



Release Notes for Cisco RF Switch Firmware Version 3.92

April 29, 2008

Cisco RF Switch Firmware Version 3.92

OL-15753-02

These release notes for the Cisco RF Switch Firmware describe the enhancements, versions, and application of the Cisco RF Switch, through Firmware Version 3.92. This document supports commands and features in prior versions of Cisco RF Switch Firmware. Firmware Version 3.92 remains subject to the restrictions and support for the N+1 Redundancy feature in Cisco IOS 12.3 BC release train.

For a list of general software configuration and operation procedures that are used for Cisco RF Switch Firmware Version 3.92 or prior, see the following document located on Cisco.com:

- *Cisco RF Switch Firmware Configuration Guide, Version 3.92*
<http://www.cisco.com/en/US/docs/cable/rfswitch/ubr3x10/configuration/guide/rfswcf36.html>

For a list of general software commands and operation procedures that are used for Cisco RF Switch Firmware Version 3.92 or prior, see the following document located on Cisco.com:

- *Cisco RF Switch Firmware Command Reference Guide, Version 3.92*
<http://www.cisco.com/en/US/docs/cable/rfswitch/ubr3x10/command/reference/rfswcr36.html>

For detailed configuration and operation procedures that apply to HCCP N+1 Redundancy on the Cisco CMTS, see the following document located on Cisco.com:

- *N+1 Redundancy for the Cisco CMTS*
<http://www.cisco.com/en/US/docs/cable/cmts/feature/guide/uFGnpls1.html>

For a list of the software enhancements or caveats that apply to Cisco IOS Release 12.3 BC, see the following document located on Cisco.com:

- *Release Notes for Cisco IOS Software Release 12.3 BC*
http://www.cisco.com/en/US/products/sw/iosswrel/ps5187/prod_release_notes_list.html



Note

You can find the most current Cisco IOS documentation on Cisco.com. This set of electronic documents may contain updates and modifications made after this document was initially published.



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Cisco recommends that you view the field notices for this release to see if your software or hardware platforms are affected.

If you have an account on Cisco.com, you can find field notices at http://www.cisco.com/en/US/customer/support/tsd_products_field_notice_summary.html.

If you do not have a Cisco.com login account, you can find field notices at http://www.cisco.com/en/US/support/tsd_products_field_notice_summary.html

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Prerequisites for Firmware Version 3.92

This section describes prerequisites that apply specifically to Firmware Version 3.92 on the Cisco RF Switch, used in conjunction with the Cisco IOS N+1 Redundancy feature on the Cisco CMTS.

- The Cisco RF Switch must be cabled and installed in full compliance with the documents listed in the [“Additional References”](#) section on page 12.

Restrictions for Firmware Version 3.92

This section describes restrictions that apply specifically to Firmware Version 3.92 on the Cisco RF Switch, used in conjunction with the Cisco IOS N+1 Redundancy feature on the Cisco CMTS.

- Cisco recommends upgrading to Firmware Version 3.92, even with earlier Cisco IOS releases subject to N+1 Prerequisites and Restrictions such as feature interoperability, factory default configurations, etc.

Refer to the following document located on Cisco.com for further information on Firmware Version 3.92:

Release Notes for Cisco IOS Software Release 12.3 BC

http://cisco.com/en/US/partner/products/hw/cable/ps2209/prod_release_notes_list.html

- Version 3.92 allocates new nvram location to support long passwords (32 characters) and SNMP community string (64 characters).

- In Version 3.92, on first reboot after migration from previous version, the new password and community string areas are installed and old settings (if any) are copied to new location.
- **If the user downgrades from 3.92 to a previous version, some of the configuration parameters in the newer versions are not recognized by the older software which causes the some of the config elements to be reset to default values.**
- **If user downgrades from Version 3.92 to Version 3.80, the new nvram location for password and community string is not recognized, and the password is removed and community string is set to private.**
- **If the user downgrades from Version 3.92 to Version 3.60 or earlier, the password is removed and community string is set to private, and the ip address, default gateway and tftp address are reset to default values.**

**Note**

Version 3.92 is case-sensitive and stores passwords and SNMP community strings as they are entered on the CLI. In previous versions the case-sensitivity was not preserved and passwords and community strings were converted internally — passwords were stored in all uppercase and community strings in all lowercase. The parser allowed the user to type in any case as long as the letters matched.

