-M2 Series Products

1.   For information about how to upgrade the NE40E-M2 series products, refer to the upgrade procedure in this document.

2.   The following tables list the upgrade information about the NE40E-M2 series products.

Upgrade information of history versions that can be upgraded

M2E:

Version	Remarks
V800R006C20SPC100	Refer to the procedure in this document to upgrade the version.
V800R007C00SPC200	Refer to the procedure in this document to upgrade the version.
V800R007C10SPC100	Refer to the procedure in this document to upgrade the version.
V800R008C00SPC100	Refer to the procedure in this document to upgrade the version
V800R008C10SPC500	Refer to the procedure in this document to upgrade the version.
V800R009C00SPC200	Refer to the procedure in this document to upgrade the version.

Version	Remarks
V800R009C10SPC200	Refer to the procedure in this document to upgrade the version.
V800R010C00SPC200	Refer to the procedure in this document to upgrade the version.
V800R010C10SPC500	Refer to the procedure in this document to upgrade the version.
V800R010C10SPC600	Refer to the procedure in this document to upgrade the version.
V800R011C00SPC200	Refer to the procedure in this document to upgrade the version.

M2F:

Version	Remarks
V800R007C00SPC200	Refer to the procedure in this document to upgrade the version.
V800R007C10SPC100	Refer to the procedure in this document to upgrade the version.
V800R008C00SPC100	Refer to the procedure in this document to upgrade the version
V800R008C10SPC500	Refer to the procedure in this document to upgrade the version.
V800R009C00SPC200	Refer to the procedure in this document to upgrade the version.
V800R009C10SPC200	Refer to the procedure in this document to upgrade the version.
V800R010C00SPC200	Refer to the procedure in this document to upgrade the version.
V800R010C10SPC500	Refer to the procedure in this document to upgrade the version.
V800R010C10SPC600	Refer to the procedure in this document to upgrade the version.
V800R011C00SPC200	Refer to the procedure in this document to upgrade the version.

M2H:

Version	Remarks
V800R009C00SPC200	Refer to the procedure in this document to upgrade the version
V800R009C10SPC200	Refer to the procedure in this document to upgrade the version.
V800R010C00SPC200	Refer to the procedure in this document to upgrade the version.
V800R010C10SPC500	Refer to the procedure in this document to upgrade the version.
V800R010C10SPC600	Refer to the procedure in this document to upgrade the version.
V800R011C00SPC200	Refer to the procedure in this document to upgrade the version.

M2K:

Version	Remarks

Version	Remarks
V800R010C10SPC500	Refer to the procedure in this document to upgrade the version
V800R011C00SPC200	Refer to the procedure in this document to upgrade the version.

M2K-B:

Version	Remarks
V800R011C00SPC200	Refer to the procedure in this document to upgrade the version.

1.1.2 Upgrade Notes for the CX600-M2 Series Products

1. For information about how to upgrade the CX600-M2 series products, refer to the upgrade procedure in this document.
2. The following tables list the upgrade information about the CX600-M2 series products.

Upgrade information of history versions that can be upgraded

M2E:

Version	Remarks
V800R006C20SPC100	Refer to the procedure in this document to upgrade the version.
V800R007C00SPC200	Refer to the procedure in this document to upgrade the version.
V800R007C10SPC100	Refer to the procedure in this document to upgrade the version.
V800R008C00SPC100	Refer to the procedure in this document to upgrade the version
V800R008C10SPC500	Refer to the procedure in this document to upgrade the version.
V800R009C00SPC200	Refer to the procedure in this document to upgrade the version.
V800R009C10SPC200	Refer to the procedure in this document to upgrade the version.
V800R010C00SPC200	Refer to the procedure in this document to upgrade the version.
V800R010C10SPC500	Refer to the procedure in this document to upgrade the version.
V800R010C10SPC600	Refer to the procedure in this document to upgrade the version.

M2F:

Version	Remarks
V800R007C00SPC200	Refer to the procedure in this document to upgrade the version.
V800R007C10SPC100	Refer to the procedure in this document to upgrade the version.
V800R008C00SPC100	Refer to the procedure in this document to upgrade the version

Version	Remarks
V800R008C10SPC500	Refer to the procedure in this document to upgrade the version.
V800R009C00SPC200	Refer to the procedure in this document to upgrade the version.
V800R009C10SPC200	Refer to the procedure in this document to upgrade the version.
V800R010C00SPC200	Refer to the procedure in this document to upgrade the version.
V800R010C10SPC500	Refer to the procedure in this document to upgrade the version.
V800R010C10SPC600	Refer to the procedure in this document to upgrade the version.

M2H:

Version	Remarks
V800R009C00SPC200	Refer to the procedure in this document to upgrade the version
V800R009C10SPC200	Refer to the procedure in this document to upgrade the version.
V800R010C00SPC200	Refer to the procedure in this document to upgrade the version.
V800R010C10SPC500	Refer to the procedure in this document to upgrade the version.
V800R010C10SPC600	Refer to the procedure in this document to upgrade the version.

M2K:

Version	Remarks
V800R010C10SPC500	Refer to the procedure in this document to upgrade the version
V800R011C00SPC200	Refer to the procedure in this document to upgrade the version.

M2K-B:

Version	Remarks
V800R011C00SPC200	Refer to the procedure in this document to upgrade the version.

1.1.3 Upgrade Notes for the PTN 6900-M2 Series Products

1. For information about how to upgrade the PTN 6900-M2 series products, refer to the upgrade procedure in this document.
2. The following tables list the upgrade information about the PTN 6900-M2 series products.

Upgrade information of history versions that can be upgraded

M2E:

Version	Remarks
V800R006C20SPC100	Refer to the procedure in this document to upgrade the version.
V800R007C00SPC200	Refer to the procedure in this document to upgrade the version.
V800R007C10SPC100	Refer to the procedure in this document to upgrade the version.
V800R008C00SPC100	Refer to the procedure in this document to upgrade the version.
V800R008C10SPC500	Refer to the procedure in this document to upgrade the version.
V800R009C10SPC200	Refer to the procedure in this document to upgrade the version.
V800R010C00SPC200	Refer to the procedure in this document to upgrade the version.
V800R010C10SPC500	Refer to the procedure in this document to upgrade the version.

M2F:

Version	Remarks
V800R007C00SPC200	Refer to the procedure in this document to upgrade the version.
V800R007C10SPC100	Refer to the procedure in this document to upgrade the version.
V800R008C00SPC100	Refer to the procedure in this document to upgrade the version.
V800R008C10SPC500	Refer to the procedure in this document to upgrade the version.
V800R009C10SPC200	Refer to the procedure in this document to upgrade the version.
V800R010C00SPC200	Refer to the procedure in this document to upgrade the version.
V800R010C10SPC500	Refer to the procedure in this document to upgrade the version.

M2K:

Version	Remarks
V800R011C00SPC200	Refer to the procedure in this document to upgrade the version.

M2K-B:

Version	Remarks
V800R011C00SPC200	Refer to the procedure in this document to upgrade the version.

1.2 Upgrade Schemes

Table 1-1 lists the upgrade schemes supported by the NE40E-M2, CX600-M2, and PTN 6900-M2.

Table 1-1 Upgrade schemes supported by routers

Upgrade Scheme	Usage Scenario	Advantage	Prerequisites	Section
iUpgrade (recommended)	This mode is recommended when the device is running properly.	The operation procedure is simple. iUpgrade can record and compare check items before and after the upgrade, and supports batch upgrade.	• Version software transfer requires the support of the network environment. • A third-party FTP/TFTP server program is required. • The CF card has enough space to store the target version software package and target patch.	For details, see *iUpgrade Tool Guide*. https://support.huawei.com/carrier/docview!docview?nid=DOC1100436723
Use command lines for a direct upgrade to V800R011C10 SPC100 (recommended)	The router is operating and carrying services properly.	Use this scheme to upgrade any source version. The upgrade procedure is simple and the impact on services is minimal.	A server is available to transmit system software. The router has been configured as an SFTP server or a third-party SFTP server application has been installed.	4.1 Upgrading the System Software Using iUpgrade
BootROM	The BootROM upgrade scheme is applicable to the following scenarios: The router is upgraded for	Any source version can be upgraded using this scheme. If the system software fails to be installed	Network resources are available to transfer system software files.	4.3 Upgrading the System Software Using the BootROM

Upgrade Scheme	Usage Scenario	Advantage	Prerequisites	Section
	the first time, and its system software is faulty or unavailable. IPU fail to be registered after the router is restarted to install the target system software.	when the router is faulty, only this scheme is applicable. **NOTE** The upgrade procedure is complicated and services may be affected.		

1.3 Impact of the Upgrade

1.3.1 Impact on the System During the Upgrade

Services will be interrupted after the upgrade is complete and the router is restarted. If the router has not been configured, the restart takes about 10 minutes. If the router has been configured, the time taken to restart the device depends on the size of the configuration file.

1.3.2 Impact of the Upgrade on the System

 NOTE
For detailed information about feature and command updates after an upgrade, see V800R011C10SPC100 *Delta Information*.

- Impact on command lines

  Some command lines in the source version are different from those in V800R011C10SPC100. After the upgrade, some configurations are no longer effective. To ensure that configuration files after the upgrade are complete, see the source version-V800R011C10SPC100 Delta Information.

1.4 Precautions

Contact Huawei technical personnel for assistance and support during the upgrade process.

Note the following function about administrator rights, password, and login management:

- Log in through the console port

  The non-authentication mode has been canceled. When you log in for the first time, you must configure a password and keep this password properly.

- Telnet/SSH login The non-authentication mode has been canceled.

  Choose to specify the authentication mode as AAA or password. If you do not specify an authentication mode, Telnet or SSH users cannot log in.

- Administrator password management

  A simple text password is no longer supported for a local user in the target version. If a simple text password has been set, it will be restored after an upgrade. Changing the simple text password to a ciphertext password is recommended.

- User right management

After an upgrade to V800R011C10SPC100, by default, a user right's level is changed as follows: 0 to 0, 1 to 1, 2 to 2, and 3-15 to 3. To have a user right's level remain unchanged after an upgrade, add the command-privilege level rearrange command to the next-startup configuration file.After this command is run, the actual user right may be degraded after an upgrade. For example, with the user level 8, a user has the administrator right in the source version, whereas has only the common user right in the target version.To have a user's right remain unchanged after an upgrade, add the command-privilege level rearrange command to the next-startup configuration file, and modify the user right level based on the following mapping: 0 to 0, 1 to 1, 2 to 2, and 3-15 to 15.

Before you upgrade a version earlier than V800R011C10SPC100 or later, save the configuration file of the source version. If the upgrade fails, you can roll back to the source version using the saved configuration file.

Precautions for the Upgrade

Stage	Precautions
Pre-upgrade	Ensure that the log function is enabled to record upgrade operations.
Upgrade in process	Do not power off or restart the router, or remove or install any board during the upgrade. There are no separate SFUs on the NE40E-M2&CX600-M2&PTN 6900-M2, and therefore no upgrade of SFUs is required. Do not manually upgrade a board if CPU usage exceeds 90 percent as doing so may result in a slow upgrade or upgrade failure. It is advisable to upgrade a board when CPU usage is below 50%.
Post-upgrade	Check that boards can be registered, that board components are compatible, and that no configuration data was lost during the upgrade.

Upgrade References

- Contact Huawei technical support personnel or visit http://support.huawei.com or http://support.huawei.com/enterprise to obtain references for your source SPC version:
  - Upgrade Guide
  - Release Notes
  - GTL License Application Guide
  - PAF&License Selection Guide
  - Version Mapping
  - Command, alarm, and MIB delta information
  - V800R010C10SPC500

- Follow instructions in this document and record all operations inG Upgrade Record. The records will help troubleshoot possible upgrade problems or a failure.

- Before changing the system software, determine whether to apply for a GTL license. For information about how to select a GTL license file, see the *Router* GTL License Application Instructions.

1.5 Telemetry Upgrade Description

In the source version, the sampling path of the Telemetry is incompatible with the current version.

NOTICE

The following table lists the comparison between the old and new sampling paths of the router for reference during the upgrade. For details about the sampling paths supported by the current product, see the 《Telemetry Performance Counter Set》.

The following table lists the paths.

NO	Sampling Path Before the Upgrade	Sampling Path After the Upgrade
1	huawei-devm:devm/cpuInfos/cpuInfo	huawei-debug:debug/cpu-infos/cpu-info
2	huawei-devm:devm/memoryInfos/memoryInfo	huawei-debug:debug/memory-infos/memory-info
3	huawei-ifm:ifm/interfaces/interface	huawei-ifm:ifm/interfaces/interface
4	huawei-devm:devm/fans/fan	N/A
5	huawei-devm:devm/temperatureInfos/temperatureInfo	N/A
6	huawei-devm:devm/powerSupplys/powerSupply/powerEnvironments/powerEnvironment	N/A
7	huawei-ifm:ifm/interfaces/interface/ifDynamicInfo	huawei-ifm:ifm/interfaces/interface/dynamic
8	huawei-kpi:kpi/kpiDatas/kpiData	huawei-kpi:kpi/kpi-datas/kpi-data

- Before the upgrade, delete and save the configuration of the existing telemetry sampling path before the upgrade. For example, the configuration in V800R011C10SPC100 is as follows :

```
#
telemetry
#
sensor-group sgroup1
sensor-path huawei-ifm:ifm/interfaces/interface/ifStatistics
sensor-path huawei-ifm:ifm/interfaces/interface/ifStatistics/ethPortErrSts
```

```
sensor-path huawei-devm:devm/fans/fan
sensor-path
huawei-devm:devm/powerSupplys/powerSupply/powerEnvironments/powerEnvironment
sensor-path huawei-devm:devm/temperatureInfos/temperatureInfo
sensor-path huawei-ifm:ifm/interfaces/interface
sensor-path huawei-ifm:ifm/interfaces/interface/ifClearedStat
sensor-path huawei-ifm:ifm/interfaces/interface/ifDynamicInfo
sensor-path huawei-devm:devm/ports/port/opticalInfo
sensor-path huawei-devm:devm/cpuInfos/cpuInfo
sensor-path huawei-devm:devm/memoryInfos/memoryInfo
sensor-path huawei-qos:qos/qosBuffers/qosBuffer
sensor-path
huawei-qos:qos/qosIfQoss/qosIfQos/qosPolicyApplys/qosPolicyApply/qosPolicyStats/qo
sPolicyStat/qosRuleStats/qosRuleStat
sensor-path huawei-qos:qos/qosPortQueueStatInfos/qosPortQueueStatInfo
#
destination-group dest1
ipv4-address 10.192.129.65 port 2105 protocol grpc no-tls
#
subscription sub1
sensor-group sgroup1 sample-interval 30000
destination-group dest1
#
```

Need to enter sensor-group view，Delete all sensor-paths. For example:

```
<HUAWEI>system-view
[~HUAWEI]telemetry
[~HUAWEI-telemetry] sensor-group sgroup1
[~HUAWEI-telemetry-sensor-group-sgroup1]undo sensor-path
huawei-ifm:ifm/interfaces/interface/ifStatistics
[*HUAWEI-telemetry-sensor-group-sgroup1]undo sensor-path
huawei-ifm:ifm/interfaces/interface/ifStatistics/ethPortErrSts
[*HUAWEI-telemetry-sensor-group-sgroup1]undo sensor-path huawei-devm:devm/fans/fan
[*HUAWEI-telemetry-sensor-group-sgroup1]undo sensor-path
huawei-devm:devm/powerSupplys/powerSupply/powerEnvironments/powerEnvironment
[*HUAWEI-telemetry-sensor-group-sgroup1]undo sensor-path
huawei-devm:devm/temperatureInfos/temperatureInfo
[*HUAWEI-telemetry-sensor-group-sgroup1]undo sensor-path
huawei-ifm:ifm/interfaces/interface
[*HUAWEI-telemetry-sensor-group-sgroup1]undo sensor-path
huawei-ifm:ifm/interfaces/interface/ifClearedStat
[*HUAWEI-telemetry-sensor-group-sgroup1]undo sensor-path
huawei-ifm:ifm/interfaces/interface/ifDynamicInfo
[*HUAWEI-telemetry-sensor-group-sgroup1]undo sensor-path
huawei-devm:devm/ports/port/opticalInfo
[*HUAWEI-telemetry-sensor-group-sgroup1]undo sensor-path
huawei-devm:devm/cpuInfos/cpuInfo
[*HUAWEI-telemetry-sensor-group-sgroup1]undo sensor-path
huawei-devm:devm/memoryInfos/memoryInfo
[*HUAWEI-telemetry-sensor-group-sgroup1]undo sensor-path
huawei-qos:qos/qosBuffers/qosBuffer
[*HUAWEI-telemetry-sensor-group-sgroup1]undo sensor-path
huawei-qos:qos/qosIfQoss/qosIfQos/qosPolicyApplys/qosPolicyApply/qosPolicyStats/qo
sPolicyStat/qosRuleStats/qosRuleStat
[*HUAWEI-telemetry-sensor-group-sgroup1]undo sensor-path
```

```
huawei-qos:qos/qosPortQueueStatInfos/qosPortQueueStatInfo
[*HUAWEI-telemetry-sensor-group-sgroup1]commit
[~HUAWEI-telemetry-sensor-group-sgroup1]return
<HUAWEI>save
```

NOTICE

Reconfigure the sampling path after the device is upgraded.

