GIGAswitch/ATM Firmware Release 2.1.1
Release Notes

November 22, 1996

This document contains the release notes for Digital's GIGAswitch/ATM firmware Release 2.1.1. This release provides the following:

- CMM firmware version 1.82
- IP Switching Support
- New user interface command for configuring emulated LANs
- Support for modphy loop timing
- Bug fixes

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

GIGAswitch/ATM Firmware Release	QLC Kernel Version (ROM)	QLC Application Version (BIN)	CMM Firmware Version
2.1.1	354	356	1.82
2.0	300	300	1.80
1.4.5	205	205	1.74
1.3.1	102	102	1.62
1.2	16	22	1.59

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 1.81.

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).

How to Get a Copy of GIGAswitch/ATM Firmware

The Release 2.1.1 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 R2_1_1.tar R2_1_1.tar
ftp> bye
```

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

```
# tar -xvf R2_1_1.tar
```

This command creates a subdirectory within your current working directory named AN3V2_1_1. The following files are unpacked into the AN3V2_1_1 subdirectory:

```
AN3R211.CTL            (sample control file)
LC15R211.BIN           (DAGGL-AA/AB/CA/CB application image)
LC15R211.ROM           (DAGGL-AA/AB/CA/CB kernel image)
LC20R211.BIN           (DAGGL-BA application image)
LC20R211.ROM           (DAGGL-BA kernel image)
CMM1_82.X              (CMM firmware)
```

Where to obtain GIGAswitch/ATM Documentation

The documentation for GIGAswitch/ATM Release 2.1.1 has not changed since Release 2.0. GIGAswitch/ATM Release 2.0 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 2.0 Installation and Service Guide
qcv8c-te.ps	Release 2.0 GIGAswitch/ATM System Management Guide

Upgrading Firmware

GIGAswitch/ATM Release 2.0 introduced new hardware to the switch environment. To facilitate the loading of the hardware, the control file format has been modified. GIGAswitch/ATM Release 2.0, and later releases, now require a new control file format. For more detailed instructions on the Release 2.0 load procedure, see the *Upgrading the Firmware* section of the GIGAswitch/ATM Installation and Service manual

To upgrade the GIGAswitch/ATM to Release 2.1.1 perform the following:

1. Edit the existing control file to change the following information:

Line	Position	Field Description	Change to…
1	1-6	Application Firmware Version Number	000356
1	7	Force Flag	F
1	8	Startup Mode Flag	F
1	9	Boot ROM Load Flag	B
1	10-*n*	Application Image File Specification	LC20R211.BIN
2	1-*n*	Kernel Image File Specification	LC20R211.ROM

2. For compatibility with the new format of control file required in Release 2.0, and later, edit the control file to add the following information:

Line	Position	Field Description	Value to Set
3	1-5	Hardware Type	QLC15
3	6	Delimiter	*space*
3	7-n	Kernel Image File Specification	LC15R211.ROM
3	n+1	Delimiter	*space*
3	n+2	Application Image File Specification	LC15R211.BIN
4	1-5	Hardware Type	QLV2
4	6	Delimiter	*space*
4	7-n	Kernel Image File Specification	LC20R211.ROM
4	n+1	Delimiter	*space*
4	n+2	Application Image File Specification	LC20R211.BIN
5	1-5	Hardware Type	LC622
5	6	Delimiter	*space*
5	7-n	Kernel Image File Specification	LC15R211.ROM
5	n+1	Delimiter	*space*