When the user upgrades to version 3.92, the mixed case passwords and SNMP community strings from previous versions are stored as lower case characters. After the upgrade, the user should verify the password and community string and set them as desired.

Prerequisites for Firmware Version 3.90

This section describes prerequisites that apply specifically to Firmware Version 3.90 on the Cisco RF Switch, used in conjunction with the Cisco IOS N+1 Redundancy feature on the Cisco CMTS.

- The Cisco RF Switch must be cabled and installed in full compliance with the documents listed in the [“Additional References” section on page 12](#).

Restrictions for Firmware Version 3.90

This section describes restrictions that apply specifically to Firmware Version 3.90 on the Cisco RF Switch, used in conjunction with the Cisco IOS N+1 Redundancy feature on the Cisco CMTS.

- Cisco recommends upgrading to Firmware Version 3.90, even with earlier Cisco IOS releases subject to N+1 Prerequisites and Restrictions such as feature interoperability, factory default configurations, etc.

Refer to the following document located on Cisco.com for further information on Firmware Version 3.90:

Release Notes for Cisco IOS Software Release 12.3 BC

http://cisco.com/en/US/partner/products/hw/cable/ps2209/prod_release_notes_list.html

Prerequisites for Firmware Version 3.80

This section describes prerequisites that apply specifically to Firmware Version 3.80 on the Cisco RF Switch, used in conjunction with the Cisco IOS N+1 Redundancy feature on the Cisco CMTS.

- The Cisco RF Switch must be cabled and installed in full compliance with the documents listed in the “[Additional References](#)” section on page 12.
- The password on the RF Switch should be removed before upgrading the RF Switch to 3.80. The password can be set on the RF Switch when the upgrade to version 3.80 is complete.

Restrictions for Firmware Version 3.80

This section describes restrictions that apply specifically to Firmware Version 3.80 on the Cisco RF Switch, used in conjunction with the Cisco IOS N+1 Redundancy feature on the Cisco CMTS.

- Cisco recommends upgrading to Firmware Version 3.80, even with earlier Cisco IOS releases subject to N+1 Prerequisites and Restrictions such as feature interoperability, factory default configurations, etc.

Refer to the following document located on Cisco.com for further information on Firmware Version 3.80:

Release Notes for Cisco IOS Software Release 12.3 BC

http://cisco.com/en/US/partner/products/hw/cable/ps2209/prod_release_notes_list.html

Prerequisites for Firmware Version 3.60

This section describes prerequisites that apply specifically to Firmware Version 3.60 on the Cisco RF Switch, used in conjunction with the Cisco IOS N+1 Redundancy feature on the Cisco CMTS.

- The Cisco RF Switch must be cabled and installed in full compliance with the documents listed in the “[Additional References](#)” section on page 12.
- Cisco recommends that the RF Switch Firmware be upgraded to Version 3.60 from previous Firmware versions, particularly for operation of the Cisco uBR10012 router with Cisco IOS Release 12.3(21)BC in N+1 Redundancy. Refer to general field notices, and the following documents for additional information:
 - *Field Notice: FN - 62695 - Cisco RF Switch Firmware Version 3.60 - Mandatory Upgrade*, Document ID: 82266
http://www.cisco.com/en/US/products/hw/cable/ps2209/prod_field_notices_list.html
 - *Release Notes for Cisco uBR10012 Universal Broadband Router for Cisco IOS Release 12.3 BC*
http://www.cisco.com/en/US/docs/cable/cmts/ubr10012/release/notes/12_3bc/ubr10k_123bc_rn.html

Restrictions for Firmware Version 3.60

- The Cisco uBR7246VXR router only supports N+1 Redundancy using Cisco IOS Release 12.3(9a)BC or prior N+1-enabled Cisco IOS releases. Firmware Version 3.60 supports N+1 Redundancy in these earlier releases.
- Cisco recommends upgrading to Firmware Version 3.60, even with earlier Cisco IOS releases, subject to N+1 Prerequisites and Restrictions in the Cisco IOS release, such as feature interoperability, factory default configurations, and so forth.
- Refer to the following Firmware Upgrade Field Notice for additional information:
 - *Field Notice: FN - 62695 - Cisco RF Switch Firmware Version 3.60 - Mandatory Upgrade*, Document ID: 82266
http://www.cisco.com/en/US/products/hw/cable/ps2209/prod_field_notices_list.html

