Release Notes for Cisco MGX 8230, MGX 8250, and MGX 8850 (PXM1), Software Version 1.3.10

Contents

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About These Release Notes

Note that for Release 1.3.10, the user documentation (command reference, overview, and installation and configuration guides) were not updated. Use the existing documents in addition to this release note.

Product documentation for MGX 8850 (PXM1) is available at the following URL:
http://www.cisco.com/univercd/cc/td/doc/product/wanbu/mgx8850/index.htm

Product documentation for MGX 8250 is available at the following URL:
http://www.cisco.com/univercd/cc/td/doc/product/wanbu/mgx8250/index.htm

Product documentation for MGX 8230 is available at the following URL:
http://www.cisco.com/univercd/cc/td/doc/product/wanbu/mgx8230/index.htm

Product documentation for VISM is available at the following URL:
http://www.cisco.com/univercd/cc/td/doc/product/wanbu/mgx8850/

Product documentation for RPM is available at the following URLs:
http://www.cisco.com/univercd/cc/td/doc/product/wanbu/mgx8850/rpm/index.htm
http://www.cisco.com/univercd/cc/td/doc/product/wanbu/mgx8250/rpm/index.htm
http://www.cisco.com/univercd/cc/td/doc/product/wanbu/mgx8230/rpm/index.htm

Product documentation for AUSM (and ATM services on MPSM 8-port T1/E1) is available at the following URL

http://www.cisco.com/univercd/cc/td/doc/product/wanbu/8850px45/rel5/ausm/index.htm

Product documentation for CESM (and circuit emulation services on MPSM 8-port T1/E1) is available at the following URL

http://www.cisco.com/univercd/cc/td/doc/product/wanbu/8850px45/rel5/cesm/index.htm

Product documentation for FRSM (and Frame Relay services on MPSM 8-port T1/E1) is available at the following URL

http://www.cisco.com/univercd/cc/td/doc/product/wanbu/8850px45/rel5/frsm/index.htm

Product documentation for MPSM 8T1/E1 hardware is available at the following URL

http://www.cisco.com/univercd/cc/td/doc/product/wanbu/8850px45/hwdoc/hig/index.htm

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Features Introduced in Release 1.3.10

Release 1.3.10 supports all features introduced in prior releases. (Refer to the 1.2.21 release notes for features introduced in the 1.2 baseline)

MPSM 8-port T1/E1 Service Module and License Manager Support

Release 1.3.10 introduces support for the MPSM-8-T1E1. The MPSM-8-T1E1 (Multiprotocol Service Module) is a single-height replacement card for the AUSM-8T1/E1, FRSM-8T1/E1, and CESM-8T1/E1 narrowband service modules, and supports the back cards each of these service modules supports. The MPSM-8-T1E1 card has any service, any card (ASAC) capability. For more information on MPSM 8T1/E1 hardware, refer to the following URL

http://www.cisco.com/univercd/cc/td/doc/product/wanbu/8850px45/hwdoc/hig/index.htm

Release 1.3.10 also introduces support for the MPSM-8-T1E1 License Manager which is required to turn on special licensed features of the MPSM card. The MPSM card can be licensed to provide the services of either a FRSM, AUSM or CESM service module on one MPSM-8-T1E1 card.

For information specific to License Manager configuration on the MPSM-8-T1E1 card in PXM1-based MGX switches, refer to the "MPSM 8-port T1/E1 Licensing Overview" section on page 42.

Standard Available Bit Rate (ABR) Mapping Changes

According to ATM forum's TM4.0, ABR connections should have zero in the CLP and EFCI bits in the ATM cell. To follow this recommendation all Frame Relay cards reset the CLP and EFCI bits of all outgoing ATM cells to zero irrespective of the value of the DE and FECN bits of the incoming frames.

Release 1.3.10 introduces support for enabling or disabling StdABR options at the port level, instead of card level by using the CLI command **cnfportstdabrctrl** or **xcnfpor**t.

The RM (Resource Management) cell generation options will remain the same for the port level as they were for the card level. These options are:

1. No RM cell generation, no mapping
2. No RM cell generation, mapping
3. RM cell generation, no mapping
4. RM cell generation, mapping

In releases prior to 1.3.10, RM cell generation and DE --> CLP, FECN --> EFCI mapping control was available as a FRSM-8T1E1 card level feature for StdABR connections. Users enabled or disabled RM cell generation and mapping through the command **cnfstdabrctr**l. Once this command was enabled, all of the StdABR connections on the card behaved in the same way. With release 1.3.10 and the introduction of port-based RM cell generation and DE --> CLP, FECN --> EFCI mapping control configuration, the CLI command **cnfstdabrctrl** has been made obsolete.

Unique Device Identifier

With Release 1.3.10 Cisco Multi Protocol Service Module products have an electronically retrievable identifier. This identifier is called the Unique Device Identifier (UDI) and consists of the Product Identifier (PID), the Version Identifier (VID), and the hardware Serial Number (SN). The UDI is programmed at the factory and is stored in non-volatile memory.

The UDI is used to identify specific equipment for inventory management, asset management, entitlement, business operations management, network implementation, and network management.

In network management, the UDI enables network administrators to easily track specific components in their network.

You can display the UDI by issuing the **show inventory** command from the command line interface (CLI). The **show inventory** command displays the information shown in Table 0-1.

Table 0-1 Show Inventory Command Display Output

Field	Description
NAME:	The name or number of the component set by Cisco. For example, “1” or “11”.
DESCR:	The description of the component as defined by Cisco. For example, “Cisco MGX8850, 32 Slot chassis”.
PID:	The product identifier – the model name of the device as defined by Cisco. For example, “MGX8850” or “AXSM-4-622”.
VID:	The version identifier – the hardware version number defined by Cisco. For example, “000”.
SN:	The hardware serial number inscribed at the factory. For example, “SN1234567890”.

The following example shows the **show inventory** command and its output:

```
MGX8850.8.PXM.a > show inventory

NAME: "1"      , DESCR: "Cisco MGX8850 Backplane"
PID: MGX8850             , VID: 000, SN: SN1234567890

NAME: "1"     , DESCR: "Double-height ATM SM, 8 T1/E1"
PID: MPSM-8-T1E1          , VID: 000, SN: SN1234567890

MGX8850.8.PXM.a >
```

Features Introduced in Release 1.3.00

Release 1.3.00 supports all features introduced in prior releases. (Refer to the 1.2.21 release notes for features introduced in the 1.2 baseline)

SRME/B Service Module

Release 1.3.00 introduces the SRME/B. The SRME/B adds T3/E3 interfaces to the current SRME which already supported OC-3 and STM-1 Electrical interfaces. This new SRME/B service module supports T3/E3, OC-3 and STM-1 Electrical interfaces with the same front card. Bulk distribution to all 24 slots is now possible for the 8230/8250/8850 PXM1-based platforms.

SRME/B hardware information is found here:

http://www.cisco.com/univercd/cc/td/doc/product/wanbu/8850px45/hwdoc/hig/index.htm

SRME/B configuration information is found here:

http://www.cisco.com/univercd/cc/td/doc/product/wanbu/8850px45/rel5/scg/index.htm

SRME/B command information is found here:

http://www.cisco.com/univercd/cc/td/doc/product/wanbu/8850px45/rel5/cmdref/index.htm

SNTP Support

In prior releases, SNTP support was only for the PXM45-based nodes. This feature allows all PXM1-based nodes to use SNTP or Simple Network Time Protocol to synchronize clocks within an internetwork of PXM1-based nodes. SNTP provides a comprehensive mechanism to access national time sources and adjust each nodes's clock to that time source. CWM support for SNTP on PXM1-based nodes is the same mechanism as supported by CWM on the MGX8800 PXM45-based switches in prior releases.

SNTP configuration material can be found here:

http://www.cisco.com/univercd/cc/td/doc/product/wanbu/8850px45/rel5/scg/index.htm

SNTP command information is found here:

http://www.cisco.com/univercd/cc/td/doc/product/wanbu/8850px45/rel5/cmdref/index.htm

SSH Support

Release 1.3.00 introduces a Secure Remote Terminal Interface feature. This feature provides an SSH session whenever someone accesses into the PXM1-based node via the LAN port using telnet.

You configure this feature using the cnftelnetenbl CLI command. This command allows you to configure telnet access to the PXM1-based node. By default, telnet server access is enabled. When you disable telnet access remote users must use the SSH protocol to login to the PXM1-based node.

MIB Changes in Release 1.3.00

Release 1.3.00 introduces support for the entity MIB. The entity MIB allows a single agent to represent multiple logical entities. The entity MIB can be used to represent physical entities in a system (node, switch etc.). These physical entities include chassis, slots, modules, backplanes, power supplies, fans, sensors etc.

Features Not Supported in This Release

- Layer 2 support as an AutoRoute routing node
- Interworking with Cisco 3810

Service Module Redundancy Support

MGX 8850 (PXM1) provides high-speed native ATM interfaces, which can be configured as ATM UNI ports or trunks. The following table contains redundancy support information for service modules.

Table 2 Service Module Redundancy Support

Front Card Model #	Redundancy Supported
MGX-AUSM-8E1/B	1:N redundancy
MGX-AUSM-8T1/B	1:N redundancy
AX-CESM-8E1	1:N redundancy
AX-CESM-8T1	1:N redundancy
MGX-CESM-8T1/B	1:N redundancy
MGX-CESM-2T3E3	1:1 redundancy
AX-FRSM-8E1	1:N redundancy
AX-FRSM-8E1-C	1:N redundancy
AX-FRSM-8T1	1:N redundancy
AX-FRSM-8T1-C	1:N redundancy
MGX-FRSM-HS2	1:1 redundancy
MGX-FRSM-HS2/B	with HSSI back card, 1:1 redundancy with 12IN1-8S back card, no redundancy
MGX-FRSM-2CT3	1:1 redundancy
MGX-FRSM-2T3E3	1:1 redundancy
MGX-FRSM-HS1/B	No redundancy
MGX-RPM-128M/B	1:N redundancy
MGX-RPM-PR-256	1:N redundancy
MGX-RPM-PR-512	1:N redundancy
MGX-VISM-8T1	1:N redundancy
MGX-VISM-8E1	1:N redundancy
MGX-VISM-PR-8T1	1:N redundancy
MGX-VISM-PR-8E1	1:N redundancy
Note Support for 1:N redundancy is provided in conjunction with an MGX-SRM-3T3[1] card, an MGX-SRME[2] or an MGX-SRME/B[3] card.	

1. SRM-3T3 cards only support bulk Distribution for T1 lines.
2. Bulk Distribution is supported for T1 and E1 lines using the SRME card.

3. The SRME/B card supports Bulk Distribution for T1 and E1 lines on the same backcards as.the SRME card supports and adds support for Bulk Distribution for T3 lines on the MGX-BNC-3T3-M backcard.

Network Management Features

Network management features are detailed in the *CWM Release 15 Release Notes* at: http://cisco.com/univercd/cc/td/doc/product/wanbu/svplus/index.htm

Port/Connection Limits

Connection limits can vary. The table below shows total connections per card, but also shows the number of connections per port with LMI enabled. For example, the new FRSM-HS2/B card using a HSSI back card can support a total of 2000 connections on the card. However, if LMI is enabled on both ports, the total number of connections goes down. If StrataLMI is enabled for one ports, that port supports 560 connections. The other port not configured for LMI can support 1000 connections, for a total of 1560 connections.

Overall, there is a limit of 16,000 connections per shelf.

Refer to Table 3 for detailed connection information.