After the upgrade, reconfigure the sampling path :

```
<HUAWEI>system-view
[~HUAWEI]telemetry
[~HUAWEI-telemetry] sensor-group sgroup1
[~HUAWEI-telemetry-sensor-group-sgroup1]sensor-path
huawei-ifm:ifm/interfaces/interface/mib-statistics
[*HUAWEI-telemetry-sensor-group-sgroup1]sensor-path
huawei-ifm:ifm/interfaces/interface/mib-statistics/huawei-pic:eth-port-err-sts
[*HUAWEI-telemetry-sensor-group-sgroup1]sensor-path
huawei-devm:devm/huawei-driver:driver/driver:fans/driver:fan
[*HUAWEI-telemetry-sensor-group-sgroup1]sensor-path
huawei-devm:devm/huawei-driver:driver/driver:power-supplys/driver:power-supply/dri
ver:power-environments/power-environment
[*HUAWEI-telemetry-sensor-group-sgroup1]sensor-path
huawei-driver:driver/temperature-informations/temperature-information
[*HUAWEI-telemetry-sensor-group-sgroup1]sensor-path
huawei-ifm:ifm/interfaces/interface
[*HUAWEI-telemetry-sensor-group-sgroup1]sensor-path
huawei-ifm:ifm/interfaces/interface/common-statistics
[*HUAWEI-telemetry-sensor-group-sgroup1]sensor-path
huawei-ifm:ifm/interfaces/interface/dynamic
[*HUAWEI-telemetry-sensor-group-sgroup1]sensor-path
huawei-devm:devm/ports/port/huawei-pic:optical-module
[*HUAWEI-telemetry-sensor-group-sgroup1]sensor-path
huawei-debug:debug/cpu-infos/cpu-info
[*HUAWEI-telemetry-sensor-group-sgroup1]sensor-path
huawei-debug:debug/memory-infos/memory-info
[*HUAWEI-telemetry-sensor-group-sgroup1]sensor-path
huawei-qos:qos/qosBuffers/qosBuffer
[*HUAWEI-telemetry-sensor-group-sgroup1]sensor-path
huawei-qos:qos/global-query/interface-traffic-policy-statisticss/interface-traffic
-policy-statistics/rule-based-staticss/rule-based-statics
[*HUAWEI-telemetry-sensor-group-sgroup1]sensor-path
huawei-qos:qos/global-query/default-queue-statisticss/default-queue-statistics
[*HUAWEI-telemetry-sensor-group-sgroup1]commit
[~HUAWEI-telemetry-sensor-group-sgroup1]return
<HUAWEI>save
```

- After the upgrade, the collector re-adapts to the new proto file.

2 Upgrade Process Overview

Figure 2-1 shows a flowchart for upgrading routers.

Figure 2-1 Upgrade flowchart
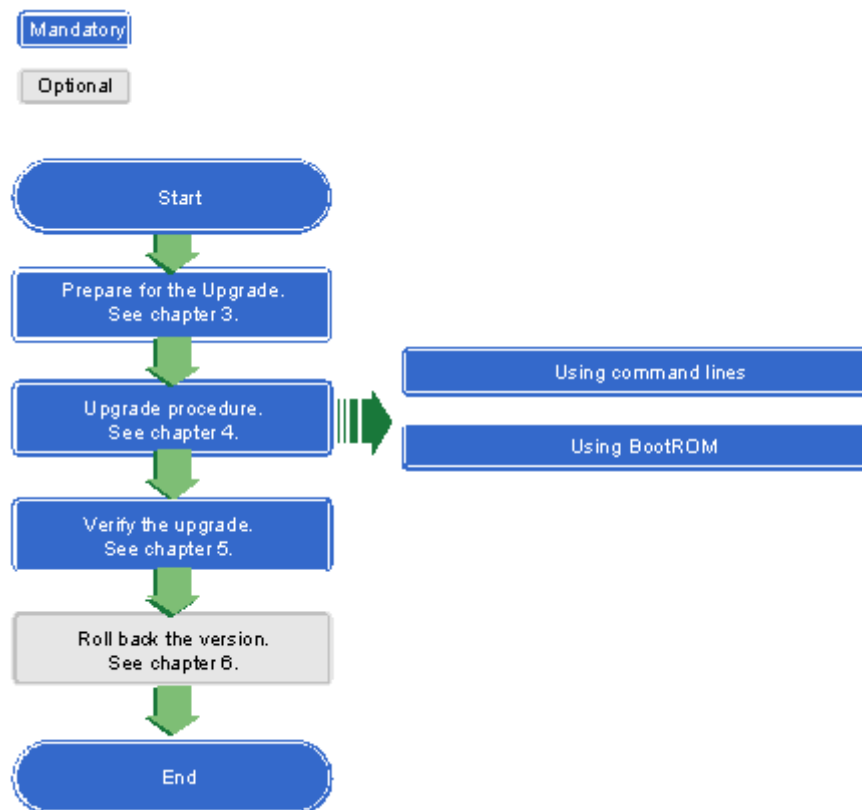
Table 2-1 lists the upgrade procedures.

Table 2-1 Upgrade Procedure

No.	Upgrade Procedure	Description	Time Required (on a 100 Mbit/s LAN)	Mandatory or Optional

No.	Upgrade Procedure	Description	Time Required (on a 100 Mbit/s LAN)	Mandatory or Optional
1	3.1 Pre-upgrade Checklist	Describes precautions and preparations for the upgrade.	About 10 minutes.	Mandatory
2	4 Performing the Upgrade	Describes how to upgrade the system software.	In CLI mode: 1. Configure FTP to upload the required files, such as software package and patch file. This operation takes about 30 minutes, depending on the file size. 2. Configure the next restart of the software package and perform an upgrade. This operation takes about 20 minutes. In BootROM mode: about 20 minutes	Mandatory
3	5 Verifying the Upgrade	Describes how to verify the upgrade. If the upgrade is successful, the upgrade task is complete; if the upgrade fails, a rollback must be performed.	About 10 minutes.	Mandatory
4	6 Rolling Back to the Source Version	Describes how to roll back the system to the source version.	About 20 minutes.	Optional

NOTE

The time required for a rollback refers to the duration between the start of the rollback and the time all boards are registered on an unconfigured router. The time listed here is an estimate; actual rollback time varies with the size of the configuration file and the number of boards.

3 Preparing for the Upgrade

3.1 Pre-upgrade Checklist

Verify that you have completed all the tasks listed in Table 3-1 and record the check results in the Check Result column.

Table 3-1 Pre-upgrade Checklist

No.	Task	Criteria	Check Result
1	3.2 Obtaining Upgrade Reference Documents	The target system software (.cc) and documents relevant to the upgrade have been obtained from Huawei.	
2	3.4 Checking the Current System Software Version	Information about the current system software version has been verified and recorded.	
3	3.5 Checking the Operating Status of the	The IPU is working properly. The pre-upgrade operating status of all boards has been recorded to provide reference for possible	

No.	Task	Criteria	Check Result
	Device	upgrade troubleshooting.	
4	3.6 Establishing an Upgrade Environment Using SFTP	The upgrade environment has been set up.	
5	3.7 Backing Up Key Data Saved in the cfcard	All important data on the CFcard has been backed up, including the configuration file, system software, patch files, and GTL license file (if any). **NOTE** For details about how to enable functions on an interface board or a service board after the GTL license file is activated, see the chapter "FAQ" in the *GTL License Application Instructions*.	
6	3.8 Checking Remaining Space in the cfcard	The CFcard has sufficient space to store the target upgrade software.	

3.2 Obtaining Upgrade Reference Documents

Contact Huawei technical support or log in to the support website to obtain the target system software and reference documents.

Before using the target system software, perform OpenPGP signature verification and use this software only if the verification succeeds. To perform OpenPGP signature verification, log in to the support website and select the desired device type. On the **Software** tab page, select the desired device and patch versions. Then, select the target system software and click **Digital Signature Authentication Mode** on the page that is displayed. The PGP file used for verification can be obtained from Huawei technical support or the support website.

The procedure for obtaining the target system software and reference documents from the support website is as follows:

Step 1 Log in to https://support.huawei.com as a carrier user or https://support.huawei.com/enterprise as an enterprise user.

If you visit the website for the first time, go to Step 2 for registration. If you are already a registered user, go to Step 3.

Step 2 Click **Register** and complete the registration process as prompted. If the registration succeeds, you will receive your username and password. Keep your password secure.

Step 3 Enter the username, password, and verification code. Then click **Login**.

Step 4 **Carrier user:** Choose **Support** from the main menu. On the page that is displayed, click the **Software** tab and then click **Network**. On the page that is displayed, choose **Data Communication** > **Service Router** from the navigation pane. Select the desired device model and download the system software (.cc file). Then choose **Support** from the main menu. On

the **Product Support** tab page, click **Data Communication**. On the page that is displayed, choose **Service Router** from the navigation pane. Select the desired device model and download the reference documents.

Enterprise user: Choose **TECHNICAL SUPPORT** > **Product Support** > **Enterprise Network** > **Routers** from the main menu. On the page that is displayed, select the desired device model and download the system software (.cc file) and reference documents.

----End

System Software (.cc)

System software package and file names

Applicable Scope	System Software Name	Device Type
Outside China	V800R011C10SPC100-OC-NE-M2E.cc	NE40E-M2E
Outside China	V800R011C10SPC100-OC-NE-M2F.cc	NE40E-M2F
Outside China	V800R011C10SPC100-OC-NE-M2H.cc	NE40E-M2H
Outside China	V800R011C10SPC100-OC-CX-M2E.cc	CX600-M2E
Outside China	V800R011C10SPC100-OC-CX-M2F.cc	CX600-M2F
Outside China	V800R011C10SPC100-OC-CX-M2H.cc	CX600-M2H
Outside China	V800R011C10SPC100-OC-PTN-M2E.cc	PTN 6900-M2E
Outside China	V800R011C10SPC100-OC-PTN-M2F.cc	PTN 6900-M2F

NOTE

This document uses V800R011C10SPC100-OC-NE-M2E.cc as an example. The system space may vary according to the product version.

3.3 Obtaining a GTL File

> **NOTICE**
>
> The extension of a GTL License file name is **.dat** or **.xml**, which is different from that of a software license file name. The GTL license file of an earlier version can be used after being upgraded to a new version. However, only the inherited function items that have been applied for can be used. To use new features of the new version, you need to apply for a new GTL license file.
>
> The GTL license application platform provides the .xml format of GTL license files for V800R011C00SPC200 and later versions, instead of the .dat format for earlier versions. However, activated .dat GTL license files can still be used in V800R011C00SPC200 and later versions.
>
> If a source version is earlier than V800R011C00SPC200 and the GTL license file needs to be replaced after an upgrade, replace the GTL license file after the upgrade is complete. Otherwise, the new GTL license file cannot be loaded or used.
>
> The GTL License file is an encrypted file and cannot be modified. If the file is modified, it becomes invalid.
>
> For details about how to enable functions on an interface board or a service board after the GTL License file is activated, see the chapter "FAQ" in the *GTL License Application Instructions*.

To use a feature controlled in V800R011C10SPC100, apply for and download the feature from Huawei GTL platform before the upgrade. Ensure that the GTL License file matches the software package. Otherwise, controlled services cannot be provisioned. For details about how to obtain and use a GTL license, contact Huawei technical support engineers.

Viewing Features Supported in a GTL License File

The method for viewing features supported by a GTL license[j(1)   varies according to the GTL license file type.[Z2]

For a .dat GTL license file, use the notepad program to open the GTL license file and view the following fields:

- Resource: a resource item that the GTL license controls
- Function: a function item that the GTL license controls

For example:

```
Product=NetEngine40E X1X2
Feature=CRFEA3
Esn="2102350BUR0000000000"
Attrib="COMM, PERMANENT, 60, NULL, NULL, NULL"
Resource="LCR5S03EDSG01=1"
Function="LCR5S03CLCK00=1"
Comment=""
```

For an .xml GTL license file, use the notepad program to open the GTL license file and view the following fields:

- CapacityKey name: a resource item that the GTL license controls[j(3)]
- FeatureKey name: a function item that the GTL license controls

Each **SaleItem name** field indicates the sales item type selected on the configurator or at the GTL license application website.

For example:

```
<SaleInfo>
   <OfferingProduct name="NE40E-M2E" version="V800R011">
        <SaleItem name="LCR5S03CLCK00">
            <Value validDate="XXXX-XX-XX">1</Value>
            <DesEng unit="PCS">NE40E-M2 Series 1588v2 Function License</DesEng>
            <FeatureKey name="LCR5S03CLCK00">
                <Value validDate="XXXX-XX-XX">1</Value>
            </FeatureKey>
        </SaleItem>
        <SaleItem name="LCR5S03EDSG01">
            <Value validDate="XXXX-XX-XX">1</Value>
            <DesEng unit="Default">NE40E-M2 Series OTT Service Boost Quantity License
Annual Fee(per 1k OTT services)</DesEng>
            <CapacityKey name="LCR5S03EDSG01">
                <Value validDate="XXXX-XX-XX">1</Value>
            </CapacityKey>
        </SaleItem>
   </OfferingProduct>
</SaleInfo>
```

Verifying that ESNs in the GTL License Are the Same as Those Saved on the Router to Be Upgraded

After obtaining the GTL License, run the following command to check the ESN of the backplane.

```
<HUAWEI> display esn
ESN: 2102350BUR0000000000
```

1. Use the notepad program to open the obtained GTL license file and view ESNs.
2. Check that the ESNs saved in the GTL license file are the same as those of MPUs saved on the NE40E.

Determining Whether or Not to Apply for a GTL License When an MPU Is Replaced

If a new MPU is used, applying for a GTL license depends on the following situations:

● A new MPU can be replaced and used and a new GTL license does not need to be applied for.

The MPU's ESN or the backplane's ESN can be identified based on the BarCode field in an electronic label (e-label).

Run the following command to view the e-label on the MPU.

```
<HUAWEI> display elabel slot-id
```

Run the following command to view the e-label on the backplane.

```
<HUAWEI> display elabel backplane
```

3.4 Checking the Current System Software Version

Run the **display version** command in the user view to view the current system software version.

```
<HUAWEI>display version
Huawei Versatile Routing Platform Software
VRP (R) software, Version 8.190 (NE40E V800R011C10SPC100)
Copyright (C) 2012-2019 Huawei Technologies Co., Ltd.
HUAWEI NE40E-M2E uptime is 1 day, 2 hours, 55 minutes
```

In this command output, the characters in bold are the Current system software version. If the Current system software version is the target version, no upgrade is required.

3.5 Checking the Operating Status of the Device

Check the operating status of IPU and PICs

Single-chassis Scenario

Run the **display device** command in the user view to check the operating status of IPU and PICs to check that they are functioning properly.

```
<HUAWEI>display device
NE40E-M2E's Device status:
--------------------------------------------------------------------------------
Slot #   Type   Online    Register     Status    Role   LsId   Primary
--------------------------------------------------------------------------------
1        PIC    Present   Registered   Normal    OTHER  0      NA
3        IPU    Present   Registered   Normal    MMB    0      Master
5        PWR    Present   Registered   Normal    OTHER  0      NA
6        FAN    Present   Registered   Normal    OTHER  0      NA
7        CLK    Present   Registered   Normal    OTHER  0      Master
--------------------------------------------------------------------------------
```

If **Unregistered** is displayed in the **Register** field, the board in that slot is not registered. If **Abnormal** is displayed in the **Status** field, the board in that slot is not functioning properly.

☐ NOTE

    If the IPU is registered, its registration state is displayed as **Registered**.

If a board cannot register or does not work properly, record its status and contact Huawei technical support personnel to determine whether to upgrade or replace the board. If the board can be upgraded, check its status again after the upgrade. If the board is still not working properly, follow the procedure in section "7.1 Boards or Fans Fail to Be Upgraded" or contact Huawei technical support personnel.

Virtual Cluster Scenario

```
<HUAWEI>display device
Total Chassis Number: 2
Central Chassis Number: 0
Line Chassis Number: 2
Chassis ID: clc1
NE40E-M2E'sDevice status:
```

```
--------------------------------------------------------------------------------
Slot #  Type   Online    Register     Status   Role  LsId  Primary
--------------------------------------------------------------------------------
clc1/3  IPU    Present   Registered   Normal   MMB   0     System master
clc1/4  PWR    Present   Registered   Normal   OTHER 0     NA
clc1/6  FAN    Present   Registered   Normal   OTHER 0     NA
clc1/7  CLK    Present   Registered   Normal   OTHER 0     Master
--------------------------------------------------------------------------------
Chassis ID: clc2
NE40E-M2E'sDevice status:
--------------------------------------------------------------------------------
Slot #   Type   Online    Register     Status    Role  LsId  Primary
--------------------------------------------------------------------------------
clc2/1   PIC    Present   Registered   Normal    OTHER 0     NA
clc2/2   PIC    Present   Registered   Normal    OTHER 0     NA
clc2/3   IPU    Present   Registered   Normal    MMB   0     System slave
clc2/4   PWR    Present   Registered   Normal    OTHER 0     NA
clc2/6   FAN    Present   Registered   Normal    OTHER 0     NA
clc2/7   CLK    Present   Registered   Normal    OTHER 0     Master

------------------------------------------------------------------------
```

Check the subcard register status

Run the **display device pic-status** command in the user view to check the subcard register status.

```
<HUAWEI>display device pic-status
Pic-status information :
--------------------------------------------------------------------------------
Pic#   Status       Type                  Port count  Init result   Logic down
--------------------------------------------------------------------------------
3/1    Registered   ETH 8xGED CARD            8        SUCCESS       SUCCESS
3/3    Registered   LAN 2x10GF ETH 24xGF CARD 26       SUCCESS       SUCCESS
--------------------------------------------------------------------------------
```

The **Init_result** and **Logic_down** fields of all subcards must be "SUCCESS".

Solutions in case of an exception: If there are unregistered subcards, perform the following operations:

1. Check whether exception alarms are generated. For details, see View alarm information.
2. If the problem persists, contact Huawei technical support personnel.