Information About Cisco RF Switch Firmware Versions and Features

This topic summarizes the new commands and features for the following Firmware Versions:

- [Features Introduced in Cisco RF Switch Firmware Version 3.92, page 5](#)
- [Features Introduced in Cisco RF Switch Firmware Version 3.90, page 6](#)
- [Features Introduced in Cisco RF Switch Firmware Version 3.80, page 6](#)
- [Features Introduced in Cisco RF Switch Firmware Version 3.60, page 7](#)
- [Features Introduced in Cisco RF Switch Firmware Version 3.50, page 8](#)
- [Features Introduced in Cisco RF Switch Firmware Version 3.30, page 8](#)
- [Features Introduced in Cisco RF Switch Firmware Version 2.50, page 9](#)

Features Introduced in Cisco RF Switch Firmware Version 3.92

Cisco RF Switch Firmware Version 3.92 provides the following changes, resolutions, enhancements, and updates, supported on the Cisco uBR10012 router with Cisco IOS release 12.3(21)BC or later:

- Version 3.92 allocates new nvram location to support long passwords (up to 32 characters) and SNMP community strings (up to 64 characters).
- Version 3.92 stores passwords and SNMP community strings the way they are entered on the CLI. The user can store mixed case strings for passwords and SNMP community strings. In previous versions, passwords were stored in all uppercase and SNMP community strings were stored in all lowercase.
- In Version 3.92, password and SNMP community strings may contain any of the printable ASCII characters (0x20-0x7e), with the exception of the space (0x20), double quote (0x22), semicolon (0x3b), backslash (\), and forward slash (/) characters. In addition the character '?' and 'HELP' cannot be used in strings by themselves as they invoke the CLI help function.
- In Version 3.92, on first reboot after migration from previous version, the new password and community string areas are installed and old settings (if any) are copied to new location. If the user moves to a previous version from 3.92, the password is removed and community string is set to **private**.

- Version 3.92 enhances the command **show log** and it now includes the nvem status message entries.
- Version 3.92 introduces **show password** help.
- Version 3.92 added **reload/reboot** and **reload?** to the main help.
- Version 3.92 enhances **enable password** and **set snmp community** help and it now lists characters not recommended in these strings.

Features Introduced in Cisco RF Switch Firmware Version 3.90

Cisco RF Switch Firmware Version 3.90 provides the following changes, resolutions, enhancements, and updates, supported on the Cisco uBR10012 router with Cisco IOS release 12.3(21)BC or later:

- Version 3.90 update resolves the Address Resolution Protocol (ARP) cache handling issue and ensures ARP updates after timeout.
- Version 3.90 provides for enhancement in the telnet server to negotiate with the client regarding the desired setting of the echo mode. The user can set the initial state of the local echoing using the **set telnet echo** command. However, the telnet server can bypass this and use the client's setting if the client supports echo options negotiation.
- Version 3.90 enhances the Trivial File Transfer Protocol (TFTP) to display the number of bytes as transfer progresses.
- Version 3.90 pushes the CLI task priority to below that of the network task. Now, pings have higher priority than interface commands.
- Version 3.90 modifies the command **show version** so that the full cyclic redundancy check (CRC) validation is not done on the flash contents. It now validates only the file header contents. To perform a full CRC check, use the command **show files**.
- Version 3.90 allows RF Switch to accept passwords that match CLI keywords. In version 3.80, they were not accepted and shown as Invalid Syntax.
- Version 3.90 updates real-time operating system (RTOS) kernel to be compatible with new IP stack.

