Brocade VDX 6740

QuickStart Guide

Supporting the VDX 6740 and Brocade VDX 6740T switches

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Brocade Communications Systems, Incorporated

Document History

The following table lists all published versions of the *Brocade VDX 6740 QuickStart Guide*.

Title	Publication number	Summary of changes	Date
Brocade VDX 6740 QuickStart Guide	53-1002862-01	New document	July 2013

Contents

Overview

This Quick Start guide is intended as an overview to help experienced installers unpack, install, and configure either the Brocade VDX 6740 or Brocade VDX 6740T quickly. For more detailed installation and configuration instructions, see the *Brocade Network OS Administrator's Guide* and the *Brocade Network OS Command Reference*.

NOTE
Throughout this document, the Brocade VDX 6740 refers to both the Brocade VDX 6740 or Brocade VDX 6740T and is referred to as the switch.

Items included with the Brocade VDX 6740

The following items are included with the standard shipment of a fully-configured Brocade VDX 6740. When you open the Brocade VDX 6740 packaging, verify that the items are included in the package and that no damage has occurred during shipping.

- The Brocade VDX 6740 switch or Brocade VDX 6740T switch
- Transceivers and cables as ordered
- One accessory kit, containing the following items:
    - Serial cable with an RJ-45 connector (Brocade VDX 6740) or a mini-USB connector (Brocade VDX 6740T)
    - 6 ft. power cords (2)
    - Rubber feet, required for setting up the switch as a standalone unit
    - 2 GB USB drive
    - China RoHS hazardous/toxic substance content chart
    - EULA/Read-Me document
    - Web pointer card for documentation
    - *Brocade VDX 6740 QuickStart Guide (this publication)*

Installation and safety considerations

You can install the Brocade VDX 6740 and Brocade VDX 6740T switches in the following ways:

- As a standalone unit on a flat surface.
- In an EIA rack using a four-post fixed-rail rack mount kit. In a Telco rack using a mid-mount rack kit. The optional mid-mount rack kit for switches can be ordered from your switch retailer.
- For the Brocade VDX 6740:
    - In a four-post EIA rack using a port-side flush mount rack mount kit.
    - In a Telco rack using either a port-side flush mount or mid-mount rack kit.
- For the Brocade VDX 6740T:
    - In a four-post EIA rack using a port-side flush mount or a non-port-side flush mount universal fixed-rail rack mount kit.
    - In a Telco rack using a port-side flush mount or mid-mount universal rack kit.

NOTE

For the VDX 6740T, be sure to keep the vents on the sides near the front of the switch are unobstructed.

Electrical considerations

To install and operate the switch successfully, ensure compliance with the following requirements:

- The primary outlets are correctly wired, protected by a circuit breaker, and grounded in accordance with local electrical codes.
- The supply circuit, line fusing, and wire size are adequate, as specified by the electrical rating on the switch nameplate.
- The power supply standards are met. Refer to Table 1 for more information.

The power supplies are universal and capable of functioning worldwide without voltage jumpers or switches. They meet IEC 61000-4-5 surge voltage requirements and are autoranging in terms of accommodating input voltages and line frequencies.

Table 1 lists the power supply specifications for the Brocade VDX 6740 switches.

TABLE 1   Power supply specifications

Specification	Value
Input voltage	Range: 90-264 VAC Auto-volt, Nominal: 100-240 VAC, ~12.0A - 5.0A; switch autosenses input voltage. Start-up: 80-87 VAC, Turn-off: 85-75 VAC
Input frequency	Range: 47-63 Hz; Nominal: 50-60 Hz.
Inrush current	Brocade VDX 6740 (250 W power supply) - Limited to 50 A peak @ 240 VAC during cold start-up at 25°C ambient Brocade VDX 6740T (500 W power supply) - Limited to 30 A peak @ 240 VAC during cold start-up at 25°C ambient
Input line protection	Both AC lines are fused.
Maximum power supply output (each)	250 watts @ 12V DC - Brocade VDX 6740 500 watts @ 12V DC - Brocade VDX 6740T

Table 2 and Table 3 illustrate the power consumption of the switch as measured at idle, maximum, and typical states respectively.

