Release Notes for Cisco MGX-RPM-1FE-CP Back Card for Cisco IOS Release 12.2(8)MC2c

January 9, 2003

Cisco IOS Release 12.2(8)MC2c

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These release notes are for the Cisco MGX-RPM-1FE-CP for Cisco IOS Release 12.2(8)MC2c. These release notes are updated as needed to describe new features, memory requirements, hardware support, software platform deferrals, and changes to the microcode and related documents.

For a list of the software caveats that apply to Cisco IOS Release 12.2(8)MC2c, see the "Caveats in Cisco IOS Release 12.2(8)MC2c" section on page 7. To review the release notes for Cisco IOS Release 12.2, go to www.cisco.com and click **Technical Documents**. Select **Release 12.2** from the Cisco IOS Software drop-down menu. Then click **Cisco IOS Release Notes** > **Cisco IOS Release 12.2**.

Contents

This document contains the following sections:

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Introduction

The MGX-RPM-1FE-CP (one-port, Fast Ethernet-Co-processor) back card is a Cisco MGX 8850 RPM-PR back card that off-loads the following processes from the Route Processor Module (RPM-PR):

- Compression/decompression of Real-time Transport Protocol (RTP)/User Datagram Protocol (UDP) headers (cRTP/cUDP)
- Multiplexing/demultiplexing of Point-to-Point Protocol (PPP) frames

The MGX-RPM-1FE-CP back card is designed to be used with an MGX 8850 that is equipped with one or more RPM-PRs and that terminates some number of T1 lines. Each MGX-RPM-1FE-CP back card has a termination capacity of up to 16 T1s (four per MLP bundle). The MGX-RPM-1FE-CP is only supported with the MLP encapsulation.

The MGX-RPM-1FE-CP back card contains one Fast Ethernet (100Base-Tx) interface. The interface has an RJ45 connector that is used to connect the card to a Category 5 un-shielded twisted pair (UTP) cable. Both half- and full-duplex operation are supported.

MGX-RPM-1FE-CP Back Card in an IP-RAN of a Mobile Wireless Network

The MGX-RPM-1FE-CP back card off loads the compression/decompression of RTP/UDP headers and the multiplexing/demultiplexing of PPP frames.

The supported use of the MGX-RPM-1FE-CP back card is within an IP-RAN of a mobile wireless network. In mobile wireless networks, radio coverage over a geographical space is provided by a network of radios and supporting electronics (Base Transceiver Station or BTS) distributed over a wide area. Each radio and supporting electronics represents a "cell." In traditional networks, the radio signals or radio data frames collected in each cell are forwarded over a T1 (or similar low-speed, leased) line to a centralized Base Station Controller (BSC) where they are processed.

The implementation of the MGX-RPM-1FE-CP backcard in the IP-RAN solution requires the following components:

- Cisco MGX 8850
- RPM-PR
- MGX-RPM-1FE-CP back card
- FRSM card
- BTS router (Cisco MWR 1900 Mobile Wireless Edge Router)

The solution uses OSPF as the routing protocol and requires MLP for transmission of the packets between the aggregation node (MGX8850) and the BTS. It requires you to configure the following:

- The Fast Ethernet (FE) interface to support OSPF. Enable multicast routing and indicate a Protocol Independent Multicast (PIM) mode.
- One or more PPP multilink interfaces with PPP mux and RTP header compression attributes.
- A virtual template for each of the multilink groups.
- A PVC under the switch subinterface that references the virtual template.

In addition, you must configure a connection between the PVC and the FRSM as well as a connection between the FRSM and the PVC.

For detailed information about the MGX-RPM-1FE-CP back card and its implementation in the IP-RAN solution, see the *MGX-RPM-1FE-CP Back Card Installation and Configuration Note*.

System Configuration Requirements

The MGX-RPM-1FE-CP requires the following system configuration:

- Cisco IOS 12.2(8) MC1 or a later Cisco IOS Release 12.2 MC image is installed on the corresponding Cisco MGX 8850 RPM-PR.