Features Introduced in Cisco RF Switch Firmware Version 3.80

Cisco RF Switch Firmware Version 3.80 provides the following changes, resolutions, enhancements, and updates, supported on the Cisco uBR10012 router with Cisco IOS release 12.3(21)BC or later:

- Version 3.80 adds the **set access system** command. This command is similar to the **password system** command, which is no longer valid in Version 3.80 or later. The **set access system** command enables access to commands that were previously available only via backdoor password. This command works in addition to any installed password, and does not override any current password protection.
- Version 3.80 adds the **set** option to the **show config** command, enabling you to display the config information formatted as SET commands.
- Version 3.80 introduces a new password recovery procedure.
- Version 3.80 adds an *all* option to the **show switch status** command. This enables users to display detailed RF Switch status for all modules (1-28), including the last command used, the detected module position, and any relays that are in error.
- Version 3.80 fixes the telnet mode so that typing the **quit** or **exit** command in a telnet session will cause the rfs w telnet server to close the connection.

- Version 3.80 adds an *echo* option negotiation to the rfsw telnet server. The new **set telnet echo** command sets the default state for echoing in the rfsw telnet server. To restore the default state, use the **no** form of the command.
- Version 3.80 adds the **enable** command. Using the **enable** command in user EXEC mode enables the user to enter privileged exec mode.
- In Version 3.80, the command **enable erase** is changed to **allow erase**. This command helps to prevent accidental image erasure.
- Version 3.80 adds the **enable password** command. This command sets enable mode password and store it in nvram. To remove the password requirement, use the **no** form of this command.
- Version 3.80 adds the **disable** command. This command exits privileged EXEC mode and return to user EXEC mode, or to exit to a lower privilege level, enter the disable command in EXEC mode.
- Version 3.80 adds caching of snmp mib vars to the AdminState sets/gets.
- Version 3.80 adds a new mib oid to control caching.

Features Introduced in Cisco RF Switch Firmware Version 3.60

Cisco RF Switch Firmware Version 3.60 provides the following changes, resolutions, enhancements, and updates, supported on the Cisco uBR10012 router with Cisco IOS release 12.3(21)BC or later:

- To help handle an increase in the SNMP traffic, Version 3.60 changes the network buffering to allocate a larger pool of (number of) buffers, with a new number of 100 buffers total.
- Version 3.60 reduces the maximum packet size to 600 bytes. This combination of a larger number of buffers with smaller maximum packet size helps with handling large bursts of inbound packets that were discarded in previous versions of Cisco RF Switch Firmware.
- Version 3.60 resolves a previous bug in the SNMP agent to help further with the above items. In prior versions of Cisco RF Switch firmware, the SNMP agent blocked traffic just after packet reception, waiting to allocate a buffer in which to place the output response. If no buffer was available (as would be the case if a large burst of incoming packets occurred), the agent would timeout, and the system would generate a watchdog timeout. Now, the agent uses a private buffer for the output response, and only requests a packet buffer after completing the snmp operation. If no buffer is available, the output response is discarded, and the agent continues processing inbound packets.
- Version 3.60 adds the **noverify** option to the **copy** command, enabling you to override the file type verification, and place a file in either the flash (FL:) or bootflash (BF:) device. Version 3.60 updates the online help to reflect this new option. This new option provides the ability to place a copy of the main application into the bootflash, so that normal system operation is restarted in the case of a system crash, instead of having the “sys>” prompt as in previous versions of Firmware.
- Version 3.60 resolves a previous issue in which concurrent access to the RF switch modules via the command-line interface and SNMP would cause random errors and crashes. The firmware now allows simultaneous usage of telnet, console, and SNMP operation. This issue was observed primarily if the show version and test module commands were used at the same time that SNMP status polling operations were occurring. This previous issue also affected a number of additional commands.

Features Introduced in Cisco RF Switch Firmware Version 3.50

Firmware Version 3.50 can be used with either Cisco IOS Release 12.2(15)BC1 or 12.2(15)BC2 for full availability of improved switchover times.

Improved Switchover Times

Firmware Versions 3.30 and 3.50 both offer significantly improved switchover times in the event of a Working interface or line card failure. Also, N+1 Redundancy is more easily configured with increased synchronization between Working and Protect interfaces. Refer to *N+1 Redundancy for the Cisco Cable Modem Termination System* on Cisco.com:

ARP Cache

Firmware Version 3.50 modifies Address Resolution Protocol (ARP) cache functions to reduce the number of ARP requests as possible. The ARP timeout was previously fixed at 60 seconds. This is now a definable setting from the RF Switch command-line interface (CLI). Commands relating to ARP are described later in this section.