5	n+2	Application Image File Specification	LC15R211.BIN

3. Skip this step if the switch is currently running Release 2.0, or later, of GIGAswitch/ATM firmware.

   If the switch is running a release prior to Release 2.0 of GIGAswitch/ATM firmware, perform an 'nvdataErase' from the switch console. The 'nvdataErase' is currently required due to a known problem, noted below. Note that the 'nvdataErase' command will erase the switch configuration that is stored in flash (i.e., PVCs, IP address, LANE configuration, static routes, etc…).

4. If the switch is currently running Release 2.0, or later, execute the *force_image_reload* command at the GIGAswitch/ATM prompt. When prompted to reboot, respond "*y*".

   If the switch is running a release prior to Release 2.0 of GIGAswitch/ATM firmware, reboot the switch..

5. At the end of the load sequence the message:

   flashApp_load: App bootrom version does not match executing bootrom version.
   Executing bootrom version: 000*xxx* App bootrom version: *xxx*.
   ERROR: in decompressing application image from flash

   will appear on the switch console. Reboot the switch to allow the switch to execute the new images.

6. **If you do not currently have, at least, CMM Version 1.59, upgrade to 1.59.**

7. Upgrade your clock firmware to CMM Version 1.82.

Configuration Recommendations

GIGAswitch/ATM configurations that include a 4 port modular line card (DAGGL-BA) should use the 4 port modular line card as the master.

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**.

For GIGAswitch/ATM configurations that have more than 5 line cards, it is recommended that the master 4 port modular line card have at least 8 MB of expansion memory (DAGCB-AA).

When using LAN Emulation over an E1 link, the BUS rate limit must be set to less than 500 kbps.

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.

Features Added in Release 2.1.1

CMM Firmware Version 1.82

GIGAswitch/ATM Release 2.1.1 introduces CMM firmware version 1.82. CMM version 1.82 provides the following:

1. Recognition of the 5-slot GIGAswitch/ATM switch
2. A fix for a problem where the switch would reset if the switch ethernet port was flooded with packets [3358].

Support for IP Switching

GIGAswitch/ATM Release 2.1.1 provides support for IP switching. Refer to the following documents for more specific information about Digital's GIGAswitch/IP solution:

1. GIGAswitch/IP Solution for ATM Installation and Configuration (EK-DAGGI-IG.A01)
2. GIGAswitch/IP Solution for ATM Products Reference Manual (EK-DAGGI-PR.A01)

An IP switch configuration requires the following hardware:

- GIGAswitch/ATM (DAGGA-CA or DAGWG-AA)
- 4 Port Modular Line Card (DAGGL-BA)
- GIGAswitch/IP Switch Controller (DAGIC-AA)
- IP Switch Gateway (DAGIG-AA) or an end system that supports IP switching protocols (IFMP)

GIGAswitch/ATM Release 2.1.1 requires IP Switch Controller and IP Switch Gateway firmware V1.1.2, or higher. For information on how to obtain the IP Switch firmware access Digital's Network Product Business WEB site at http://www.networks.digital.com.

<u>Configuring the GIGAswitch/ATM for IP Switching</u>

The GIGAswitch can be configured to support IP switching by using the *configure_ipswitch* command, from the switch console. The following example illustrates the configuration:

```
GIGAswitch/ATM-> configure_ipswitch
ERROR: Config Record read status 00000001          [note 1]
ERROR: Config Record size error 0                  [note 1]

===== Active IP Switch Configuration Information =====
Default VCI for IFMP:                     32
```

Slot Number, Link Number, VCI Number to IP Switch Controller:	3, 1, 32	
Rate in MBits/Sec for Multicast VCs:	20	
Minimum and Maximum VCIs Reserved on each Link for IP Switch:	32, 512	
IP Switching enabled on the following slots and ports:		
Change IP Switch Configuration <1: Yes, 2: No>?	1	
Default VCI for IFMP:	32	*[note 2]*
Slot #, Link #, VCI # to IP Switch Controller:	3, 1, 32	*[note 2]*
Rate in MBits/Sec for Multicast VCs:	20	
Min and Max VCIs for each Link for IPSwitch:	32, 512	*[note 2]*
Ports enabled on slot 3:	1 2 3 4	
New IP Switch Configuration		
Default VCI for IFMP:	32	
Slot Number, Link Number, VCI Number to IP Switch Controller	3, 1, 32	
Rate in MBits/Sec for Multicast VCs:	20	
Minimum and Maximum VCIs Reserved on each Link for IP Switch	32, 512	
IP Switching enabled on the following slots and ports		
Ports enabled on slot 3:	01, 02, 03, 04	
Save or discard new Configuration <1-Save, 2-Discard>?	1	
New IP SWITCH Configuration written to Flash		

Notes on Usage:

[note 1]: The message reported does not indicate an error. The message indicates that there is no IP switch configuration currently recorded in flash.

[note 2]: The switch must be configured to use VCI 32 for the *Default VCI for IFMP* and the *VCI #* to *IP Switch Controller.*

To delete the IP switch configuration use the *delete_configure_ipswitch* command, from the switch console. The following will appear when the delete_configure_ipswitch command is executed:

GIGAswitch/ATM-> delete_ipswitch_config
Deleting IP Switch Configuration from Flash .. done.
Reboot Switch to stop GSMP Communication.

Known Problems

VCI 15 is not supported as a VCI for the *Default VCI for IFMP* and the *VCI #* to *IP Switch Controller.* If the user enters VCI 15, the configure_ipswitch_command will not report an error. Instead, the GIGAswitch reports receive errors when it receives messages from the controller. If this scenario occurs the current workaround is to:

1. Disconnect the ATM fiber cable to the IP switch controller
2. Execute the delete_ipswitch_config command
3. Reboot the switch
4. Execute the configure_ipswitch command to correctly configure the GIGAswitch.

Configuring Emulated LANs

The *elanall* command is used to create and configure emulated LANs (ELANs). The command is an easy and convenient way to create an ELAN, LES, BUS and link them together. The command must be executed at the switch console.

Command Syntax:

elanall ***number*** ***[{unique option | option list}]***

unique options:

-e	Enable ELAN and associated LES and BUS
-d	Disable ELAN and associated LES and BUS
-x	Delete ELAN and associated LES and BUS from memory and nonvolatile storage
-s	Show ELAN summary information
+nv	Store ELAN, LES and BUS information to nonvolatile storage

option list:

+y *type*	Sets the ELAN type for the associated ELAN, LES and BUS *type* values: 8023 - Ethernet/IEEE 802.3 8025 - IEEE 802.5
+f *size*	Sets the maximum ELAN frame size for the associated ELAN, LES, and BUS *size* values: 1516 4544 9234 18190
+/- n *string*	Sets(+) or clears (-) the ELAN name of the associated ELAN, LES, and BUS *string* can be up to 32 characters and must be in SNMP v2 DisplayString format
+/- des *string*	Sets(+) or clears (-) the ELAN description of the associated ELAN, LES, and BUS *string* can be up to 32 characters and must be in SNMP v2 DisplayString format

Notes on Usage:

The *elanall number* command, with no other parameters, will create an emulated LAN (ELAN, LES, and BUS) with the index given by the number parameter. All emulated LAN attributes are defaulted to the values determined in the LAN Emulation Over ATM Specification.

An error will be displayed if an emulated LAN, with the given index number, already exists.

If you choose to specify a unique option, you must specify only one option per command.

You may specify more than one option, from the option list, in a single command. The options must be separated by spaces.

You cannot combine a unique option, with an option from the option list, in a single command.

All actions issued with the elanall command affect the indicated ELAN and the associated LES and BUS.

Support for Modphy Loop Timing

GIGAswitch/ATM Release 2.1.1, in conjunction with the new 4 port modular line card (DAGGL-BA) announced in Release 2.0, supports the selection of the transmit timebase. SNMP already supports read-write access of the transmit timebase for DS3, E3, and E1. OBM now supports read-write access to the transmit timebase for all interfaces. The selection of the transmit timebase can be accessed via OBM menu 3.8 (*Modify Transmit Clock Generation Source*).

<u>ModPhy Types Supported</u>:

E1 UTP/ScTP	DAGGE1-AA
E3 Coax	DAGGE-AA
DS3/T3 Coax	DAGGT-AA
155 Mbps UTP/ScTP	DAGGU-AA
OC-3 - MMF	DAGGM-AA

<u>Transmit Timebase Selection and Non-Volatile Parameter Storage</u>

Transmit timing sources are established on a per-link basis. Each physical link can be configured to derive its transmit timing from either a local oscillator or the recovered receive clock. Local timing specifies that the transmit timing is derived from the local oscillator. Loop timing specifies that the transmit timing is derived from the recovered receive clock.

