



Alteon OS[™]

Release Notes

Nortel Layer 2/3 GbE Switch Module for IBM BladeCenter[®]

Version 1.5

Part Number: BMD00032, April 2008

BLADE
N E T W O R K
T E C H N O L O G I E S

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Release Notes

The Layer 2/3 GbE Switch Module is one of up to four GbE Switch Modules that can be installed in the IBM BladeCenter chassis.

These release notes provide the latest information regarding Alteon OS version 1.5 for the Nortel Layer 2/3 GbE Switch Module for IBM BladeCenter. This supplement modifies information found in the complete documentation:

- *Alteon OS Application Guide* for the Nortel Layer 2/3 GbESM for IBM BladeCenter
- *Alteon OS Command Reference* for the Nortel Layer 2/3 GbESM for IBM BladeCenter
- *Alteon OS ISCLI Reference* for the Nortel Layer 2/3 GbESM for IBM BladeCenter
- *Alteon OS Browser-Based Interface Quick Guide* for the Nortel Layer 2/3 GbESM for IBM BladeCenter
- *Installation Guide* for the Nortel Layer 2/3 GbESM for IBM BladeCenter

The publications listed above are available from the IBM support website:

<http://www.ibm.com/support>

Please keep these release notes with your product manuals.

Hardware support

This Alteon OS version 1.5 software is only supported on the IBM BladeCenter's Layer 2/3 GbE Switch Module hardware (see Figure 1). The GbE Switch Module (GbESM) is a high performance Layer 2/3 embedded network switch. The GbESM supports six Gigabit Ethernet External copper or fiber ports, 14 Gigabit Ethernet internal ports and two Fast Ethernet Management ports. The GbESM also features tight integration with IBM BladeCenter's management module.

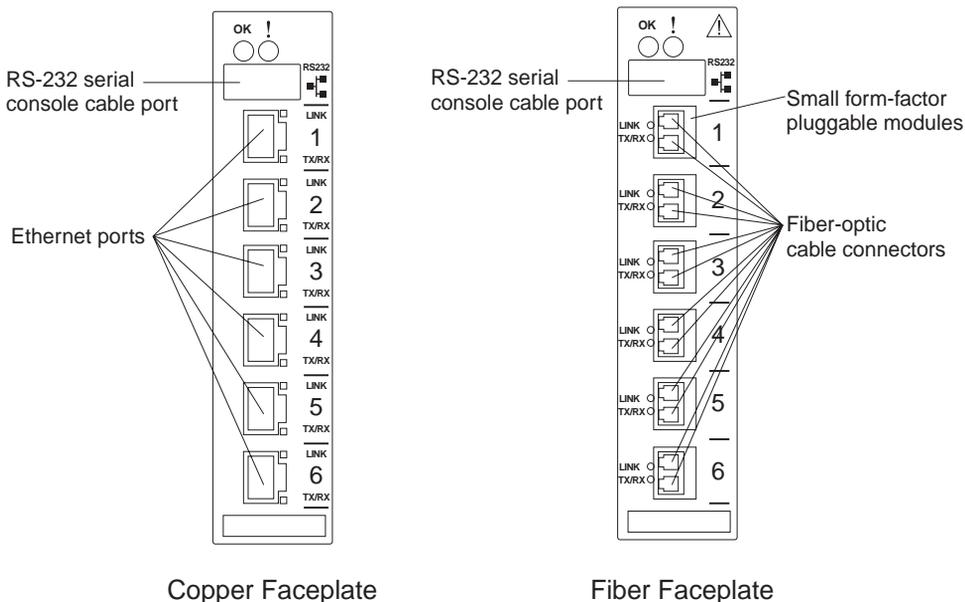


Figure 1 GbE Switch Module faceplate

Software Update Procedure

The switch software image is the executable code running on the GbE Switch Module. A version of the image ships with the switch, and comes pre-installed on the device. As new versions of the image are released, you can upgrade the software running on your switch. To get the latest version of software available for your GbE Switch Module, go to:

<http://www.ibm.com/support>

Click on **software updates**. Use the following command to determine the current software version: `/boot/cur`

The typical upgrade process for the software image consists of the following steps:

- Place the new image onto a FTP or TFTP server on your network, or on a local computer.
- Transfer the new image to your switch.
- Select the new software image to load the next time the switch is reset.

