GIGAswitch/ATM Firmware Release 2.4.1
Release Notes

September 12, 1997

This document contains the release notes for Digital's GIGAswitch/ATM firmware Release 2.4.1. This release provides support for the following new hardware:

- DAGGL-BB - 4 Port Modular Line Card (QLC V2.1)
  including support for the following single port modphys:
  - DAGE1-AA - E1 UTP/ScTP
  - DAGGE-AA - E3 Coax
  - DAGGT-AA - DS3/T3 Coax
  - DAGGU-AA - 155 Mbps UTP/ScTP
  - DAGGS-AA - OC-3 SMF
  - DAGGM-AA - OC-3 MMF
  - DAGT1-AA - T1 UTP/ScTP

GIGAswitch/ATM releases consist of 3 basic components: a LC Kernel image, a LC Application image, and CMM firmware. The table below identifies the major GIGAswitch/ATM releases and the associated component version numbers. .

GIGAswitch/ATM Firmware Release	LC Kernel Version (ROM)	LC Application Version (BIN)	CMM Firmware Version
2.4.1	**568**	**568**	**1.90**[2]
2.1.3	356	359	1.82
2.1.1	354	356	1.82
2.0	300	300	1.80[1]
1.4.5	205	205	1.74
1.3.1	102	102	1.62
1.2	16	22	1.59

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[2] DAGGL-BB (QLC 2.1) line card support available from Release 2.4.1 (CMM 1.90) onwards.
[1] DAGGL-BA (QLC 2.0) line card support available from Release 2.0 (CMM 1.80) onwards.

Warning

Upgrading to this release requires CMM firmware version 1.59 or higher. If your CMM firmware version pre-dates version 1.59, **you MUST upgrade the CMM firmware to version 1.59 before** upgrading to version 1.90.

Failure to properly upgrade the CMM firmware will render the CMM card unusable!

To determine the CMM firmware version currently in use, type B at the CLK> prompt. If the firmware version is earlier than version 1.59 you must first upgrade to 1.59. The 1.59 CMM firmware is contained in the GIGAswitch/ATM firmware Release 1.2. Follow the instructions in the GIGAswitch/ATM firmware Release 1.2 Release Notes. The V1.2 release can be found in the /pub/DEC/GIGAswitchATM directory at Digital's FTP site (ftp.digital.com).

Hardware Requirements

The master line card must be QLC 2.0 (DAGGL-BA) or a QLC 2.1 (DAGGL-BB) with at least an 8M SIMM (DAGME-AA) – i.e. with at least 16 Mbytes of DRAM. OC 12 (DAGGL-CA/DAGGL-CB) line cards and QLC 1.5 (DAGGL-AA) line cards may only be used as slaves.

How to Get a Copy of GIGAswitch/ATM Firmware

The Release 2.4.1 firmware kit is located in a release area at the Digital FTP Site ftp.digital.com. Copy the image to your system using these commands:

```
# ftp ftp.digital.com

username: anonymous
password: (your Internet address)

ftp> cd /pub/DEC/GIGAswitchATM
ftp> bin
ftp> get AN3V2_4_1.tar AN3V2_4_1.tar
ftp> bye
```

To unpack the new image, use the following Unix command:

```
# tar -xvf AN3V2_4_1.tar
```

This command creates a subdirectory within your current working directory named AN3V2_4_1. The following files are unpacked into the AN3V2_4_1 sub-directory:

```
AN3_VER241        (sample control file)
LC15V241.BIN      (DAGGL-AA/AB/CA/CB application image)
LC15V241.ROM      (DAGGL-AA/AB kernel image)
LC20V241.BIN      (DAGGL-BA/BB application image)
LC20V241.ROM      (DAGGL-BA/BB kernel image)
CMM1_90.X         (CMM firmware)
```

Where to obtain GIGAswitch/ATM Documentation

GIGAswitch/ATM Release 2.4.1 documentation is available at the following locations:

WEB site

http://www.networks.digital.com/dr/gigaatm/manuals/

Anonymous FTP:

host:	www.networks.digital.com	
directory:	/pub/networks/gigaatm/manuals	
file names:		
	qcv7b-te.ps	Release 2.4.1 14 slot Installation and Service Guide
	dagwg-b1.ps	Release 2.4.1 5 slot Installation and Service Guide
	qcv8d-te.ps	Release 2.5 GS/ATM System Management Guide

Note that the 2 versions of the GIGAswitch/ATM System Management Guide are present in the /pub/networks/gigaatm/firmware directory. The 2.0 Management guide (qcv8c-te.ps) and the 2.5 Management guide (qcv8d-te.ps). The latter describes all the features available with Release 2.4.1. <u>Later sections of this document describe the commands/features which are unsupported in Release 2.4.1.</u>

Upgrading Firmware

The new firmware is not compatible with ELAN configurations created with older versions of firmware. This was necessary as a result of the new redundant-LANE functionality that will be released in Release 2.5. It is therefore necessary to delete all ELAN configuration before upgrading to the new firmware. It is recommended that a complete clean up of the non-volatile configuration data is performed before altering or creating configuration with the 2.4.1 firmware, but it is not necessary to do so (especially if large numbers of PVCs exist in the flash).

The GIGAswitch/ATM should be upgraded using the following process:

Upgrade the clock card firmware to 1.90 *<u>before</u>* updating the line card firmware to V 2.4.1. If you do not currently have, at least, CMM Version 1.59, upgrade to 1.59 first. Note that the new clock firmware (1.90) is backward compatible with the older revisions of line card firmware. Procedures to update the clock card are available in the GS/ATM manual.

The procedures to upgrade the line card firmware are the same as before (specified in the GS/ATM management manual). However, upgrading from firmware revisions 2.1.5 (or older) to Release 2.4.1 has some caveats. The ROM image of Release 2.4.1 uses larger flash widths available with the QLC 2.0 hardware. This was necessary to fit in the larger image sizes of the application. The first attempt to load the new firmware will therefore produce error messages about the application being too big. However, after the first load procedure, reload the switch with the new firmware again. The second time, the switch uses the new ROM image, which will be able to accommodate the larger application images.

Note that 2.4.1 firmware does not require manual intervention to reboot the switch after the initial load when upgrading the switch firmware. In the past, this was necessary when the old ROM image and the new application image were incompatible. During future upgrades of the switch firmware, after loading the flash with the new ROM & application images, the switch automatically reboots itself to run the new images.

The following is a summary of steps to upgrade the firmware from 2.1.6 (or older) to 2.4.1

- Change the "Line card Start up mode" flag in the clock to "L", or *force_image*_reload from the master. Reboot the switch to load the new line cards with the new firmware. The boot control file should be modified to point to the new images.

- The master line card loads the new ROM image, and tries to load the new application image. Error messages will appear on the switch console - *"size occupies more than it should" etc.* Wait until the switch prompt on the master appears (after the slaves are downloaded with the new ROM). A message *"Application not started*" will indicate that a second reboot is required.

- Reboot the switch. This time the switch will successfully load both the ROM and application images. After the slaves are downloaded with the new images, the switch will automatically be rebooted again to run the new images.

For detailed instructions on how to download firmware images to your GIGAswitch/ATM, see the *Upgrading the Firmware* section of the GIGAswitch/ATM Installation and Service manual.

Configuration Recommendations

To allow access from other switches to the LECS, it is recommended that a static route be created on the LECS-enabled switch to the well-known LECS address. The static route's *forwarding slot* should be set to the master linecard's slot number and the *forwarding port* be set to 0. Also, the route must be **exported**. (Eg: *decnni* **-***sr* **-***conf 47* **-***partial* **-***port 1:0* **-** *exp*)

When configuring constant bit rate (CBR) circuits for E1, E3, or T3 links set the CBR to a value that is less than 70% of the total allowable link rate. The following are the limits to CBR bandwidth allocations imposed by the switch.

