IBM System Networking RackSwitch™ G8316

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.

First Edition (June 2013)

Release Notes

This release supplement provide the latest information regarding IBM Networking OS 7.7 for the RackSwitch G8316 (referred to as G8316 throughout this document).

This supplement modifies and extends the following IBM N/OS documentation for use with *N/OS* 7.7:

- *IBM Networking OS* 7.7 *Application Guide*
- *IBM Networking OS* 7.7 *Command Reference*
- *IBM Networking OS* 7.7 *ISCLI Reference*
- *IBM Networking OS* 7.7 *BBI Quick Guide*
- *RackSwitch G8316 Installation Guide*

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

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

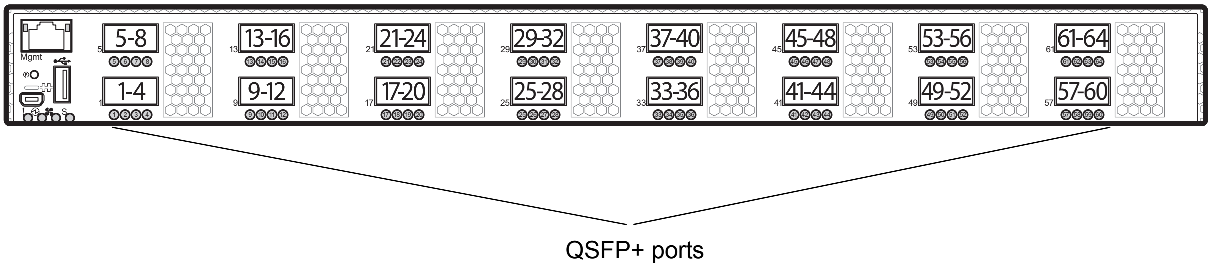
Please keep these release notes with your product manuals.

Hardware Support

The G8316 contains sixteen 40GbE QSFP+ ports. The QSFP+ ports can be populated with optical QSFP+ transceivers or DACs.

Note: If a DAC is not programmed to meet MSA specifications (including length identifier), the switch disables the port and generates a syslog message indicating that the DAC is not approved.

Figure 1. RackSwitch G8316 Front Panel



Transceivers and DACs

The following transceivers and Direct Attach Cables (DACs) are available:

Table 1. RackSwitch G8316 Transceivers and DACs

Description	Option part number	Tier 1 CRU part number
QSFP+ 40GBASE-SR4 Optical Fiber Transceiver	49Y7884	49Y7928
QSFP+ 40Gbps 1 meter DAC	49Y7890	49Y7934
QSFP+ 40Gbps 3 meter DAC	49Y7891	49Y7935
QSFP+ to four SFP+ 1 meter breakout DAC	49Y7886	49Y7930
QSFP+ to four SFP+ 3 meter breakout DAC	49Y7887	49Y7931
QSFP+ to four SFP+ 5 meter breakout DAC	49Y7888	49Y7932

The G8316 accepts any QSFP+ Direct Attach Cable that complies to the MSA specification.

Updating the Switch Software Image

The switch software image is the executable code running on the G8316. 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 G8316, 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:

```
RS G8316# show boot
```

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.

CAUTION:
Although the typical upgrade process is all that is necessary in most cases, upgrading from (or reverting to) some versions of N/OS or BLADEOS 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 N/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 7.2 or Prior

After updating:

- The default time zone setting is different compared to release 7.2 and prior. In the prior releases, a default setting of US Pacific Time was used. In release 7.4 and above, no default is assumed. For switches that use the default US Pacific Time setting, after upgrading to release 7.4 or above it is recommended that the administrator review the configured time zone and make any appropriate changes. (ID: 60469)

Loading New Software to Your Switch

The G8316 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.

CAUTION:
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 Upgrade” on page 15).

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 N/OS CLI, the ISCLI, or the BBI to download and activate new software.

Loading Software via the N/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 G8316. 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

N/OS 7.7 for RackSwitch G8316 (G8316) has been updated to include several new features, summarized in the following sections. For more detailed information about configuring G8316 features and capabilities, refer to the complete N/OS 7.7 documentation as listed on page 3.

Border Gateway Protocol

Multipath Relax

BGP multipath relax functionality allows load balancing across different autonomous system paths that have equal AS path length. This functionality can be enabled using the command:

```
RS G8316(config-router-bgp)# bestpath as-path multipath-relax
```

DHCP

Host Name Configuration

The G8316 supports DHCP host name configuration as described in RFC 2132, option 12. DHCP host name configuration is enabled by default.