Cisco Command Changes for Firmware Version 3.50

Version 3.50 offers the following command enhancements, continued through Version 3.60:

- Added the new **set arp timeout** command to allow configuration of the ARP cache feature (see above).
- Enhanced the **show config** command to display ARP timeout information.
- Enhanced the **show arp** command. There are now three forms:
 - **sdow arp** — Displays minimal information to show valid entries in use.
 - **show arp all** — Displays more details, including link-list information and entries that may be expired.
 - **show arp table** — Displays full table, including unused entries.

Features Introduced in Cisco RF Switch Firmware Version 3.30

Firmware Version 3.30 can be used with either Cisco IOS Release 12.2(15)BC1 or 12.2(15)BC2 for full availability of improved switchover times.

Improved Switchover Times

Firmware Versions 3.30 and 3.50 both offer significantly improved switchover times in the event of a Working interface or line card failure. Also, N+1 Redundancy is more easily configured with increased synchronization between Working and Protect interfaces. Refer to the following document on Cisco.com for additional information:

- *N+1 Redundancy for the Cisco Cable Modem Termination System* on Cisco.com:
<http://www.cisco.com/en/US/docs/cable/cmts/feature/guide/uFGnpls1.html>

Firmware Command Changes for Version 3.30

Version 3.30 offers the following command enhancements, continued through Version 3.60:

- Replaces the **configure card count** command with the **set slot config** command for setting Cisco RF Switch slots to line cards on the router chassis.
 Previously, Version 2.50 required that upstream and downstream line cards be configured to specific slots in the RF Switch chassis (using the **configure card count** command). Firmware Version 3.30 allows for the RF Switch chassis to be configured with any mix of upstream or downstream line cards using the **set slot config** command.
- Adds the **show ip** command to display IP configuration information for the Cisco RF Switch.
- Adds display of slot configuration information with the **show slot config** command.

- Modifies the `password` field output displayed in the `show config` Firmware command so as to preserve password security with encryption.
- Modifies the `Card Protect Mode` field output in the `show config` command to change the previous notations of 1x4/1x8 to the Cisco standard notations of 4+1/8+1.

DHCP Server added for Firmware Version 3.30

Version 3.30 adds support for the DHCP server and the DHCP client, and the RF Switch Firmware no longer assumes a static IP address of 10.0.0.1 as in Version 2.50.

Features Introduced in Cisco RF Switch Firmware Version 2.50

SNMPv1 Upconverters and Traps

Version 2.50 introduces support for the Cisco 3x10 RF Switch and SNMP upconverters with the Cisco uBR10012 router. Firmware Version 2.50 fully implements SNMPv1 and Traps. SNMP traps are sent with the following events:

- System startup (coldstart)
- Whenever the N+1 Redundancy Unit (NRU) has completed initialization:
 - `nruModuleOnOffNotification` and/or `nruModuleFaultNotification`
- Whenever a switchover fails:
 - `nruModuleFaultNotification`
- Whenever a system crash is detected:
 - `nruModuleOnOffNotification.999 offline`

Because the system remains largely inactive unless a switchover is requested, the controller (after startup) is not able to detect a cable interface line card that is removed or has failed until told to perform some action. The controller automatically detects a line card that is inserted into the chassis. Therefore, you get automatic notification if a line card is replaced.

Default Gateway for Remote TFTP Transfer

Version 2.50 adds support for the default gateway to enable TFTP transfers of remote Firmware images.

Installing Cisco RF Switch Firmware Version 3.92

As with previous Firmware upgrades on the Cisco RF Switch, the new Version 3.92 image can be downloaded and installed via TFTP using the COPY TFTP: command. This command can be applied from either the serial console port or via a Telnet session.