The maximum allowed CBR reservation on an OC3 link is 126 Mbs of payload bandwidth.
The maximum allowed CBR reservation on an OC 12 link is 510 Mbs of payload bandwidth.

The maximum allowed CBR reservation per VC on an OC 12 link is 360 Mbs of payload bandwidth.

Unsupported Features/Commands

The following CLI commands and associated features are <u>not supported</u> (and hence not available for general use) in Release 2.4.1.

clip - Configuring a CLIP client
pvp - Configuring Permanent Virtual Paths
rlecs - Redundant LANE configuration
service - Altering the ILMI service registry MIB**.**

The following CLI command options are <u>not supported</u> in Release 2.4.1

lecs -r	- Enabling the LECS in redundant mode
switch -vpmode | -vp	- Configuring a line card to operate in Virtual Path mode
trace -snmp	- Enhanced SNMP traces

Hot swap of line cards is <u>not supported</u>.

Switch Initialization

Release 2.4.1 has security features enabled (by default) for the 5 slot chassis. The security features of a 14 slot chassis may be controlled, as before, using the switch on the front panel of the chassis as described in the manual. The user will hence be prompted to type in a login/password before the CLI can be accessed. The default values for login and password are *"user"* and *"username"* respectively. The password may be changed using the *passwd* command as described in the GS/ATM management manual. [If you forget your password for the 5 slot chassis, change the "Line card Start up mode" flag in the clock to "N", reboot the switch and at the switch prompt execute the command `clearRecordType(819).` This will reset the password back to the default.]

The console prompt is now "ATMswitch-> ".

Release 2.4.1 supports redundant power supplies in a 5 slot chassis. It also supports sending SNMP traps when a power supply or a fan fails. To receive these traps, an IP address should be configured via the snmp command. If a trap address is not configured, one or more messages are printed out at the end of initialization. For eg.*"Could not send trap decATMPscSwap - no trap destinations!"*. These are informational messages, and should be ignored if you don't expect to receive SNMP traps.

CLI Changes

Release 2.4.1 comes with a new command language interpreter (CLI). The OBM interface has been retained for backward compatibility, but all the new features are only available via the CLI. Description of the various commands and options of the CLI are available in the new GS/ATM management manual available on the web. The new management manual was developed for Release 2.5 and hence describes new features which are unsupported in Release 2.4.1. The list of unsupported commands and features are listed earlier in this document.

Other Notables

Release 2.4.1 has changes which allow support of large configurations. Performance improvements have been made to increase the effective throughput of the LANE broadcast server resident in the switch. Depending on the amount of DRAM installed in the master line card, the number of calls supported is automatically scaled. With 16 M bytes of memory in the master (i.e. an 8 M SIMM installed, which is the minimum requirement), the number of point-to-point calls supported is 8192. If a 16 M SIMM is installed (i.e. 24 M of total memory), the number of calls supported scales automatically to 16384.

Release 2.4.1 supports up to 29 ELANs per switch.

The number of point-to-multipoint parties that are supported is 3200 (with an 8M or 16M SIMM). This is greater than the maximum number of parties required to support 29 ELANs with a party on every link in a 14 slot chassis.

Release 2.4.1 also includes enhancements to the GIGAswitch/IP firmware. Details of the IP switching enhancements may be obtained from the latest Gigaswitch/IP release notes.

Known Problems

Upgrading the Switch Firmware

Please see the Section on "Upgrading Firmware" for details about upgrading from an older line card firmware release to Release 2.4.1

Downgrading the Switch Firmware

After downgrading the switch to any release prior to Release 2.4.1 of the GIGAswitch/ATM firmware, the user MUST perform an 'nvdataErase' from the switch console [2809].