Table 3 Port/Connection Limits

Card Type	Back Card(s)	Conns./Card	Physical Ports	Logical Ports	Per port with StrataLMI	Per port with Annex A/D NNI/UNI
MGX-FRSM-HS2/B	HSSI	2000	2	2	560	898
	12IN1-8S	4000	8	8	560	898
MGX-FRSM-HS2	HSSI	2000	2	2	560	898
MGX-FRSM-2CT3	BNC-2T3	4000	2	256	560	898
MGX-FRSM-2T3E3	BNC-2T3	2000	2	2	560	898
	BNC-2E3	2000	2	2	560	898
	BNC-2E3A	2000	2	2	560	898
MGX-FRSM-HS1/B	12IN1-4S	192	4	4	192	192
MGX-AUSM-8E1/B	RJ48-8E1	1000	8	8	N/A	N/A
	SMB E1	1000	8	8	N/A	N/A
MGX-AUSM-8T1/B	RJ48-8T1	1000	8	8	N/A	N/A
AX-CESM-8E1	RJ48-8E1	248	8	248	N/A	N/A
	SMB-8E1	248	8	248	N/A	N/A
AX-CESM-8T1	RJ48-T1	192	8	192	N/A	N/A
MGX-CESM-8T1/B	RJ48-T1	192	8	192	N/A	N/A
MGX-CESM-2T3E3	BNC-2T3	1	1	1	N/A	N/A
	BNC-2E3	1	1	1	N/A	N/A
AX-FRSM-8E1	RJ48-8E1	1000	8	8	560	898

Table 3 Port/Connection Limits (continued)

Card Type	Back Card(s)	Conns./Card	Physical Ports	Logical Ports	Per port with StrataLMI	Per port with Annex A/D NNI/UNI
	SMB-8E1	1000	8	8	560	898
AX-FRSM-8E1-C	RJ48-8E1	1000	8	248	560	898
	SMB-8E1	1000	8	248	560	898
AX-FRSM-8T1	RJ48-8T1	1000	8	8	560	898
AX-FRSM-8T1-C	RJ48-8T1	1000	8	192	560	898

For the MGX 8230 and MGX 8250 Edge Concentrators, 16,000 connections (PVC) on the PXM1 based PAR Controller. If the MGX is a feeder to a BPX, only 15,729 feeder connections are available—271 connections are reserved for communication between the BPX and MGX. Maximum number of PXM UNI connections supported is still 4000 (as in prior releases).

SNMP MIB

The MIBs provided with Release 1.3.10 are named mgx1rel1310mib.tar.

The MIBs are bundled in the firmware bundle posted to CCO.

Note The old_mib_Format has been discontinued as of the 1.2.10 release As of the 1.2.10 release the new_mibFormat will be named mgx1rel<releasenumber>mib.tar

Notes and Cautions

The following notes and cautions should be reviewed before using this release.

New Boot Image for FRSM 8T1/E1

There is a new FRSM Boot image for the FRSM-8 cards. The image is only required for the fix for CSCdz18745.

To upgrade the boot image, please follow the procedure in Service Module Upgrades, page 41.

Using the restoresmcnf Command

Before using the restoresmcnf command, you must issue a clrsmcnf to make sure that there are no dangling connections after the restoresmcnf command.

Loopback Plug on a HSSI:DTE Interface

Using a loopback plug on a HSSI:DTE interface is not supported and can bring the node down.

UPC Connection Parameters

In Release 1.1.40 and higher, the default PCR is 50 cps, and the default for policing is "enabled." These settings are insufficient for running RPM ISIS protocol over the connection, and with such settings, the ISIS protocol will fail. The PCR value needs to be increased, depending upon the number of interfaces configured for ISIS on the RPM. CLI modification and changes in this release.

Depending upon your connection type, you can use the following CLIs to modify the PCR parameter.

- **cnfupccbr**
- **cnfupcvbr**
- **cnfupcabr**
- **cnfupcubr**

ForeSight and Standard ABR Coexistence Guidelines

ForeSight is similar to the rate-based ABR control system in TM 4.0 in that they both use Rate up and Rate down messages sent to the source of the connection to control the rate a connection runs at, based on congestion within the switches along that connections path. Both systems use Resource Management (RM) cells to pass these messages. There are differences between the two systems that need to be considered.

RM Cell Generation

ForeSight is a destination-driven congestion notification mechanism. The destination switch is responsible for generating the RM cells, which defaults to every 100 ms. This means that any rate modifications at the source end happen approximately every 100 ms, and the time delay between the actual congestion at the destination and the source getting to know about it could be 100 ms.

In standard ABR a source generates FRM cells every (nRM) cell intervals, where *n* is configurable. These are used to pass congestion information along to the destination switch, which then uses this information to generate BRM (Backward RM cells) back to the source A further consideration is that the actual user data flow will be lower for an equivalent rate due to the additional RM cells. Therefore, the more traffic being generated on a connection at any one time, the faster the feedback will be to the source.

There is also a TRM parameter which states that if no RM cells have been generated after this time has passed then one will automatically be sent. Depending upon the speed it is running at, an ABR connection may therefore react faster or slower to congestion than the equivalent ForeSight connection. (for example, if an ABR connection runs at 100 cells per second, and nRM is 32, then approximately three RM cells will be generated per second, or once every 300 msecs. If it runs at 1000 cps then an RM cell would be generated approximately every 30 msecs. In both cases, the equivalent ForeSight connection would generate an RM cell every 100 msec.)

Reaction to Feedback Messages – Rate Up

In ForeSight, in response to a Rate Up cell from the destination, the source increases its rate by a percentage of the MIR for that connection. If we call this percentage the rate increase percentage (RIP), then RIP is configurable at the card level (the default is 10 percent). In the case where MIR is low, the ForeSight rate increase will be slow as it has to increase as a percentage of MIR (rather than CIR).

On a standard ABR connection, in the event of available bandwidth (no congestion) the source increases its rate by a factor of (RIF*PCR). This means the rate increase step sizes are much bigger than for ForeSight for larger values of RIF (RIF has a range of 1/2, 1/4,....,1/32768). If RIF is not configured properly then standard ABR will ramp up its rate much faster and to a higher value. This is aided by the fact that the step sizes are bigger and the step frequency is higher in comparison with ForeSight.

Reaction to feedback messages – Rate Down

In ForeSight on receiving a Rate Down cell from the remote end, the source reduces its current rate (actual cell rate) by 13 percent. The rate decrease percentage (RDP). RDP is configurable at the card level.

In standard ABR, rate decrease is by an amount (RDF*ACR). Currently, the default value of RDF is 1/16 (6.25 percent). This means when this connection co-exists with ForeSight connections, in the event of congestion ForeSight connection reduces its rate by 13 percent whereas standard ABR connection reduces its rate by only 6.25 percent. Therefore, in the case of co-existence, if we need to approximate the same behavior across the two connection types, then RDF should be changed to 1/8, so that both connections ramp down by the same amount (13 percent).

Fast-Down

In ForeSight if the destination egress port drops any data due to congestion then the destination sends a Fast Rate Down cell. Also, if a frame cannot be reassembled at the egress due to a lost cell somewhere in the network, a Fast-down will be generated. On reception of Fast Rate Down the source reduces its current rate by 50 percent (this is again a card-level configurable parameter).

Standard ABR does not distinguish between drops and the ECN/EFCI threshold being exceeded. This means that, in case of drops in the egress port queue, a standard ABR connection rate reduces by only (RDF*ACR) but the ForeSight connection rate reduces by (ACR*0.5). Therefore, in the case of co-existence, if we need to approximate the same behavior across the two connection types then Fast Down could be effectively disabled by configuring the reaction to be 13 percent rate down instead of 50 percent.

Guidelines

The two systems will work together within the network, but as the above description suggests, if the differences between the two systems are not taken into consideration, then a ForeSight connection and an ABR connection with the same configuration parameters will not behave the same way within the network.

ABR and ForeSight provide a mechanism for distributing excess bandwidth between connections over and above the minimum rate, therefore if these guidelines are not taken into consideration then the allocation of this excess bandwidth may be biased toward connections running one of these algorithms over connections running the other.

If this is a requirement, the following guidelines may be useful, assuming ForeSight is set to defaults except for Fast Rate Down which is set for 13 percent.

- **Nrm**: Nrm needs to be set at a value whereby the approximate RM cell generation is 100 milliseconds, to match that of ForeSight. This calculation is based on the expected average, or sustained, cell rate of the connection. However, if the (potential) fast-down messages from ForeSight are left to equate to 50 percent rate down, then an estimate of how often this may occur needs to be made and factored into the equation. If the connection receives Fast-down messages, then this would make the ForeSight connection react faster than the equivalent ABR connection to

congestion. To compensate for this, Nrm needs to be set at a value of less than 100 msecs, a suggested value to aim for is between 60-70 msecs (this would be approximate as *n* is configurable in steps of 2**n). This would mean that, in the event of congestion, the ABR connection would start to react faster.

- **RIF**: Rate increase factor is a factor of PCR in ABR and MCR in ForeSight. The default RIF for ForeSight is MCR*.10. Therefore, RIF should be configured so that (PCR*RIF) approximates MCR*0.1. If Fast-Down is still effectively enabled, then PCR*RIF should approximate MCR*0.62 to compensate.
- **RDF**: (Rate Decrease Factor) RDF should be 1/8. This approximates to 13 percent that ForeSight uses.

The following worked examples may help explain this further

Assume a network is currently running ForeSight with default parameters, and supports the following four connection type, where CIR = MIR, PIR = port speed, and QIR = PIR:

T1 Port Speed 64K CIR

Example:

CIR = MIR = 64K
PIR = QIR = port speed = 1544
Fastdown = 13%

(The calculation used to convert between frame based parameters (CIR, PIR, and so on.) and their equivalent cell-based parameters is FR_param *3/800. This allows for cell overheads, and so on. based on frame sizes of 100 octets.)

CIR = MIR = (64000*3/800) = 240 cps
PIR = QIR = (1544 *3/800) = 5790 cps

ForeSightABR
Rate-up equals (240*.1) = 24 cpsRIF equals x where (1590/x) = 24 cps
X needs to be approx 200
RIF equals 256 (nearest factor of 2)

RDF equals 13%RDF = 1/8
Nrm equals 100 msecsNrm equals 32

RM cells will be generated somewhere between 6 (5790 cps approx equal to 32 cells per 6 msecs) and 133 msecs (240 cps approx equal to 32 cells every 133 msecs) depending on ACR.

Node Related

- A maximum of one BERT test can be performed per bay at any point in time. The command **addln** should be issued before executing the **addapsln** command.
- If you are moving service modules from an existing MGX 8220 platform to the MGX 8850 (PXM1), MGX 8250, or MGX 8230, the MGX 8220 service modules (AX-FRSM-8T1/E1, and AX-CESM-8T1/E1) need to have the boot flash upgraded to MGX 8220 Release 5.0.00 common boot code (1.0.01 version) before they can be plugged in to the MGX 8850 (PXM1), MGX 8250, or MGX 8230 chassis. All MGX 8220 service module versions that use Release 4.0.xx of boot code and earlier are not supported in the MGX 8850 (PXM1), MGX 8250, or MGX 8230.

  If loading of the correct common boot code image is required then it will have to be performed on an MGX 8220 chassis, and cannot be performed on an MGX 8850 (PXM1), MGX 8250, or MGX 8230 chassis. Please refer to the procedure below, which is also outlined in the *Cisco MGX 8850 (or MGX 8250 /MGX 8230) Installation and Configuration* publication on the documentation CD.

Step 1 Use ftp to port the MGX 8220 Release 5 common boot image for the service module to a workstation.

Step 2 Plug in the card into the MGX 8220 shelf.

Step 3 Download the proper MGX 8220 shelf Release 5.0 boot image using the following commands from the workstation:

```
tftp <ip address of the MGX 8220 shelf >
bin
put <boot filename> AXIS_SM_1_<slot#>.BOOT
```

To insure that TFTP downloaded the appropriate boot code, perform the following procedure to verify the flash checksums.

Step 1 Log into the shelf.

```
cc <slot #>
```

Step 2 Verify that the two checksums are the same.

```
chkflash
```

If *not*, repeat the process until they are the same. If they are the same, then you can safely remove the card. At this point the service module can be used in the MGX 8850 (PXM1) shelf.

Caution If the checksums are not the same when you remove the service module, then the service module will not boot when it is plugged in and the service module will have to be returned using the Cisco Returned Material Authorization process.