One recommended procedure for installing the upgrade is as follows:

1. Copy the image to CMTS:

```
COPY TFTP: //<tftpserver-ip>/<userid>/1935030N.BIN BOOTFLASH:
```

2. Setup the tftp server on CMTS:

```
CONF T  
TFTP-SERVER BOOTFLASH:1935030N.BIN ALIAS 1935030N.BIN  
END
```

3. Setup RF Switch with tftp host, if not already set:

```
SET TFTP HOST <tftpserver-ip-addr>
```

4. Remove the password that has been set on the RF Switch, only if you are loading Version 3.80:

The CLI to remove password in Version 3.80 or later is:

```
NO ENABLE PASSWORD
```

The CLI to remove password in versions prior to 3.80 is:

```
NO SET PASSWORD
```

5. Install the new code update with the following command:

```
COPY TFTP:1935030N.BIN FLASH:
```

6. Reboot the Cisco RF Switch to run the new version of firmware:

```
REBOOT
```

7. Go to the enable prompt:

```
ENABLE
```

8. Install the new firmware image into the bootflash, using the new COPY command:

```
COPY TFTP:1935030N.BIN BOOTFLASH: NOVERIFY
```

9. Reboot the Cisco RF Switch to run the new version of firmware:

```
REBOOT
```

10. Set the password back on the RF Switch if you had removed it before upgrade. In Version 3.80 and later, the CLI to set enable password is:

```
ENABLE PASSWORD <password>
```

After the upgrade, the console will display the following warning message to show that changes have been made.

```
Recalling nvmem... ** nvmem default(s) used (0x0c) **  
**WARNING** The following non-volatile configuration memory area(s)  
**WARNING** have been modified or updated:  
Ethernet/IP  
SNMP
```

This procedure is subject to the changes and additional restrictions applied by the Field Notice in the following document on Cisco.com:

- *Release Notes for Cisco uBR10012 Universal Broadband Router for Cisco IOS Release 12.3 BC*
http://www.cisco.com/en/US/docs/cable/cmts/ubr10012/release/notes/12_3bc/ubr10k_123bc_rn.html

Additional References

Related Documents

Related Topic	Document Title
Cisco Broadband Cable Command References	<ul style="list-style-type: none"> • <i>Cisco Broadband Cable Command Reference Guide</i> http://www.cisco.com/en/US/products/hw/cable/ps2217/products_command_reference_book09186a0080108e88.html
Cisco RF Switch Hardware	<ul style="list-style-type: none"> • <i>Cisco RF Switch Documentation Guide</i> http://www.cisco.com/en/US/products/hw/cable/ps2929/products_documentation_roadmap09186a00801c9b9c.html • <i>Cisco RF Switch Installation and Cabling Guide</i> http://www.cisco.com/en/US/products/hw/cable/ps2929/products_installation_guide_book09186a008007ca42.html • <i>N+1 Redundancy for the Cisco CMTS</i> http://www.cisco.com/en/US/products/hw/cable/ps2217/products_feature_guide_chapter09186a008015096c.html • <i>Bitmap Calculator for N+1 Configuration with the Cisco RF Switch</i> (Microsoft Excel format) http://www.cisco.com/warp/public/109/BitMap.xls • <i>Cisco RF Switch Product Home Page</i> http://www.cisco.com/en/US/products/hw/cable/ps2929/index.html
Cisco RF Switch Firmware	<ul style="list-style-type: none"> • <i>Cisco RF Switch Firmware Command Reference Guide, Version 3.90</i> http://www.cisco.com/en/US/products/hw/cable/ps2929/prod_command_reference09186a00807d75cf.html • <i>Cisco RF Switch Firmware Configuration Guide, Version 3.90</i> http://www.cisco.com/en/US/products/hw/cable/ps2929/prod_configuration_guide09186a00807d75b2.html • Field Notice—<i>uBR-RF-SW (N+1 Switch) Firmware Upgrade to Version 3.3 to Enable Setting of Default Gateway for Remote Software Upgrades</i> http://www.cisco.com/warp/public/770/fn19290.shtml
Cisco uBR7246VXR Universal Broadband Router	<ul style="list-style-type: none"> • <i>Cisco uBR7200 Series Universal Broadband Routers</i> Web page (complete documentation set) http://www.cisco.com/en/US/products/hw/cable/ps2217/products_documentation_roadmap09186a00805e0d0c.html
Cisco uBR10012 Universal Broadband Router	<ul style="list-style-type: none"> • <i>Cisco uBR10012 Universal Broadband Router</i> Web page (complete documentation set) http://www.cisco.com/en/US/products/hw/cable/ps2209/products_documentation_roadmap09186a0080733a04.html
High Availability References for Cisco Broadband Cable	<ul style="list-style-type: none"> • <i>N+1 Redundancy for the Cisco CMTS</i> http://www.cisco.com/en/US/products/hw/cable/ps2217/products_feature_guide_chapter09186a008015096c.html • <i>N+1 Tips and Configuration for the uBR 10012 Router with MC28C Cards</i> http://www.cisco.com/warp/public/109/n_1_ubr10k_19135_1.html • <i>PacketCable and PacketCable Multimedia for the Cisco CMTS</i> http://www.cisco.com/en/US/products/hw/cable/ps2217/products_feature_guide_chapter09186a008019b576.html

