

# RELEASE NOTES:



## Alteon OS™ 21.0

Layer 2-3 GbE Switch Module  
for IBM @server BladeCenter

**Version 1.1**

Part Number: 24R9730, October 2005

**NORTEL**  
NETWORKS™

4655 Great America Parkway  
Santa Clara, CA 95054  
[www.nortelnetworks.com](http://www.nortelnetworks.com)  
Reference: 217026-B

Copyright © 2005 Nortel Networks, Inc., 4655 Great America Parkway, Santa Clara, California, 95054, USA. All rights reserved. Part Number: 24R9730.

This document is protected by copyright and distributed under licenses restricting its use, copying, distribution, and decompilation. No part of this document may be reproduced in any form by any means without prior written authorization of Nortel Networks, Inc. Documentation is provided “as is” without warranty of any kind, either express or implied, including any kind of implied or express warranty of non-infringement or the implied warranties of merchantability or fitness for a particular purpose.

U.S. Government End Users: This document is provided with a “commercial item” as defined by FAR 2.101 (Oct. 1995) and contains “commercial technical data” and “commercial software documentation” as those terms are used in FAR 12.211-12.212 (Oct. 1995). Government End Users are authorized to use this documentation only in accordance with those rights and restrictions set forth herein, consistent with FAR 12.211- 12.212 (Oct. 1995), DFARS 227.7202 (JUN 1995) and DFARS 252.227-7015 (Nov. 1995).

Nortel Networks, Inc. reserves the right to change any products described herein at any time, and without notice. Nortel Networks, Inc. assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by Nortel Networks, Inc. The use and purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of Nortel Networks, Inc.

Alteon, Alteon WebSystems, and Alteon OS are trademarks of Nortel Networks, Inc. in the United States and certain other countries. Any other trademarks appearing in this manual are owned by their respective companies.

Originated in the USA.



# 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 eServer BladeCenter chassis.

These release notes provide the latest information regarding *Alteon OS 21.0 version 1.1* for Nortel Networks Layer 2-3 GbE Switch Module for IBM eServer BladeCenter. This supplement modifies information found in the complete documentation:

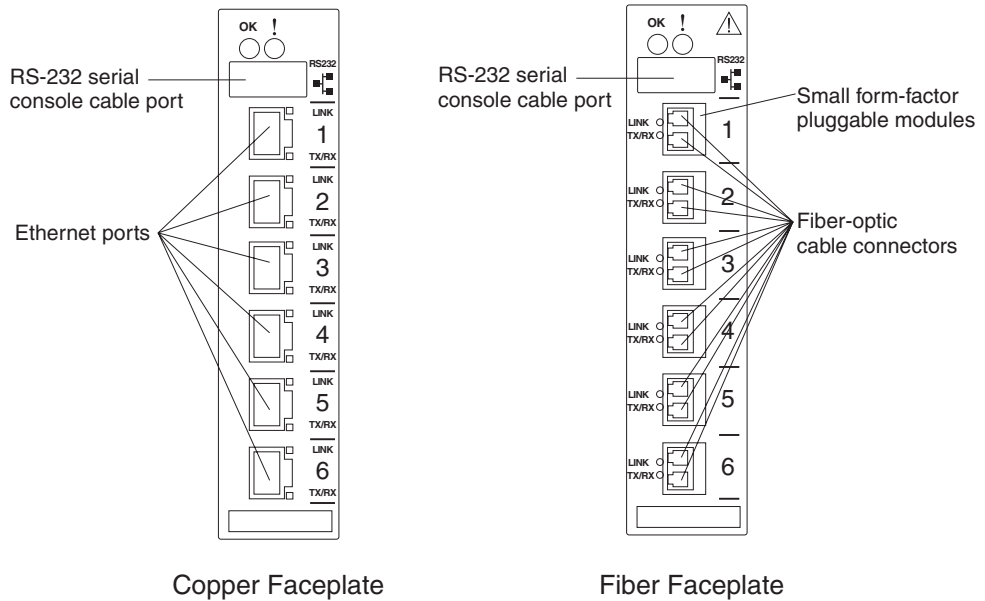
- *Alteon OS Command Reference*
- *Alteon OS Application Guide*
- *Alteon OS Browser-Based Interface Quick Guide*
- *Installation Guide*

The publications listed above are available on the IBM *BladeCenter Documentation CD*. Please keep the release notes with your product manuals.

## Hardware support

---

This *Alteon OS 21.0, version 1.1* software is only supported on the IBM eServer BladeCenter's Layer 2-3 GbE Switch Module hardware (see Figure 1). The Nortel Networks GbE Switch Module is a high performance Layer 2-3 embedded network switch. The Layer 2-3 GbE Switch Module (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 eServer BladeCenter's management module.



**Figure 1** GbE Switch Module faceplate

## Software Update Procedure

The software image is the executable code running on the GbE Switch Module (GbESM). The GbESM ships with a software image pre-installed. As new versions of the image are released, you can update the software running on your switch.

IBM maintains pages on the World Wide Web where you can get the latest technical information and follow the link for Downloads and Drivers. To access these pages, go to <http://www.ibm.com/pc/support/> and follow the instructions.

Update the switch software using a FTP or TFTP server application. Typically, this application is installed on a machine that is reachable from the switch through the external ports or the management module ports. Download the GbESM software to the machine where the FTP or TFTP server resides, and perform the steps indicated in the following section.

## 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-1.0.1.1-os.img
- Boot file: GbESM-AOS-1.0.1.1-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.**

---

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:
<username> or <Enter>
```

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

You should next select a software image to run, as described below.

## Selecting a Software Image to Run

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

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

```
Boot Options# image
```

**2. 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"]:
```

## 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 21.0, Version 1.1 Application Guide* for Nortel Networks' *Layer 2-3 GbE Switch Module for IBM eServer BladeCenter*.

