BLADE OS™

Release Notes

BNT Layer 2-7 GbE Switch Module for IBM BladeCenter®

Version 21.0.8

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Release Notes

The Layer 2-7 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 BLADE OS version 21.0.8 for the BNT Layer 2-7 GbE Switch Module for IBM BladeCenter. This supplement modifies information found in the complete documentation:

- BLADE OS *Application Guide* for the BNT Layer 2-7 GbESM for IBM BladeCenter
- BLADE OS *Command Reference* for the BNT Layer 2-7 GbESM for IBM BladeCenter
- BLADE OS *Browser-Based Interface Quick Guide* for the BNT Layer 2-7 GbESM for IBM BladeCenter
- *Installation Guide* for the BNT Layer 2-7 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 BLADE OS version 21.0.8 software is only supported on the IBM BladeCenter's Layer 2-7 GbE Switch Module hardware (see Figure 1). The GbE Switch Module (GbESM) is a high performance Layer 2-7 embedded network switch. The GbESM supports four Gigabit Ethernet External copper ports, 14 Gigabit Ethernet internal ports and two Fast Ethernet Management ports. The GbESM also features tight integration with IBM BladeCenter's management module.

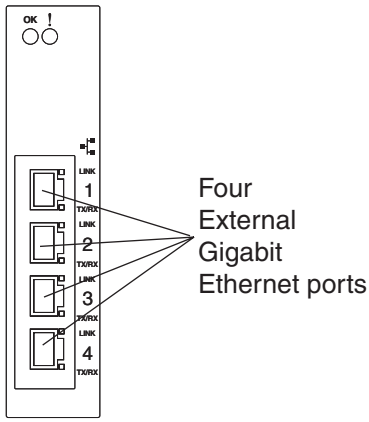


Figure 1 GbE Switch Module faceplate

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 `/boot/cur` command to determine the current software version.

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 be loaded into switch memory 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-21.0.8.2_OS.img`
- Boot file: `GbESM-21.0.8.3_Boot.img`

Use the following procedure to download the new software to your switch.

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

Using the BLADE OS CLI:

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

```
Boot Options# gtimg
```

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 BBI:

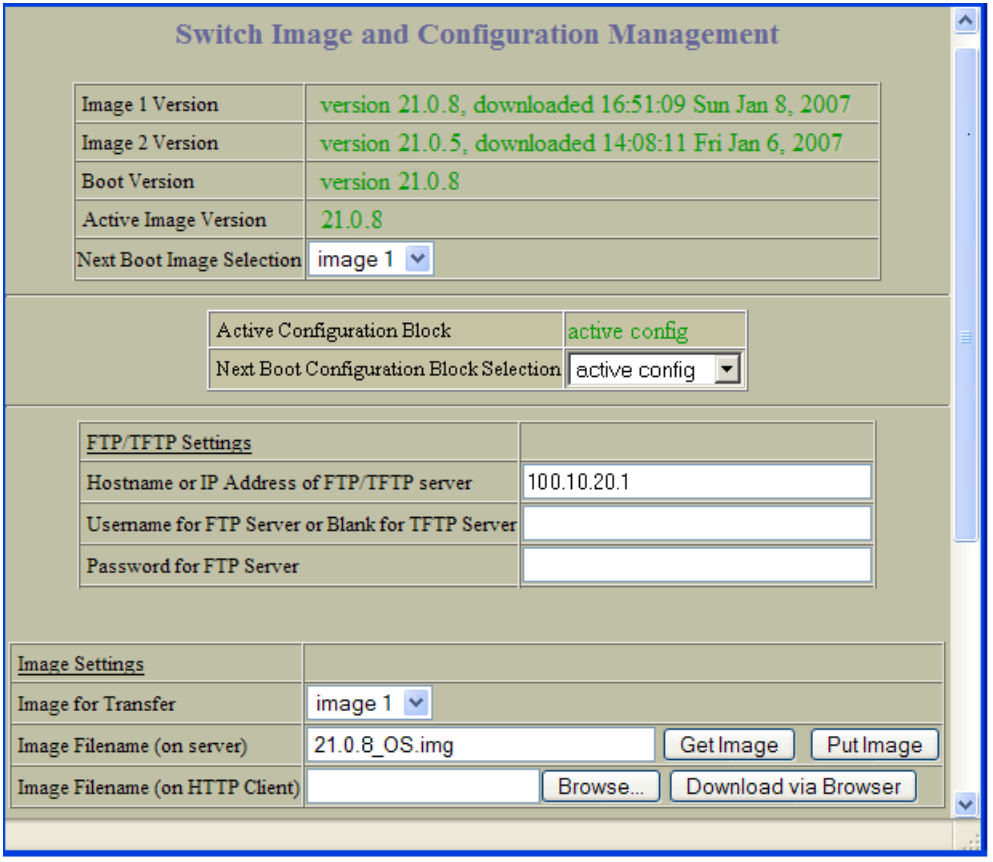
You can use the Browser-Based Interface to load software onto the GbESM. The software image to load can reside in one of the following locations:

- 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 BLADE OS toolbar.**
2. **In the Navigation Window, select** System > Config/Image Control**.**

   The Switch Image and Configuration Management page appears.