Downloading New Software to the GbE Switch Module

The GbE Switch Module (GbESM) can store up to two different Operating System (OS) software images, called `image1` and `image2`, as well as boot software, called `boot`. When you download new software, you must specify where it should be placed: either into `image1`, `image2`, or `boot`.

For example, if your active OS image is currently loaded into `image1`, you would probably load the new image software into `image2`. This lets you test the new software and reload the original active image (stored in `image1`), if needed.

To download a new software to your switch, you will need the following:

- The image or boot software loaded on a FTP or TFTP server on your network
- The hostname or IP address of the FTP or TFTP server
- The name of the new software image or boot file

NOTE – The DNS parameters must be configured if specifying hostnames.

Image names:

- Image file: `GbESM-AOS-1.5.1.0_OS.img`
- Boot file: `GbESM-AOS-1.5.1.0_Boot.img`

When the above requirements are met, use the following procedure to download the new software to your switch.

NOTE – When performing this update, make sure you download the new boot file and the new image file.

Using the AOS CLI:

1. **At the Boot Options# prompt, enter:**

```
Boot Options# gting
```

2. **Enter the name of the switch software to be replaced:**

```
Enter name of switch software image to be replaced
["image1"/"image2"/"boot"]: <image>
```

3. **Enter the hostname or IP address of the FTP or TFTP server.**

```
Enter hostname or IP address of FTP/TFTP server: <name or IP address>
```

4. **Enter the name of the new software file on the server.**

```
Enter name of file on FTP/TFTP server: <filename>
```

The exact form of the name will vary by server. However, the file location is normally relative to the FTP or TFTP directory (usually /tftpboot).

5. **Enter your username for the server, if applicable.**

```
Enter username for FTP server or hit return for TFTP server: <user-
name> or <Enter>
```

6. **The system prompts you to confirm your request.**

Use the following procedure to select which OS software image (image1 or image2) you want to run in switch memory for the next reboot.

7. **At the Boot Options# prompt, enter:**

```
Boot Options# image
```

8. **Enter the name of the image you want the switch to use upon the next boot.**

The system informs you of which image is currently set to be loaded at the next reset, and prompts you to enter a new choice:

```
Currently set to use switch software "image1" on next reset.
Specify new image to use on next reset ["image1"/"image2"]:
```

Using the ISCLI:

1. **In Privileged EXEC mode, enter the following command:**

```
Router# copy tftp {<image1|image2|boot-image>}
```

or

```
Router# copy ftp {<image1|image2|boot-image>}
```

2. **Enter the hostname or IP address of the FTP or TFTP server.**

```
Address or name of remote host: <name or IP address>
```

3. **Enter the name of the new software file on the server.**

```
Source file name: <filename>
```

The exact form of the name will vary by server. However, the file location is normally relative to the FTP or TFTP directory (usually `tftpboot`).

4. **Enter your username and password for the server, if applicable.**

```
User name: <username>|<Enter>
```

5. **The system prompts you to confirm your request.**

After loading software to the switch, select a software image to run, as described below.

Use the following procedure to select which OS software image (`image1` or `image2`) you want to run in switch memory for the next reboot.

6. **In Global Configuration mode, enter:**

```
Router(config)# boot image {image1|image2}
```

7. **Enter the name of the image you want the switch to use upon the next boot.**

The system informs you of which image set to be loaded at the next reset:

```
Next boot will use switch software image1 instead of image2.
```

Using the BBI:

You can use the Browser-Based Interface to load software onto the GbESM. The software image to load can reside in one of the following locations:

- FTP server
- TFTP server
- Local computer

After you log onto the BBI, perform the following steps to load a software image:

1. **Click the Configure context tab in the toolbar.**
2. **In the Navigation Window, select System > Config/Image Control.**

The Switch Image and Configuration Management page appears.

