IBM Flex System EN2092 1Gb Ethernet Scalable Switch

Release Notes

for Networking OS 7.7

Note: Before using this information and the product it supports, read the general information in the *Safety information and Environmental Notices* and *User Guide* documents on the IBM *Documentation* CD and the *Warranty Information* document that comes with the product.

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Release Notes

This release supplement provides the latest information regarding IBM Networking OS 7.7 for the EN2092 1Gb Ethernet Scalable Switch (referred to as EN2092 throughout this document).

This supplement modifies and extends the following IBM Networking OS documentation for use with Networking OS 7.7:

- *IBM Networking OS Application Guide for the EN2092 1Gb Ethernet Scalable Switch*
- *IBM Networking OS Command Reference for the EN2092 1Gb Ethernet Scalable Switch*
- *IBM Networking OS ISCLI Reference for the EN2092 1Gb Ethernet Scalable Switch*
- *IBM Networking OS BBI Quick Guide for the EN2092 1Gb Ethernet Scalable Switch*
- *EN2092 1Gb Ethernet Scalable Switch User's Guide*

The publications listed above are available at the following address:

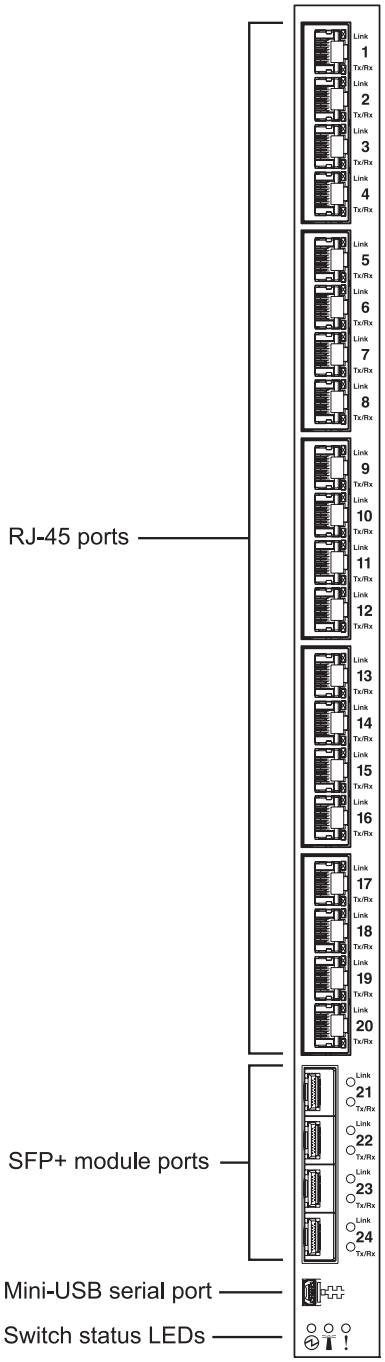
http://publib.boulder.ibm.com/infocenter/flexsys/information/index.jsp

Please keep these release notes with your product manuals.

Hardware Support

Networking OS 7.7 software is supported only on the EN2092 1Gb Ethernet Scalable Switch for the IBM Flex System. The EN2092 1Gb Ethernet Scalable Switch (EN2092), shown in Figure 1, is a high performance Layer 2-3 embedded network switch that features tight integration with IBM Flex System chassis management module.

Figure 1. EN2092 1Gb Ethernet Scalable Switch Faceplate



The EN2092 has the following port capacities:

- Twenty 1Gb RJ-45 ports
- Four 10Gb SFP+ ports
- Twenty-Eight 1Gb internal ports (maximum)
- One 1Gb internal management port
- One mini-USB serial port

Transceivers

The following transceivers and DACs are available:

Table 1. EN2092 Transceivers and DACs

Description	Part number
Transceivers	
1000Base-SX SFP (MMFiber) transceiver	81Y1622
1000Base-T SFP transceiver 4	81Y1618
1000Base-LX SFP LX transceiver	90Y9424
10GBase-SR SFP+ (MMFiber) transceiver	44W4408
10GBase-SR SFP+ (MMFiber) transceiver	46C3447
IBM BNT SFP+ LR transceiver	90Y9412
Direct Attach Cables (DACs)	
1m IBM Passive DAC SFP+	90Y9427
3m IBM Passive DAC SFP+	90Y9430
5m IBM Passive DAC SFP+	90Y9433