Check the temperature of the boards

Run the **display temperature slot** *slotid* command in the user view to check the temperature of the boards.

```
<HUAWEI>display temperature slot 3
 Base-Board, Unit:C, Slot 3
------------------------------------------------------------------------
PCB     I2C ADDr Chl Status Minor Major Fatal FanTMin FanTMax Temp(C)
------------------------------------------------------------------------
IPU     0   72   0   NORMAL 67    70    75    30      55      31
IPU     0   74   0   NORMAL 78    81    85    60      75      52
IPU     0   76   0   NORMAL 86    91    96    71      81      42
```

```
IPU        0    76   1    NORMAL 95    100   105   80          90          52
IPU        0    77   0    NORMAL 78    81    85    60          75          49
IPU        0    175  0    NORMAL 93    100   105   80          90          61
IPU        5    72   0    NORMAL 84    90    96    70          80          52
IPU        5    73   0    NORMAL 67    70    75    30          55          32
IPU        5    74   0    NORMAL 86    91    96    71          81          51
IPU        5    75   0    NORMAL 78    81    85    60          75          43
IPU        255  77   0    NORMAL 100   105   110   80          95          63
IPU        255  78   0    NORMAL 100   105   110   80          95          65
IPU        255  79   0    NORMAL 100   105   110   80          95          53
IPU        255  175  0    NORMAL 95    100   105   82          92          62
E8GED      4    75   0    NORMAL 77    82    92    51          66          38
E8GED      255  76   0    NORMAL 100   105   110   80          95          55
--------------------------------------------------------------------------
```

The **Status** of all boards should be "NORMAL", and all the **Temp** values should be lower than 60.

Solutions in case of an exception: If the **Temp** values exceed 60, turning down the air-conditioner in the equipment room.

Check the main control board and PIC running status

Run the **display device** *slotid* command in the user view to check the main control board running status.

```
<HUAWEI>display device 3
IPU CR5B0BKP0371 3's detail information:
--------------------------------------------------------------------------
 Description:                      Integration Processing Unit
 Board status:                     Normal
 Register:                         Registered
 Uptime:                           2018/10/08 12:55:34
 CPU Utilization(%):                14%
 Mem Usage(%):                      27%
 Statistic information:
 Statistic item                   Statistic number
 SERDES interface link lost:        0
 MAC Address:                      0055-6677-8899
 MAC Base Addr:                    38ba-1850-3701
 MAC Block size:                    16
--------------------------------------------------------------------------
PIC1: CR5D00E8GE71 information:
 Description: 8-Port 100/1000Base-RJ45 Physical Interface Card(PIC)
 Uptime:                  2018/10/08 12:57:08
 Card type:               ETHERNET
 Port number:             8
 Converge info:           non-converge
PIC3: CR5D00L2XEFGFA71 information:
 Description:2-Port 10GBase LAN/WAN-SFP+ + 24-Port 100/1000Base-X-SFP Fixed Interface
Card(FIC)
 Uptime:                  2018/10/08 12:57:05
 Card type:               ETHERNET
 Port number:             26
 Converge info:           non-converge
--------------------------------------------------------------------------
```

Check the logs

The logs on an IPU are stored in the **logfile** directory in cfcard:/.

```
<HUAWEI>dir
Directory of cfcard:/logfile/
 Idx Attr    Size(Byte) Date       Time      FileName
 0  -rw-       49,982  Mar 08 2019  13:04:31 diag.log
 1  drwx           -   Mar 08 2019  20:31:20 lost+found
1,982,464 KB total (461,105 KB free)
<HUAWEI>
```

Solutions in case of an exception: If the following logs are frequently generated, record these logs and contact Huawei technical support personnel.

```
0  -rw-       49,982  Mar 08 2019  13:04:31 diag.log
```

NOTICE

If more than 200 logs are stored in the log directory, the device may not be restarted after the upgrade. In this situation, back up these logs, delete the historical logs from the directory to reduce the number of logs smaller than 200, back up the configuration files, and restart the device

Check the memory usage of IPU

Run the **display health** command in the user view to check the memory usage of IPU. Check that IPU are functioning properly.

```
<HUAWEI> display health
-----------------------------------------------------------------
Slot                 CPU Usage  Memory Usage(Used/Total)
-----------------------------------------------------------------
3    IPU(Master)        9%         20% 785MB/3815MB
-----------------------------------------------------------------
```

📖 **NOTE**

    The default IPU memory is 4 GB for NE40E-M2E.

For information about memory usage on each board in various scenarios on a device running V800R011C10SPC100 , seeB Memory and CPU Usage of Boards.

View alarm information

Run the **display alarm all** command in the user view to view alarm information. Check that all the IPU and PICs are functioning properly.

```
<HUAWEI> display alarm all
```

If alarms are displayed, contact Huawei technical support personnel for assistance determining whether or not to continue the upgrade.

Keep a detailed record of the operating status of each board for use as a troubleshooting reference.

3.6 Establishing an Upgrade Environment Using SFTP

□ NOTE
- If SFTP is used for upgrade, the router functions as a client and the PC functions as a server, install the SFTP server application on the PC. The SFTP server application does not come with the router; therefore, you must purchase and install the SFTP server application separately.
- Using SFTP is recommended.

You can download the system software using SFTP in the command line view, specify the system software as the startup system software, and then restart the device to complete the upgrade. For details, see 4.1 Upgrading the System Software Using iUpgradeUpgrading the System Software Using Command Lines.

Figure 3-1 shows the basic networking diagram for establishing an upgrade environment using SFTP.

□ NOTE
A PC can also function as a server to store the downloaded system software. You will need to connect the PC to the router using a network cable.

The general requirements for establishing an upgrade environment using SFTP are as follows:

- The RS-232 serial interface on the PC and the console interface on the device are connected using a console cable.
- The server and the Ethernet interface on the IPU of the device are connected using a network cable.
- The IP addresses of the server and the Ethernet interface on the device are on the same network segment.
- Upgrade files, including the system software are stored on the server.

Figure 3-1 Networking diagram for upgrading the router using SFTP
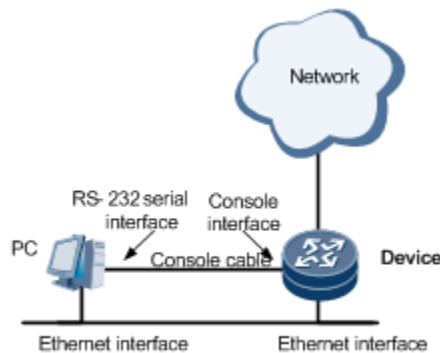
This document assumes that:

- The IP address of the Ethernet interface is X.X.X.X/24.
- The IP address of the PC is **X.X.X.X**.

3.7 Backing Up Key Data Saved in the cfcard

Make sure that you back up the key data (configuration-related files) that is stored in the cfcard before upgrade. After upgrade, you can load the backup files again.

The key data includes the configuration file, patch file, system software before the upgrade, and GTL License file.

Perform the following steps to save the configuration file:

1.   Run the **save** [*config-filename*] command in the user view.

📕 **NOTE**

The extension of a configuration file name must be .cfg or .zip. The system configuration file must be saved in the root directory on the storage device.

```
Warning: Are you sure to save the configuration to cfcard:/vrpcfg.zip? [Y/N]:y
Now saving the current configuration to the slot 3
Info: Save the configuration successfully.
```

NOTICE

1. The **save** and **save** *config-filename* commands have different functions. Note the following when using them.

● The **save** command saves the current configuration to the configuration file for the next startup on the storage device. You can use the **display startup** command to view information about the configuration file for the next startup. By default, the configuration file of the next startup is cfcard:/ vrpcfg.zip.

● The **save** *config-filename* command backs up the current configuration to the file specified by *config-filename* on the storage device. The command execution does not affect the current startup configuration file. If *config-filename* is specified the same as the configuration file for the next startup and the storage path for the configuration file, the **save** *config-filename* command functions the same as the **save** command.

2. If you have run the **save** *config-filename* command to back up the current configuration and still want to deliver the new configuration, you must run the **save** *config-filename* command again to back up the new configuration to the configuration file. This ensures that the new configuration restores after the device restarts.

2.   Set a PC as the SFTP server, configure a user named **huawei** with the password **huawei@123**, and store the target system software in the file directory of the FTP server. This example assumes that the IP address of the SFTP server is **X.X.X.X**, and the IP address of the Ethernet interface on the router is X.X.X.X.

📕 **NOTE**

In this example, a PC functions as an SFTP server. For more methods to upload/download files, refer to the procedure in chapter A Uploading/Downloading Files.

If the router functions as a client, and the PC functions as a server, install the SFTP server application on your PC before the upgrade. The SFTP server application does not come with the router; therefore. you must purchase and install the SFTP server application separately.

3.   Log in to the SFTP server.

Run the s**ftp** *ip-address* command on the router to set up an FTP connection with the PC and enter the FTP client view.

```
[~HUAWEI]sftp X.X.X.X
Trying X.X.X.X ...
Press CTRL+K to abort
```

```
Connected to X.X.X.X ...
Warning: The negotiated encryption or digest algorithm is insecure. Using a security
algorithm (AES-256, SHA-256) is recommended.
Please input the username:huawei
Enter password:******
sftp-client>
```

4. At the prompt **sftp-client>**, run the **put** *remote-filename* [*local-filename*] command to
    upload files from the FTP server.

    For example, download the configuration file (confile.cfg), GTL license file, and the
    pre-upgrade system software (V800R010C10SPC500) to the local directory for backup.

```
sftp-client>put vrpcfg.zip vrpcfgbackup.zip
Local file: vrpcfg.zip ---> Remote file: / vrpcfgbackup.zip
Uploading the file. Please wait...\
Uploading file successfully ended.
File upload is completed in xx seconds.
sftp-client>put V800R010C10SPC500-OC-NE-M2E.cc V800R010C10SPC500backup-OC-NE-M2E.cc
Local file: V800R010C10SPC500-OC-NE-M2E.cc ---> Remote file: /
V800R010C10SPC500backup-OC-NE-M2E.cc
Uploading the file. Please wait...\
Uploading file successfully ended.
File upload is completed in xx seconds.
sftp-client> put gtl.dat gtlbackup.dat
Local file: gtl.dat ---> Remote file: / gtlbackup.dat
Uploading the file. Please wait...\
Uploading file successfully ended.
File upload is completed in xx seconds.
```

    ----End

3.8 Checking Remaining Space in the cfcard

Checking Remaining Space

Run the **dir** command in the user view to check whether the remaining space in the cfcards of
is sufficient (about 200M Byte)for storing the target system software.

📕 **NOTE**

If a cfcard has been used for more than five years, replace it.

The cfcard has internal partitions. The remaining space information shown in the **dir cfcard:** command
output greatly differs from that shown in the **dir cfcard:/logfile/** command output. Before you install the
target system software, run the **dir cfcard:** command to verify whether the remaining space is sufficient.

```
<HUAWEI>dir cfcard:/
Directory of cfcard:/
 Idx  Attr  Size(Byte)  Date       Time      FileName
 0  drwx          -  Mar 08 2019  13:01:43 $ checkpoint
 1  drwx          -  Mar 08 2019  11:05:37 $ install hpg
 2  drwx          -  Mar 08 2019  11:05:37 $ install mod
 3  dr-x          -  Mar 08 2019  20:38:12 $ license
 4  dr-x          -  Mar 08 2019  11:51:09 $ security info
 5  dr-x          -  Mar 08 2019  17:17:53 $ system
 6  -rw- 283,976,924  Mar 08 2019  11:14:49 V800R010C10SPC500-OC-NE-M2E.cc
 7  -rw-      14,458  Mar 08 2019  13:05:55 device.sys
```

```
 8   drwx           -  Mar 08 2019  13:05:55  logfile
 9   drwx           -  Mar 08 2019  20:30:55  lost+found
10   drwx            - Mar 08 2019  18:56:59  lpustat
11   drwx           -  Mar 08 2019  00:00:00  pmdata
12   -rw-      12,351  Mar 08 2019  12:53:08  vrpcfg.zip
......
1,982,464 KB total (582,236 KB free)
//1,982,464 KB total indicates the capacity of the current cfcard, and 1,431,539 KB
free  indicates the remaining space of the current cfcard.
```

Deleting Unnecessary Files

If the remaining space in the cfcard is insufficient for storing the upgrade system software, delete unnecessary files.

To delete unnecessary files from the cfcards on the IPU, run the following commands in the user view:

NOTICE

The files deleted using the **delete** command are saved in the Recycle Bin. You can restore files in the Recycle Bin using the **undelete** command. Files in the Recycle Bin still occupy space in the cfcard.

The file name **huawei.pat** is only an example.

You can run the **reset recycle-bin** command to permanently delete these files.

```
<HUAWEI> delete cfcard:/huawei.pat
Info: Delete cfcard:/huawei.pat? [Y/N]:y
Info: Deleting file cfcard:/huawei.pat......succeeded.
```

Run the following command to restore mistakenly deleted files stored in the Recycle Bin:

```
<HUAWEI> undelete cfcard:/huawei.pat
Info: Undelete cfcard:/huawei.pat? [Y/N]:Y
Info: Undeleted file cfcard:/huawei.pat......Done.
```

Run the following commands to permanently delete unnecessary files:

```
<HUAWEI> reset recycle-bin cfcard:/
Info: Squeeze cfcard:/huawei.pat? [Yes/All/No/Cancel]:y
Info: Cleared file cfcard:/huawei.pat......Done.
```

4 Performing the Upgrade

4.1 Upgrading the System Software Using iUpgrade

Purpose	To upgrade the system software.
Impact	Services will be interrupted during the post-upgrade restart.
Time Required	The upgrade takes approximately 50 minutes, including the time for downloading and uploading the system software package.
Prerequisites	• The network environment is normal. • iUpgrade has been installed correctly.

☐ NOTE

For details about iUpgrade installation and iUpgrade-based upgrade process and operations, refer to the latest *iUpgrade Tool Guide* at
https://support.huawei.com/carrier/docview!docview?nid=DOC1100436723.

4.2 Upgrading the System Software Using Command Lines

Purpose	To upgrade router's system software.
Impact	Services will be interrupted during the post-upgrade restart.
Time Required	The upgrade takes approximately 20 minutes.
Prerequisites	The router that runs a version earlier than the target version is functioning properly.

	The router and the PC can ping each other successfully.
	The CF card has sufficient space to store the target system software.
	The current configuration file and system software have been backed up.

Upgrade Flowchart

Figure 4-1 Flowchart for upgrading the system software using command lines
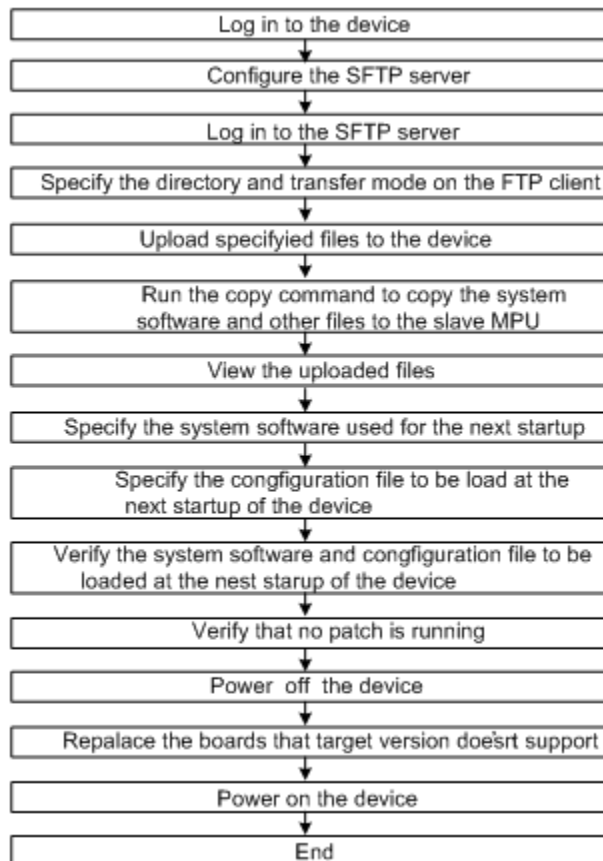
Upgrade Procedure (Using a Router as an SFTP Client)

☐ NOTE

- This example only describes how to download files by using the router as an SFTP client. For more methods to upload/download files, refer to the procedure in chapter A Uploading/Downloading Files.
- During the upgrade, the router will be restarted, interrupting services temporarily. Therefore, choose an appropriate time to upgrade the router, minimizing the impact on services.

1. Set the SFTP server.

   Set a PC as the SFTP server, configure a user named **huawei** with the password **huawei@123**, and store the target system software in the file directory of the FTP server. This example assumes that the IP address of the FTP server is X.X.X.X, and the IP address of the Ethernet interface on the router is X.X.X.X.

2. Log in to the SFTP server.

Run the s**ftp** *ip-address* command on the router to set up an FTP connection with the PC and enter the FTP client view.

```
[~HUAWEI]sftp X.X.X.X
Trying X.X.X.X ...
Press CTRL+K to abort
Connected to X.X.X.X ...
Warning: The negotiated encryption or digest algorithm is insecure. Using a security
algorithm (AES-256, SHA-256) is recommended.
Please input the username:huawei
Enter password:****
sftp-client>
```

3. At the **sftp-client>** prompt, run the **get** *local-filename* [*remote-filename*] command to upload the specified files to the router.

```
sftp-client> get V800R011C10SPC100-OC-NE-M2E.cc
Remote file: / V800R011C10SPC100-OC-NE-M2E.cc ---> Local file:
V800R011C10SPC100-OC-NE-M2E.cc
Downloading the file. Please wait.../
Downloading file successfully ended.
File download is completed in  xx seconds.
```

4. （Optional）Copy files to the CFcard of the slave chassis in virtual cluster and view uploaded files.