<u>System Behavior at Switch Reboot and Across ModPhy Hot Swap</u>

When the switch is rebooted, the non-volatile record(s) for each populated link are examined. If a record is found, for the phy type detected, the stored setting is used. If a record is not found, local timing is used. This implies that if a phy type is changed while the switch is powered down, switch initialization will not necessarily yield the default setting.

The same sequence of actions will occur if a link is unpopulated at switch power up, but later populated.

When modphy hot-swap yields a phy type change, the new link is initialized with the default setting, local timing. When modphy hot-swap does <u>not</u> result in a phy type change, the link is re-initialized per its last known setting (if such is not over-ridden by an error condition, as described below). Note, that hot-swap does ***not*** trigger a non-volatile record update. So, a subsequent switch reboot may, by virtue of a previously stored record for that link and type, change the timing setting.

<u>Effect of Link Errors on Transmit Timebase Setting</u>

Two error conditions, loss of signal and loss of frame, will force a loop-timed link to revert to local timing. Subsequent clearing of the error condition will force such a link back to loop timing. Neither of these forced transitions will cause a non-volatile record update.

Problems Fixed in Release 2.1.1

Diagnostics

1. Manufacturing mode diagnostics will report the wrong failing line on a slave QLC [13429].

LAN Emulation

1. In multiswitch LANE configurations the switch does not correctly failover to a redundant NNI link when a link error occurs [5990].

2. Moving a DECswitch 400 from one port to another may cause the GIGAswitch/ATM to reboot [6297].
3. In multiswitch LANE configurations remote clients may not rejoin the emulated LAN if the switch that contains the LANE services is rebooted [3319].
4. LAN emulation clients, using ATMworks 350L and ATMworks 950L drivers, configured to run UNI 3.0 will not join an emulated LAN in a multiswitch environment [13909].

NVData

2. The ‘download_nvdata’ command does not correctly restore PVCs [13934].

Out of Band Management (OBM)

1. While setting the SNMP Read-Write, Read-Only, and Trap Community Name parameters, via OBM menus 4.1 through 4.3, OBM accepts ‘n’ or ‘N’ as a negative response but incorrectly accepts any other value as a positive response [1738].
2. When viewing SUNI error counters per port, via OBM menu 1(*Management Parameter Selection*), the counters may display a negative value [13833].
3. OBM accepts a maximum of 20 characters for the SNMP Read-Write, Read-Only, and Trap Community Name parameters. The correct maximum number of characters should be 33, as specified in the OBM prompt. [1568].

PVCs

1. When setting PVCs between 622 and non-622 linecards the ‘pvc -a’ command will display odd values (port and VCI numbers). The values are correctly set on the switch but are not displayed correctly. If the PVCs are stored in flash, after the next reboot the ‘pvc -a’ command will display the correct values [6542].
2. When viewing point-to-multipoint ABR PVCs the ‘pvc -a’ command, will incorrectly display blank lines [6667].

Signaling

Setting the UNI version on slot 1 port 1, via the "uni -ver" command, causes the phy LED to turn amber and the UNI version is not set [13321].

Known Problems in Release 2.1.1

Downgrading the Switch Firmware

After downgrading the switch to any release prior to Release 2.0 of the GIGAswitch/ATM firmware, the user MUST perform an 'nvdataErase' from the switch console [2809].

MultiChassis Manager

1. 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.
2. When attempting to disable an ATM port, on a QLC V2 linecard, MultiChassis Manager will indicate that the port is enabled when it is actually disabled [15667].
3. MultiChassis Manager displays bogus adpReceiveBuffer information for an inactive QLC V2 multimode fiber ATM port [15523].

Out-of-Band Management (OBM)

1. OBM will hang if you abort the session, using ‘ctrl-c’, when attempting to configure a static route via OBM menu 6.1.2 (*Set/Show Static Routes*) [6123].
2. When configuring a static route via OBM, the user is allowed to incorrectly specify an unoccupied slot [13677].

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:

```
GIGAswitch/ATM-> setRoute(“0”,”192.20.0.1”)
```

To delete the default gateway, use the following command:

```
GIGAswitch/ATM-> clearRecordType(832)
```

PVCs

When deleting a branch of a point-to-multipoint circuit, both the root and branch must be specified.

Signaling

1. 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 *uni* command, from the switch console.
2. Some implementations of UNI 3.0 signaling reject calls that are sent with the Default DEC Address Prefix. This problem can be avoided by:
   – 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 various console commands and OBM menu options, on a GIGAswitch/ATM 5-Slot Chassis, the switch will display 14 slot positions. Ignore slot positions greater than 5.

Anomalies

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.