Updating the Switch Software Image

The switch software image is the executable code running on the EN2092. A version of the image 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 supported for your EN2092, go to the following website:

http://www.ibm.com/systems/support

To determine the software version currently used on the switch, use the following switch command:

```
>> # /info/sys/gen
```

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

- Load a new software image and boot image onto an FTP or TFTP server on your network.
- Transfer the new images to your switch.
- Specify the new software image as the one which will be loaded into switch memory the next time a switch reset occurs.
- Reset the switch.

For instructions on the typical upgrade process using the CLI, ISCLI, or BBI, see “Loading New Software to Your Switch” on page 6.

ATTENTION: Although the typical upgrade process is all that is necessary in most cases, upgrading from (or reverting to) some versions of Networking OS requires special steps prior to or after the software installation process. Please be sure to follow all applicable instructions in the following sections to ensure that your switch continues to operate as expected after installing new software.

Special Software Update Issues

When updating to Networking OS 7.7, the following special conditions may apply, depending on the version of software currently installed on your switch. These conditions are cumulative: If updating from version 2.0 (for example), follow the recommendations in order, beginning with those for 2.0, and then continue with all that apply, such as for “3.0 and prior,” “4.0 and prior,” and so on.

Updating from IBM Networking OS 7.5 or Prior

- In N/OS 7.7, the UID 1 default name is `USERID`, which cannot be modified. However, you are allowed to change the UID password, if required. Changes made to the UID 1 name in any of the previous switch software versions will be lost after an upgrade to N/OS 7.7.

Loading New Software to Your Switch

The EN2092 can store up to two different switch software images (called `image1` and `image2`) as well as special boot software (called `boot`). When you load new software, you must specify where it should be placed: either into `image1`, `image2`, or `boot`.

For example, if your active 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.

ATTENTION: When you upgrade the switch software image, always load the new boot image and the new software image before you reset the switch. If you do not load a new boot image, your switch might not boot properly (To recover, see "Recovering from a Failed Software Upgrade" on page 14).

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

- The image and boot software loaded on an FTP or TFTP server on your network.

  Note: Be sure to download both the new boot file and the new image file.
- The hostname or IP address of the FTP or TFTP server

  Note: The DNS parameters must be configured if specifying hostnames.
- The name of the new software image or boot file

When the software requirements are met, use one of the following procedures to download the new software to your switch. You can use the Networking OS CLI, the ISCLI, or the BBI to download and activate new software.

Loading Software via the Networking OS CLI

1. Enter the following Boot Options command:

   ```
   >> # /boot/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: <hostname 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> /<Enter>}
   ```

   If entering an FTP server username, you will also be prompted for the password. The system then prompts you to confirm your request. Once confirmed, the software will load into the switch.

6. If software is loaded into a different image than the one most recently booted, the system will prompt you whether you wish to run the new image at next boot. Otherwise, you can enter the following command at the `Boot Options#` prompt:

```
Boot Options# image
```

The system then informs you of which software image (`image1` or `image2`) 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"]:
```

Specify the image that contains the newly loaded software.

7. Reboot the switch to run the new software:

```
Boot Options# reset
```

The system prompts you to confirm your request. Once confirmed, the switch will reboot to use the new software.

Loading Software via the ISCLI

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

```
Router# copy {tftp|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 (for example, `tftpboot`).

4. If required by the FTP or TFTP server, enter the appropriate username and password.
5. The switch will prompt you to confirm your request.

Once confirmed, the software will begin loading into the switch.

6. When loading is complete, use the following commands to enter Global Configuration mode to select which software image (`image1` or `image2`) you want to run in switch memory for the next reboot:

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

The system will then verify which image is set to be loaded at the next reset:

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

7. Reboot the switch to run the new software:

```
Router(config)# reload
```

   The system prompts you to confirm your request. Once confirmed, the switch will reboot to use the new software.