- Whenever an MGX 8850 is added as a feeder to a BPX 8600, SWSW automatically programs a channel with a VPI.VCI of 3.8 for use as the IP Relay channel. IP Relay is used to send IP data between nodes via the network handler, allowing every node in the domain to be directly addressable via IP addressing and CWM workstations to communicate with every node (especially feeders) using TELNET, SNMP and CWM protocols. If the user tries to add a channel with a VPI.VCI of 3.8, the BPX 8600 does *not* prevent the user channel from being added, but the MGX 8850 rejects it. To delete the added channel on the BPX 8600, and to get IP relay working you need to reset the BXM card.
- In addition to clearing the entire configuration, **clrallcnf** command clears the network IP addresses. IP addresses and netmasks stay the same (**dspifip**). However, Cisco recommends entering the **cnfifip** command to reconfigure the network IP addresses. Network IP is gone (**dspnwip**), and must be re-configured using the **cnfifip** command. Refer to the entry on **cnfifip** in the *Cisco MGX 8850 Command Reference* for syntax.
- Service module upgrades error handling is not provided. If the user skips any of the steps during upgrade or if a power failure happens in the middle of the upgrade, results will be unpredictable. See the Special Installation and Upgrade requirements section for service module upgrades. To recover from procedural errors contact your TAC support personnel.
- The MGX 8850 (PXM1) supports 15 simultaneous Telnet sessions and up to 10 TFTP sessions per shelf.

- You must use the following Y-cables for FRSM-HS2 and FRSM-CT3 redundancy as specified in the Product Orderability Matrix (Straight Cable: 72-0710-01, Crossover Cable: 72-1265-01, Straight Y-cable: FRSM-HS2: CAB-SCSI2-Y, FRSM-CT3: CAB-T3E3-Y). Other cables are not supported.

  Y-cable redundancy for FRSM-HS2, FRSM-2CT3, FRSM-2T3, FRSM-2E3 is supported only for adjacent slots.

- There is no need to issue the **syncdisk** and **shutdisk** commands before removing the PXMs. The system quiesces the disk by detecting the removal of the PXM board and flushes the write buffers to the disk and *puts the PXM in sleep mode.* This disables any further hard disk access by locking the actuator.

Note When the card is reinserted the PXM automatically comes out of sleep mode.

Caution **Cooling and Power limitations**: Be aware of the need for extra power supplies and fans beyond certain limitations. A single fan tray will support all configurations that draw between 1200 and 1400 watts. For power requirements, the MGX 8850 (PXM1) requires a minimum of one power supply per line cord to support the power requirement for five cards (see Table 4).

Table 4 Number of Power Supplies Per Line Cord Based on Cards Supported

	0-5 Cards	6-10 Cards	11 and Above
Single Line Cord (N+1):	2	3	4
Dual Line Cord (2N):	2	4	6

This is based on an estimated worst-case power requirement of 190W plus margin per card slot.

Connection Management Related

- The name of the node cannot be changed if there are PVCs. The node name must be changed from the default value before adding connections, since it cannot be changed later. Use the **cnfname** command to change the node name.
- Only one feeder trunk can be configured. No BNI trunk to MGX 8850 (PXM1) as a feeder is supported.
- The slave end of a connection must be added first.

  The slave end cannot be deleted and re-added back by itself. If you delete the slave end, the entire connection must be completely torn down and re-added back. If the slave end of the connection is deleted and re-added back by itself, then unpredictable results will happen.
- For user connections, VCI 3 and VCI 4 on every VPI are reserved for VPC OAMs.
- The actual number of feeder connections you can provision on the PXM is always two less than you have configured. The **dsprscprtns** command shows max connections as 32767, but you can only use 32767 - 2 = 32765. One connection is used for LMI and another one for IP relay.
- There is no error handling detection while provisioning through the CLI. Invalid endpoints and unsupported connection types (such as connections between FRSM-CESM ports or connections between structured and unstructured connections) are permitted using the CLI. The user should not configure these connections.

- The sum of CIR of all channels of a port can be greater than port speed as long as CAC is disabled. However, it is not acceptable for one channel's CIR to be greater then port speed even if CAC is disabled. Two channels added up can exceed port speed. This means you cannot oversubscribe a port if only one channel is configured.
- When trying to add a port on DS0 slot 32 of a CESM-8E1 line using an SNMP set or the CiscoView Equipment Manager, the SNMP agent in CESM will time out, without adding the port. The SNMP libraries treat the 32 bit DS0 slotmap (cesPortDs0ConfigBitMap) as an integer. The value for the last DS0 is treated as the sign value. This causes a corruption in the packet coming to the agent. As the agent does not receive a complete SNMP packet, it does not respond and times out. Use the command line interface to add a port on DS0 slot 32 of a CESM-8E1 line.
- The **cnfport** command does not allow VPI ranges to be reduced. The **cnfport** command only allows the VPI range to expand. The correct sequence is to delete all connections on the partitions, delete the partitions, delete the port, and add the port with new VPI range.
- On an FRSM-2CT3, one can add 128 ports on a group of 14 T1 lines as indicated below.
  - lines 1 to 14: 128 ports (A)
  - lines 15 to 28: 128 ports (B)
  - lines 29 to 42: 128 ports (C)
  - lines 43 to 56: 128 ports (D)

  So, to add 256 ports on one T3: add 128 ports on the first 14 T1 lines and the remaining 128 on the next 14 T1 lines.
- Note that (A) and (D) are connected to first FREEDM and (B) and (C) are connected to the second FREEDM. Each FREEDM supports only 128 ports. If 128 ports are added on one T3 as in (A), then there cannot be any more ports as in (D). The 129th port should be on lines 15 to 42 (as in B or C).
- If the user adds a connection between an RPM and a PXM and then deletes the connection, the RPM shows no connection but the PXM still has the connection. The MGX was designed and implemented in such a way that only the connections that have the master end show up on PXM (by **dspcons** command). Consider these three connections:
  - c1: has only slave end
  - c2: has only master end
  - c3: has both master and slave end

  When using the **dspcons** command, c2 and c3 will be displayed, *not* c1. The connection will not show up once the master end (PXM) is deleted. Recommendation: When adding a connection, if one end of the connection is PXM, always configure the PXM side to be the slave. Thus when deleting the RPM side, which is the master, the connection will not show up on the PXM. However, keep in mind that the slave end (PXM) still exists. This also provides a side benefit. When a connection exists with only the slave side, no bandwidth is occupied. The bandwidth is reserved only if the master end exists (with or without the slave).

Documentation Corrections

The documentation for the PXM1-based MGX switches incorrectly describes the cellbus to slot assignments.

For example, the MGX 8250 with a PXM1 has 8 cellbuses. The distribution of these 8 cellbuses to the appropriate slot numbers can be found executing the CLI command **dspcbclk**.

m8250-4a.1.8.PXM.a > **dspcbclk**

```
CellBus    Rate (MHz)     Slot     AutoClkMode
  ------------------------------------------------
     CB1          21          1, 2       disable
     CB2          21          3, 4       disable
     CB3          21          5, 6       disable
     CB4          21        17 - 22      disable
     CB5          21         9, 10       disable
     CB6          21        11, 12       disable
     CB7          21        13, 14       disable
     CB8          21        25 - 30      disable
```

Limitations

clrsmcnf

As a speedy way to wipe out all configuration on an SM, you can use **clrsmcnf**. This command works in the following scenarios:

- SM not in slot
- SM in slot and in active (good) state
- SM in slot but in failed state, boot state or another state.

To be able to use an SM of a different type from the current one in a slot you can also use **clrsmcnf** for example, if there is a FRSM8T1/E1 in the slot with some configuration and the customer wants to use this slot for an AUSM8T1/E1 card.

The following are NOT supported on the MGX 8850 (PXM1), MGX 8250, and MGX 8230:

- Saving a configuration of an SM from one shelf and restoring it to the same slot on another shelf.
- Saving a configuration of an SM in a slot and restoring it to another slot of the same card type.

Note As designed, if RPM-PR is configured as a Label Switch Controller (LSC), execution of the **clrsmcnf** command on those LSC slots will be rejected.

Problems after Power Cycle

This limitation pertains to configurations on MGX 8250 and MGX 8230 nodes with RPM-PR cards.

Following a power cycle, some configurations of MGX 8230 or MGX 8250 may display problems. (The booting of some service modules, RPM-PR cards and/or the standby PXM1 card are impacted.) The following must be true for this problem to occur:

1) RPM-PR cards must have configuration on the PXM HD.

2) There have to be RPM-PR cards on the shelf.

3) There have to be SRM cards on the shelf.

4) There has to be core card redundancy

The workaround is to reset the impacted card(s) to clear the problem (see CSCeb02400).

Known Anomalies for Platform Software Release 1.3.10 and Service Module Firmware

Table 5 lists known anomalies in the service module firmware and the Release 1.3.10 software as of 08/23/04. Included with each is a brief discussion of the problem. A more in-depth discussion is available in the Release Note enclosure of the problem record in Bug Navigator.

Table 5 Known Anomalies in the Service Module Firmware and the Release 1.3.10 Software

Bug ID	Description
CSCdv53678	Headline: switchapsln 1 c command causes aps line switch over Symptom: switchapsln clear command sometimes causes aps line switch over from active working line to the protection line. Conditions: Under a specific sequence of actions and conditions, this problem occurred once. Initial conditions: MGX 7.1 and BPX 1.1 working lines are active, all lines are clear. There is no last user APS request shown. PXM card in slot 7 is active. Sequence of actions: a. Disconnect MGX to BPX 7.1 fiber (just one fiber) b. "switchapsln s 8" on MGX c. Remove MGX slot 7 back card d. "switchcc" on MGX e. Remove MGX slot 7 front card f. Insert MGX slot 7 back card with the previously disconnected fiber reconnected g. Insert MGX slot 7 front card h. "switchcc" on MGX i. "switchapsln s 7" on MGX Workaround: 1) Make sure at both ends the working card is active. 2) Make sure both working and protection lines on both sides are clear. 3) Delete APS on MGX and add it back.
CSCdw60302	Headline: APS-B-PXM1: with WL in YEL alarm, delapsln & addapsln results WL active. Symptom: With 1+1 APS bi-directional configuration, working line 7.1 in YEL alarm, active line stays on working 7.1. Conditions: Removed the Rx of the working line from remote end to cause YEL alarm (RDI-L) on the working line. Delapsln and Addapsln, then configured to bi-directional mode. Workaround: Execute a switchaps with Lockout, then switchaps with Clear. Then the active line will switch to protection line 8.1. Further Problem Description: This problem is due to line condition prior to APS configuration.

Table 5 Known Anomalies in the Service Module Firmware and the Release 1.3.10 Software

Bug ID	Description
CSCdz16976	Headline: PXM missing ports Symptom: Customer added port on AUSM cards and the port did not appear on the PXM. Conditions: Creating port on MGX1 with PXM1 processor and AUSM card, the port is created on the service module but fails to appear on the PXM. The log contains the port add, dspports on the service module shows the port, but dsparifs on the active PXM does not have the port. Workaround: Delete the port on the AUSM card and perform a softswitch. The port can then be added.
CSCdz59162	Headline: Need functionality on PXM1 to recover form Secondary Cache (L2) error Symptom: MGX 8850 resets due to Secondary Cache error and creates a core dump This causes a switchover to the current standby card. Conditions: Core dump on Secondary Cache error enabled Workaround: None.
CSCea04133	Headline: PXM1-2T3 continuously resets when adding mngt pvc with both ds3s active Symptom: When adding a management PVC on an MGX8230 with a PXM1-2T3E3 (a pvc to internal port 34) the PXM will reset (sometime continiously). Conditions: This will only happen a management PVC is added, (port 34 on the pxm) and only when both DS3 lines are added. Workaround: By using a VPI other than 0 on the management port (34), the PXM will not reset.