Host name can be manually configured using the following command:

```
RS G8316(config)# hostname <name>
```

If the host name is manually configured, the switch does not replace it with the host name received from the DHCP server.

After the host name is configured on the switch, if DHCP or DHCP host name configuration is disabled, the switch retains the host name.

The switch prompt displays the host name.

Host name configuration can be enabled/disabled using the following command:

```
RS G8316(config)# [no] system dhcp hostname
```

SYSLOG Server

During switch startup, if the switch fails to get the configuration file, a message can be recorded in the SYSLOG server.

The G8316 supports requesting of a SYSLOG server IP address from the DHCP server as described in RFC 2132, option 7. DHCP SYSLOG server request option is enabled by default.

Manually configured SYSLOG server takes priority over DHCP SYSLOG server.

Up to two SYSLOG server addresses received from the DHCP server can be used. The SYSLOG server can be learnt over a management port or a data port.

Use the `RS G8316# show logging` command to view the SYSLOG server address.

DHCP SYSLOG server address option can be enabled/disabled using the following command:

```
RS G8316(config)# [no] system dhcp syslog
```

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 G8316. 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 G8316. 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 G8316. 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 G8316. 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: `RS G8316(config)# no access user administrator-enable`. 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 G8316. 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:

```
RS G8316(config)# access user strong-password enable
```

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:

```
RS G8316(config)# access user strong-password lockout
```

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:

```
RS G8316(config)# access user strong-password clear local user lockout username
                  <user name>
```

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:

```
RS G8316(config)# access user strong-password clear local user lockout all
```

Hot Links

Hot links provides basic link redundancy with fast recovery. Prior to IBM Networking OS 7.7, STP had to be globally disabled for configuring hot links. This restriction is no longer applicable. STP can be globally enabled but must be disabled on the ports used for hot links configuration.

IPv4 Address Conflict Detection

The RackSwitch G8316 uses a simple mechanism to detect if two hosts on the same subnetwork are using the same IPv4 address at the same time. The G8316 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 G8316 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

Microburst Detection

Microburst detection helps to identify peaks in data traffic at millisecond intervals. A maximum threshold is configured at the ingress port. Following commands can be used to check the status of an ingress port:

```
RS G8316# show microburst microburst-status  (View microburst state of ingress ports)
RS G8316# show microburst port-log           (View buffer utilization on ingress ports)
```

Microburst detection is disabled by default. To enable, use the following command:

```
RS G8316# microburst enable
```

OpenFlow

OpenFlow architecture consists of a control plane residing outside of the switch (typically on a server) and a data plane residing in the switch. The control plane is called OpenFlow controller. The data plane which resides in the switch consists of a set of flows which determine the forwarding of data packets.

The OpenFlow protocol is described in the OpenFlow Switch Specification 1.0.0

An OpenFlow network consists of simple flow-based switches in the data path, with a remote controller to manage all switches in the OpenFlow network.

OpenFlow maintains a TCP channel for communication of flow management between the controller and the switch. All controller-switch communication takes place over the switch's management network.

Switch Profiles

The RackSwitch G8316 can be used for configuring OpenFlow and legacy switching features simultaneously. However, Layer 2 and Layer 3 switching features can be configured only on the ports that are not OpenFlow ports. Legacy switching ports and OpenFlow ports do not communicate with each other.

Alternately, the switch can be configured as an OpenFlow-only switch if you do not need to configure legacy switching features.

Based on your requirement, select the switch boot profile using the following commands:

- OpenFlow-only: `RS G8316(config)# boot profile openflow`

  The switch will operate only in OpenFlow environment. None of the legacy switching features will be supported.
- OpenFlow and Legacy Switching: `RS G8316(config)# boot profile default`

  Legacy switching features can be configured on the non-OpenFlow ports. By default, the switch boots in this profile.

Reload the switch to apply boot profile changes.

For details, see *IBM Networking OS 7.7 Application Guide* for RackSwitch G8316.

Virtual Distributed Switch

A virtual Distributed Switch (vDS) allows the hypervisor's NIC to be attached to the vDS instead of its own virtual switch. The vDS connects to the vCenter and spans across multiple hypervisors in a datacenter. The administrator can manage virtual machine networking for the entire data center from a single interface. The vDS enables centralized provisioning and administration of virtual machine networking in the data center using the VMware vCenter server.

When a member is added to a distributed VM group, a distributed port group is created on the vDS. The member is then added to the distributed port group.

Distributed port groups on a vDS are available to all hypervisors that are connected to the vDS. Members of a single distributed port group can communicate with each other.