Related Topic	Document Title
DOCSIS and EuroDOCSIS	<ul style="list-style-type: none"> • <i>DOCSIS 1.1 for Cisco uBR7200 Series Universal Broadband Routers</i> http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121newft/121limit/121cx/docsis11.htm • <i>Internal DOCSIS Configurator File Generator for the Cisco Cable Modem Termination System</i> http://www.cisco.com/en/US/products/hw/cable/ps2217/products_feature_guide_chapter09186a008019b57d.html
Additional Broadband Cable Technical Reference	<ul style="list-style-type: none"> • <i>Cisco Cable Solutions Home Page</i> http://cisco.com/warp/public/779/servpro/solutions/cable/ • <i>Cisco Multiservice Broadband Cable Guide</i> http://www.cisco.com/en/US/prod/collateral/video/ps8806/ps5684/ps2209/prod_brochure09186a008014eeb0.pdf • <i>Cable Radio Frequency (RF) FAQs</i> http://www.cisco.com/warp/public/109/cable_faq_rf.html

Standards

The Cisco uBR10012 router, Cisco uBR7246VXR router and the Cisco RF Switch each support N+1 redundancy in compliance with these industry standards:

- Data-Over-Cable Service Interface Specifications (DOCSIS):
 - *DOCSIS 1.0 support for end-to-end cable telecommunications*
 - *DOCSIS 1.1 support for end-to-end cable telecommunications*
- European DOCSIS (EuroDOCSIS)
- PacketCable

Refer to the release notes for additional information about standards supported by your specific CMTS equipment.

MIBs

MIBs for Cisco RF Switch Firmware Version 3.30

Access to the chassis line card configuration via SNMP requires the addition of the following new objects to the MIB database, summarized in [Table 1](#). Each of these objects has these three attributes:

- SYNTAX: OCTET STRING (SIZE(2))
- ACCESS: read-only
- STATUS: mandatory



Note

Because these objects are 16-bit hex integer bitmasks, in keeping with the conventions currently used in other bitmask values, they are declared as OCTET STRING (SIZE(2)).

Table 1 *MIBs Objects Required with Firmware Version 3.30 and Later.*

Object	Description
nruCacheSnmpData	Value of set snmp cache command. A value of 1 in a bit position indicates that the caching is enabled. It is enabled by default.

Object	Description
nruUpstreamSlotConfig	Value of the <i>upstreamslots</i> parameter of the set slot config command. A value of 1 in a bit position indicates that the corresponding slot should expect an upstream linecard.
nruUpstreamSlotDetected	Results of line card enumeration. A value of 1 in a bit position indicates that an upstream linecard was detected in the slot. Normally, this value should equal nruUpstreamSlotConfig.
nruUpstreamSlotErrors	A value of 1 in any bit position indicates that there is a discrepancy between the configured versus the detected settings for the slot.
nruDnstreamSlotConfig	Value of the <i>dnstreamslots</i> parameter of the set slot config command. A value of 1 in a bit position indicates that the corresponding slot should expect a downstream line card.
nruDnstreamSlotDetected	Results of line card enumeration. A value of 1 in a bit position indicates that a downstream linecard was detected in the slot. Normally, this value should equal nruDnstreamSlotConfig.
nruDnstreamSlotErrors	A value of 1 in any bit position indicates that there is a discrepancy between the configured versus the detected settings for the slot.

Additional MIB Information

To obtain lists of supported MIBs by platform and Cisco IOS release, and to download MIB modules, go to the [Cisco Network Management Software](#) web page (MIBs sections) on Cisco.com.

RFCs

No new or modified RFCs are supported by this feature.

Technical Assistance

Description	Link
Technical Assistance Center (TAC) home page, containing 30,000 pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.	http://www.cisco.com/en/US/support/index.html

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