Table 5 Known Anomalies in the Service Module Firmware and the Release 1.3.10 Software

Bug ID	Description
CSCea86502	Headline: CLI does not validate the parameters of the mv command correctly Symptom: Invalid directory contents on the PXM disk Conditions: The customer followed a sequence of steps and that caused this problem. This problem is 100% recreatable if these steps are followed. Workaround: While in FW directory, if the customer wants to go to root dir, they can use cd "/"
CSCeb59713	Headline: PAR: Cannot increase Max vpcconid with cnftrk Symptom: PAR does not allow you to change the number of VPCs from the default. Conditions: rev 1.2.02. Workaround: None.
CSCeb79964	Headline: PAR sets ABit Clear to channel, causing AIS towards CPE Symptom: CPE connected to the AUSM-8T1 port receives AIS on a specific connection. There are no line and port alarms. There are no remote alarms. Conditions: Cisco 3810 connected to an AUSM-8T1 service module on a MGX1 shelf. Workaround: None.
CSCec36943	Headline: Clocking info not in MGX config files Symptom: Under certain conditions, the clock source configuration information does not show up in CWM Conditions: The information is not obtained through config upload. Workaround: The switch can be queried through SNMP or CLI.

Table 5 Known Anomalies in the Service Module Firmware and the Release 1.3.10 Software

Bug ID	Description
CSCec72985	Headline: PXM failing CBC ASIC Symptom: Online Diags test sometimes fails for CBC Asic access check</B> Conditions: Heavy traffic Workaround: None
CSCed28747	Headline: Watchdog Timeout due to PAR tasks Symptom: PXM1 reset, with clean switchover to redundant PXM1. Conditions: Normal operation. Workaround: None
CSCed64635	Headline: PXM switchover during SM bringup could cause SM to remain in BOOT state. Symptom: SMs seen in BOOT state Conditions: PXM switchover to redundant PXM. SM reset before just about before the PXM switchover. Workaround: None Further Problem Description: This is happening because the card bringup is event based. When the standby PXM becomes active, it does not get any event about the card rebooting, for the PXM to start the card bringup procedure.
CSCed66342	Headline: PXM1 Diags fails external clock test with UIS3 back card

Table 5 Known Anomalies in the Service Module Firmware and the Release 1.3.10 Software

Bug ID	Description
CSCee21093	Headline: tftp to RPM-PR card takes infinite long time get config file on PXM1 Symptom: On MGX8850 with PXM1 controller card platform, tftp of the config file by the CWM NMS application from the RPM-PR card takes a long time to complete. Conditions: CWM NMS application tries to sync up with the MGX node - this process invokes a SNMP get route to collect information from the node cards. For some reason, the said RPMPR config file can't be collected as the SNMP get routine gets timed out. As the time out happens in this condition, CWM NMS application can't sync up with said RPMPR configuration. Workaround: Remove the running configuration of the said RPMPR card by executing “clrsmcnf” from the PXM1 controller card. Reload the original configuration (which must be saved in a temporary file before executing clrsmcnf) on the RPMPR card. This should allow the card to resync properly with the CWM NMS application.
CSCee35196	Headline: During APS switchover, ensure the registers are programmed. Symptom: In very rare situations, this problem can lead to traffic loss. Conditions: None Workaround: None Further Problem Description: When an APS switchover is invoked, we program the register by writing it once. We don't cross check if this has gone through fine. Just to make things doubly sure, Write it five times and read.

Table 5 Known Anomalies in the Service Module Firmware and the Release 1.3.10 Software

Bug ID	Description

CSCee48365	Headline:
	QE Access Failed for QE1
	Symptom:
	Online diag QE access failure on QE1 chip one.
	`04/29/2004-15:13:34 07 tOnlnDiag  ONLI-7-ONLNDIAG_TEST_F`
	`Online Diag test Failed. QE Access Unique ID: 5`
	`ERROR - qe_RAM[2] Walking 1 test FAILED`
	Conditions:
	If we have a connection with valid glcn 0x8000 & this connection is discarding cells due to high traffic rate. Online QE diag test can fail.
	Workaround:
	Prevention of using of 0x8000 glcn for a connection.
	Symptom:
	Online diag QE access failure on QE1 chip one.

CSCee50833	Headline: PXM1 stuck in mode 5 because emc detects .CF missing bbIf port table Symptom: In CWM 12.0 p1.1, selnd indicates that the MGX 8230 PXM1 nodes remain in mode 5. Conditions: None. Workaround: None.

CSCee60756	Headline:
	Active PXM reset due to sarFrmBufGet and sarFrmxmt invalid address
	Symptom:
	Active PXM1-OC3 resets due to software Error. Hardware replacement is already done, but that replaced PXM card reset with following logs;
	`04/26/2004-22:19:31 07 tSCM  SSI-3-EXCEPTION  02697`
	`Software Exception: Vector 2  EPC: 0x8009348c  ADDR: 0x00000004.`
	`04/26/2004-22:19:31 07 tRootTask  SYS-1-TASKLOSTFATAL`
	`Trouble-Task[tSCM]: action is SYSTEM RESET`
	`Conditions: During normal operation.`
	Workaround:
	None.
	Further Problem Description:
	Card is reset with swerror. However, after resetting, it is ok for a while.

Table 5 Known Anomalies in the Service Module Firmware and the Release 1.3.10 Software

Bug ID	Description
CSCee61563	Headline: QE errors, Need to reset the pxm card when we have fatal QE errors Symptom: When the QE has some fatal errors. Conditions: Whenever the QE has some fatal errors, we need to reset the pxm card. Workaround: None.
CSCee95065	Headline: Reconfigure clk source when the pxm card comes to active state Symptom: External clock becomes internal on a switchcc of the pxm cards. Conditions: On switchcc of pxm cards & clock source is S3 external. The clock goes out of freq. Workaround: Reconfigure clock source.
CSCef12424	Headline: RPM IPC FAILURE after pxm1 switchover with Power On reset Symptom: 1.PXM1 switchover with Power On reset, no core file logged; 2.After PXM1 switchover ,1:N RPM redundancy switchover because slot9 RPM IPC FAILURE; 3.slot1 RPM is redundancy card for slot9 and slot10 RPM.slot9 switch to slot1;slot10 RPM in reserve state. Conditions: None. Workaround: None.
CSCef24248	Headline: changes to handle the frsm getting stuck in failed state Symptom: FRSM cards remain in failed state. Conditions: None. Workaround: None.

Resolved Anomalies for Platform Software Release 1.3.10 and Service Module Firmware

Table 6 lists resolved anomalies in the service module firmware and the Release 1.3.10 software as of 08/23/04. Included with each is the headline tied to the particular problem. A more in-depth discussion is available in the Release Note enclosure of the problem record in Bug Navigator.

Table 6 Resolved Anomalies in Release 1.3.10 Software

Bug ID	Description
CSCdx35791	PXM card fails to boot
CSCea74880	MGX8250: PXM1-T3: switchcc may cause PXM to lose primary clock
CSCed48400	PXM1 needs better idtmon DRAM test
CSCed55773	addred between NBSM & MPSM-8 causes PXM SW error reset
CSCed74835	can not copy big rpm files to C: drive
CSCed92515	Bring VxWorks source into the VOB; fix timer wrap around after 466 days
CSCee05163	RPMPR doesn't come up IPC communication not established
CSCee18019	MPSM8-RAS: addln on PXM1 does not work after upgrade from 1.2.20
CSCee24657	trap 50024 received with 6 varbinds instead of 8
CSCee35171	Watchdog timeout reset due to readNvRam
CSCee40233	To resolve the ssiFunctrace issue
CSCee51143	Bad clk signal on external clock source
CSCee75100	UPG5+: Software exception blocked access to standby PXM1
CSCee76389	duplicate trap sequence number
CSCee79278	PXM1 goes to Mismatch and SRMs hang in CardInit after reset
CSCee89622	Switch sending corrupt varbind to CWM 15.0
CSCef07832	Adding 1:N redundancy not blocked for SM cards with different FW version
CSCef40614	PXM1-2-T2E3 resets while enabling second interface

Resolved Anomalies for Platform Software Release 1.3.00 and Service Module Firmware

Table 7 lists resolved anomalies in the service module firmware and the Release 1.3.00 software as of 04/14/04. Included with each is the headline tied to the particular problem. A more in-depth discussion is available in the Release Note enclosure of the problem record in Bug Navigator.

Table 7 Resolved Anomalies in Release 1.3.00 Software

Bug ID	Description
CSCdr65069	agent returns GEN_ERR when rcv SET nextTrapseq w/ non-exist MgrIndex
CSCdv32986	100% data is getting dropped on some connections
CSCdz67816	AUSM CLI restartimagrp error msg typo
CSCea04133	PXM1-2T3 continuously resets when adding mgmt pvc with both ds3s active
CSCea16127	PXM1e: dspsarcnt output is mis-aligned
CSCea33131	DB inconsistency between PAR and SPM
CSCea35799	snmpwalk does not get all PVCs on AUSM
CSCea66855	SRM_3T3 non-TLV Novram support
CSCeb05910	PM parameters on NBSMs are not accurate
CSCeb17823	Unreliable tstdelay results for axsm/B/E <--> frsm
CSCeb27697	delrscprtn not working properly
CSCeb40265	xcnfln shows the clkfrquency threshold 1-5. does not show what values mean
CSCeb46869	subagents table display should correspond to correct shelf/slot no
CSCeb46903	dsptotals should be blocked on CESM redundant cards thru CLI
CSCeb58981	MPSM8-DT: When pxm is daylight savings frsm-vhs time do not change
CSCeb59239	PM parameters on NBSMs are not accurate
CSCeb60499	Channel showing OK state with Controller Abit=0
CSCeb72485	CESM cannot clear RcvAIS when connected to physical loop
CSCeb72867	FRSM8 cannot add con with VCI > 9999 as master to AUSM
CSCeb75989	tRoot task switchover due to Software Error Reset
CSCeb76113	MPSM8-DT: AUSM does not force range check for VPID for resource partition
CSCeb77891	IMA-Auto: dspimagrp shows additional info with ima autorestart enable
CSCeb77913	SRMEB: NBSM in mismatch after upgd from 21.0(2.x) to 22.x
CSCeb80600	corrupted stats on pxm1e -- cesm-t1e1 cards under corner configurations
CSCeb84360	ChanIngressClpSetCell counter not correct
CSCeb86832	License Management Enhancement
CSCec00744	Add cefcModuleOperStatus to trap 60052 on applicable platforms
CSCec01002	MPSM8-DT: xcnfchan allows changing non-UBR connection to 0 CIR
CSCec01073	FRSM HS2/B to support low speed rates like 2.4K
CSCec02145	CESM 8E1 connection addition fails when partial fill < 31 on E1 struct

Table 7 Resolved Anomalies in Release 1.3.00 Software (continued)

Bug ID	Description
CSCec04894	Port on FRSM Show failed due to line failure while lines are OK
CSCec07295	Xcnfcon -pt is not working on the CESM card
CSCec08533	CESM T3E3 1:1 Redundancy is not functional
CSCec11248	wrong connector value for frsm-8e1 lines in MGX8850 node
CSCec12595	CESM-T3E3 connection not in Fail state after LOS on T3 line
CSCec17957	MPSM8-DT: xcnfchan allows changing non-UBR connection to 0 CIR
CSCec20161	MPSM8-DT: primary LSM went into mismatch/active detects FC mismatch
CSCec23758	FRSM HS1 connections stuck in AIS alarm after card reset.
CSCec25164	One-way traffic sometimes on FRSM-VHS
CSCec25298	CWM: Ausm Ingress Discard Option missing in trap upload
CSCec29715	MPSM8-DT: card should flags License alarm instead invalid alarm
CSCec29899	MPSM8-DT: dspfeature command should be removed from MPSM8
CSCec30186	most of the instances of entPhysicalHardwareRev are not correct
CSCec30195	entPhysicalFirmwareRev is empty for FRSM/HS1B/HS2/B/2T3 and VISM8T1/E
CSCec31183	Port Alarm is asserted on standby CESM-T3E3 card after addred
CSCec46539	PXM reset while using CLI and getting error logs - stays removed
CSCec59200	MGX rel 1 fails to complete sync up, TFTP requests timeout
CSCec84256	Tlb Load Exception with dspifip
CSCed32265	card reset and coredump because of the runaway task
CSCed36283	Monitoring the SRAM of QE/CBC/RCMP for errors and take recovery action
CSCed41792	Check in for MPSM-8T1E1 Core Dump
CSCed43229	Can not telnet or ping PXM1 node
CSCed48400	PXM1 needs better idtmon DRAM test
CSCed48400	PXM1 needs better idtmon DRAM test
CSCed55064	SRME sometimes loses the backplane reference clock and goes to recovery mode
CSCed55739	Request from PRT8535 issue-26
CSCed56014	UPG5: MGX-8230 stdby SRM stuck in Init after switchcc
CSCed70467	abort mpsm core dump gets logged no matter what
CSCed84883	pxm reset due to workQPanic
CSCee13131	FRSM-8T1 fails to boot after a power cycle running 1.3.00
CSCee20455	port resync on pop1 updates wrong port ids

Compatibility Notes

MGX 8230, MGX 8250, and MGX 8850 (PXM1) Software Certification with Other Products

Table 8 lists how MGX software version 1.3.10 interoperates with other products.