MultiChassis Manager

MultiChassis Manager will occasionally report a "no response from agent" error when attempting to communicate with the switch [2506]. The workaround for this is to increase the MultiChassis Manager retry timer.

MultiChassis Manager displays bogus adpReceiveBuffer information for an inactive QLC V2 multimode fiber ATM port [15523].

LAN Emulation

1. Enabling and Disabling ELANs repeatedly via a script with a large number of ELANs and clients will cause a switch hang.
2. LAN Emulation must not be used over T1/E1 links.
3. Repeated creation/deletion of CBR point-to-multipoint branch VCs (PVCs or SVCs) causes a memory leak in the line card in which the branch VCIs exist. This will eventually necessitate a reboot of the switch. The manifestation of this problem is when a link carrying LANE clients goes up/down continually for a long period of time (more than 8 to 10 hours).

PVCs

1. “Master Cct Setup Error: VCI is already bound or reserved” errors may be seen when large number of PVCs between different cards in a switch are replayed from flash. These are harmless and will be cleaned up in the next release. The PVCs are set up properly despite the error messages.
2. When deleting a branch of a Point-to-Multipoint circuit, both the root and branch must be specified.

Network Configuration

To access the GIGAswitch/ATM switch from outside of its IP subnet, a default gateway address can be set using BOOTP via the “gw” field, as documented in the Installation and Service manual. However, if the switch’s IP address/netmask information is configured statically, i.e. using the OBM interface, the default gateway address must be set using the *setRoute(“0”,”gateway_address*”) command from the switch console. For example, if the default gateway is 192.20.0.1, use the command:

```
GIGAswitchATM> setRoute(“0”,”192.20.0.1”)
```

To delete the default gateway, use the following command:

```
GIGAswitchATM> clearRecordType(832)
```

Signaling

The switch does not correctly auto-sense the UNI version of an OpenVMS ATM end system that is connected to a QLC V2 line card [15892]. The workaround is to manually set the UNI version, using the *sig* command, from the switch console.

Some implementations of UNI 3.0 signaling reject calls that are sent with the Default DEC Address Prefix. This problem can be avoided by modifying the prefix using the *decnni* command or via OBM as shown below:

- Entering OBM
- Accessing OBM menu 6.1.4 (*Set/Show DEC Switch ID*)
- Showing the current ID using option 3 (*Show Configured DEC Switch ID*)
- Using option 1 (*Configure DEC Switch ID*), enter the new 6-byte ID substituting the first byte 08 with 00
- Accessing OBM menu 6 to save the new DEC Switch ID to Flash using option 4

SLIP

1. Rebooting the switch while the CMM is in SLIP mode causes the switch to reboot multiple times [794]. The workaround for this problem is:
   - During switch reboot, enter CMM local mode by entering a BREAK on a direct terminal connection or (~#) from tip
   - Put the CMM into console forwarding mode by typing Ctrl-O
   - Wait for the message “switch initialization complete”
   - Enter SLIP mode using the normal procedure
2. Attempting to “ping” the switch through the host/SLIP port while the switch is NOT in SLIP mode will cause the switch to reboot. To prevent this problem, ensure that the switch is in SLIP mode before attempting this operation [795].

SNMP

E1 ModPhy MIB objects dsx1CurrentDMs, dsx1IntervalDMs, and dsx1TotalDMs are not supported in this release. Displayed values will always be zero, regardless of the actual number of degraded minutes [5770].

Telnet

Invoking a telnet session to a switch that is already engaged by telnet or TIP, will cause the initial session to be locked out until the second session is terminated [3320].

User Interface

While using some OBM and CLI menu options, on a GIGAswitch/ATM 5-Slot Chassis, the switch will display 14 slot positions. Ignore slot positions greater than 5.

Anomalies

1. Internal error messages displayed during switch failures use a zero-based numbering scheme for both slot and port. Furthermore, the CMM module is not included, so slot 8 is reported as 6, slot 9 as 7, etc.