After the uploading is complete, run the copy source-filename destination-filename command to copy the PAF file, system software patch file, and GTL License file to the CF card of another IPU. The following uses the NE40E-M2E virtual cluster as an example.

a. Copy the files to the CFcard of the slave chassis.

```
<HUAWEI>copy cfcard:/ V800R011C10SPC100-OC-NE-M2E.cc  clc2/3#cfcard:
```

After the preceding operations, run the **dir** command to view the uploaded files and verify that the files have been uploaded or downloaded completely.

📖 **NOTE**

After uploading or downloading files, verify their completeness. If the files are not uploaded or downloaded completely due to insufficient storage space, delete unnecessary files from the cfcard. For instructions on how to delete unnecessary files from the cfcard, see "3.8 Checking Remaining Space in the cfcard."

Verify the uploaded files by checking file sizes and dates.

Run the **check system-software** *filename* command to check the integrity of the uploaded software package.

(1) Single-chassis

```
<HUAWEI>dir cfcard:/
Directory of cfcard:/
 Idx  Attr     Size(Byte) Date       Time       FileName
 0  dr-x           - Mar 08 2019  14:14:48 $ checkpoint
 1  dr-x           - Mar 08 2019  12:35:13 $ install hpg
 2  dr-x         - Mar 08 2019  12:35:13 $ install mod
 3  dr-x           - Mar 08 2019  20:38:12 $ license
 4  dr-x           - Mar 08 2019  11:51:09 $ security info
 5  dr-x           - Mar 08 2019  14:14:03 $ system
 6  -rw- 283,976,924 Mar 08 2019  11:14:49 V800R010C10SPC500-OC-NE-M2E.cc
 7  -rw- 304,949,700 Aug 07 2019  15:44:24  V800R011C10SPC100-OC-NE-M2E.cc
 8  -rw-         201 Mar 08 2019  14:13:38 backupelb.txt
```

```
 9  -rw-       14,458  Mar 08 2019  13:22:07 device.sys
10  -rw-        4,640  Mar 08 2019  14:11:24 lcsbox
11  drwx           -   Mar 08 2019  13:23:40 logfile
12  drwx           -   Mar 08 2019  20:30:55 lost+found
13  drwx           -   Mar 08 2019  18:56:59 lpustat
14  drwx           -   Mar 08 2019  00:00:00 pmdata
15  -rw-       12,224  Mar 08 2019  13:22:07 vrpcfg.zip
......
1,982,464 KB total (298,273 KB free)
<HUAWEI>
<HUAWEI>check system-software V800R011C10SPC100-OC-NE-M2E.cc
Caution!!! Confirm to check startup file! Continue? [Y/N]:y
Info: Prepare to check system software cfcard:/V800R011C10SPC100-OC-NE-M2E.cc,
please wait .................
.........................................
Info: The SHA256 hash value of the system software is
ead757043648feaf667918e33137f92293f63d5a3ba2109ff8c339220164c7c5.
Info: System software signature check passed!
<HUAWEI>
```

(2) Virtual cluster

The following uses the NE40E-M2F virtual cluster as an example.

a.   Run the following command to display information about the master CF card on the master chassis:

```
dir clc1/3#cfcard:
```

b.   Run the following command to display information about the master CF card on the master chassis:

```
dir clc2/3#cfcard:
```

5.   Specify system software, PAF file,the configuration file and patch file for the next startup.

📖 **NOTE**

- If the iUpgrade tool is used, the configuration file used during next startup will be changed.

- Do specify system software before specifying the PAF file; otherwise, the system may use the default PAF file during startup.

- The system loads PAF file contained in system software by default. If you have specified a user-defined PAF file for next startup, you can use the **startup paf default** command to re-specify the default PAF file for next startup. M2 series product does not support the **startup license** command, and you do not need to specify the license file for next startup.

(1) Single-chassis

Specify the system software to be loaded to IPU for the next startup.

```
<HUAWEI> startup system-software V800R011C10SPC100-OC-NE-M2E.cc
```

(Optional) Specify the startup patch file for the router.

```
<HUAWEI> startup patch huawei.pat all
Info: Operating, please wait for a moment........done.
Info: Succeeded in setting startup the patch.
```

(Optional) Specify the startup paf file for the router.

```
<HUAWEI> startup paf huawei.bin
Info: Succeeded in setting main board resource file for system.
```

(Optional) Specify the startup configuration file for the router. If no configuration file is specified, the configuration file of the source version is used during the next startup.

```
<HUAWEI> startup saved-configuration vrpcfg.zip
```

(2) Virtual cluster

Specify the system software to be loaded for the startup of the master and slave IPUs.

```
<HUAWEI>start system-software V800R011C10SPC100-OC-NE-M2E.cc all
Info: Operating, please wait for a moment...................done.
Info: Succeeded in setting the software for booting system in slot clc1/3.
Info: Succeeded in setting the software for booting system in slot clc2/3.
Warning: Ensure that the check system-software command or an offline tool has been
used to verify the validity and integrity of the startup software package.
```

After completing the preceding operations, run the **display startup** command to verify that files to be loaded for the next startup have been specified successfully.

NOTICE

1. Verify the integrity of the target system software by checking byte count.

2. To prevent threats to carrier networks caused by software tampering or damage in transit, verify the integrity of software packages after receiving them. Only verified software packages can be deployed. Digital Signature Authentication Mode refers to <OpenPGP Signature Verification Guide> on the support web.

3. When a source version is upgraded to V800R011C10SPC100, run the **check system-software** cfcard:/ V800R011C10SPC100-OC-NE-M2E.cc command to verify the integrity of the target system software. If the check fails, re-upload the target system software. The system software named   V800R011C10SPC100-OC-NE-M2E.cc is saved in the CF card.

(1).Single-chassis

```
<HUAWEI> display startup
MainBoard:
  Configured startup system software:      cfcard:/V800R010C10SPC500-OC-NE-M2E.cc
  Startup system software:                 cfcard:/V800R010C10SPC500-OC-NE-M2E.cc
  Next startup system software:
cfcard:/V800R011C10SPC100-OC-NE-M2E.cc
  Startup saved-configuration file:        cfcard:/vrpcfg.zip
  Next startup saved-configuration file:   cfcard:/vrpcfg.zip
 Startup paf file:                         default
 Next startup paf file:                    default
 Startup patch package:                    NULL
 Next startup patch package:               NULL
(Optional) The PAF file and patch file is specified.
  <HUAWEI> display startup
MainBoard:
  Configured startup system software:      cfcard:/V800R010C10SPC500-OC-NE-M2E.cc
  Startup system software:                 cfcard:/V800R010C10SPC500-OC-NE-M2E.cc
  Next startup system software:
cfcard:/V800R011C10SPC100-OC-NE-M2E.cc
  Startup saved-configuration file:        cfcard:/vrpcfg.zip
  Next startup saved-configuration file:   cfcard:/vrpcfg.zip
 Startup paf file:                         cfcard:/paf-OC-NE.bin
 Next startup paf file:                    cfcard:/paf-OC-NE.bin
 Startup patch package:                     cfcard:/ huawei.pat
 Next startup patch package:                cfcard:/ huawei.pat
```

(2) Virtual cluster

```
<HUAWEI>display startup
======================================================================
Chassis ID: clc1
 ----------------------------------------------------------------------
 clc1/3 (system master board):
  Configured startup system software:      cfcard:/V800R010C10SPC500-OC-NE-M2F.cc
  Startup system software:                 cfcard:/V800R010C10SPC500-OC-NE-M2F.cc
  Next startup system software:
cfcard:/V800R011C10SPC100-OC-NE-M2F.cc
  Startup saved-configuration file:        cfcard:/vrpcfg.zip
  Next startup saved-configuration file:   cfcard:/vrpcfg.zip
  Startup paf file:                        default
  Next startup paf file:                   default
  Startup patch package:                   NULL
  Next startup patch package:              NULL
======================================================================


======================================================================
Chassis ID: clc2
 ----------------------------------------------------------------------
 clc2/3 (system slave board):
  Configured startup system software:      cfcard:/V800R010C10SPC500-OC-NE-M2F.cc
  Startup system software:                 cfcard:/V800R010C10SPC500-OC-NE-M2F.cc
  Next startup system software:
cfcard:/V800R011C10SPC100-OC-NE-M2F.cc
  Startup saved-configuration file:        cfcard:/vrpcfg.zip
  Next startup saved-configuration file:   cfcard:/vrpcfg.zip
  Startup paf file:                        default
  Next startup paf file:                   default
  Startup patch package:                   NULL
  Next startup patch package:              NULL
======================================================================
(Optional) The PAF file and patch file is specified.
<HUAWEI>display startup
======================================================================
Chassis ID: clc1
 ----------------------------------------------------------------------
 clc1/3 (system master board):
  Configured startup system software:      cfcard:/V800R010C10SPC500-OC-NE-M2F.cc
  Startup system software:                 cfcard:/V800R010C10SPC500-OC-NE-M2F.cc
  Next startup system software:
cfcard:/V800R011C10SPC100-OC-NE-M2F.cc
  Startup saved-configuration file:        cfcard:/vrpcfg.zip
  Next startup saved-configuration file:   cfcard:/vrpcfg.zip
  Startup paf file:                        cfcard:/huawei.bin
  Next startup paf file:                   cfcard:/huawei.bin
  Startup patch package:                   cfcard:/ huawei.pat
  Next startup patch package:              cfcard:/ huawei.pat
======================================================================


======================================================================
Chassis ID: clc2
 ----------------------------------------------------------------------
 clc2/3 (system slave board):
  Configured startup system software:      cfcard:/V800R010C10SPC500-OC-NE-M2F.cc
```

```
 Startup system software:                cfcard:/V800R010C10SPC500-OC-NE-M2F.cc
 Next startup system software:
cfcard:/V800R011C10SPC100-OC-NE-M2F.cc
 Startup saved-configuration file:       cfcard:/vrpcfg.zip
 Next startup saved-configuration file:    cfcard:/vrpcfg.zip
 Startup paf file:                     cfcard:/huawei.bin
 Next startup paf file:                 cfcard:/huawei.bin
 Startup patch package:                 cfcard:/ huawei.pat
 Next startup patch package:             cfcard:/ huawei.pat
==================================================================
```

6. Save configurations.

    ```
    <HUAWEI> save
    The current configuration will be written to the device.
    Are you sure to continue?[Y/N]y
    Now saving the current configuration to the slot 3 ..
    Save the configuration successfully.
    ```

7. (Optional)Enable the rollback function.

    It helps rectify remote login failures after the upgrade.

    > ⚠ **CAUTION**
    >
    > The rollback function is disabled by default. Before the upgrade, the **upgrade rollback enable** command is used to enable rollback and set a period of time for a rollback to start after the upgrade.

    The device rollback time is relevant to the device type and number of services carried over the device. For the specific time information, contact Huawei technical support engineers.

    A device version rollback is performed when both of the following conditions are met: The **undo upgrade rollback** command is not run before the device restart; No user logs in to the device through Telnet or the console interface after the device restart within the specified time.

    ```
    <HUAWEI> upgrade rollback enable rollback-timer 60
    Info:The state of upgrade rollback is enable. Limit time is 60 minutes.
    If no User cancels the function, the main IPU will restart by the bootfile cfcard:/
    V800R010C10SPC500-OC-NE-M2E.cc.The slave IPU will restart by the bootfile cfcard:/
    V800R010C10SPC500-OC-NE-M2E.cc
    ```

    To view the rollback status and the period of time before a rollback is implemented, run the **display upgrade rollback** command.

    ```
    <HUAWEI> display upgrade rollback
    Info:The state of upgrade rollback is enable. Limit time is 60 minutes.
    If no User cancels the function, the main IPU will restart by the bootfile cfcard:/
    V800R010C10SPC500-OC-NE-M2E.cc. The slave IPU will restart by the bootfile cfcard:/
    V800R010C10SPC500-OC-NE-M2E.cc.
    ```

    To disable the rollback function, run the **undo upgrade rollback** command.

    ```
    <HUAWEI> undo upgrade rollback
    Info:The state of upgrade rollback is disable.
    ```

8. (Optional)Block users from getting online and cut off online users.

    📖 **NOTE**
    - If the router to be upgraded has no service, skip this step.

- This step must be performed on the router that has services; otherwise, a reboot will cause logoff and result in login attempt failures.

(1)Block users from getting online in the AAA domain.

– The **block** command used in the AAA domain view blocks a domain. After this command is used, new users in the domain cannot get online, but online users in this domain are not affected.

– View online users in all domains.

```
[~HUAWEI-aaa]display domain
-------------------------------------------------------------------------------
 Domain name          State     CAR Access-limit Online  BODNum RptVSMNum


-------------------------------------------------------------------------------
 default0             Active      0    1045504       0       0        0
 default1             Active      0    1045504       0       0        0
 default_admin        Active      0    1045504       2       0        0


-------------------------------------------------------------------------------
 Total 3,3 printed
```

Run the **block** command in each domain that has users.

```
[~HUAWEI-aaa-domain-test] block
```

(2)Get users offline.

Run the **cut access-user** command in the AAA view to get users offline in each domain that has online users found using the **display domain** command. This process takes less than 1 minute if there are a lot of online users.

```
[~HUAWEI-aaa] cut access-user domain test
```

Wait for a certain period of time and run the **display domain** command to verify that all users are offline. After all users go offline, shut down the BAS interface and save the configuration (do not shut down the remote login interface). And then back up the configuration file for possible rollback (Do not run the block or cut access-user command for the default_admin domain).

📕 **NOTE**

- If a large number of users are online, running the cut access-user command results in increasing CPU usage because many protocol packets are exchanged. After online users get offline, CPU usage reduces and becomes stable.

The **cut access-user** command takes effect only once and is not saved into the configuration file. Running this command does not affect the follow-up upgrade procedure.

9. Reboot the device.

📕 **NOTE**

- Some commands and functions may change because the configuration file changes after the reboot.
- The **reboot fast** command is used for quick restart of the router without prompting the user to confirm whether to save current configurations.

```
<HUAWEI> reboot
IPU 3:
Next startup system software: cfcard:/ V800R011C10SPC100-OC-NE-M2E.cc
Next startup saved-configuration file: cfcard:/vrpcfg.zip
Next startup paf file: default
Next startup patch package: NULL
System will reboot! Continue? [Y/N]:y
(Optional)The PAF file and patch file is specified for the next startup.
IPU 3:
```

```
Next startup system software: cfcard:/ V800R011C10SPC100-OC-NE-M2E.cc
Next startup saved-configuration file: cfcard:/vrpcfg.zip
Next startup paf file: cfcard:/paf-OC-NE.bin
Next startup patch package: cfcard:/huawei.pat
System will reboot! Continue? [Y/N]:y
```

10. After the restart, run the **display startup** command to verify that the router is running target system software.

(1) Single-chassis

```
<HUAWEI> display startup
MainBoard:
  Configured startup system software:       cfcard:/
V800R011C10SPC100-OC-NE-M2E.cc
  Startup system software:                  cfcard:/ V800R011C10SPC100-OC-NE-M2E.cc
  Next startup system software:             cfcard:/ V800R011C10SPC100-OC-NE-M2E.cc
  Startup saved-configuration file:         cfcard:/vrpcfg.zip
  Next startup saved-configuration file:    cfcard:/vrpcfg.zip
  Startup paf file:                 default
  Next startup paf file:            default
  Startup patch package:            NULL
  Next startup patch package:        NULL
  (Optional) The PAF file and patch file is specified.
  <HUAWEI> display startup
MainBoard:
  Configured startup system software:       cfcard:/
V800R011C10SPC100-OC-NE-M2E.cc
  Startup system software:                  cfcard:/ V800R011C10SPC100-OC-NE-M2E.cc
  Next startup system software:             cfcard:/ V800R011C10SPC100-OC-NE-M2E.cc
  Startup saved-configuration file:         cfcard:/vrpcfg.zip
  Next startup saved-configuration file:    cfcard:/vrpcfg.zip
  Startup paf file:                 cfcard:/paf-OC-NE.bin
  Next startup paf file:            cfcard:/paf-OC-NE.bin
  Startup patch package:            cfcard:/ huawei.pat
  Next startup patch package:        cfcard:/ huawei.pat
```

(2) Virtual cluster

```
<HUAWEI>display startup
====================================================================
Chassis ID: clc1
 --------------------------------------------------------------------
 clc1/3 (system master board):
  Configured startup system software:
cfcard:/V800R011C10SPC100-OC-NE-M2F.cc
  Startup system software:                  cfcard:/V800R011C10SPC100-OC-NE-M2F.cc
  Next startup system software:             cfcard:/V800R011C10SPC100-OC-NE-M2F.cc
  Startup saved-configuration file:         cfcard:/vrpcfg.zip
  Next startup saved-configuration file:    cfcard:/vrpcfg.zip
  Startup paf file:                 default
  Next startup paf file:            default
  Startup patch package:            NULL
  Next startup patch package:        NULL
====================================================================


====================================================================
Chassis ID: clc2
 --------------------------------------------------------------------
```

```
clc2/3 (system slave board):
 Configured startup system software:
cfcard:/V800R011C10SPC100-OC-NE-M2F.cc
 Startup system software:             cfcard:/V800R011C10SPC100-OC-NE-M2F.cc
 Next startup system software:        cfcard:/V800R011C10SPC100-OC-NE-M2F.cc
 Startup saved-configuration file:      cfcard:/vrpcfg.zip
 Next startup saved-configuration file:   cfcard:/vrpcfg.zip
 Startup paf file:                 default
 Next startup paf file:            default
 Startup patch package:            NULL
 Next startup patch package:        NULL
======================================================================
(Optional) The PAF file and patch file is specified.
<HUAWEI>display startup
======================================================================
Chassis ID: clc1
 ------------------------------------------------------------------
 clc1/3 (system master board):
 Configured startup system software:
cfcard:/V800R011C10SPC100-OC-NE-M2F.cc
 Startup system software:             cfcard:/V800R011C10SPC100-OC-NE-M2F.cc
 Next startup system software:        cfcard:/V800R011C10SPC100-OC-NE-M2F.cc
 Startup saved-configuration file:      cfcard:/vrpcfg.zip
 Next startup saved-configuration file:   cfcard:/vrpcfg.zip
 Startup paf file:                 cfcard:/paf-OC-NE.bin
 Next startup paf file:            cfcard:/paf-OC-NE.bin
 Startup patch package:            cfcard:/ huawei.pat
 Next startup patch package:        cfcard:/ huawei.pat
======================================================================

======================================================================
Chassis ID: clc2
 ------------------------------------------------------------------
 clc2/3 (system slave board):
 Configured startup system software:
cfcard:/V800R011C10SPC100-OC-NE-M2F.cc
 Startup system software:             cfcard:/V800R011C10SPC100-OC-NE-M2F.cc
 Next startup system software:        cfcard:/V800R011C10SPC100-OC-NE-M2F.cc
 Startup saved-configuration file:      cfcard:/vrpcfg.zip
 Next startup saved-configuration file:   cfcard:/vrpcfg.zip
 Startup paf file:                 cfcard:/paf-OC-NE.bin
 Next startup paf file:            cfcard:/paf-OC-NE.bin
 Startup patch package:            cfcard:/ huawei.pat
 Next startup patch package:        cfcard:/ huawei.pat
======================================================================
```

11. (Optional)After restart,load a desired GTL license file.