- The FE interface is configured via the Cisco IOS software command line interface.

Memory Recommendations

Table 1   Memory Recommendations for the Cisco MGX 8850 RPM-PR

Platform	Software Image	Flash Memory Recommended	DRAM Memory Recommended	Runs From
Cisco MGX-RPM-1FE-CP	rpm-js-mz	32 MB Flash	256 MB DRAM	RAM

Determining the Software Version

To determine the version of Cisco IOS software copied on the RPM-PR, access the CLI of the RPM-PR and enter the **show version** command:

```
rpm> show version
    Cisco Internetwork Operating System Software
    IOS (tm) RPM Software (RPM-JS-M), Version 12.2(8)MC2, EARLY DEPLOYMENT RELEASE
    SOFTWARE (fc1)
```

Upgrading to a New Software Release

For information about copying Cisco IOS images to RPM-PR Flash memory, see the *RPM-PR Installation and Configuration* document.

For general information about upgrading to a new Cisco IOS software release, refer to Software Installation and Upgrade Procedures located at the following URL:

http://www.cisco.com/warp/public/130/upgrade_index.shtml

New Features in the MGX-RPM-1FE-CP with Cisco IOS Release 12.2 MC Software

For detailed descriptions of each of these features, see the *MGX-RPM-1FE-CP Back Card Installation and Configuration Note*.

- Fast Ethernet—Single 10/100 FE port that can be used with or without cRTP/cUDP or PPP Multiplexing configured.
- cUDP/cRTP—Header compression that compresses UDP/RTP headers to 2 to 4 bytes.
- PPP Multiplexing—Method, as defined in RFC 3153, of sending multiple PPP encapsulated packets in a single PPP frame.

New Feature in the MGX-RPM-1FE-CP with Cisco IOS Release 12.2(8)MC2b Software

The following new feature is introduced in Cisco IOS Release 12.2(8)MC2b.

Traffic Recovery Over MLP After T1 Failure

When a T1 failure occurs, traffic recovers over the MLP link within 6 seconds.

This caveat is a feature enhancement to the **keepalive** interface configuration command. With this enhancement, you can also configure a maximum number of retries before a link is declared down by issuing the command as follows:

keepalive [*interval*] [*retries*]

where:

- *interval* is the keepalive interval (in seconds). Valid value is a number greater than 0. The default is 10.
- *retries* is the number of times a link will be tried again before being declared down. Valid value is a number between 1 and 255. The default is 5.

For implementation in an IP RAN solution, the recommended configuration is as follows:

On the MWR 1900:

```
interface Serial0/0:0
 no ip address
 encapsulation ppp
 keepalive 1 2
 no cdp enable
 ppp multilink
 multilink-group 1
end
```

On the MGX-RPM-1FE-CP back card;

```
interface Virtual-Template2
 bandwidth 1536
 no ip address
 keepalive 1 2
```

```
no peer default ip address
ppp multilink
multilink-group 101
end.
```

Note In the MGX-RPM-1FE-CP backcard configuration example, only the **keepalive** interface command and configuration recommendation is specific to implementation in an IP RAN solution.

This new feature is identified by CSCdy78207.

New Features in the MGX-RPM-1FE-CP with Cisco IOS Release 12.2(8)MC2c

The following sections describe the new features in the MGX-RPM-1FE-CP with Cisco IOS Release 12.2(8)MC2c.

16 Multilink Interfaces Support

The MGX-RPM-1FE-CP now supports up to 16 multilink interfaces.

The additional interface support requires that the number of RTP compression-connections for an interface be managed using the **ip rtp compression-connections** command.

Up to 6000 compression-connections can be allocated with up to 1000 RTP compression-connections per multilink interface. If more than 6000 compression-connections are configured, an error message similar to the following will display whenever an interface comes up and it does not receive all of its requested compression-connections:

```
00:22:32:%IXP1200_CP-1-HPRX_CTX_MEM_POOL:Out of resources for Multilink5. Requested 1000
compression-connections, Obtained 900.
```

While an interface that does not obtain enough compression-connections will still function, the compression will be limited to the number of connections that it did obtain. If no compression-connections were obtained, all packets will be sent decompressed.