Loading Software via BBI

You can use the Browser-Based Interface to load software onto the EN2092. 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.
3. If you are loading software from your computer (HTTP client), skip this step and go to the next. Otherwise, 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**. Then click **Download via Browser**.

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

New and Updated Features

Networking OS 7.7 for EN2092 1Gb Ethernet Scalable Switch (EN2092) has been updated to include several new features, summarized in the following sections. For more detailed information about configuring EN2092 features and capabilities, refer to the complete Networking OS 7.7 documentation as listed on page 3.

Enhanced Password Security

Switch Login Levels

To enable better switch management and user accountability, three levels or *classes* of user access have been implemented on the EN2092. Levels of access to CLI, Web management functions, and screens increase as needed to perform various switch management tasks. Conceptually, access classes are defined as follows:

- User interaction with the switch is completely passive—nothing can be changed on the EN2092. Users may display information that has no security or privacy implications, such as switch statistics and current operational state information.
- Operators can only effect temporary changes on the EN2092. These changes will be lost when the switch is rebooted/reset. Operators have access to the switch management features used for daily switch operations. Because any changes an operator makes are undone by a reset of the switch, operators cannot severely impact switch operation.
- Administrators are the only ones that may make permanent changes to the switch configuration—changes that are persistent across a reboot/reset of the switch. Administrators can access switch functions to configure and troubleshoot problems on the EN2092. Because administrators can also make temporary (operator-level) changes as well, they must be aware of the interactions between temporary and permanent changes.

Access to switch functions is controlled through the use of unique user names and passwords. Once you are connected to the switch via console, remote Telnet, or SSH, you are prompted to enter a password.

Access to each user level (except admin account) can be disabled by setting the password to an empty value. To disable admin account, use the command: `>>Main# /cfg/sys/access/user/dis`. Admin account can be disabled only if there is at least one user account enabled and configured with administrator privilege.

Strong Passwords

The administrator can require use of Strong Passwords for users to access the EN2092. Strong Passwords enhance security because they make password guessing more difficult.

The following rules apply when Strong Passwords are enabled:

- Minimum length: 8 characters; maximum length: 64 characters
- Must contain at least one uppercase alphabet
- Must contain at least one lowercase alphabet
- Must contain at least one number
- Must contain at least one special character:

  Supported special characters: ! “ # % & ‘ ( ) ; < = >> ? [\] * + , - . / : ^ _ { | } ~
- Cannot be same as the username
- No consecutive four characters can be the same as in the old password

When strong password is enabled, users can still access the switch using the old password but will be advised to change to a strong password while attempting to log in.

Strong password requirement can be enabled using the following command:

```
>>Main# /cfg/sys/access/user/strongpw ena
```

The administrator can choose the number of days allowed before each password expires. When a strong password expires, the user is allowed to log in one last time (last time) to change the password. A warning provides advance notice for users to change the password.

Locking Accounts

To protect the switch from unauthorized access, the account lockout feature can be enabled. By default, account lockout is disabled. To enable this feature, ensure the strong password feature is enabled. Then use the following command:

```
>> # /cfg/sys/access/user/strongpwd/lockout enable
```

After multiple failed login attempts, the switch locks the user account if lockout has been enabled on the switch.

Re-enabling Locked Accounts

The administrator can re-enable a locked account by reloading the switch or by using the following command:

```
>> # /cfg/sys/access/user/uid <user ID>/clrlock
```

However, the above command cannot be used to re-enable an account disabled by the administrator.

To re-enable all locked accounts, use the following command:

```
>> # /cfg/sys/access/user/strongpwd/clrlock
```

IPv4 Address Conflict Detection

The EN2092 1Gb Ethernet Scalable Switch uses a simple mechanism to detect if two hosts on the same subnetwork are using the same IPv4 address at the same time. The EN2092 sends a gratuitous ARP request for its own IP address. If it receives an ARP response, it sends a syslog message with the IP address and MAC address of the host that is using its IP address.