Note: vDS works with ESX 4.0 or higher versions.

To add a vDS, use the command:

```
RS G8316# virt vmware dvswitch add <datacenter name> <dvSwitch name> [<dvSwitch-version>]
```

Prerequisites

Before adding a vDS on the G8316, ensure the following:

- VMware vCenter is fully installed and configured and includes a "`bladevm`" administration account and a valid SSL certificate.
- A virtual distributed switch instance has been created on the vCenter. The vDS version must be higher or the same as the hypervisor version on the hosts.
- At least two hypervisors are configured.

Guidelines

Before migrating VMs to a vDS, consider the following:

- At any one time, a VM NIC can be associated with only one virtual switch: to the hypervisor's virtual switch, or to the vDS.
- Management connection to the server must be ensured during the migration. The connection is via the Service Console or the Kernel/Management Interface.

- The vDS configuration and migration can be viewed in vCenter at the following locations:
  - vDS: `Home> Inventory > Networking`
  - vDS Hosts: `Home > Inventory > Networking > vDS > Hosts`

  Note: These changes will not be displayed in the running configuration on the G8316.

Migrating to vDS

You can migrate VMs to the vDS using vCenter. The migration may also be accomplished using the operational commands on the G8316 available in the following CLI menus:

For VMware vDS operations:

```
RS G8316# virt vmware dvswitch ?
```

For VMware distributed port group operations:

```
RS G8316# virt vmware dpg ?
```

VLAG

Protocol Independent Multicast (PIM)

Added support for PIM configuration in a VLAG topology.

In a VLAG topology, IBM Networking OS supports PIM in Sparse Mode (PIM-SM) and Dense Mode (PIM-DM).

VMready

Up to 2048 VM profiles, 4093 VM groups, 4096 VMs, and 4096 VEs can be configured on the RackSwitch G8316. Of the total VMs, 2048 can be used in local groups.

Supplemental Information

This section provides additional information about configuring and operating the G8316 and N/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 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.

VLAGs

For optimal VLAG operation, adhere to the following configuration recommendations:

- Any port-related configuration, such as applied ACLs, should be the same for all ports included in the same VLAG, across both peer switches.
- Configure VLAG health checking as shown in the *Application Guide*.

After configuring VLAG, if you need to change any configuration on the VLAG ports, you must follow the guidelines given below:

- If you want to change the STP mode, first disable VLAG on both the peers. Make the STP mode-related changes and re-enable VLAG on the peers.
- If you have MSTP on, and you need to change the configuration of the VLAG ports, follow the steps below:

  On the VLAG Secondary Peer:

  1. Shutdown the VLAG ports on which you need to make the change.
  2. Disable their VLAG instance using the command:
     ```
     RS G8316 (config)# no vlag adminkey <key> enable (or)
     RS G8316 (config)# no portchannel <number> enable
     ```
  3. Change the configuration as needed.

  On the VLAG Primary Peer:

  4. Disable the VLAG instance.
  5. Change the configuration as needed.
  6. Enable the VLAG instance.

  On the VLAG Secondary Peer:

  7. Enable the VLAG instance.
  8. Enable the VLAG ports.

  Note: This is not required on non-VLAG ports or when STP is off.

Known Issues

This section describes known issues for N/OS 7.7 on the RackSwitch G8316

BGP

- Maximum number of route maps that can be added to a BGP peer is 16 (8 route-maps for incoming traffic and 8 for outgoing traffic). (ID: 46448)

FCoE

- The FCoE connection between the server and the FCF will be retained even if you disable CEE/FIP/vNIC on the switch. To avoid this scenario, either reboot the switch, or disable and re-enable the ports connected to the sever and the FCF after you disable CEE/FIP/vNIC. (ID:41915)
- When using DCBX to synchronize Priority-base Flow Control (PFC) with a peer (using the PFC TLV option), PFC operation on the switch port will not be disabled as expected when PFC is not available on the peer. To resolve this, manually disable PFC on ports connected to devices that do not participate in PFC. (ID: 62114)
- Disruption to FCoE connections and FCoE traffic may be expected when changing the LACP mode. It is recommended that the administrator halt FCoE traffic before changing any switch configuration. (ID: 67044)
- It is recommended to use the FIP snooping automatic VLAN creation option in FCOE environments, in addition to configuring VLANs manually. The auto-VLAN feature should be disabled only if no additional FCF or ENode ports will be automatically added to the FCOE VLAN. Otherwise, some FCF or ENode ports might not be automatically added to the FCOE VLAN, even if the auto-VLAN feature is later enabled, requiring them to be added manually.