To view the number of RTP compression-connections configured for an interface, issue the **show ip rtp header-compression** command. In the following example, the interface has requested 1000 compression-connections, but only obtained 900. The interface still supports 1000 compression-connections for decompression but only 900 compression-connections for compression.

```
Router2#show ip rtp header-compression multilink5
  RTP/UDP/IP header compression statistics:
    Interface Multilink5:
      Rcvd:   1286911 total, 1272389 compressed, 0 errors, 0 status msgs
               0 dropped, 0 buffer copies, 0 buffer failures
      Sent:   1288070 total, 1288040 compressed, 0 status msgs
               29624890 bytes saved, 24474050 bytes sent
               2.21 efficiency improvement factor
      Connect:1000 rx slots, 900 tx slots,
               1288070 long searches, 30 misses 0 collisions, 0 negative cache hits
                99% hit ratio, five minute miss rate 0 misses/sec, 0 max
```

This new features is identified by CSCdz00565.

ACFC and PFC Support on PPP Interfaces

By default, Address and Control Field Compression (ACFC) and Protocol Field Compression (PFC) are enabled on PPP interfaces. Both features are always enabled and will be negotiated on all serial interfaces.

Note   If upgrading for this support, ensure that you upgrade the MGX-RPM-1FE-CP backcard images first. After doing so, immediately upgrade all MWR 1900 routers connected to the MGX-RPM-1FE-CP back card.

This new feature is identified by CSCdz15371.

Ignore IP ID Field Delta in cUDP Packet Flows Support

By default, the ability to ignore IP ID field delta in cUDP traffic flows is enabled. This ability eliminates the need to send information about the IP header ID field in compressed packets. The decompressor saves the original ID field from the full header packet and generates an ID field by incrementing it by one for each decompressed packet.

This feature improves processing efficiency; helping to minimize dropped packets and link saturation.

This feature is identified by CSCdy87595.

Limitations, Restrictions, and Important Notes

When working with a MGX-RPM-1FE-CP back card, please take note of the following limitations, restrictions, and important notes:

- Only one MGX-RPM-1FE-CP back card is supported per Cisco MGX 8850 RPM-PR.
- FE and multilink interfaces should be shut down before online insertion and removal (OIR) of the MGX-RPM-1FE-CP.
- The MGX-RPM-1FE-CP is only supported on the Cisco MGX 8850 RPM-PR.
- For PPP Multiplexing, MLP must be configured on the MGX-RPM-1FE-CP back card.
- For error messages to be stored, console logging must be configured.
- The IP MTU should be set to 512 bytes or less on multilink interfaces.
- The MGX-RPM-1FE-CP back card supports up to 16 multilink interfaces.
- MLP with LFI is not supported by the Cisco MWR 1900 router. Therefore, MLP with LFI must be disabled on peer devices connecting to the Cisco MWR 1900 router T1 MLP connections.
- To fully disable PPP Multiplexing, issue the **no ppp mux** command on the T1 interfaces of the routers at both ends of the T1 link. If PPP Multiplexing remains configured on one side of the link, that side will offer to receive PPP multiplexed packets.
- If upgrading to Cisco IOS Release 12.2(8)MC2c or later for the ACFC and PFC support on PPP interfaces, ensure that you upgrade the MGX-RPM-1FE-CP backcard image first. After doing so, immediately upgrade all MWR 1900 routers connected to the MGX-RPM-1FE-CP back card.

Caveats in Cisco IOS Release 12.2(8)MC2c

The following sections list and describe the open and resolved caveats for the Cisco MGX-RPM-1FE-CP with Cisco IOS Release 12.2(8)MC2c. Only severity 1 through 3 caveats are included.