Switch Image and Configuration Management	
Image 1 Version	version 1.5.0, downloaded 16:51:09 Sun Jan 8, 2008
Image 2 Version	version 1.4.1, downloaded 14:08:11 Fri Jan 6, 2008
Boot Version	version 1.5.0
Active Image Version	1.5.0
Next Boot Image Selection	image 1 ▾
Active Configuration Block	active config
Next Boot Configuration Block Selection	active config ▾
Next CLI Boot Mode Selection	AOS CLI ▾
Prompt for selectable boot mode	DISABLE ▾
<u>FTP/TFTP Settings</u>	
Hostname or IP Address of FTP/TFTP server	100.10.20.1
Username for FTP Server or Blank for TFTP Server	
Password for FTP Server	
<u>Image Settings</u>	
Image for Transfer	image 1 ▾
Image Filename (on server)	1.5.0_OS.img <input type="button" value="Get Image"/> <input type="button" value="Put Image"/>
Image Filename (on HTTP Client)	<input type="button" value="Browse..."/> <input type="button" value="Download via Browser"/>

3. **If you are loading software from your computer (HTTP client), go to step 4. If you are loading software from a FTP/TFTP server, enter the server's information in the FTP/TFTP Settings section.**
4. **In the Image Settings section, select the image version you want to replace (Image for Transfer).**
 - **If you are loading software from a FTP/TFTP server, enter the file name and click Get Image.**
 - **If you are loading software from your computer, click Browse. In the File Upload Dialog, select the file and click OK. Click Download via Browser.**

Once the image has loaded, the page refreshes to show the new software.

New Software features

The list of features below briefly summarizes the new functionality of the GbE Switch Module (GbESM). For more detailed information about GbESM's features and capabilities, please refer to the Alteon OS version 1.5 *Application Guide* for the Nortel Layer 2/3 GbE Switch Module for IBM BladeCenter.

ECMP Static Routes

Equal-Cost Multi-Path (ECMP) is a forwarding mechanism that routes packets along multiple paths of equal cost. ECMP provides equally-distributed link load sharing across the paths. The hashing algorithm used is based on the source IP address (SIP).

ECMP routes allow the switch to choose between several next hops toward a given destination.

The switch performs periodic health checks (ping) on each ECMP gateway. If a gateway fails, it is removed from the routing table, and an SNMP trap is sent.

BGP integration

When a dynamic route is added through Border Gateway Protocol (BGP), the switch checks the route's gateway against the ECMP static routes. If the gateway matches one of the single or ECMP static route destinations, then the BGP route is added to the list of ECMP static routes. Traffic is load-balanced across all of the available gateways.

When the BGP dynamic route times out, it is deleted from the list of ECMP static routes.

Configuring ECMP static routes

To configure ECMP static routes, add the same route multiple times, each with the same destination IP address, but with a different gateway IP address. These routes become ECMP routes.

```
>> Main# cfg/l3/route/add 10.10.1.1
Enter destination subnet mask: 255.255.255.255
Enter gateway IP address: 10.100.1.1
Enter interface number: (1-128) 1
>> IP Static Route# add 10.10.1.1
Enter destination subnet mask: 255.255.255.255
Enter gateway IP address: 10.200.2.2
Enter interface number: (1-128) 1
```

You may add up to five (5) gateways for each static route.

The following command now display the current IP static route and any dynamically created BGP ECMP routes:

```
/info/13/ecmp
```

Current ecmp static routes:				
Destination	Mask	Gateway	If	GW Status
10.10.1.1	255.255.255.255	10.100.1.1	1	up
		10.200.2.2	1	down
10.20.2.2	255.255.255.255	10.233.3.3	1	up
10.20.2.2	255.255.255.255	10.234.4.4	1	up
10.20.2.2	255.255.255.255	10.235.5.5	1	up

Supplemental Information

This section provides additional information about configuring and operating the GbE Switch Module and Alteon OS version 1.5.

