IBM @server BladeCenter™ Fibre Channel Switch Interoperability Guide

Version 3.0

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Introduction

The *IBM eServer BladeCenter Switch Interoperability Guide* provides the details needed to configure and deploy multi-vendor switched fabrics. Detailed switch configuration data and step-by-step configuration procedures are provided to merge the IBM eServer BladeCenter with Brocade, Cisco, CNT, McDATA, and QLogic Fibre Channel switched fabrics that comply with the second revision of the Fibre Channel switch standard (FC-SW-2).

The FC-SW-2 Standard

FC-SW-2 is an open standard for switch-to-switch communication, allowing end users to choose best-in-class products with the assurance that these products can be deployed in multi-vendor storage area networks (SANs). Fibre Channel switches complying with this standard communicate connectivity and configuration information, path selection, and routing, as well as management and event services using the same language. FC-SW-2 also provides standardized mechanisms for SAN management. These applications can configure, manage, and monitor multi-vendor Fibre Channel SANs from any particular point in the fabric.

The IBM eServer BladeCenter Fibre Channel Switch Module and QLogic 6-port Enterprise Fibre Channel Switch Module (hereinafter referred to as the IBM switch modules), along with switches from Brocade, Cisco, CNT, McDATA, and QLogic, can communicate across three specified FC-SW-2 levels, enabling end-users to deploy products that best suit their needs.

Level 1 addresses switch connectivity and configuration by allowing Fibre Channel switches to interoperate at the link level and by enabling switches to be configured as part of physical and logical configurations (such as Zoning). Fabric Zones allow customers to partition their storage network based on application requirements and to create virtual private SANs within a larger SAN.

Level 2 defines path selection and routing, which create interoperability at the operational level. The fabric shortest path first (FSPF) selection process, which is a key element of FC-SW-2, allows paths to be set up between end devices using multi-switch fabrics. This enables customers to design and implement Fibre Channel configurations based on their individual requirements.

Level 3 specifies management and event services. These services allow Fibre Channel services to be implemented using a distributed model, increasing availability and scalability throughout the entire fabric. The Name Server and Management Server allow the physical and logical SAN topology to be discovered through upper-level SAN management applications, thereby facilitating resource management and capacity planning. Event services create the means for SAN administrators to be notified in case of configuration changes, allowing them to take appropriate action.

IBM TotalStorage Support

This guide is limited to stating vendor switch interoperability with IBM switch modules (IBM eServer BladeCenter Fibre Channel Switch Module and QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter) using the FC-SW-2 open standard for switch-to-switch communication. This guide is not intended to provide interoperability support statements for IBM TotalStorage or other Fibre Channel storage vendor products of SAN configurations.

For interoperability and technical support information for IBM TotalStorage products, please use the support and interoperability URLs for IBM or other vendor products listed below.

Contacting IBM eServer BladeCenter

For more information about merging the IBM eServer BladeCenter with other switched fabrics, please contact IBM customer service. Resources can be found at the following IBM Web sites:

IBM eServer BladeCenter http://www.ibm.com/servers/eserver/bladecenter/

IBM Technical Support http://www.ibm.com/support/us/

NOTE: If you are contacting IBM technical support concerning implementing multi-vendor switches, specify *machine type* as **BladeCenter** so that your questions can be routed to the appropriate support representative.

IBM eServer BladeCenter Literature http://www.pc.ibm.com/us/eserver/bladecenter/literature.html

Other IBM TotalStorage Contacts

For information on specific IBM products, refer to the following resources:

IBM FastT Storage Interoperability Matrix http://www.storage.ibm.com/disk/fastt/supserver.htm

IBM Enterprise Storage Server (ESS) Interoperability Matrix http://www.storage.ibm.com/disk/ess/supserver.htm

IBM TotalStorage Technical Support http://www.ssddom02storage.ibm.com/techsup/webnav.nsf/support/sanfcswitch

IBM TotalStorage SAN Fibre Channel Switch 3534 Model F08 http://www.ssddom02storage.ibm.com/techsup/webnav.nsf/support/3534f08 ftp://service.boulder.ibm.com/storage/san/3534f08/SM3534F08.pdf

IBM TotalStorage SAN Fibre Channel Switch 2109 Model F16 http://www.ssddom02storage.ibm.com/techsup/webnav.nsf/support/2109f16 ftp://service.boulder.ibm.com/storage/san/2109f16/SM2109F16.pdf IBM TotalStorage SAN Fibre Channel Switch 2109 Model F32 http://www.ssddom02storage.ibm.com/techsup/webnav.nsf/support/2109f32 ftp://service.boulder.ibm.com/storage/san/2109f32/SM2109F32.pdf

IBM TotalStorage SAN Fibre Channel Switch 2109 Model M12 <u>http://www.ssddom02storage.ibm.com/techsup/webnav.nsf/support/2109m12</u> <u>ftp://service.boulder.ibm.com/storage/san/2109m12/SM2109M12.pdf</u>

Contacting Other Storage Vendors

Cisco MDS 9216 Multilayer Fabric Switch Cisco MDS 9509 Multilayer Director http://www.cisco.com/go/ibm/storage

CNT FC/9000 Enterprise Director http://www.cnt.com/partners/technology/ibm

McDATA ES-3016 & ES-3032 Fabric Switches (IBM Models 2031-16 & 2031-32) http://www.ssddom02storage.ibm.com/techsup/webnav.nsf/support/es3000 ftp://service.boulder.ibm.com/storage/san/es3032/SMES3032.pdf

McDATA Sphereon 3216 & 3232 Fabric Switches (IBM Models 2031-216 & 2031-232) http://www.ssddom02storage.ibm.com/techsup/webnav.nsf/support/es3232 ftp://service.boulder.ibm.com/storage/san/es3232/SMES3232.pdf

McDATA 4500 Fabric Switch (IBM Model 2031-224) http://www.ssddom02storage.ibm.com/techsup/webnav.nsf/support/es4500 ftp://service.boulder.ibm.com/storage/san/es4500/SMES4500.pdf

McDATA Intrepid 6064 Enterprise Fibre Channel Director 1 & 2 Gbit/sec (IBM Model 2032-064) http://www.ssddom02storage.ibm.com/techsup/webnav.nsf/support/ed6064 ftp://service.boulder.ibm.com/storage/san/ed6064/SMED6064.pdf

McDATA Intrepid 6140 Director 2 Gbit/sec (IBM Model 2032-140) http://www.ssddom02storage.ibm.com/techsup/webnav.nsf/support/ed6140 ftp://service.boulder.ibm.com/storage/san/ed6140/SMED6140.pdf

QLogic SANbox2 Switches Product Information http://www.glogic.com/products/fc_san_switchs.asp

QLogic SANbox2 Switches Product Support http://www.glogic.com/support/home_resources.asp?id=37

QLogic SANbox 5200 Switches Product Information http://www.glogic.com/products/fc_san_switchs.asp

QLogic SANbox 5000 Switches Product Information and Product Support http://www.qlogic.com/support/product_resources.asp?id=540 Introduction

Supported Switches and Firmware Versions

The following IBM switch modules have been tested in the IBM BladeCenter environment and comply with the FC-SW-2 standard.

Switch Model	Firmware Version
IBM eServer BladeCenter Fibre Channel Switch Module	1.4.0.49.0 and above
QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter	4.1.0.17-0 and above

IBM Supported Switch and Firmware Versions

The IBM switch modules have tested interoperable with the following switches from Brocade, Cisco, CNT, McDATA, and QLogic that comply with the FC-SW-2 standard. See the referenced page for detailed instructions on merging IBM BladeCenter with these fabrics.

Manufacturer	Switch Model	Firmware Version
Brocade (see page 11)	SilkWorm 3200/ IBM TotalStorage SAN Switch H08	3.0.2g and above
	SilkWorm 3250/ IBM TotalStorage SAN Switch F08	4.2.0c and above
	SilkWorm 3800/ IBM TotalStorage SAN Switch H16	3.0.2g and above
	SilkWorm 3850/ IBM TotalStorage SAN Switch F16	4.2.0c and above
	SilkWorm 3900/ IBM TotalStorage SAN Switch F32	4.0.0e and above
	SilkWorm 12000/ IBM TotalStorage SAN Switch M14	4.0.0e and above
	SilkWorm 24000/ IBM TotalStorage Director M14	version?
Cisco (see page 129)	MDS 9216 Switch	1.2(1) and above
	MDS 9509 Director	1.2(1) and above
CNT (see page 173)	FC/9000 Switch	Code set 3.0.3 and above

Brocade, Cisco, CNT, McDATA, and QLogic Supported Switch and Firmware Versions

Manufacturer	Switch Model	Firmware Version
McDATA (see page 213)	ES-3016/IBM 2031-16	5.1 and above
	ES-3032/IBM 2031-32	5.1 and above
	Sphereon 3032/IBM 2031-216	5.1 and above
	Sphereon 3232/IBM 2031-232	5.1 and above
	Sphereon 4300/ [IBM equivalent?]	6.02.00 22 and above
	Sphereon 4500/IBM 2031-224	5.1 and above
	Intrepid 6064 Director/IBM 2032-064	5.1 and above
	Intrepid 6140 Director/IBM 2032-140	5.1 and above
QLogic (see page 311)	SANbox 5200	4.0.0.x-x and above
	SANbox2-8	1.5.x and above
	SANbox2-16	1.5.x and above
	SANbox2-64	1.5.x and above

Brocade, Cisco, CNT, McDATA, and QLogic Supported Switch and Firmware Versions (Continued)

How to Use this Guide

The *IBM eServer BladeCenter Switch Interoperability Guide* provides detailed switch configuration data and step-by-step configuration procedures for merging the IBM eServer BladeCenter with Brocade, Cisco, CNT, McDATA, and QLogic Fibre Channel switched fabrics.

NOTE: Updated versions of this guide can be downloaded from the following IBM Web site: <u>http://www.ibm.com/servers/eserver/bladecenter/</u>.

This section discusses:

- How the guide is organized (see page 7)
- CLI documentation conventions (see page 9)

How the Guide Is Organized

All chapters within the *IBM eServer BladeCenter Switch Interoperability Guide* are organized the same way. For a visual representation, see page 8.

- Integration Checklist. Lists the steps that must be completed to successfully merge the fabrics.
- Vendor and IBM BladeCenter Configuration Limitations. Details the configuration limitations, including features not supported by the vendor switches and IBM switch modules.
- Supported Switches and Firmware Versions. The supported switches and firmware versions for which this information applies.
- Backing Up and Restoring the Current Configuration Settings. The procedures for backing up and restoring the current switch configuration data.
- For the vendor switch and the IBM switch module, this guide provides graphical user interface (GUI) and command line interface (CLI) information, as appropriate, for the following:
 - **Domain ID Configuration**
 - Timeout Values
 - Principal Switch Configuration
 - **Zone Configuration**
 - Operating Mode Configuration
 - Vendor and IBM BladeCenter Specific Configuration
- Successful Integration Checklist. Lists the steps to be taken after the E_port connection has been established and the fabric has had time to update.

In addition, refer to the **Glossary** (see page 355) for terms used in this guide and to the **Index** (see page 361) for quick reference to key topics.



Visual Representation of How the Chapters Are Organized

CLI Documentation Conventions

The following is a sample CLI. Note the following:

- Items in brackets (such as [Online]) indicate the default value.
- Items in **bold** (such as **set config switch**) indicate the value to be entered or range of values that can be entered.
- Login. As each line displays, enter the value or accept the default value. Then press Enter.

```
Login: admin
Password: xxxxxxx
IBM BladeCenter #> admin start
IBM BladeCenter (admin) #> config edit
IBM BladeCenter (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  DefaultDomainID (decimal value, 1-239) [1] <97-127>
  DomainIDLock (True / False) [False] True
  SymbolicName (string, max=32 chars) [Fibre Channel Switch Module]
  R T TOV (decimal value, 1-1000 msec) [100]
  R A TOV (decimal value, 100-100000 msec) [10000]
  E D TOV (decimal value, 10-20000 msec) [2000]
  FS TOV (decimal value, 100-100000 msec) [5000]
  DS TOV (decimal value, 100-100000 msec) [5000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [Default Config]
IBM BladeCenter (admin-config) #> config save
IBM BladeCenter (admin) #> config activate
The configuration will be activated. Please confirm (y/n): [n] y
```

Merging IBM BladeCenter and Brocade Fabrics

The following IBM switch modules have been tested in the IBM BladeCenter environment and comply with the FC-SW-2 standard. They have tested interoperable with the following switches from Brocade that comply with the FC-SW-2 standard.

Manufacturer	Switch Model	Firmware Version
IBM	IBM eServer BladeCenter Fibre Channel Switch Module	1.4.0.49.0 and above
	QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter	4.1.0.17-0 and above
Brocade	SilkWorm 3200/ IBM TotalStorage SAN Switch H08	3.0.2g and above
	SilkWorm 3250/ IBM TotalStorage SAN Switch F08	4.2.0c and above
	SilkWorm 3800/ IBM TotalStorage SAN Switch H16	3.0.2g and above
	SilkWorm 3850/ IBM TotalStorage SAN Switch F16	4.2.0c and above
	SilkWorm 3900/ IBM TotalStorage SAN Switch F32	4.0.0e and above
	SilkWorm 12000/ IBM TotalStorage SAN Switch M14	4.0.0e and above
	SilkWorm 24000/ IBM TotalStorage Director M14	version?

IRM and Brocade Supported	Switch and Firmware Versions
ibin and biocade Supported	Switch and I milware versions

The following chapters provide detailed information about merging Brocade and IBM BladeCenter fabrics:

- Brocade SilkWorm 3000 Series Switches / IBM TotalStorage SAN Switches (8-Port and 16-Port) (see page 13)
- Brocade SilkWorm Switches / IBM TotalStorage SAN Switches (14-Port and 32-Port) (see page 71)

Brocade SilkWorm 3000 Series Switches / IBM TotalStorage SAN Switches (8-Port and 16-Port)

Integration Checklist

The following steps must be completed to successfully merge Brocade and IBM BladeCenter fabrics. The remainder of this section provides detailed instructions and examples.

ATTENTION!!

- Back up the current switch configuration data prior to performing the following steps so that the configuration is available if something goes wrong (see the first step for details).
- Disruptions in the fabric can occur as a result of performing the following steps. Therefore, it is recommended that these changes be done during down time or off-peak hours.
- ✓ Back up the current switch configuration data (see "Backing Up and Restoring the Current Configuration Settings" on page 17).
- ✓ Verify that the correct version of switch firmware is installed on each switch (see "Supported Switches and Firmware Versions" on page 16).
- Ensure that each switch has a unique Domain ID and that it falls within the proper range (see "Domain ID Configuration" on page 19).
- ✓ Set all switches to the appropriate timeout values (see "Timeout Values" on page 31).
- ✓ Ensure that all Zone set and Zone names are unique and conform to ANSI T11 standards (see "Active Zone Set Names" on page 47).
- ✓ Ensure that all zone members are specified by WWPN (see "Zone Types" on page 56).
- ✓ Ensure that all Brocade switches are configured for Interoperability mode (see "Operating Mode Configuration" on page 64).
- ✓ Ensure that Brocade's Platform Management Server is disabled (see "Brocade Specific Configuration" on page 65).
- ✓ Verify that the fabrics have successfully merged (see "Successful Integration Checklist" on page 66).
- ✓ Contact IBM Technical Support to obtain the document, *Remote Boot of IBM BladeCenter from IBM FAStT*, if you are planning to use the boot form SAN functionality.

Brocade Configuration Limitations

The configuration limitations are as follows:

- When merging Brocade and IBM BladeCenter fabrics, be sure to enable Interoperability mode on all Brocade switches in the fabric. Brocade switches that are not in Interoperability mode are unable to communicate with IBM BladeCenter FC-SW-2 fabrics and Brocade fabrics in proprietary mode.
- Existing Brocade switches retain the following features that are available once the IBM switch module is merged into a heterogeneous fabric. The features will function on Brocade switches that are in Interoperability mode:
 - QuickLoop. Functions as described by Brocade on Brocade switches running in Interoperability mode. In addition, QuickLoop functions when an IBM switch module is between two Brocade QuickLoop partners. Brocade switches and IBM switch modules cannot become QuickLoop partners.
 - Trunking. Operates on all Brocade switches configured with this feature. Additionally, traffic submitted to and from a IBM switch module-attached device (initiator/target) can pass through Brocade Trunked ISL ports.
 - Aliasing. Operates on all Brocade switches configured with this feature. Can only be managed by the originating switch vendor's management utility or CLI. Aliased names do not propagate between vendors' management utilities, but when an Alias is created and entered into a zone, the WWPNs that were in the Alias propagate correctly.
- To support zoning with an IBM switch module and the Brocade SilkWorm 3200/IBM TotalStorage SAN Switch H08, you must purchase and enable a fabric zoning license from Brocade.
- Brocade proprietary features that may not function in multi-vendor fabrics include:
 - Brocade Fabric Assist
 - Brocade Remote Switch
 - □ Brocade Extended Fabric
 - Brocade Advanced Performance Monitor
 - Brocade Secure Fabric OS
 - Brocade Fabric Services
 - Management Server
 - Platform Support
 - Virtual Channels
 - Broadcast Zones

- When zoning ports greater than 16, be sure they reside in separate zones. Otherwise, you may not be able to see the target devices in all the ports. When forming an ISL between these larger port Brocade switches and another vendor in the Interoperability mode, Brocade switches no longer have default zones. Therefore, the attached switches—without extended addressing—cannot adequately address the higher Brocade switch ports without Name Server propagation. To enable upper port connectivity, follow these steps:
 - 1. Establish the ISL between switches with a port lower than 16.
 - 2. Apply any required zones in ports lower than 16.
 - 3. After applying zones in the lower numbered ports, the ports greater than 16 should be usable for zoning or establishing an ISL.
- When merging Brocade and IBM BladeCenter fabrics, a maximum of 31 switches can be configured.
- **NOTE:** When making zone changes in a multi-vendor environment using the IBM BladeCenter SAN Utility or IBM BladeCenter SAN Browser QLogic SANbox Manager GUI, zone changes propagate to the Brocade switches and display within the Brocade CLI but not in the Web Tools GUI. Zone changes using Brocade's Web Tools will successfully propagate to the IBM BladeCenter SAN Utility and IBM BladeCenter SAN Browser QLogic SANbox Manager GUI and QLogic CLI-IBM BladeCenter CLI. [Does this apply? What should this state?]

Contacting Brocade

For more information on configuring the Brocade switches, please see the contact information located in the Introduction (see page 3).

IBM BladeCenter Configuration Limitations

If you will be implementing the I/O stream guard feature, please contact your IBM technical support representative prior to configuring. Additional configuration procedures may be required.

Supported Switches and Firmware Versions

The following IBM switch modules have been tested in the IBM BladeCenter environment and comply with the FC-SW-2 standard. They have tested interoperable with the following switches from Brocade that comply with the FC-SW-2 standard.

Manufacturer	Switch Model	Firmware Version
IBM	IBM eServer BladeCenter Fibre Channel Switch Module	1.4.0.49.0 and above
	QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter	4.1.0.17-0 and above
Brocade	SilkWorm 3200 /IBM TotalStorage SAN Switch H08	3.0.2g and above
	SilkWorm 3250/ IBM TotalStorage SAN Switch F08	4.2.0c and above
	SilkWorm 3800 /IBM TotalStorage SAN Switch H16	3.0.2g and above
	SilkWorm 3850/ IBM TotalStorage SAN Switch F16	4.2.0c and above

IBM and Brocade Supported Switch and Firmware Versions

<u>ATTENTION!!</u> When updating Brocade firmware, the switch may default to a proprietary operating mode. Therefore, after a firmware update, verify that the switch is still set to Interoperability mode (see "Operating Mode Configuration" on page 64).

The following figures illustrate a Brocade Fibre Channel fabric prior to and after merging with an IBM BladeCenter.





Brocade Fibre Channel Fabric Prior to Merging with the IBM BladeCenter

Brocade Fibre Channel Fabric with the IBM BladeCenter

Backing Up and Restoring the Current Configuration Settings

Back up the current Brocade switch configuration data prior to following the steps to merge Brocade and IBM BladeCenter fabrics so that the configuration can be restored if something goes wrong.

NOTE: For additional information, refer to the documentation provided with the switch.

Backup Procedure

Do the following to create a software copy backup of the switch configuration.

- **NOTE:** This procedure requires access to an FTP server for Fabric OS 4.x, and an FTP or RSHD server for Fabric OS 3.x.
- 1. Verify that the FTP (or RSHD, as appropriate) service is running on the host workstation.
- 2. Log into the switch as the admin user.
- 3. Enter the configupload command.
- 4. Provide the information requested at the prompts.

For example:

switch:admin> configupload Server Name or IP Address [host]: 192.168.15.42 User Name [none]: user21 File Name [config.txt]: config-switch.txt Password: xxxxxx upload complete switch:admin>

Restore Procedure

If you need to restore the Brocade configuration settings that you backed up, do the following:

ATTENTION!! This procedure requires a reboot of the switch.

- **NOTE:** This procedure requires access to an FTP server for Fabric OS 4.x, and an FTP or RSHD server for Fabric OS 3.x.
- 1. Verify that the FTP (or RSHD, as appropriate) service is running on the host workstation.
- 2. Log into the switch as the admin user.
- 3. Shut down the switch by entering the **switchdisable** command.
- 4. Enter the **configdownload** command.
- 5. Provide the information requested at the prompts.
- 6. Reboot the switch by entering the **reboot** command:

For example:

```
switch:admin> configdownload
Server Name or IP Address [host]: 192.168.15.42
User Name [None]: user21
File Name [config.txt]: config-file.txt
Password: xxxxxx
download complete
switch:admin>
switch:admin> reboot
```

Domain ID Configuration

To ensure that there are no conflicts between switches, we recommend that each switch have an assigned Domain ID. The following steps show how to set the Domain ID on both the Brocade switch and the IBM switch module.

NOTE: The Domain ID should be locked and unique within the 97–127 (0x61–0x7f) range.

Brocade's Web Tools

NOTE: The procedures differ based on the Brocade switch firmware level.

For Brocade switches with firmware levels 3.0.2g and above but less than 3.1.0, do the following:

- 1. Start Brocade's Web Tools. The **Fabric View** dialog box displays.
- 2. From the Fabric View dialog box, click the Administration button.



- 3. From the **Switch Admin for Brocade** dialog box, select the **Switch Settings** tab. Do the following:
 - a. In the **Domain ID** field, type or edit the Domain ID as appropriate.
 - b. Click OK.

Duitebblance: Dracedo 2000	Demointe 407 IM	****	0.50.01.0	Edibler	0.0000 4.00 Pt
witchiname: Brocade3800	Domainid: 127 W	WN: 10:00:00:60:6	09:50:00:0C	FINOV	8 2002, 1:00 PA
Report Port Setting Switch Settings	User Admin Network Config	Configure	Routing ogd St	Exter	nded Fabric Lic Admin
Name and Id Name Brocade380 Domain Id 127		Serial Nu	mber 10:00:0	0:60:69:50	:0b:6c
Status					
Enable C Disable					
Enable Ploable					
Extended Fabric Mode					
Extended Fabric Mode					
Extended Fabric Mode					
Extended Fabric Mode					
Extended Fabric Mode					
Extended Fabric Mode					
Extended Fabric Mode					
F Extended Fabric Mode		ок	Apply	Close	Reset
Extended Fabric Mode		ОК	Apply	Close	Reset
Extended Fabric Mode		OK	Apply	Close	Reset

For Brocade switches with firmware level 3.1.0 and above, do the following:

- 1. Start Brocade's Web Tools. The **Switch Explorer** dialog box displays.
- 2. From the **Switch Explorer** dialog box, click the **Admin** button.



- 3. From the Switch Admin dialog box, select the Switch Information tab. Do the following:
 - a. In the Switch Status section, select the **Disable** radio button. Click **Apply**.
 - b. In the Name and ID section **Domain ID** field, type or edit the Domain ID as appropriate. Click **Apply**.
 - c. In the Switch Status section, select the **Enable** radio button. Click **Apply**.
 - d. Click Close.

itchName: BRCI	03	DomainID: 103 \	AWN: 10:1	00:00:60	69:c0:92:a9			Wed Jul 21 2004, 3:41
Port Setting Switch Info	Routing	Extended Fabric	User A	dmin Uplo	Configure	Quic	kLoop	Trunk Information
-Name and ID-	Name Domain ID	BRCD3			Serial N	umber	10:00:0	D:60:69:c0:92:a9
Switch Status C Enable C Disable Report View Report				Email Configuration Mail Server Domain Name		0.0.0.0 none Remove All		
					Apply	Close	Re	set Refresh
itch Commit	. Messages							

Brocade CLI

NOTE: Use the following CLI commands when Brocade's Web tools are not available.

For Brocade switches with firmware levels 3.0.2g and above but less than 3.1.0, do the following:

```
Login: admin
Password: xxxxxxx
Brocade3800:admin> switchdisable
Brocade3800:admin> configure
  The following options display:
  Fabric parameters (yes, y, no, n): [no] yes
  Domain: (1-239) [98] <97-127>
  BB credits: 91-27) [16]
  R A TOV: (4000..120000) [10000]
  E D TOV: (1000..5000) [2000]
  WAN TOV: (1000..120000) [0]
  WAN_RTT_DLY_MAX: (100..5000) [200]
  Data field size: (256..2112) [2112]
  Sequence Level Switching: (0..1) [0]
  Disable Device Probing: (0..1) [0]
  Suppress Class F Traffic: (0..1) [0]
  SYNC IO mode: (0..1) [0]
  VC Encoded Address Mode: (0..1) [0]
  Core Switch PID Format: (0..1) [1]
  Per-frame Route Priority: (0..1) [0]
  Long Distance Fabric: (0..1) [0]
  Virtual Channel parameters (yes, y, no, n): [no]
  Zoning Operation parameters (yes, y, no, n): [no]
  RSCN Transmission Mode (yes, y, no, n): [no]
  NS Operation Parameters (yes, y, no, n): [no]
  Arbitrated Loop parameters (yes, y, no, n): [no]
  System services (yes, y, no, n): [no]
  Portlog events enable (yes, y, no, n): [no]
Brocade:3800:admin> switchenable
```

For Brocade switches with firmware level 3.1.0 and above, do the following:

```
Login: admin
Password: xxxxxxx
BRCD3:admin> switchdisable
BRCD3:admin> configure
Configure...
  Fabric parameters (yes, y, no, n): [no] yes
    Domain: (1..239) [1] 103
    BB credit: (1..27) [16]
    R A TOV: (4000..120000) [10000]
    E D TOV: (1000..5000) [2000]
    Data field size: (256..2112) [2112]
    Sequence Level Switching: (0..1) [0]
    Disable Device Probing: (0..1) [0]
    Suppress Class F Traffic: (0..1) [0]
    SYNC IO mode: (0..1) [0]
    VC Encoded Address Mode: (0..1) [0]
    Switch PID Format: (0..2) [1]
    Per-frame Route Priority: (0..1) [0]
    Long Distance Fabric: (0..1) [0]
  Virtual Channel parameters (yes, y, no, n): [no]
  Zoning Operation parameters (yes, y, no, n): [no]
  RSCN Transmission Mode (yes, y, no, n): [no]
  Arbitrated Loop parameters (yes, y, no, n): [no]
  System services (yes, y, no, n): [no]
  Portlog events enable (yes, y, no, n): [no]
Committing configuration...done.
BRCD3:admin> switchenable
```

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN Utility—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Switch menu, select Switch Properties.

IBM BladeCent	ter™ SAN Utility - Face	plate
<u>F</u> ile Fabric <u>S</u> w	vitch Port Zoning	<u>/</u> iew <u>H</u> elp
Add Archive Load Firmware Load Firmware FC Fabrics Firmware Fallback • • • 10.20 Set Date/Time		Coning deCenter Switch rmal
φ- 0 10.20. Si cos sb Bi Νe	<u>witch Properties</u> etwork Properties Toggle Beacon	
Ex Co	xp <u>o</u> rt Alarm Log onfigure <u>A</u> larm Thresh	olds
Reset Switch Restore Factory Defaults		
		Dev Switch Port Address Type VWVNN
		Name Server Switch Port Stats Port Info Configured Zonesets Alarm Log
		—————————————————————————————————————

- 3. From the Switch Properties—IBM BladeCenter SAN Utility dialog box, do the following:
 - a. Select the **Domain ID Lock Disable** radio button.
 - b. In the **Domain ID** box, type a unique Domain ID in the 97–127 range for the switch.
 - c. Select the **Domain ID Lock Enable** radio button to ensure that the switch always has that Domain ID.
 - d. Click OK.

World Wide Name: 10 Operational State: on	World Wide Name: 10:00:00:c0:dd:00:72:c7 Operational State: online			630000 V1.4.0.26-5		
Chassis Name: IB IP Address: 10	M BladeCente 1.20.78.93	er Switch	MAC address:	00:c0:dd:00:72:c6		
Chassis Name:	IBM BladeC	enter Switch				
Administrative State:	Administrative State: online 🔹			Timeout Values		
🔶 Domain ID:	99		R_A_TOV:	10000		
Domain ID lock:	• Enable	O Disable	R_T_TOV:	100		
Broadcast Support:	• Enable	O Disable	E_D_TOV:	2000		
In-band Management	• Enable	O Disable				
For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Switch menu, select Switch Properties.

IBM BladeC	enter(TM) SAN	Browser	- Facep	olate							
<u>File</u> Fabric	Switch Port	Zoning	⊻iew	Wizards	<u>H</u> elp						
Add Refr	Archive Restore User Account Set Date/Time	s 2									
🌳 🗢 10.20.	 Temperature	Threshol	ds								
- Swit	Switch Prope	rties									
	Network Prop	erties									
	SNMP Proper	ties									
	🗆 Toggle Bead	con									
	Port Threshol	ld Alarm (<u>C</u> onfigu	ration							
	Load Firmwar	re			3	4 5 6	78	9 10	11 12 13 1	14	
	Activate Firm	ware									
	<u>F</u> irmware Fall	back									
	Reset Switch					Nickname	Details	EC Address	Switch	Port	Target/Initi
	Restore Facto	ory Defau	lts				(1)	7c0100	Switchblade2	Bay 1	Unknown
		21.0	1.00.09.	00.30.49.80	_		(i)	7:0200	Switchblade2	Bay 2	Unknown
		Dev	rices	Switch	Port S	tats Port li	fo Conf	igured Zonese	ets		

- 3. From the Switch Properties—IBM BladeCenter SAN Browser dialog box, do the following:
 - a. Select the **Domain ID Lock Disable** radio button.
 - b. In the **Domain ID** box, type a unique Domain ID in the 97–127 range for the switch.
 - c. Select the **Domain ID Lock Enable** radio button to ensure that the switch always has that Domain ID.
 - d. Click OK.