    Run the **license active** *license name* command to activate a GTL license in the following *scenarios:*

    Scenario 1: Activate a license for the first time.

    ```
    <HUAWEI> license active gtl.xml
    Now activing the License........................done.
    ```

    Scenario 2: A license file with the same name resides on a main control board that is not the master main control board.

Enter **Y** or **N** to confirm the activation operation. Enter **Y** to activate the license. Enter **N** to use the existing license.

```
<HUAWEI> license active gtl.xml
Warning: A file with the same name exists on the other board. This operation will
replace the existing one. Continue? [Y/N]:y
Now activing the License........................done.
```

Scenario 3: A license file has been activated. The new license to be activate has higher specifications than the existing activated one.

```
<HUAWEI> license active gtl.xml
Now activing the License........................done.
```

Scenario 4: A license file has been activated. The new license to be activate has lower specifications than the existing activated one.

Enter **Y** or **N** to confirm the activation operation. Enter **Y** to activate the license. Enter **N** to use the existing license.

```
<HUAWEI> license active gtl.xml
Warning: This operation will reduce current resource or function. Continue?  [Y/N]:y
Now activing the License........................done.
```

NOTICE

Since V800R011C00SPC200, the extension of a GTL license file obtained at the ESDP is changed from .dat to .xml. V800R011C00SPC200 supports both .dat and .xml GTL license files. In the preceding scenarios, the activation methods for .xml GTL license files are the same as those for .dat files.

12. Check services after the upgrade.

After the device starts up, check the subcard registration status. If all subcards are registered, check the configuration recovery status and check that no configuration loss occurs. Then, run the **undo shutdown** command on the network-side interface and check whether the network-side protocol status is restored.

(Optional)Run the **undo block** command, and then run the **undo shutdown** command on one downstream BAS interface. Check that services are normal. Then enter all the domains of online users on the BAS interface, and check that user services are normal.

Troubleshooting

If the IPU cannot be properly registered or the router cannot be telneted to but the BootROM menu is displayed, you can implement a rollback to restore the source system software. Another upgrade can be planned and performed after the router works properly. For information about version rollback, see section 7.2 IPU Fails to Be Registered.

If any boards fail to run properly or register, see section 7.1 Boards or Fans Fail to Be Upgraded.

4.3 Upgrading the System Software Using the BootROM

Purpose	To upgrade the device using the BootROM when the device fails to start up.

Impact	Services are interrupted when the host software on the master IPU is being upgraded.
Time Required	It takes approximately 20 minutes to upgrade the device with minimum configuration on a LAN.
Prerequisites	The device has Ethernet interfaces for communicating with an FTP server. CFcards have enough free space to store the system software.

Upgrade Flowchart

Figure 4-2 Upgrading the system software using the Console interface
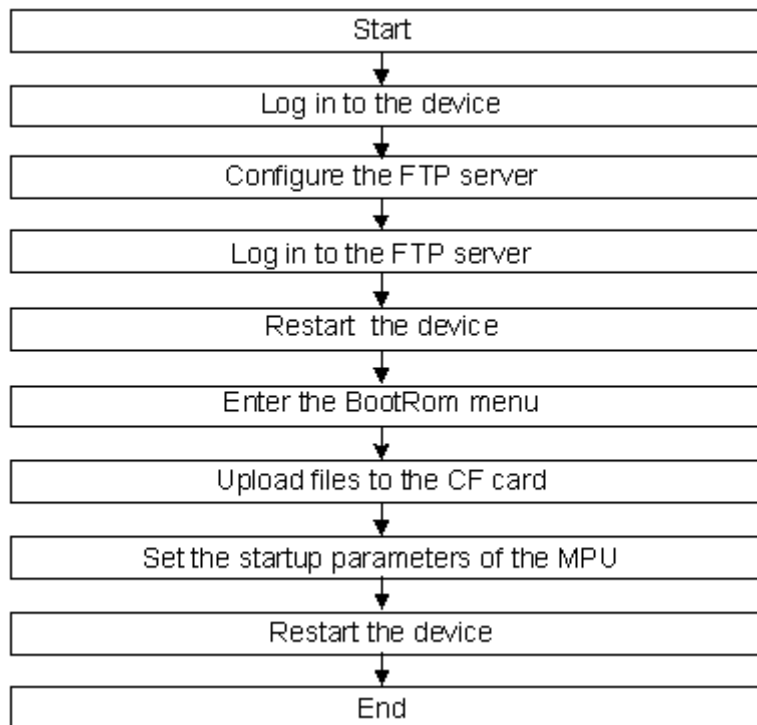
Procedure

◻ **NOTE**

- WindowsXP uses the built-in HyperTerminal.
- For the operating systems later than WindowsXP, install the HyperTerminal or a similar tool.
- Contact Huawei engineers to install such type of terminal software.

1. Connect the Console interface and the COM interface of a PC, and configure the HyperTerminal.
2. Run the FTP and TFTP Server programs on the PC.

📕 **NOTE**

In this step, the window displayed may vary because the FTP and TFTP software may be different for different devices. The TFTP and FTP software must be stored in the same directory which is used for storing system software.

Set parameters for the FTP server program, including the file directory, user name, and password. For details, see Figure 4-3.

Figure 4-3 FTP parameter settings
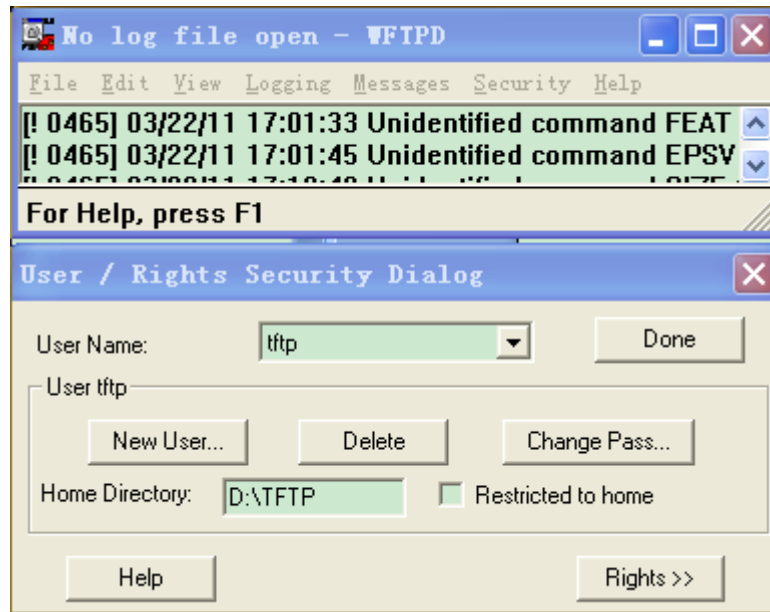
Set parameters, such as the file path and TFTP server address, for the TFTP server program.

3. Restart the router. The HyperTerminal interface displays the following information:

```
***********************************************************
*      Copyright 2012-2018 Huawei Tech. Co., Ltd.     *
***********************************************************
Board Name ....................................... IPU80
SDRAM Size ....................................... 3814MB
SDRAM ECC initializing ........................... pass
```

```
Press CTRL+T for full memory test ............... skip


Memory Test ................................... pass


Press Ctrl+A to enter bios Menu...
Boot from main ...
fix TBI0 addr.
USB: Register 10011 NbrPorts 1
USB EHCI 1.00
scanning bus for devices... 2 USB Device(s) found
      scanning bus for storage devices...
1 Storage Device(s) found


Press Ctrl+B to enter bootload Menu... 2
```

4.   Press **Ctrl+B** within xx seconds after the message of **Press Ctrl+B to enter Main Menu... 3** is displayed.

📕 NOTE

Whether a device has the BootLoad menu options depends on the MPU type. If the prompt "Press Ctrl+B to enter kernel Menu... 3" is displayed on the serial interface of a device, the device does not have the BootLoad menu options. The kernel menu of such a device is different from that of other devices. Options in this kernel menu can be used to perform an upgrade. For upgrade details, see Step 9 through Step 14.

```
*******************************************************************************
*******************************************************************************
******

Password: WWW@HUAWEI
**********
Warning: The initial password poses security risks.
The password needs to be changed. Change now? [Y/N]:n
```

5.   Enter a password and access the main menu.

📕 NOTE

- The default password is WWW@HUAWEI. The default password is WWW@HUAWEI. Using the default password brings security risks. Therefore, changing the default password is recommended.

- After a device is upgraded from an early version to V800R011C10SPC100, the password for the BootLoad menu remains. Changing the default password is recommended after upgrade.

- In the BootLoad menu, select **5. Modify boot ROM password** and change the password. A password is at least six characters long and contains at least two of upper-case letters, lower-case letters, digits, and special characters.

```
                Bootload Menu(Hiboot Version: 06.14)


  1. Boot with default mode
  2. Boot from U-DISK
  3. Enter ethernet submenu
  4. Set boot file and path
  5. Modify boot ROM password
  6. List file in U-DISK
  7. Modify System and Chassis Parameters
  8. Modify start mode
  9. Clear expand flag
 10. Clear password for console user
 11. Reboot
```

6.   Select   **Enter ethernet submenu** to enter the Ethernet interface submenu.

```
      Ethernet Submenu


  1. Install OS through ethernet interface
  2. Install OS Format Hard Disk
  3. Boot OS through ethernet interface
  4. Modify ethernet interface boot parameters
  5. Return


 Note: Need to open tftp & ftp tools both while downloading.

Enter your choice(1-5):
```

7. Select **Modify ethernet interface boot parameters** to set boot parameters.

```
server ip   : X.X.X.X - \\FTP Server IP address.
target ip   : X.X.X.X - \\This is the IP used for communication with the FTP or
TFTP server.
gateway ip : X.X.X.X - \\This is the gateway used for communication with the FTP
or TFTP server.
net mask    : X.X.X.X - \\This is the mask used for communication with the FTP or
TFTP server.
file name   : V800R011C10SPC100-OC-NE-M2E.cc - \\Enter the name of the system
softwar
ftp or tftp : tftp        - \\FTP or TFTP server
user name   : ******      - \\This is the username of the FTP or TFTP user
user password : ******      - \\This is the password of the FTP or TFTP user



      Ethernet Submenu

  1. Install OS through ethernet interface
  2. Install OS Format Hard Disk
  3. Boot OS through ethernet interface
  4. Modify ethernet interface boot parameters
  5. Return


 Note: Need to open tftp & ftp tools both while downloading.

Enter your choice(1-5):
```

8. Select **Install OS through ethernet interface** to install the system software through the Ethernet interface.

```
Tftp download file V800R011C10SPC100-OC-NE-M2E.cc OK!
  install os from net init start flag!
Startup file: V800R011C10SPC100-OC-NE-M2E.cc
Config  file:/opt/vrpv8/home/
Paf    file:/opt/vrpv8/home/
License file:
Patch file:
Update BIOS...upgrade bios file success!
Done.
Update bootload...upgrade bootload file success!
Done.

Hi-boot Reset Board...
```

```
**********************************************************
*     Copyright 2012-2018 Huawei Tech. Co., Ltd.     *
**********************************************************
Board Name ...................................... IPU80
SDRAM Size ...................................... 3814MB
SDRAM ECC initializing .......................... pass


Press CTRL+T for full memory test ............... skip

Memory Test ..................................... pass
TPM already initialized!

Press Ctrl+A to enter bios Menu...
begin check bios by tpm.
the tpm did not actived.
Boot from main ...
begin check bootloader by tpm.
the tpm did not actived.


----- build time : Mar 08 2019  15:34:33 ------
fix TBI0 addr.
USB: Register 10011 NbrPorts 1
USB EHCI 1.00
scanning bus for devices... 2 USB Device(s) found
      scanning bus for storage devices...
1 Storage Device(s) found

Press Ctrl+B to enter bootload Menu... 0
```

9. (Branch) Some devices do not have the BootLoad menu due to hardware reasons. In this
    case, reboot the device. The HyperTerminal window displays the following device
    startup information:

```
**********************************************************
*     Copyright 2012-2018 Huawei Tech. Co., Ltd.     *
**********************************************************
Init pcf ok
Boot area 0
Built at 20:33:06 on Aug 28 2018
Reset times is 30
Reset cause :cpu reset,cpu reset,cpu reset,cpu reset,
Last fiq: not ocurred[0x0]
Totem C CLUSTER L1/L2 Cache Mbist end!
Totem C LLC Mbist OK!
Totem C HHA:OK
Boot firmware (version iWare uniBIOS V2R1 SPC021B010)
CPU info for Socket 0 Nimbus
......


......


......

***********bsp init enter*************
```

```
echo 1024 > /proc/sysrq-region-size success
config hungtask .......
/
/
flag: 0,0
eth0 mac is 0A:0B:0C:09:BF:00 by env.
ifconfig eth0 ip: 192.168.1.20
default gateway: 192.168.1.1
start_up time: 2018.10.09 16:10:55


Press CTRL+B to enter Kernel Menu..
```

10. (Branch) After the prompt "Press CTRL+B to enter Kernel Menu.." is displayed, press **Ctrl**+**B** within 3 seconds

```
Please Input Password: ************
str mkdir -p /cfcard1
tty = /dev/console | /dev/console
[menu_entry:24]Enter Menu
```

11. (Branch) Enter the password of the kernel menu.

📖 **NOTE**

- The default password is Changeme_123. Using the default password brings security risks. Therefore, changing the default password is recommended.

- After a device is upgraded from an early version to V800R011C10SPC100, the password for the BootLoad menu remains. Changing the default password is recommended after upgrade.

- In the BootLoad menu, select **<6> Change password** and change the password. A password is at least six characters long and contains at least two of upper-case letters, lower-case letters, digits, and special characters.

```
===================================
 *** Kernel Menu ***
===================================
<0> List file(s) in cfcard.
<1> Enter ethernet submenu.
<2> Download debug log.
<3> Change password.
<4> CFcard Format Submenu.
<5> Set boot file and path.
<6> Reboot.
<V> Review result
<L> Language Switch
<U> Upper Menu..
Enter your choice: 1
```

12. (Branch) Choose **Enter ethernet submenu** to enter the Ethernet submenu.

```
===================================
 *** ethernet submenu ***
===================================
<0> Check Package
<1> Set Eth Config
<2> DownLoad Package
<3> Install OS through ethernet interface with integrity check
<4> Install OS Format Hard Disk with integrity check
<V> Review result
<L> Language Switch
<U> Upper Menu..
```

```
 Enter your choice: 1
```

13. (Branch) Choose **Set Eth Config** to set loading parameters.

```
server ip    :X.X.X.X
target ip    :X.X.X.X
gateway ip   :X.X.X.X
net mask     : X.X.X.X
file name    : V800R011C10SPC100-NE-M2K.cc
user name    : huawei
user password : ******
- Set eth para Success
```

14. (Branch) After the settings are complete, choose **Boot OS through ethernet interface** to start loading system software.

```
CPLD check:OK
PLL check:OK
Board mode:not ctl,load switch:0x0,debug switch:0x0
Board type:bd,sys clk:50M,BKP ID:0x8C
ACC type:BRD ID:epld,PCB VER:epld,BOM ID SOFT:epld,BOM ID HRD:epld
        SLOTID:epld,BKP ID:epld,RUN LED:cpu gpio
EXT-FLASH:no,NVRAM:yes
DDR Chip:8G bit,NVRAM:512K byte,Bootrom:32M byte,Flash:128M byte
........


Now starting VRPV8 ........
User interface con0 is available

Please Press ENTER.
```

15. Verify that the system software has been upgraded successfully.

```
<HUAWEI> check version startup
Info: Prepare to check system software cfcard:/V800R011C10SPC100-OC-NE-M2E.cc,
please wait ...........................................
......................................
Info: The SHA256 hash value of the system software is
b36bbd350f10386fc1ef0e2c20b3c603724c07aeda939848af3789b22d106011.
Info: System software signature check passed!
Info: Software version match Ok!
```

The message **Software version match Ok!** indicates that the upgrade is successful. Otherwise, you need to perform the upgrade again.