TABLE 2   VDX 6740 power consumption - maximum

MAX: Brocade VDX 6740 All ports configured with ELOAD, Traffic Running (mode 11), Fan Speed Max (8190 RPM), Room Temp					
AC Voltage	Input Current (Amp) 1 PSU	Input Watts 1 PSU AC Measured	BTUs/hr 1 PSU	Input Watts 2 PSUs AC Measured	BTUs/hr 2PSU
100 VAC	1.65	165.00	563.16	170.00	580.22
120 VAC	1.37	165.40	564.52	170.27	581.15

TABLE 2   VDX 6740 power consumption - maximum (Continued)

MAX: Brocade VDX 6740 All ports configured with ELOAD, Traffic Running (mode 11), Fan Speed Max (8190 RPM), Room Temp

AC Voltage	Input Current (Amp) 1 PSU	Input Watts 1 PSU AC Measured	BTUs/hr 1 PSU	Input Watts 2 PSUs AC Measured	BTUs/hr 2PSU
200 VAC	0.85	164.00	559.75	168.45	574.93
240 VAC	0.75	164.00	559.75	168.00	573.40

TABLE 3   VDX 6740T power consumption - maximum

MAX: Brocade VDX 6740T All ports configured with ELOAD, Traffic Running (mode 11), Fan Speed Max (8190 RPM), Room Temp

AC Voltage	Input Current (Amp) 1 PSU	Input Watts 1 PSU AC Measured	BTU'/hr 1 PSU	Input Watts 2 PSUs AC Measured	BTUs/hr 2PSU
100 VAC	4.90	488.00	1665.58	490.00	1672.41
120 VAC	4.53	482.00	1645.10	486.00	1658.76
200 VAC	2.44	474.00	1617.80	480.00	1638.28
240 VAC	2.05	473.00	1614.39	479.00	1634.87

Environmental considerations

For successful installation and operation of the switch, ensure that the following environmental requirements are met:

- Because the Brocade VDX 6740 switches can be ordered with fans that move air either front to back (exhaust) or back to front (intake), be sure to orient your switch with the airflow pattern of any other devices in the rack. All equipment in the rack should force air in the same direction to avoid intake of exhaust air.
- For the Brocade VDX 6740 - A maximum flow of 43.7 cubic meters/hour (25.7 cubic feet/minute) at the intake vents.
- For the Brocade VDX 6740T - A maximum flow of 88.35 cubic meters/hour (52.0 cubic feet/minute) at the intake vents.
- The ambient air temperature does not exceed 40° C (104° F) while the switch is operating.

Rack considerations

For successful installation and operation of the switch in a rack, ensure the following rack requirements are met:

- The rack must be a standard EIA rack.
- The rack space required is one rack unit (1U) 44.45 mm (1.75 in.) high and 482.60 mm (19 in.) wide.
- The equipment in the rack is grounded through a reliable branch circuit connection and maintains ground at all times. Do not rely on a secondary connection to a branch circuit, such as a power strip.

- Ensure that the rack mounting does not impede airflow or negatively affect temperature requirements, particularly if the switch is installed in a closed or multirack assembly.
- The additional weight of the switch does not exceed the rack's weight limits or unbalance the rack in any way.
- The rack is secured to ensure stability in case of unexpected movement, such as an earthquake.

Recommendations for cable management

The minimum radius to which a 50-micron cable can be bent under full tensile load is 5.1 cm (2 in.). For a cable under no tensile load, that minimum is 3.0 cm (1.2 in.).

Cables can be organized and managed in a variety of ways; for example, use cable channels on the sides of the cabinet or patch panels to reduce the potential for tangling the cables. The following list provides some recommendations for cable management:

NOTE
You should not use tie wraps with optical cables because they are easily overtightened and can damage the optic fibers. Velcro-like wraps are recommended.

- Plan for the rack space required for cable management before installing the switch.
- Leave at least 1 m (3.28 ft) of slack for each port cable. This provides room to remove and replace the switch, allows for inadvertent movement of the rack, and helps prevent the cables from being bent to less than the minimum bend radius.
- For easier maintenance, label the cables and record the devices to which they are connected.
- Keep LEDs visible by routing port cables and other cables away from the LEDs.