World Wile Name. 10.00.00.00.00.00.00.00	First Port Address: 7c000	10		
Operational State: online	Firmware Version: V4.1.0.17-0			
Symbolic Name: Switchblade2	MAC address: 00:c0:	dd:02:1d:67		
IP Address: 10.20.67.24				
Symbolic Name: Switchblade2	Domain ID lock:	Enable 💿 Disable 🚽		
Administrative State: online 🔹	Broadcast Support:	Enable 🔿 Disable		
Domain ID: 124 0x7c	In-band Management: 💿	Enable 🔿 Disable		
FDMI HBA Entry Limit: 1000	FDMI:	Enable 🔿 Disable		
Timeout Values	FC CH/ 2 Commission			
R_A_TOV: 10000	FC-SW-2 Compliant:	Enable O Disable		
E D TOV: 2000	Legacy Address Format: 🔘	Enable 🔘 Disable		

IBM BladeCenter CLI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM switch modules, use the following CLI commands when the IBM BladeCenter SAN Utility is not available:

```
Login: admin
Password: xxxxxxx
IBM BladeCenter #> admin start
IBM BladeCenter (admin) #> config edit
IBM BladeCenter (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  DefaultDomainID (decimal value, 1-239) [1] <97-127>
  DomainIDLock (True / False) [False] True
  SymbolicName (string, max=32 chars) [Fibre Channel Switch Module]
  R T TOV (decimal value, 1-1000 msec) [100]
  R A TOV (decimal value, 100-100000 msec) [10000]
  E D TOV (decimal value, 10-20000 msec) [2000]
  FS TOV (decimal value, 100-100000 msec) [5000]
  DS TOV (decimal value, 100-100000 msec) [5000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [Default Config]
IBM BladeCenter (admin-config) #> config save
IBM BladeCenter (admin) #> config activate
The configuration will be activated. Please confirm (y/n): [n] y
```

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, use the following CLI commands when the IBM eServer BladeCenter SAN Browser is not available:

```
Switchblade2: admin> admin start
Switchblade2 (admin): admin> config edit
  The config named default is being edited.
Switchblade2 (admin-config): admin> set config switch
  A list of attributes with formatting and current values will follow.
  Enter a new value or simply press the ENTER key to accept the current
  value. If you wish to terminate this process before reaching the end of
  the list press 'q' or 'Q' and the ENTER key to do so.
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  FdmiEnabled (True / False) [True]
  FdmiEntries (decimal value, 0-1000) [1000]
  DefaultDomainID (decimal value, 1-239) [1] 124
  DomainIDLock (True / False) [False] true
  SymbolicName (string, max=32 chars) [Switchblade2]
  R A TOV (decimal value, 100-100000 msec) [10000]
  E D TOV (decimal value, 10-20000 msec) [2000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [IBM eServer BladeCenter(TM)
  6-port Enterprise Fibre Channel Swit]
  FC-SW-2 Compliant (True / False) [True]
  Finished configuring attributes.
  This configuration must be saved (see config save command) and
  activated (see config activate command) before it can take effect.
  To discard this configuration use the config cancel command.
Switchblade2 (admin-config): admin> config save
  The config named default has been saved.
Switchblade2 (admin): admin> config activate
  The currently active configuration will be activated.
  Please confirm (y/n): [n] y
Switchblade2 (admin): admin> admin end
```

Timeout Values

As per FC-SW-2 Fibre Channel standards, set all switches to the following timeout values (TOV) in order to successfully establish an E_port connection.

 $R_A_TOV = 10$ seconds (The setting is **10000**.) $E_D_TOV = 2$ seconds (The setting is **2000**.)

NOTE: These are the default values for **R_A_TOV** and **E_D_TOV**. In addition, **BB Credits** will need to be set to **12** (the default is **16**).

This section provides the steps to change these values.

Brocade's Web Tools

<u>ATTENTION!!</u> The following steps take the switch offline; therefore, do not perform them on a switch being managed in-band.

NOTE: The procedures differ based on the Brocade switch firmware level.

For Brocade switches with firmware levels 3.0.2g and above but less than 3.1.0, do the following:

- 1. Start Brocade's Web Tools. The **Fabric View** dialog box displays.
- 2. From the **Fabric View** dialog box, click the **Administration** button.

Fabric View - Microsoft Internet Explorer	
File Edit View Favorites Tools Help	
🔇 Back 🔹 🐑 - 💌 😰 🏠 🔎 Search 🤺 F	avorites 🜒 Media 🧭 🔗 *
Address 💩 http://10.20.67.3/	Go Links 🎽
Fabric Events Fabric Topology Name Server One Admin Summary View Status Legend Healthy Marginal Down Unmonitored	▲ A Control of the second
e	🌍 Internet

- From the Switch Admin for Brocade dialog box, select the Configure tab. Verify that R_A_TOV is set to 10000, E_D_TOV is set to 2000, and BB Credit is set to 12. If the settings are not correct, do the following:
 - a. In the **BB Credit** box, change the setting to **12**.
 - b. In the **R_A_TOV** box, change the setting to **10000**.
 - c. In the **E_D_TOV** box, change the setting to **2000**.
 - d. Click OK.

ritchName: brocade	DomainId: 104 WWN: 1	0:00:00:60:69:50:10:	64 Thu Di	ec 5 2002, 5:41 PM
Switch Settings Report Port Setting	Network Config	Firm Upgd Configure	SNMP	Lic Admin dended Fabric
Fabric Parameters				
BB Credit 16	R_A_TOV 10000	E_D_TOV 2000	Data Size	2112
C Sequence Switching	Disable Devic	e Probing F P	er-Frame Route	s Priority
VC Encoded Address	Mode 🔽 Supress Cla	ss F Traffic		
Victual Channel Reservat				
Vinual Channel Paramete	VC Priority	2 0		
vo Priority 2 2	VC Filolity	5 µ2	VC Filolity 4 12	
VC Priority 5 12	VC Priority	0 3	VC Priority 7 13	
Arbitrated Loop Paramete	rs	System Services		
🔽 Send Fan Frames		□ rstatd	🔽 rapid	
Always Send RSCN				
Do Not Allow AL PA 0x	00	☐ rusersd	RLS Probing	
		OK L AD	nhu Classa	Basat
			piy Close	Reser
-				2.1
sitch Commit Messages				-

For Brocade switches with firmware level 3.1.0 and above, do the following:

- 1. Start Brocade's Web Tools. The **Switch Explorer** dialog box displays.
- 2. From the **Switch Explorer** dialog box, click the **Admin** button.



3. From the **Switch Admin** dialog box, select the **Configure** tab. Verify that **R_A_TOV** is set to **10000**, **E_D_TOV** is set to **2000**, and **BB Credit** is set to **12**. If the settings are *not* correct, proceed to step 4. If the settings are correct, no changes need to be made; proceed to the next appropriate section.

Switch Admin - Microsoft	DomainID: 103	WWN: 10:00:00:60:1	59:c0:92:a9		Thu Jul 22, 2004, 1:46
Switch Information	Network Config	Upload User Admin	d/Download Configure	SNMP QuickLoop	License Admin Trunk Information
Fabric Parameters					
BB Credit	12		_	🗖 Sequence Leve	el Switching
R_A_TOV	10000		_	Disable Device	Probing
E_D_TOV	2000		_	Per-Frame Rout	iing Priority
Datafield Size	2112			🗖 Supress Class	F Traffic
Switch PID Format	Format 1 (0-base, 256 pc	ort Encoding)	~		
Fabric Virtual Channel A	rbitrated Loop System				
			Apply	Close Re	set Refresh
_					
itch Commit Messages	3				
minister switch configuration	information				

4. Select the **Switch Information** tab. In the Switch Status section, select the **Disable** radio button. Click **Apply**.

🖉 Switch Admin - Microsoft Inl	ernet Explorer		
SwitchName: BRCD3	DomainID: 103 VWWN: 10:	00:00:60:69:c0:92:a9	Wed Jul 21 2004, 3:41 PM
Port Setting Routing Switch Information	Extended Fabric User A Network Config	dmin Configure QuickLoop Upload/Download SNMP	Trunk Information
-Name and ID Name Domain ID	BRCD3	Serial Number 10:00:	00:60:69:c0:92:a9
Switch Status C Enable C Disable Report View Report		Email Configuration Mail Server 0.0.0. Domain Name none	Remove All
AY.		Apply Close R	eset Refresh
Switch Commit Messages			

- 5. Select the **Configure** tab, do the following as appropriate:
 - a. In the **BB Credit** box, change the setting to **12**.
 - b. In the **R_A_TOV** box, change the setting to **10000**.
 - c. In the **E_D_TOV** box, change the setting to **2000**.
 - d. Click Apply.

🗿 Switch Admin - Microsoft	Internet Explorer				_	
SwitchName: BRCD3	DomainID: 103	VW/N: 10:00:00:60):69:c0:92:a9		Thu Jul 22, 2004, 1	:41 PN
Switch Information	Network Config	Uplo	ad/Download	SNMP	License Admin	
Port Setting Routing	Extended Fabric	User Admin	Configure	QuickLoop	Trunk Informatio	n
Fabric Parameters						
BB Credit	12			Sequence Lev	el Switching	
R_A_TOV	10000			Disable Device	Probing	
E_D_TOV	2000			Per-Frame Rou	ting Priority	
Datafield Size	2112			Supress Class	F Traffic	
Switch PID Format	Format 1 (0-base, 256 pc	ort Encoding)	Ŧ			
Fabric Virtual Channel Ar	bitrated Loop System					_
			Apply	Close Re	Refresh	
A T						
Changes to [Switch Inf	ormation] Panel at	: Thu Jul 22	2004, 1:4	l PM		
 Switch Status has been	x					
	x					
1						

6. Select the **Switch Information** tab. In the Switch Status section, select the **Enable** radio button to re-enable to switch. Click **Apply**

SwitchName: BRCD3	DomainID: 103 VWVN: 1	0:00:00:60:69:c0:92:a9	Thu Jul 22 2004, 1
Port Setting Routing Switch Information	Extended Fabric User Network Config	Admin Configure Quic Upload/Download S	kLoop Trunk Informati SNMP License Admir
Name and D			
Name and ID	- PRCD2	Control Manakara	40.00.00.00.00.00.00
Nam	e jokcos	Serial Number	J10:00:00:60:69:60:92:89
Domain I	0 103		
Switch Status		Email Configuration	
🕨 🖸 Enable 🔿 Disable		Mail Server	0.0.0.0
		Domain Name	none
Report			
View Report			Remove All
		Apply Close	Reset Refresh
Switch Commit Messages			

Brocade CLI

NOTE: Use the following CLI commands when Brocade's Web tools are not available.

Login: admin Password: xxxxxxx

Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.

```
BRCD3:admin> configshow
```

If these timeout values are *not* correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
BRCD3:admin> switchdisable
BRCD3:admin> configure
Configure...
  Fabric parameters (yes, y, no, n): [no] yes
    Domain: (97..127) [103]
    BB credit: (1..27) [16] 12
    R A TOV: (4000..120000) [9000] 10000
    E D TOV: (1000..5000) [1500] 2000
    Data field size: (256..2112) [2112]
    Sequence Level Switching: (0..1) [0]
    Disable Device Probing: (0..1) [0]
    Suppress Class F Traffic: (0..1) [0]
    SYNC IO mode: (0..1) [0]
    Switch PID Format: (0..2) [1]
    Per-frame Route Priority: (0..1) [0]
    Long Distance Fabric: (0..1) [0]
  Virtual Channel parameters (yes, y, no, n): [no]
  Zoning Operation parameters (yes, y, no, n): [no]
  RSCN Transmission Mode (yes, y, no, n): [no]
  Arbitrated Loop parameters (yes, y, no, n): [no]
  System services (yes, y, no, n): [no]
  Portlog events enable (yes, y, no, n): [no]
BRCD3:admin> switchenable
```

IBM BladeCenter GUI

<u>ATTENTION!!</u> The following steps take the switch offline; therefore, do not perform them on a switch being managed in-band.

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN Utility—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Switch menu, select Switch Properties.



3. From the **Switch Properties**—**IBM BladeCenter SAN Utility** dialog box, verify that **R_A_TOV** is set to **10000** and **E_D_TOV** is set to **2000**. If the settings are not correct, proceed to step 4. If the settings are correct, no changes need to be made; proceed to the next appropriate section.

World Wide Name: 10	00:00:c0:dd:00:72:c7	FC Address:	630000
Operational State: on	line	Firmware Version	V1.4.0.26-5
Chassis Name: IBN IP Address: 10	I BladeCenter Switch	MAC address:	00:c0:dd:00:72:c6
Chassis Name:	IBM BladeCenter Switc	h	
Administrative State:	online	 Timeout Values 	
Domain ID:	99	R_A_TOV:	10000
Domain ID lock:	🖲 Enable 🔿 Disab	R_T_TOV:	100
Broadcast Support:	• Enable 🔿 Disab	E_D_TOV:	2000
In-band Management:	Enable O Disab	le	

- 4. From the Switch Properties—IBM BladeCenter SAN Utility dialog box Administrative State list, select offline. Click OK.
- 5. Re-enter the **Switch Properties—IBM BladeCenter SAN Utility** dialog box (see step 2). Do the following:
 - a. In the **R_A_TOV** box, enter **10000**.
 - b. In the **E_D_TOV** box, enter **2000**.
 - c. Click OK.
- 6. Re-enter the Switch Properties—IBM BladeCenter SAN Utility dialog box (see step 2). In the Administrative State list, select Online. Click OK.

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Switch menu, select Switch Properties.



3. From the **Switch Properties—IBM BladeCenter SAN Browser** dialog box, verify that **R_A_TOV** is set to **10000** and **E_D_TOV** is set to **2000**. If the settings are *not* correct, proceed to step 4. If the settings are correct, no changes need to be made; proceed to the next appropriate section.

nona mac nan	e: 10:00:00:c0:dd:02:1d:68	First Port Address: 7	c0000	
Operational Stat	e: online	Firmware Version: V	4.1.0.17-0	
Symbolic Name:	Switchblade2	MAC address: 0	0:c0:dd:02:10	1:67
IP Address:	10.20.67.24			
Symbolic Name:	Switchblade2	Domain ID lock:	• Enable) Disa
Administrative S	tate: online 🔻	Broadcast Support:	• Enable	O Disa
Domain ID:	124 0x 7c	In-band Management:	• Enable	O Disa
FDMI HBA Entry L	.imit: 1000	FDMI:	• Enable) Disa
Timeout Values		EC EW 2 Compliants	© Frankla	0.01
R_A_TOV:	10000	rc-3w-2 compliant.	Enable	U Disa
	2000	Legacy Address Format:	O Enable	Disa

- 4. To modify the timeout value settings, do the following:
 - a. In the Administrative State drop-down box, select offline. Click OK.
 - b. In the Timeout Values section, do the following:
 - (1) In the **R_A_TOV** box, enter **10000**.
 - (2) In the **E_D_TOV** box, enter **2000**.
 - c. Click OK.
 - d. In the Administrative State drop-down box, select online. Click OK.

World Wide Name	:10:00:00:c0:dd:02:1d:ea	First Port Address: 0	10000	
Operational State	offline	Firmware Version: V	/4.1.0.17-0	
Symbolic Name:	Switchblade1	MAC address: 0	0:c0:dd:02:1	t:e9
IP Address:	10.20.67.24			
Symbolic Name:	Switchblade1	Domain ID lock:	• Enable	O Disab
Administrative Sta	ite: online	Broadcast Support:	• Enable	O Disab
Domain ID:	123 0x 7b	In-band Management:	• Enable	O Disab
FDMI HBA Entry Li	nit: 1000	FDMI:	• Enable	O Disab
Timeout Values R_A_TOV:	10000	FC-SW-2 Compliant:	Enable	O Disab
		Legacy Address Format:	O Enable	Disab

5. From the **Switch Properties—IBM BladeCenter SAN Utility** dialog box, verify your changes (see step 3).

IBM BladeCenter CLI

<u>ATTENTION!!</u> The following steps take the switch offline; therefore, do not perform them on a switch being managed in-band.

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, use the following CLI commands when the IBM eServer BladeCenter SAN Utility is not available:

```
Login: admin
Password: xxxxxxx
```

Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.

```
IBM BladeCenter #> show config switch
```

If these timeout values are *not* correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
IBM BladeCenter #> admin start
IBM BladeCenter (admin) #> config edit
IBM BladeCenter (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  DefaultDomainID (decimal value, 1-239) [1]
  DomainIDLock (True / False) [True]
  SymbolicName (string, max=32 chars) [Fibre Channel Switch Module]
  R T TOV (decimal value, 1-1000 msec) [100]
  R A TOV (decimal value, 100-100000 msec) [9000]
                                                     10000
  E D TOV (decimal value, 10-20000 msec) [1000]
                                                   2000
  FS TOV (decimal value, 100-100000 msec) [5000]
  DS TOV (decimal value, 100-100000 msec) [5000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [Default Config]
IBM BladeCenter (admin-config) #> config save
IBM BladeCenter (admin) #> config activate
The configuration will be activated. Please confirm (y/n): [n] y
```

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, use the following CLI commands when the IBM eServer BladeCenter SAN Browser is not available:

Login: **admin** Password: **xxxxxxx**

Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.

Switchblade2: admin> **show config switch**

If these timeout values are *not* correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
Switchblade2: admin>
Switchblade2: admin> admin start
Switchblade2 (admin): admin> config edit
The config named default is being edited.
Switchblade2 (admin-config): admin> set config switch
```

A list of attributes with formatting and current values will follow. Enter a new value or simply press the ENTER key to accept the current value. If you wish to terminate this process before reaching the end of the list press 'q' or 'Q' and the ENTER key to do so.

AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online] BroadcastEnabled (True / False) [True] InbandEnabled (True / False) [True] FdmiEnabled (True / False) [True] FdmiEntries (decimal value, 0-1000) [1000] DefaultDomainID (decimal value, 1-239) [124] DomainIDLock (True / False) [True] SymbolicName (string, max=32 chars) [Switchblade2] R_A_TOV (decimal value, 100-100000 msec) [9000] 10000 E_D_TOV (decimal value, 10-20000 msec) [1000] 2000 PrincipalPriority (decimal value, 1-255) [254] ConfigDescription (string, max=64 chars) [IBM eServer BladeCenter(TM) 6-port Enterprise Fibre Channel Swit] FC-SW-2 Compliant (True / False) [True] Finished configuring attributes.

```
This configuration must be saved (see config save command) and
activated (see config activate command) before it can take effect.
To discard this configuration use the config cancel command.
Switchblade2 (admin-config): admin> config save
The config named default has been saved.
Switchblade2 (admin): admin> config activate
The currently active configuration will be activated.
Please confirm (y/n): [n] y
Switchblade2 (admin): admin> admin end
```

Principal Switch Configuration

Brocade switches and IBM switch modules negotiate for principal switch automatically. Therefore, there are no steps to take.

Zone Configuration

This section discusses configuring active Zone Set names and Zone types.

Active Zone Set Names

NOTE: For Brocade, Zone Set is referred to as Zone Configuration.

The Zone and Zone Set names on each switch must be unique. If not, change one of the duplicate names. All Zone Set and Zone names must conform to the Fibre Channel (FC) Standards for Zone Naming (ANSI T11/00-427v3):

- 1. Must be 1–64 characters in length.
- 2. All characters are ASCII.
- 3. First character is [a-z] or [A-Z].
- 4. All other characters must be [a–z], [A–Z], [0–9], or the _ character. Other characters (\$-^) may not be supported by all vendors and should be avoided.

Brocade's Web Tools

NOTE: The procedures differ based on the Brocade switch firmware level.

For Brocade switches with firmware levels 3.0.2g and above but less than 3.1.0, do the following:

- 1. Start Brocade's Web Tools. The **Fabric View** dialog box displays.
- 2. From the Fabric View dialog box, click the Zone Admin button.



3. From the **Zone Administration** dialog box, select the **WWN Config** tab. Verify that all config names conform to the standards discussed under "Active Zone Set Names" on page 47 and are unique between the switches.

			1
Cfg Name	Creațe Cfg	Delete Cfg	Rename Cfg
Zone Selection List		Config Memi	pers
🔷 Zones	< <u>S</u> earch Mem		
	Add <u>M</u> em>	1	
	< <u>R</u> emove Mem	1	
	Analyze Config	l	
	Refresh Fabric	1	
Enable Config	Enabled config:		
Disable Zoning Save Config			
Ref Zone A/D WWN	Rpl WWN Ok	Apply Close	C <u>I</u> r All

For Brocade switches with firmware level 3.1.0 and above, do the following:

- 1. Start Brocade's Web Tools. The **Switch Explorer** dialog box displays.
- 2. From the Switch Explorer dialog box, click the Zone Admin button.



3. From the **Zone Administration** dialog box, select the **Config** tab. Click the **Name** drop-down list to verify that all config names conform to the standards discussed under "Active Zone Set Names" on page 47 and are unique between the switches.

The Edit View Actions		
Mixed Zoning		Enabled Config: Nor
Alias Zone QuickLoop Fabric Assist	onfig 🛛 🔫 🚃	
Name	Create	Delete Rename
Member Selection List		Config Members
Tones FA Zones Quick Loops	Add Member > < Remove Member Analyze Config	
	,	
witch Commit Messages:		
witch Commit Messages: one Admin opened at Thu Jul 22 20(04, 03:34:59 PM	

Brocade CLI

NOTE: Use the following CLI commands when Brocade's Web tools are not available.

Login: **admin** Password: **xxxxxxxx** Brocade3800:admin> **cfgshow**

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN** Utility—Faceplate dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

IBM BladeCenter ** SAN Utility - Fac	replate
File Fabric Switch Port Zoning	View Help
Add Open Save	aing ning <u>C</u> onfig e Zone Set
FC Fabrics Deactiv	rate Zone Set r Switch
C 10.20.67.16 Restore	e Default Zoning
IBM BladeCenter Switch	Image: Constraint of the second se
	Konne Control: Dark Olate Dark Marca Configurand Zamanata Alarma Law
	Name Server Switch Port Stats Port into Configured Zonesets Alarm Log

3. From the **Edit Zoning— IBM BladeCenter SAN Utility** dialog box, compare the Zone Set and Zone names from each switch to ensure that none have the same name and the names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 47.



For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN** Utility—Faceplate dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

BM BladeCenter ¹⁶ SAN Utility - Faceplate		
File Fabric Switch Port Zoning View	Help	
🔲 🚗 📳 Edit Zoning		
Add Open Save Edit Zoning Con	nfig	
Activate Zone S	Set	
FC Fabrics Deactivate Zone	e Set r Switch	
	It Zoning	
Bill St2-17 Bill BM BladeCenter Switch	Image: Server Switch Port Stats Port Info Configured Zonesets Alarm Log	

3. From the **Edit Zoning—IBM BladeCenter SAN Utility** dialog box, compare the Zone Set and Zone names from each switch to ensure that none have the same name and the names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 47.



IBM BladeCenter CLI

NOTE: Use the following CLI commands when the IBM BladeCenter GUI is not available.

Login: **admin** Password: **xxxxxxx** IBM BladeCenter #> **zone list**

Zone Types

All zones members must be specified by a world wide port name (WWPN) in order to comply with Fibre Channel standards. Any zone member not specified by WWPN cannot participate in the fabric. Below are steps to confirm the zone types.

NOTE: A world wide name (WWN) consists of a world wide node name (WWNN) and one or more WWPNs. References in this guide to WWN actually refer to the WWPN.

Brocade's Web Tools

NOTE: The procedures differ based on the Brocade switch firmware level.

For Brocade switches with firmware levels 3.0.2g and above but less than 3.1.0, do the following:

- 1. Start Brocade's Web Tools. The Fabric View dialog box displays.
- 2. From the Fabric View dialog box, click the Zone Admin button.



3. From the **Zone Administration** dialog box, select the **WWN Zone** tab. Verify that all zone names conform to the standards discussed under "Active Zone Set Names" on page 47 and are unique between the switches.

Cone Adminis	tration - Micros	oft Internet E	xplorer					3
WWN Alias	WN Zone WW	N Config						
Zone Name		-	Create Zone	Delete	Zone	Rename Zone		
Mem	ber Selection Lis	st			Zone Membe	ers Rename a z	one.	
 WWNs Aliases 			< <u>S</u> earch Mem					
			Add <u>M</u> em>					
			< <u>R</u> emove Mem					
			Add ₩₩N>					
Rel Zone	A/D MONN	Rol MONN	01	Apply	Close	CIr All		
		<u></u>	<u></u>	3449	Diose		4	

For Brocade switches with firmware level 3.1.0 and above, do the following:

- 1. Start Brocade's Web Tools. The **Switch Explorer** dialog box displays.
- 2. From the Switch Explorer dialog box, click the Zone Admin button.



- 3. From the **Zone Administration** dialog box, select the **Zone** tab. Verify that all zone names conform to the standards discussed under "Active Zone Set Names" on page 47 and are unique between the switches. Do the following:
 - a. In the Name drop-down box, select a zone.
 - b. In the Zone Members section, verify the WWNs.
 - c. Repeat steps a and b for each zone.

		/		
Alla Zone	QuickLoop Fabric Assist Config	T Cranta	Delete Rename	
Ma	mhar Salaction List		Zone Members	
inter			Zurie members	
i i i i i i i i i i i i i i i i i i i	103(BRCD3)			
	- 103,0			
	I 103,1	Add Member >		
	- 💷 103,2	< Remove Member		
- F	- 103,4	Add Other		
	E-Q 20:00:00:e0:8b:06:e9:b7			
	- 103 5			
- L	I 103,7			
AL 🔄	_PAs			
Ali	iases			
4				
itch Commit	Messanes.			
Loon commite	and at The Jul 22 2004 04	-29-26 DW		

Brocade CLI

NOTE: Use the following CLI commands when Brocade's Web tools are not available.

Login: admin Password: xxxxxxxx Brocade3800:admin> zoneshow

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN** Utility—Faceplate dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

IBM BladeCenter ** SAN Utility - Fac	replate
File Fabric Switch Port Zoning	View Help
Add Open Save	aing ning <u>C</u> onfig e Zone Set
FC Fabrics Deactiv	rate Zone Set r Switch
C 10.20.67.16 Restore	e Default Zoning
IBM BladeCenter Switch	Image: Constraint of the second se
	Konne Control: Dark Olate Dark Marca Configurand Zamanata Alarma Law
	Name Server Switch Port Stats Port into Configured Zonesets Alarm Log

3. The Edit Zoning—IBM BladeCenter SAN Utility dialog box displays. Confirm that all zone members are listed as WWN.



For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Zoning menu, select Edit Zoning.


- 3. The Edit Zoning—IBM BladeCenter SAN Browser dialog box displays. Do the following:
 - a. Select a ZoneSet.
 - b. Select a Zone.
 - c. In the Zone Members section, confirm that all zone members are listed as WWN.
 - d. Repeat the above steps for each zone.



IBM BladeCenter CLI

NOTE: Use the following CLI commands when the IBM BladeCenter GUI is not available.

Login: admin Password: xxxxxxx IBM BladeCenter #> zone members <zone name> Repeat this statement for each zone and confirm that only WWNs are listed.

Operating Mode Configuration

The Brocade switch must be in Interoperability mode to be FC-SW2 compliant. Therefore, the current operating status must be Interopmode on. Note the following:

- □ InteropMode = 0 (disabled, which is Brocade proprietary mode)
- □ InteropMode = 1 (enabled, which is FC-SW-2 compliant mode)

Brocade's Web Tools

Interoperability mode cannot be set using Brocade's Web Tools; use the Brocade CLI.

Brocade CLI

Do the following to set the Brocade switch to Interoperability mode.

<u>ATTENTION!!</u> This procedure requires a reboot of the switch.

Enter the following command to verify that the current operating status is Interopmode:

```
BRCD3:admin> interopmode
InteropMode: Off
Usage: InteropMode 0|1
   0: to turn it off
   1: to turn it on
BRCD3:admin>
```

If Interopmode is disabled, enter the following commands to enable Interopmode:

```
BRCD3:admin> switchdisable
BRCD3:admin> interopmode 1
```

The switch effective configuration will be lost when the operating mode is changed; do you want to continue? (yes, y, no, n): [no] ${\bf yes}$

Interopmode is enabled

Enter the following command to reboot the switch for the new change to take effect:

```
BRCD3:admin> fastboot
```

IBM BladeCenter GUI

Not applicable.

IBM BladeCenter CLI

Not applicable.

Brocade Specific Configuration

The platform manager server must be disabled.

Brocade's Web Tools

This function cannot be done using Brocade's Web Tools; use the Brocade CLI.

Brocade CLI

Enter the following command to verify that Platform Management is disabled:

```
BRCD3:admin> msPlatShow
Platform Management is NOT enabled.
BRCD3:admin>
```

If Platform Management is enabled, enter the following command to disable platform management:

BRCD3:admin> **msPlMgmtDeactivate**

IBM BladeCenter Specific Configuration

Not applicable.

Successful Integration Checklist

Perform the following steps after the E_port connection has been established and the fabric has had time to update. If everything verifies, the Brocade and IBM BladeCenter fabrics have successfully merged.

- ✓ Compare and verify that all Zoning information has been propagated on all switches.
- ✓ Verify that the correct Zone Set is activated.
- ✓ Compare and verify that all devices are in the Name Server of each switch.
- Verify that all initiators continue to detect and have access to all targets that existed prior to the fabric merger.

After everything is verified, your fabric has merged successfully and no additional steps need to be taken. If any of the above tasks did not complete successfully, please contact IBM support.

Brocade SilkWorm Switches / IBM TotalStorage SAN Switches (14-Port and 32-Port)

Integration Checklist

The following steps must be completed to successfully merge Brocade and IBM BladeCenter fabrics. The remainder of this section provides detailed instructions and examples.

ATTENTION!!

- Back up the current switch configuration data prior to performing the following steps so that the configuration is available if something goes wrong (see the first step for details).
- Disruptions in the fabric can occur as a result of performing the following steps. Therefore, it is recommended that these changes be done during down time or off-peak hours.
- ✓ Back up the current switch configuration data (see "Backing Up and Restoring the Current Configuration Settings" on page 74).
- ✓ Verify that the correct version of switch firmware is installed on each switch (see "Supported Switches and Firmware Versions" on page 73).
- Ensure that each switch has a unique Domain ID and that it falls within the proper range (see "Domain ID Configuration" on page 77).
- ✓ Set all switches to the appropriate timeout values (see "Timeout Values" on page 89).
- ✓ Ensure that all Zone set and Zone names are unique and conform to ANSI T11 standards (see "Active Zone Set Names" on page 106).
- ✓ Ensure that all zone members are specified by WWPN (see "Zone Types" on page 116).
- ✓ Ensure that all Brocade switches are configured for Interoperability mode (see "Operating Mode Configuration" on page 125).
- ✓ Ensure that Brocade's Platform Management Server is disabled (see "Brocade Specific Configuration" on page 126).
- Verify that the fabrics have successfully merged (see "Successful Integration Checklist" on page 126).
- ✓ Contact IBM Technical Support to obtain the document, *Remote Boot of IBM BladeCenter from IBM FAStT*, if you are planning to use the boot form SAN functionality.

Brocade Configuration Limitations

The configuration limitations are as follows:

- When merging Brocade and IBM BladeCenter fabrics, be sure to enable Interoperability mode on all Brocade switches in the fabric. Brocade switches that are not in Interoperability mode are unable to communicate with IBM BladeCenter FC-SW-2 fabrics and Brocade fabrics in proprietary mode.
- Existing Brocade switches retain the following features that are available once the IBM switch module is merged into a heterogeneous fabric. The features will function on Brocade switches that are in Interoperability mode:
 - QuickLoop. Functions as described by Brocade on Brocade switches running in Interoperability mode. In addition, QuickLoop functions when an IBM switch module is between two Brocade QuickLoop partners. Brocade switches and IBM switch modules cannot become QuickLoop partners.
 - Trunking. Operates on all Brocade switches configured with this feature. Additionally, traffic submitted to and from a IBM switch module-attached device (initiator/target) can pass through Brocade Trunked ISL ports.
 - Aliasing. Operates on all Brocade switches configured with this feature. Can only be managed by the originating switch vendor's management utility or CLI. Aliased names do not propagate between vendors' management utilities, but when an Alias is created and entered into a zone, the WWPNs that were in the Alias propagate correctly.
- Brocade proprietary features that may not function in multi-vendor fabrics include:
 - □ Brocade Fabric Assist
 - Brocade Remote Switch
 - □ Brocade Extended Fabric
 - Brocade Advanced Performance Monitor
 - Brocade Secure Fabric OS
 - Brocade Fabric Services
 - Management Server
 - Platform Support
 - Virtual Channels
 - Broadcast Zones
- When zoning ports greater than 16, be sure they reside in separate zones. Otherwise, you may not be able to see the target devices in all the ports. When forming an ISL between these larger port Brocade switches and another vendor in the Interoperability mode, Brocade switches no longer have default zones. Therefore, the attached switches—without extended

addressing—cannot adequately address the higher Brocade switch ports without Name Server propagation. To enable upper port connectivity, follow these steps:

- 1. Establish the ISL between switches with a port lower than 16.
- 2. Apply any required zones in ports lower than 16.
- 3. After applying zones in the lower numbered ports, the ports greater than 16 should be usable for zoning or establishing an ISL.
- When merging Brocade and QLogic fabrics, a maximum of 31 switches can be configured.
- **NOTE:** When making zone changes in a multi-vendor environment using the IBM BladeCenter SAN Utility or IBM BladeCenter SAN Browser QLogic SANbox Manager GUI, zone changes propagate to the Brocade switches and display within the Brocade CLI but not in the Web Tools GUI. Zone changes using Brocade's Web Tools will successfully propagate to the IBM BladeCenter SAN Utility and IBM BladeCenter SAN Browser QLogic SANbox Manager GUI and QLogic CLI-IBM BladeCenter CLI. [Does this apply? What should this state?]

Contacting Brocade

For more information on configuring the Brocade switches, please see the contact information located in the Introduction (see page 3).

IBM BladeCenter Configuration Limitations

If you will be implementing the I/O stream guard feature, please contact your IBM technical support representative prior to configuring. Additional configuration procedures may be required.

Supported Switches and Firmware Versions

The following IBM switch modules have been tested in the IBM BladeCenter environment and comply with the FC-SW-2 standard. They have tested interoperable with the following switches from Brocade that comply with the FC-SW-2 standard.

Manufacturer	Switch Model	Firmware Version
IBM	IBM eServer BladeCenter Fibre Channel Switch Module	1.4.0.49.0 and above
	QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter	4.1.0.17-0 and above
Brocade	SilkWorm 3900/ IBM TotalStorage SAN Switch F32	4.0.0e and above

IBM and Brocade Supported Switch and Firmware Versions

Manufacturer	Switch Model	Firmware Version
	SilkWorm 12000/ IBM TotalStorage SAN Switch M14	4.0.0e and above
	SilkWorm 24000/ IBM TotalStorage Director M14	version?

<u>ATTENTION!!</u> When updating Brocade firmware, the switch may default to a proprietary operating mode. Therefore, after a firmware update, verify that the switch is still set to Interoperability mode (see "Operating Mode Configuration" on page 125).

The following figures illustrate a Brocade Fibre Channel fabric prior to and after merging with an IBM BladeCenter.



Brocade Fibre Channel Fabric Prior to Merging with the IBM BladeCenter Brocade Fibre Channel Fabric with the IBM BladeCenter

Backing Up and Restoring the Current Configuration Settings

Back up the current Brocade switch configuration data prior to following the steps to merge Brocade and IBM BladeCenter fabrics so that the configuration can be restored if something goes wrong.

NOTE: For additional information, refer to the documentation provided with the switch.

Backup Procedure

Do the following to create a software copy backup of the switch configuration.

- **NOTE:** This procedure requires access to an FTP server for Fabric OS 4.x, and an FTP or RSHD server for Fabric OS 3.x.
- 1. Verify that the FTP (or RSHD, as appropriate) service is running on the host workstation.
- 2. Log into the switch as the admin user.
- 3. Enter the configupload command.
- 4. Provide the information requested at the prompts.

For example:

```
switch:admin> configupload
Server Name or IP Address [host]: 192.168.15.42
User Name [none]: user21
File Name [config.txt]: config-switch.txt
Password: xxxxxx
upload complete
switch:admin>
```

Restore Procedure

If you need to restore the Brocade configuration settings that you backed up, do the following:

ATTENTION!! This procedure requires a reboot of the switch.

- **NOTE:** This procedure requires access to an FTP server for Fabric OS 4.x, and an FTP or RSHD server for Fabric OS 3.x.
- 1. Verify that the FTP (or RSHD, as appropriate) service is running on the host workstation.
- 2. Log into the switch as the admin user.
- 3. Shut down the switch by entering the **switchdisable** command.
- 4. Enter the **configdownload** command.
- 5. Provide the information requested at the prompts.
- 6. Reboot the switch by entering the **reboot** command:

For example:

switch:admin> configdownload Server Name or IP Address [host]: 192.168.15.42 User Name [None]: user21 File Name [config.txt]: config-file.txt Password: xxxxxx download complete switch:admin> switch:admin> reboot

Domain ID Configuration

To ensure that there are no conflicts between switches, we recommend that each switch have an assigned Domain ID. The following steps show how to set the Domain ID on both the Brocade switch and IBM switch module.

NOTE: The Domain ID should be locked and unique within the 97–127 (0x61–0x7f) range.

Brocade's Web Tools

NOTE: The procedures differ based on the Brocade switch firmware level.

For Brocade switches with firmware levels 3.0.2g and above but less than 3.1.0, do the following:

- 1. Start Brocade's Web Tools. The **Fabric View** dialog box displays.
- 2. From the **Fabric View** dialog box, click the **Administration** button.



- 3. From the **Switch Admin for Brocade** dialog box, select the **Switch Settings** tab. Do the following:
 - a. In the **Domain ID** field, type or edit the Domain ID as appropriate.
 - b. Click OK.

ort setting	Configure	Routing	Extended	Fabric T	runk Inforn	nation	
Switch Info	rmation 🔫	Notwork Co	onfig	Upload/Dow	nload	SNMP	License Admi
Name and I	D						
	Name san	40_44		Serial	Number F	T02X8047E	E
Do	main ID 100						
Status				Report			
Enable	O Disable			View	Report		
Extende	d Fabric Mode						
_ Extende	d Fabric Mode						
_ Extende	d Fabric Mode		ОК	Apply	Close	Reset	Refresh
Extende	d Fabric Mode	: :d]: Fri Feb 14	ОК	Apply 0 PM	Close	Reset	Refresh
T Extende	d Fabric Mode	: :d]: Fri Feb 14	OK	Apply 0 PM	Close	Reset	Refresh

For Brocade switches with firmware level 3.1.0 and above, do the following:

- 1. Start Brocade's Web Tools. The **Switch Explorer** dialog box displays.
- 2. From the **Switch Explorer** dialog box, click the **Admin** button.



- 3. From the Switch Admin dialog box, select the Switch Information tab. Do the following:
 - a. In the Switch Status section, select the **Disable** radio button. Click **Apply**.
 - b. The **Switch Information: Confirm Action** message warns that disabling the switch may reconfigure the fabric. Click **Yes** to continue.
 - c. In the Name and ID section **Domain ID** field, type or edit the Domain ID as appropriate. Click **Apply**.
 - d. The **Switch Information: Confirm Action** message warns that changing the Domain ID can affect port level zoning. Click **Yes** to continue.
 - e. In the Switch Status section, select the Enable radio button. Click Apply.
 - f. Click Close.

The state of the s	DomainID: 1 VWVN:	10:00:00:60:69:90:0b:eb	Tue Jul 27 2004,
Upload/Download SNI Switch	MP License Admin I	Port Setting Routing E	tended Fabric Confi work Config
Name and ID		_	
Name	e b3900	Manufacturer Serial #	FA03X900BEB
Domain ID	D 103	Supplier Serial #	BRCB030002638
Switch Status		Email Configuration	
C Enable 📀 Disable		DNS Server 1	
		DNS Server 2	
Report			
View Report		Domain Name	
			Remove All
		Apply Close	Reset Refrest
▼		ApplyClose	Reset Refrest
Witch Status has been turned o		Apply Close	Reset Refrest

Brocade CLI

NOTE: Use the following CLI commands when Brocade's Web tools are not available.

For Brocade switches with firmware levels 3.0.2g and above but less than 3.1.0, do the following:

```
Fabric OS (cp1)
cp1 login: admin
Password:
Brocade12000:admin> switchdisable
Brocade12000:admin> configure
Configure...
  Fabric parameters (yes, y, no, n): [no] yes
    Domain: (97..127) [100]
    R A TOV: (4000..120000) [10000]
    E D TOV: (1000..5000) [2000]
    Data field size: (256..2112) [2112]
    Sequence Level Switching: (0..1) [0]
    Disable Device Probing: (0..1) [0]
    Suppress Class F Traffic: (0..1) [0]
    VC Encoded Address Mode: (0..1) [0]
    Per-frame Route Priority: (0..1) [0]
    BB credit: (1..16) [16]
  Virtual Channel parameters (yes, y, no, n): [no]
  Zoning Operation parameters (yes, y, no, n): [no]
  RSCN Transmission Mode (yes, y, no, n): [no]
  NS Operation Parameters (yes, y, no, n): [no]
  Arbitrated Loop parameters (yes, y, no, n): [no]
  System services (yes, y, no, n): [no]
  Portlog events enable (yes, y, no, n): [no]
No changes.
Brocade12000:admin> switchenable
10 Brocade12000:admin> 9 8 7 6 5 4 3 2 1
fabric: Principal switch
fabric: Domain 100
```

For Brocade switches with firmware level 3.1.0 and above, do the following:

```
Fabric OS (b3900)
b3900 login: admin
Password:
b3900:admin> switchdisable
b3900:admin> configure
Configure...
  Fabric parameters (yes, y, no, n): [no] yes
     Domain: (1..239) [1] 103
     R A TOV: (4000..120000) [10000]
     E D TOV: (1000..5000) [2000]
     Data field size: (256..2112) [2112]
     Sequence Level Switching: (0..1) [0]
     Disable Device Probing: (0..1) [0]
     Suppress Class F Traffic: (0..1) [0]
     Switch PID Format: (1..2) [1]
     Per-frame Route Priority: (0..1) [0]
    Long Distance Fabric: (0..1) [0]
     BB credit: (1..27) [16]
  Insistent Domain ID Mode (yes, y, no, n): [no]
  Virtual Channel parameters (yes, y, no, n): [no]
  Zoning Operation parameters (yes, y, no, n): [no]
  RSCN Transmission Mode (yes, y, no, n): [no]
  Arbitrated Loop parameters (yes, y, no, n): [no]
  System services (yes, y, no, n): [no]
  Portlog events enable (yes, y, no, n): [no]
WARNING: The domain ID will be changed. The port level zoning may be affected
b3900:admin> switchenable
```

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN Utility—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Switch menu, select Switch Properties.

IBM Blade	Center™ SAN Utility - Face	plate
File Fabric Add FC Fabrics	Switch Port Zoning Archive Restore Load Firmware Firmware Fallback Set Date/Time	<u>Alew Help</u> Zoning deCenter Switch rmal
♥- ♥ 10.20.	Switch Properties Network Properties Toggle Beacon Export Alarm Log Configure Alarm Thresh Reset Switch Restore Factory Default	
		Dev Switch Port Address Type WWNN

- 3. From the Switch Properties—IBM BladeCenter SAN Utility dialog box, do the following:
 - a. Select the **Domain ID Lock Disable** radio button.
 - b. In the **Domain ID** box, type a unique Domain ID in the 97–127 range for the switch.
 - c. Select the **Domain ID Lock Enable** radio button to ensure that the switch always has that Domain ID.
 - d. Click OK.

World Wide Name: 10:00:00:c0: Operational State: online Chassis Name: IBM BladeCe	World Wide Name: 10:00:00:c0:dd:00:72:c7 Operational State: online Chassis Name: IBM BladeCenter Switch IP Address: 10:20.78.93				
Chassis Name: IBM Blad Administrative State: online	eCenter Switch] Timeout Value	s		
Domain ID: 99		R_A_TOV:	10000		
 Domain ID lock: Enable Broadcast Support: Enable 	e O Disable e O Disable	E_D_TOV:	2000		
In-band Management: Enable	e 🔿 Disable				

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Switch menu, select Switch Properties.

IBM Blade(Eenter(TM) SAN	Browser	- Facep	olate							
<u>File</u> Fa <u>b</u> ric	Switch Port	Zoning	⊻iew	<u>W</u> izards	<u>H</u> elp						
Add Refr Switch	<u>Archive</u> <u>R</u> estore <u>U</u> ser Account Set <u>D</u> ate/Time Temperature	is e Threshol	lds								
- Swit	Switch Prope	rties									
	Network Prop SNMP Proper	erties ties con									
	Port Thresho	ld Alarm (Configu	ration							
	Load Firmwa				34	56	78	9 10	11 12 13 ⁻	14	
	Activate Firm	ware									
	<u>F</u> irmware Fall	back									
	Reset Switch				N	ckname	Details	FC Address	Switch	Port	Target/Initi
	Restore Facto	ory Defau	its				(i)	7c0100	Switchblade2	Bay 1	Unknown
		21.01 () () () () () () () () () () () () ()	vices	50.35.49.81	Port Sta	ts Port In	(L)	7c0200 igured Zonese	Switchblade2	Bay 2	Unknown
											.

- 3. From the Switch Properties—IBM BladeCenter SAN Browser dialog box, do the following:
 - a. Select the **Domain ID Lock Disable** radio button to ensure that the switch always has that Domain ID.
 - b. In the **Domain ID** box, type a unique Domain ID in the 97–127 range for the switch.
 - c. Select the **Domain ID Lock Enable** radio button to ensure that the switch always has that Domain ID.
 - d. Click OK.

World Wide Name: 10:00:00:c0:dd:02:1d:68	First Port Address: 7c0000				
Operational State: online	Firmware Version: V4.1.0.17-0				
Symbolic Name: Switchblade2	MAC address: 00:c0:dd:02:1d:67				
IP Address: 10.20.67.24					
Symbolic Name: Switchblade2	Domain ID lock:	O Enable	• Disable •		
Administrative State: online	Broadcast Support:	Enable	O Disable		
Domain ID: 124 0x 7c	In-band Management:	• Enable	O Disable		
FDMI HBA Entry Limit: 1000	FDMI:	Enable	O Disable		
meout Values	50 GU 0 0 1 1		_		
R_A_TOV: 10000	FC-SW-2 Compliant:	Enable	() Disable		
E_D_TOV: 2000	Legacy Address Forma	at: 🔿 Enable	Disable		

IBM BladeCenter CLI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, use the following CLI commands when the IBM eServer BladeCenter SAN Utility is not available:

```
Login: admin
Password: xxxxxxx
IBM BladeCenter #> admin start
IBM BladeCenter (admin) #> config edit
IBM BladeCenter (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  DefaultDomainID (decimal value, 1-239) [1] <97-127>
  DomainIDLock (True / False) [False] True
  SymbolicName (string, max=32 chars) [Fibre Channel Switch Module]
  R T TOV (decimal value, 1-1000 msec) [100]
  R A TOV (decimal value, 100-100000 msec) [10000]
  E D TOV (decimal value, 10-20000 msec) [2000]
  FS TOV (decimal value, 100-100000 msec) [5000]
  DS TOV (decimal value, 100-100000 msec) [5000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [Default Config]
IBM BladeCenter (admin-config) #> config save
IBM BladeCenter (admin) #> config activate
The configuration will be activated. Please confirm (y/n): [n] y
```

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, use the following CLI commands when the IBM eServer BladeCenter SAN Browser is not available:

```
Switchblade2: admin> admin start
Switchblade2 (admin): admin> config edit
  The config named default is being edited.
Switchblade2 (admin-config): admin> set config switch
  A list of attributes with formatting and current values will follow.
  Enter a new value or simply press the ENTER key to accept the current
  value. If you wish to terminate this process before reaching the end of
  the list press 'q' or 'Q' and the ENTER key to do so.
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  FdmiEnabled (True / False) [True]
  FdmiEntries (decimal value, 0-1000) [1000]
  DefaultDomainID (decimal value, 1-239) [1] 124
  DomainIDLock (True / False) [False] true
  SymbolicName (string, max=32 chars) [Switchblade2]
  R A TOV (decimal value, 100-100000 msec) [10000]
  E D TOV (decimal value, 10-20000 msec) [2000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [IBM eServer BladeCenter(TM)
  6-port Enterprise Fibre Channel Swit]
  FC-SW-2 Compliant (True / False) [True]
  Finished configuring attributes.
  This configuration must be saved (see config save command) and
  activated (see config activate command) before it can take effect.
  To discard this configuration use the config cancel command.
Switchblade2 (admin-config): admin> config save
  The config named default has been saved.
Switchblade2 (admin): admin> config activate
  The currently active configuration will be activated.
  Please confirm (y/n): [n] y
Switchblade2 (admin): admin> admin end
```

Timeout Values

As per FC-SW-2 Fibre Channel standards, set all switches to the following timeout values (TOV) in order to successfully establish an E_port connection:

 $R_A_TOV = 10$ seconds (The setting is **10000**.) $E_D_TOV = 2$ seconds (The setting is **2000**.)

NOTE: These are the default values for **R_A_TOV** and **E_D_TOV**. In addition, **BB Credits** will need to be set to **12** (the default is **16**).

This section provides the steps to change these values.

Brocade's Web Tools

<u>ATTENTION!!</u> The following steps take the switch offline; therefore, do not perform them on a switch being managed in-band.

NOTE: The procedures differ based on the Brocade switch firmware level.

For Brocade switches with firmware levels 3.0.2g and above but less than 3.1.0, do the following:

- 1. Start Brocade's Web Tools. The **Fabric View** dialog box displays.
- 2. From the Fabric View dialog box, click the Administration button.



- From the Switch Admin for Brocade dialog box, select the Configure tab. Verify that BB Credit is set to 12, R_A_TOV is set to 10000, E_D_TOV is set to 2000. If the settings are not correct, do the following:
 - a. In the **BB Credit** box, change the setting to **12**.
 - b. In the **R_A_TOV** box, change the setting to **10000**.
 - c. In the **E_D_TOV** box, change the setting to **2000**.
 - d. Click OK.

Switch Inform	Configure nation N	Routing etwork Col	Extende nfig	ed Fabric Upload/D	Trunk Info ownload	rmation SNMP	License Admin
Fabric Param	eters						
	BB(Credit 16				equence Lev	el Switching
	RA	TOV 100	00			isable Device	e Probing
					P	er-Frame Ro	uting Priority
		_10V 200	U			C Encoded A	ddress Mode
	Datafield	1 Size 2113	2		3	upress cias:	S F Hame
Fabric Vir	tual Channel	Arbitrate	ed Loop	System	_		
			ок	Apply	Close	Reset	Refresh
the last de stars tas tas t	- 4 ¹ - 10 - 10						
ilon Auministi	ration openeoj	. FAFED 14	2003,6	.00 PW			

For Brocade switches with firmware level 3.1.0 and above, do the following:

- 1. Start Brocade's Web Tools. The **Switch Explorer** dialog box displays.
- 2. From the **Switch Explorer** dialog box, click the **Admin** button.



 From the Switch Admin dialog box, select the Configure tab. Verify that BB Credit is set to 12, R_A_TOV is set to 10000, E_D_TOV is set to 2000. If the settings are *not* correct, proceed to step 4. If the settings are correct, no changes need to be made; proceed to the next appropriate section.

🗳 Switch Admin - Microsoft Int	ernet Explorer				_ 🗆 ×
SwitchName: b3900	DomainID: 103	VWVN: 10:00:00:60:6	9:90:0b:eb	Tue Jul 27	2004, 2:22 PN
Switch In	formation	n Port Setting	Netwo Routing Exter	'k Config nded Fabric	Configure
-Fabric Parameters		I For courry			
				-	
	1				
BB Credit 12			I Sequence	e Level Switching	
R_A_TOV 10	000		🗖 Disable D	evice Probing	
E_D_TOV 20	00		Per-Fram	e Routing Priority	
Datafield Size 21	12		Suppress	Class F Traffic	
Switch PID Format	rmat 1 (0-base, 256 r	ort Encoding)		Domain ID Mode	
Fabric Virtual Channel Arbitr	ated Loop System				
			Apply Close	Reset F	Refresh
A T					
	I				
					-
[Warning]: Fabric will reconfigure, u	use "Refresh" button t	oupdate views.			
Please enter a number in the range [1 - 27]				

4. Select the **Switch Information** tab. In the Switch Status section, select the **Disable** radio button. Click **Apply**.

🚰 Switch Admin - Microsoft Internet Explorer	_ <u> </u>
SwitchName: b3900 DomainID: 1 VW	VN: 10:00:00:60:69:90:0b:eb Tue Jul 27 (2004, 1:31 PM
Upload/Download SNMP License Admin Switch Information	Port Setting Routing Extended Fabric Configure Network Config
Name and ID Name b3900	Manufacturer Serial # FA03X900BEB Supplier Serial # BRCB030002638
Switch Status	Email Configuration
C Enable C Disable	DNS Server 1 DNS Server 2 DNS Server 2
View Report	Remove All
	Apply Close Reset Refresh
Kwitch Status has been turned on	
[///arning]: Fabric will reconfigure, use "Refresh" button to up	odate views.
Disable Switch	and the second secon

- 5. Select the **Configure** tab, do the following as appropriate:
 - a. In the **BB Credit** box, change the setting to **12**.
 - b. In the **R_A_TOV** box, change the setting to **10000**.
 - c. In the **E_D_TOV** box, change the setting to **2000**.
 - d. Click Apply.

🎒 Switch Admin - Micro	soft Internet Explorer					>
SwitchName: b3900	DomainID: 1	03 VWVN: 10:00	0:00:60:69:	90:0b:eb	Tue J	ul 27 2004, 2:22 PN
:	Switch Information		1	1	Network Config	
Upload/Download	SNMP License Ad	imin Port S	Setting	Routing	Extended Fabric	Configure
-Fabric Parameters					/	
вв с	redit 12			□ Se	quence Level Switc	hing
	TOV 10000			Dis	able Device Probing	,
● E_D_	TOV 2000			Per	-Frame Routing Pric	rity
Datafield	Size 2112			□ Su	ppress Class F Traf	fic
Switch PID Fo	rmat Format 1 (0-base, 25	6 port Encoding)		🔹 🗌 Ins	istent Domain ID Mo	de
Fabric Virtual Channe	Arbitrated Loop System	m				
			A	oply Clos	e Reset	Refresh
Switch Status has been tu	rned off	on to update view	/s.			
Please enter a number in the	e range [1 - 27]					

6. Select the **Switch Information** tab. In the Switch Status section, select the **Enable** radio button to re-enable to switch. Click **Apply**

🚈 Switch Admin - Microsoft Internet Explorer	
SwitchName: b3900 DomainID: 103 VWVN: 1	0:00:00:60:69:90:0b:eb Tue Jul 27 2004, 4:20 PM
Upload/Download SNMP License Admin P Switch Information	tob:60:69:90:0b:eb Tue Jul 27 2004, 4:20 PM Setting Routing Extended Fabric Configure Network Config Network Config Manufacturer Serial # FA03X900BEB Supplier Serial # BRCB030002638 mail Configuration DNS Server 1 DNS Server 2 Domain Name Remove All
Name and ID Name b3900 Domain ID 103	Manufacturer Serial # FA03X900BEB Supplier Serial # BRCB030002638
Switch Status	Email Configuration DNS Server 1 DNS Server 2 Domain Name DDMS
View Report	Remove All
	Apply Close Reset Refresh
(Switch Administration opened): Tue Jul 27 2004, 4:19 PM	
Enable Switch	

Brocade CLI

NOTE: Use the following CLI commands when Brocade's Web tools are not available.

```
Fabric OS (cpl)
cpl login: admin
Password: xxxxxxx
```

Use the following command to verify that R_A_TOV is set to 10000, E_D_TOV is set to 2000, and BB credit is set to 12.

Brocade12000:admin> configshow

If these timeout and BB credit values are *not* correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
Brocade12000:admin> switchdisable
Brocade12000:admin> configure
Configure...
  Fabric parameters (yes, y, no, n): [no] yes
    Domain: (97..127) [100]
    R A TOV: (4000..120000) [10000]
    E D TOV: (1000..5000) [2000]
    Data field size: (256..2112) [2112]
    Sequence Level Switching: (0..1) [0]
    Disable Device Probing: (0..1) [0]
    Suppress Class F Traffic: (0..1) [0]
    VC Encoded Address Mode: (0..1) [0]
    Per-frame Route Priority: (0..1) [0]
    BB credit: (1..16) [12]
  Virtual Channel parameters (yes, y, no, n): [no]
  Zoning Operation parameters (yes, y, no, n): [no]
  RSCN Transmission Mode (yes, y, no, n): [no]
  NS Operation Parameters (yes, y, no, n): [no]
  Arbitrated Loop parameters (yes, y, no, n): [no]
  System services (yes, y, no, n): [no]
  Portlog events enable (yes, y, no, n): [no]
```

Brocade12000:admin> switchenable 10 Brocade12000:admin> 9 8 7 6 5 4 3 2 1 fabric: Principal switch fabric: Domain 100

IBM BladeCenter GUI

<u>ATTENTION!!</u> The following steps take the switch offline; therefore, do not perform them on a switch being managed in-band.

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN** Utility—Faceplate dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Switch menu, select Switch Properties.



3. From the **Switch Properties**—**IBM BladeCenter SAN Utility** dialog box, verify that **R_A_TOV** is set to **10000** and **E_D_TOV** is set to **2000**. If the settings are not correct, proceed to step 4. If the settings are correct, no changes need to be made; proceed to the next appropriate section.

World Wide Name: 10:00:00:c0:dd:00:72:c7		FC Address:	630000
Operational State: onl	perational State: online		n:∨1.4.0.26-5
Chassis Name: IBN	I BladeCenter Switch	MAC address:	00:c0:dd:00:72:c6
IP Address: 10.	20.78.93		
Chassis Name:	IBM BladeCenter Switch		
Administrative State:	online 💌	Timeout Value	S
Domain ID:	99	R_A_TOV:	10000
Domain ID lock:	• Enable 🔿 Disable	R_T_TOV:	100
Broadcast Support:	• Enable 🔿 Disable	E_D_TOV:	2000
In-band Management:	• Enable 🔿 Disable		

- 4. From the Switch Properties—IBM BladeCenter SAN Utility dialog box Administrative State list, select offline. Click OK.
- 5. Re-enter the **Switch Properties—IBM BladeCenter SAN Utility** dialog box (see step 2). Do the following:
 - a. In the **R_A_TOV** box, enter **10000**.
 - b. In the **E_D_TOV** box, enter **2000**.
 - c. Click OK.
- 6. Re-enter the Switch Properties—IBM BladeCenter SAN Utility dialog box (see step 2). In the Administrative State list, select Online. Click OK.

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Switch menu, select Switch Properties.



3. From the **Switch Properties—IBM BladeCenter SAN Browser** dialog box, verify that **R_A_TOV** is set to **10000** and **E_D_TOV** is set to **2000**. If the settings are *not* correct, proceed to step 4. If the settings are correct, no changes need to be made; proceed to the next appropriate section.

YYONU YYIUE Name: 10.00.00.00.00.00.02.10.0	8 First Port Address: 7	First Port Address: 7c0000		
Operational State: online	Firmware Version: V	Firmware Version: V4.1.0.17-0		
Symbolic Name: Switchblade2	MAC address: 0)0:c0:dd:02:1d:67		
IP Address: 10.20.67.24				
Symbolic Name: Switchblade2	Domain ID lock:	• Enable) Disa	
Administrative State: online	Broadcast Support:	• Enable) Disa	
Domain ID: 124 0x7c	In-band Management:	• Enable) Disa	
FDMI HBA Entry Limit: 1000	FDMI:	• Enable) Disa	
Timeout Values	FC CHU 2 Compliants	o	0.00	
R_A_TOV: 10000	FC-SVV-2 Compliant:	Enable	() Disa	
E D T016	Legacy Address Format:	O Enable	① Disa	
- 4. To modify the timeout value settings, do the following:
 - a. In the Administrative State drop-down box, select offline. Click OK.
 - b. In the Timeout Values section, do the following:
 - (1) In the **R_A_TOV** box, enter **10000**.
 - (2) In the **E_D_TOV** box, enter **2000**.
 - c. Click OK.
 - d. In the Administrative State drop-down box, select online. Click OK.

World Wide Name: 10:00):00:c0:dd:02:1d:ea	First Port Address: 010000			
Operational State: offline		Firmware Version:	/4.1.0.17-0		
Symbolic Name: Switchblade1		MAC address:	00:c0:dd:02:1c	t:e9	
IP Address: 10.20	0.67.24				
Symbolic Name:	witchblade1	Domain ID lock:	• Enable	O Disa	
Administrative State:	nline	Broadcast Support:	• Enable) Disa	
Domain ID:	23 0x 7b	In-band Management:	• Enable) Disa	
FDMI HBA Entry Limit: 1	000	FDMI:	• Enable) Disa	
Timeout Values		FC-SW-2 Compliant:	• Enable) Disa	
E D 1016		Legacy Address Format	O Enable	Disa	

5. From the **Switch Properties—IBM BladeCenter SAN Utility** dialog box, verify your changes (see step 3).

IBM BladeCenter CLI

<u>ATTENTION!!</u> The following steps take the switch offline; therefore, do not perform them on a switch being managed in-band.

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, use the following CLI commands when the IBM eServer BladeCenter SAN Utility is not available:

```
Login: admin
Password: xxxxxxx
```

```
Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.
```

```
IBM BladeCenter #> show config switch
```

If these timeout values are *not* correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
IBM BladeCenter #> admin start
IBM BladeCenter (admin) #> config edit
IBM BladeCenter (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  DefaultDomainID (decimal value, 1-239) [1]
  DomainIDLock (True / False) [True]
  SymbolicName (string, max=32 chars) [Fibre Channel Switch Module]
  R T TOV (decimal value, 1-1000 msec) [100]
  R A TOV (decimal value, 100-100000 msec) [9000]
                                                     10000
  E D TOV (decimal value, 10-20000 msec) [1000]
                                                   2000
  FS TOV (decimal value, 100-100000 msec) [5000]
  DS TOV (decimal value, 100-100000 msec) [5000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [Default Config]
IBM BladeCenter (admin-config) #> config save
IBM BladeCenter (admin) #> config activate
The configuration will be activated. Please confirm (y/n): [n] y
```

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, use the following CLI commands when the IBM eServer BladeCenter SAN Browser is not available:

Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.

Login: admin Password: xxxxxxxx Switchblade2 #> show config switch

If these timeout values are *not* correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
Switchblade2: admin>
Switchblade2: admin> admin start
Switchblade2 (admin): admin> config edit
The config named default is being edited.
Switchblade2 (admin-config): admin> set config switch
```

A list of attributes with formatting and current values will follow. Enter a new value or simply press the ENTER key to accept the current value. If you wish to terminate this process before reaching the end of the list press 'q' or 'Q' and the ENTER key to do so.

```
AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
BroadcastEnabled (True / False) [True]
InbandEnabled (True / False) [True]
FdmiEnabled (True / False) [True]
FdmiEntries (decimal value, 0-1000) [1000]
DefaultDomainID (decimal value, 1-239) [124]
DomainIDLock (True / False) [True]
SymbolicName (string, max=32 chars) [Switchblade2]
R_A_TOV (decimal value, 100-100000 msec) [9000] 10000
E_D_TOV (decimal value, 10-20000 msec) [1000] 2000
PrincipalPriority (decimal value, 1-255) [254]
ConfigDescription (string, max=64 chars) [IBM eServer BladeCenter(TM)
6-port Enterprise Fibre Channel Swit]
FC-SW-2 Compliant (True / False) [True]
```

Finished configuring attributes.

```
This configuration must be saved (see config save command) and
activated (see config activate command) before it can take effect.
To discard this configuration use the config cancel command.
Switchblade2 (admin-config): admin> config save
The config named default has been saved.
Switchblade2 (admin): admin> config activate
The currently active configuration will be activated.
Please confirm (y/n): [n] y
Switchblade2 (admin): admin> admin end
```

Principal Switch Configuration

Brocade switches and IBM switch modules negotiate for principal switch automatically. Therefore, there are no steps to take.

Zone Configuration

This section discusses configuring active Zone Set names and Zone types.

Active Zone Set Names

NOTE: For Brocade, Zone Set is referred to as Zone Configuration.

The Zone and Zone Set names on each switch must be unique. If not, change one of the duplicate names. All Zone Set and Zone names must conform to the Fibre Channel (FC) Standards for Zone Naming (ANSI T11/00-427v3):

- 1. Must be 1–64 characters in length.
- 2. All characters are ASCII.
- 3. First character is [a–z] or [A–Z].
- 4. All other characters must be [a–z], [A–Z], [0–9], or the _ character. Other characters (\$-^) may not be supported by all vendors and should be avoided.

Brocade's Web Tools

NOTE: The procedures differ based on the Brocade switch firmware level.

For Brocade switches with firmware levels 3.0.2g and above but less than 3.1.0, do the following:

- 1. Start Brocade's Web Tools. The **Fabric View** dialog box displays.
- 2. From the Fabric View dialog box, click the Zone Admin button.

🗿 Fabric View - Microsoft Internet Explorer	
File Edit View Favorites Tools Help	
🔾 Back 🔹 🕖 🖌 🙎 🏠 🔎 Search 🤺 Favorites 🌒 Media 🛛 🊱 🍰 🖬 👻 🛄 🕉	
Address 🙋 http://10.4.40.44	💌 🄁 Go 🛛 Links 🌺
Image: Server Image: Server Image: Server	2
Click to open an Admin View	Internet

3. From the **Zone Administration** dialog box, select the **WWN Config** tab. Verify that all config names conform to the standards discussed under "Active Zone Set Names" on page 106 and are unique between the switches.