IGMP

- The G8264 supports the following IGMP capacities (ID: 45775):
  - IGMP Snooping mode: 3072 IGMP and IPMC groups
  - IGMP Relay mode: 1000 IGMP groups and IPMC groups
- Only 1024 VLANs can be added to IGMP Snooping. Only 8 VLANs can be added to IGMP Relay. (ID: 45781)

IPsec

- When configuring IPsec to operate between IBM switches, keys of various lengths are supported. However, when using IPsec to connect with non-IBM devices, the manual policy session keys must be of the following fixed lengths:
  - For the AH key:
    - SHA1 = 20 bytes
    - MD5 = 16 bytes
  - For the ESP auth key:
    - SHA1 = 20 bytes
    - MD5 = 16 bytes
  - For the ESP cipher key:
    - 3DES = 24 bytes
    - AES-cbc = 24 bytes
    - DES = 8 bytes

- IPsec does not support OSPFv3 virtual links. (ID: 48914)
- Packet fragmentation over IPsec is supported in transport mode only. Fragmentation is not available in tunneling mode. (ID: 50291)

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)
- 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)

Management Port Rate Limiting

- Rate-limiter functionality is not available yet for the p4040 processor on the management port. The processor is able to handle the traffic on management port. (ID: 56871)

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.
  - 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.
  - IPsec does not support OSPFv3 virtual links. (ID: 48914)

PIM

- When the PIM mrouter table is cleared for only one of the intermediate routers in the topology, the maximum number of entries might not be recreated, or it might take 10-15 minutes until the entries are recreated. (ID: 55369)

Port Routing

- Using the ISCLI, routing can be enabled or disabled on a per-port basis using the `[no] switchport` command in the `interface port` mode. Configuration of this feature is not currently supported in the menu-based CLI. (ID: 62846)

Precision Time Protocol

- When using the PTP Transparent Clock on the switch, there may be variations in the residence time for PTP packets traversing the switch. The corrections stored in the Follow-Up/Delay-Response packets will correctly take into account the residence time. However, other PTP devices that receive event packets that pass through the switch (thus obtaining a residence time correction from the switch) must be configured to be resilient to residence time variations. For example, some PTP devices provide stiffness filters which help the device compute an average of the path delay. (ID: 61657)

Private VLANs

- The sequence in which a private VLAN is configured is not the same as displayed in the output of the `RS G8316(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)

Qlogic NIC

- Some link flapping (twice) can occur when you reboot a server with a Qlogic NIC. This happens for the link between Qlogic QLE8152 and the G8316. (ID: 55526)

Spanning Tree

- When using LACP with PVRST, it is not recommended to configure the switch as the STP root bridge. When doing so, traffic can be discarded for up to 30 seconds on affected LACP ports while initial STP path states are being resolved (discarding, learning, forwarding). (ID: 63315)
- After changing from MSTP to a different STP mode, some MSTP commands will still appear in the configuration file. The non-applicable MSTP commands do not affect switch operation and can be ignored. (ID: 64388)

VLAG

- The following features are not supported on ports participating in VLAGs:
  - FCoE
  - Hotlinks
  - IGMP relay
  - Private VLANs
  - vNICs
  - UDLD
- In a multi-layer VLAG topology, the VLAG ports may be disabled in CIST if you change the STP mode on the secondary switch to MSTP. (ID: 58696)

VMready

- VMs belonging to different ESX servers cannot ping each other across different VM groups. Because the VM groups belong to different VLANs, this is appropriate and expected behavior. However, ping can be facilitated if IP interfaces with VLAN IDs corresponding to those of the VM groups are configured on the switch.
- On switch ports on which VMs are learned, the switch does not learn the MAC address of the destination host unless the host sends some network traffic. Therefore the switch might not forward packets to the destination host (for instance, when using `ping`). (ID: 44946)
  - If you are not using VMready in a VM environment, disable VMready (**`no virt enable`**).
  - If you are using VMready, periodically send traffic from the host (for example, `ping`), so that the host's MAC address is always present in the Forwarding Database (MAC Address Table).

- Bandwidth metering drops excess packets when the configured limits on the vNIC pipe are reached. CEE Enhanced Transmission Selection will be ignored. (ID: 50950)
- vNIC egress bandwidth control is not strictly enforced on the switch for packets larger than 900 bytes, resulting in greater egress bandwidth from the switch to the server than is configured. However, ingress bandwidth control (from the server to the switch) is strictly enforced. (ID: 50950)