The EN2092 sends a gratuitous ARP request in the following situations:

- an IP interface comes up when:
  - the interface is enabled
  - a link comes up
  - a port goes into STP forwarding state
  - a member is added to a VLAN
- the IP address of an IP interface changes

Manual Reflective Relay

Reflective Relay (RR) is an operation where the switch forwards a frame back to the port on which it arrived if the destination MAC address is on the same port. When an EVB profile is configured on a port, RR is automatically enabled on the port after capability exchange with the peer, using the IEEE802.1QBG protocol. This is the usual mode of operation.

When the switch interoperates with devices that do not support IEEE 802.1QBG protocols, RR can be manually configured using the following command:

```
>>Main# /cfg/port <port num>/rrforce ena
```

Manual RR and EVB profile cannot be configured on a port at the same time.

Network Time Protocol (NTP)

New commands added to provide the following:

- Detailed information on NTP association:

```
Router(config)# show ntp associations

address            ref clock            st           when(s)
offset(s)
#192.168.13.33      -                    16           -          0
*192.168.13.57      192.168.1.111        3            32         11

* - synced
# - unsynced
```

- Minimize number of syslogs when NTP synchronization fails or system clock is updated:

```
Router(config)# [no] ntp sync-logs        (Enable logs for information on sync failures)

Router(config)# [no] ntp offset <0-86400>   (Set minimum clock change to trigger logs)
```

OSPFv3

Enhancements based on RFC5340.

Secure FTP

Added support for configuring SFTP server port other than the standard port 22.

SNMP Community Strings

Added support for 8 read-only and read-write community strings for SNMP v1 and SNMPv2. If any one of the community strings is matched, then read-only or read-write access will be granted. Use the following commands to add or delete community strings:

```
To add:
>> #/cfg/sys/ssnmp/rcomm-additional <1-32 characters>
(or)
>> #/cfg/sys/ssnmp/wcomm-additional <1-32 characters>

To delete:
>> #/cfg/sys/ssnmp/rcomm-delete <1-32 characters>
(or)
>> #/cfg/sys/ssnmp/wcomm-delete <1-32 characters>
```

Supplemental Information

This section provides additional information about configuring and operating the EN2092 and Networking OS.

The Boot Management Menu

The Boot Management menu allows you to switch the software image, reset the switch to factory defaults, or to recover from a failed software download.

You can interrupt the boot process and enter the Boot Management menu from the serial console port. When the system displays Memory Test, press **<Shift B>**. The Boot Management menu appears.

```
Resetting the System ...
Memory Test ..............................

1 - Change booting image
2 - Change configuration block
3 - Boot in recovery mode (tftp and xmodem download of images to
    recover switch)
4 - Xmodem download (for boot image only - use recovery mode for
    application images)
5 - Reboot
6 - Exit

Please choose your menu option: 3
```

The Boot Management menu allows you to perform the following actions:

- To change the booting image, press 1 and follow the screen prompts.
- To change the configuration block, press 2, and follow the screen prompts.
- To perform a software image recovery, press 3 and follow the screen prompts.
- To perform an Xmodem download (boot image only), press 4 and follow the screen prompts.
- To exit the Boot Management menu, press 6. The booting process continues.

Recovering from a Failed Software Upgrade

Use the following procedure to recover from a failed software upgrade.

1. Connect a PC to the serial port of the switch.
2. Open a terminal emulator program that supports Xmodem download (for example, HyperTerminal, CRT, PuTTY) and select the following serial port characteristics:
   - Speed: 9600 bps
   - Data Bits: 8
   - Stop Bits: 1
   - Parity: None
   - Flow Control: None
3. Boot the switch and access the Boot Management menu by pressing <**Shift B**> while the Memory Test is in progress and the dots are being displayed.

4. Select **3** for **Boot in recovery mode**. You will see the following display:

```
Entering Rescue Mode.
Please select one of the following options:
        T) Configure networking and tftp download an image
        X) Use xmodem 1K to serial download an image
        R) Reboot
        E) Exit
```

   – If you choose option **x** (Xmodem serial download), go to step 5.
   – If you choose option **t** (TFTP download), go to step 6.