16. (Optional) Install the latest patches for the new system software.

For detailed instructions on how to install patches, refer to the pertaining patch release notes.

----End

5 Verifying the Upgrade

5.1 Verification Checklist

Table 5-1 Verification checklist

No.	Item	Expected Result	Actual Result
1	5.2 Verifying the System Software Version	The system software version is correct.	
2	5.3 Verifying that Boards Successfully Register	Boards and subboards are successfully registered.	
3	5.3 Verifying that Boards Successfully Register	The MonitorBus version is consistent with the system software version.	
4	5.6 Verifying the Running Status of the Device	The device is running properly.	
5	5.7 Verifying Configurations	The new configuration file is the same as the saved configuration file.	

No.	Item	Expected Result	Actual Result
6	5.8 Verifying Services	Services are available, and registered users are not forced offline.	

5.2 Verifying the System Software Version

After the upgrade, run the **display version** command and the **display startup** command in any view to check the router's system software version. The display in bold is the current router's system software version. Check whether the system software is the target version. If the version is not the target version, review the upgrade steps to determine the cause of the problem and then perform the version upgrade again.

```
<HUAWEI>display version
Huawei Versatile Routing Platform Software
VRP (R) software, Version 8.190 (NE40EV800R011C10SPC100)
Copyright (C) 2012-2019 Huawei Technologies Co., Ltd.
HUAWEI NE40E-M2E uptime is 0 day, 0 hour, 7 minutes
<HUAWEI> display startup
MainBoard:
 Configured startup system software:      cfcard:/ V800R011C10SPC100-OC-NE-M2E.cc
 Startup system software:                 cfcard:/ V800R011C10SPC100-OC-NE-M2E.cc
 Next startup system software:            cfcard:/ V800R011C10SPC100-OC-NE-M2E.cc
 Startup saved-configuration file:        cfcard:/vrpcfg.zip
 Next startup saved-configuration file:   cfcard:/vrpcfg.zip
 Startup paf file:                        default
 Next startup paf file:                   default
 Startup patch package:                   NULL
 Next startup patch package:              NULL
(Optional) The PAF file and patch file is specified.
 <HUAWEI> display startup
MainBoard:
 Configured startup system software:      cfcard:/ V800R011C10SPC100-OC-NE-M2E.cc
 Startup system software:                 cfcard:/ V800R011C10SPC100-OC-NE-M2E.cc
 Next startup system software:            cfcard:/ V800R011C10SPC100-OC-NE-M2E.cc
 Startup saved-configuration file:        cfcard:/vrpcfg.zip
 Next startup saved-configuration file: cfcard:/vrpcfg.zip
 Startup paf file:                        cfcard:/paf-OC-NE.bin
 Next startup paf file:                   cfcard:/paf-OC-NE.bin
 Startup patch package:                   cfcard:/ huawei.pat
 Next startup patch package:              cfcard:/ huawei.pat
```

5.3 Verifying that Boards Successfully Register

Single-chassis

Run the **display device** command in any view to check the registration status of boards. The registration status should be **Normal**.

📖 **NOTE**

If the master IPU is registered, its registration state is displayed as **NA**.

```
<Huawei> display device
NE40E-M2E's Device status:
--------------------------------------------------------------------------------
Slot #    Type    Online    Register      Status     Role    LsId    Primary
--------------------------------------------------------------------------------
1         PIC     Present   Registered    Normal     OTHER   0       NA
3         IPU     Present   Registered    Normal     MMB     0       Master
4         PWR     Present   Registered    Normal     OTHER   0       NA
5         PWR     Present   Registered    Normal     OTHER   0       NA
6         FAN     Present   Registered    Normal     OTHER   0       NA
7         CLK     Present   Registered    Normal     OTHER   0       Master
```

Virtual-Cluster

```
<HUAWEI>display device
Total Chassis Number: 2
Central Chassis Number: 0
Line Chassis Number: 2
Chassis ID: clc1
NE40E-M2F'sDevice status:
--------------------------------------------------------------------------------
Slot # Type Online    Register      Status     Role LsId Primary
--------------------------------------------------------------------------------
clc1/3 IPU    Present Registered Normal     MMB 0     System master
clc1/4 PWR    Present Registered Normal     OTHER 0    NA
clc1/6 FAN    Present Registered Normal     OTHER 0    NA
clc1/7 CLK    Present Registered Normal     OTHER 0    Master
--------------------------------------------------------------------------------
Chassis ID: clc2
NE40E-M2F'sDevice status:
--------------------------------------------------------------------------------
Slot # Type Online    Register      Status     Role LsId Primary
--------------------------------------------------------------------------------
clc2/1 PIC    Present Registered Normal     OTHER 0    NA
clc2/2 PIC    Present Registered Normal     OTHER 0    NA
clc2/3 IPU    Present Registered Normal     MMB 0     System slave
clc2/4 PWR    Present Registered Normal     OTHER 0    NA
clc2/6 FAN    Present Registered Normal     OTHER 0    NA
clc2/7 CLK    Present Registered Normal     OTHER 0    Master
--------------------------------------------------------------------------------
```

5.4 Verifying that the GTL License Functions Properly

- Display information about the license files on master and slave IPUs.

For the .dat GTL License file:

```
<HUAWEI>display license
 Active License   : cfcard:/gtl.dat
 License state    : Normal
 Revoke ticket    : No ticket
```

```
RD of Huawei Technologies Co., Ltd.


Product name     : NetEngine40E X1X2
Product version  : V800R010
License Serial No : LICXXXXXXXXXXXXXX
Creator          : Huawei Technologies Co., Ltd.
Created Time     : 2019-08-07 16:47:26
Feature name     : CRFEA3
Authorize type   : comm
Expired date     : PERMANENT
Trial days       : --


Item name        Item type    Value    Description
------------------------------------------------------------
LCR5S03CLCK00    Function     YES      NE40E-M2 Series 1588v2 Function License


Master board license state: Trial. The trial days remains 60 day(s).
Apply for authentic license before the current license expires.
```

For the license in XML format:

```
<HUAWEI>display license
Active License   : cfcard:/gtl.xml
License state    : Normal
Revoke ticket    : No ticket


RD of Huawei Technologies Co., Ltd.


Product name     : NetEngine40E X1X2
Product version  : V800R011
License Serial No : LICXXXXXXXXXXXXXX
Creator          : Huawei Technologies Co., Ltd.
Created Time     : 2019-08-07 16:37:52
Feature name     : XXXXXX
Authorize type   : comm
Expired date     : PERMANENT
Trial days       : --


Item name        Item type    Value    Description
------------------------------------------------------------
LCR5S03CLCK00    --           1        NE40E-M2 Series 1588v2 Function License
 LCR5S03CLCK00   Function     YES      NE40E-M2 Series 1588v2 Function License


Master board license state: Normal.
```

All of the items in the list above are controlled by the GTL license. A **Used value** of 0 indicates that a function is unavailable; a value of 1 indicates that it is available. A **Control value** indicates the number of authorized resources. Use the list to check whether **Authorize type**, **Expired date**, and **Control value** for GTL license items are the same as what you applied for.

5.5 Verifying the Version Consistency on Components

If there are version inconsistencies after the upgrade, perform a manual upgrade by following the instructions in 7.1 Boards or Fans Fail to Be Upgraded.

Run the **check version startup** command in the user view to verify the software upgrade result.

- If the upgrade succeeded, the display is as follows:

```
<HUAWEI> check version startup
Info: Prepare to check system software cfcard:/V800R011C10SPC100-OC-NE-M2E.cc, please
wait ...........................................
......................................
Info: The SHA256 hash value of the system software is
b36bbd350f10386fc1ef0e2c20b3c603724c07aeda939848af3789b22d106011.
Info: System software signature check passed!
Info: Software version match Ok!
```

The preceding information indicates that the software version of each component on the device is the same as the current system software version. A detailed list for each component is not displayed.

- If the upgrade failed, the display is as follows:

```
<HUAWEI> check version startup
Info: Prepare to check system software cfcard:/V800R011C10SPC100-OC-NE-M2E.cc, please
wait ...........................................
......................................
Info: The SHA256 hash value of the system software is
b36bbd350f10386fc1ef0e2c20b3c603724c07aeda939848af3789b22d106011.
Info: System software signature check passed!
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
Slot#   Type  Content    CurVer  ExactVer  State          Upgrade Suggestion
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
3      IPU  EPLD      XXX     XXX      Incompatible    Must
```

The preceding information indicates that the EPLD version of the IPU is different from that in the current system software. You need to upgrade the EPLD of this IPU.

If there are inconsistencies such as the one shown in the preceding display, you must perform a manual upgrade to correct the problem. For detailed instructions, see section 7.1 Boards or Fans Fail to Be Upgraded.

5.6 Verifying the Running Status of the Device

Run the **display health** and **display alarm all** commands in the user view to check the running status of the device. Make sure that IPU and PICs are functioning properly.

```
<HUAWEI> display health
-------------------------------------------------------------
Slot                CPU Usage  Memory Usage(Used/Total)
-------------------------------------------------------------
3     IPU(Master)        10%       19% 748MB/3815MB
-------------------------------------------------------------
<HUAWEI>display alarm all
----------------------------------------------------------------------
```

```
NO alarm
--------------------------------------------------------------------------
```

```
--------------------------------------------------------------------------
```

Keep a detailed record of the operating status of each board for use as a troubleshooting reference.

5.7 Verifying Configurations

Run the **display current-configuration** command in any view to check the router configurations after the router starts up. Run the **compare configuration** command in the user view to compare the new configuration file with the saved configuration file.

The following display shows that no configurations are lost:

```
<HUAWEI> compare configuration
Info:The current configuration is the same as the next startup configuration file.
```

The following display shows that some configurations are lost:

```
<HUAWEI> compare configuration
Building configuration...
Warning: The current configuration is not the same as the next startup configuration
file. There may be several differences, and the
 following are some configurations beginning from the first:
 ====== Current configuration line 765 ======
return
 ====== Configuration file line 768 ======
l2tp-group default-lac
 tunnel name HUAWEI
#
l2tp-group default-lns
 tunnel name HUAWEI
#
```

5.8 Verifying Services

Two methods are available for verifying whether services are running properly.

> **NOTICE**
>
> Check whether services are running properly before running the **save** command.

- Compare data entries from the upgraded routing table, FIB table, MAC table and other tables with pre-upgrade entries from the same tables to determine if any data is lost. Check whether the traffic volumes of services are the same before and after the upgrade. If the traffic volumes of services are different, contact Huawei technical support personnel.
- Contact Huawei technical support personnel to check whether services are running properly.

5.9 Check whether the device is enabled with secure boot.

To improve device security, V800R010C10SPC800 and later versions support secure boot. When the system is started, the system checks the next level of the BIOS, OS Kernel, and system software package based on the boot sequence of the BIOS, OS Kernel, and system software package. If the verification fails, the system rejects the startup to ensure the security and reliability of the system.

If secure boot is not enabled after the device is upgraded, the message "Info: The device is not enabled with secure boot, please enable it" will be displayed upon user login through Telnet.

NOTICE

A device with secure boot enabled cannot be rolled back to a version that does not support secure boot. If a device does not have secure boot enabled, you can roll back it to a version that does not support secure boot according to 6 Rolling Back to the Source Version.

The **set flash-lock immediately** command enables secure boot immediately, while the **set flash-lock delay** *day* **days** command enables secure boot after the specified number of days. The delay period ranges from 1 to 90 days. The device can be rolled back to a version that does not support secure boot within this period.

Configuration Roadmap

After the router is started, check whether the secure boot capability is enabled. If not, run the command to enable secure boot.

Operational Procedure

1. Check whether secure boot is enabled on the device. If **RoT** is **Flash/Unlocked**, secure boot is not enaled.

   If **RoT** is **Flash/Locked**, secure boot is enabled.

   ```
   <HUAWEI> display boot status
   Slot #   Type    RoT
   --------------------------------------------------------------------------------
   ---
   3       IPU    Flash/Unlocked (to be locked in 88 days 23 hours 18 minutes)


   --------------------------------------------------------------------------------
   ---
   ```

2. **RoT** is **Flash/Unlocked**, enable secure boot on the device.

   ```
   <HUAWEI> system-view
   [~HUAWEI] set flash-lock Immediately
   ```

```
Warning: This operation will set the lock-until-reset of flashrom to protect RoT
from being rewritten. Once flashrom is locked, this device will not be able to rollback
to a software version earlier than V800R010C10SPC800. Are you sure to do this
operation? [Y/N]:y Warning: This operation is irrevocable and you have no means to
cancel it once committed. Are you sure to do this operation? [Y/N]:y Info: Slot 3
success to enable secure boot.
[~HUAWEI] commit
```

3. Check secure boot status on the device again.

   If **RoT** is **Flash/Locked**, secure boot has been enabled.

```
<HUAWEI> display boot status
Slot #    Type    RoT
-------------------------------------------------------------------------------
---
3       IPU    Flash/Locked
-------------------------------------------------------------------------------
---
```

6 Rolling Back to the Source Version

6.1 Precautions for Version Rollback

- Version rollback interrupts services temporarily. The duration of the interruption depends on the rollback method and the number of services configured on the device.

- Before version rollback, contact Huawei technical support personnel to confirm whether you need to install patches after version rollback. If patches are required, install them immediately after version rollback. Refer to the source version documentation for instructions on installing patches.

- Key configuration files on the cfcard need to be backed up before version rollback. Use FTP or TFTP to download files for back up to the PC. For detailed instructions, see section 3.7 Backing Up Key Data Saved in the cfcard. After version rollback, re-loading backup data to the cfcard is recommended.

- Before you have to roll back the existing version to a source version, specify the configuration file of the source version and upgrade the existing version.

- The configuration file in the source version must be used to restore configurations to ensure that the local user password is valid.

- If the current version needs to be rolled back to an earlier version due to service requirements, some new boards and their subboards supported in the current version may fail to be registered after version rollback. If this is the case, contact Huawei technical support personnel.

- If version rollback fails, or other problems occur during version rollback, record the fault symptoms and your own actions, and contact Huawei technical support personnel.

6.2 Scenarios and Method of Version Rollback

Version rollback may be necessary for the following reasons:

- The current version must be rolled back to the source version to meet service requirements.

- The device is unable to function properly after the system software upgrade.

Version rollback methods:

- If the device functions properly after the system software upgrade, use command lines to perform version rollback.
- If the device cannot function properly after the system software upgrade, use the BootROM to perform version rollback.

NOTICE

Before the version rollback, verify that the source configuration file exists on the device. If the source configuration file does not exist, upload it and replace the existing configuration file.

Performing Version Rollback Using Command Lines

If the device can reboot, but some services cannot be properly processed after the upgrade, perform version rollback using command lines.

The method for version rollback using command lines is the same as that for upgrading the system software using command lines. For detailed instructions, see section 4.1 Upgrading the System Software Using iUpgradeUpgrading the System Software Using Command Lines.

If the old system software and patch file are stored on the CF card, you do not need to upload these files again. You only need to set the old system software and configuration file to be used for the next startup, and then run the **reboot** command in the user view.

Performing Version Rollback Using the BootROM

The method for version rollback using BootROM is the same as that for upgrading the system software using BootROM. For detailed instructions, see section 4.3 Upgrading the System Software Using the BootROM.

6.3 Verifying the Rollback

📖 NOTE

The checklist for version rollback verification provided here only lists key check items. For detailed operating instructions, see the chapters pertaining to version rollback in the Version Upgrade Instructions.

Table 6-1 Verification checklist

No.	Item	Expected Result	Actual Result
1	Run the **display startup** command to view the system software version.	The system software of an old version is used for startup.	
2	Run the **check version startup** command to check	The following information is displayed, indicating that version	

No.	Item	Expected Result	Actual Result
	whether version rollback has succeeded. Note that in , the **check version** command is used.	rollback has succeeded: Software version match Ok! If the **State** field is displayed as **incompatible**, manually roll back the system to the source version.	
3	Run the **display current configuration** command to check whether the backup configuration file is loaded.	The configuration file is the same as you specified.	

7 Troubleshooting

7.1 Boards or Fans Fail to Be Upgraded

7.1.1 Fault Symptom

- After the system software is upgraded, some boards fail to register or do not function properly.
- After the system software is upgraded, the fans fail to register or do not function properly.
- After a new board is installed, it fails to register or function properly.

7.1.2 Fault Analysis

1. Run the **display device** command in the user view to view information about the status of all boards on the device.

```
<HUAWEI>
display device
NE40E-M2E's Device status:
--------------------------------------------------------------------------------
Slot #   Type   Online     Register     Status     Role   LsId   Primary
--------------------------------------------------------------------------------
1        PIC    Present    Registered   Normal     OTHER  0      NA
3        IPU    Present    Registered   Normal     MMB    0      Master
5        PWR    Present    Registered   Abnormal   OTHER  0      NA
6        FAN    Present    Registered   Normal     OTHER  0      NA
7        CLK    Present    Registered   Normal     OTHER  0      Master
---
```

If **Unregistered** is displayed in the **Register** field, the board in the specified slot is not registered. If **Abnormal** is displayed in the **Status** field, the board in the specified slot is not functioning properly.