Management Module

- The “Fast POST=Disabled/Enabled” inside the IBM management module Web interface “I/O Module Admin Power/Restart” does not apply to the GbE Switch Module.
Solution: To boot with Fast or Extended POST, go to the “I/O Module Admin Power/Restart” window. Select the GbE Switch Module, and then choose “Restart Module and Run Standard Diagnostics” or “Restart Module and Run Extended Diagnostics.”
- The following table correlates the Firmware Type listed in the IBM management module’s Web interface “Firmware VPD” window to the GbE Switch Module software version:

Table 1 Firmware Type list

Firmware Type	Description
Boot ROM	GbE Switch Boot code version
Main Application 1	Active image GbE Switch Alteon OS version
Main Application 2	Backup image GbE Switch Alteon OS version

- Within the IBM management module Web interface, the Java applets of “Start Telnet Session” and “Start Web Session” do not support changing of default known ports 23 and 80 respectively.
Solution: If the Telnet or HTTP port on the GbE Switch Module is changed to something other than the default port number, the user must use a separate Telnet client or Web browser that supports specifying a non-default port to start a session to the GbE Switch Module user interface.

Management Module-GbE Switch Module Connectivity

Currently, the IBM management module is designed to provide one-way control of the GbE Switch Module. As a result, the GbE Switch Module may lose connectivity to the management module via the management port under the following conditions:

- If new IP attributes are pushed from the management module to the GbE Switch Module while the IP Routing table is full with 2048 entries, the new attributes will not be applied.

Solution: Enable “External Management over all ports,” connect to the switch using other interface and then clear the routing table. Then push the IP address from the management module. If this does not work, use Solution 2 below.

- If you execute the `/boot/reset` CLI command on the GbE Switch Module or the GbE Switch Module resets itself, the management module might not push the IP attributes to the switch, and connectivity may be lost.

Solution 1: If you should experience any connectivity issues between the switch module and the management module, go to the *I/O Module Management* window on the management module’s Web interface. Under the *New Static IP Configuration* section, click **Save** to trigger the management module to push the stored IP attributes to the switch module.

Solution 2: If Solution 1 does not resolve your connectivity issue, then go to the *I/O Module Power/Restart* window on the management module’s Web interface. Restart the switch module in question.

Solution 3: If this still does not resolve the issue, enable *Preserve new IP configuration on all resets* setting on the management module and restart the switch module via the *I/O Module Power/Restart* window on the management module’s Web interface.

NOTE – As a rule, always use the management module Web interface to change the GbE Switch Module management IP attributes (IP address, mask and gateway), and then click **Save** to push the IP attributes to the switch module. Use of the command-line interface to change the switch module management IP attributes may result in duplicated IP Interface 128 entries in the GbE Switch route table and/or loss of connectivity via the management module.

Secure Management Network

The following GbE Switch Module attributes are reserved to provide secure management access to and from the IBM management module:

- VLAN 4095
- IP Interface 128
- Gateway 132
- MGT1 (Port 15)
- MGT2 (Port 16)
- STG 128

For more information about remotely managing the GbE Switch Module through the external ports, see “Accessing the Switch” in the Alteon OS , Version 1.5 *Application Guide*.

NOTE – The external uplink ports (EXT1-EXT6) cannot be members of the management VLAN (4095).

Secure Shell (SSH)

Because SSH key generation is CPU intensive, the GbE Switch Module attempts to avoid unnecessary key generation. The process generates three server keys:

1. One key is generated to replace the current server key, if used.
2. A second key is generated as a spare, in case the current server key is used and the specified interval expires.
3. A third key is generated for use at the next reboot.

Therefore, if you never login via SSH, you will only see two key generation events. You may see all three events directly following a reboot. If you want to witness the key generation after the specified interval has expired, then you must login via SSH at least once during each expiration interval.

Port Mirroring

The GbESM Port Mirroring feature may behave differently than you expect. For detailed information, refer to “Troubleshooting” in the Alteon OS , Version 1.5 *Application Guide*.