WWWN Allas	WWN Zone	WWN Config				
g Name 🛛 Inte	erop_Broc_Qigo	• •	Grea <u>t</u> e Cfg	D <u>e</u> l	ete Cfg	Re <u>n</u> ame Cfg
Cone/QLoop/F	A Zone Selectio	n List		Interop_	Broc_Qlgc M	embers
Zones		<	Search Mem	Z1		
) QuickLoop) FaZones	S			Zone	e memher list	1
			Add <u>M</u> em>	2011		1
		< <u>F</u>	temove Mem			
		An	alyze Config			
		R	efresh Fabric			
				I		
) Ena <u>b</u> le Con	fig		Enabled config	: CHECKK		
) <u>D</u> isable Zon) Save Confic	ing					
		1	1			
Ref Zo	A/D W	RpI W	Ok	Apply	Close	GIr All

For Brocade switches with firmware level 3.1.0 and above, do the following:

- 1. Start Brocade's Web Tools. The **Switch Explorer** dialog box displays.
- 2. From the Switch Explorer dialog box, click the Zone Admin button.



3. From the **Zone Administration** dialog box, select the **Config** tab. Click the **Name** drop-down list to verify that all config names conform to the standards discussed under "Active Zone Set Names" on page 106 and are unique between the switches.

Mixed Zoning			Enabled Config: N
mixed Zonnig			Enabled Coning. IV
Alias Zone QuickLoop Fabric Assist Config			
Name start_zoneset	▼ Create	Delete	Rename
Member Selection List		Config Members	
		Cornig monitors	
	Add Member >	bbb	
		ddd	
	< Remove Member	aaa	
	Analyze Config	Z1	
€ € 20:00:00:0c:50:79:87:c3			
€ € 20:00:00:0c:50:79:87:fb			
E ≤ 20:00:00:0c:50:79:89:32			
±−€3 20:00:00:00:50:79:87:bb			
+ 32 20:00:00:00:00:79:86:51 + 30:00:00:00:00:50:79:86:80			
± 1 aaa			
t			
te-🔃 ccc 🔪			
	,		
Switch Commit Messages: Zene Admin enemed at The Jul 27 2004 01.	25.04 DW		
zone Admin opened at fue our 27 2004, or:	55:04 m		

Brocade CLI

NOTE: Use the following CLI commands when Brocade's Web tools are not available.

```
Fabric OS (cp1)
cp1 login: admin
Password: xxxxxxx
Brocade12000:admin> cfgshow
Defined configuration:
  cfg: Interop_Broc_IBM
           Z1
                 21:00:00:e0:8b:06:01:e6; 21:00:00:e0:8b:06:00:e6;
  zone:
           Z1
           21:00:00:e0:8b:06:04:e6; 21:00:00:e0:8b:06:99:67;
           50:02:0f:23:00:00:03:58
Effective configuration:
  cfg: CHECKK
  zone:
           Z1
                 21:00:00:e0:8b:06:01:e6
           21:00:00:e0:8b:06:00:e6
           21:00:00:e0:8b:06:04:e6
           21:00:00:e0:8b:06:99:67
           50:02:0f:23:00:00:03:58
```

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The IBM BladeCenter SAN Utility—Faceplate dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

BM BladeCenter® SAN Utility - Face	plate	
File Fabric Switch Port Zoning	view Help	
🗔 🤿 💾 Edit Zonii	ng	
Add Open Save Edit Zoni	ng <u>C</u> onfig	
EC Exprise Description	Zone Set	
© 10.20.67.16 Pestore	te zone set i ownen	
P • 10.20.67.17		
IBM BladeCenter Switch	Image: Constraint of the second state of the second sta	
	Name Server Switch Port Stats Port Info Configured Zonesets Alarm Log	
اد (بــــــــــــــــــــــــــــــــــــ		5 -

3. From the **Edit Zoning— IBM BladeCenter SAN Utility** dialog box, compare the Zone Set and Zone names from each switch to ensure that none have the same name and the names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 106.



For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Zoning menu, select Edit Zoning.



3. From the **Edit Zoning**— **IBM BladeCenter SAN Browser** dialog box, compare the Zone Set and Zone names from each switch to ensure that none have the same name and the names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 106.



IBM BladeCenter CLI

NOTE: Use the following CLI commands when the IBM BladeCenter GUI is not available.

Login: admin Password: xxxxxxx IBM BladeCenter #> zone list

Zone Types

All zone members must be specified by a world wide port name (WWPN) in order to comply with Fibre Channel standards. Any zone member not specified by WWPN cannot participate in the fabric. Below are steps to confirm the zone types.

NOTE: A world wide name (WWN) consists of a world wide node name (WWNN) and one or more WWPNs. References in this guide to WWN actually refer to the WWPN.

Brocade's Web Tools

NOTE: The procedures differ based on the Brocade switch firmware level.

For Brocade switches with firmware levels 3.0.2g and above but less than 3.1.0, do the following:

- 1. Start Brocade's Web Tools. The **Fabric View** dialog box displays.
- 2. From the Fabric View dialog box, click the Zone Admin button.



3. From the **Zone Administration** dialog box, select the **WWN Zone** tab. Verify that all zone names conform to the standards discussed under "Active Zone Set Names" on page 106 and are unique between the switches.

	WWN Zone	WWN Config			
e Name Zi	I	-	Crea <u>t</u> e Zone	D <u>e</u> lete Zone	Re <u>n</u> ame Zone
Memi	ber Selection Li	st		Z1 Mem	ibers
WWNs			< <u>S</u> earch Mem	🔶 WWNs	
Aliases				Aliases	
			Add <u>M</u> em>		
				_	
			< <u>R</u> emove Mem		
		· · · · ·			
100-00-00-00-00-00-00-00-00-00-00-00-00-					
	Section and the sector	Deltw	OL	Annix Cir	

For Brocade switches with firmware level 3.1.0 and above, do the following:

- 1. Start Brocade's Web Tools. The **Switch Explorer** dialog box displays.
- 2. From the Switch Explorer dialog box, click the Zone Admin button.



- 3. From the **Zone Administration** dialog box, select the **Zone** tab. Verify that all zone names conform to the standards discussed under "Active Zone Set Names" on page 106 and are unique between the switches. Do the following:
 - a. In the Name drop-down box, select a zone.
 - b. In the Zone Members section, verify the WWNs.
 - c. Repeat steps a and b for each zone.

Alias Zone QuickLoop Fabric Assist Config				- Linux ou ing
Name Z1	*	Create	Delete	Rename
Member Selection List			Zone Member	rs
Al_PAs Alases	Add Mem < Remove I Add Oth	er	4) 2000000000000000000000000000000000000	79:87:66 79:86:79 79:87:c3 79:87:tb 79:89:32 79:87:tb 79:88:51 79:86:80
Switch Commit Messages: Zone Admin opened at Tue Jul 27 2004, 0	01:35:04 PM			

Brocade CLI

NOTE: Use the following CLI commands when Brocade's Web tools are not available.

Login: **admin** Password: **xxxxxxxx** Brocade12000:admin> **zoneshow**

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN** Utility—Faceplate dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

BM BladeCenter® SAN Utility - Face	plate	
File Fabric Switch Port Zoning	view Help	
🗔 🤿 💾 Edit Zonii	ng	
Add Open Save Edit Zoni	ng <u>C</u> onfig	
EC Exprise Description	Zone Set	
© 10.20.67.16 Pestore	te zone set i ownen	
P • 10.20.67.17		
IBM BladeCenter Switch	Image: Constraint of the second state of the second sta	
	Name Server Switch Port Stats Port Info Configured Zonesets Alarm Log	
اد (بــــــــــــــــــــــــــــــــــــ		5 -

3. The Edit Zoning—IBM BladeCenter SAN Utility dialog box displays. Confirm that all zone members are listed as WWN.



For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Zoning menu, select Edit Zoning.



- 3. The Edit Zoning—IBM BladeCenter SAN Browser dialog box displays. Do the following:
 - a. Select a ZoneSet.
 - b. Select a Zone.
 - c. In the Zone Members section, confirm that all zone members are listed as WWN.
 - d. Repeat the above steps for each zone.



IBM BladeCenter CLI

NOTE: Use the following CLI commands when the IBM BladeCenter GUI is not available.

Login: **admin**

Password: **xxxxxxx**

IBM BladeCenter #> zone members <zone name>

Repeat this statement for each zone and confirm that only WWNs are listed.

Operating Mode Configuration

The Brocade switch must be in Interoperability mode to be FC-SW2 compliant. Therefore, the current operating status must be Interopmode on. Note the following:

- □ InteropMode = 0 (disabled, which is Brocade proprietary mode)
- □ InteropMode = 1 (enabled, which is FC-SW-2 compliant mode)

Brocade's Web Tools

Interoperability mode cannot be set using Brocade's Web Tools; use the Brocade CLI.

Brocade CLI

Do the following to set the Brocade switch to Interoperability mode.

<u>ATTENTION!!</u> This procedure requires a reboot of the switch.

Enter the following command to verify that the current operating status is Interopmode:

```
Login: admin
Password: xxxxxxx
b3900:admin> interopmode
InteropMode: Off
Usage: InteropMode 0|1
0: to turn it off
1: to turn it on
b3900:admin>
```

If the Interopmode is disabled, enter the following commands to enable Interopmode:

```
b3900:admin> switchdisable
b3900:admin> interopmode 1
```

The switch effective configuration will be lost when the operating mode is changed; do you want to continue? (yes, y, no, n): [no] yes

Interopmode is enabled

Enter the following command to reboot the switch for the new change to take effect:

b3900:admin> fastboot

IBM BladeCenter GUI

Not applicable.

IBM BladeCenter CLI

Not applicable.

Brocade Specific Configuration

The platform manager server must be disabled.

Brocade's Web Tools

These functions cannot be done using Brocade's Web Tools; use the Brocade CLI.

Brocade CLI

Enter the following command to verify that Platform Management is disabled:

b3900:admin> **msPlatShow** Platform Management is NOT enabled. b3900:admin>

If Platform Management is enabled, enter the following command to disable platform management:

b3900:admin> msPlMgmtDeactivate

IBM BladeCenter Specific Configuration

Not applicable.

Successful Integration Checklist

Perform the following steps after the E_port connection has been established and the fabric has had time to update. If everything verifies, the Brocade and IBM BladeCenter fabrics have successfully merged.

- ✓ Compare and verify that all Zoning information has been propagated on all switches.
- ✓ Verify that the correct Zone Set is activated.
- ✓ Compare and verify that all devices are in the Name Server of each switch.
- Verify that all initiators continue to detect and have access to all targets that existed prior to the fabric merger.

After everything is verified, your fabric has merged successfully and no additional steps need to be taken. If any of the above tasks did not complete successfully, please contact IBM support.

Merging IBM BladeCenter and Cisco Fabrics

The following IBM switch modules have been tested in the IBM BladeCenter environment and comply with the FC-SW-2 standard. They have tested interoperable with the following switches from Cisco that comply with the FC-SW-2 standard.

Manufacturer	Switch Model	Firmware Version
IBM	IBM eServer BladeCenter Fibre Channel Switch Module	1.4.0.49.0 and above
	QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter	4.1.0.17-0 and above
Cisco	MDS 9216 Switch	1.2(1) and above
	MDS 9509 Director	1.2(1) and above

IBM and	Cisco Su	pported	Switch and	l Firmware	Versions
	0.000 00	pportoa	om and		10.0.0.0

The following chapter provides detailed information about merging Cisco and IBM BladeCenter fabrics: **Cisco MDS 9000 Series Switches (see page 131)**.

Cisco MDS 9000 Series Switches

Integration Checklist

The following steps must be completed to successfully merge Cisco and IBM BladeCenter fabrics. The remainder of this section provides detailed instructions and examples.

ATTENTION!!

- Back up the current switch configuration data prior to performing the following steps so that the configuration is available if something goes wrong (see the first step for details).
- Disruptions in the fabric can occur as a result of performing the following steps. Therefore, it is recommended that these changes be done during down time or off-peak hours.
- ✓ Back up the current switch configuration data (see "Backing Up and Restoring the Current Configuration Settings" on page 134).
- ✓ Verify that the correct version of switch firmware is installed on each switch (see "Supported Switches and Firmware Versions" on page 133).
- Ensure that each switch has a unique Domain ID and that it falls within the proper range (see "Domain ID Configuration" on page 135).
- ✓ Set all switches to the appropriate timeout values (see "Timeout Values" on page 144).
- ✓ Ensure that all Zone set and Zone names are unique and conform to ANSI T11 standards (see "Active Zone Set Names" on page 157).
- ✓ Ensure that all zone members are specified by WWPN (see "Zone Types" on page 164).
- ✓ Verify that the fabrics have successfully merged (see "Successful Integration Checklist" on page 170).
- ✓ Contact IBM Technical Support to obtain the document, *Remote Boot of IBM BladeCenter from IBM FAStT*, if you are planning to use the boot form SAN functionality.

Cisco Configuration Limitations

VSAN functionality is specific to the Cisco switch. Refer to the Cisco manuals for configuration steps.

Contacting Cisco

For more information on configuring the Cisco switches, please see the contact information located in the Introduction (see page 3).

IBM BladeCenter Configuration Limitations

If you will be implementing the I/O stream guard feature, please contact your IBM technical support representative prior to configuring. Additional configuration procedures may be required.

Supported Switches and Firmware Versions

The following IBM switch modules have been tested in the IBM BladeCenter environment and comply with the FC-SW-2 standard. They have tested interoperable with the following switches from Cisco that comply with the FC-SW-2 standard.

Manufacturer	Switch Model	Firmware Version
IBM	IBM eServer BladeCenter Fibre Channel Switch Module	1.4.0.49.0 and above
	QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter	4.1.0.17-0 and above
Cisco	MDS 9216 Switch	1.2(1) and above
	MDS 9509 Director	1.2(1) and above

IBM and Cisco Supported Switch and Firmware Versions

The following figures illustrate a Cisco Fibre Channel fabric prior to and after merging with an IBM BladeCenter.



Cisco Fibre Channel Fabric Prior to Merging with the IBM BladeCenter



Cisco Fibre Channel Fabric with the IBM BladeCenter

Backing Up and Restoring the Current Configuration Settings

Back up the current Cisco switch configuration data prior to following the steps to merge Cisco and IBM BladeCenter fabrics so that the configuration can be restored if something goes wrong.

NOTE: For additional information, refer to the documentation provided with the switch.

Backup Procedure

Do the following to save the Cisco configuration settings:

- 1. Start Cisco Device Manager. The Device Manager dialog box displays.
- 2. From the **Device Manager** dialog box **Admin** menu, select **Save Configuration**.
- 3. A dialog prompts whether you want to copy the running configuration to the startup configuration. Click **Yes** to save the configuration.

Restore Procedure

If you need to restore the Cisco configuration settings that you backed up, do the following:

- 1. Start Cisco Device Manager. The **Device Manager** dialog box displays.
- 2. From the **Device Manager** dialog box **Admin** menu, select **Copy Configuration**.
- 3. The **Copy Configuration** dialog box displays. Specify the following:
 - Server address from which you want to copy the file
 - File name of the file you want to copy
 - Protocol you want to use
 - User name and password for the switch from which you want to copy the file (if required)
- 4. Do one of the following:
 - To copy the configuration, click **Apply**.
 - To close the **Copy Configuration** dialog without downloading, click **Cancel**.

Domain ID Configuration

To ensure that there are no conflicts between switches, we recommend that each switch have an assigned Domain ID. The following steps show how to set the Domain ID on both the Cisco switch and IBM switch module.

Cisco Device Manager

NOTE: The procedures differ based on the Cisco switch firmware level.

For Cisco switches with firmware levels 1.2(1) and above but less than 1.3(4a), do the following:

- 1. Start Cisco Device Manager. The **Device Manager** dialog box displays.
- 2. From the Device Manager dialog box FC menu, select Domain Manager.



- 3. From the **Domain Manager** dialog box, select the **Configuration** tab. For the VSAN to which you will connect the E_port, do the following as appropriate:
 - a. In the **Domain ID** field, type or edit the Domain ID.
 - b. In the **ConfigDomain IdType** field, type **static**.
 - c. Click Apply.

	🔜 10.20.67.4 - Domain Manager 🛛 🔀										
1	Running Configuration Configuration Interfaces Areas Areas Area Ports										
Ļ	Br t ⇒ P ⊗										
		ConfigDomain									
1	/sanId	Enable	Id	IdType	FabricName	Priority	ContiguousAllocation	AutoReconfigure	Restart		
1			n/a	preferred	20:01:00:05:30:00:28:df	128	Г	Г	noOp		
2		V	34	static	20.01100105150100:28:df	128	Γ	Г	noOp		
21	2 row(s)										

For Cisco switches with firmware levels above 1.3(4a), do the following:

- 1. Start Cisco Device Manager. The **Device Manager** dialog box displays.
- 2. From the Device Manager dialog box FC menu, select Domain Manager.

Device Manager 1.3(4a)	- 10.20.67.23 (MD59216-23) [a	dmin]	-U×					
Device Physical Interface	FC FICON IP	Security Admin	Logs Help						
😑 👁 🖨 🔍 📄 👔	VSANs	?							
Device Cummunul	Domain Mana	ger 🕂 💳							
bevice Summary	Name Server.								
FAN CISCO STOTENS D. ATT	RSCN	Staff con	ecle Mgmt Gedal						
	Advanced	🕨 🕴 📱	•						
			1.3(4a	0					
	×××××	9 10 11 12 XXXXX	13 14 15 16						
2 🧟				0					
\$\$				_					
university and a second s									
Up Down Fail Minor Unreachable 🗾									

- 3. From the **Domain Manager** dialog box, select the **Configuration** tab. For the VSAN to which you will connect the E_port, do the following as appropriate:
 - a. In the **ConfigDomain DomainId** field, type or edit the domain ID.
 - b. In the **ConfigDomain IdType** drop-down box, select **static**.
 - c. Click Apply.

🜎 10.20.67.23 - Domain Manager										×	
Running Configuration Domains Statistics Interfaces Persistent Folds Allowed Ids											
🕼 🐎 🔊 🖬 🗳											
			ConfigD	omain					Fold		
Vsan	ild Er	nable	DomainId	ldType	FabricName	Priority	ContiguousAllocation	AutoReconfigure	Persistency	Purge	Restart
1		V	23	static 🗖	20:01:00:05:30:00:28:df	128					NoSelection
								Apply	Refresh	Help	Close
1 row	(s)										

Cisco CLI

NOTE: Use the following CLI commands when the Cisco Device Manager is not available.

```
login: admin
Password: *******
Cisco_9216# config t
Cisco_9216(config)# fcdomain domain <domain id> static vsan <vsan id>
Cisco_9216(config)# fcdomain restart disruptive vsan <vsan id>
Cisco_9216(config)# end
```

If you want these changes to remain through a switch reset, enter the following command.

Cisco_9216# copy running-config startup-config

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN Utility—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Switch menu, select Switch Properties.

BIBM Blade	enter [®] SAN Utility - Face	plate
File Fabric	Switch Port Zoning Archive Restore Load Firmware Firmware Fallback	View Help Zoning deCenter Switch
♥ ● 10.20. ♥ ● 10.20. ♥ ■ sb	Set Date/Time Switch Properties Network Properties Toggle Beacon Export Alarm Log Configure Alarm Thresh Reset Switch Restore Eactory Default	rmal olds I
		Dev Switch Port Address Type WWNN
		Name Server Switch Port Stats Port Info Configured Zonesets Alarm Log
1		

- 3. From the Switch Properties—IBM BladeCenter SAN Utility dialog box, do the following:
 - a. Select the **Domain ID Lock Disable** radio button.
 - b. In the **Domain ID** box, type a unique Domain ID in the 97–127 range for the switch.
 - c. Select the **Domain ID Lock Enable** radio button to ensure that the switch always has that Domain ID.
 - d. Click OK.

World Wide Name: 10: Operational State: on	00:00:c0:dd:00:72:c7 ine	FC Address: Firmware Versior	630000 V1.4.0.26-5		
Chassis Name: IBM IP Address: 10.	I BladeCenter Switch 20.78.93	MAC address:	00:c0:dd:00:72:c		
Chassis Name:	IBM BladeCenter Switcl	1			
Administrative State:	online	Timeout Values	IS		
► Domain ID:	99	R_A_TOV:	10000		
🕨 Domain ID lock:	🖲 Enable 🛛 🔿 Disabl	R_T_TOV:	100		
Broadcast Support:	🖲 Enable 🛛 🔿 Disabl	E_D_TOV:	2000		
In-band Management:	🖲 Enable 🛛 Disabl	e			

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Switch menu, select Switch Properties.

IBM Blade(Center(TM) SAI	N Browser	- Facep	olate							
<u>File</u> Fabric	Switch Port	Zoning	⊻iew	Wizards	<u>H</u> elp						
Add Refr Switch	Archive Restore User Accoun Set Date/Tim Temperature	ts e Threshol	ds								
- Swit	Switch Prope	erties									
	Network Prop SNMP Proper	perties rties con									
	Port Thresho	id Alarm (Configu	ration							
	Load Firmwa	re			34	56	78	9 10	11 12 13	14	
	Activate Firm	ware									
	<u>F</u> irmware Fal	lback									
	Reset Switch	1			Ni	kname	Details	FC Address	Switch	Port	Target/Initi
	Restore Fact	ory Defau	lts				(i)	7c0100	Switchblade2	Bay 1	Unknown
		1	0.00.03	80.38.49.8	,			7c0200	Switchblade2	Bay 2	Unknown
		Dev	vices 🛛	Switch	Port Stat	s Port Ir	nfo Con	figured Zones	ets		
<u>.</u>											
- 3. From the Switch Properties—IBM BladeCenter SAN Browser dialog box, do the following:
 - a. Select the **Domain ID Lock Disable** radio button to ensure that the switch always has that Domain ID.
 - b. In the **Domain ID** box, type a unique Domain ID in the 97–127 range for the switch.
 - c. Select the **Domain ID Lock Enable** radio button to ensure that the switch always has that Domain ID.
 - d. Click OK.

World Wide Name: 10:00:00:c0:dd:02:1d:68	First Port Address: 70	0000	
Operational State: online	Firmware Version: V4	.1.0.17-0	
Symbolic Name: Switchblade2	MAC address: 00	:c0:dd:02:1d	1:67
IP Address: 10.20.67.24			
Symbolic Name: Switchblade2	Domain ID lock:	O Enable	• Disable
Administrative State: online 💌	Broadcast Support:	• Enable	O Disable
Domain ID: 124 0x 7c	In-band Management:	• Enable	O Disable
FDMI HBA Entry Limit: 1000	FDMI:	Enable	O Disable
imeout Values		_	
R_A_TOV: 10000	FC-SW-2 Compliant:	Enable	O Disable
E_D_TOV: 2000	Legacy Address Format:	O Enable	Disable

IBM BladeCenter CLI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, use the following CLI commands when the IBM eServer BladeCenter SAN Utility is not available:

```
Login: admin
Password: xxxxxxx
IBM BladeCenter #> admin start
IBM BladeCenter (admin) #> config edit
IBM BladeCenter (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  DefaultDomainID (decimal value, 1-239) [1] <97-127>
  DomainIDLock (True / False) [False] True
  SymbolicName (string, max=32 chars) [Fibre Channel Switch Module]
  R T TOV (decimal value, 1-1000 msec) [100]
  R A TOV (decimal value, 100-100000 msec) [10000]
  E D TOV (decimal value, 10-20000 msec) [2000]
  FS TOV (decimal value, 100-100000 msec) [5000]
  DS TOV (decimal value, 100-100000 msec) [5000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [Default Config]
IBM BladeCenter (admin-config) #> config save
IBM BladeCenter (admin) #> config activate
The configuration will be activated. Please confirm (y/n): [n] y
```

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, use the following CLI commands when the IBM eServer BladeCenter SAN Browser is not available:

```
Switchblade2: admin> admin start
Switchblade2 (admin): admin> config edit
  The config named default is being edited.
Switchblade2 (admin-config): admin> set config switch
  A list of attributes with formatting and current values will follow.
  Enter a new value or simply press the ENTER key to accept the current
  value. If you wish to terminate this process before reaching the end of
  the list press 'q' or 'Q' and the ENTER key to do so.
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  FdmiEnabled (True / False) [True]
  FdmiEntries (decimal value, 0-1000) [1000]
  DefaultDomainID (decimal value, 1-239) [1] 124
  DomainIDLock (True / False) [False] true
  SymbolicName (string, max=32 chars) [Switchblade2]
  R A TOV (decimal value, 100-100000 msec) [10000]
  E D TOV (decimal value, 10-20000 msec) [2000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [IBM eServer BladeCenter(TM)
  6-port Enterprise Fibre Channel Swit]
  FC-SW-2 Compliant (True / False) [True]
  Finished configuring attributes.
  This configuration must be saved (see config save command) and
  activated (see config activate command) before it can take effect.
  To discard this configuration use the config cancel command.
Switchblade2 (admin-config): admin> config save
  The config named default has been saved.
Switchblade2 (admin): admin> config activate
  The currently active configuration will be activated.
  Please confirm (y/n): [n] y
Switchblade2 (admin): admin> admin end
```

Timeout Values

As per FC-SW-2 Fibre Channel standards, set all switches to the following timeout values (TOV) in order to successfully establish an E_port connection:

 $R_A_TOV = 10$ seconds (The setting is **10000**.) $E_D_TOV = 2$ seconds (The setting is **2000**.)

This section provides the steps to change these values.

Cisco Device Manager

<u>ATTENTION!!</u> The following steps take the switch offline; therefore, do not perform them on a switch being managed in-band.

Cisco Device Manager

NOTE: The procedures differ based on the Cisco switch firmware level.

For Cisco switches with firmware levels 1.2(1) and above but less than 1.3(4a), do the following:

- 1. Start Cisco Device Manager. The **Device Manager** dialog box displays.
- 2. From the **Device Manager** dialog box **FC** menu, select **Timers/Policies**.



- 3. From the **Timers Policies** dialog box, verify that **R_A_TOV** is set to **10000** and **E_D_TOV** is set to **2000**. If the settings are not correct, do the following:
 - a. In the **R_A_TOV** box, change the setting to **10000**.
 - b. In the **E_D_TOV** box, change the setting to **2000**.

1

c. Click Apply.

	Timeouts
-	R_A_TOV: 10000 5000100000 ms
-	E_D_TOV: 2000 1000100000 ms
	F_S_TOV: 5000 ms
	D_S_TOV: 5000 5000100000 ms
	- Drop Latencies
	Network: 2000 060000 ms
	Switch: 500 ms
	- Policies
	InorderDelivery
	TrunkProtocol

For Cisco switches with firmware levels greater than 1.3(4a), do the following:

- 1. Start Cisco Device Manager. The **Device Manager** dialog box displays.
- 2. From the **Device Manager** dialog box **FC** menu, select **VSANs**.



- 3. From the VSAN dialog box, select the **Timers** tab. Verify that **R_A_TOV** is set to **10000** and **E_D_TOV** is set to **2000**. If the settings are not correct, do the following:
 - a. In the **R_A_TOV** box, change the setting to **10000**.
 - b. In the **E_D_TOV** box, change the setting to **2000**.
 - c. Click Apply.

ĺ	10.20.6	7.23 - VSAN					×
	General	Membership	ICON Membersh	nip Timers		-	
	e 👘	🍃 🔒 🗳					
	Vsanid	R_A_TOV	D_S_TOV	E_D_TOV	Networ	kDropLatenc	y (ms)
	1	10000	5000	2000			2000
				_			
			Ap	oly Ref	resh	Help	Close
	1 row(s)						

Cisco CLI

login: admin Password: ******* Cisco 9216# show fctimer

Use the above command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000. If these timeout values are not correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
Cisco_9216# config t

Cisco_9216(config)# vsan database

Cisco_9216(config-vsan-db)# vsan <vsan id> suspend (do this for all vsan)

Cisco_9216(config-vsan-db)# exit

Cisco_9216(config)# fctimer r_a_tov 10000

Cisco_9216(config)# fctimer e_d_tov 2000

Cisco_9216(config)# vsan database

Cisco_9216(config)# vsan database

Cisco_9216(config-vsan-db)# no vsan <vsan id> suspend (do this for all vsan)

Cisco_9216(config-vsan-db)# exit

Cisco_9216(config)# end
```

If you want these changes to remain through a switch reset, enter the following command.

```
Cisco_9216# copy running-config startup-config
```

IBM BladeCenter GUI

<u>ATTENTION!!</u> The following steps take the switch offline; therefore, do not perform them on a switch being managed in-band.

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN Utility—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Switch menu, select Switch Properties.



3. From the **Switch Properties—IBM BladeCenter SAN Utility** dialog box, verify that **R_A_TOV** is set to **10000** and **E_D_TOV** is set to **2000**. If the settings are not correct, proceed to step 4. If the settings are correct, no changes need to be made; proceed to the next appropriate section.

World Wide Name: 10: Operational State: opi	:00:00:c0:dd line	:00:72:c7	FC Address: Firmware Version	630000 r: V1 4 0 26-5
Chassis Name: IBM IP Address: 10.	/ BladeCent 20.78.93	er Switch	MAC address:	00:c0:dd:00:72:c6
Chassis Name:	IBM BladeC	enter Switch		
Administrative State:	online	•	Timeout Value:	S
Domain ID:	99		R_A_TOV:	10000
Domain ID lock:	Enable	O Disable	R_T_TOV:	100
Broadcast Support:	• Enable	O Disable	E_D_TOV:	2000
In-band Management:	Enable	O Disable		

- 4. From the Switch Properties—IBM BladeCenter SAN Utility dialog box Administrative State list, select offline. Click OK.
- 5. Re-enter the **Switch Properties—IBM BladeCenter SAN Utility** dialog box (see step 2). Do the following:
 - a. In the **R_A_TOV** box, enter **10000**.
 - b. In the **E_D_TOV** box, enter **2000**.
 - c. Click OK.
- 6. Re-enter the Switch Properties—IBM BladeCenter SAN Utility dialog box (see step 2). In the Administrative State list, select Online. Click OK.

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Switch menu, select Switch Properties.



3. From the **Switch Properties—IBM BladeCenter SAN Browser** dialog box, verify that **R_A_TOV** is set to **10000** and **E_D_TOV** is set to **2000**. If the settings are *not* correct, proceed to step 4. If the settings are correct, no changes need to be made; proceed to the next appropriate section.

World Wide Name: 10:00:00:c0:dd:02:1d:60	8 First Port Address:	7c0000	
Operational State: online	Firmware Version:	/4.1.0.17-0	
Symbolic Name: Switchblade2	MAC address:	00:c0:dd:02:10	1:67
IP Address: 10.20.67.24			
Symbolic Name: Switchblade2	Domain ID lock:	• Enable	() Dis
Administrative State: online -	Broadcast Support:	• Enable	() Dis
Domain ID: 124 0x 7c	In-band Management:	• Enable	() Dis
FDMI HBA Entry Limit: 1000	FDMI:	• Enable) Dis
Timeout Values	FC CW 2 Compliants	o =	_ .
R_A_TOV: 10000	FC-SVV-2 Complianc	Enable	O Dis
	Legacy Address Format	O Enable	Dis

- 4. To modify the timeout value settings, do the following:
 - a. In the Administrative State drop-down box, select offline. Click OK.
 - b. In the Timeout Values section, do the following:
 - (1) In the **R_A_TOV** box, enter **10000**.
 - (2) In the **E_D_TOV** box, enter **2000**.
 - c. Click OK.
 - d. In the Administrative State drop-down box, select online. Click OK.

World Wide Name	:10:00:00:c0:dd:02:1d:ea	First Port Address: 0	10000	
Operational States	offline	Firmware Version: V	/4.1.0.17-0	
Symbolic Name:	Switchblade1	MAC address: 0	0:c0:dd:02:1	t:e9
IP Address:	10.20.67.24			
Symbolic Name:	Switchblade1	Domain ID lock:	• Enable	O Disab
Administrative Sta	ite: online	Broadcast Support:	• Enable	O Disab
Domain ID:	123 0x 7b	In-band Management:	• Enable	O Disab
FDMI HBA Entry Li	nit: 1000	FDMI:	• Enable	O Disab
Timeout Values R_A_TOV:	10000	FC-SW-2 Compliant:	Enable	O Disab
		Legacy Address Format:	O Enable	Disab

5. From the **Switch Properties—IBM BladeCenter SAN Utility** dialog box, verify your changes (see step 3).

IBM BladeCenter CLI

<u>ATTENTION!!</u> The following steps take the switch offline; therefore, do not perform them on a switch being managed in-band.

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, use the following CLI commands when the IBM eServer BladeCenter SAN Utility is not available:

```
Login: admin
Password: xxxxxxx
```

```
Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.
```

```
IBM BladeCenter #> show config switch
```

If these timeout values are *not* correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
IBM BladeCenter #> admin start
IBM BladeCenter (admin) #> config edit
IBM BladeCenter (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  DefaultDomainID (decimal value, 1-239) [1]
  DomainIDLock (True / False) [True]
  SymbolicName (string, max=32 chars) [Fibre Channel Switch Module]
  R T TOV (decimal value, 1-1000 msec) [100]
  R A TOV (decimal value, 100-100000 msec) [9000]
                                                     10000
  E D TOV (decimal value, 10-20000 msec) [1000]
                                                   2000
  FS TOV (decimal value, 100-100000 msec) [5000]
  DS TOV (decimal value, 100-100000 msec) [5000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [Default Config]
IBM BladeCenter (admin-config) #> config save
IBM BladeCenter (admin) #> config activate
The configuration will be activated. Please confirm (y/n): [n] y
```

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, use the following CLI commands when the IBM eServer BladeCenter SAN Browser is not available:

Login: **admin** Password: **xxxxxxx**

Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.