Items required for installation

The following items are required for installing, configuring, and connecting the Brocade VDX 6740 and Brocade VDX 6740T switches for use in a network and fabric:

- A workstation with an installed terminal emulator, such as HyperTerminal
- An unused IP address and corresponding subnet mask and gateway address
- A serial cable (provided)
- An Ethernet cable
- (Optional) Access to an FTP server or Brocade-branded USB device for backing up the switch configuration
- Optional adhesive rubber feet for standalone mounting

Standalone installation for a Brocade VDX 6740

Complete the following steps to install the Brocade VDX 6740 as a standalone unit.

1. Unpack the Brocade VDX 6740 switch and verify the items listed in "Items included with the Brocade VDX 6740" on page 4 are present and undamaged.

2. Apply the adhesive rubber feet. Applying the rubber feet to the switch helps prevent the switch from sliding off the supporting surface.

   a. Clean the indentations at each corner of the bottom of the switch to ensure that they are free of dust or other debris that might lessen the adhesion of the feet.

   b. With the adhesive side against the chassis, place one rubber foot in each indentation and press into place.

3. Place the switch on a flat, sturdy surface.

4. Provide power to the switch as described in "Providing power to the switch" on page 8.

ATTENTION
Do not connect the switch to the network until the IP address is correctly set. For instructions on how to set the IP address, refer to "Setting the switch IP address" on page 11.

Rack installation for a Brocade VDX 6740

Follow the installation instructions shipped with the appropriate rack mount kit:

- *Mid-Mount Rack Kit (Switch) Installation Procedure* (*Brocade VDX 6740* only)
- *Two-post Flush Mount Installation Procedure* (*Brocade VDX 6740* only)
- *Slim Rail Rack Mount Kit Installation Procedure* (*Brocade VDX 6740* only)
- *1U-2U Universal 4-Post Rail Mount Kit* (*Brocade VDX 6740T* only)
- *1U-2U Universal 2-Post Rail Mount Kit* (*Brocade VDX 6740T* only)

Providing power to the switch

Perform the following steps to provide power to the Brocade VDX 6740 switches.

1. Connect the power cords to both power supplies, and then to power sources on *separate* circuits to protect against failure. Ensure that the power cords have a minimum service loop of 15.2 cm (6 in.) available and are routed to avoid stress.

2. For the Brocade VDX 6740, flip the switch on each power supply to **I**.

   For the Brocade VDX 6740T, the power supplies power up as soon as they are plugged in.

   The power supply LEDs display green. The power LED on the front of the switch turn green as well. The system status LED on the front panel will be amber until POST completes and then it will turn green.

   ATTENTION
   Power is supplied to the switch as soon as the first power supply is connected and powered on.

3. After POST is complete, verify that the switch power and status LEDs on the port side of the switch are green.

Verifying operation

After you have powered the system on and POST is complete, verify that the switch is working properly.

1. Verify that the power supply LEDs are solid green.

2. Verify that the system status LED is solid green.

3. The port LEDs should be lit during POST activities. When POST is complete, only the LEDs for ports connected to other devices should be green.

Refer to the *Brocade VDX 6740 Hardware Reference Manual* for more details on the LED patterns.

Creating a serial connection

You perform all configuration tasks in this guide using a serial connection from a workstation or terminal to the switch.

Complete the following steps to create a serial connection to the switch.

1. Connect the serial cable to the serial port on the switch and to an RS-232 serial port on the workstation or terminal device.

   If the serial port on the workstation or terminal device is RJ45 instead of RS-232, remove the adapter on the end of the serial cable and insert the exposed RJ45 connector into the RJ45 serial port on the workstation.

2. Open a terminal emulator application (such as HyperTerminal on a PC, or TERM, TIP, or Kermit in a UNIX environment), and configure the application as follows:

   - In a Windows environment, enter the following values: 9600 bits per second, 8 databits, no parity, 1 stop bit, and no flow control.

   - In a UNIX environment using TIP, enter the following string at the prompt:

     ```
     tip /dev/ttyb -9600
     ```

     If ttyb is already in use, use ttya instead.