Trunk Group Configuration Tips

Please be aware of the following information when you configure trunk groups:

- Always configure trunk groups first on both ends, before you physically connect the links.
- Configure all ports in a trunk group to the same speed. You cannot aggregate 10/100Base-TX or 100Base-FX module ports with gigabit ports.

Spanning Tree Configuration Tips

To ensure proper operation with switches that use Cisco Per VLAN Spanning Tree (PVST+), you must do one of the following:

- Create a separate Spanning Tree Group for each VLAN.
- Manually add all associated VLANs into a single Spanning Tree Group.

When using Layer 2 Trunk Failover, disable Spanning Tree Protocol on external ports (EXT1-EXT6).

Syslog Configuration Tip

The *facility* parameter traditionally is used to correlate services (e.g. IP, CLI, etc.) to messages. This is done to distinguish between the different services that are running in the network/device. However, for the GbE Switch Module, there is a single configured facility value (0-7) used on all messages. By configuring a unique facility value for each switch, a single SYSLOG server can distinguish between the various GbESMs in the network. Refer to "System Host Log Configuration" in the Alteon OS , version 1.5 *Command Reference*.

IP Forwarding with MSTP

You can enable IP forwarding globally (`/cfg/13/frwd on`), and MSTP globally (`/cfg/12/MSTP on`). With IP forwarding enabled, each port can have only one Spanning Tree instance configured and turned on. The software blocks attempts to configure and turn on more than one Spanning Tree per port.

Internal Port Autonegotiation

The default port settings for the internal ports has been changed to auto-negotiation. This setting provides better integration with the default settings of device drivers for the server blades. If you have configured a Linux server with hard-coded settings, you must change to the default value of auto-negotiation, because if auto-negotiation is attempted when the port is hard coded, the link does not come up. This is not an issue with Microsoft Windows, because the driver ignores the auto-negotiation and the GbESM fails back to hard-coded settings of 1000 Mbps/ Full Duplex/Rx & Tx Flow Control enabled.

FTP/TFTP directory path using forward slash

When you use the CLI to perform a FTP/TFTP file transfer, you cannot use a forward slash (/) in the directory path, unless it is preceded by a back slash (\). This issue occurs only when a full command is issued on one line.

Invalid example:

```
/boot/gtimg 1 10.10.10.2 image_directory/filename
```

Valid example:

```
/boot/gtimg 1 10.10.10.2 image_directory\filename
```

Downgrading firmware on new switch modules

Newer GbESMs contain a new flash module that is not compatible with some older firmware versions.

Release 1.5 is compatible with both the old flash module and the new flash module. Switches that contain the new flash module might experience problems downgrading from 1.5 to a previous software release. If you receive an error message when attempting to downgrade firmware, obtain the equivalent firmware version, as follows:

- Version 1.3.3.0 is equivalent to version 1.3.20
- Version 1.2.10.0 is equivalent to version 1.2.5.1

QLogic with iSCSI

If you experience problems using QLogic with iSCSI, turn off autonegotiation on internal ports:

```
/cfg/port x/gig auto off
```

Known issues

This section describes known issues for the GbE Switch Module and Alteon OS.

Interoperability with Older Hubs

The command-line interface might display **link up** and **link down** messages continuously for an external port that is connected to certain older hub models configured for 100 Mbps half-duplex. The display might show **link up** erroneously. This behavior has been observed when connecting the GbE Switch Module with the following devices:

- NetGear FE104 100 hub
- SBS 1000Base-T NIC
- 3Com Linkbuilder FMS100 Hub 3C250 TX/I
- 3Com SuperStack II 100TX 3C250C-TX-24/12
- Nortel Baystack 204 Hub

If the GbE Switch Module is connected to an Alteon Application Switch which requires a link speed of 100 Mbps half-duplex, then enable auto negotiation on the GbE Switch Module port with port speed=any, mode=any, fctl=both, and auto=on.

ACL Filters

The ACL filters for TCP/UDP work properly only on packets that do not have IP options.