Switchblade2: admin> show config switch

If these timeout values are *not* correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
Switchblade2: admin>
Switchblade2: admin> admin start
Switchblade2 (admin): admin> config edit
The config named default is being edited.
Switchblade2 (admin-config): admin> set config switch
A list of attributes with formatting and current values will follow.
Enter a new value or simply press the ENTER key to accept the current
value. If you wish to terminate this process before reaching the end of
the list press 'q' or 'Q' and the ENTER key to do so.
AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
BroadcastEnabled (True / False) [True]
```

InbandEnabled (Irue / False) [Irue] FdmiEnabled (True / False) [True] FdmiEntries (decimal value, 0-1000) [1000] DefaultDomainID (decimal value, 1-239) [124] DomainIDLock (True / False) [True] SymbolicName (string, max=32 chars) [Switchblade2] R_A_TOV (decimal value, 100-100000 msec) [9000] 10000 E_D_TOV (decimal value, 10-20000 msec) [1000] 2000 PrincipalPriority (decimal value, 1-255) [254] ConfigDescription (string, max=64 chars) [IBM eServer BladeCenter(TM) 6-port Enterprise Fibre Channel Swit] FC-SW-2 Compliant (True / False) [True] Finished configuring attributes.
This configuration must be saved (see config save command) and
activated (see config activate command) before it can take effect.
To discard this configuration use the config cancel command.
Switchblade2 (admin-config): admin> config save
The config named default has been saved.
Switchblade2 (admin): admin> config activate
The currently active configuration will be activated.
Please confirm (y/n): [n] y
Switchblade2 (admin): admin> admin end

Principal Switch Configuration

Cisco switches and IBM switch modules negotiate for principal switch automatically. Therefore, there are no steps to take.

Zone Configuration

This section discusses configuring active Zone Set names and Zone types.

Active Zone Set Names

The Zone and Zone Set names on each switch must be unique. If not, change one of the duplicate names. All Zone Set and Zone names must conform to the Fibre Channel (FC) Standards for Zone Naming (ANSI T11/00-427v3):

- 1. Must be 1–64 characters in length.
- 2. All characters are ASCII.
- 3. First character is [a–z] or [A–Z].
- 4. All other characters must be [a–z], [A–Z], [0–9], or the _ character. Other characters (\$-^) may not be supported by all vendors and should be avoided.

Cisco Fabric Manager

NOTE: The procedures differ based on the Cisco switch firmware level.

For Cisco switches with firmware levels 1.2(1) and above but less than 1.3(4a), do the following:

- 1. Start Cisco Fabric Manager. The **Fabric Manager** dialog box displays.
- 2. From the Fabric Manager dialog box left panel, do the following:
 - a. Select the VSAN/Zone tab.
 - b. Expand the VSAN to which you plan to connect the E_port.
 - c. Verify that the Zone Set names and Zone names conform to the standards discussed under "Active Zone Set Names" on page 157 and are unique between the switches.



For Cisco switches with firmware levels above 1.3(4a), do the following:

- 1. Start Cisco Fabric Manager. The **Fabric Manager** dialog box displays.
- 2. From the **Fabric Manager** dialog box left panel, do the following:
 - a. Select the **Logical** tab.
 - b. Expand the VSAN to which you plan to connect the E_port.
 - c. Verify that the Zone Set names and Zone names conform to the standards discussed under "Active Zone Set Names" on page 157 and are unique between the switches.



Cisco CLI

NOTE: Use the following CLI commands when the Cisco Fabric Manager is not available.

login: **admin** Password: **********

Cisco_9216# show zoneset vsan <vsan id>

Use the above command to verify that all Zone and Zone Set names in the VSAN conform to FC standards.

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN Utility—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

BM BladeCenter® SAN Utility - Face	eplate	
File Fabric Switch Port Zoning	<u>View</u> Help	
🗔 📢 🛄 Edit Zon	ing	
Add Open Save Edit Zon	ing <u>C</u> onfig	
Activate	Zone Set	
PC Paprics Deactive	Ite Zone Set r Switch	
P 010.20.67.17	Default Zoning	
■ sb2-17 ■ IBM BladeCenter Switch	Image: Server Switch Port Stats Port Info Configured Zonesets Alarm Log	
		.

3. From the Edit Zoning— IBM BladeCenter SAN Utility dialog box, compare the Zone Set and Zone names from each switch to ensure that none have the same name and the names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 157.



For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN** Utility—Faceplate dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

BM BladeCenter ¹⁶ SAN Utility - Faceplate	
File Fabric Switch Port Zoning View Help	
🔲 🚗 📳 Edit Zoning	
Add Open Save Edit Zoning Config	20
Activate Zone Set	
FC Fabrics Deactivate Zone Set	r Switch
BM BladeCenter Switch	Switch Port Address Type WWNN Switch Port Address Type WWNN

3. From the **Edit Zoning—IBM BladeCenter SAN Utility** dialog box, compare the Zone Set and Zone names from each switch to ensure that none have the same name and the names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 157.



IBM BladeCenter CLI

NOTE: Use the following CLI commands when the IBM BladeCenter GUI is not available.

Login: **admin** Password: **xxxxxxx** IBM BladeCenter #> **zone list**

Zone Types

All zone members must be specified by a world wide port name (WWPN) in order to comply with Fibre Channel standards. Any zone member not specified by WWPN cannot participate in the fabric. Below are steps to confirm the zone types.

NOTE: A world wide name (WWN) consists of a world wide node name (WWNN) and one or more WWPNs. For Cisco, references to pwwn refer to the WWPN. For IBM, references to WWN refer to the WWPN.

Cisco Fabric Manager

NOTE: The procedures differ based on the Cisco switch firmware level.

For Cisco switches with firmware levels 1.2(1) and above but less than 1.3(4a), do the following:

- 1. Start Cisco Fabric Manager. The Fabric Manager dialog box displays.
- 2. From the Fabric Manager dialog box left panel, do the following:
 - a. Select the VSAN/Zone tab.
 - b. Expand the VSAN to which you plan to connect the E_port.
 - c. Verify that the zone member names conform to the standards discussed under "Active Zone Set Names" on page 157 and are unique between the switches.



For Cisco switches with firmware levels above 1.3(4a), do the following:

- 1. Start Cisco Fabric Manager. The **Fabric Manager** dialog box displays.
- 2. From the **Fabric Manager** dialog box left panel, do the following:
 - a. Select the **Logical** tab.
 - b. Expand the VSAN to which you plan to connect the E_port.
 - c. Verify that the zone member names conform to the standards discussed under "Active Zone Set Names" on page 157 and are unique between the switches.



Cisco CLI

NOTE: Use the following CLI commands when the Cisco Fabric Manager is not available.

login: admin
Password: *******
Cisco_9216# show zone vsan <vsan id>

Use the above command to verify that all zone members are specified by pwwn.

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN Utility—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

BM BladeCenter® SAN Utility - Face	eplate	
File Fabric Switch Port Zoning	<u>View</u> Help	
🗔 📢 🛄 Edit Zon	ing	
Add Open Save Edit Zon	ing <u>C</u> onfig	
Activate	Zone Set	
PC Paprics Deactive	Ite Zone Set r Switch	
P 010.20.67.17	Default Zoning	
■ sb2-17 ■ IBM BladeCenter Switch	Image: Server Switch Port Stats Port Info Configured Zonesets Alarm Log	
		<u>_</u>

3. The Edit Zoning—IBM BladeCenter SAN Utility dialog box displays. Confirm that all zone members are listed as WWN.



For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Zoning menu, select Edit Zoning.



- 3. The Edit Zoning—IBM BladeCenter SAN Browser dialog box displays. Do the following:
 - a. Select a ZoneSet.
 - b. Select a Zone.
 - c. In the Zone Members section, confirm that all zone members are listed as WWN.
 - d. Repeat the above steps for each zone.



IBM BladeCenter CLI

NOTE: Use the following CLI commands when the IBM BladeCenter GUI is not available.

Login: admin Password: xxxxxxx IBM BladeCenter #> zone members <zone name> Repeat this statement for each zone and confirm that only WWNs are listed.

Operating Mode Configuration

Not applicable.

Cisco Specific Configuration

Not applicable. [per email 8/25.04: set the attribute "interop" to "default" under VSAN attibutes. Nik. can you provide this information?]

IBM BladeCenter Specific Configuration

Not applicable.

Successful Integration Checklist

Perform the following steps after the E_port connection has been established and the fabric has had time to update. If everything verifies, the Cisco and IBM BladeCenter fabrics have successfully merged.

- ✓ Compare and verify that all Zoning information has been propagated on all switches.
- ✓ Verify that the correct Zone Set is activated.
- ✓ Compare and verify that all devices are in the Name Server of each switch.
- Verify that all initiators continue to detect and have access to all targets that existed prior to the fabric merger.

After everything is verified, your fabric has merged successfully and no additional steps need to be taken. If any of the above tasks did not complete successfully, please contact IBM support.

ADMINISTRATIVE NOTE!!

If the Cisco Fabric Manager is unable to see initiators on the IBM BladeCenter, verify that the **InBandEnabled** parameter on the IBM switch module is set to **True**.

Use the following CLI commands to verify that **InbandEnabled** is set to **True**.

```
Sanbox2 login: admin
Password: *******
#> show config switch
```

The following displays:

Switch Configuration Information AdminState Online BroadcastEnabled True * InbandEnabled True

If InbandEnabled is set to False, use the following CLI commands to change the setting.

#> admin start
(admin)#> config edit
(admin-config)#> set config switch

A list of attributes with formatting and current values displays. Enter a new value or press **ENTER** to accept the current value. If you want to terminate this process before reaching the end of the list, press q + ENTER or Q + ENTER.

```
AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
BroadcastEnabled (True / False) [True]
InbandEnabled (True / False) [False] True
DefaultDomainID (decimal value, 1-239) [6]
```

This configuration must be saved (using the **config save** command) and activated (using the **config activate** command) before it can take effect. If you want to discard this configuration, use the **config cancel** command.

(admin-config) #> config save
(admin) #> config act

The Cisco Fabric Manager is now able to display within its topology map the initiators present in the IBM fabric.

Merging IBM BladeCenter and CNT Fabrics

The following IBM switch modules have been tested in the IBM BladeCenter environment and comply with the FC-SW-2 standard. They have tested interoperable with the following switch from CNT that complies with the FC-SW-2 standard.

Manufacturer	Switch Model	Firmware Version
IBM	IBM eServer BladeCenter Fibre Channel Switch Module	1.4.0.49.0 and above
	QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter	4.1.0.17-0 and above
CNT	FC/9000 Switch	Code set 3.0.3.2 and above

IBM and CNT Supported Switch an	d Firmware Versions
---------------------------------	---------------------

The following chapter provides detailed information about merging IBM BladeCenter and CNT fabrics: CNT FC/9000 Switches (see page 175).

CNT FC/9000 Switches

Integration Checklist

The following steps must be completed to successfully merge CNT and IBM BladeCenter fabrics. The remainder of this section provides detailed instructions and examples.

ATTENTION!!

- Back up the current switch configuration data prior to performing the following steps so that the configuration is available if something goes wrong (see the first step for details).
- Disruptions in the fabric can occur as a result of performing the following steps. Therefore, it is recommended that these changes be done during down time or off-peak hours.
- ✓ Back up the current switch configuration data (see "Backing Up and Restoring the Current Configuration Settings" on page 177).
- ✓ Verify that the correct version of switch firmware is installed on each switch (see "Supported Switches and Firmware Versions" on page 176).
- Ensure that each switch has a unique Domain ID and that it falls within the proper range (see "Domain ID Configuration" on page 177).
- ✓ Set all switches to the appropriate timeout values (see "Timeout Values" on page 185).
- ✓ Ensure that all Zone set and Zone names are unique and conform to ANSI T11 standards (see "Active Zone Set Names" on page 194).
- ✓ Ensure that the zone member type is set to Port WWN (see "Zone Types" on page 204).
- ✓ Verify that the fabrics have successfully merged (see "Successful Integration Checklist" on page 212).
- ✓ Contact IBM Technical Support to obtain the document, *Remote Boot of IBM BladeCenter from IBM FAStT*, if you are planning to use the boot form SAN functionality.

CNT Configuration Limitations

The configuration limitations are:

- When merging CNT and IBM BladeCenter fabrics, the maximum number of switches that can be configured depends upon the CNT switch model.
 - □ For the FC9000-64, the maximum is 56 interconnected switches per fabric.
 - □ For the FC9000-128, the maximum is 48 interconnected switches per fabric.
- You may need to manually enter the WWPN for an expansion card if an "Unknown Device" error is reported during configuration.

Otherwise, all features are fully supported and comply with industry standards.

Contacting CNT

For more information on configuring the CNT switches, please see the contact information located in the Introduction (see page 3).

IBM BladeCenter Configuration Limitations

If you will be implementing the I/O stream guard feature, please contact your IBM technical support representative prior to configuring. Additional configuration procedures may be required.

Supported Switches and Firmware Versions

The following IBM switch modules have been tested in the IBM BladeCenter environment and comply with the FC-SW-2 standard. They have tested interoperable with the following switch from CNT that complies with the FC-SW-2 standard.

Manufacturer	Switch Model	Firmware Version
IBM	IBM eServer BladeCenter Fibre Channel Switch Module	1.4.0.49.0 and above
	QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter	4.1.0.17-0 and above
CNT	FC/9000 Switch	Code set 3.0.3 and above

IBM and CNT Supported Switch and Firmware Versions
The following figures illustrate an CNT Fibre Channel fabric prior to and after merging with an IBM BladeCenter.





CNT Fibre Channel Fabric Prior to Merging with the IBM BladeCenter

CNT Fibre Channel Fabric with the IBM BladeCenter

Backing Up and Restoring the Current Configuration Settings

Back up the current CNT switch configuration data prior to following the steps to merge CNT and IBM BladeCenter fabrics so that the configuration can be restored if something goes wrong.

NOTE: Refer to the documentation provided with the switch.

Domain ID Configuration

To ensure that there are no conflicts between switches, we recommend that each switch have an assigned Domain ID. The following steps show how to set the Domain ID on both the CNT switch and the IBM switch module.

NOTE: The Domain ID should be locked and unique within the 1–239 range.

CNT IN-VSN Enterprise Manager

- 1. Start the CNT IN-VSN Enterprise Manager. The **IN-VNS Enterprise Manager** dialog box displays.
- 2. From the **IN-VNS Enterprise Manager** dialog box, select the **System Configuration** tab and do the following:
 - a. In the **Director Domain ID** box, type a unique Domain ID.
 - b. In the Lock Director Domain ID list, select Yes.
 - c. Click Apply.

💭 IN-VSN Enterprise Manager							
<u>F</u> ile <u>V</u> iew <u>T</u> raps <u>D</u> irector <u>H</u>	elp						
← → ✓ Back Forward Apply	Cancel	C Refresh	W Devices	Z Zoning			
⊡-Fabrics				Fab E FC	-64 : FC-64		
🖻 🚟 Fab_E_FC-64	Gen	eral	P	ort Confia	1	Offline Po	rt Config
E- FC-64	Name	Service	S	ystem Configura	ation	Version	Trap Setting
Users	Configurati System C Inter Switt WWWN Serial Nur RTTOV RATOV EDTOV MFSTOV FICON Ma Director D Max No. o Lock Dire Director D WWWN of F	on Type Syster configuration th Link Type mber mber omain Id Rang f Domains ctor Domain Id rincipal Switch	wer (CUP)	E Port 10000060DF200 N/A 1000 2000 640 Disabled Disabled 1-239(0x01-0xEF 56 Yes 107 10000060DF200)COC _	Select Rang	e
2002.12.06 15:43:52 CST:N/A Pin	g success. IPA	idress = 10.20	.8.46				<u> </u>
	10.4		~ **				*
ready							Administrato

CNT CLI

Not applicable.

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN Utility—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Switch menu, select Switch Properties.

E IBM Blade	Center [™] SAN Utility - Facep	late
File Fabric	Switch Port Zoning V Archive Restore Load Firmware Firmware Fallback Set Date/Time	Help Zoning deCenter Switch rmal
9 9 10.20	Switch Properties Network Properties Toggle Beacon Export Alarm Log Configure Alarm Thresho Reset Switch Restore Factory Defaults	
		Dev Switch Port Address Type WW/NN

- 3. From the Switch Properties—IBM BladeCenter SAN Utility dialog box, do the following:
 - a. Select the **Domain ID Lock Disable** radio button.
 - b. In the **Domain ID** box, type a unique Domain ID in the 97–127 range for the switch.
 - c. Select the **Domain ID Lock Enable** radio button to ensure that the switch always has that Domain ID.
 - d. Click OK.

World Wide Name: 10: Operational State: onl	00:00:c0:dd:00:72:c7 ine	FC Address: Firmware Version	630000 n:∀1.4.0.26-5		
Chassis Name: IBN IP Address: 10.	I BladeCenter Switch 20.78.93	MAC address:	00:c0:dd:00:72:cf		
Chassis Name:	IBM BladeCenter Switch]			
Administrative State:	online 👻	Timeout Values			
► Domain ID:	99	R_A_TOV:	10000		
▶ Domain ID lock:	🖲 Enable 🛛 Disable	R_T_TOV:	100		
Broadcast Support:	🖲 Enable 🔷 Disable	E_D_TOV:	2000		
In-band Management:	🖲 Enable 🛛 Disable				

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Switch menu, select Switch Properties.

IB	M Blade(Center(T	M) SAN	Browser	- Facep	olate								
<u>F</u> ile	Fabric	Switch	Port	Zoning	⊻iew	<u>W</u> izards	<u>H</u> elp	1						
Ad Swi	itch 10.20.	<u>Archive</u> <u>R</u> estor <u>U</u> ser A Set <u>D</u> at	e e ccount te/Time rature	s e T <u>h</u> reshol	ds									
l '	Swit	Switch	Prope	rties										
		<u>N</u> etwor SNMP	rk Prop Proper	oerties ties										
		🗆 Toggi	le Bea	con										
		Port Th	nresho	ld Alarm g	<u>C</u> onfigu	ration								
		Load Fi	irmwai	re			3	4	56	78	9 10	11 12 13	14	
		Activat	e Firm	ware										
		Eirmwa	are Fall	back										
		Reset 9	Switch				• 🗖	Nickn	ame	Details	FC Address	Switch	Port	Target/Initi
		Restor	e Facto	ory Defau	its					<u>(i)</u>	7c0100	Switchblade2	Bay 1	Unknown
				<	vices	Switch	Port	Stats	Port Im	(i) (i)	7c0200	Switchblade2	Bay 2	Unknown
J								oluto	. circin	Con	igaroa Eonose			_

- 3. From the Switch Properties—IBM BladeCenter SAN Browser dialog box, do the following:
 - a. Select the **Domain ID Lock Disable** radio button to ensure that the switch always has that Domain ID.
 - b. In the **Domain ID** box, type a unique Domain ID in the 97–127 range for the switch.
 - c. Select the **Domain ID Lock Enable** radio button to ensure that the switch always has that Domain ID.
 - d. Click OK.

World Wide Name: 10:0	00:00:c0:dd:02:1d:68	First Port Address: 1	°c0000			
Operational State: onli	ne	Firmware Version: \	/4.1.0.17-0			
Symbolic Name: Swi	tchblade2	MAC address: 0	00:c0:dd:02:1	0:c0:dd:02:1d:67		
IP Address: 10.2	20.67.24					
Symbolic Name:	Switchblade2	Domain ID lock:	O Enable) Disable 4		
Administrative State:	online 🔻	Broadcast Support:	• Enable	O Disable		
Domain ID:	124 0x 7c	In-band Management:	• Enable	O Disable		
FDMI HBA Entry Limit:	1000	FDMI:	• Enable	O Disable		
imeout Values			_			
R_A_TOV: 1000	0	FC-SW-2 Compliant:	Enable	O Disable		
E D TOV: 2000		Legacy Address Format	O Enable	Disable		

IBM BladeCenter CLI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, use the following CLI commands when the IBM eServer BladeCenter SAN Utility is not available:

```
Login: admin
Password: xxxxxxx
IBM BladeCenter #> admin start
IBM BladeCenter (admin) #> config edit
IBM BladeCenter (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  DefaultDomainID (decimal value, 1-239) [1] <97-127>
  DomainIDLock (True / False) [False] True
  SymbolicName (string, max=32 chars) [Fibre Channel Switch Module]
  R T TOV (decimal value, 1-1000 msec) [100]
  R A TOV (decimal value, 100-100000 msec) [10000]
  E D TOV (decimal value, 10-20000 msec) [2000]
  FS TOV (decimal value, 100-100000 msec) [5000]
  DS TOV (decimal value, 100-100000 msec) [5000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [Default Config]
IBM BladeCenter (admin-config) #> config save
IBM BladeCenter (admin) #> config activate
The configuration will be activated. Please confirm (y/n): [n] y
```

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, use the following CLI commands when the IBM eServer BladeCenter SAN Browser is not available:

```
Switchblade2: admin> admin start
Switchblade2 (admin): admin> config edit
  The config named default is being edited.
Switchblade2 (admin-config): admin> set config switch
  A list of attributes with formatting and current values will follow.
  Enter a new value or simply press the ENTER key to accept the current
  value. If you wish to terminate this process before reaching the end of
  the list press 'q' or 'Q' and the ENTER key to do so.
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  FdmiEnabled (True / False) [True]
  FdmiEntries (decimal value, 0-1000) [1000]
  DefaultDomainID (decimal value, 1-239) [1] 124
  DomainIDLock (True / False) [False] true
  SymbolicName (string, max=32 chars) [Switchblade2]
  R A TOV (decimal value, 100-100000 msec) [10000]
  E D TOV (decimal value, 10-20000 msec) [2000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [IBM eServer BladeCenter(TM)
  6-port Enterprise Fibre Channel Swit]
  FC-SW-2 Compliant (True / False) [True]
  Finished configuring attributes.
  This configuration must be saved (see config save command) and
  activated (see config activate command) before it can take effect.
  To discard this configuration use the config cancel command.
Switchblade2 (admin-config): admin> config save
  The config named default has been saved.
Switchblade2 (admin): admin> config activate
  The currently active configuration will be activated.
  Please confirm (y/n): [n] y
Switchblade2 (admin): admin> admin end
```

Timeout Values

As per FC-SW-2 Fibre Channel standards, set all switches to the following timeout values (TOV) in order to successfully establish an E_port connection:

 $R_A_TOV = 10$ seconds (The setting is **10000**.) $E_D_TOV = 2$ seconds (The setting is **2000**.)

This section provides the steps to change these values.

CNT IN-VSN Enterprise Manager

- 1. Start the CNT IN-VSN Enterprise Manager. The **IN-VNS Enterprise Manager** dialog box displays.
- From the IN-VNS Enterprise Manager dialog box, select the System Configuration tab. Verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000. If the settings are not correct, do the following.
 - a. In the **R_A_TOV** box, change the setting to **10000**.
 - b. In the **E_D_TOV** box, change the setting to **2000**.
 - c. Click Apply.



CNT CLI

Not applicable.

IBM BladeCenter GUI

<u>ATTENTION!!</u> The following steps take the switch offline; therefore, do not perform them on a switch being managed in-band.

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN Utility—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Switch menu, select Switch Properties.



3. From the **Switch Properties**—**IBM BladeCenter SAN Utility** dialog box, verify that **R_A_TOV** is set to **10000** and **E_D_TOV** is set to **2000**. If the settings are not correct, proceed to step 4. If the settings are correct, no changes need to be made; proceed to the next appropriate section.

World Wide Name: 10:	00:00:c0:dd:0	D:72:c7	FC Address:	630000			
Operational State: on	ine		Firmware Version: V1.4.0.26-5				
IP Address: 10.	20.78.93	Switch	MAC address:	UU:CU:dd:UU:72:66			
Chassis Name:	IBM BladeCer	nter Switch					
Administrative State:	online	•	Timeout Values	5			
Domain ID:	99		R_A_TOV:	10000			
Domain ID lock:	Enable	O Disable	R_T_TOV:	100			
Broadcast Support:	• Enable	O Disable	E_D_TOV:	2000			
In-band Management:	Enable	O Disable					

- 4. From the Switch Properties—IBM BladeCenter SAN Utility dialog box Administrative State list, select offline. Click OK.
- 5. Re-enter the **Switch Properties—IBM BladeCenter SAN Utility** dialog box (see step 2). Do the following:
 - a. In the **R_A_TOV** box, enter **10000**.
 - b. In the **E_D_TOV** box, enter **2000**.
 - c. Click OK.
- 6. Re-enter the Switch Properties—IBM BladeCenter SAN Utility dialog box (see step 2). In the Administrative State list, select Online. Click OK.

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Switch menu, select Switch Properties.



3. From the **Switch Properties—IBM BladeCenter SAN Browser** dialog box, verify that **R_A_TOV** is set to **10000** and **E_D_TOV** is set to **2000**. If the settings are *not* correct, proceed to step 4. If the settings are correct, no changes need to be made; proceed to the next appropriate section.

World Wide Name. To	:00:00:c0:dd:02:1d:68	First Port Address: 7	°c0000	
Operational State: on	line	Firmware Version: \	/4.1.0.17-0	
Symbolic Name: Sv	vitchblade2	MAC address: 0	0:c0:dd:02:1	1:67
IP Address: 10	.20.67.24			
Symbolic Name:	Switchblade2	Domain ID lock:	• Enable) Dis
Administrative State:	online 🔻	Broadcast Support:	• Enable	() Dis
Domain ID:	124 Ox 7c	In-band Management:	• Enable	() Dis
FDMI HBA Entry Limit:	1000	FDMI:	• Enable) Dis
Timeout Values		FC CM 2 Compliant	o	0.00
R_A_TOV: 100	00	FC-SVV-2 Compliant:	Enable	() Dis
		Legacy Address Format:	O Enable	(i) Dis

- 4. To modify the timeout value settings, do the following:
 - a. In the Administrative State drop-down box, select offline. Click OK.
 - b. In the Timeout Values section, do the following:
 - (1) In the **R_A_TOV** box, enter **10000**.
 - (2) In the **E_D_TOV** box, enter **2000**.
 - c. Click OK.
 - d. In the Administrative State drop-down box, select online. Click OK.

World Wide Name: 10:00:00:	c0:dd:02:1d:ea First Port Addre	First Port Address: 010000					
Operational State: offline	Firmware Vers	Firmware Version: V4.1.0.17-0					
Symbolic Name: Switchbla	ade1 MAC address:	MAC address: 00:c0:dd:02:1d:e9					
IP Address: 10.20.67	24						
Symbolic Name: Switc	hblade1 Domain ID lock:	• Enable) Disat				
Administrative State: onlin	e Broadcast Support:	Enable) Disat				
Domain ID: 123	0x7b In-band Managemen	nt: 💿 Enable) Disat				
FDMI HBA Entry Limit: 1000	FDMI:	Enable) Disat				
Timeout Values R_A_TOV: 10000	FC-SW-2 Compliant	• Enable) Disat				
	Legacy Address Fo	rmat: O Enable	O Disat				

5. From the **Switch Properties—IBM BladeCenter SAN Utility** dialog box, verify your changes (see step 3).

IBM BladeCenter CLI

<u>ATTENTION!!</u> The following steps take the switch offline; therefore, do not perform them on a switch being managed in-band.

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, use the following CLI commands when the IBM eServer BladeCenter SAN Utility is not available:

```
Login: admin
Password: xxxxxxx
```

```
Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.
```

IBM BladeCenter #> show config switch

If these timeout values are *not* correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
IBM BladeCenter #> admin start
IBM BladeCenter (admin) #> config edit
IBM BladeCenter (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  DefaultDomainID (decimal value, 1-239) [1]
  DomainIDLock (True / False) [True]
  SymbolicName (string, max=32 chars) [Fibre Channel Switch Module]
  R T TOV (decimal value, 1-1000 msec) [100]
  R A TOV (decimal value, 100-100000 msec) [9000]
                                                     10000
  E D TOV (decimal value, 10-20000 msec) [1000]
                                                   2000
  FS TOV (decimal value, 100-100000 msec) [5000]
  DS TOV (decimal value, 100-100000 msec) [5000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [Default Config]
IBM BladeCenter (admin-config) #> config save
IBM BladeCenter (admin) #> config activate
The configuration will be activated. Please confirm (y/n): [n] y
```

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, use the following CLI commands when the IBM eServer BladeCenter SAN Browser is not available:

Login: **admin** Password: **xxxxxxx**

Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.

Switchblade2: admin> show config switch

If these timeout values are *not* correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
Switchblade2: admin>
Switchblade2: admin> admin start
Switchblade2 (admin): admin> config edit
The config named default is being edited.
Switchblade2 (admin-config): admin> set config switch
A list of attributes with formatting and current values will follow.
Enter a new value or simply press the ENTER key to accept the current
value. If you wish to terminate this process before reaching the end of
the list press 'q' or 'Q' and the ENTER key to do so.
```

```
AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
BroadcastEnabled (True / False) [True]
InbandEnabled (True / False) [True]
FdmiEnabled (True / False) [True]
FdmiEntries (decimal value, 0-1000) [1000]
DefaultDomainID (decimal value, 1-239) [124]
DomainIDLock (True / False) [True]
SymbolicName (string, max=32 chars) [Switchblade2]
R_A_TOV (decimal value, 100-100000 msec) [9000] 10000
E_D_TOV (decimal value, 10-20000 msec) [1000] 2000
PrincipalPriority (decimal value, 1-255) [254]
ConfigDescription (string, max=64 chars) [IBM eServer BladeCenter(TM)
6-port Enterprise Fibre Channel Swit]
FC-SW-2 Compliant (True / False) [True]
```

Finished configuring attributes.