Table 8 Software That was Certified with MGX Release 1.3.10

Switch or Component	Certified Software Version
MGX 8230, MGX 8250, and MGX 8850 (PXM1)	MGX 1.3.10
MGX 8850 (PXM45), MGX 8850 (PXM1E), and MGX 8950	MGX 5.0.10 MGX 4.0.15 MGX 3.0.25
BPX Switch Software:	9.4 Release, 9.4.10 9.3 Release, 9.3.36, 9.3.47 9.2 Release, 9.2.43
BPX SES Shelf:	SES 4.0.15 SES 3.0.25 SES 1.1.75
Cisco WAN Manager	CWM 15.0.00, Patch 2
MGX 8220 Shelf:	MGX 8220 4.1.12 MGX 8220 5.0.20
VISM	VISM Release 3.2.11 VISM Release 3.1.2 VISM Release 1.5.08 (1.1.34 only)

Boot File Names and Sizes

Table 9 displays the boot file names and sizes for this release.

Table 9 Boot File Names and Size

File Name	File Size (in bytes)
ausm_8t1e1_AU8_BT_1.0.02.fw	377836
cesm_8t1e1_CE8_BT_1.0.02.fw	264592
cesm_t3e3_CE8_BT_1.0.02.fw	303936
frsm_8t1e1_FR8_BT_1.0.06.fw	298716
frsm_hs1_HS1_BT_1.0.02.fw	293052

Table 9 Boot File Names and Size (continued)

File Name	File Size (in bytes)
frsm_vhs_VHS_BT_1.0.07.fw	468676
mpsm_t1e1_030.000.010.201_bt.fw	1430648
pxm_bkup_1.3.10.fw	1385192
rpm-boot-mz.123-7.T3	3597912

MGX 8250 and MGX 8850 (PXM1) Firmware Compatibility

The firmware compatibility matrix for this release is presented in Table 10.

Table 10 MGX 8250 Switch and MGX 8850 (PXM1) Switch Firmware Compatibility Matrix

PCB Description	CW2000 Name	Latest F/W	File Name	File Size (in bytes)
PXM1	PXM-1	1.3.10	pxm_1.3.10.fw	3285864
PXM1-2-T3E3	PXM1-2T3E3	1.3.10	pxm_1.3.10.fw	3285864
PXM1-4-155	PXM1-4OC3	1.3.10	pxm_1.3.10.fw	3285864
PXM1-1-622	PXM1-OC12	1.3.10	pxm_1.3.10.fw	3285864
MGX-SRM-3T3/B	SRM-3T3	—	—	—
MGX-SRM-3T3/C	SRM-3T3	—	—	—
MGX-SRME	SRME	—	—	—
MGX-SRME/B	SRME/B	—	—	—
MGX-AUSM-8E1/B	AUSMB-8E1	10.3.10	ausm_8t1e1_10.3.10.fw	1389788
MGX-AUSM-8T1/B	AUSMB-8T1	10.3.10	ausm_8t1e1_10.3.10.fw	1389788
AX-CESM-8E1	CESM-8E1	10.3.10	cesm_8t1e1_10.3.10.fw	744064
AX-CESM-8T1	CESM-8T1	10.3.10	cesm_8t1e1_10.3.10.fw	744064
MGX-CESM-8T1/B	CESM-8T1	10.3.10	cesm_8t1e1_10.3.10.fw	744064
MGX-CESM-T3	CESM-T3	10.3.10	cesm_t3e3_10.3.10.fw	641488
MGX-CESM-E3	CESM-E3	10.3.10	cesm_t3e3_10.3.10.fw	641488
AX-FRSM-8E1/E1-C	FRSM-8E1	10.3.10	frsm_8t1e1_10.3.10.fw	899924
AX-FRSM-8T1/T1-C	FRSM-8T1	10.3.10	frsm_8t1e1_10.3.10.fw	899924
MGX-FRSM-HS2/B	FRSM-HS2/B	10.3.10	frsm_vhs_10.3.10.fw	1030564
MGX-FRSM-HS2	FRSM-HS2	10.3.10	frsm_vhs_10.3.10.fw	1030564
MGX-FRSM-2CT3	FRSM-2CT3	10.3.10	frsm_vhs_10.3.10.fw	1030564
MGX-FRSM-2T3E3	FRSM-2T3	10.3.10	frsm_vhs_10.3.10.fw	1030564
MGX-FRSM-2T3E3	FRSM-2E3	10.3.10	frsm_vhs_10.3.10.fw	1030564
MGX-FRSM-HS1/B	FRSM-HS1/B	10.3.10	frsm_hs1_10.3.10.fw	786640
MPSM-8-T1E1	MPSM-8-T1E1	30.0.10	mpsm_t1e1_030.000.010.201.fw	2253888
MGX-RPM-PR	RPM	12.3(7)T3	rpm-js-mz.123-7.T3 (IOS)	11427796

MGX 8230 Firmware Compatibility

The MGX 8230 firmware compatibility matrix for this release is presented in Table 11.

Table 11 MGX 8230 Firmware Compatibility Matrix

PCB Description	CW2000 Name	Latest F/W	File Name	File Size (in bytes)
PXM1	PXM-1	1.3.10	pxm_sc_1.3.10.fw	3281824
PXM1-2-T3E3	PXM1-2T3E3	1.3.10	pxm_sc_1.3.10.fw	3281824
PXM1-4-155	PXM1-4OC3	1.3.10	pxm_sc_1.3.10.fw	3281824
PXM1-1-622	PXM1-OC12	1.3.10	pxm_sc_1.3.10.fw	3281824
MGX-SRM-3T3/B	SRM-3T3	—	—	—
MGX-SRM-3T3/C	SRM-3T3	—	—	—
MGX-SRME	SRME	—	—	—
MGX-SRME/B	SRME/B	—	—	—
MGX-AUSM-8E1/B	AUSMB-8E1	10.3.10	ausm_8t1e1_10.3.10.fw	1389788
MGX-AUSM-8T1/B	AUSMB-8T1	10.3.10	ausm_8t1e1_10.3.10.fw	1389788
AX-CESM-8E1	CESM-8E1	10.3.10	cesm_8t1e1_10.3.10.fw	744064
AX-CESM-8T1	CESM-8T1	10.3.10	cesm_8t1e1_10.3.10.fw	744064
MGX-CESM-8T1/B	CESM-8T1	10.3.10	cesm_8t1e1_10.3.10.fw	744064
MGX-CESM-T3	CESM-T3	10.3.10	cesm_t3e3_10.3.10.fw	641488
MGX-CESM-E3	CESM-E3	10.3.10	cesm_t3e3_10.3.10.fw	641488
AX-FRSM-8E1/E1-C	FRSM-8E1	10.3.10	frsm_8t1e1_10.3.10.fw	899924
AX-FRSM-8T1/T1-C	FRSM-8T1	10.3.10	frsm_8t1e1_10.3.10.fw	899924
MGX-FRSM-HS2/B	FRSM-HS2/B	10.3.10	frsm_vhs_10.3.10.fw	1030564
MGX-FRSM-HS2	FRSM-HS2	10.3.10	frsm_vhs_10.3.10.fw	1030564
MGX-FRSM-2CT3	FRSM-2CT3	10.3.10	frsm_vhs_10.3.10.fw	1030564
MGX-FRSM-2T3E3	FRSM-2T3	10.3.10	frsm_vhs_10.3.10.fw	1030564
MGX-FRSM-2T3E3	FRSM-2E3	10.3.10	frsm_vhs_10.3.10.fw	1030564
MGX-FRSM-HS1/B	FRSM-HS1/B	10.3.10	frsm_hs1_10.3.10.fw	786640
MPSM-8-T1E1	MPSM-8-T1E1	30.0.10	mpsm_t1e1_030.000.010.201.fw	2253888
MGX-RPM-PR	RPM	12.3(7)T3	rpm-js-mz.123-7.T3 (IOS)	11427796

MGX 8850 (PXM1), MGX 8250, and MGX 8230 Release 1.3.10 Hardware

Table 12 shows the front card and back card compatibility for the hardware supported in this release. The table lists the card model/ name, part numbers, the minimum version and the minimum revisions of each card supported in Release 1.3.10. Note that there may be more than one 800 level part numbers for the same front cards. The minimum version is identified by the last 2 digits of the 800 level numbers.

]

Table 12 Hardware Compatibility Matrix

Front Cards	Part Number/ Min. Version	Rev.	Back Cards	Part Number/ Min. Version	Rev.
PXM1	800-05084-02	A0	PXM-UI	800-03688-01	A0
	800-05760-01	A0	PXM-UI-S3	800-05787-01	A0
	800-07888-01				
PXM1-4-155	800-05086-02	A0	PXM-UI	800-03688-01	A0
	800-05762-01	A0	PXM-UI-S3	800-05787-01	A0
	800-06229-02	A0	MGX-MMF-4-155/B	800-05053-01	A0
			MGX-SMFIR-4-155/B	800-05351-01	A0
			MGX-SMFLR-4-155/B	800-05352-01	A0
PXM1-1-622	800-05085-02	A0	PXM-UI	800-03688-01	A0
	800-05763-01	A0	PXM-UI-S3	800-05787-01	A0
	800-06228-02	A0	MGX-SMFIR-1-622/B	800-05379-01	A0
			MGX-SMFLR-1-622/B	800-05381-01	A0
PXM1-2-T3E3	800-05087-02	A0	PXM-UI	800-03688-01	A0
	800-05602-01	A0	PXM-UI-S3	800-05787-01	A0
	800-06230-02	A0	MGX-BNC-2E3	800-04056-02	A0
			MGX-BNC-2E3A	800-04743-02	A0
			MGX-BNC-2T3	800-04057-02	A0
MGX-SRM-3T3/B	800-04092-01	**E0**	MGX-BNC-3T3-M	800-03148-02	A0
MGX-SRM-3T3/C	800-05648-01	A0	MGX-BNC-3T3-M	800-03148-02	A0
MGX-SRME	800-14224-02	A0	MGX-SMFIR-1-155	800-14460-02	A0
			MGX-STM1-EL-1	800-14479-02	A0
MGX-AUSM-8E1/B	800-04810-01	A0	AX-SMB-8E1	800-02287-01	A0
			AX-R-SMB-8E1	800-02410-01	A0
			AX-RJ48-8E1	800-02408-01	A0
			AX-R-RJ48-8E1	800-02409-01	A0
			MGX-RJ48-8E1	800-19310-01	A0
MGX-AUSM-8T1/B	800-04809-01	A0	AX-RJ48-8T1	800-02286-01	A0
			AX-R-RJ48-8T1	800-02288-01	A0

Table 12 Hardware Compatibility Matrix (continued)