QoS Metering

Traffic may exceed the configured maximum burst size of the ACL meter (`/cfg/port x/aclqos/meter/mbsize`) by one packet, with that packet remaining In-Profile. Once the ACL meter has been exceeded, additional burst packets fall Out-of-Profile.

QoS Scheduling

The observed scheduling weight used by the highest Class Of Service queue might not match the configured value entered in the `/cfg/qos/8021p/weight` command. The highest-weighted COS queue is not serviced according to its configured value if that value is two or greater than the value configured for the second-highest weighted COS queue. In Example 1 below, the highest weighted COS queue has an observed weight that is one more than the second-highest COS queue. In Example 2 below, the highest-weighted COS queue has an observable weight equal to the second-highest COS queue.

Example 1: The highest-weighted COS queue has a higher priority COS than the second highest-weighted COS queue:

```
COSq 0 = 1
COSq 1 = 2
COSq 2 = 3
COSq 3 = 4
COSq 4 = 4
COSq 5 = 4
COSq 6 = 5
COSq 7 = 9
```

In this example, COS queue 7 is serviced with a weight of 6, based on the weight of COS queue 6, plus one. All other COS queues are serviced with their configured weights.

Example 2: The highest-weighted COS queue has a lower-priority COS than the second highest-weighted COS queue:

```
COSq 0 = 1
COSq 1 = 1
COSq 2 = 1
COSq 3 = 1
COSq 4 = 1
COSq 5 = 1
COSq 6 = 7
COSq 7 = 2
```

In this example, COS queue 6 is serviced with a weight of 2, which is equal to the value COS queue 7. All other COS queues are serviced with their configured weights.

NOTE – COS queues configured with a value of zero (strict priority) are not affected by this limitation.

QoS and Trunking

When you assign an ACL (or ACL Group) to one port in a trunk, Alteon OS does not automatically assign the ACL to other ports in the trunk, and it does not prompt you to assign the ACL to other ports in the trunk.

Solution: Manually assign each ACL or ACL Group to all ports in a trunk.

RADIUS with SSHv2

With RADIUS turned on, users might see a duplicate login prompt for SSHv2 clients, if the RADIUS server is too slow to respond or if the RADIUS server is not available. In this case, users must re-type the username and password to login.

RIP MIBs

Due to backward-compatibility issues, two Routing Information Protocol (RIP) MIBs are available in Alteon OS : `ripCfg` and `rip2Cfg`. Use the `rip2Cfg` MIB to configure RIPv1 and RIPv2 through SNMP.

Alteon OS does not support the standard RIPv2 MIB, as described in RFC 1724. Use the `rip2Cfg` MIB to configure RIPv1 and RIPv2 through SNMP.

Trunk and Link Loop

When you create a trunk or link loop between the GbESM and another switch, packets might loop infinitely at line rate within the related links. When this problem occurs, the GbESM continuously displays the following messages at the console:

```
WARNING: packet_sent u: 0, dv_active: tx ring full
packet_sent dcnt=114, public1=110, vcnt=1025
```

Solution: Remove the loop to resolve this misconfiguration.

Trunk Traffic

Multicast, broadcast and DLF (Destination Lookup Failed, which are unknown destination MAC packets) traffic is sent to the lowest numbered port in the trunk. If this port is down, then the traffic is sent to the next lowest-numbered port. If the port that was down comes up again, the traffic is not re-hashed back to the recovered port.

BBI software download

Some versions of Microsoft Internet Explorer version 6.x do not perform HTTP download efficiently. If you have one of these versions, HTTP software download might take much longer than expected (up to several minutes).

Blade Network Technologies recommends the Firefox browser for BBI use.

Strong Password expiration

If you configure a Strong Password with automatic expiration, the password might not expire if the system date and time is not configured first. Use of a Network Time Protocol (NTP) server resolves this issue.

Solution: When you configure a strong password with automatic expiration, first configure the system time and date for the switch.

ISCLI delay during VLAN creation

When you use the ISCLI to configure VLANs, the process can take a long time (up to three hours for 1024 VLANs).