2. Run the **check version startup** command in the user view to display any components whose versions do not match the target system software version.

```
<HUAWEI> check version startup
Info: Prepare to check system software cfcard:/V800R011C10SPC100-OC-NE-M2E.cc, please
wait ............................................
......................................
Info: The SHA256 hash value of the system software is
b36bbd350f10386fc1ef0e2c20b3c603724c07aeda939848af3789b22d106011.
Info: System software signature check passed!
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
Slot#    Type    Content       CurVer  ExactVer  State          Upgrade Suggestion
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
3       IPU    EPLD       XXX    XXX       Incompatible    Must
```

The preceding information indicates that the version of the EPLD in slot 3 is inconsistent with the system software version. You need to upgrade the EPLD in slot 3.

7.2 IPU Fails to Be Registered

7.2.1 Fault Symptom

- When the router resets after the system software is upgraded, neither of the two IPUs can be registered.
- The router cannot be telneted to.

7.2.2 Fault Analysis

- If the IPU fails to be registered due to unknown reasons during the upgrade and the system cannot start, roll back the system software to the source version using the BootROM.

7.2.3 Troubleshooting Procedure

For detailed troubleshooting procedures, see 4.3 Upgrading the System Software Using the BootROMUpgrading the System Software Using the BootROM.

7.3 System Software on the Device Is Incorrect or No System Software Exists

7.3.1 Fault Symptom

The device cannot load the system software successfully.

7.3.2 Fault Analysis

If system software was not delivered with the device or the system software is incorrect, use a management network port to load the system software.

7.3.3 Troubleshooting Procedure

Uploading the System Software Using a Management Network Port

For detailed troubleshooting procedures, see 7.2.3 Troubleshooting Procedure.

A Uploading/Downloading Files

A.1 Using a Router as an FTP/TFTP Client and a PC as an FTP/TFTP Server

A.1.1 Uploading or Downloading the System Software Using TFTP (Using a Router as an TFTP Client)

1. Configure the TFTP server.

   Configure a PC as the TFTP server and store the target system software in the file directory of the TFTP server. This example assumes that the IP address of the TFTP server is **X.X.X.X**, and the IP address of the Ethernet interface on the router is X.X.X.X/24.

2. Download the router system software.

📕 **NOTE**

The system software to be downloaded must have been saved in the file directory of the TFTP server.

On the router, run the **tftp** *ip-address* **get***source-filename* [*destination-filename*] command to download the system software from the PC.

```
<HUAWEI> tftp X.X.X.X get V800R011C10SPC100-OC-NE-M2E.cc
 Transfer file in binary mode.
 Now begin to download file from remote tftp server, please wait for a while...
 TFTP:  171900428 bytes received in xx seconds.
 File downloaded successfully.
```

A.1.2 Uploading or Downloading the System Software Using FTP (Using a Router as an FTP Client)

1. Set the FTP server.

   Set a PC as the FTP server, configure a user named **huawei** with the password **123**, and store the target system software in the file directory of the FTP server. This example assumes that the IP address of the FTP server is 100.100.100.10, and the IP address of the Ethernet interface on the router is X.X.X.X.

2. Log in to the FTP server.

   Run the **ftp** *ip-address* command on the router to set up an FTP connection with the PC and enter the FTP client view.

```
<HUAWEI> ftp X.X.X.X
Trying X.X.X.X ...
Press CTRL+K to abort
Connected to X.X.X.X.
220 WFTPD 2.0 service (by Texas Imperial Software) ready for new user
User(X.X.X.X:(none)):huawei
331 Give me your password, please
Password: ***
230 Logged in successfully
```

3. Download the router's system software.

    Run the **get** *source-filename* [*destination-filename*] command in the FTP client view to download the router's system software from the PC. After the download is complete, run the **bye** command or **quit** command to terminate the FTP connection and return to the user view.

```
[ftp]get V800R011C10SPC100-OC-NE-M2E.cc
200 PORT command okay
150 "C:\ V800R011C10SPC100-OC-NE-M2E.cc" file ready to send (171900428 bytes) in ASCII
mode
226 Transfer finished successfully.
FTP: 171900428 byte(s) received in 147.816 second(s) 89.80Kbyte(s)/sec.
[ftp] bye
221 Windows FTP Server (WFTPD, by Texas Imperial Software) says goodbye
```

A.2 Using a Router as an SFTP Server

1. Configure a local key pair on the SSH server.

```
<HUAWEI> system-view
[HUAWEI] sysname SSH Server
[*HUAWEI]rsa local-key-pair create
The key name will be: SSH Server_Host
% RSA keys defined for client001_Host already exist.
Confirm to replace them? Please select [Y/N]:y
The range of public key size is (512 ~ 2048).
NOTE: Key pair generation will take a short while.
Input the bits in the modulus [default = 2048]:1024
Warning: Keys less than 2048 digits impose security risks. Using keys of 2048 digits
is recommended.
[*HUAWEI]commit...
```

2. Create an SSH user on the server.

    📖 **NOTE**

    The SSH user can be authenticated in six modes: password, RSA, password-RSA, DSA, password-dsa, and all.

    ● When the SSH user adopts the password, password-DSA, or password-RSA authentication mode, configure a local user with the same name.

    ● When the SSH user adopts the RSA, password-RSA, DSA, password-DSA, or all authentication mode, the server should save the RSA or DSA public key for the SSH client.

    Configure the VTY user interface.

```
[~SSH Server]user-interface vty 0 4
[~SSH Server-ui-vty0-4]authentication-mode aaa
[*SSH Server-ui-vty0-4]protocol inbound ssh
[*SSH Server-ui-vty0-4]commit
```

```
[~SSH Server-ui-vty0-4]quit
[~SSH Server]
```

- Create Client001 for the SSH user.

Create an SSH user with the name Client001. The authentication mode is password.

```
[~SSH Server]ssh user client001
Info: Succeeded in adding a new SSH user.
[*SSH Server]ssh user client001 authentication-type password
[*SSH Server]commit
```

Set huawei as the password for the Client001 of the SSH user.

```
[~SSH Server-aaa]local-user client001 password cipher huawei@123
Info: The user client001's password has been changed to be irreversible.
[*SSH Server-aaa]local-user client001 service-type ssh
[*SSH Server-aaa]local-user client001 level 3
[*SSH Server-aaa]commit
[~SSH Server-aaa]quit
[~SSH Server] quit
```

- Create Client002 for the SSH user.

Create an SSH user with user name Client002 and RSA authentication.

```
[~SSH Server]ssh user client002
Info: Succeeded in adding a new SSH user.
[*SSH Server]ssh user client002 authentication-type rsa
[*SSH Server]commit
[~SSH Server]
```

3. Configure the RSA public key of the server.

📖 **NOTE**

The following provides an example of how to create a local key pair on a router that functions as an SFTP client. If your client is not a router, see the corresponding usage guide of your client.

a. Generate a local key pair on the client.

```
<HUAWEI> system-view
[HUAWEI] sysname client002
[client002] rsa local-key-pair create
```

b. View the RSA public key generated on the client.

```
[client002] display rsa local-key-pair public
=====================================================
Time of Key pair created: 16:38:51  2018/10/08
Key name: client002 Host
Key type: RSA encryption Key
=====================================================
Key code:
3047
  0240
    BFF35E4B C61BD786 F907B5DE 7D6770C3 E5FD17AB
    203C8FCB BBC8FDF2 F7CB674E 519E8419 0F6B97A8
    EA91FC4B B9E18836 5E74BFD5 4C687767 A89C6B43
    1D7E3E1B
  0203
    010001
Host public key for PEM format code:
---- BEGIN SSH2 PUBLIC KEY ----
```

```
AAAAB3NzaC1yc2EAAAADAQABAAAAQQC/815LxhvXhvkHtd59Z3DD5f0XqyA8j8u7
yP3y98tnTlGehBkPa5eo6pH8S7nhiDZedL/VTGh3Z6ica0Mdfj4b
---- END SSH2 PUBLIC KEY ----
Public key code for pasting into OpenSSH authorized_keys file :
ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAAAQQC/815LxhvXhvkHtd59Z3DD5f0XqyA8j8u7yP3y98tn
TlGehBkPa5eo6pH8S7nhiDZedL/VTGh3Z6ica0Mdfj4b rsa-key
=====================================================
Time of Key pair created: 16:38:51  2018/10/08
Key name: client002_Server
Key type: RSA encryption Key
=====================================================
Key code:
3067
  0260
    BCFAC085 49A2E70E 1284F901 937D7B63 D7A077AB
    D2797280 4BCA86C0 4CD18B70 5DFAC9D3 9A3F3E74
    9B2AF4CB 69FA6483 E87DA590 7B47721A 16391E27
    1C76ABAB 743C568B 1B35EC7A 8572A096 BCA9DF0E
    BC89D3DB 5A83698C 9063DB39 A279DD89
  0203
    010001
```

c.   Send the RSA public key generated on the client to the server.

```
[SSH Server] rsa peer-public-key RsaKey001
Enter "RSA public key" view, return system view with "peer-public-key end"
[SSH Server-rsa-public-key] public-key-code begin
Enter "RSA key code" view, return last view with "public-key-code end"
[SSH Server-rsa-key-code] 3047
[SSH Server-rsa-key-code] 0240
[SSH Server-rsa-key-code] BFF35E4B C61BD786 F907B5DE 7D6770C3 E5FD17AB
[SSH Server-rsa-key-code] 203C8FCB BBC8FDF2 F7CB674E 519E8419 0F6B97A8
[SSH Server-rsa-key-code] EA91FC4B B9E18836 5E74BFD5 4C687767 A89C6B43
[SSH Server-rsa-key-code] 1D7E3E1B
[SSH Server-rsa-key-code] 0203
[SSH Server-rsa-key-code] 010001
[SSH Server-rsa-key-code] public-key-code end
[SSH Server-rsa-public-key] peer-public-key end
```

4.   Bind the RSA public key of SSH client to Client002 of the SSH user.

```
[SSH Server] ssh user client002 assign rsa-key RsaKey001
```

5.   Enable the STelnet service on the SSH server.

Enable the STelnet service.

```
[SSH Server] sftp server enable
```

6.   Configure the service type and authorized directory of the SSH user.

Two SSH users are configured on the SSH server, namely, Client001 and Client002. The password authentication mode is configured for Client001 and the RSA authentication mode is configured for Client002.

```
[~SSH Server]ssh user client001 service-type sftp
[*SSH Server]ssh user client001 sftp-directory cfcard:
[*SSH Server]ssh user client002 service-type sftp
[*SSH Server] ssh user client002 sftp-directory cfcard:
[*SSH Server]commit
```

A.3 Using a Router as an SFTP Client

Enabling the first authentication on Client001.

```
<HUAWEI> system-view
[HUAWEI] sysname client001
[client001] ssh client first-time enable
```

Enabling the first authentication on Client002.

```
<HUAWEI> system-view
[HUAWEI] sysname client002
[client002] ssh client first-time enable
```

Connect the STelnet client Client001 to the SSH server with the password authentication mode.

```
[client001] sftp X.X.X.X
Please input the username:client001
Trying X.X.X.X ...
Press CTRL+K to abort
Connected to X.X.X.X.
sftp-client>
```

Connect the STelnet client Client002 to the SSH server with the RSA authentication mode.

☐ NOTE

When the SSH user adopts the RSA authentication mode, the server should save the RSA or DSA public key for the SSH client., For configuration details, see Using a Router as an SFTP Server.

```
[client002] sftp X.X.X.X
Please input the username: client002
Trying X.X.X.X ...
Press CTRL+K to abort
Connected to X.X.X.X.
sftp-client>
```

B Memory and CPU Usage of Boards

For the memory usages of the CX600-M2, NE40E-M2, and PTN 6900-M2 series products in V800R011C10SPC100 with empy configuration of all service boards and main control boards, see the Release Notes of the corresponding product..

C Shortcut Key Usage on the Serial Interface

When you use a serial cable to connect the serial interface on a PC to the console interface on the IPU while the IPU is starting, the following message is displayed:

```
**********************************************************
*     Copyright 2012-2018 Huawei Tech. Co., Ltd.     *
**********************************************************

 Clock Configuration:
     CPU:1200 MHz
     CCB:600  MHz
     DDR:400  MHz (800 MT/s data rate) (Asynchronous)
     LBC:37.500  MHz
Board Name ...................................... IPU80
SDRAM Size ...................................... 4096MB
SDRAM ECC initializing .......................... pass

Press CTRL+T for full memory test ............... skip
 Memory Test .................................... pass
  Normal Boot ... Press Ctrl+A to enter bios Menu...
Boot from main ...
FPGA load ....................................... pass
Net:
USB:  Register 10011 NbrPorts 1
USB EHCI 1.00
scanning bus for devices... 2 USB Device(s) found
     scanning bus for storage devices...
1 Storage Device(s) found
 Press Ctrl+B to enter bootload Menu... 0
Get Board Reset Mode(0x008d) .................... pass
install os flag: 0.
save startmode 1
start mode: 1. [reference: 1 - local mode/2 - remote mode].

booting from U-DISK0 ...
save startmode 1
Set Bootargs Env ................................ pass
Loading Kernel Image ............................ pass
```

```
Loading Ramdisk Image ........................... pass
Loading FDT Image ............................... pass
Loading, please wait...
wait for storage device node...
[CPU_FPGA] LOAD OK!
Storage probe noPress CTRL+K to enter Kernel Menu..1s
Check file system, this may take a few minutes ...
*[NPU_FPGA] LOAD OK!
command:1
[FPGA] set fpga status OK!
*wdt enable
Check file system .... ok.
sh: 0xff600000: bad number
rootfs loading, please wait...
ln: /dev/sdb: No such file or directory
ln: /dev/sdb1: No such file or directory
Now starting VRPV8 ........


User interface con0 is available


Please Press ENTER.
```

Full Memory Test

When you use a serial cable to connect the serial interface on a PC to the console interface on the IPU while the IPU is starting, the following message is displayed:

```
Press CTRL+T for full memory test...
```

Press **CTRL**+**T** to perform the full memory test. After the memory is replaced or expanded, performing the full memory test is recommended. The full memory test is to ensure that the new memory is compatible with the board. The board will reset automatically after the full memory test.

BIOS Menu

When you use a serial cable to connect the serial interface on a PC to the console interface on the IPU while the IPU is starting, the following message is displayed:

```
Press Ctrl+A to enter bios Menu...
```

Press **Ctrl**+**A** to enter the BIOS menu. The BIOS menu is used when you want to upgrade the BIOS and BootLoad through Xmodem on a serial interface.

BootLoad Menu

When you use a serial cable to connect the serial interface on a PC to the console interface on the IPU while the IPU is starting, the following message is displayed:

```
Press Ctrl+B to enter bootload Menu...
```

Press Ctrl+B to enter the BootLoad menu. The BootLoad menu is used when you want to upgrade the system software package, modify the system type, and set the board startup parameters using TFTP or FTP on an Ethernet interface. If the system fails to restart due to a hardware or software failure on a board, the BootLoad menu can be used to restore it.

D BIOS Menu Usage

Message

When you use a serial cable to connect the serial interface on a PC to the console interface on the IPU while the IPU is starting, the following message is displayed:

```
Press Ctrl+A to enter bios Menu...
```

Press Ctrl+A to enter bios Menu.

- The default password is WWW@HUAWEI. Using the default password brings security risks. Therefore, changing the default password is recommended.
- After device is upgraded, the password for the BootROM menu remains. Changing the default password is recommended after upgrade.
- The new password is at least six characters long and contains at least two of upper-case letters, lower-case letters, digits, and special characters.

Entering the BIOS Menu

```
   Bios Menu(Hiboot Version: 06.10)


1. Update BOOT ROM Small System
2. Update BOOT ROM Main System
3. Modify Serial Interface Parameter
4. Modify bios password
5. Boot Main System
6. Update FMan Ucode
7. TPM
8. Reboot


Enter your choice(1-8):
```

Updating the BIOS

Connect a serial interface of the PC to the serial interface of the master IPU. The default transmission rate of the serial interface is 9600 bit/s.

Select **1** in the BIOS menu to update the BIOS. Enter **1** on the serial interface and select **Transmit Files** from the menu in the window of the HyperTerminal to send the BIOS file in the format of *.bin.

Updating the BootLoad

Connect a serial interface to the serial interface of the main IPU. The default transmission rate of the serial interface is 9600 bit/s.

Select **2** in the BIOS menu to update the BootLoad. Enter **2** on the serial interface and select **Transmit Files** in the menu in the window of the HyperTerminal to send the BootLoad file in the format of *.bin.

Setting a Serial Interface Baud Rate

Connect a serial interface to the serial interface of the main IPU. The default transmission rate of the serial interface is 9600 bit/s.

To transmit the BIOS and BootLoad files at 9600 bit/s baud rate takes much time. In this situation, you can reconfigure a baud rate.

Select **3** in the BIOS menu to configure a serial interface baud rate.

1: 9600 (default)

2: 19200

3: 38400

4: 57600

5: 115200

Please select an appropriate baudrate:

You can choose one baud rate from the preceding five options. For example, if you select 5, the baud rate is set to 115200 bit/s. After that, the transmission between the HyperTerminal of the PC and the device will be interrupted because the serial interfaces at the two ends works at different rates. To avoid such interruption, you need to reset the baud rate of the PC to 115200 bit/s.

Modify BIOS Password

Select **4** in the BIOS menu to modify the BIOS password. The default password is WWW@HUAWEI.

Starting the BootLoad

Select **5** in the BIOS menu to start the BootLoad.

Querying and Setting the TPM Status

In the BootROM menu, select 6 for the IPUK and 8 for the IPUK1 to enter the TPM submenu.

```
TPM Submenu
1. Show TPM Chip Information (query the TPM status)
2. Modify TPM Chip Configuration (set the TPM status)
3. Return
```

Enter your choice(1-3): 2 (2 as an example)

Current details:

The hardware status is disabled and inactive.   (The TPM status is disabled and inactive)

Enable and activate the TPM chip?(y/n):Y   (Enter Y when being prompted whether to enable and activate the TPM)

The TPM chip is enabled and activated successfully.   (The TPM is enabled and activated)

Rebooting the System

Select **8** in the BIOS menu to reboot the system.