Front Cards	Part Number/ Min. Version	Rev.	Back Cards	Part Number/ Min. Version	Rev.
AX-CESM-8E1	800-02751-02	A0	AX-SMB-8E1	800-02287-01	A0
			AX-R-SMB-8E1	800-02410-01	A0
			AX-RJ48-8E1	800-02408-01	A0
			AX-R-RJ48-8E1	800-02409-01	A0
			MGX-RJ48-8E1	800-19310-01	A0
AX-CESM-8T1	800-02750-02	A0	AX-RJ48-8T1	800-02286-01	A0
		A0	AX-R-RJ48-8T1	800-02288-01	A0
MGX-CESM-8T1/B	800-08613-02	A0	AX-RJ48-8T1	800-02286-01	A0
		A0	AX-R-RJ48-8T1	800-02288-01	A0
MGX-CESM-T3E3	800-03864-02	A0	MGX-BNC-2E3	800-04056-02	A0
			MGX-BNC-2E3A	800-04743-02	A0
			MGX-BNC-2T3	800-04057-02	A0
AX-FRSM-8E1	800-02438-04	A0	AX-SMB-8E1	800-02287-01	A0
			AX-R-SMB-8E1	800-02410-01	A0
			AX-RJ48-8E1	800-02408-01	A0
			AX-R-RJ48-8E1	800-02409-01	A0
			MGX-RJ48-8E1	800-19310-01	A0
AX-FRSM-8E1-C	800-02462-04	A0	AX-SMB-8E1	800-02287-01	A0
			AX-R-SMB-8E1	800-02410-01	A0
			AX-RJ48-8E1	800-02408-01	A0
			AX-R-RJ48-8E1	800-02409-01	A0
			MGX-RJ48-8E1	800-19310-01	A0
AX-FRSM-8T1	800-02437-04	A0	AX-RJ48-8T1	800-02286-01	A0
			AX-R-RJ48-8T1	800-02288-01	A0
AX-FRSM-8T1-C	800-02461-04	A0	AX-RJ48-8T1	800-02286-01	A0
			AX-R-RJ48-8T1	800-02288-01	A0
MGX-FRSM-2CT3	800-02910-04	A0	MGX-BNC-2T3	800-04057-02	A0
	800-06335-01	A0			
MGX-FRSM-2T3E3	800-02911-03	A0	MGX-BNC-2E3	800-04056-02	A0
			MGX-BNC-2E3A	800-04743-02	A0
			MGX-BNC-2T3	800-04057-02	A0
MGX-FRSM-HS1/B	800-05129-01	A0	MGX-12IN1-4S	800-04981-01	A0
			MGX-SCSI2-2HSSI/B	800-05463-02 800-05501-01	A0 A0

Table 12 Hardware Compatibility Matrix (continued)

Front Cards	Part Number/ Min. Version	Rev.	Back Cards	Part Number/ Min. Version	Rev.
MGX-FRSM-HS2	800-02909-03	A0	MGX-SCSI2-2HSSI/B	800-05463-02 800-05501-01	A0 A0
MGX-FRSM-HS2/B	800-17066-01	A0	MGX-12IN1-8S	800-18302-01	A0
MGX-RPM-128M/B	800-05743-01	A0	MGX-RJ45-FE	800-02735-02	A0
			MGX-MMF-FE	800-03202-02	A0
			MGX-RJ45-4E	800-02737-02	A0
			MGX-MMF-FDDI	800-02857-01	A0
			MGX-MMF-FDDI/FD	800-03820-01	A0
			MGX-SMF-FDDI	800-02736-01	A0
			MGX-SMF-FDDI/FD	800-03822-01	A0
MGX-RPM-PR-256	800-07178-02	A0	MGX-RJ45-FE	800-02735-02	A0
			MGX-MMF-FE	800-03202-02	A0
			MGX-RJ45-4E/B	800-12134-01	A0
MGX-RPM-PR-512	800-07656-02	A0	MGX-RJ45-FE	800-02735-02	A0
			MGX-MMF-FE	800-03202-02	A0
			MGX-RJ45-4E/B	800-12134-01	A0
MGX-VISM-8E1	800-04398-01	A0	AX-SMB-8E1	800-02287-01	A0
			AX-R-SMB-8E1	800-02410-01	A0
			AX-RJ48-8E1	800-02408-01	A0
			AX-R-RJ48-8E1	800-02409-01	A0
			MGX-RJ48-8E1	800-19310-01	A0
MGX-VISM-8T1	800-04399-01	A0	AX-RJ48-8T1	800-02286-01	A0
			AX-R-RJ48-8T1	800-02288-01	A0
MGX-VISM-PR-8E1	800-07991-02	A0	AX-SMB-8E1	800-02287-01	A0
			AX-R-SMB-8E1	800-02410-01	A0
			AX-RJ48-8E1	800-02408-01	A0
			AX-R-RJ48-8E1	800-02409-01	A0
			MGX-RJ48-8E1	800-19310-01	A0
MGX-VISM-PR-8T1	800-07990-02	A0	AX-RJ48-8T1	800-02286-01	A0
			AX-R-RJ48-8T1	800-02288-01	A0

Table 12 Hardware Compatibility Matrix (continued)

Front Cards	Part Number/ Min. Version	Rev.	Back Cards	Part Number/ Min. Version	Rev.
MPSM-8-T1E1	800-24473-07	A0	AX-RJ48-8T1	800-02286-01	A0
			AX-R-RJ48-8T1	800-02288-01	A0
			AX-RJ48-8E1	800-02408-01	A0
			AX-R-RJ48-8E1	800-02409-01	A0
			AX-SMB-8E1	800-02287-01	A0
			AX-R-SMB-8E1	800-02410-01	A0

Special Installation and Upgrade Requirements

Existing customers should use the upgrade procedure Service Module Upgrades, page 41 to upgrade. A graceful upgrade from any release previous to the current release is supported. For new customers, the image will be pre-installed and should use the PXM installation procedure to upgrade to future maintenance releases.

A graceful upgrade from any release previous to the current release is supported (for example, MGX 1.1.3x, 1.1.4x or 1.2.2x to MGX 1.3.10), but a graceful *downgrade* is not supported. Abort or fallback to the previous release is supported at any stage during the upgrade. For abort instructions, refer to Instructions to Abort PXM Upgrade, page 38.

Special Instructions for Networks Containing FRSM-2-CT3

When upgrading from any release prior to Release 1.1.32, under certain conditions with the FRSM 2 CT3, a script must be ran in order to properly upgrade the software. The script resolves the FREEDM buffer issue described in anomaly CSCds66176; namely, that ports are lost sometimes after softswitch or resetcd. The algorithm to allocate FREEDM buffers was changed in order to fix this anomaly. Because of the algorithm change, ports might be lost when upgrading from a release (FRSM version < 10.0.22) with the older algorithm. The script identifies cards which will lose ports if the card is upgraded to Release 1.1.32 or greater.

A README file contained in the Release bundle TAR file located on CCO describes how to run the script and shows an example of the script output.

Executing the Script

Execute the script:

- On all shelves with FRSM-2CT3 prior to an upgrade from any version to Release 1.1.32 (FRSM VHS version 10.0.22) or higher.
- For upgrades from releases prior to Release 1.1.32 for the MGX 8250, MGX 8230, or MGX 8850. To fix this issue, an algorithm change was made in Release 1.1.32 (10.0.22 version of FRSM 2 CT3).

Script Functionality

The script applies the new algorithm for buffer allocation to existing ports to determine if all the ports will remain intact during the upgrade process. After application of the new algorithm, a log file is created for each FREEDM chip on all the FRSM 2CT3 cards on the shelf. The log file contains confirmation that the buffer allocations are OK or NOTOK. If the log file contains NOTOK for a card, then upgrading the card to the new release will cause the card to lose ports. Therefore, ports must be moved to another card before upgrading this card.

Upgrade Procedure for Non-Redundant PXM

Upgrading a switch with non-redundant PXMs is an ungraceful upgrade. An ungraceful upgrade from any release previous to the current release is supported (for example, MGX 1.1.3x, 1.1.4x or 1.2.2x to MGX 1.3.10).

Step 1 Save your current configuration.

```
saveallcnf
```

Step 2 Get the filename by listing the CNF directory:

```
node-prompt> ll "C:/CNF"
size          date           time       name
--------      ------         ------     --------
512           APR-08-1999    08:16:18   .                 <DIR>
512           APR-08-1999    08:16:18   ..                <DIR>
512           APR-09-1999    05:26:42   TMP               <DIR>
45433         APR-09-1999    05:28:42   NODENAME_0409990528.zip
45433         APR-09-1999    05:28:42   NODENAME.zip
In the file system :
total space :  819200 K bytes
free  space :  787787 K bytes
```

Step 3 On the workstation, upload the saved configuration to the workstation:

```
unix-prompt> tftp <shelf.ip.address>
tftp> bin
tftp> get CNF/NODENAME_0409990528.zip
Received 45433 bytes in 0.4 seconds
```

Step 4 Download the release to upgrade PXM Backup boot image to the PXM. For example:

```
unix-prompt> tftp <node_name or IP address>
tftp> bin
tftp> put pxm_bkup_<new_rel>.fw POPEYE@PXM.BT
tftp> quit
```

Step 5 Download the release to upgrade PXM runtime image to the PXM. For example:

```
tftp> <node_name or IP address>
tftp> bin
tftp> put pxm_<new_rel>.fw POPEYE@PXM.FW
tftp> quit
```

Step 6 Download the `ComMat.dat` file to the `C:/FW` directory of the Active PXM. Enter the TFTP **put** command:

```
tftp <node_name or IP address>
tftp> bin
tftp> put ComMat.dat
```

```
tftp> quit
```

Step 7 On the PXM type the following when the transfer is done:

```
PXM.a> copy ComMat.dat /FW/ComMat.dat
```

Step 8 Enter **install bt <***new_rel***>**.

Step 9 Enter **install <***new_rel***>**. At the end of the display, enter **yes**.

```
PXM.a> install <new_rel>
redundancy is not available
the other card is not available
you are not in redundant mode,
do you want to try an ungraceful upgrade
(yes or no)?yes
```

Upgrade Procedure for Redundant PXMs

This section applies to upgrades from 1.1.34 and all later releases.

Caution Do not remove old firmware until the upgrade is done.

Note First you must ensure that the shelf IP address and the PXM IP address are set. The PXM must have its own unique IP address and there must be a another unique IP address for the shelf.

Step 1 Save your current configuration.

```
saveallcnf
```

Step 2 Get the filename by listing the CNF directory:

```
node-prompt> ll "C:/CNF"
  size          date       time       name
--------       ------     ------    --------
     512    APR-08-1999  08:16:18   .                 <DIR>
     512    APR-08-1999  08:16:18   ..                <DIR>
     512    APR-09-1999  05:26:42   TMP               <DIR>
   45433    APR-09-1999  05:28:42   NODENAME_0409990528.zip
   45433    APR-09-1999  05:28:42   NODENAME.zip
In the file system :
    total space :  819200 K bytes
    free  space :  787787 K bytes
```

Step 3 On the workstation, upload the saved configuration to the workstation:

```
unix-prompt> tftp <shelf.ip.address>
tftp> bin
tftp> get CNF/NODENAME_0409990528.zip
Received 45433 bytes in 0.4 seconds
```

Step 4 Verify that one PXM is Active and the other Standby.

Step 5 From the workstation, download the PXM Backup boot image.

```
unix-prompt> tftp <pxm.ip.address>
tftp> bin
```

```
tftp> put pxm_bkup_<new_rel>.fw POPEYE@PXM.BT
tftp> quit
```

Step 6 From the workstation, download the PXM FW.

```
unix-prompt> tftp <pxm.ip.address>
tftp> bin
tftp> put pxm_<new_rel>.fw POPEYE@PXM.FW
Sent 1982672 bytes in 18.3 seconds
```

Make sure that the transfer is successful by looking at the message displayed on the PXM console after the transfer:

```
Program length = 1982672
Calculated checksum = 0xd9779bc6 stored checksum = 0xd9779bc6
Fw checksum passed
```

Note Bytes sent, program length, and receive time vary per release. Also, see the Compatibility Matrixes for current file sizes and file names.