The serial port is located on the port side of the VDX 6740 switches. The Brocade VDX 6740 uses an RJ-45 connector for the serial port. The Brocade VDX 6740T uses a mini-USB connector for the serial port. An RJ-45 to DB9 adapter is also provided with the switch. The cable supplied is a rollover cable.

NOTE
To protect the serial port from damage, keep the cover on the port when not in use.

The serial port can be used to connect to a workstation to configure the IP address for the Brocade VDX 6740 before connecting the switch to a fabric or IP network. The serial port's parameters are fixed at 9600 baud, 8 data bits, and no parity, with flow control set to None.

Table 4 lists the serial cable pinouts.

TABLE 4   Serial cable pinouts

PIN	Signal	Description
1	Not supported	NA
2	Not supported	NA
3	TXD	Transmit data

TABLE 4   Serial cable pinouts

PIN	Signal	Description
4	GND	Logic ground
5	Not supported	NA
6	RXD	Receive data
7	Not supported	NA
8	Not supported	NA

Assigning permanent passwords

When you log in for the first time, Brocade recommends that you change the passwords for the default accounts.

The factory-configured default accounts on the switch are admin, user, and root. Use the default administrative account as shown in Table 5 to log in to the switch for the first time and to perform the basic configuration tasks.

The root account is reserved for development and manufacturing. The user account is read-only and used primarily for system monitoring.

TABLE 5   Default administrative account names and passwords

Account type	Login name	Password
Administrative	admin	password
User account (read-only)	user	password

Changing the default account passwords

When you change the default account password after you log in for the first time, only the default password rule is in effect. The rule specifies a minimum password length of eight characters. For advanced user and role management, including setting password rules, refer to the Security chapter of the *Brocade Network OS Administrator's Guide*.

1. Enter the **configure terminal** command to enter global configuration mode.

2. Enter the **username** command followed by the account name and the password parameter.

3. When prompted, enter the new password. and press **Enter**.

```
Switch# configure terminal
Entering configuration mode terminal
switch(config)# username admin password
(<WORD>:  ********
```

Setting the switch IP address

You can configure the Brocade VDX 6740 with a static IP address, or you can use a DHCP (Dynamic Host Configuration Protocol) server to set the IP address of the switch. DHCP is enabled by default. The Brocade VDX 6740 switches support both IPv4 and IPv6 format addresses. For information about setting static IP addresses and stateless IPv6 addresses, please see the *Brocade Network OS Administrator's Guide*.

Using DHCP to set the IP address

When using DHCP, the Brocade VDX 6740 switches obtain the IP address, subnet mask, and default gateway address from the DHCP server. The DHCP client can only connect to a DHCP server that is on the same subnet as the switch. If your DHCP server is not on the same subnet as the Brocade VDX 6740, use a static IP address. For information on how to set the IP address using a static IP address, please refer to the Brocade VDX 6740 *Hardware Reference Manual*.

To set an IPv4 IP address using DHCP, complete the following steps.

1. Log in to the switch using the admin account.

2. Configure the management interface with the following command:

   ```
   switch(config)# interface Management 1/0
   ```

3. Configure the IP address using the following command:

   ```
   switch(config-Management-1/0)# ip address dhcp
   ```

Changing the RBridge ID

If you are going to have more than one switch in a fabric, each switch must have a unique RBridge ID. The default RBridge ID for any VDX 6740 is 1. Use the **vcs rbridge-id** *[rbridge-id]* command to change the default RBridge ID. You should be in privileged EXEC mode to run the command. The **vcs rbridge-id** command reboots the switch and sets the startup configuration to the default.

Enter the **vcs rbridge-id** *[rbridge-id]* command.

```
switch# vcs rbridge-id 2
This operation will change the configuration to default and reboot the switch. Do you want to
continue? [y/n]:y
```

When the confirmation question appears, answer Y.

The reply to the command will include a line about the setting of the RBridge ID.

```
Successfully set rbridge-id.
```

Changing the VCS ID

If you are going to have more than one VCS fabric, each fabric must have a unique VCS ID. The default VCS ID for any VCS fabric is 1. Use the **vcs vcs-id** *[ID]* command to change the default VCS ID. You should be in privileged EXEC mode to run the command. The **vcs vcs-id** command reboots the switch and sets the startup configuration to the default.