5. **Xmodem download**: When you see the following message, change the Serial Port characteristics to 115200 bps:

```
Change the baud rate to 115200 bps and hit the <ENTER> key before
initiating the download.
```

   a. Press <**Enter**> to set the system into download accept mode. When the readiness meter displays (a series of “C” characters), start XModem on your terminal emulator.
   b. When you see the following message, change the Serial Port characteristics to 9600 bps:

```
Change the baud rate back to 9600 bps, hit the <ESC> key.
```

   c. When you see the following prompt, enter the image number where you want to install the new software and press <**Enter**>.

```
Install image as image 1 or 2 (hit return to just boot image): 1
```

   d. The following message is displayed when the image download is complete. Continue to step 7.

```
Installing image as image1...
Image1 updated successfully
Please select one of the following options:
        T) Configure networking and tftp download an image
        X) Use xmodem 1K to serial download an image
        R) Reboot
        E) Exit
```

6. **TFTP download**: The switch prompts you to enter the following information:

```
Performing TFTP rescue. Please answer the following questions (enter
'q' to quit):
IP addr    :
Server addr:
Netmask    :
Gateway    :
Image Filename:
```

a. Enter the required information and press <**Enter**>.

b. You will see a display similar to the following:

```
        Host IP    : 10.10.98.110
        Server IP  : 10.10.98.100
        Netmask    : 255.255.255.0
        Broadcast  : 10.10.98.255
        Gateway    : 10.10.98.254
Installing image 6.8.3_OS.img from TFTP server 10.10.98.100
```

c. When you see the following prompt, enter the image number where you want to install the new software and press <**Enter**>.

```
Install image as image 1 or 2 (hit return to just boot image): 1
```

d. The following message is displayed when the image download is complete. Continue to step 7.

```
Installing image as image1...
Image1 updated successfully
Please select one of the following options:
        T) Configure networking and tftp download an image
        X) Use xmodem 1K to serial download an image
        R) Reboot
        E) Exit
```

7. Image recovery is complete. Perform one of the following steps:
   – Press **r** to reboot the switch.
   – Press **e** to exit the Boot Management menu
   – Press the Escape key (<**Esc>**) to re-display the Boot Management menu.

Recovering a Failed Boot Image

Use the following procedure to recover from a failed boot image upgrade.

1. Connect a PC to the serial port of the switch.
2. Open a terminal emulator program that supports Xmodem download (for example, HyperTerminal, CRT, PuTTY) and select the following serial port characteristics:
   – Speed: 9600 bps
   – Data Bits: 8
   – Stop Bits: 1
   – Parity: None
   – Flow Control: None
3. Boot the switch and access the Boot Management menu by pressing <**Shift B**> while the Memory Test is in progress and the dots are being displayed.
4. Select **4** for **Xmodem download**. You will see the following display:

```
Perform xmodem download

To download an image use 1K Xmodem at 115200 bps.
```

5. When you see the following message, change the Serial Port characteristics to 115200 bps:

```
Change the baud rate to 115200 bps and hit the <ENTER> key before
initiating the download.
```

   a. Press <**Enter**> to set the system into download accept mode. When the readiness meter displays (a series of “C” characters), start Xmodem on your terminal emulator.You will see a display similar to the following:

```
Extracting images ... Do *NOT* power cycle the switch.
**** RAMDISK ****
Un-Protected 38 sectors
Erasing Flash...
..................................... done
Erased 38 sectors
Writing to
Flash...9....8....7....6....5....4....3....2....1....done
Protected 38 sectors
**** KERNEL ****
Un-Protected 24 sectors
Erasing Flash...
....................... done
Erased 24 sectors
Writing to Flash...9....8....7....6....5....4....3....2....1....
```

   b. When you see the following message, change the Serial Port characteristics to 9600 bps:

```
Change the baud rate back to 9600 bps, hit the <ESC> key.
```

Boot image recovery is complete.

Chassis Management Module

When configuring the IP interface, which is dedicated to the internal management port (IF128, MGT1), you cannot use a subnet that is already configured on any other enabled interface (IF1-126). This results in port MGT1 not accepting the configuration and an IP configuration of all zeros displayed on the CMM user interface.