```
This configuration must be saved (see config save command) and
activated (see config activate command) before it can take effect.
To discard this configuration use the config cancel command.
Switchblade2 (admin-config): admin> config save
The config named default has been saved.
Switchblade2 (admin): admin> config activate
The currently active configuration will be activated.
Please confirm (y/n): [n] y
Switchblade2 (admin): admin> admin end
```

Principal Switch Configuration

CNT switches and IBM switch modules negotiate for principal switch automatically. Therefore, there are no steps to take.

Zone Configuration

This section discusses configuring active Zone Set names and Zone types.

Active Zone Set Names

The Zone and Zone Set names on each switch must be unique. If not, change one of the duplicate names. All Zone Set and Zone names must conform to the Fibre Channel (FC) Standards for Zone Naming (ANSI T11/00-427v3):

- 1. Must be 1–64 characters in length.
- 2. All characters are ASCII.
- 3. First character is [a–z] or [A–Z].
- 4. All other characters must be [a–z], [A–Z], [0–9], or the _ character. Other characters (\$-^) may not be supported by all vendors and should be avoided.

CNT IN-VSN Enterprise Manager

1. Start the CNT IN-VSN Enterprise Manager. The **IN-VNS Enterprise Manager** dialog box displays. Click the **Zoning** button.



2. From the **E-Port Zoning (All Fabrics)** dialog box, select the fabric and click the **Zoom In** button.

💭 E-Port Zoning								
图-鬻 Fab_E_FC-64	€ Zoom In	ି Zoom Out	Save Save	C Refresh	Cancel			
					All Fa	brics		
	Fabric		# Dire	ctors		Active Zoneset	Member Type	
	Fab_E_FC-6	4	1				Port WWN	
	•) ×
	To access Di and zoom-in	rector Zonir or double-cl	ng databa: lick.	ses, select	Fabric			

🔔 E-Port Zoning											
🖭 🚟 Fab_E_FC-64	€.	9		100							
	Zoom In	Zoom Out 8	ave Refres	n Cancel							
			Fabric: Fab_E_FC-64: All Director Domains								
	Director Nam	ie Doma	in ID	Active Zoneset	Member Type	# INACTIVE Zonesets					
	 FC-64	107			Port WWN	2					
	,										
	To access Zon	esets and Zone:	s of a directo	r, select director	and .						
	To replicate :	Zoning database	e from one din	ector to another,							
	right-click	on source dire	tor and choos	e 'Replicate Zonin	ng Database'.						

3. From the **E-Port Zoning (Fabric x: All Director Domains)** dialog box, select the director and click the **Zoom In** button.

 From the E-Port Zoning (Fabric x: Director y: All Zonesets) dialog box, select the Zonesets tab. Verify that all Zone Set names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 194.

💭 E-Port Zoning								
. 🐨 🚟 Fab_E_FC-64	۹	e,	~	2	×			
	Zoom In	Zoom Out	Save	Refresh	Cancel			
			Fabr	ic: Fab_E_F	C-64: Di	rector: FC-64 Al	Zonesets	
	Zonesets	All Zones					1	1
	Zoneset N	ame # Zo	nes	# Zone N	lembers	Member Type	Zoneset State	Zoneset Status
	Inrange_Zo	neSet_1 0		0		Port WWN	INACTIVE	Saved
	Inrange_Zo	neSet_2_U		U		Port WWWN	INACTIVE	Saved
	-Oreate 201	10001						
	To view Zon	es in a Zone	set, seled	t Zoneset :	and zoom-	in.		
	To modify z	ones in an I	NACTIVE zo	oneset, acc	ess zones	via 'All Zones	' view.	
	Note: No up	dates are al	lowed for	an ACTIVE :	Coneset.			

5. Select the **All Zones** tab. Verify that all Zone names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 194.

E-Port Zoning									
	€.	Q	V	2	×				
	Zoom In	Zoom Out	Save	Refresh	Cancel				
	Zonesets	Fabric: Fab_E_FC-64: Director: FC-64 All Zonesets							
	Zoneset N	ame # Zo	nes	# Zone N	embers	Member Type	Zoneset State	Zoneset Status	
	Inrange_Zo	neSet_1 0		0		PortWWN	INACTIVE	Saved	
	Inrange_Zo	neSet_2_0		0		Port WWN	INACTIVE	Saved	
	<create td="" zor<=""><td>neset></td><td></td><td></td><td></td><td></td><td></td><td></td></create>	neset>							
	<u>.</u>								
	To view Zon To modify z Note: No up	es in a Zone ones in an I dates are al	set, sele NACTIVE z lowed for	ct Zoneset a oneset, acce an ACTIVE 2	and zoom- ess zones Coneset.	in. via 'All Zones	' view.		

CNT CLI

Not applicable.

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN** Utility—Faceplate dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

BM BladeCenter® SAN Utility - Face	eplate	
File Fabric Switch Port Zoning	<u>View</u> Help	
🗔 🤿 💾 Edit Zonii	ing	
Add Open Save Edit Zoni	ing <u>C</u> onfig ng	
EC Exprise Description	Zone Set	—
© 10.20.67.16 Pestore	Default Zoning	
P • 10.20.67.17		-
IBM BladeCenter Switch	Image: Constraint of the second state of the second sta	
	Name Server Switch Port Stats Port Info Configured Zonesets Alarm Log	<u></u>
ی <u>۔۔۔۔</u> ا ۱		;

3. From the Edit Zoning— IBM BladeCenter SAN Utility dialog box, compare the Zone Set and Zone names from each switch to ensure that none have the same name and the names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 194.



For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN Utility—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

Birth BladeCenter The SAN Utility - Faceplate	
File Fabric Switch Port Zoning View Help	
🗔 📳 Edit Zoning	
Add Open Save Edit Zoning Config	20
Activate Zone Set	
FC Fabrics Deactivate Zone Set	r Switch
BM BladeCenter Switch	Switch Port Address Type WWNN Switch Port Stats Port Info Configured Zonesets Alarm Log

3. From the **Edit Zoning—IBM BladeCenter SAN Utility** dialog box, compare the Zone Set and Zone names from each switch to ensure that none have the same name and the names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 194.



IBM BladeCenter CLI

NOTE: Use the following CLI commands when the IBM BladeCenter GUI is not available.

Login: **admin** Password: **xxxxxxx** IBM BladeCenter #> **zone list**

Zone Types

All zones members must be specified by a world wide port name (WWPN) in order to comply with Fibre Channel standards. Any zone member not specified by WWPN cannot participate in the fabric. Below are steps to confirm the zone types.

NOTE: A world wide name (WWN) consists of a world wide node name (WWNN) and one or more WWPNs. References in this guide to WWN actually refer to the WWPN.

CNT IN-VSN Enterprise Manager

1. Start the CNT IN-VSN Enterprise Manager. The **IN-VNS Enterprise Manager** dialog box displays. Click the **Zoning** button.



E-Port Zoning										
. Fab_E_FC-64		€ Zoom In	् Zoom Out	Save	🔊 Refresh	Cancel				
		All Fabrics								
		Fabric Fab E FC-6	4	# Dire	ctors		Active Zoneset	Member Type Port WWN		
	1									
		•								
	Te	o access Di nd zoom-in	rector Zonin or double-cl	ng databas lick.	es, select	Fabric				

2. From the **E-Port Zoning (All Fabrics)** dialog box, select the fabric and click the **Zoom In** button.

3. From the **E-Port Zoning (Fabric x: All Director Domains)** dialog box, select the director and click the **Zoom In** button.

C E-Port Zoning												
⊞-ﷺ Fab_E_FC-64		Q Zoom In 2	Coom Out	ve Refresh	Cancel							
			Fabric: Fab_E_FC-64: All Director Domains									
		Director Name	e Domai	n ID	Active Zoneset	Member Type	# INACTIVE Zonesets					
		FC-64	107			Port WWN	2					
	r.	To access Zone	sets and Zones	of a director	, select direct	or and						
		zoom-in or do	uble-click.	from one dire	ector to another							
		right-click of	n source direc	tor and choose	Replicate Zon	ing Database'.						
		Fo replicate Z right-click o	oning database n source direc	from one dire tor and choose	ctor to another Preplicate Zon	ing Database'.						

4. From the **E-Port Zoning (Fabric x: Director y: All Zones)** dialog box, select the **All Zones** tab. Verify that all **Zone Member Types** are set to **Port WWN**.

💭 E-Port Zoning								
. 🗃 🛱 Fab_E_FC-64	€ L	e,	~	2	×			
	Zoom In	Zoom Out	Save	Refresh	Cancel			
	Fabric: Fab_E_FC-64: Director: FC-64 All Zones Pool							
	Zonesets	e I	Member Tv	me #	Zone Memi	aers # Assigned Zonesets	Zone Status	
	Payroll		Port WWN	2	Lone menn		Saved	
	HSM	F	Port WWN	3		0	Saved	
	<create td="" zor<=""><td>ie></td><td></td><td></td><td></td><td></td><td></td></create>	ie>						
	To delete o followed b To access o	r replicate y Save toolk r modify Zor	a Zone, u bar button he Members	se right mo , select Zo	use click m ne and zoom	enu		

CNT CLI

Not applicable.

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN** Utility—Faceplate dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

BM BladeCenter® SAN Utility - Face	eplate	
File Fabric Switch Port Zoning	<u>View</u> Help	
🗔 🤿 💾 Edit Zonii	ing	
Add Open Save Edit Zoni	ing <u>C</u> onfig ng	
EC Exprise Description	Zone Set	—
© 10.20.67.16 Pestore	Default Zoning	
P • 10.20.67.17		-
IBM BladeCenter Switch	Image: Constraint of the second state of the second sta	
	Name Server Switch Port Stats Port Info Configured Zonesets Alarm Log	<u></u>
ی <u>۔۔۔۔</u> ا ۱		;

3. The Edit Zoning—IBM BladeCenter SAN Utility dialog box displays. Confirm that all zone members are listed as WWN.



For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Zoning menu, select Edit Zoning.



- 3. The Edit Zoning—IBM BladeCenter SAN Browser dialog box displays. Do the following:
 - a. Select a ZoneSet.
 - b. Select a Zone.
 - c. In the Zone Members section, confirm that all zone members are listed as WWN.
 - d. Repeat the above steps for each zone.



IBM BladeCenter CLI

NOTE: Use the following CLI commands when the IBM BladeCenter GUI is not available.

Login: admin Password: xxxxxxxx IBM BladeCenter #> zone members <zone name> Repeat this statement for each zone and confirm that only WWNs are listed.

Operating Mode Configuration

Not applicable.

CNT Specific Configuration

Not applicable.

IBM BladeCenter Specific Configuration

Not applicable.

Successful Integration Checklist

Perform the following steps after the E_port connection has been established and the fabric has had time to update. If everything verifies, the fabrics have successfully merged.

- ✓ Compare and verify that all Zoning information has been propagated on all switches.
- ✓ Verify that the correct Zone Set is activated.
- ✓ Compare and verify that all devices are in the Name Server of each switch.
- Verify that all initiators continue to detect and have access to all targets that existed prior to the fabric merger.

After everything is verified, your fabric has merged successfully and no additional steps need to be taken. If any of the above tasks did not complete successfully, please contact IBM support.
Merging IBM BladeCenter and McDATA Fabrics

The following IBM switch modules have been tested in the IBM BladeCenter environment and comply with the FC-SW-2 standard. They have tested interoperable with the following switches from McDATA that comply with the FC-SW-2 standard.

Manufacturer	Switch Model	Firmware Version
IBM	IBM eServer BladeCenter Fibre Channel Switch Module	1.4.0.49.0 and above
	QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter	4.1.0.17-0 and above
McDATA	ES-3016/IBM 2031-16	5.1 and above
	ES-3032/IBM 2031-32	5.1 and above
	Sphereon 3032/IBM 2031-216	
	Sphereon 3232/IBM 2031-232	5.1 and above
	Sphereon 4500 Switch	5.1 and above
	Intrepid 6064 Director	5.1 and above
	Intrepid 6140 Director	5.1 and above

IBM and McDATA Supported	Switch and Firmware Versions
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The following chapters provide detailed information about merging McDATA and IBM BladeCenter fabrics:

- McDATA Edge Switches (see page 215)
- McDATA Intrepid 6000 Series Directors (see page 263)

McDATA Edge Switches

Integration Checklist

The following steps must be completed to successfully merge McDATA and IBM BladeCenter fabrics. The remainder of this section provides detailed instructions and examples.

ATTENTION!!

- Back up the current switch configuration data prior to performing the following steps so that the configuration is available if something goes wrong (see the first step for details).
- Disruptions in the fabric can occur as a result of performing the following steps. Therefore, it is recommended that these changes be done during down time or off-peak hours.
- ✓ Back up the current switch configuration data (see "Backing Up and Restoring the Current Configuration Settings" on page 219).
- ✓ Verify that the correct version of switch firmware is installed on each switch (see "Supported Switches and Firmware Versions" on page 217).
- Ensure that each switch has a unique Domain ID and that it falls within the proper range (see "Domain ID Configuration" on page 220).
- ✓ Set all switches to the appropriate timeout values (see "Timeout Values" on page 231).
- ✓ Ensure that all Zone set and Zone names are unique and conform to ANSI T11 standards (see "Active Zone Set Names" on page 243).
- ✓ Ensure that all zone members are specified by WWPN (see "Zone Types" on page 250).
- Ensure that all McDATA switches are configured for Open Fabric Interoperability mode (see "Operating Mode Configuration" on page 256).
- ✓ Verify that the fabrics have successfully merged (see "Successful Integration Checklist" on page 261).
- ✓ Contact IBM Technical Support to obtain the document, *Remote Boot of IBM BladeCenter from IBM FAStT*, if you are planning to use the boot form SAN functionality.

McDATA Configuration Limitations

When merging McDATA and IBM BladeCenter fabrics, a maximum of 31 interconnected switches per fabric can be configured. Otherwise, all features are fully supported and comply with industry standards.

Contacting McDATA

For more information about configuring McDATA switches, please see the McDATA contact information in the **Introduction** (see page 3).

IBM BladeCenter Configuration Limitations

If you will be implementing the I/O stream guard feature, please contact your IBM technical support representative prior to configuring. Additional configuration procedures may be required.

Supported Switches and Firmware Versions

The following IBM switch modules have been tested in the IBM BladeCenter environment and comply with the FC-SW-2 standard. They have tested interoperable with the following switches from McDATA that comply with the FC-SW-2 standard.

Manufacturer	Switch Model	Firmware Version			
IBM	IBM eServer BladeCenter Fibre Channel Switch Module	1.4.0.49.0 and above			
	QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter				
McDATA	ES-3016 and IBM 2031-16	5.1 and above			
	ES-3032 and IBM 2031-32	5.1 and above			
	Sphereon 3032 and IBM 2031-216	5.1 and above			
	Sphereon 3232 and IBM 2031-232	5.1 and above			
	Sphereon 4500 and IBM 2031-224	5.1 and above			

IBM and McDATA Supported Switch and Firmware Versions

The following figures illustrate a McDATA Fibre Channel fabric prior to and after merging with an IBM BladeCenter.





McDATA Fibre Channel Fabric Prior to Merging with the IBM BladeCenter

McDATA Fibre Channel Fabric with the IBM BladeCenter

Backing Up and Restoring the Current Configuration Settings

Back up the current McDATA switch configuration data prior to following the steps to merge McDATA and IBM BladeCenter fabrics so that the configuration can be restored if something goes wrong.

NOTE: For additional information, refer to the documentation provided with the switch.

Note the following:

- Only a single copy of the configuration is kept on the McDATA server hard disk drive.
- The location and file name of the saved configuration cannot be modified.
- The configuration can only be restored to a switch with the same IP address.

Backup Procedure

To backup the current McDATA configuration settings, do the following:

- 1. Start McDATA Sphereon Web Management. The Main Switch View dialog box displays.
- 2. On the navigation panel, select **Operations**. The **Operations** dialog box displays. Select the **Maintenance** tab. The **Maintenance** dialog box displays.
- 3. From the **Maintenance** dialog box, select **Backup and Restore Configuration**. The **Backup and Restore Configuration** dialog box displays. Click **Backup**.
- 4. When the backup of the configuration completes, a message displays. Click **OK**.

NOTE: If the backup fails, a message informs you that the backup to the server failed.

Restore Procedure

If you need to restore the McDATA configuration settings that you backed up, do the following.

- **NOTE:** The backed up configuration is restored to the nonvolatile random access memory (NVRAM) on the switch. The restore operation initiates an initial product load (IPL).
- 1. Start McDATA Sphereon Web Management. The Main Switch View dialog box displays.
- 2. On the navigation panel, select **Operations**. The **Operations** dialog box displays. Select the **Switch** tab, select the **Online State** tab, then click the **Set Offline** button.
- 3. Select the Maintenance tab. The Maintenance dialog box displays.
- 4. From the **Maintenance** dialog box, select **Backup and Restore Configuration**. The **Backup and Restore Configuration** dialog box displays. Click **Restore**.
- 5. A confirmation dialog box displays, stating that the restore overwrites the existing configuration on the switch and the date of the restored backup. Click **OK**.
- 6. When the restore completes, select the **Switch** tab, select the **Online State** tab, then click the **Set Online** button.

Domain ID Configuration

To ensure that there are no conflicts between switches, we recommend that each switch have an assigned Domain ID. The following steps show how to set the Domain ID on both the McDATA switch and IBM switch module.

The Domain ID should be locked and unique within the 97–127 (0x61–0x7f) range. This is equivalent to 1–31 on the McDATA switch. The following chart lists the McDATA Domain ID and the corresponding IBM Domain ID.

McDATA Domain ID	IBM Domain ID	McDATA Domain ID	IBM Domain ID	McDATA Domain ID	IBM Domain ID
1	97	11	107	21	117
2	98	12	108	22	118
3	99	13	109	23	119
4	100	14	110	24	120
5	101	15	111	25	121
6	102	16	112	26	122
7	103	17	113	27	123
8	104	18	114	28	124
9	105	19	115	29	125
10	106	20	116	30	126
—	—	—	—	31	127

McDATA Versus IBM Domain IDs

McDATA Sphereon Web Management

- 1. Start McDATA Sphereon Web Management. The **Main Switch View** dialog box displays.
- 2. On the navigation panel, select **Operations**. The **Operations** dialog box displays. Select the **Switch** tab, select the **Online State** tab, then click the **Set Offline** button.

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- 3. On the navigation panel, select **Configure**. The **Configure** dialog box displays. Select the **Switch** tab, select the **Parameters** tab, and do the following:
 - a. In the **Preferred Domain ID** box, type a unique Domain ID.
 - b. From the Insistent Domain ID list, select Enabled.
 - c. Click Activate.

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1.11.000	*Preferred Domain ID:
View	Insistent Domain ID:
0	Rerouting Delay:
Configure	Domain RSCN: Disabled
Monitor	Suppress RSCN on Zone set activations: Disabled 🔽
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e http://10.20.67.19/cfg_fa	io_params_rs.ntm

4. On the navigation panel, select **Operations**. The **Operations** dialog box displays. Select the **Switch** tab, select the **Online State** tab, then click the **Set Online** button.

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View Configure	Operations: Switch Port Maintenance Installation Beacon Online State Reset Config Sys Err Light Current state is OFFLINE Set Online
Monitor Operations	
Help	
۲	Sector Se

McDATA Telnet CLI

NOTE: Use the following CLI commands when McDATA Sphereon Web Management is not available.

Username: Administrator
Password: xxxxxxx
Root> maint system
Maint.System> setOnlineState false
Maint.System> root
Root> config switch
Config.Switch> prefDomainId xx (xx=unique domain id)
Config.Switch> insistDomainId enable
Config.Switch> root
Root> maint system
Maint.System> setOnlineState true

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN** Utility—Faceplate dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Switch menu, select Switch Properties.

E IBM Blade	Center [™] SAN Utility - Facep	late
File Fabric	Switch Port Zoning V Archive Restore Load Firmware Firmware Fallback Set Date/Time	Help
9 9 10.20	Switch Properties Network Properties Toggle Beacon Export Alarm Log Configure Alarm Thresho Reset Switch Restore Factory Defaults	
		Dev Switch Port Address Type WW/NN

- 3. From the Switch Properties—IBM BladeCenter SAN Utility dialog box, do the following:
 - a. Select the **Domain ID Lock Disable** radio button.
 - b. In the **Domain ID** box, type a unique Domain ID in the 97–127 range for the switch.
 - c. Select the **Domain ID Lock Enable** radio button to ensure that the switch always has that Domain ID.
 - d. Click OK.

World Wide Name: 10 Operational State: or Chassis Name: IB IP Address: 10	:00:00:c0:dd:00:72:c7 line M BladeCenter Switch .20.78.93	FC Address: 630000 Firmware Version: V1.4.0.2 MAC address: 00:c0:dd	6-5 1:00:72:c8
Chassis Name: Administrative State: Domain ID:	IBM BladeCenter Switch	Timeout Values R_A_TOV: 10000	
Domain ID lock: Broadcast Support:	Enable Disable Enable Disable	R_T_TOV: 100 E_D_TOV: 2000	

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Switch menu, select Switch Properties.

IBM Blade	Center(TM) SAN	Browser	- Facep	late								
<u>File</u> Fa <u>b</u> ric	Switch Port	Zoning	⊻iew	Wizards	<u>H</u> elp							
Add Refr Switch	<u>Archive</u> <u>R</u> estore <u>U</u> ser Account Set <u>D</u> ate/Time Temperature	ts e T <u>h</u> reshol	ds									
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	- Firmware Fall	lback										
	Reset Switch				• =	Nickname		Details	FC Address	Switch	Port	Target(Initi
	- Restore Facto	ory Defau	Its			INICIAIUTIC		(i)	7c0100	Switchblade2	Bay 1	Unknown
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									9999999999			
		Dev	rices	Switch	Port	Stats Por	rt Info	Conf	igured Zonese	ets		

- 3. From the Switch Properties—IBM BladeCenter SAN Browser dialog box, do the following:
 - a. Select the **Domain ID Lock Disable** radio button to ensure that the switch always has that Domain ID.
 - b. In the **Domain ID** box, type a unique Domain ID in the 97–127 range for the switch.
 - c. Select the **Domain ID Lock Enable** radio button to ensure that the switch always has that Domain ID.
 - d. Click OK.

World Wide Name: 10:0	00:00:c0:dd:02:1d:68	First Port Address: 1	°c0000	
Operational State: onli	ne	Firmware Version: \	/4.1.0.17-0	
Symbolic Name: Swi	tchblade2	MAC address: 0	00:c0:dd:02:1	1:67
IP Address: 10.2	20.67.24			
Symbolic Name:	Switchblade2	Domain ID lock:	O Enable) Disable 4
Administrative State:	online 🔻	Broadcast Support:	• Enable	O Disable
Domain ID:	124 0x 7c	In-band Management:	• Enable	O Disable
FDMI HBA Entry Limit:	1000	FDMI:	• Enable	O Disable
imeout Values			_	
R_A_TOV: 1000	0	FC-SW-2 Compliant:	Enable	O Disable
E D TOV: 2000		Legacy Address Format	O Enable	Disable

IBM BladeCenter CLI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, use the following CLI commands when the IBM eServer BladeCenter SAN Utility is not available:

```
Login: admin
Password: xxxxxxx
IBM BladeCenter #> admin start
IBM BladeCenter (admin) #> config edit
IBM BladeCenter (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  DefaultDomainID (decimal value, 1-239) [1] <97-127>
  DomainIDLock (True / False) [False] True
  SymbolicName (string, max=32 chars) [Fibre Channel Switch Module]
  R T TOV (decimal value, 1-1000 msec) [100]
  R A TOV (decimal value, 100-100000 msec) [10000]
  E D TOV (decimal value, 10-20000 msec) [2000]
  FS TOV (decimal value, 100-100000 msec) [5000]
  DS TOV (decimal value, 100-100000 msec) [5000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [Default Config]
IBM BladeCenter (admin-config) #> config save
IBM BladeCenter (admin) #> config activate
The configuration will be activated. Please confirm (y/n): [n] y
```

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, use the following CLI commands when the IBM eServer BladeCenter SAN Browser is not available:

```
Switchblade2: admin> admin start
Switchblade2 (admin): admin> config edit
  The config named default is being edited.
Switchblade2 (admin-config): admin> set config switch
  A list of attributes with formatting and current values will follow.
  Enter a new value or simply press the ENTER key to accept the current
  value. If you wish to terminate this process before reaching the end of
  the list press 'q' or 'Q' and the ENTER key to do so.
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  FdmiEnabled (True / False) [True]
  FdmiEntries (decimal value, 0-1000) [1000]
  DefaultDomainID (decimal value, 1-239) [1] 124
  DomainIDLock (True / False) [False] true
  SymbolicName (string, max=32 chars) [Switchblade2]
  R A TOV (decimal value, 100-100000 msec) [10000]
  E D TOV (decimal value, 10-20000 msec) [2000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [IBM eServer BladeCenter(TM)
  6-port Enterprise Fibre Channel Swit]
  FC-SW-2 Compliant (True / False) [True]
  Finished configuring attributes.
  This configuration must be saved (see config save command) and
  activated (see config activate command) before it can take effect.
  To discard this configuration use the config cancel command.
Switchblade2 (admin-config): admin> config save
  The config named default has been saved.
Switchblade2 (admin): admin> config activate
  The currently active configuration will be activated.
  Please confirm (y/n): [n] y
Switchblade2 (admin): admin> admin end
```

Timeout Values

As per FC-SW-2 Fibre Channel standards, set all switches to the following timeout values (TOV) in order to successfully establish an E_port connection:

 $R_A_TOV = 10$ seconds (The setting is **100**.) $E_D_TOV = 2$ seconds (The setting is **20**.)

This section provides the steps to change these values.

McDATA Sphereon Web Management

- 1. Start McDATA Sphereon Web Management. The Main Switch View dialog box displays.
- On the navigation panel, select Configure. The Configure dialog box displays. Select the Switch tab, then select the Fabric Parameters tab. Verify that R_A_TOV is set to 100 and E_D_TOV is set to 20. If the settings are *not* correct, proceed to step 3. If the settings are correct, no changes need to be made; proceed to the next appropriate section.



3. On the navigation panel, select **Operations**. The **Operations** dialog box displays. Select the **Switch** tab, select **Online State** tab, then click the **Set Offline** button.

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View Configure Monitor Operations Help	-7/23/04	4 at 13:15:29	
		🥝 Internet	1.

- 4. On the navigation panel, select **Configure**, The **Configure** dialog box displays. Select the **Switch** tab, select the **Fabric Parameters** tab, then do the following:
 - a. In the **R_A_TOV** box, change the setting to **100**.
 - b. In the **E_D_TOV** box, change the setting to **20**.
 - c. Click Activate.

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Address 🔄 http://10.20.67.19/cfg_fab_params_fs.htm 🔽 🄗 Go Links 🎽 🏟 🛱					
Search - Edit	Google ▼ Yahool ▼ Ask Jeeves LookSmart ‡0\$ Customize 🖑 My Button 💷 Highlight				
	Configure: Refresh-7 / 23 / 04 at 14:05:00				
	Ports Switch Management Zoning Security Performance				
	Identification Date / Time Parameters Fabric Parameters Network				
View	R_A_TOV: 100 (tenths of a second)				
	E_D_TOV: 20 (tenths of a second)				
Configure					
Monitor	_				
Monitor	Online State: Offline				
Operations	Note: The device must be offline to activate any changes				
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5. On the navigation panel, select **Operations**. The **Operations** dialog box displays. Select the **Switch** tab, select the **Online State** tab, then click the **Set Online** button.

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McDATA Telnet CLI

NOTE: Use the following CLI commands when McDATA Sphereon Web Management is not available.

Username: Administrator Password: xxxxxxx

Use the following command to verify that R_A_TOV is set to 100 and E_D_TOV is set to 20.

Root> **show** Show> **switch**

If these timeout values are not correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
Show> root
Root> maint system
Maint.System> setOnlineState false
Maint.System> root
Root> config switch
Config.Switch> raTOV 100
Config.Switch> edTOV 20
Config.Switch> root
Root> maint system
Maint.System> setOnlineState true
```

IBM BladeCenter GUI

<u>ATTENTION!!</u> The following steps take the switch offline; therefore, do not perform them on a switch being managed in-band.

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN Utility—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Switch menu, select Switch Properties.



3. From the **Switch Properties**—**IBM BladeCenter SAN Utility** dialog box, verify that **R_A_TOV** is set to **10000** and **E_D_TOV** is set to **2000**. If the settings are not correct, proceed to step 4. If the settings are correct, no changes need to be made; proceed to the next appropriate section.

World Wide Name: 10	:00:00:c0:dd:00:	72:c7	FC Address:	630000
Operational State: online Chassis Name: IBM BladeCenter Switch IP Address: 10.20.78.93		Firmware Version: V1.4.0.26-5	¥V1.4.0.26-5	
		witch	MAC address:	00:c0:dd:00:72:c6
Chassis Name:	IBM BladeCent	er Switch		
Administrative State:	online	•	Timeout Values	5
Domain ID:	99		R_A_TOV:	10000
Domain ID lock:	• Enable	Disable	R_T_TOV:	100
Broadcast Support:	• Enable) Disable	E_D_TOV:	2000
In-band Management:	• Enable	Disable		

- 4. From the Switch Properties—IBM BladeCenter SAN Utility dialog box Administrative State list, select offline. Click OK.
- 5. Re-enter the **Switch Properties—IBM BladeCenter SAN Utility** dialog box (see step 2). Do the following:
 - a. In the **R_A_TOV** box, enter **10000**.
 - b. In the **E_D_TOV** box, enter **2000**.
 - c. Click OK.
- 6. Re-enter the Switch Properties—IBM BladeCenter SAN Utility dialog box (see step 2). In the Administrative State list, select Online. Click OK.

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Switch menu, select Switch Properties.



3. From the **Switch Properties—IBM BladeCenter SAN Browser** dialog box, verify that **R_A_TOV** is set to **10000** and **E_D_TOV** is set to **2000**. If the settings are *not* correct, proceed to step 4. If the settings are correct, no changes need to be made; proceed to the next appropriate section.

World Wide Name: 10:00:00:c0:dd:02:1d:68	First Port Address:	°c0000	
Operational State: online	Firmware Version: \	/4.1.0.17-0	
Symbolic Name: Switchblade2	MAC address:	00:c0:dd:02:10	1:67
IP Address: 10.20.67.24			
Symbolic Name: Switchblade2	Domain ID lock:	• Enable) Disa
Administrative State: online	Broadcast Support:	• Enable) Disa
Domain ID: 124 0x7c	In-band Management:	• Enable) Disa
FDMI HBA Entry Limit: 1000	FDMI:	• Enable) Disa
Timeout Values	FC FW 2 Compliants	o	0.00
R_A_TOV: 10000	FC-SVV-2 Compliant:	Enable	() Disa
E D T014	Legacy Address Format	O Enable	Dis

- 4. To modify the timeout value settings, do the following:
 - a. In the Administrative State drop-down box, select offline. Click OK.
 - b. In the Timeout Values section, do the following:
 - (1) In the **R_A_TOV** box, enter **10000**.
 - (2) In the **E_D_TOV** box, enter **2000**.
 - c. Click OK.
 - d. In the Administrative State drop-down box, select online. Click OK.

World Wide Na	me: 10:00:00:c0:dd:02:1d:ea	First Port Address:	010000	
Operational Sta	ite: offline	Firmware Version: \	/4.1.0.17-0	
Symbolic Name	: Switchblade1	MAC address:	00:c0:dd:02:10	t:e9
IP Address:	10.20.67.24			
Symbolic Name	: Switchblade1	Domain ID lock:	• Enable) Disa
Administrative	State: online	Broadcast Support:	• Enable) Dis
Domain ID:	123 0x 7b	In-band Management:	• Enable) Dis
FDMI HBA Entry	Limit: 1000	FDMI:	• Enable) Dis
Timeout Values	10000	FC-SW-2 Compliant:	• Enable) Dis
	2000	Legacy Address Format	O Enable	Disc

5. From the **Switch Properties—IBM BladeCenter SAN Utility** dialog box, verify your changes (see step 3).

IBM BladeCenter CLI

<u>ATTENTION!!</u> The following steps take the switch offline; therefore, do not perform them on a switch being managed in-band.

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, use the following CLI commands when the IBM eServer BladeCenter SAN Utility is not available:

```
Login: admin
Password: xxxxxxx
```

Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.

```
IBM BladeCenter #> show config switch
```

If these timeout values are *not* correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
IBM BladeCenter #> admin start
IBM BladeCenter (admin) #> config edit
IBM BladeCenter (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  DefaultDomainID (decimal value, 1-239) [1]
  DomainIDLock (True / False) [True]
  SymbolicName (string, max=32 chars) [Fibre Channel Switch Module]
  R T TOV (decimal value, 1-1000 msec) [100]
  R A TOV (decimal value, 100-100000 msec) [9000]
                                                     10000
  E D TOV (decimal value, 10-20000 msec) [1000]
                                                   2000
  FS TOV (decimal value, 100-100000 msec) [5000]
  DS TOV (decimal value, 100-100000 msec) [5000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [Default Config]
IBM BladeCenter (admin-config) #> config save
IBM BladeCenter (admin) #> config activate
The configuration will be activated. Please confirm (y/n): [n] y
```

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, use the following CLI commands when the IBM eServer BladeCenter SAN Browser is not available:

Login: **admin** Password: **xxxxxxx**

Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.

Switchblade2: admin> **show config switch**

If these timeout values are *not* correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
Switchblade2: admin>
Switchblade2: admin> admin start
Switchblade2 (admin): admin> config edit
The config named default is being edited.
Switchblade2 (admin-config): admin> set config switch
```

A list of attributes with formatting and current values will follow. Enter a new value or simply press the ENTER key to accept the current value. If you wish to terminate this process before reaching the end of the list press 'q' or 'Q' and the ENTER key to do so.

AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online] BroadcastEnabled (True / False) [True] InbandEnabled (True / False) [True] FdmiEnabled (True / False) [True] FdmiEntries (decimal value, 0-1000) [1000] DefaultDomainID (decimal value, 1-239) [124] DomainIDLock (True / False) [True] SymbolicName (string, max=32 chars) [Switchblade2] R_A_TOV (decimal value, 100-100000 msec) [9000] 10000 E_D_TOV (decimal value, 10-20000 msec) [1000] 2000 PrincipalPriority (decimal value, 1-255) [254] ConfigDescription (string, max=64 chars) [IBM eServer BladeCenter(TM) 6-port Enterprise Fibre Channel Swit] FC-SW-2 Compliant (True / False) [True] Finished configuring attributes.

```
This configuration must be saved (see config save command) and
activated (see config activate command) before it can take effect.
To discard this configuration use the config cancel command.
Switchblade2 (admin-config): admin> config save
The config named default has been saved.
Switchblade2 (admin): admin> config activate
The currently active configuration will be activated.
Please confirm (y/n): [n] y
Switchblade2 (admin): admin> admin end
```

Principal Switch Configuration

McDATA switches and IBM switch modules negotiate for principal switch automatically. Therefore, there are no steps to take.

Zone Configuration

This section discusses configuring active Zone Set names and Zone types.

Active Zone Set Names

The Zone and Zone Set names on each switch must be unique. If not, change one of the duplicate names. All Zone Set and Zone names must conform to the Fibre Channel (FC) Standards for Zone Naming (ANSI T11/00-427v3):

- 1. Must be 1–64 characters in length.
- 2. All characters are ASCII.
- 3. First character is [a–z] or [A–Z].
- 4. All other characters must be [a–z], [A–Z], [0–9], or the _ character. Other characters (\$-^) may not be supported by all vendors and should be avoided.

McDATA Sphereon Web Management

- 1. Start McDATA Sphereon Web Management. The Main Switch View dialog box displays.
- 2. On the navigation panel, select **Configure**. The **Configure** dialog box displays. Select the **Zoning** tab, then select the **ZoneSet** tab. Verify that the Zone Set name conforms to the standards for zone naming as discussed under "Active Zone Set Names" on page 243.

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	Zone Set Zones				
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Configure	Save and Activate Zoning Conliguration				
Monitor	Zone Set Name: ZS1 Rename Zone Set				
Operations	Default Zone: Enabled Disable Default Zone				
Hale					
нер	Disable Zone Set (Place all attached devices in the Default Zone)				
	Discard Changes (Devert to Saved Zoning Configuration)				
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3. Select the **Zones** tab. Verify that the Zone names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 243.

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Zone Set Zones
View Displayed Zoning Configuration is: Saved
Configure
Add New Zone
Monitor
Help
Display Previous Zones Display More Zones
Delete Email_Cluster
Delete Engineering
Delete Accounting
All Zones Displayed
Display Previous Zones Display More Zones

McDATA Telnet CLI

NOTE: Use the following CLI commands when McDATA Sphereon Web Management is not available.

Username: Administrator Password: xxxxxxx Root> show Show> zoning

Verify that the Zone Set and Zone Names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 243.

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN** Utility—Faceplate dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

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	Name Server Switch Port Stats Port Info Configured Zonesets Alarm Log	
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3. From the Edit Zoning— IBM BladeCenter SAN Utility dialog box, compare the Zone Set and Zone names from each switch to ensure that none have the same name and the names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 243.



For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN Utility—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

BM BladeCenter ^{TN} SAN Utility - Faceplate	
File Fabric Switch Port Zoning View Help	
🗔 🚗 📳 Edit Zoning	
Add Open Save Edit Zoning Config	20
Activate Zone Set	
FC Fabrics Deactivate Zone Set	r Switch
BM BladeCenter Switch	Switch Port Address Type WWNN Switch Port Address Type WWNN
3. From the **Edit Zoning—IBM BladeCenter SAN Utility** dialog box, compare the Zone Set and Zone names from each switch to ensure that none have the same name and the names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 243.



IBM BladeCenter CLI

NOTE: Use the following CLI commands when the IBM BladeCenter GUI is not available.

Login: **admin** Password: **xxxxxxx** IBM BladeCenter #> **zone list**

Zone Types

All zones members must be specified by a world wide port name (WWPN) in order to comply with Fibre Channel standards. Any zone member not specified by WWPN cannot participate in the fabric. Below are steps to confirm the zone types.

NOTE: A world wide name (WWN) consists of a world wide node name (WWNN) and one or more WWPNs. References in this guide to WWN actually refer to the WWPN.

McDATA Sphereon Web Management

- 1. Start McDATA Sphereon Web Management. The **Main Switch View** dialog box displays.
- 2. On the navigation panel, select **Configure**. The **Configure** dialog box displays. Select the **Zoning** tab, then select the **Zones** tab.

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Operations	Delete All Zones
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	Display Previous Zones Display More Zones
	Delete Email_Cluster
	Delete
	Delete Accounting
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3. Select each zone and verify that all members are specified by WWN.

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l l	Zone Set Zones Modify Zone
View	Displayed Zoning Configuration is: Saved
Configure	Terry Freed On the
Manthan	Zone: Email_Ouster
worlitor	
Operations	Add New Zone Member:
Help	Attached Node WWN: No Attached Nodes 🗾 Add Member
	World Wide Name: Add Member
	Dennein ID: 02 Deut Manuferm 0 Add Mamber
	Display Previous Members Display More Members
	Delete 50:05:07:62:05:82:15:62
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McDATA Telnet CLI

NOTE: Use the following CLI commands when McDATA Sphereon Web Management is not available.

Username: Administrator Password: xxxxxxxx Root> show Show> zoning

Verify that all of the Zone members are specified by WWN.

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN** Utility—Faceplate dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

BM BladeCenter® SAN Utility - Face	plate	
File Fabric Switch Port Zoning	view Help	
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Add Open Save Edit Zoni	ng <u>C</u> onfig	
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3. The Edit Zoning—IBM BladeCenter SAN Utility dialog box displays. Confirm that all zone members are listed as WWN.



For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Zoning menu, select Edit Zoning.



- 3. The Edit Zoning—IBM BladeCenter SAN Browser dialog box displays. Do the following:
 - a. Select a ZoneSet.
 - b. Select a Zone.
 - c. In the Zone Members section, confirm that all zone members are listed as WWN.
 - d. Repeat the above steps for each zone.



IBM BladeCenter CLI

NOTE: Use the following CLI commands when the IBM BladeCenter GUI is not available.

Login: admin Password: xxxxxxx IBM BladeCenter #> zone members <zone name> Repeat this statement for each zone and confirm that only WWNs are listed.

Operating Mode Configuration

McDATA Sphereon Web Management

- 1. Start McDATA Sphereon Web Management. The **Main Switch View** dialog box displays.
- 2. On the navigation panel, select **Operations**. The **Operations** dialog box displays. Select the **Switch** tab, select **Online State** tab, then click the **Set Offline** button.

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	Operations: Refresh-7 / 23 / 04 at 13:15:29 Switch Port Maintenance Feature Installation
	Beacon Online State Reset Config Sys Err Light
View Configure Monitor Operations	Current state is ONLINE
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3. On the navigation panel, select **Configure**. The **Configure** dialog box displays. Select the **Zoning** tab, select the **Zone Set** tab, then the **Disable Default Zone** button.

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	Refresh-7/23/04 at 16:07:47
	Configure:
1	Ports Switch Management Zoning Security Performance
	Zone Set Zones
Mour	Displayed Zoning Configuration is: Saved
View	
Configure	Save and Activate Zoning Configuration
Goninguro	
Monitor	Zone Set Name: 751
Operations	Default Zone: Enabled
Help	Disable Zone Set (Place all attached devices in the Default Zone)
	Discard Changes (Revert to Saved Zoning Configuration)
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- 4. On the navigation panel, select **Configure**. The **Configure** dialog box displays. Select the **Switch** tab, select the **Fabric Parameters** tab, then do the following:
 - a. From the Interop Mode list, select Open Fabric 1.0.
 - b. Click Activate.

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	Configure: Ports Switch Management Zoning User Rights Identification Date / Time Parameters Fabric Parameters Network	.13:59
View	R_A_TOV: 100 (tenths of a second) E_D_TOV: 20 (tenths of a second)	
Configure	Switch Priority: Default Interop Mode: Den Fabric 1.0	
Monitor	Online State: Offline	
Operations	Note: The device must be offline to activate any changes	
Help		
Done 🖉	Intern	et .;

5. On the navigation panel, select **Operations**. The **Operations** dialog box displays. Select the **Switch** tab, select **Online State** tab, then click the **Set Online** button.

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McDATA Telnet CLI

NOTE: Use the following CLI commands when McDATA Sphereon Web Management is not available.

Username: Administrator Password: xxxxxxx Root> maint system Maint.System> setOnlineState false Maint.System> root Root> config zoning Config.Zoning> setDefZoneState false Config.Zoning> root Root> config switch Config.Switch> interopMode open Config.Switch> root Root> maint system Maint.System> setOnlineState true

IBM eServer BladeCenter SAN Utility

Not applicable.

IBM BladeCenter CLI

Not applicable.

McDATA Specific Configuration

Not applicable.

IBM BladeCenter Specific Configuration

Not applicable.

Successful Integration Checklist

Perform the following steps after the E_port connection has been established and the fabric has had time to update. If everything verifies, the fabrics have successfully merged.

- ✓ Compare and verify that all Zoning information has been propagated on all switches.
- ✓ Verify that the correct Zone Set is activated.
- ✓ Compare and verify that all devices are in the Name Server of each switch.
- ✓ Verify that all initiators continue to detect and have access to all targets that existed prior to the fabric merger.

After everything is verified, your fabric has merged successfully and no additional steps need to be taken. If any of the above tasks did not complete successfully, please contact IBM support.

McDATA Intrepid 6000 Series Directors

Integration Checklist

The following steps must be completed to successfully merge McDATA and IBM BladeCenter fabrics. The remainder of this section provides detailed instructions and examples.

ATTENTION!!

- Back up the current switch configuration data prior to performing the following steps so that the configuration is available if something goes wrong (see the first step for details).
- Disruptions in the fabric can occur as a result of performing the following steps. Therefore, it is recommended that these changes be done during down time or off-peak hours.
- ✓ Back up the current switch configuration data (see "Backing Up and Restoring the Current Configuration Settings" on page 266).
- ✓ Verify that the correct version of switch firmware is installed on each switch (see "Supported Switches and Firmware Versions" on page 265).
- Ensure that each switch has a unique Domain ID and that it falls within the proper range (see "Domain ID Configuration" on page 267).
- ✓ Set all switches to the appropriate timeout values (see "Timeout Values" on page 278).
- ✓ Ensure that all Zone set and Zone names are unique and conform to ANSI T11 standards (see "Active Zone Set Names" on page 291).
- ✓ Ensure that all zone members are specified by WWPN (see "Zone Types" on page 298).
- Ensure that all McDATA switches are configured for Open Fabric Interoperability mode (see "Operating Mode Configuration" on page 305).
- ✓ Verify that the fabrics have successfully merged (see "Successful Integration Checklist" on page 310).
- ✓ Contact IBM Technical Support to obtain the document, *Remote Boot of IBM BladeCenter from IBM FAStT*, if you are planning to use the boot form SAN functionality.

McDATA Configuration Limitations

When merging McDATA and IBM BladeCenter fabrics, a maximum of 31 interconnected switches per fabric can be configured. Otherwise, all features are fully supported and comply with industry standards.

Contacting McDATA

For more information about configuring McDATA switches, please see the McDATA contact information in the **Introduction** (see page 3).

IBM BladeCenter Configuration Limitations

If you will be implementing the I/O stream guard feature, please contact your IBM technical support representative prior to configuring. Additional configuration procedures may be required.

Supported Switches and Firmware Versions

The following IBM switch modules have been tested in the IBM BladeCenter environment and comply with the FC-SW-2 standard. They have tested interoperable with the following switches from McDATA that comply with the FC-SW-2 standard.

Manufacturer	Switch Model	Firmware Version
IBM	IBM eServer BladeCenter Fibre Channel Switch Module	1.4.0.49.0 and above
	QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter	4.1.0.17-0 and above
McDATA	Intrepid 6064 Director and IBM 2109F32	5.1 and above
	Intrepid 6140 Director and IBM 2109M12	5.1 and above

IBM and McDATA Supported Switch and Firmware Versions

The following figures illustrate a McDATA Fibre Channel fabric prior to and after merging with an IBM BladeCenter.



McDATA Fibre Channel Fabric Prior to Merging with the IBM BladeCenter

McDATA Fibre Channel Fabric with the IBM BladeCenter

Backing Up and Restoring the Current Configuration Settings

Back up the current McDATA switch configuration data prior to following the steps to merge McDATA and IBM BladeCenter fabrics so that the configuration can be restored if something goes wrong.

NOTE: For additional information, refer to the documentation provided with the switch.

Note the following:

- Only a single copy of the configuration is kept on the McDATA server hard disk drive.
- The location and file name of the saved configuration cannot be modified.
- The configuration can only be restored to a switch with the same IP address.

Backup Procedure

To backup the current McDATA configuration settings, do the following:

- 1. Start McDATA Sphereon Web Management. The Main Switch View dialog box displays.
- 2. On the navigation panel, select **Operations**. The **Operations** dialog box displays. Select the **Maintenance** tab. The **Maintenance** dialog box displays.
- 3. From the **Maintenance** dialog box, select **Backup and Restore Configuration**. The **Backup and Restore Configuration** dialog box displays. Click **Backup**.
- 4. When the backup of the configuration completes, a message displays. Click **OK**.

NOTE: If the backup fails, a message informs you that the backup to the server failed.

Restore Procedure

If you need to restore the McDATA configuration settings that you backed up, do the following.

- **NOTE:** The backed up configuration is restored to the nonvolatile random access memory (NVRAM) on the switch. The restore operation initiates an initial product load (IPL).
- 1. Start McDATA Sphereon Web Management. The Main Switch View dialog box displays.
- 2. On the navigation panel, select **Operations**. The **Operations** dialog box displays. Select the **Switch** tab, select the **Online State** tab, then click the **Set Offline** button.
- 3. Select the Maintenance tab. The Maintenance dialog box displays.
- 4. From the **Maintenance** dialog box, select **Backup and Restore Configuration**. The **Backup and Restore Configuration** dialog box displays. Click **Restore**.
- 5. A confirmation dialog box displays, stating that the restore overwrites the existing configuration on the switch and the date of the restored backup. Click **OK**.
- 6. When the restore completes, select the **Switch** tab, select the **Online State** tab, then click the **Set Online** button.

Domain ID Configuration

To ensure that there are no conflicts between switches, we recommend that each switch have an assigned Domain ID. The following steps show how to set the Domain ID on both the McDATA switch and IBM switch module.

The Domain ID should be locked and unique within the 97–127 (0x61–0x7f) range. This is equivalent to 1–31 on the McDATA switch. The following chart lists the McDATA Domain ID and the corresponding IBM Domain ID.

McDATA Domain ID	IBM Domain ID	McDATA Domain ID	IBM Domain ID	McDATA Domain ID	IBM Domain ID
1	97	11	107	21	117
2	98	12	108	22	118
3	99	13	109	23	119
4	100	14	110	24	120
5	101	15	111	25	121
6	102	16	112	26	122
7	103	17	113	27	123
8	104	18	114	28	124
9	105	19	115	29	125
10	106	20	116	30	126
	—	—	—	31	127

McDATA Versus IBM Domain IDs

McDATA SANpilot Web Management

- 1. Start McDATA SANpilot Web Management. The **Main Director View** dialog box displays.
- 2. On the navigation panel, select **Operations**. The **Operations** dialog box displays. Select the **Director** tab, select the **Online State** tab, then click the **Set Offline** button.

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- 3. On the navigation panel, select **Configure**. The **Configure** dialog box displays. Select the **Director** tab, select the **Parameters** tab, and do the following:
 - a. In the **Preferred Domain ID** box, type a unique Domain ID.
 - b. From the Insistent Domain ID list, select Enabled.
 - c. Click Activate.

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Address Per http://10.4.40.7	Identification Date / Time Parameters Network Preferred Domain ID: Identification Date / Time Parameters Network Insistent Domain ID: Imagement Disabled Disabled Disabled Domain RSCN's: Disabled Disabled Disabled Disabled Disabled Online State: Offine Online to activate a change to the switch speed. If switch speed has not changed, activation may occur online Activate Cancel Cancel Disabled Disabled	G 0	Links "
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4. On the navigation panel, select **Operations**. The **Operations** dialog box displays. Select the **Director** tab, select the **Online State** tab, then click the **Set Online** button.

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	Operations: Refresh-2/18/03 at 16:36:49	
	Director Port Maintenance Feature Installation	
	Beacon Online State	
View	Current state is OFFLINE	
Configure	Set Unline	
Monitor		
Operations		
Help		

McDATA Telnet CLI

NOTE: Use the following CLI commands when McDATA SANpilot Web Management is not available.

Username: Administrator Password: xxxxxxx Root> maint system Maint.System> setOnlineState False Maint.System> root Root> config switch Config.Switch> prefDomainId 1 Config.Switch> insistDomainId enable Config.Switch> show

Switch Information	
BB Credit:	16
R_A_TOV:	100
E_D_TOV:	20
Preferred Domain ID:	1
Switch Priority:	Default
Speed:	2 Gb/sec
Rerouting Delay:	Disabled
Interop Mode:	Open Fabric 1.0
Insistent Domain ID:	Enabled
Domain RSCN:	Disabled

Config.Switch> root Root> maint system Maint.System> setOnlineState True

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN Utility—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Switch menu, select Switch Properties.

BIBM Blade	Center® SAN Utility - Faceplate	
<u>File</u> Fabric	Switch Port Zoning View	Help
Add FC Fabrics	<u>Archive</u> Restore Load Firmware Firmware Fallback	Zoning deCenter Switch
• • 10.20. • • 10.20.	Set Date/Time	rmal
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	Export Alarm Log Configure <u>A</u> larm Thresholds	
	Reset Switch	
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- 3. From the Switch Properties—IBM BladeCenter SAN Utility dialog box, do the following:
 - a. Select the **Domain ID Lock Disable** radio button.
 - b. In the **Domain ID** box, type a unique Domain ID in the 97–127 range for the switch.
 - c. Select the **Domain ID Lock Enable** radio button to ensure that the switch always has that Domain ID.
 - d. Click OK.

World Wide Name: 10 Operational State: on	:00:00:c0:dd: line	:00:72:c7	FC Address: Firmware Versio	630000 n:∨1.4.0.26-5
Chassis Name: IB IP Address: 10	M BladeCent .20.78.93	er Switch	MAC address:	00:c0:dd:00:72:c0
Chassis Name:	IBM BladeC	enter Switch		
Administrative State:	online	-	Timeout Value	S
🕨 Domain ID:	99		R_A_TOV:	10000
🕨 Domain ID lock:	• Enable	O Disable	R_T_TOV:	100
Broadcast Support:	• Enable	O Disable	E_D_TOV:	2000
In-band Management	• Enable	O Disable		

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Switch menu, select Switch Properties.

IBM Blade(Center(TM) SAN	Browser	- Facep	olate									
<u>File</u> Fabric	Switch Port	Zoning	⊻iew	<u>W</u> izards	<u>H</u> elp								
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- 3. From the Switch Properties—IBM BladeCenter SAN Browser dialog box, do the following:
 - a. Select the **Domain ID Lock Disable** radio button to ensure that the switch always has that Domain ID.
 - b. In the **Domain ID** box, type a unique Domain ID in the 97–127 range for the switch.
 - c. Select the **Domain ID Lock Enable** radio button to ensure that the switch always has that Domain ID.
 - d. Click OK.

World Wide Name: 10:00:00:c0:d	1:02:1d:68 First Port Address	s: 7c0000	
Operational State: online	Firmware Version	: V4.1.0.17-0	
Symbolic Name: Switchblade2	MAC address:	00:c0:dd:02:10	1:67
IP Address: 10.20.67.24			
Symbolic Name: Switchbla	Domain ID lock:	O Enable	• Disable •
Administrative State: online	Broadcast Support:	Enable	O Disable
Domain ID: 124	0x7c In-band Management:	Enable	O Disable
FDMI HBA Entry Limit: 1000	FDMI:	Enable	O Disable
ïmeout Values		_	_
R_A_TOV: 10000	FC-SVV-2 Compliant:	Enable	() Disable
E D TOV: 2000	Legacy Address Form	at: 🔿 Enable	Disable

IBM BladeCenter CLI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, use the following CLI commands when the IBM eServer BladeCenter SAN Utility is not available:

```
Login: admin
Password: xxxxxxx
IBM BladeCenter #> admin start
IBM BladeCenter (admin) #> config edit
IBM BladeCenter (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  DefaultDomainID (decimal value, 1-239) [1] <97-127>
  DomainIDLock (True / False) [False] True
  SymbolicName (string, max=32 chars) [Fibre Channel Switch Module]
  R T TOV (decimal value, 1-1000 msec) [100]
  R A TOV (decimal value, 100-100000 msec) [10000]
  E D TOV (decimal value, 10-20000 msec) [2000]
  FS TOV (decimal value, 100-100000 msec) [5000]
  DS TOV (decimal value, 100-100000 msec) [5000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [Default Config]
IBM BladeCenter (admin-config) #> config save
IBM BladeCenter (admin) #> config activate
The configuration will be activated. Please confirm (y/n): [n] y
```

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, use the following CLI commands when the IBM eServer BladeCenter SAN Browser is not available:

```
Switchblade2: admin> admin start
Switchblade2 (admin): admin> config edit
  The config named default is being edited.
Switchblade2 (admin-config): admin> set config switch
  A list of attributes with formatting and current values will follow.
  Enter a new value or simply press the ENTER key to accept the current
  value. If you wish to terminate this process before reaching the end of
  the list press 'q' or 'Q' and the ENTER key to do so.
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  FdmiEnabled (True / False) [True]
  FdmiEntries (decimal value, 0-1000) [1000]
  DefaultDomainID (decimal value, 1-239) [1] 124
  DomainIDLock (True / False) [False] true
  SymbolicName (string, max=32 chars) [Switchblade2]
  R A TOV (decimal value, 100-100000 msec) [10000]
  E D TOV (decimal value, 10-20000 msec) [2000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [IBM eServer BladeCenter(TM)
  6-port Enterprise Fibre Channel Swit]
  FC-SW-2 Compliant (True / False) [True]
  Finished configuring attributes.
  This configuration must be saved (see config save command) and
  activated (see config activate command) before it can take effect.
  To discard this configuration use the config cancel command.
Switchblade2 (admin-config): admin> config save
  The config named default has been saved.
Switchblade2 (admin): admin> config activate
  The currently active configuration will be activated.
  Please confirm (y/n): [n] y
Switchblade2 (admin): admin> admin end
```

Timeout Values

As per FC-SW-2 Fibre Channel standards, set all switches to the following timeout values (TOV) in order to successfully establish an E_port connection:

 $R_A_TOV = 10$ seconds (The setting is **100**.) $E_D_TOV = 2$ seconds (The setting is **20**.)

This section provides the steps to change these values.

McDATA SANpilot Web Management

- 1. Start McDATA SANpilot Web Management. The Main Director View dialog box displays.
- On the navigation panel, select Configure. The Configure dialog box displays. Select the Director tab, then select the Fabric Parameters tab. Verify that R_A_TOV is set to 100 and E_D_TOV is set to 20. If the settings are not correct, proceed to step 3. If the settings are correct, no changes need to be made; proceed to the next appropriate section.



3. On the navigation panel, select **Operations**. The **Operations** dialog box displays. Select the **Director** tab, select **Online State** tab, then click the **Set Offline** button.

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1	Director For maintenance Installation		
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- 4. On the navigation panel, select **Configure**, The **Configure** dialog box displays. Select the **Director** tab, select the **Fabric Parameters** tab, then do the following:
 - a. In the **R_A_TOV** box, change the setting to **100**.
 - b. In the **E_D_TOV** box, change the setting to **20**.
 - c. Click Activate.

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5. On the navigation panel, select **Operations**. The **Operations** dialog box displays. Select the **Director** tab, select the **Online State** tab, then click the **Set Online** button.

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McDATA Telnet CLI

NOTE: Use the following CLI commands when McDATA SANpilot Web Management is not available.

Username: Administrator Password: XXXXXXX Root> main system

Maint.System> setOnlineState False
Maint.System> root
Root> config switch
Config.Switch> raTOV 100
Config.Switch> edTOV 20
Config.Switch> show

Switch Information	
BB Credit:	16
R_A_TOV:	100
E_D_TOV:	20
Preferred Domain ID:	1
Switch Priority:	Default
Speed:	2 Gb/sec
Rerouting Delay:	Disabled
Interop Mode:	Open Fabric 1.0
Insistent Domain ID:	Enabled
Domain RSCN:	Disabled
Root> maint system	
Maint.System> setOnline	State True

IBM BladeCenter GUI

<u>ATTENTION!!</u> The following steps take the switch offline; therefore, do not perform them on a switch being managed in-band.

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN Utility—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Switch menu, select Switch Properties.



3. From the **Switch Properties—IBM BladeCenter SAN Utility** dialog box, verify that **R_A_TOV** is set to **10000** and **E_D_TOV** is set to **2000**. If the settings are not correct, proceed to step 4. If the settings are correct, no changes need to be made; proceed to the next appropriate section.

World Wide Name: 10: Operational State: opi	:00:00:c0:dd:0 line	00:72:c7	FC Address: Firmware Version	630000 vv1 4 0 26-5
Chassis Name: IBN IP Address: 10.	BladeCenter Switch 20.78.93		MAC address:	00:c0:dd:00:72:c6
Chassis Name:	IBM BladeCe	enter Switch		
Administrative State:	online	•	Timeout Values	
Domain ID:	99		R_A_TOV:	10000
Domain ID lock:	Enable	O Disable	R_T_TOV:	100
Broadcast Support:	• Enable	O Disable	E_D_TOV:	2000
In-band Management:	Enable	O Disable		

- 4. From the Switch Properties—IBM BladeCenter SAN Utility dialog box Administrative State list, select offline. Click OK.
- 5. Re-enter the **Switch Properties—IBM BladeCenter SAN Utility** dialog box (see step 2). Do the following:
 - a. In the **R_A_TOV** box, enter **10000**.
 - b. In the **E_D_TOV** box, enter **2000**.
 - c. Click OK.
- 6. Re-enter the Switch Properties—IBM BladeCenter SAN Utility dialog box (see step 2). In the Administrative State list, select Online. Click OK.
For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Switch menu, select Switch Properties.



3. From the **Switch Properties—IBM BladeCenter SAN Browser** dialog box, verify that **R_A_TOV** is set to **10000** and **E_D_TOV** is set to **2000**. If the settings are *not* correct, proceed to step 4. If the settings are correct, no changes need to be made; proceed to the next appropriate section.

vvoria vvide Name: 10.0	0:00:c0:dd:02:1d:68	First Port Address: 7	c0000		
Operational State: onlin	ne	Firmware Version: V	4.1.0.17-0		
Symbolic Name: Swit	chblade2	MAC address: 0	0:c0:dd:02:10	1:67	
IP Address: 10.2	0.67.24				
Symbolic Name: Switchblade2 Domain ID lock:					
Administrative State:	online 🔻	Broadcast Support:	• Enable) Dis	
Domain ID:	124 0x 7c	In-band Management:	• Enable) Dis	
FDMI HBA Entry Limit:	1000	FDMI:	• Enable) Dis	
Timeout Values		FO OW D Compliants	<u> </u>	~ -··	
R_A_TOV: 10000)	FC-SW-2 Compliant:	Enable	() Dis	
		Legacy Address Format:	O Enable	() Dis	

- 4. To modify the timeout value settings, do the following:
 - a. In the Administrative State drop-down box, select offline. Click OK.
 - b. In the Timeout Values section, do the following:
 - (1) In the **R_A_TOV** box, enter **10000**.
 - (2) In the **E_D_TOV** box, enter **2000**.
 - c. Click OK.
 - d. In the Administrative State drop-down box, select online. Click OK.

World Wide N	ame: 10:00:00:c0:dd:02:1d:ea	First Port Address:	010000	
Operational St	ate: offline	Firmware Version:	V4.1.0.17-0	
Symbolic Nam	e: Switchblade1	MAC address:	00:c0:dd:02:10	t:e9
IP Address:	10.20.67.24			
Symbolic Nam	e: Switchblade1	Domain ID lock:	• Enable	() Dis
Administrative	State: online	Broadcast Support:	• Enable	() Dis
Domain ID:	123 0x 7b	In-band Management:	• Enable	() Dis
FDMI HBA Entr	Limit: 1000	FDMI:	• Enable) Dis
Timeout Values	10000	FC-SW-2 Compliant:	• Enable) Dis
	2000	Legacy Address Format	: O Enable	Dis

5. From the **Switch Properties—IBM BladeCenter SAN Utility** dialog box, verify your changes (see step 3).

IBM BladeCenter CLI

<u>ATTENTION!!</u> The following steps take the switch offline; therefore, do not perform them on a switch being managed in-band.

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, use the following CLI commands when the IBM eServer BladeCenter SAN Utility is not available:

```
Login: admin
Password: xxxxxxx
```

```
Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.
```

```
IBM BladeCenter #> show config switch
```

If these timeout values are *not* correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
IBM BladeCenter #> admin start
IBM BladeCenter (admin) #> config edit
IBM BladeCenter (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  DefaultDomainID (decimal value, 1-239) [1]
  DomainIDLock (True / False) [True]
  SymbolicName (string, max=32 chars) [Fibre Channel Switch Module]
  R T TOV (decimal value, 1-1000 msec) [100]
  R A TOV (decimal value, 100-100000 msec) [9000]
                                                     10000
  E D TOV (decimal value, 10-20000 msec) [1000]
                                                   2000
  FS TOV (decimal value, 100-100000 msec) [5000]
  DS TOV (decimal value, 100-100000 msec) [5000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [Default Config]
IBM BladeCenter (admin-config) #> config save
IBM BladeCenter (admin) #> config activate
The configuration will be activated. Please confirm (y/n): [n] y
```

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, use the following CLI commands when the IBM eServer BladeCenter SAN Browser is not available:

Login: **admin** Password: **xxxxxxx**

Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.

Switchblade2: admin> **show config switch**

If these timeout values are *not* correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
Switchblade2: admin>
Switchblade2: admin> admin start
Switchblade2 (admin): admin> config edit
The config named default is being edited.
Switchblade2 (admin-config): admin> set config switch
A list of attributes with formatting and current values will follow.
Enter a new value or simply press the ENTER key to accept the current
value. If you wish to terminate this process before reaching the end of
the list press 'q' or 'Q' and the ENTER key to do so.
AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
BroadcastEnabled (True / False) [True]
```

InbandEnabled (True / False) [True]

FdmiEnabled (True / False) [True]

FdmiEntries (decimal value, 0-1000) [1000] DefaultDomainID (decimal value, 1-239) [124] DomainIDLock (True / False) [True] SymbolicName (string, max=32 chars) [Switchblade2] R_A_TOV (decimal value, 100-100000 msec) [9000] 10000 E_D_TOV (decimal value, 10-20000 msec) [1000] 2000 PrincipalPriority (decimal value, 1-255) [254] ConfigDescription (string, max=64 chars) [IBM eServer BladeCenter(TM) 6-port Enterprise Fibre Channel Swit] FC-SW-2 Compliant (True / False) [True] Finished configuring attributes.
This configuration must be saved (see config save command) and
activated (see config activate command) before it can take effect.
To discard this configuration use the config cancel command.
Switchblade2 (admin-config): admin> config save
The config named default has been saved.
Switchblade2 (admin): admin> config activate
The currently active configuration will be activated.
Please confirm (y/n): [n] y
Switchblade2 (admin): admin> admin end

Principal Switch Configuration

McDATA switches and IBM switch modules negotiate for principal switch automatically. Therefore, there are no steps to take.