E BootLoad Menu Usage

📖 NOTE

Whether a device has the BootLoad menu options depends on the MPU type. If the prompt "Press Ctrl+B to enter kernel Menu... 3" is displayed on the serial interface of a device, the device does not have the BootLoad menu options.

Message

When you use a serial cable to connect the serial interface on a PC to the console interface on the IPU while the IPU is starting, the following message is displayed:

```
Press Ctrl+B to enter bootload Menu...
```

Entering a Password

```
Password:
```

A password is needed to enter the BootLoad menu. The default password is WWW@HUAWEI and changeable.

- The default password is WWW@HUAWEI. Using the default password brings security risks. Therefore, changing the default password is recommended.

- After device is upgraded, the password for the BootROM menu remains. Changing the default password is recommended after upgrade.

- The new password is at least six characters long and contains at least two of upper-case letters, lower-case letters, digits, and special characters.

Entering the BootLoad Menu

```
          Bootload Menu(Hiboot Version: 06.14)

1. Boot with default mode
2. Boot from U-DISK
3. Enter ethernet submenu
4. Set boot file and path
5. Modify boot ROM password
6. List file in U-DISK
7. Modify System and Chassis Parameters
8. Modify start mode
9. Clear expand flag
```

```
10. Clear password for console user
11. Reboot
```

Starting the System Using the Default Method

Select **1** in the BootLoad menu to start the system using the default method (obtaining the startup path from the configuration files).

Starting the System Using the CFcard

Select **2** in the BootLoad menu to start the system using the CFcard if the system software package is stored in the CFcard.

Entering the Ethernet Interface Submenu

Select **3** in the BootLoad menu to enter the Ethernet interface submenu to upgrade the system software package.

```
  Ethernet Submenu

1. Install OS through ethernet interface
2. Install OS Format Hard Disk
3. Boot OS through ethernet interface
4. Modify ethernet interface boot parameters
5. Return
```

Note: Need to open tftp & ftp tools both while downloading.

NOTICE

TFTP is used to load the BIOS in the system software while the system is being started. Therefore, TFTP and FTP must be enabled and the same path where the system software is stored must be specified for TFTP and FTP if you want to use the BootLoad menu to upgrade the system.

---

1. **Loading and Starting the System Software Package Using the Ethernet**

   Enter **1** in the Ethernet interface submenu to load and start the system software package for the upgrade using the Ethernet.

2. **Loading and Starting the System Software Package Using the Ethernet and Formatting the CFcard**

   Enter **2** in the Ethernet interface submenu to load and start the system software package using the Ethernet and format the CFcard when the CFcard does not have sufficient space for the upgrade.

3. **Loading the Operating System Using the Ethernet**

   Enter **3** in the Ethernet interface submenu to load and start the operating system using the Ethernet when you want to debug the operating system.

4. **Modifying Ethernet Interface Load Parameters**

   Select **4** in the Ethernet interface submenu to configure Ethernet interface load parameters.

```
server ip   : X.X.X.X  -
```

```
target ip    : X.X.X.X   -
gateway ip   : X.X.X.X       -
net mask     : X.X.X.X     -
file name    : V800R011C10SPC100-OC-NE-M2E.cc -
ftp or tftp  :               -
user name    : ******           -
user password : ******            -
```

Item	Description	Remark
server ip	IP address of the FTP and TFTP server	-
target ip	IP address of the Ethernet interface on the IPU	-
gateway ip	Gateway	-
net mask	Subnet mask	-
file name	Name of the system software package to be uploaded	Extension name .cc
ftp or tftp	Ignore this.	-
user name	FTP user name	-
user password	FTP login password	-

5. **Returning to the BootLoad Menu**

   Enter 6 in the Ethernet interface submenu to return to the BootLoad menu.

6. **Setting the Boot File Name and Path**

   Select **4** in the BootLoad menu to enter the files submenu to configure the boot file name and path.

```
  Boot Files Submenu

1. Modify the boot file
2. Modify the paf file
3. Modify the config file
4. Modify the patch file
5. Clear the patch file
6. Return
```

7. **Modifying the Boot File**

   Enter 1 in the files submenu to modify the boot file.

```
  Boot Files Submenu

1. Modify the boot file
2. Modify the paf file
3. Modify the config file
4. Modify the patch file
5. Clear the patch file
6. Return
```

```
Enter your choice(1-7): 1

 Current boot file is V800R011C10SPC100-OC-NE-M2E.cc, modify the file name if needed.
Please input file name:
```

Enter the boot file name at the preceding prompt.

8. **Modifying the PAF File**

   Enter 2 in the files submenu to modify the paf file.

```
   Boot Files Submenu

   1. Modify the boot file
   2. Modify the paf file
   3. Modify the config file
   4. Modify the patch file
   5. Clear the patch file
   6. Return

Enter your choice(1-7): 2

 Current PAF file is , modify the file name if needed.
Please input file name:
```

9. **Modifying the Configuration File**

   Enter **3** in the files submenu to modify the configuration file.

```
   Boot Files Submenu

   1. Modify the boot file
   2. Modify the paf file
   3. Modify the config file
   4. Modify the patch file
   5. Clear the patch file
   6. Return

Enter your choice(1-7): 3

 Current config file is vrpcfg.zip, modify the file name if needed.
Please input file name:
```

10. **Modifying the Patch File**

   Enter 4 in the files submenu to modify the patch file.

```
   Boot Files Submenu

   1. Modify the boot file
   2. Modify the paf file
   3. Modify the config file
   4. Modify the patch file
   5. Clear the patch file
   6. Return

Enter your choice(1-7): 4
```

```
 Current patch file is , modify the file name if needed.
Please input file name:
```

11. **Clear the Patch File**

    Enter **5** in the files submenu to modify the patch status file.

```
    Boot Files Submenu

  1. Modify the boot file
  2. Modify the paf file
  3. Modify the config file
  4. Modify the patch file
  5. Clear the patch file
  6. Return

Enter your choice(1-7): 5

 Current patch state file is , modify the file name if needed.
Please input file name:
```

12. **Returning to the BootLoad Menu**

    Select 6 to return to the BootLoad menu.

Modifying the BootLoad Password

Select 5 in the BootLoad menu to configure a BootLoad password. The default password is WWW@HUAWEI. The password must be a string of at least six characters with at least two of the following types: uppercase letters, lowercase letters, digits, and special characters.

Displaying the File List

Select **6** in the BootLoad menu to display the file list and enter the file list submenu.

```
    CFcard Content List Submenu

  1. List file(s) in CFcard
  2. List file(s) in CFcard2
  3. Return
```

Displaying the File List in the CFcard

Select **1** in the file list submenu to display the file list in the CFcard.

```
    CFcard Content List Submenu

  1. List file(s) in CFcard
  2. List file(s) in CFcard2
  3. Return

Enter your choice(1-3): 1
[efs list] using device cfcard 0:1, directory: /.
[DIR]      1024 .
[DIR]      1024 ..
[DIR]     12288 lost+found
           606 vrpcfg.zip
```

```
          18251 device.sys
[DIR]      1024 logfile
           4640 lcsbox
           1086 ckhighmem.sh
      171900428 V800R010C10SPC500-OC-NE-M2E.cc
[DIR]      1024 $_install_mod
           2680 open_linux.bin
            384 copy.sh
             16 backplane_esn.bin
      171900428 V800R011C10SPC100-OC-NE-M2E.cc
```

Returning to the BootLoad Menu

Select **3** to return to the BootLoad menu.

Rebooting the System

Select **10** in the BootLoad menu to reboot the system.

F Kernel Menu Usage

📖 NOTE

The kernel menu varies accoding to the MPU type. You can press Ctrl+B or Ctrl+K to enter the kernel menu at the prompt of a serial interface during MPU restart..

E.1 Pressing Ctrl+K to Enter the Kernel Menu (on a Device with the BootLoad Menu)

Message

When you use a serial cable to connect the serial interface on a PC to the console interface on the IPU while the IPU is starting, the following message is displayed:

```
Press CTRL+K to enter Kernel Menu..
```

Entering a Password

```
Password:
```

A password is needed to enter the Kernel menu. The default password is WWW@HUAWEI and changeable.

Entering the Kernel Menu

```
*************************************
*   Kernel Menu (version: 0.2)      *
*************************************
    1. List file(s) in cfcard.
    2. Delete file in cfcard.
    3. Rename file in cfcard.
    4. Download debug log.
    5. Change password.
    6. Exit menu and continue startup.
    7. Reboot.
```

Displaying the File List in the CF Card

Select **1** to display the File List in the CF Card.

```
*************************************
```

```
*   Kernel Menu (version: 0.2)      *
****************************************
   1. List file(s) in cfcard.
   2. Delete file in cfcard.
   3. Rename file in cfcard.
   4. Download debug log.
   5. Change password.
   6. Exit menu and continue startup.
7. Reboot.
Enter your choice(1-7):1
-rw-r--r--   11001  1003   171900428  Jun  4  20:03 V800R011C10SPC100-OC-NE-M2E.cc
-rwxr-xr-x   11001  1003          16  Jun  4  20:07 backplane_esn.bin
-rwxr-xr-x   11001  1003        1086  Jun  5  19:49 ckhighmem.sh
-rwxr-xr-x   11001  1003         384  May 31  15:30 copy.sh
-rw-rw-r--   11001  1003       18251  Jun  8  16:24 device.sys
```

Deleting a File from the CF Card

Select 2 to delete a file from the CF card.

```
****************************************
*   Kernel Menu (version: 0.2)      *
****************************************
   1. List file(s) in cfcard.
   2. Delete file in cfcard.
   3. Rename file in cfcard.
   4. Download debug log.
   5. Change password.
   6. Exit menu and continue startup.
   7. Reboot.
Enter your choice(1-7):2
Please input file name to be deleted:
```

Renaming a File in the CF card

Select 3, enter the original name and the new name, and confirm it.

```
****************************************
*   Kernel Menu (version: 0.2)      *
****************************************
   1. List file(s) in cfcard.
   2. Delete file in cfcard.
   3. Rename file in cfcard.
   4. Download debug log.
   5. Change password.
   6. Exit menu and continue startup.
   7. Reboot.
Enter your choice(1-7):3
Please input file name to be renamed:copy.sh
Please input new file's name:copy.sh
Are you sure rename file copy.sh to copy.sh ?[Y/N]y
```

Downloading Diagnostic Logs

Select 4 to diagnostic logs to the server configured in the BootLoad menu.

```
**************************************
*   Kernel Menu (version: 0.2)     *
**************************************
    1. List file(s) in cfcard.
    2. Delete file in cfcard.
    3. Rename file in cfcard.
    4. Download debug log.
    5. Change password.
    6. Exit menu and continue startup.
    7. Reboot.
Enter your choice(1-7):4
```

Modifying the Kernel Menu Password

Select 5 to modify the Kernel menu password. The default password is WWW@HUAWEI.

Exiting from the Kernel Menu and Continuing Startup

Select 6 to exit from the Kernel menu and continue startup.

Rebooting the System

Select 7 to reboot the system.

E.2 Pressing Ctrl+B to Enter the Kernel Menu (on a Device Without the BootLoad Menu)

Message

When you use a serial cable to connect the serial interface on a PC to the console interface on the IPU while the IPU is starting, the following message is displayed:

```
Press CTRL+B to enter Kernel Menu..
```

Entering a Password

```
Password:
```

A password is needed to enter the Kernel menu. The default password is Changeme_123 and changeable. Using the default password brings security risks. Therefore, changing the default password is recommended.

Entering the Kernel Menu

```
=====================================
 *** Kernel Menu ***
=====================================
 <0> List file(s) in cfcard.
 <1> Enter ethernet submenu.
 <2> Download debug log.
 <3> Change password.
 <4> CFcard Format Submenu.
 <5> Set boot file and path.
 <6> Reboot.
 <V> Review result
```

```
<L> Language Switch
<U> Upper Menu..
Enter your choice:..
```

List file(s) in cfcard

Enter **0** to display files in the CF card.

```
Enter your choice: 0
==================================
 *** U-DISK Content List Submenu ***
==================================
<0> List file(s) in U-DISK
<1> List file(s) in U-DISK2
<V> Review result
<L> Language Switch
<U> Upper Menu..
Enter your choice:

Enter 0 to display the files in the primary CF card.
Enter your choice: 0
drwxrwxrwx   1 ftpvrpv8 ftpvrpv8    4080 Oct  9 20:03 $ checkpoint
drwxr-xr-x   1 ftpvrpv8 ftpvrpv8    4080 Sep 25 05:42 $ install hpg
drwxr-xr-x   1 ftpvrpv8 ftpvrpv8    4080 Sep 25 05:42 $ install mod
drwxrwx---   1 ftpvrpv8 ftpvrpv8    4080 Sep 20 16:00 $ license

Enter 1 to display the files in the secondary CF card.
Enter your choice: 1
drwxr-xr-x   2 root    root        1540 Sep 29 12:04 bin
drwxr-x---   2 root    root          40 Sep 27 08:36 boot

Enter V to display the test result.
Enter your choice: V
==================================
 *** U-DISK Content List Submenu ***
==================================
<0> List file(s) in U-DISK
<1> List file(s) in U-DISK2
<V> Review result
<L> Language Switch
<U> Upper Menu..
Enter U to return to the upper-level menu.
```

Enter **1** to display the Ethernet submenu.

```
Enter your choice: 1
==================================
 *** ethernet submenu ***
==================================
<0> Check Package
<1> Set Eth Config
<2> DownLoad Package
<3> Install OS through ethernet interface with integrity check
<4> Install OS Format Hard Disk with integrity check
<V> Review result
<L> Language Switch
```

```
<U> Upper Menu..
```

Enter **0** to check the digital signature of the system software package.

Enter **1** to set the network environment.

```
Enter your choice: 4
server ip    :X.X.X.X
target ip    :X.X.X.X
gateway ip   :X.X.X.X
net mask     : X.X.X.X
file name    : CX600-M2K-V800R011C10SPC700.cc
user name    : huawei
user password : ******
```

Object	Description	Remarks
server ip	IP address of the FTP server	-
target ip	This is the IP used for communication with the FTP or TFTP server.	-
gateway ip	Gateway used for communicating with the FTP server.	-
net mask	Subnet mask	-
file name	Name of the system software on the server	-
ftp or tftp	Upgrade using FTP or TFTP. FTP is used by default.	-
user name	Name of an FTP user that exists on the FTP server	-
user password	Password of the FTP user	-

Enter **2** to download only the system software package.

Enter **3** to download the system software package from the network, check the digital signature, and boot the system using this package.

Enter **4** to format the CF card, download the system software package from the network, check the digital signature, and boot the system using this package.

Enter **V** to display the test result.

Enter **U** to return to the upper-level menu.

Change password

Enter **3** to set the password of the kernel menu. The default password is **Changeme_123**.

CFcard Format Submenu

Enter **4** to enter the CF card formatting submenu.

```
Enter your choice: 7
==================================
 *** Format CFcard. ***
==================================
 <0> Format CFcard
 <1> Format CFcard2
 <V> Review result
 <L> Language Switch
 <U> Upper Menu..
```

To format the primary CF card, enter **0**.

To format the secondary CF card, enter **1**.

```
Set boot file and path
```

Enter **5** to enter the submenu for setting the boot file and path.

```
Enter your choice: 8
==================================
 *** Boot Info submenu ***
==================================
 <0> Modify the boot file
 <1> Modify the paf file
 <2> Modify the config file
 <3> Modify the patch file
 <4> Clear the patch file
 <V> Review result
 <L> Language Switch
 <U> Upper Menu..
```

To set the next-startup system software package, enter **0**.

To set the next-startup PAF file, enter **1**.

To set the next-startup configuration file, enter **2**.

To set the next-startup patch file, enter **3**.

```
Enter your choice: 0
next bootfile /opt/vrpv8/home/ CX600-M2K-V800R011C10SPC100.cc :
Enter your choice: 1
next paffile /opt/vrpv8/home/ :
Enter your choice: 2
next cfgfile /opt/vrpv8/home/vrpcfg.zip :
Enter your choice: 3
next patchfile :
```

Reboot

Enter **9** to boot the system.

Upper Menu

Enter **U** to exit the kernel menu.

G Upgrade Record

Site		Upgrade Date	
Source Version		Target Version	
Upgrade Engineers	Customer: Huawei:		
Upgrade Successful (Y/N)			

Upgrade Checklist		Result	Resolution Specifics
Pre-Upgrade Check	Check whether required service parts are available.		
	Check the version of the current system software.		
	Check whether a new GTL is needed.		
	Check the running status of the device.		
	Check the upgrade environment.		
	Check whether required upgrade software is available.		
	Check whether key data is backed up.		
	Check whether the remaining space in the CF card is sufficient.		
	Check whether unsupported boards exist on the router.		
	Check whether the bcf.txt		

Site		Upgrade Date	
	file exists in the CF card.		
Upgrade Check	Check FTP server configurations.		
	Check the procedure for upgrading the system software.		
	(Optional) Check the procedure for upgrading the slave IPU.		
	Check the procedure for upgrading the GTL.		
	Check the procedure for upgrading the configuration file.		
Post-Upgrade Check	Check the version of the system software after the upgrade.		
	Check board registration.		
	Check the running status of the GTL.		
	(Optional) Check the software versions of boards.		
	Check the configuration file.		
	Check whether services are running properly.		

H Acronyms and Abbreviations

F	
FTP	File Transfer Protocol
I	
IPU	Integration Processing Unit