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most serious caveats, severity 2 caveats are less serious, and severity 3 caveats are the least serious of these three severity levels.

Caveats in Cisco IOS Releases 12.2 and 12.2 T are also in Cisco IOS Release 12.2(8)MC2c. For information on caveats in Cisco IOS Release 12.2, see *Caveats for Cisco IOS Release 12.2*. For information on caveats in Cisco IOS Release 12.2 T, see *Caveats for Cisco IOS Release 12.2 T*. These two documents list severity 1 and 2 caveats and are located on CCO and the Documentation CD-ROM.

Note If you have an account with Cisco.com, you can use Bug Navigator II to find caveats of any severity for any release. To reach Bug Navigator II, Login to Cisco.com and click **Software Center**: **Cisco IOS Software**: **Cisco Bugtool Navigator II**. Another option is to go directly to http://www.cisco.com/support/bugtools.

Open Caveats

This section lists the caveat that is open in Release 12.2(8)MC2c

- CSCdy83310

  Entering the **no shut** command on an RPM FE interface when the system is under a moderate to heavy load causes the CPU to spike to about 95% utilization for approximately 5 seconds. During this time, multilink interfaces and OSPF adjacencies flap, resulting in lost calls.

  Workaround: Avoid issuing the **no shut** command on an RPM FE interface when the system is under a moderate to heavy load.

Resolved Caveats

This section lists the caveats resolved in Release 12.2(8)MC2c.

- CSCdy60894

  The MWR 1900 router incorrectly flushes Type 5 link-state advertisements (LSAs). This condition might occur when the MWR 1900 is acting as a OSPF not-so-stubby area (NSSA) translator and autonomous system border router (ASBR). If a route that is being redistributed gets overwritten by an NSSA external route, then the MWR 1900 generates a Type 5 LSA and immediately flushes it.

- CSCdy79502

  If PPPMux and cUDP compression are enabled on the MGX-RPM-1FE-CP, when the MGX-RPM-1FE-CP decompresses the cUDP header, the wrong header might be added to the payload of some packets.

- CSCdz39580

  When cUDP and PPPMux are enabled, if the MWR 1900 router receives a short burst of multicast packets from the RPM that all have the same source and destination IP addresses and/or UDP ports, 20 to 30 packets might be dropped before a cUDP recovery occurs.

Troubleshooting

To collect data for reporting back card and router issues, issue the following command:

- **show tech-support**—Displays general information about the router when it reports a problem.

- **show logging**—Displays information in the syslog history table.

Documentation Updates

This section contains information that was not included or was documented incorrectly in the *MGX-RPM-1FE-CP Back Card Installation and Configuration Note*. The heading in this section corresponds with the applicable section title in the documentation.

Configuring RTP/UDP Compression

The maximum number of RTP header compression connections is documented as 150 per T1 interface and up to 600 connections per MLP bundle when in fact, 1000 connections are supported per MLP bundle regardless of whether the bundle contains one T1 interface or four.

The show ppp mux Command

The efficiency improvement factor calculation documented in the **show ppp mux** command section is incorrect. The correct improvement factor calculation uses bytes, not packets, and is as follows:

Multiplex efficiency improvement factor = 100 * (Total bytes saved) / (Total bytes received)

Where total bytes saved = bytes_received_at_muxer - bytes_sent_at_muxer.

Demultiplex efficiency improvement factor = 100 * (Total bytes saved) / (Total bytes sent)

Where total bytes saved = bytes_sent_at_demuxer - bytes_received_at_demuxer.

The show ip rtp header-compression Command

The **detail** keyword is not supported in the **show ip rtp header-compression** command on the MGX-RPM-1FE-CP back card. Output does not display for the `detail` keyword if specified in command.

Related Documentation

The following sections describe the documentation available related to the Cisco MGX-RPM-1FE-CP back card.These documents consist of hardware and software installation guides, Cisco IOS configuration guides and command references, system error messages, and other documents.

Documentation is available as printed manuals or electronic documents.

