

IBM System Networking RackSwitch™ G8332



# 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 provide the latest information regarding IBM Networking OS 7.7 for the RackSwitch G8332 (referred to as G8332 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 ISCLI Reference*
- *IBM Networking OS 7.7 BBI Quick Guide*
- *RackSwitch G8332 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.

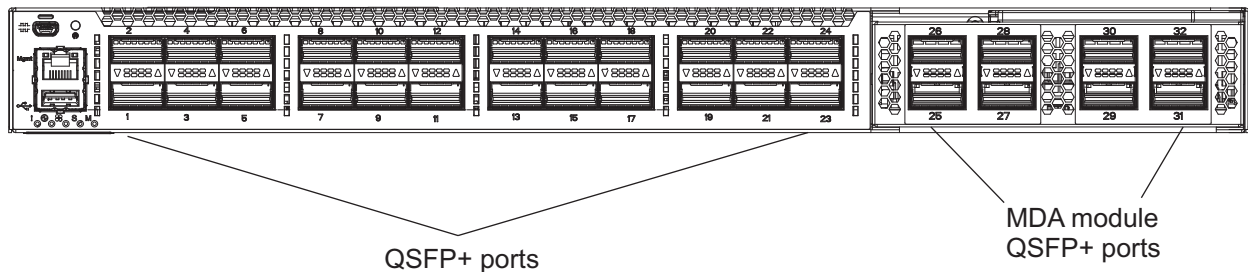
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## Hardware Support

The G8332 contains 24 embedded 40GbE QSFP+ ports and an expansion media dependent adapter (MDA) board fitted with 8 additional 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 G8332 Front Panel



## Transceivers and DACs

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

Table 1. RackSwitch G8332 Transceivers and DACs

Description	P/N	FRU
Blade Network Q-SR4	BN-CKM-QP-SR4	
Blade Network Q-SR4	BN-CKM-SP-LR	
Fiber	45D6364	
Fiber	1-1966466-6	
Fiber	1-1966466-5	
Fiber breakout		
IBM-Avago Q-SR4	78P2523-N81070	
IBM-Finisar Q-LR4	78P2593-N81138	
IBM-JDSU Q-LR4	78P2593-N81138	
QDAC IBM-Amphenol	44X1368	81Y8083
QDAC IBM-Amphenol	00D5802	49Y7934
QDAC IBM-Amphenol	44X1369	81Y8085
QDAC IBM-Amphenol	00D5803	49Y7935
QDAC IBM-Amphenol	44X1370	81Y8087
QDAC IBM-Amphenol	00D5814	00D5809
QDAC IBM-Amphenol	95Y1634	T.B.D
QDAC IBM-Amphenol	00D5811	00D5812
QDAC IBM-Amphenol	44X1371	81Y8089
QDAC IBM-Amphenol Breakout	00D5806	49Y7930
QDAC IBM-Amphenol Breakout	00D5807	49Y7931
QDAC IBM-Amphenol Breakout	00D5808	49Y7932
QDAC Molex Inc	1110401304	

The G8332 accepts any QSFP+ Direct Attach Cable that complies to the MSA specification.

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## Updating the Switch Software Image

The switch software image is the executable code running on the G8332. 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 G8332, go to the following website:

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

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

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 5](#).



**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.**

## Loading New Software to Your Switch

The G8332 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 9](#)).**

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, SFTP or TFTP server.

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

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

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

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

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

```
Enter username for FTP, SFTP server or hit return for  
TFTP server: {<username>/<Enter>}
```

If entering an FTP, SFTP 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|sftp} {image1|image2|boot-image}
```

2. Enter the hostname or IP address of the FTP, SFTP 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, SFTP or TFTP directory (for example, `tftpboot`).

4. If required by the FTP, SFTP 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 G8332. The software image to load can reside in one of the following locations:

- FTP server
- SFTP 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/SFTP/TFTP server, enter the server's information in the FTP/SFTP/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/SFTP/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.



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## Supplemental Information

This section provides additional information about configuring and operating the G8332 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_0S.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 G8332 (config)# no vlag adminkey <key> enable (or)  
RS G8332 (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.

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## Known Issues

This section describes known issues for N/OS 7.7 on the RackSwitch G8332

### Debug

- IBM N/OS debug commands are for advanced users. Use the debug commands with caution as they can disrupt the operation of the switch under high load conditions. This could be dangerous in mission-critical production environments. Before debugging, check the MP utilization to verify there is sufficient overhead available for the debug functionality. When debug is running under high load conditions, the CLI prompt may appear unresponsive. In most cases, control can be returned by issuing a `no debug <function>` command.
- Removing the MDA board while the switch is operating, without prior MDA shutdown, may generate the following error message:

```
i2cWrite_byte MDA LM75 0:0xee @ 0x00 1 Error 5 (-1)
```

This error is not critical and does not interfere with any switch functionality (ID: XB262550 and XB264278).

### DOVE

- In the current release, the DOVE Management Console (DMC version 1.1.0.140219) does not support clearing a VLAN gateway from the WebUI. To avoid this, use the DMC's command line interface. (ID: XB264861)
- Changing the TEP IP interrupts data traffic. To fix this, disable and enable DOVE on the switch. (ID: XB271897)
- In the current release, only 10GbE ports are supported as reserved ports. (ID: XB270743)

### EVB

- When a VM cannot be associated, because the maximum number of ACLs supported on a port (256) has been reached, the console may be flooded with syslog messages stating the association failed due to insufficient ACL resources. (ID: XB263550)

### FCoE and CEE

- Globally enabling or disabling CEE may halt L3 traffic. To avoid this, temporarily suspend data traffic when changing CEE settings. Otherwise, reload the switch to fix the disrupted traffic. (ID: XB137860)
- When using static trunks to set up FCoE links between two switches, both participating switches must have their corresponding portchannels enabled. Otherwise, multicast frames may enter loops and cause frame drops. (ID: XB260972)
- After enabling FIP snooping on an FIP Snooping Bridge, it may take up to two minutes for the FCoE sessions to initiate. (ID: XB262043)

- When displaying FC zone status information for a VLAN, the PWWN member count indicates the number of unique members, instead of the total number.

```
RS G8332(config)# show zone status vlan <vlan no. >
```

PWWN members that belong to multiple zones, are counted only once. (ID: XB256730 and XB258881)

- When changing the FIP Keep Alive Advertisement period, it is recommended to wait for a duration five times longer than the highest value in the interval before submitting another change. For instance, when increasing the period from 20 to 75 seconds, or decreasing it from 75 to 45 seconds, it is recommended to wait for  $75 \times 5 = 375$  seconds before changing it again.

It is also recommended to divide large FIP Keep Alive Advertisement period changes in smaller increments. For instance, if lowering the value from 90 seconds to 4 seconds, you should lower it from 90 to 20 seconds in a first stage and, after waiting for  $90 \times 5 = 450$  seconds, lower the period from 20 to 4 seconds in a second stage. (ID: XB268990)

## IGMP

- The switch keeps forwarding IPMC traffic with IP options to multicast routers after the IGMP group expires. (ID: XB256781)
- Avoid scenarios where IGMP is enabled on one VLAN while another VLAN has flooding disabled (but no IGMP configuration). Otherwise, the report processing mechanism may, after several minutes, generate out of memory messages for reports sent at a high rate over multiple member ports in the VLAN with flooding disabled. To avoid this, lower the IGMP CoPP rate to 2000 pps or less, or stop the IGMP reports stream. (ID: XB258760)

## Jumbo Frames

- All jumbo frames are counted as multicast packets on the ingress ports. (ID: XB261919)

## LACP

- Up to 104 portchannels can be created, but the verified scaling limit is 64 portchannels.

## MDA

- Repeatedly enabling and disabling the MDA board may lock-up random ports. To fix this, remove and reinstall the affected transceiver. (ID: XB263409)

## NAT

- If NAT is enabled with no NAT rules defined, heavy inter-realm SSH/Telnet/HTTP traffic is sent to queue 25 instead of queue 0. This slows down switch management over the data ports. To avoid this:
  - a. Disable NAT when not in use (no NAT rules defined).
  - b. Otherwise, do not flood data ports with inter-realm SSH, Telnet or HTTP traffic. This traffic is dropped if no NAT rules are defined and slows down switch management.
  - c. If the above is unavoidable, disable SSH, Telnet or HTTP traffic on the affected data ports. (ID: XB266328)

- DNAT+NAPT rules that map destination IP addresses between the default and the inside/outside realm, will route packets at CoPP rates if only the destination IP addresses match, while the destination port numbers do not match. To avoid this:
  - a. Do not create DNAT rules mapping destination IPs between the default realm and the inside/outside realm.
  - b. Otherwise, do not create DNAT+NAPT rules that do not match the packets' L4 destination port numbers.
  - c. If the above is unavoidable, define additional DNAT+NAPT rules to match all the L4 destination ports employed in traffic. (ID: XB266690)

## OpenFlow

- Static FDB flows are stored as ACL flows. (ID: XB262456)
- Using a port-mod message to change the `OFPPC_NO_FLOOD` bit does not reprogram the already installed flows. (ID: XB259385)

## PIM

- Receiving multicast packets at rates of 1,000,000 pps, or within the 100K – 111K pps range, causes slow learning for (S, G) entries. To avoid this, configure the Control Plane Protection bandwidth for the unknown-destination packets (queue 0 by default) to a prime number larger than 1000 (ID: XB261554).

```
RS G8332(config)# qos protocol -packet-control
rate-limit-packet-queue 0 2113
```

## VLAG

- If Protocol Independent Multicast (PIM) is configured in a VLAG topology, when disabling and re-enabling IGMP or IGMP snooping on a secondary VLAG switch, some of the PIM outgoing interfaces may fail to change back from forwarding to pruned state. To limit this issue, it is recommended to wait at least 1 minute between disabling and enabling back IGMP or IGMP snooping on a secondary VLAG switch when running PIM. (ID: XB264621)
- VLAG scalability is limited by system load. Under heavy load, when disabling and enabling back multiple VLAG instances on a switch, some of the instances on its peer may remain in LOCAL-UP state instead of changing to FORMED state. (ID: XB263527)

## VRRP

- Virtual router interfaces do not support Telnet sessions. (ID: XB255037)