For example, consider that an external interface (IF1) is configured or enabled to the following IP address and mask:

```
Interface information:
1: IP4 192.168.71.120  255.255.255.0
```

The switch will reject an attempt made from the CMM CLI to configure the internal management port (MGT1, IF128) to the following IP address and mask:

```
system:switch[1]> ifconfig -i 192.168.71.130 -s 255.255.255.0
```

In this scenario, the switch rejects the attempt by disabling any current configuration on IF128, and responds to the CMM with an IP address, mask, and gateway that contains all zeros.

On the CMM CLI, the resulting condition appears as follows:

```
system:switch[1]> ifconfig
Ethernet ScSE
Enabled
-c  static
-i   0.0.0.0
-s   0.0.0.0
-g   0.0.0.0
```

External Port Link Negotiation

Autonegotiation settings for each external switch port should be the same as those of the devices being connected. In a valid configuration, both ends of a port link are set with autonegotiation on, or both ends are set to specific speed and link properties with autonegotiation disabled.

Port Mirroring Tags BPDU Packets

When you perform port mirroring, Spanning Tree BPDU packets are VLAN tagged at the monitoring port. This is standard behavior of port mirroring on the EN2092. All mirrored egress traffic is tagged.

Secure Management Network

The following EN2092 attributes are reserved to provide secure management access to and from the chassis management module:

- MGT port
- VLAN 4095
- IP interface 127, 128
- Gateway 4
- STG 128

For more information about remotely managing the EN2092 through the external ports, see “Accessing the Switch” in the *IBM Networking OS 7.7 Application Guide*.

Note: The external uplink ports (EXTx) cannot be members of management VLANs.

Secure Shell (SSH)

Because SSH key generation is CPU intensive, the EN2092 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.

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.

Syslog Configuration Tip

The *facility* parameter traditionally is used to correlate services (such as IP, CLI, etc.) to messages. This is done to distinguish between the different services that are running in the network/device. However, for the EN2092, 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 EN2092s in the network. Refer to “System Host Log Configuration” in the *Command Reference.*

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 1Gb ports with 10GBASE-SFP+ ports).

vCenter Synchronization

When applying distributed VM group configuration changes, the switch will attempt to synchronize settings with the VMware vCenter for virtualization management. If the vCenter is unavailable, an error message will be displayed on the switch. Be sure to evaluate all error message and take the appropriate actions to ensure the expected changes are properly applied. If corrective actions are not taken, synchronization may remain incomplete when connection with the vCenter is restored.

Solution: When the switch connection with the vCenter is restored, use the following operational command to force synchronization:

```
>> # /oper/virt/vmware/scan
```

VRRP Configuration

Although the Virtual Router Redundancy Protocol (VRRP) standard permits up to 255 virtual router instances, the Networking OS 7.7 implementation only allows up to 128 virtual router instances (corresponding to the number of supported IP interfaces). Each virtual router instance can be assigned a unique Virtual Router ID (VRID) between 1 and 255.

Known Issues

This section describes known issues for Networking OS 7.7 on the EN2092 1Gb Ethernet Scalable Switch.

BBI

While accessing BBI pages, the switch may crash. This event is unpredictable and is not related to any particular BBI page or configuration. (ID: 67865)

Boot Configuration Block

- In the CLI, the boot configuration command (`/boot/conf` <*block*>) examines only the initial character of the *block* option. Invalid *block* strings (those other than `active`, `backup`, or `factory`) that use a valid first character (a, b, or f) will be interpreted as the matching valid string. (ID: 42422)

Chassis Management Module (CMM)

- The switch management port IP address cannot currently be configured via the CMM web interface (ID: 64760). Use an alternate switch configuration method (CLI, ISCLI, BBI, etc.).
- NTP configuration cannot currently be saved via the CMM web interface. Use an alternate switch configuration method (CLI, ISCLI, BBI, etc.).