Platform-Specific Documents

These documents are available for the Cisco MWR 1900 Mobile Wireless Edge Router on Cisco.com and the Documentation CD-ROM:

- *MGX-RPM-1FE-CP Back Card Installation and Configuration Note*
- *RPM-PR Installation and Configuration*
- Cisco MWR 1900 Mobile Wireless Edge Router
    - *Cisco MWR 1900 Hardware Installation Guide*
    - *Cisco MWR 1900 Software Configuration Guide*
    - *Cisco MWR 1900 Rack Mounting Instructions*
    - *Cisco MWR 1900 Regulatory Compliance and Safety Information*
- *VWIC-2MFT-T1-DIR, VWIC-2MFT-E1-DIR Installation Instructions*

Feature Modules

Feature modules describe new features supported by Cisco IOS Release 12.2 MC and are updates to the Cisco IOS documentation set. A feature module consists of an overview of the feature, configuration tasks, and a command reference.

On Cisco.com at:

Technical Documents: Cisco IOS Software: Cisco IOS Release 12.2: New Feature Documentation: New Features in 12.2-Based Limited Lifetime Releases: New Features in Release 12.2 MC: New Features in Release 12.2 MC2

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2: New Feature Documentation: New Features in 12.2-Based Limited Lifetime Releases: New Features in Release 12.2 MC: New Features in Release 12.2 MC2

Obtaining Documentation

These sections explain how to obtain documentation from Cisco Systems.

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at this URL:

http://www.cisco.com

Translated documentation is available at this URL:

http://www.cisco.com/public/countries_languages.shtml

Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which is shipped with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual subscription.

Ordering Documentation

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Networking Products MarketPlace:

  http://www.cisco.com/cgi-bin/order/order_root.pl

- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:

  http://www.cisco.com/go/subscription

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, U.S.A.) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

Documentation Feedback

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You can submit your comments by mail by using the response card behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Document Resource Connection
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain online documentation, troubleshooting tips, and sample configurations from online tools by using the Cisco Technical Assistance Center (TAC) Web Site. Cisco.com registered users have complete access to the technical support resources on the Cisco TAC Web Site.

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- Register for online skill assessment, training, and certification programs

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http://www.cisco.com

Technical Assistance Center

The Cisco Technical Assistance Center (TAC) is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two levels of support are available: the Cisco TAC Web Site and the Cisco TAC Escalation Center.

Cisco TAC inquiries are categorized according to the urgency of the issue:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration.

- Priority level 3 (P3)—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.

- Priority level 2 (P2)—Your production network is severely degraded, affecting significant aspects of business operations. No workaround is available.

- Priority level 1 (P1)—Your production network is down, and a critical impact to business operations will occur if service is not restored quickly. No workaround is available.

The Cisco TAC resource that you choose is based on the priority of the problem and the conditions of service contracts, when applicable.

Cisco TAC Web Site

You can use the Cisco TAC Web Site to resolve P3 and P4 issues yourself, saving both cost and time. The site provides around-the-clock access to online tools, knowledge bases, and software. To access the Cisco TAC Web Site, go to this URL:

http://www.cisco.com/tac

All customers, partners, and resellers who have a valid Cisco service contract have complete access to the technical support resources on the Cisco TAC Web Site. The Cisco TAC Web Site requires a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to this URL to register:

http://www.cisco.com/register/

If you are a Cisco.com registered user, and you cannot resolve your technical issues by using the Cisco TAC Web Site, you can open a case online by using the TAC Case Open tool at this URL:

http://www.cisco.com/tac/caseopen

If you have Internet access, we recommend that you open P3 and P4 cases through the Cisco TAC Web Site.

Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses priority level 1 or priority level 2 issues. These classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer automatically opens a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to this URL:

http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

Before calling, please check with your network operations center to determine the level of Cisco support services to which your company is entitled: for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). When you call the center, please have available your service agreement number and your product serial number.

This document is to be used in conjunction with the documents listed in the "Related Documentation" section.