Enter the **vcs vcs-id** *[ID]* command.

```
switch# vcs vcs-id 2
This operation will change the configuration to default and reboot the switch. Do you want to
continue? [y/n]:y
```

When the confirmation question appears, answer Y.

The reply to the command will include a line about the setting of the VCS ID.

```
Successfully set vcs-id.
```

Configuring switch ports

By default, the interfaces are not configured as switch ports. In order to put an interface in Layer 2 mode, use the following command in Interface Configuration mode.

```
switch(conf-if-te-1/0/3)# switchport
```

To remove an interface from Layer 2 mode, use the following command

```
switch(conf-if-te-1/0/3)# no switchport
```

Connecting network devices

For direct attachment from the Brocade device to a Gigabit NIC, switch, or router, you can use either a fiber cabling with an LC connector or a copper cable with an RJ-45 connector.

Connecting to Ethernet or Fast Ethernet hubs

For copper connections to Ethernet hubs, a 10/100 Base-TX or 1000 Base-T switch, or another Brocade device, a crossover cable is required. If the hub is equipped with an uplink port, it requires a straight-through cable instead of a crossover cable.

NOTE
The 802.3ab standard (automatic MDI or MDIX detection) calls for automatic negotiation of the connection between two 1000Base-T ports. Therefore, a crossover cable may not be required; a straight-through cable may work as well.

Enabling logical chassis cluster mode

Logical chassis cluster mode is defined as a fabric in which both the data and configuration paths are distributed. There is a single global configuration across all nodes in the fabric (up to 24 nodes) and that configuration can be managed from a single node (the principal node).

While the Brocade VDX 6740 switches are always in VCS mode, logical chassis cluster mode is disabled by default. Unless it is explicitly enabled, the Brocade VDX 6740 switches boot up in fabric cluster mode. For more details on both fabric cluster mode and logical chassis cluster mode, refer to the *Brocade Network OS Administrator's Guide*.

Before enabling logical chassis cluster mode, all nodes in the cluster must be completely interconnected. All nodes must be running Network OS 4.0.0 or later. If there will be more than two nodes in the cluster, you must have a VCS license. Follow the steps below to enable logical chassis cluster mode and create a logical chassis cluster.

1. Log into one switch that will be a member of the logical chassis cluster you are creating:

2. In Privileged EXEC mode, enter the vcs command with options to set the VCD ID, the RBridge ID and enable logical chassis mode for the switch. The VCS ID and RBridge IDs shown below are chosen for the purposes of this example.

   ```
   switch# vcs vcsid 22 rbridge-id 15 logical-chassis enable
   ```

3. The switch reboots after you run the vcs command. You are asked if you want to keep the default configuration; answer yes.

4. Repeat the above steps for each node in the cluster, changing only the RBridge ID each time.

   You must, however, set the VCS ID to the same value on each node that belongs to the cluster.

5. When you have enabled the logical chassis mode on each node in the cluster, run the show vcs command to determine which node has been assigned as the cluster principal node. The arrow (>) denotes the principal node. The asterisk (*) denotes the current mode.

   ```
   switch# show vcs
   Config Mode : Distributed
   VCS ID : 1
   VCS GUID : 86024da1-b2c2-4b35-955d-41c27598aaa0
   Total Number of Nodes : 2
   Rbridge-Id WWN Management IP Status HostName
   ----------------------------------------------------------------------------------
   154 >10:00:00:05:33:51:63:42* 10.17.37.154 Online switch
   2607:f0d0:1002:ff51:ffff:ffff:ffff:fff5
   165 10:00:00:05:33:B7:F0:00 10.17.37.165 Online
   ```

   The RBridge ID with the arrow pointing to the WWN is the cluster principal. In this example, RBridge ID 154 is the principal.

6. Log in to the principal cluster and make any desired global configuration changes. Global configuration changes must be made on the principal node; these changes then are distributed automatically to all nodes in the logical chassis cluster.

7. Make any local configuration changes from the principal. You can enter the RBridge ID configuration mode for any RBridge in the cluster from the cluster principal node.