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 BNT Layer 2-7 GbE Switch Module for IBM BladeCenter *Application Guide*.

Enhancements

The following enhancements are available with BLADE OS version 21.0.8 for the BNT Layer 2-7 GbESM.

BC-S chassis support

BLADE OS version 21.0.8 supports the BladeCenter BC-S chassis. When the GbESM is installed in the BC-S chassis, the following information displays reflect the BC-S port mapping:

- Port link information (`/info/link`) for switches installed in bay 1 and bay 2:

```
Alias   Port   Speed    Duplex     Flow Ctrl      Link
----   -----   -----   --------  --TX-----RX--   ------
 INT1A   1      1000     full     yes    yes       up
 INT1B   2      1000     full     yes    yes       up
 INT2A   3      1000     full     yes    yes       up
 INT2B   4      1000     full     yes    yes       up
 INT3A   5      1000     full     yes    yes      down
 INT3B   6      1000     full     yes    yes       up
 INT4A   7      1000     full     yes    yes       up
 INT4B   8      1000     full     yes    yes       up
 INT5A   9      1000     full     yes    yes       up
 INT5B  10      1000     full     yes    yes       up
 INT6A  11      1000     full     yes    yes       up
 INT6B  12      1000     full     yes    yes       up
 SMGT1  13      1000     full     yes    yes       up
 SMGT2  14      1000     full     yes    yes       up
 MGT1   15       100     full     yes    yes       up
 MGT2   16       100     full     yes    yes       up
 EXT1   17      1000      any     yes    yes       up
 EXT2   18      1000      any     yes    yes       up
 EXT3   19      1000      any     yes    yes       up
 EXT4   20      1000      any     yes    yes       up
```

- Port link information (`/info/link`) for switches installed in bay 3 and bay 4:

```
Alias   Port   Speed    Duplex     Flow Ctrl      Link
----   -----   -----   --------  --TX-----RX--   ------

 INT1    1      1000     full     yes    yes       up
 INT2    2      1000     full     yes    yes       up
 INT3    3      1000     full     yes    yes      down
 INT4    4      1000     full     yes    yes       up
 INT5    5      1000     full     yes    yes       up
 INT6    6      1000     full     yes    yes       up
 MGT1   15       100     full     yes    yes       up
 MGT2   16       100     full     yes    yes       up
 EXT1   17      1000      any     yes    yes       up
 EXT2   18      1000      any     yes    yes       up
 EXT3   19      1000      any     yes    yes       up
 EXT4   20      1000      any     yes    yes       up
```

- Port information (`/info/port`) for switches installed in bay 1 and bay 2:

```
Alias Port Tag Fast Lrn Fld PVID      NAME                 VLAN(s)
----- ---- --- ---- --- --- ---- -------------- --------------------
INT1A   1   y   n    e   e     1 INT1A          1 4095
INT1B   2   y   n    e   e     1 INT1B          1 4095
INT2A   3   y   n    e   e     1 INT2A          1 4095
INT2B   4   y   n    e   e     1 INT2B          1 4095
INT3A   5   y   n    e   e     1 INT3A          1 4095
INT3B   6   y   n    e   e     1 INT3B          1 4095
INT4A   7   y   n    e   e     1 INT4A          1 4095
INT4B   8   y   n    e   e     1 INT4B          1 4095
INT5A   9   y   n    e   e     1 INT5A          1 4095
INT5B  10   y   n    e   e     1 INT5B          1 4095
INT6A  11   y   n    e   e     1 INT6A          1 4095
INT6B  12   y   n    e   e     1 INT6B          1 4095
SMGT1  13   y   n    e   e  4095*INT13          4095
SMGT2  14   y   n    e   e  4095*INT14          4095
MGT1   15   y   n    e   e  4095*MGT1           4095
MGT2   16   y   n    e   e  4095*MGT2           4095
EXT1   17   n   n    e   e     1 EXT1           1
EXT2   18   n   n    e   e     1 EXT2           1
EXT3   19   n   n    e   e     1 EXT3           1
EXT4   20   n   n    e   e     1 EXT4           1
```

- Port information (`/info/port`) for switches installed in bay 3 and bay 4:

```
Alias Port Tag Fast Lrn Fld PVID      NAME                 VLAN(s)
----- ---- --- ---- --- --- ---- -------------- --------------------
INT1    1   y   n    e   e     1 INT1           1 4095
INT2    2   y   n    e   e     1 INT2           1 4095
INT3    3   y   n    e   e     1 INT3           1 4095
INT4    4   y   n    e   e     1 INT4           1 4095
INT5    5   y   n    e   e     1 INT5           1 4095
INT6    6   y   n    e   e     1 INT6           1 4095
MGT1   15   y   n    e   e  4095*MGT1           4095
MGT2   16   y   n    e   e  4095*MGT2           4095
EXT1   17   n   n    e   e     1 EXT1           1
EXT2   18   n   n    e   e     1 EXT2           1
EXT3   19   n   n    e   e     1 EXT3           1
EXT4   20   n   n    e   e     1 EXT4           1
```

Supplemental Information

This section provides additional information about configuring and operating the GbE Switch Module and BLADE OS version 21.0.8.