DHCP

- When a static IP address is configured for the management interface, the switch sends a DHCP INFORM packet through the management port, but ignores the returning DHCP ACK packets. (ID: 68071)

HTTPS

While handling an HTTPS request, the switch may crash if the connection to the client is suddenly terminated during the session. (ID: XB205895)

IPsec

- IPsec does not support virtual links. (ID: 48914)

ISCLI

- If a port needs to be a member of more than 500 VLANs, we recommend that you first shutdown the port and then add the port as a member of the VLANs. (ID: 70739)

ISCLI Configuration Scripts

When using the ISCLI, configuration commands are applied to the active switch configuration immediately upon execution. As a result, when using the ISCLI to load a configuration script containing a long list of processor-intensive commands (such as static route definitions), switch response to other management functions (such as Telnet access for additional management sessions) may be slow or even time-out while the switch individually applies each scripted command. (ID 31787)

Solution: The CLI may be used as an alternative to the ISCLI. Because CLI commands are not fully processed until the CLI `apply` command is given, the equivalent configuration script can be loaded in its entirety and then applied as a whole without undue impact on other management sessions.

Jumbo Frames

- Some ingress jumbo frames (for example, ICMP) are not routed from one VLAN to another VLAN. Jumbo frames are routed across data VLANs.

LACP

- If a static trunk on a EN2092 is connected to another EN2092 with LACP configured (but no active LACP trunk), the `/info/l2/trunk` command might erroneously report the static trunk as forwarding.
- If you configure LACP (active/passive) on one port, also configure LACP on the partner switch, at the end of the link. If you connect LACP with a static trunk, there will be no connectivity on that link.
- 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.
- Under some conditions, setting the LACP timeout value on partner switches to “short” may cause LACP links to flap in and out of service. If this situation occurs, set the LACP timeout value to “long.” (ID: 63405, 64518)
- Under heavy switch load conditions, LACP links may flap when configured with short timeout mode. To stabilize LACP under heavy load, it is recommended to use the long timeout mode instead. (ID: 66173)
- When connecting IBM switches of different models, install the same version of IBM N/OS on the switches. This is to ensure that LACP functionality performs as expected.

Menu-Based Command Line Interface

- When dynamic VLAN configuration is enabled for features such as QBG, VMready, or FCoE, whenever automatic changes are made to the switch VLAN configuration, any other unapplied changes pending from menu-based CLI configuration session will be automatically applied. (ID: 65392)

OSPF

- Some changes to OSPF configuration (such as creating a new area or changing an area's type) may result in OSPF state reconvergence. (ID: 46445, 48483)
- OSPFv3 over IPsec
  - This combination can only be configured only on a per-interface basis. Configuration based on virtual links is not currently supported.
  - The current implementation for OSPFv3 allows the use of only one protocol (AH or ESP) at any given time. AH and ESP cannot be applied together.

Ports and Transceivers

- Under repeated and rapid removal and reinsertion a port transceiver, it is possible that the resulting port state may not be represented accurately within the switch. (ID 32412)

  Solution: Once you have removed a transceiver from a switch port, wait five seconds before reinserting any transceiver into the same port. This allows the port to stabilize, and promotes accurate port state information within the switch.
- 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 switch is changed to 10 Mbps.

  Solution: At the external device, disconnect and reconnect the cable.
- 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 switch 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 EN2092 is connected to an application switch which requires a link speed of 100 Mbps half-duplex, then enable auto negotiation on the EN2092 port with port speed=any, mode=any, fctl=both, and auto=on.

Private VLANs

- The sequence in which a private VLAN is configured is not the same as displayed in the output of the `Router(config)# show running-config` command. Hence, if you copy and paste the private VLAN configuration from the output of the above command, the private VLAN configuration will be lost. (ID: 67169)
- Traffic with secondary VLAN ID is not forwarded to promiscuous ports. (ID: 70980)

SLP

- When using multi-value attributes that contain a list of comma-separated values, the service reply will match if it contains one or more of the values. It is not required that all values match. (ID: 60086)

SNMP

During SNMP MIB walks, if you experience timeouts, set the timeout value to 3 seconds or higher in the SNMP application/tool. (IDs: 71913, 71914, 71906)