Step 7 Download the `ComMat.dat` file to the `C:/FW` directory of the Active PXM. Enter the TFTP **put** command:

```
unix-prompt> tftp <node_name or IP address>
tftp> bin
tftp> put ComMat.dat
tftp> quit
```

Step 8 After the transfer is done, type the following on the PXM:

```
PXM.a> copy ComMat.dat /FW/ComMat.dat
```

Step 9 Enter the command **install bt <***new_rel***>**.

Step 10 Enter the command **install <***new_rel***>**.

Step 11 After the Standby card is reset and successfully enters the hold state, on the Active PXM, enter the command **newrev <***new_rel***>**.

The Active card will be reset and go to hold state.

After the **newrev,** enter the command **dspcd** to show the firmware revision on the new, active PXM.

Caution If at this stage (after newrev) the upgrade needs to be aborted, follow the instructions under "Instructions to Abort PXM Upgrade, page 38."

During the graceful upgrade procedure, if after the **newrev** command the non-active card enters the "MISMATCH" state, do the normal commit command. You will get a warning message:

other card not found,

do you still want to complete the commit operation

Answer yes and then reset the non-active card.

If you get the MISMATCH during the upgrade process, after you finish, you will still have the MISMATCH. To correct the mismatch, you must check your back cards; they must be identical.

Step 12 After the Active PXM is reset and successfully enters the hold state, on the new Active PXM, enter **commit <***new_rel***>**.

Instructions to Abort PXM Upgrade

A graceful *downgrade* is not supported. However, abort or fallback to the previous release is supported at any stage during the upgrade. The following procedure should be used to abort to a previous release.

Aborting an Upgrade from Release 1.1.3x and Above

If the upgrade needs to be aborted for any reason during the upgrade process from release 1.1.3x and above, follow these instructions.

Step 1 Execute **abort <***release no***>**

```
PXM.a> abort <release no>
```

Aborting an Upgrade from Release 1.1.2x

If the upgrade needs to be aborted for any reason during the upgrade process from release 1.1.2x, follow these instructions.

Step 1 If the abort is required before the **newrev** command is entered, skip to Step 8.

Step 2 Enter the following commands if the upgrade process is past the **newrev** stage.

Step 3 On the Active PXM, enter **shellConn**

Step 4 Enter **smCardMibVer = 21**

Step 5 Enter **saveDBToArchive <***PXM SlotNo***>, 0**

Step 6 Enter **uploadBram <***PXM SlotNo***>, <***PXM SlotNo***>**

The <*PXM SlotNo*> should be **7** for the MGX 8850 (PXM1) switch and for the MGX 8250 switch (even if the Active PXM is in slot 8, use slot **7**).

The <*PXM SlotNo*> should be **1** for the MGX 8230 switch (even if the Active PXM is in slot 2 use slot **1**).

The example that follows is for the MGX 8850.

```
PXM.a > shellConn
-> smCardMibVer=21
-> saveDBToArchive 7, 0
-> uploadBram 7, 7
```

Step 7 If RPM cards also are on this node, perform the following for each RPM card:

Inside shellConn on Active PXM, enter:

saveDBToArchive <*RPM_slot#*>, 1

d &arcMem+<*RPM_slot#*>*4

Copy down the 4 byte address that is displayed after executing the **d&arcMem+**<*RPM_slot#*>***4** command and enter it in the following command.

rmSlotArchFileSave <*RPM_slot#*>, <*4 byte address*>

For example, for an RPM in slot 9, the result is:

```
-> d &arcMem+36
d &arcMem+36
```

```
8051cb90:            8702 bad8 0000 0000 0000 0000   *      ..........*
8051cba0:  0000 0000 0000 0000 0000 0000 0000 0000
-> rmSlotArchFileSave 9,0x8702bad8
```

Step 8 Execute **abort <***release no***>.**

```
PXM.a> abort <release no>
```

Service Module Boot/Firmware Download Procedure

The following procedure describes how to download the boot and the service module firmware for slot-independent and slot-dependent images.

Step 1 Download the boot image for the service module onto the PXM hard disk.

```
unix-prompt> tftp <node_name or IP address>
tftp> bin
tftp> put <backup boot> POPEYE@SM_1_0.BT
tftp> quit
```

Step 2 Download the boot image onto the respective service module using the command:

install bt sm <*slot #*> <*version*>

Repeat for each of the service modules on the node.

Step 3 Now, choose instruction for slot-independent or slot-dependent firmware. See below.

For slot-independent image:

Download the selected revision of service module firmware onto the PXM hard disk.

```
unix-prompt>tftp <node_name or IP address>
tftp> bin
tftp> put <FW file> POPEYE@SM_1_0.FW
tftp> quit
```

You cannot do two puts in the same TFTP session.

Repeat for each service module type and for each slot-independent firmware.

For slot-dependent image:

For a slot-specific image (in this example the service module is tied to slot 1),

```
unix-prompt> tftp <ip address of the MGX 8850 shelf>
tftp> bin
tftp> put <sm FW file name> POPEYE@SM_1_1.fw
```

Note If the checksums are not the same when you remove the service module then the service module will not boot when it is plugged in and the service module will have to be RMA'ed.

Note Please consult your Support Representative before performing any software upgrade.

Manual Configuration of Chassis Identification

MGX as a Standalone Node

If any MGX box is to be used as a standalone node for testing, the intended model number from the PXM firmware configuration should be matched MANUALLY by running the "**runConfigurator**" utility.

Example: node1 was running 1.1.24 as a 8850 node:

If the node's model number is set to 8250 by default after a 1.1.32 firmware upgrade, but the node1 is still configured as a 8850 standalone node on the CWM side, then CWM will reject the node on discovery, and the node will remain undiscovered.

Solution: On every standalone node, manually verify that the runConfigurator settings match the switch.

Chassis Identification During a Firmware Upgrade

On the CWM side, the emd.conf must be modified to a one second wait time so it can help clean up the emc process's internal cache and CWM database (regarding any slot that has sent the functional removal trap). This ensures that CWM will sync up whatever is current with the switch after the upgrade.

Before a firmware upgrade is begun, complete the following steps:

Step 1 Change the following line in emd.conf:

"Hold for **300** secs before deleting the card after a func module trap is received".

to

"Hold for **1** secs before deleting the card after a func module trap is received".

Note This prevents race conditions in updating the database table from the firmware version upgrade.

Step 2 After emd.conf is changed, send HUP signals to all EMC processes.

Step 3 After the firmware upgrade is complete, reset the hold time back to **300** seconds.

Step 4 Send HUP signals to EMC processes to confirm the changeback.

Interoperability of Service Modules on MGX 8220 and MGX 8250 Switches

Caution Graceful downgrade for the Service Module is not supported.

If you are moving service modules from an existing MGX 8220 platform to the MGX 8850, the MGX 8220 service modules (AX-FRSM-8T1/E1, and AX-CESM-8T1/E1) need to have the boot flash upgraded to MGX 8220 Release 5.0.00 common boot code (1.0.01 version) before they can be plugged in the MGX 8850 chassis. All MGX 8220 service module versions that use Release 4.0.xx of boot code and earlier are not supported in the MGX 8850.

SPARE DEPOT: Customers receiving a replacement service module via the TAC (through the RMA process) will have the common boot code image that works for MGX 8220 Release 4.x, 5,x, and MGX 8850 installed on legacy service modules. (Spare service modules received directly from manufacturing through the normal ordering process will have the correct boot code image already loaded.)

If loading of the correct common boot code image is required then it will have to be performed on an MGX 8220 chassis, and cannot be performed on an MGX 8850 chassis. Please refer to the procedure below, which is also outlined in the *Cisco MGX 8850 Installation and Configuration Guide* on the documentation CD.

Use ftp to port the Axis 5 common boot image for the service module to a workstation.

Plug in the card into the MGX 8220 shelf.

Download the proper MGX 8220 shelf Release 5.0 boot image using the following commands from the workstation:

```
unix-prompt> tftp <ip address of the MGX 8220 shelf >
tftp> bin
1tftp> put <boot filename> AXIS_SM_1_<slot#>.BOOTkj
```

Now you must insure that TFTP downloaded the appropriate boot code by verifying the flash checksums.

Login to the shelf.

```
unix-prompt> tftp cc <slot #>
tftp> chkflash
```

Verify that the two checksums are the same.

If NOT, repeat the process until they are the same. If they are the same, then you can safely remove the card. At this point the service module can be used in the MGX 8850 shelf.

Service Module Upgrades

The following steps need to be followed for service module upgrades. Service module firmware images cannot be downloaded as specific versions, because only 1 slot independent image can be present on the disk. Hence, the user cannot revert back during the installation process.

Step 1 Download the service module firmware to the shelf. Refer to Service Module Boot/Firmware Download Procedure, page 39.

Note To upgrade all the service modules, load all the firmware files and boot files to the node. Then execute the command **resetsys**. Make sure that the configuration is saved.

Step 2 For non-graceful upgrades, just reset the card and the service module will come up with the new image.

Step 3 Enter the following command to install the service module boot file:

```
install bt sm <slot> <version>
```

where <slot> is the service module that is being upgraded

and <version> is the service module image on the disk.

Step 4 For graceful upgrades, a secondary card should be backing up the service module that needs to be upgraded. Configure the redundancy and enter the following command:

```
install sm <slot> <version>
```

where <slot> is the service module that is being upgraded

and <version> is the service module image on the disk.

Note The concept of version is redundant here, since there is only one service module image on the disk. However we do check that the version given by the user matches the image on the disk to make it consistent with PXM upgrade/downgrade.

```
newrev sm <slot> <version>
```

where <slot> is the service module that is being upgraded

and <version> is the service module image on the disk.

```
commit sm <slot> <version>
```

where <slot> is the service module that is being upgraded

and <version> is the service module image on the disk.

Note There is no abort command for service module upgrade.

MPSM 8-port T1/E1 Licensing Overview

A description of the MPSM 8-port T1/E1 hardware is available in the *Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, Cisco MGX 8830, and Cisco MGX 8880 Hardware Installation Guide, Releases 2 Through 5* online. For general information on configuration of the MPSM 8-port T1/E1 in general, and general information on configuration of the licensing feature, refer to Chapter 9 in the *Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, Cisco MGX 8830, and Cisco MGX 8880 Configuration Guide, Release 5* online.

Refer to the following section for licensing alarm information specific to PXM1-based MGX switches.

MPSM License Alarms

MPSM feature license alarms can occur at the node level or the slot level of the switch. The following sections describe these alarms:

- Node License Alarm
- Slot License Alarms

Node License Alarm

Node license alarms are raised when the count of the feature licenses in the PXM license pool database on the switch is considered invalid.

Node license alarms can happen under the following conditions:

- A switch configuration that was saved before licenses were added or transferred to and from the PXM license pool has been restored. Any mismatch between the actual license count and the restored license count generates a minor license alarm. To prevent this type of alarm, always save the switch configuration after you move, transfer, or add licenses.
- The switch configuration is restored on a different node, or the Cisco MGX chassis is replaced with another chassis. Because licenses are authorized for a specific backplane serial number, such conditions will cause a mismatch between the physical backplane serial number and serial number recorded in the database.

When a node license alarm is raised, all cards that are using feature licenses go into the slot license alarm state. If no licenses are in use by the cards, no slot license alarms will be raised.