### Layer 2 Trunk Failover enhancements

The following Layer 2 Trunk Failover enhancements are available in version 1.1:

- A VLAN monitor allows the switch to disable only internal links that reside in the same VLAN as the failed external link(s).
- A failover limit lets you specify the minimum number of operational links required within each trigger before the trigger initiates a failover event. For example, if the limit is four (`/cfg/l2/failovr/trigger x/limit 4`), a failover event occurs when the number of operational links in the trigger is four or fewer.
- Spanning Tree awareness allows the switch to decide if a link has failed based on a port's forwarding state.
- LACP trunk support allows you to include LACP trunks in a failover trigger.

For more information, refer to "High Availability" in the *Alteon OS 21.0, Version 1.1 Application Guide*.

### Multi-link Trunking enhancements

The number of static trunk groups you can configure has been increased to 13, with up to six ports allowed within each trunk group. *Alteon OS 21.0, version 1.1* provides support for internal (INT1-INT14) ports from the same blade to be included in a trunk group.

### VLAN enhancement

The maximum number of VLANs available has been increased to 1024.

### Spanning Tree enhancement

The maximum number of Spanning Trees available has been increased to 32. The management Spanning Tree Group (STG) is STG 32.

## IGMP Snooping enhancements

IGMP Snooping allows the switch to handle multicast traffic efficiently. With IGMP Snooping, the switch forwards multicast traffic only to those ports that request it, and prevents multicast traffic from being flooded to all ports.

*Alteon OS 21.0, version 1.1* supports snooping for IGMP version 1 and version 2. It provides improved IGMP version 3 compatibility. The number of multicast routers (Mrouters) that the GbESM can learn has been increased to 16.

## SNMP/Syslog enhancements

SNMP and Syslog enhancements provide the following capabilities:

- Suppress SNMP alarms on internal ports
- Suppress Syslog messages on internal ports
- Obtain general system information, including the switch serial number, using MIB OIDs 1.3.6.1.4.1.1872.2.5.1.3.1.12 through 1.3.6.1.4.1.1872.2.5.1.3.1.23

## Software upgrade using BBI

*Alteon OS 21.0, version 1.1* supports HTTP software upgrade using the Browser-Based Interface (BBI). FTP or TFTP server is not required to perform a software upgrade.

## Native VLAN Tagging on Ports

*Alteon OS 21.0, version 1.1* provides the option of tagging the native VLAN on a port, using the `/cfg/port x/tagpvid` command. Previously, the switch tagged non-native VLANs, but left the native VLAN untagged.

By default, this option is disabled.

## End-to-end Flow Control

*Alteon OS 21.0, version 1.1* supports end-to-end flow control using 802.3 Pause Frame protocol. When flow control is activated, the switch generates pause frames whenever an ingress traffic stream throttles an egress port. This enhancement provides end-to-end flow control between any two ports on the switch.



# Supplemental Information

---

This section provides additional information about configuring and operating the GbE Switch Module and *Alteon OS 21.0, version 1.1*.

## 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 Alteon OS version
Main Application 2	Image 2 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. 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.

Solution: If you change the default Telnet or HTTP port in the GbE Switch Module configuration, then you must manage the switch from a non-management module port (e.g. EXT1–EXT6, or INT1–INT14).

## 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 32

For more information about remotely managing the GbE Switch Module through the external ports, see “Accessing the Switch” in the *Alteon OS 21.0, Version 1.1 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 21.0, Version 1.1 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 21.0, Version 1.1 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.

## Known issues

---

This section describes known issues for the GbE Switch Module and *Alteon OS 21.0*.

### 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.

### 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.

## 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/13/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.

## 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/qweight` 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 21.0: `ripCfg` and `rip2Cfg`. Use the `rip2Cfg` MIB to configure RIPv1 and RIPv2 through SNMP.

Alteon OS 21.0 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.

## Date and Time

The maximum year supported in the GbE Switch Module is 2037. If a year higher than 2037 is entered in the Alteon OS CLI setup wizard, the BBI or the `/cfg/sys/date` CLI command, an erroneous date of 12/31/2069 is displayed.

The `/cfg/dump` and `/maint/tsdump` output do not include system date and time information.

## Downgrading software

The management Spanning Tree Group (STG) has changed from STG 16 to STG 32 in Alteon OS 21.0 version 1.1. If you made configuration changes to the STG 16 in version 1.0, these changes automatically migrate to STG 32 during upgrade to version 1.1.

If you didn't make any configuration changes on the management STG, you won't be affected by a downgrade.

To avoid difficulties with the management STG after a downgrade, manually re-configure the management STG (STG 16), or perform the following procedure after downgrading the software from version 1.1 to 1.0:

1. **Upload the version 1.1 configuration to a FTP/TFTP server.**

**2. Edit the first line of the configuration script file, to change the script version from 5 to 4:**

Change the first line of the script file from the following:

```
script start "Layer 2-3 Gigabit Ethernet Switch Module for IBM  
eServer BladeCenter" 5 /***** DO NOT EDIT THIS LINE!
```

The first line of the script file becomes the following:

```
script start "Layer 2-3 Gigabit Ethernet Switch Module for IBM  
eServer BladeCenter" 4 /***** DO NOT EDIT THIS LINE!
```

- 3. Edit the script file to change each instance of “stg 32” to “stg 16.”**
- 4. Load the version 1.0 software.**
- 5. Load the configuration script file from the FTP/TFTP server (/cfg/gtcfg).**

## **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).

Nortel Networks recommends the Firefox browser for BBI use.