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	Image 1 GbE Switch BLADE OS version
Main Application 2	Image 2 GbE Switch BLADE 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 250
- Gateway 254
- MGT1 (Port 15)
- MGT2 (Port 16)
- STG 32

For more information about remotely managing the GbE Switch Module through the external ports, see “Accessing the Switch” in the *BLADE OS 21.0.8*version 21.0.8 *Application Guide*.

NOTE – The external uplink ports (EXT1-EXT4) 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.

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-EXT4).

Enabling IGMP Snooping

BLADE OS 21.0.8 no longer requires you to enable IGMP Snooping. When you turn IGMP on, IGMP Snooping is enabled automatically.

Port Mirroring Tip

Only one external port (EXT1-EXT4) can be used as monitor port.

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

Known issues

This section describes known issues for the GbE Switch Module and *BLADE OS 21.0.8*.

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 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.

SNMP Link States

- Each port is capable of generating a LinkStateUp and LinkStateDown trap. This capability is enabled or disabled using the linktrap parameter, using the CLI command, `/cfg/sys/ssnmp/linkt`. LinkState traps are enabled by default. In this release of the software, when a user attempts to disable LinkState traps (`/cfg/sys/ssnmp/linkt` *<port #>* `d`), then applies and saves the configuration, an entry will be written incorrectly to the configuration file. Rather than writing the tree path `/cfg/sys/ssnmp`, the path `/cfg/ssnmp` will be saved, resulting in two behaviors:

  On next reset, the GbE Switch Module will report an error; specifically:

```
Error: unknown command "ssnmp"
```

  Since the parameter change is not recognized, `linkt` will remain enabled.

  Solution: Manually edit the configuration file. The configuration file can be written to, and read from a TFTP server.

  - Start a TFTP server, then use the Switch Module command `/cfg/ptcfg` to write the configuration file to the device where the TFTP server is operating.

- Open the file with an ASCII text editor, locate the line starting with:

```
/cfg/ssnmp/linkt
```

- Change this line to:

```
/cfg/sys/ssnmp/linkt
```

- Write the change to the cfg file, then use the command `/cfg/gtcfg` to read the file back to the GbE Switch Module. Now reset the GbE Switch Module.

- The link state (`/info/link`) infrequently may report link up status for a server blade that has been removed from the chassis.

  Solution: Disable internal ports for empty server blade slots.

SLB Health Checks

If the management gateway is the only gateway operational, and the internal server blades are on the same IP subnet as the management gateway, then the GbESM may try to use the management gateway to send out traffic intended for the server blades, such as L4 health checks. This happens because both the management network and the server blades reside on VLAN 4095.

Solution: To avoid unwanted traffic on the management gateway, make sure that another gateway is operational, or temporarily disable real services on the GbESM while servicing the internal server blades.

Link Aggregation Control Protocol

If a static trunk on a GbESM is connected to another GbESM with LACP configured (but no active LACP trunk), the command `/info/l2/trunk` might erroneously report the static trunk as forwarding.

Since LACP trunks use LACPDU packet to maintain trunking with the partner, there is a possibility for those packets to be dropped from an extremely busy trunk. If this happens, some links in the LACP trunk might be removed, then aggregated back to the trunk if an LACPDU is received. To avoid this unstable LACP trunk link, you can add more links to the trunk to increase the bandwidth, or use regular static trunk if there are no more links available.

Linking at 10/100Mb

When the link speed for an external connection is forced (i.e. no Auto-Negotiation) to 100 Mbps and then changed to 10 Mbps, if the external device is changed first, the external device may erroneously report the link as DOWN even after the GbESM is changed to 10 Mbps.

Solution: At the external device, disconnect and reconnect the cable.

Static MRouter

If a port has a static multicast router (Mrouter) configured, and you move the port to a different VLAN, the static MRouter appears in the `/info/l3/igmp/mrouter/dump` output for the original VLAN.

Solution: When you move the port to a new VLAN, remove the static Mrouter from the port, and add it again.

SNMPv3 Configuration

You cannot use the BBI or SNMP to configure SNMPv3 parameters.

Solution: Use the CLI to configure SNMPv3.

IGMP Limitation

You cannot configure multiple IGMP versions on the same host port. You must configure each IGMP version on a different port.

SNMP MIB Browser Timeouts

Some SNMP MIB browsers time out during file transfers, for example:

- FTP/TFTP get backup configuration (gtcfg)
- FTP/TFTP get image (gtimg) or put image (ptimg)

Typically, the file transfer is proceeding normally, and will be successful.

Solution: Change the time out period on the MIB browser to a larger value.

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.