On PXM1 platforms, use the PXM **dspcd** command to troubleshoot the node license alarm. As shown in the following example, if the switch is in the node license alarm state, the *cardIntegratedAlarm* will be *minor* and the *cardMinorAlarmBitMap* will indicate *License Alarm*:

```
M8850_R1.1.7.PXM.a > dspcd

    ModuleSlotNumber:          7
    FunctionModuleState:       Active
    FunctionModuleType:        PXM1-OC3
    FunctionModuleSerialNum:   SAG05304YHH
    FunctionModuleHWRev:       D0
    FunctionModuleFWRev:       1.3.10.065
    FunctionModuleResetReason: Restoreallcnf
    LineModuleType:            PXM-UI
    LineModuleState:           Present
    SecondaryLineModuleType:   SMFIR-4-155
    SecondaryLineModuleState:  Present
    mibVersionNumber:          1.2.20
    configChangeTypeBitMap:    No changes
    cardIntegratedAlarm:       Minor
    cardMajorAlarmBitMap:      Clear
    cardMinorAlarmBitMap:      License Alarm
    BkCardSerialNum:           SBK042501CN
    TrunkBkCardSerialNum:      SBK05070188
    FrontCardPCBNumber:        800-06229-04
    TrunkBkCardPCBNumber:      800-05351-01
    UIBkCardPCBNumber:         800-03688-01

    SrmBackCardPCBNumber:      Not Applicable

M8850_R1.1.7.PXM.a >
```

Node license alarms are cleared by validating licenses in the license pool. This is done by applying the special Rekey feature license to the node using the **cnflic** command. When the pool licenses are validated, any existing slot license alarms are also cleared and normal operation is restored. For the procedure to rekey feature licenses, see the "Rekeying Feature Licenses" section in Chapter 9 of the Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, Cisco MGX 8830, and Cisco MGX 8880 Configuration Guide, Release 5 online.

Note If the switch is in node license alarm, you must rekey the PXM license pool *before* proceeding with any other license management tasks. Failure to resolve node license alarms can lead to the invalidation of previously generated license keys due to sequence number mismatches.

Slot License Alarms

Slot license alarms are raised under the following conditions:

- The node license alarm has been raised indicating an invalid count of licenses in the PXM license pool database. When a node license alarm is raised, all cards that are using feature licenses go into the slot license alarm state. Slot license alarms raised under this condition can be cleared by rekeying the PXM license pool. For the procedure to rekey feature licenses, see the "Rekeying Feature Licenses" section in Chapter 9 of the Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, Cisco MGX 8830, and Cisco MGX 8880 Configuration Guide, Release 5 online.
- The slot in alarm has acquired or oversubscribed one or more licenses while these licenses were not available in the license pool. For example, on the PXM1 platform this situation might occur when a card is configured to use licenses, the card slot configuration is removed with the **clrsmcnf** command, the licenses are assigned to another card, and then the card slot configuration is restored. Slot license alarms raised under this condition are cleared by adding the required number of licenses to the PXM license pool or by releasing corresponding licenses from other slots so that they become available to the slot in alarm. If slots in alarm have redundancy, you must add licenses to cover both the primary and secondary slots to clear the alarms.

On PXM1 platforms, use the PXM **dsplicalms** command to troubleshoot slot license alarms. The output of this command will indicate which MPSM cards are in the slot license alarm state. The following example shows the output of the PXM **dsplicalms** command on the PXM1 platform. In this example, the MPSM card in slot 22 is in slot license alarm:

```
M8850_R1.1.7.PXM.a > dsplicalms
Slot  Critical   Major     Minor   ||  Slot  Critical   Major     Minor
----  --------  -------   -------  ||  ----  --------  -------   -------
 1          0        0         0   ||  17          0        0         0
 2          0        0         0   ||  18          0        0         0
 3          0        0         0   ||  19          0        0         0
 4          0        0         0   ||  20          0        0         0
 5          0        0         0   ||  21          0        0         0
 6          0        0         0   ||  22          0        0         1
 7          0        0         0   ||  23          0        0         0
 8          0        0         0   ||  24          0        0         0
 9          0        0         0   ||  25          0        0         0
10          0        0         0   ||  26          0        0         0
11          0        0         0   ||  27          0        0         0
12          0        0         0   ||  28          0        0         0
13          0        0         0   ||  29          0        0         0
14          0        0         0   ||  30          0        0         0
15          0        0         0   ||  31          0        0         0
16          0        0         0   ||  32          0        0         0

M8850_R1.1.7.PXM.a >
```

On PXM1-based platforms, the output of the PXM **dspliccd** <*slot*> command also shows if a card is in slot license alarm and displays how much time is left in the alarm grace period and if provisioning is allowed with the **addcon** command. The following example shows the output of the PXM **dspliccd** <*slot*> command of an MPSM-8T1-FRM card in a PXM1 platform in the slot license alarm state:

```
M8850_R1.1.7.PXM.a > dspliccd 22
Card License Alarm:             Minor
Service Module Type:            MPSM-8T1E1
Service Module Serial Number:   SAD073103HH
Provisioning Allowed:           Yes
Grace-Period Remaining:         4 Days, 23 Hrs

=======================================================
Allocated License Type      Quantity
```

```
--------------------        --------
RateControl                 1

=========================================================
Programmed License Type     Quantity
--------------------        --------

=========================================================
Programmed Licenses Registered:          N/A
License Registration Node:               --
License Registration Chassis Serial No:  --

M8850_R1.1.7.PXM.a >
```

On PXM1-based platforms, the MPSM **dspcd** command will indicate if a card is in slot license alarm. If the card is in the slot license alarm state, the *cardIntegratedAlarm* will be *minor* and the *cardMinorAlarmBitMap* will indicate *License Alarm.* The following example shows the output of the **dspcd** command on an MPSM-8T1-FRM card in a PXM1 platform in the slot license alarm state:

```
M8850_R1.1.22.MPSM8T1.FRM.a > dspcd

  ModuleSlotNumber:          22
  FunctionModuleState:       Active
  FunctionModuleType:        MPSM-8T1-FRM
  FunctionModuleSerialNum:   SAD073103HH
  FunctionModuleHWRev:       02
  FunctionModuleFWRev:       030.000.004.016-P2
  FunctionModuleResetReason: Reset by PXM
  LineModuleType:            LM-RJ48-8T1
  LineModuleState:           Present
  mibVersionNumber:          102
  configChangeTypeBitMap:    No changes
  cardIntegratedAlarm:       Minor
  cardMinorAlarmBitMap:      LICENSE ALARM

      Front Card Info

  PCB PART NO-(800 LEVEL):   800-24473-01
  PCB PART_NO-(73 LEVEL):    73-9197-01
  PCB REVISION (800 LEVEL):
  PCB SERIAL NO:             SAD073103HH
  CLEI CODE:                 0
  MANUFACTURING ENG:         0x0
  RMA TEST HISTORY:          0x0

      Back Card Info

  PCB PART NO-(800 LEVEL):   000-00000-00
  PCB PART NO-(73 LEVEL):    00-00000-00
  PCB REVISION (800 LEVEL):  AC
  FAB PART NO-(28 LEVEL):    28-02011-01
  PCB SERIAL NO:             B75816
  MANUFACTURING ENG:         0x1C
  RMA HISTORY:               0x0

M8850_R1.1.22.MPSM8T1.FRM.a >
```

On PXM1-based platforms, the output of the MPSM **dspliccd** command also shows if a card is in slot license alarm. The following example shows the output of the **dspliccd** command of an MPSM-8T1-FRM card in a PXM1-based platform in the slot license alarm state:

```
M8850_R1.1.22.MPSM8T1.FRM.a > dspliccd
Card License Alarm:             Minor
```

```
Service Module Type:              MPSM8T1E1
Service Module Serial Number:     SAD073103HH
Provisioning (addcon) Allowed:    YES
=========================================================
Needed License Type                Needed Licenses
-------------------                ---------------
RateControl                        1

=========================================================
Allocated License Type             Allocated licenses
----------------------             ------------------
RateControl                        1

=========================================================
Programmed  License Type           Programmed licenses
------------------------           -------------------

=========================================================
Programmed License Registered:    NO
License registration node:        NONE
License registration chassis:     NONE
=========================================================

M8850_R1.1.22.MPSM8T1.FRM.a >
```

Note If the switch is in node license alarm, you must rekey the PXM license pool *before* proceeding with any other license management tasks. Failure to resolve node license alarms can lead to the invalidation of previously generated license keys, due to sequence number mismatches.

When the switch is in slot license alarm, you have a grace period of 5 days (120 hours) to resolve the alarm(s). During the first 4 days (96 hours), traps are sent every 24 hours. For the final 24 hours of the grace period, traps are sent every hour of operation. If the alarms do not get cleared, the following actions are taken:

- An event is logged indicating the expiration of the grace period for a given slot needing license(s).
- A trap is sent hourly indicating the expiration of the grace period.
- The **addcon** command is blocked on the slot in license alarm until the license alarms are cleared.

Once the PXM license pool has been rekeyed or licenses have been added to the PXM license pool, provisioning is restored and the switch exits the alarm state.

Related Documentation

Note that for Release 1.3.10, the product documents (Command Reference, Overview, and Installation and Configuration Guides) were not updated. Use the Release 1.1.3 documents in addition to the *Release Notes for Cisco WAN MGX 8850, MGX 8230, and MGX 8250 Software Version 1.3.10*.

Product documentation for MGX 8850 (PXM1) is available at the following URL:
http://www.cisco.com/univercd/cc/td/doc/product/wanbu/mgx8850/index.htm

Product documentation for MGX 8250 is available at the following URL:
http://www.cisco.com/univercd/cc/td/doc/product/wanbu/mgx8250/index.htm

Product documentation for MGX 8230 is available at the following URL:
http://www.cisco.com/univercd/cc/td/doc/product/wanbu/mgx8230/index.htm

Product documentation for VISM is available at the following URL:
http://www.cisco.com/univercd/cc/td/doc/product/wanbu/mgx8850/

Product documentation for RPM is available at the following URLs:
http://www.cisco.com/univercd/cc/td/doc/product/wanbu/mgx8850/rpm/index.htm
http://www.cisco.com/univercd/cc/td/doc/product/wanbu/mgx8250/rpm/index.htm
http://www.cisco.com/univercd/cc/td/doc/product/wanbu/mgx8230/rpm/index.htm

Product documentation for AUSM (and ATM services on MPSM 8-port T1/E1) is available at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/wanbu/8850px45/rel5/ausm/index.htm

Product documentation for CESM (and circuit emulation services on MPSM 8-port T1/E1) is available at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/wanbu/8850px45/rel5/cesm/index.htm

Product documentation for FRSM (and Frame Relay services on MPSM 8-port T1/E1) is available at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/wanbu/8850px45/rel5/frsm/index.htm

Product documentation for MPSM 8T1/E1 hardware is available at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/wanbu/8850px45/hwdoc/hig/index.htm

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Cisco provides several ways to obtain documentation, technical assistance, and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

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

http://www.cisco.com/univercd/home/home.htm

You can access the Cisco website at this URL:

http://www.cisco.com

International Cisco websites can be accessed from this URL:

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

Ordering Documentation

You can find instructions for ordering documentation at this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpck/pdi.htm

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- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Ordering tool:

  http://www.cisco.com/en/US/partner/ordering/index.shtml

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

Finding Documentation for Cisco MGX, BPX, SES, and CWM Products

The previous "Ordering Documentation" section applies to other Cisco documentation. Starting in 2003, all documents listed in the "Related Documentation" section are available online only unless stated otherwise.

- In your browser's URL field, enter **www.cisco.com**. In the top right search field, enter the complete document part number (for example, enter **OL-4538-01**, including the -01 suffix). Click on GO.
- For the Cisco Wide Area Network Manager (CWM) documents, in your browser's URL field, enter **http://www.cisco.com/univercd/cc/td/doc/product/wanbu/svplus/index.htm** and look for the CWM release number.
- For all other documents, in your browser's URL field, enter **http://www.cisco.com/univercd/cc/td/doc/product/wanbu/index.htm**. Look for the switch name and release number. For example, look for *MGX 8850 (PXM1E)*, then *Release 5*.

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170 West Tasman Drive
San Jose, CA 95134-9883

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Obtaining Technical Assistance

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Technical Assistance Center

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

Inquiries to Cisco TAC 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.

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

Cisco TAC Web Site

The Cisco TAC Web Site allows you 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 the following URL:

http://www.cisco.com/tac

All customers, partners, and resellers who have a valid Cisco services 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 the following URL to register:

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

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

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

If you have Internet access, it is recommended that you open P3 and P4 cases through the Cisco TAC Web Site.

Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses issues that are classified as priority level 1 or priority level 2; 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 will automatically open a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to the following 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). In addition, please have available your service agreement number and your product serial number.

This document is to be used in conjunction with the Cisco WAN Switching MGX 8850 Release 1, MGX 8250, and MGX 8230 publications.