Zone Configuration

This section discusses configuring active Zone Set names and Zone types.

Active Zone Set Names

The Zone and Zone Set names on each switch must be unique. If not, change one of the duplicate names. All Zone Set and Zone names must conform to the Fibre Channel (FC) Standards for Zone Naming (ANSI T11/00-427v3):

- 1. Must be 1–64 characters in length.
- 2. All characters are ASCII.
- 3. First character is [a–z] or [A–Z].
- 4. All other characters must be [a–z], [A–Z], [0–9], or the _ character. Other characters (\$-^) may not be supported by all vendors and should be avoided.

McDATA SANpilot Web Management

- 1. Start McDATA SANpilot Web Management. The Main Director View dialog box displays.
- 2. On the navigation panel, select **Configure**. The **Configure** dialog box displays. Select the **Zoning** tab, then select the **ZoneSet** tab. Verify that the Zone Set name conforms to the standards for zone naming as discussed under "Active Zone Set Names" on page 291.

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Configure: Refresh-2/21/03 at 15:07:58	
Ports Director Management Zoning Lieer Bights	
Tone for	
View Displayed Zoning Configuration is: Saved	
1 CAN	
Configure Save and Activate Zoning Configuration	
Monitor Zone Set Name: Interop_Set Rename Zone Set	
Help Disable Zone Set (Place all attached devices in the Default Zone)	
Discard Changes (Revert to Saved Zoning Configuration)	
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3. On the navigation panel, select **Configure**. The **Configure** dialog box displays. Select the **Zoning** tab, then select the **Zones** tab. Verify that the Zone names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 291.

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1	Ports Director Management Zoning User Rights		
	Zone Set Zones		
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Configure	Add New Zone		
Monitor			
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Operations	Delete All Zones		
Help	Diaplay Previous Tance Diaplay Mars Tance		
	Display Frevious Zones Display wore Zones		
	All Zones Displayed		
	All Zones Displayed		
	Display Previous Zones Display More Zones		
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McDATA Telnet CLI

NOTE: Use the following CLI commands when McDATA SANpilot Web Management is not available.

Username: Administrator Password: xxxxxxx Root> show Show> zoning

Verify that the Zone Set and Zone Names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 291.

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN Utility—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

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Add Open Save Edit Zoni	ng <u>C</u> onfig	
EC Exprise Description	Zone Set	
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IBM BladeCenter Switch	Image: Constraint of the second state of the second sta	
	Name Server Switch Port Stats Port Info Configured Zonesets Alarm Log	
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3. From the Edit Zoning— IBM BladeCenter SAN Utility dialog box, compare the Zone Set and Zone names from each switch to ensure that none have the same name and the names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 291.



For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN** Utility—Faceplate dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

BM BladeCenter ^{TN} SAN Utility - Faceplate	
File Fabric Switch Port Zoning View Help	
🗔 📳 Edit Zoning	
Add Open Save Edit Zoning Config	20
Activate Zone Set	
FC Fabrics Deactivate Zone Set	r Switch
BBM BladeCenter Switch	Switch Port Address Type WWNN Switch Port Stats Port Info Configured Zonesets Alarm Log

3. From the **Edit Zoning—IBM BladeCenter SAN Utility** dialog box, compare the Zone Set and Zone names from each switch to ensure that none have the same name and the names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 291.



IBM BladeCenter CLI

NOTE: Use the following CLI commands when the IBM BladeCenter GUI is not available.

Login: **admin** Password: **xxxxxxx** IBM BladeCenter #> **zone list**

Zone Types

All zone members must be specified by a world wide port name (WWPN) in order to comply with Fibre Channel standards. Any zone member not specified by WWPN cannot participate in the fabric. Below are steps to confirm the zone types.

NOTE: A world wide name (WWN) consists of a world wide node name (WWNN) and one or more WWPNs. References in this guide to WWN actually refer to the WWPN.

McDATA Sphereon Web Management

- 1. Start McDATA SANpilot Web Management. The **Main Director View** dialog box displays.
- 2. On the navigation panel, select **Configure**. The **Configure** dialog box displays. Select the **Zoning** tab, then select the **Zones** tab. Select each zone.

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- 3. For each the zone selected in step 2, verify that all members are specified by WWN.

McDATA Telnet CLI

NOTE: Use the following CLI commands when McDATA SANpilot Web Management is not available.

Username: Administrator Password: xxxxxxx

Verify that all of the Zone members are specified by WWN.

Root> show		
Show> zonin	g	
Active Zone	Set	
Default Zon	e Enabled	: False
Zone Set:	Interop_S	et
Zone: Z2	2	
Zone	Member:	50:02:0F:23:00:00:9F:E8
Zone	Member:	50:02:0F:23:00:00:9F:5D
Zone	Member:	21:01:00:E0:8B:22:6E:2E
Zone	Member:	21:00:00:E0:8B:09:CA:63
Zone	Member:	21:00:00:E0:8B:09:8F:5E
Zone	Member:	21:00:00:E0:8B:07:4C:B7
Zone	Member:	21:00:00:E0:8B:06:8E:67
Zone	Member:	21:00:00:E0:8B:06:8A:67

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN** Utility—Faceplate dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

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File Fabric Switch Port Zoning	view Help	
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Add Open Save Edit Zoni	ng <u>C</u> onfig	
EC Exprise Description	Zone Set	
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IBM BladeCenter Switch	Image: Constraint of the second state of the second sta	
	Name Server Switch Port Stats Port Info Configured Zonesets Alarm Log	
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3. The Edit Zoning—IBM BladeCenter SAN Utility dialog box displays. Confirm that all zone members are listed as WWN.



For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Zoning menu, select Edit Zoning.



- 3. The Edit Zoning—IBM BladeCenter SAN Browser dialog box displays. Do the following:
 - a. Select a ZoneSet.
 - b. Select a Zone.
 - c. In the Zone Members section, confirm that all zone members are listed as WWN.
 - d. Repeat the above steps for each zone.



IBM BladeCenter CLI

NOTE: Use the following CLI commands when the IBM BladeCenter GUI is not available.

Login: admin Password: xxxxxxx IBM BladeCenter #> zone members <zone name> Repeat this statement for each zone and confirm that only WWNs are listed.

Operating Mode Configuration

McDATA SANpilot Web Management

- 1. Start McDATA SANpilot Web Management. The **Main Director View** dialog box displays.
- 2. On the navigation panel, select **Operations**. The **Operations** dialog box displays. Select the **Director** tab, select the **Online State** tab, then click the **Set Offline** button.

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- 3. On the navigation panel, select **Configure**. The **Configure** dialog box displays. Select the **Zoning** tab, select the **Zone Set** tab, then the **Disable Default Zone** button.
 - **NOTE:** The figure below shows what displays when the **Disable Default Zone** button is selected.

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	Configure: Refresh-2/21/03 at 15:07:58	
	Ports Director Management Zoning User Rights	
View	Displayed Zoning Configuration is: Saved	
	Carlo and Artirate Taxing Configuration	
Configure	Save and Activate 20ming Configuration	
Monitor	Zone Set Name: Interop_Set	
Operations	Default Zone: Disabled	
Help	Disable Zone Set (Place all attached devices in the Default Zone)	
	(Revert to Saved Zoning Configuration)	
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- 4. On the navigation panel, select **Configure**. The **Configure** dialog box displays. Select the **Director** tab, select the **Fabric Parameters** tab, then do the following:
 - a. From the Interop Mode list, select Open Fabric 1.0.
 - b. Click Activate.

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	Configure: Refresh-2/18/03 at 16:45:07	
	Ports Director Management Zoning User Rights	
	Identification Date / Time Parameters Fabric Parameters	
View	BB_Credit: 16 R A TOV: 100 (tenths of a second)	
Configure	E_D_TOV: 20 (tenths of a second)	
Semigene	Switch Priority: Default	
Monitor	Interop Mode: Open Fabric 1.0	
Onemtions		
Operations	Note: The device must be offline to activate any changes	
Help	Artivita Canad	
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5. On the navigation panel, select **Operations**. The **Operations** dialog box displays. Select the **Director** tab, select the **Online State** tab, then click the **Set Online** button.

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Address 🗿 http://10.4.40.71/operations_online_fs.htm
View Configure Monitor Operations Help

McDATA Teinet CLI

NOTE: Use the following CLI commands when McDATA Sphereon Web Management is not available.

```
Username: Administrator

Password: xxxxxxx

Root> maint system

Maint.System> setOnlineState False

Maint.System> root

Root> config zoning

Config.Zoning> setDefZoneState False

Config.Zoning> root

Root> config switch

Config.Switch> interopMode Open

Config.Switch> root

Root> maint system

Maint.System> setOnlineState True
```

IBM eServer BladeCenter SAN Utility

Not applicable.

IBM BladeCenter CLI

McDATA Specific Configuration

Not applicable.

IBM BladeCenter Specific Configuration

Not applicable.

Successful Integration Checklist

Perform the following steps after the E_port connection has been established and the fabric has had time to update. If everything verifies, the McDATA and IBM BladeCenter fabrics have successfully merged.

- ✓ Compare and verify that all Zoning information has been propagated on all switches.
- ✓ Verify that the correct Zone Set is activated.
- ✓ Compare and verify that all devices are in the Name Server of each switch.
- Verify that all initiators continue to detect and have access to all targets that existed prior to the fabric merger.

After everything is verified, your fabric has merged successfully and no additional steps need to be taken. If any of the above tasks did not complete successfully, please contact IBM support.

Merging IBM BladeCenter and QLogic Fabrics

The following IBM switch modules have been tested in the IBM BladeCenter environment and comply with the FC-SW-2 standard. They have tested interoperable with the following switches from QLogic that comply with the FC-SW-2 standard.

Manufacturer	Switch Model	Firmware Version
IBM	IBM eServer BladeCenter Fibre Channel Switch Module	1.4.0.49.0 and above
	QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter	4.1.0.17-0 and above
QLogic	SANbox 5200	4.0.0.x-x and above
	SANbox2-8	1.5.x and above
	SANbox2-16	1.5.x and above
	SANbox2-64	1.5.x and above

IBM and QLogic Supported Switch and Firmware Versions

The following chapter provides detailed information about merging QLogic and IBM BladeCenter fabrics: **QLogic SANbox 5000 Series and SANbox2 Series Switches (see page 313)**.

QLogic SANbox 5000 Series and SANbox2 Series Switches

Integration Checklist

The following steps must be completed to successfully merge QLogic and IBM BladeCenter fabrics. The remainder of this section provides detailed instructions and examples.

ATTENTION!!

- Back up the current switch configuration data prior to performing the following steps so that the configuration is available if something goes wrong (see the first step for details).
- Disruptions in the fabric can occur as a result of performing the following steps. Therefore, it is recommended that these changes be done during down time or off-peak hours.
- ✓ Back up the current switch configuration data (see "Backing Up and Restoring the Current Configuration Settings" on page 316).
- ✓ Verify that the correct version of switch firmware is installed on each switch (see "Supported Switches and Firmware Versions" on page 315).
- ✓ Ensure that each switch has a unique Domain ID (see "Domain ID Configuration" on page 317).
- ✓ Set all switches to the appropriate timeout values (see "Timeout Values" on page 329).
- ✓ Ensure that all Zone set and Zone names are unique and conform to ANSI T11 standards (see "Active Zone Set Names" on page 342).
- ✓ Ensure that all QLogic switches are configured for Merge Active Zonesets Only or SW2 mode, as appropriate (see "Operating Mode Configuration" on page 352).
- ✓ Verify that the fabrics have successfully merged (see "Successful Integration Checklist" on page 354).
- ✓ Contact IBM Technical Support to obtain the document, *Remote Boot of IBM BladeCenter from IBM FAStT*, if you are planning to use the boot form SAN functionality.

Contacting QLogic

For more information on configuring the QLogic SANbox 5200 and SANbox2 switches, refer to the contact information located in the Introduction (see page 3).

QLogic Configuration Limitations

No limitations exist when merging QLogic and IBM BladeCenter fabrics; all features are fully supported and comply with industry standards.

IBM BladeCenter Configuration Limitations

If you will be implementing the I/O stream guard feature, please contact your IBM technical support representative prior to configuring. Additional configuration procedures may be required.

Supported Switches and Firmware Versions

The following IBM switch modules have been tested in the IBM BladeCenter environment and comply with the FC-SW-2 standard. They have tested interoperable with the following switches from QLogic that comply with the FC-SW-2 standard.

Manufacturer	Switch Model	Firmware Version
IBM	IBM eServer BladeCenter Fibre Channel Switch Module	1.4.0.49.0 and above
	QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter	4.1.0.17-0 and above
QLogic	SANbox 5200	4.0.0.x-x and above
	SANbox2-8	1.5.x and above
	SANbox2-16	1.5.x and above
	SANbox2-64	1.5.x and above

IBM and QLogic Supported Switch and Firmware Versions

The following figures illustrate a QLogic Fibre Channel fabric prior to and after merging with an IBM BladeCenter.



QLogic Fibre Channel Fabric Prior to Merging with the IBM BladeCenter

QLogic Fibre Channel Fabric with the IBM BladeCenter

Backing Up and Restoring the Current Configuration Settings

Back up the current QLogic switch configuration data prior to following the steps to merge QLogic and IBM BladeCenter fabrics so that the configuration can be restored if something goes wrong.

NOTE: For additional information, refer to the documentation provided with the switch.

This backup and restore process uses the SANbox Manager function. Note the following:

- The archive file can be used for restoring the configuration on the same switch or a replacement switch, and as a template for configuring new switches to add to a fabric.
- The switch archive must be compatible with the switch to be restored. For example, you cannot restore a SANbox2-8c switch with a SANbox2-16 archive.

Backup Procedure

Do the following to create an .XML archive file containing the QLogic configuration settings.

- 1. Open the Switch menu and select Archive.
- 2. In the **Save** window, enter a file name.
- 3. Click the **Save** button.

Restore Procedure

If you need to restore the QLogic switch settings, do the following using the .XML archive file:

- 1. Log into the fabric through the switch you want to restore. You cannot restore a switch over an inter-switch link (ISL).
- 2. Open the **Switch** menu and select **Restore**.
- 3. In the **Restore** window, enter the archive file name or browse for the file.
- 4. Click the **Restore** button.

Domain ID Configuration

To ensure that there are no conflicts between switches, we recommend that each switch have an assigned Domain ID. The following steps show how to set the Domain ID on both the QLogic switch and IBM switch module.

QLogic SANbox Manager GUI

- 1. Start the SANbox Manager application. The **SANbox Manager—Faceplate** dialog box displays.
- 2. From the SANbox Manager—Faceplate dialog box Switch menu, select Switch Properties.

For the QLogic SANbox 5200, the following displays:

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		_ Activate	Firmw	are			Port Address	iype		VININ	WWPN	vendor
		– Firmwar	re Fallb	ack								
	/	- Reset S	witch			•						
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				4 3								
				Na	me Server	Swi	Port Stats Port Info	Configured	Zonesets			
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For the QLogic SANbox2-8 and SANbox2-16, the following displays:



🕵 SANbox Manager - Faceplate File Fabric Switch Blade Port Zoning View Help Zoning glogic Archive -* Restore ... Add Load Firmware... FC Fabrics ox2-64 **Firmware Fallback** 👁 🔵 10.20. Set Date/Time. 10.20 Switch Properties Network Properties.. OL Toggle Beacon Export Alarm Log... Configure Alarm Thresholds. 6 GL **Reset Switch** -₽ GL Restore Factory Defaults GL GL : GL o ⁵ GL • 5 GL ; GL - - GL GL 8 GL Simplify GL 18 Dev Switch Port Address Type WWNN WWPN Vendo Simplify 4 • Name Server Switch Port Stats Port Info Blade Info Configured Zonesets Alarm Log <u>₩</u>;±=

For the QLogic SANbox2-64, the following displays:

- 3. From the Switch Properties—SANbox Manager dialog box, do the following:
 - a. In the **Domain ID** box, type a unique Domain ID for the switch.
 - b. In the **Domain ID Lock** field, select **Enable** to ensure that the switch always has that Domain ID.
 - c. Click OK.

For the QLogic SANbox2-8 and SANbox2-16, the following displays:

World Wide Name: 10:00:00:c0:dd:00:72:19 Operational State: online	FC Address: 010000 Firmware Version: V1.3-56-0		
Chassis Name: SANbox2 IP Address: 10.20.67.16	MAC address: 00:c0:dd:00:72:1		
Chassis Name: SANbox2			
Administrative State: online 🗸	R_A_TOV: 10000		
Domain ID: 1	R_T_TOV: 100		
Domain ID lock:	E_D_TOV: 2000		
Broadcast Support: Enable Disable			

For the QLogic SANbox2-64, the following displays:

World Wide Name: 10 Operational State: on Chassis Name: QL	:00:00:c0:dd line .ogic SANbo	FC Address: 780000 Firmware Version: V1.4.0.36-0 MAC address: 00:c0:dd:00:72			
IP Address: 10	.20.67.1				
Chassis Name:	QLogic SAN	lbox2-64			
Administrative State:	online	•	Timeout Values		
► Domain ID:	120		R_A_TOV:	10000	
Domain ID lock:	Enable	O Disable	R_T_TOV:	100	
Broadcast Support:	• Enable	O Disable	E_D_TOV:	2000	
In-band Management:	Enable	O Disable			
QLogic CLI

NOTE: Use the CLI commands when the QLogic SANbox Manager GUI is not available. The CLI procedures differ based on QLogic switch model and firmware level.

For QLogic SANbox2 series switches with firmware levels 1.5.x and above but less than 2.0.0.3x-x, do the following:

```
Login: admin
Password: xxxxxxx
SANbox2 #> admin start
SANbox2 (admin) #> config edit
SANbox2 (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  DefaultDomainID (decimal value, 1-239) [1] <choose a unique number>
  DomainIDLock (True / False) [False] True
  SymbolicName (string, max=32 chars) [QLogic SANbox 2-64]
  R T TOV (decimal value, 1-1000 msec) [100]
  R A TOV (decimal value, 100-100000 msec) [10000]
  E D TOV (decimal value, 10-20000 msec) [2000]
  FS TOV (decimal value, 100-100000 msec) [5000]
  DS TOV (decimal value, 100-100000 msec) [5000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [Default Config]
SANbox2 (admin-config) #> config save
SANbox2 (admin) #> config activate
The configuration will be activated. Please confirm (y/n): [n] y
```

For QLogic SANbox 5000 series switches with firmware levels 4.0.0.x-x and above and SANbox2 series switches with firmware levels 2.0.0.3x-x and above, do the following:

```
Login: admin
Password: xxxxxxx
SANbox 5200 #> admin start
SANbox 5200 (admin) #> config edit
SANbox 5200 (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  FdmiEnabled (True / False) [True]
  FdmiEntries (decimal value, 0-1000) [1000]
  DefaultDomainID (decimal value, 1-239) [1] <choose a unique number>
  DomainIDLock (True / False) [False] True
  SymbolicName (string, max=32 chars) [SANbox 5200]
  R A TOV (decimal value, 100-100000 msec) [10000]
  E D TOV (decimal value, 10-20000 msec) [2000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [SANbox 5200 FC Switch]
  FC-SW-2 Compliant (True / False) [True]
SANbox 5200 (admin-config) #> config save
SANbox 5200 (admin) #> config act
The currently active configuration will be activated.
  Please confirm (y/n): [n] y
```

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN** Utility—Faceplate dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Switch menu, select Switch Properties.

IBM Blade	Center™ SAN Utility - Face	plate
File Fabric Add FC Fabrics	Switch Port Zoning Archive Restore Load Firmware Firmware Fallback Set Date/Time	<u>Alew Help</u> Zoning deCenter Switch rmal
9- () 10.20.	Switch Properties Network Properties Toggle Beacon Export Alarm Log Configure Alarm Thresh Reset Switch Restore Factory Default	
		Dev Switch Port Address Type WWNN

- 3. From the Switch Properties—IBM BladeCenter SAN Utility dialog box, do the following:
 - a. Select the Domain ID Lock Disable radio button.
 - b. In the **Domain ID** box, type a unique Domain ID in the 97–127 range for the switch.
 - c. Select the **Domain ID Lock Enable** radio button to ensure that the switch always has that Domain ID.
 - d. Click OK.

World Wide Name: 10:00:00:c0:dd:00:72:c7 Operational State: online Chassis Name: IBM BladeCenter Switch IP Address: 10:20:78:93	FC Address: Firmware Version MAC address:	630000 : V1.4.0.26-5 00:c0:dd:00:72:c6
Chassis Name: IBM BladeCenter Switch	Timeout Values	5
Domain ID: 99	R_A_TOV:	10000
Domain ID lock:	R_T_TOV:	100
Broadcast Support:	E_D_TOV:	2000
In-band Management: Enable Oisable		

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Switch menu, select Switch Properties.

IBN	1 Blade(Center(T	M) SAN	Browser	- Facep	ilate								
File	Fabric	Switch	Port	Zoning	⊻iew	<u>W</u> izards	<u>H</u> elp							
Ad Swit	k Refr tch 10.20.	Archive Restor User A Set Dat Tempe Switch	e e ccount te/Time rature <u>P</u> rope ik Prop	is 2 T <u>h</u> reshol rties perties	ds									
		SNMP	Proper	ties										
		- Togg	le Bead	con										
		Port Th	reshol	ld Alarm (Configu	ration								
		L nad Fi	irmwar				3	4	56	78	9 10	11 12 13 ⁻	14	
		Activat	e Firm	ware										
		Firmwa	nre Fall	back										
		- Reset S	Switch				, –	Nieko	ama	Detaile	EC Addrose	Qwitch	Port	Target(Initi
		Restor	e Facto	orv Defau	Its			INIGRIE	anne	(i)	7:0100	Switchblade2	Bay 1	Unknown
				- Z	1.00.09	00.30.49.8	7			(i)	7c0200	Switchblade2	Bay 2	Unknown
											0000000000			
				De	rices [Switch	Port	Stats	Port In	o Con	iaured Zonese	ets		
<u> </u>														

- 3. From the Switch Properties—IBM BladeCenter SAN Browser dialog box, do the following:
 - a. Select the **Domain ID Lock Disable** radio button to ensure that the switch always has that Domain ID.
 - b. In the **Domain ID** box, type a unique Domain ID in the 97–127 range for the switch.
 - c. Select the **Domain ID Lock Enable** radio button to ensure that the switch always has that Domain ID.
 - d. Click OK.

World Wide Name: 10:00:00:c0:dd:02:1d:68	First Port Address	:7c0000			
Operational State: online	Firmware Version:	V4.1.0.17-0			
Symbolic Name: Switchblade2	MAC address:	MAC address: 00:c0:dd:02:1d:67			
IP Address: 10.20.67.24					
Symbolic Name: Switchblade2	Domain ID lock:	O Enable	• Disable •		
Administrative State: online	Broadcast Support:	Enable	O Disable		
Domain ID: 124 0x 7c	In-band Management:	• Enable	O Disable		
FDMI HBA Entry Limit: 1000	FDMI:	Enable	O Disable		
meout Values	50 GU 0 0 1 1		_		
R_A_TOV: 10000	FC-SW-2 Compliant:	Enable	() Disable		
E_D_TOV: 2000	Legacy Address Forma	at: 🔿 Enable	Disable		

IBM BladeCenter CLI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, use the following CLI commands when the IBM eServer BladeCenter SAN Utility is not available:

```
Login: admin
Password: xxxxxxx
IBM BladeCenter #> admin start
IBM BladeCenter (admin) #> config edit
IBM BladeCenter (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  DefaultDomainID (decimal value, 1-239) [1] <97-127>
  DomainIDLock (True / False) [False] True
  SymbolicName (string, max=32 chars) [Fibre Channel Switch Module]
  R T TOV (decimal value, 1-1000 msec) [100]
  R A TOV (decimal value, 100-100000 msec) [10000]
  E D TOV (decimal value, 10-20000 msec) [2000]
  FS TOV (decimal value, 100-100000 msec) [5000]
  DS TOV (decimal value, 100-100000 msec) [5000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [Default Config]
IBM BladeCenter (admin-config) #> config save
IBM BladeCenter (admin) #> config activate
The configuration will be activated. Please confirm (y/n): [n] y
```

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, use the following CLI commands when the IBM eServer BladeCenter SAN Browser is not available:

```
Switchblade2: admin> admin start
Switchblade2 (admin): admin> config edit
  The config named default is being edited.
Switchblade2 (admin-config): admin> set config switch
  A list of attributes with formatting and current values will follow.
  Enter a new value or simply press the ENTER key to accept the current
  value. If you wish to terminate this process before reaching the end of
  the list press 'q' or 'Q' and the ENTER key to do so.
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  FdmiEnabled (True / False) [True]
  FdmiEntries (decimal value, 0-1000) [1000]
  DefaultDomainID (decimal value, 1-239) [1] 124
  DomainIDLock (True / False) [False] true
  SymbolicName (string, max=32 chars) [Switchblade2]
  R A TOV (decimal value, 100-100000 msec) [10000]
  E D TOV (decimal value, 10-20000 msec) [2000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [IBM eServer BladeCenter(TM)
  6-port Enterprise Fibre Channel Swit]
  FC-SW-2 Compliant (True / False) [True]
  Finished configuring attributes.
  This configuration must be saved (see config save command) and
  activated (see config activate command) before it can take effect.
  To discard this configuration use the config cancel command.
Switchblade2 (admin-config): admin> config save
  The config named default has been saved.
Switchblade2 (admin): admin> config activate
  The currently active configuration will be activated.
  Please confirm (y/n): [n] y
Switchblade2 (admin): admin> admin end
```

Timeout Values

As per FC-SW-2 Fibre Channel standards, set all switches to the following timeout values (TOV) in order to successfully establish an E_port connection:

 $R_A_TOV = 10$ seconds (The setting is **10000**.) $E_D_TOV = 2$ seconds (The setting is **2000**.)

This section provides the steps to change these values.

QLogic SANbox Manager GUI

<u>ATTENTION!!</u> The following steps take the switch offline; therefore, do not perform them on a switch being managed in-band.

- 1. Start the **SANbox Manager** application. The **SANbox Manager—Faceplate** dialog box displays.
- 2. From the SANbox Manager—Faceplate dialog box Switch menu, select Switch Properties.

For the QLogic SANbox 5200, the following displays:



For the QLogic SANbox2-8 and SANbox2-16, the following displays:



ile Fa <u>b</u> ric	Switch Blade Po	ort <u>Z</u> oning <u>V</u> ie	w <u>H</u> elp						
□_*	Archive Restore		· · ·	logic					
Add	Load Firmware		Zoning	0			 		
FC Fabrics	Firmware Fallback	 01	x2-64						
10.20.	Set Date/Time								
SANbo	Switch Properties		•	•		- ÷ ÷			Θ
	Toggle Beacon	S			a 2a				
3111	Export Alarm Log								8883
	Configure Alarm T	hresholds							
	Reset Switch				GL OF GL				
	Restore Factory D	efaults	GL		GL OF GL		GL		•
Sim	plify		5 GL						
Sim	plify	Dev	Switch	Port	Address	Туре		WWPN	Ver
								Letter .	

For the QLogic SANbox2-64, the following displays:

3. From the **Switch Properties**—**SANbox Manager** dialog box, verify that **R_A_TOV** is set to **10000** and **E_D_TOV** is set to **2000**. If the settings are not correct, proceed to step 4. If the settings are correct, no changes need to be made; proceed to the next appropriate section.

For the QLogic SANbox2-8 and SANbox2-16, the following displays:

World Wide Name: 10:00:00:c0:dd:00:72:19	FC Address: 010000
Operational State: online	Firmware Version: V1.3-56-0
Chassis Name: SANbox2	MAC address: 00:c0:dd:00:72:1a
IP Address: 10.20.67.16	
Chassis Name: SANbox2	J
Administrative State: online	Timeout Values
	R_A_TOV: 10000
Domain ID: 1	R_T_TOV: 100
Domain ID lock:	E_D_TOV: 2000
Broadcast Support: Enable Operable	

For the QLogic SANbox2-64, the following displays:

World Wide Name: 10:00:00:c0:dd:00:72:bb	FC Address: 780000
Operational State: online	Firmware Version: V1.4.0.36-0
Chassis Name: QLogic SANbox2-64 IP Address: 10.20.67.1	MAC address: 00:c0:dd:00:72:b
Chassis Name: QLogic SANbox2-64	
Administrative State: online	Timeout Values
Domain ID: 120	R_A_TOV: 10000
Domain ID lock:	R_T_TOV: 100
Broadcast Support:	E_D_TOV: 2000
In-band Management: Enable O Disable	

- 4. From the Switch Properties—SANbox Manager dialog box Administrative State list, select offline. Click OK.
- 5. Re-enter the **Switch Properties—SANbox Manager** dialog box (see step 2). Do the following:
 - a. In the **R_A_TOV** box, change the setting to **10000**.
 - b. In the **E_D_TOV** box, change the setting to **2000**.
 - c. Click OK.
- 6. Re-enter the Switch Properties—SANbox Manager dialog box (see step 2). In the Administrative State list, select Online. Click OK.

QLogic CLI

NOTE: Use the following CLI commands when the QLogic SANbox Manager GUI is not available. The CLI procedures differ based on QLogic switch model and firmware level.

For QLogic SANbox2 series switches with firmware levels 1.5.x and above but less than 2.0.0.3x-x, do the following:

```
Login: admin
Password: xxxxxxx
```

Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.

SANbox2 #> show config switch

Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.

If these timeout values are *not* correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
SANbox2 #> admin start
SANbox2 (admin) #> config edit
SANbox2 (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  DefaultDomainID (decimal value, 1-239) [1]
  DomainIDLock (True / False) [True]
  SymbolicName (string, max=32 chars) [QLogic SANbox2-64]
  R T TOV (decimal value, 1-1000 msec) [100]
  R A TOV (decimal value, 100-100000 msec) [9000] 10000
  E D TOV (decimal value, 10-20000 msec) [1000] 2000
  FS TOV (decimal value, 100-100000 msec) [5000]
  DS TOV (decimal value, 100-100000 msec) [5000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [Default Config]
SANbox2 (admin-config) #> config save
SANbox2 (admin) #> config activate
The configuration will be activated. Please confirm (y/n): [n] {f y}
```

For QLogic SANbox 5000 series switches with firmware levels 4.0.0.x-x and above and SANbox2 series switches with firmware levels 2.0.0.3x-x and above, do the following:

Login: admin Password: **xxxxxxx**

Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.

```
SANbox2 #> show config switch
```

Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.

If these timeout values are not correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
SANbox 5200 #> admin start
SANbox 5200 (admin) #> config edit
SANbox 5200 (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  FdmiEnabled (True / False) [True]
  FdmiEntries (decimal value, 0-1000) [1000]
  DefaultDomainID (decimal value, 1-239) [100]
  DomainIDLock (True / False) [True]
  SymbolicName (string, max=32 chars) [SANbox 5200]
  R A TOV (decimal value, 100-100000 msec) [9000] 10000
  E D TOV (decimal value, 10-20000 msec) [200] 2000
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [SANbox 5200 FC Switch]
  FC-SW-2 Compliant (True / False) [True]
SANbox 5200 (admin-config) #> config save
SANbox 5200 (admin) #> config act
The currently active configuration will be activated.
  Please confirm (y/n): [n] y
```

IBM BladeCenter GUI

<u>ATTENTION!!</u> The following steps take the switch offline; therefore, do not perform them on a switch being managed in-band.

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN Utility—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Switch menu, select Switch Properties.



3. From the **Switch Properties—IBM BladeCenter SAN Utility** dialog box, verify that **R_A_TOV** is set to **10000** and **E_D_TOV** is set to **2000**. If the settings are not correct, proceed to step 4. If the settings are correct, no changes need to be made; proceed to the next appropriate section.

World Wide Name: 10: Operational State: onl	:00:00:c0:dd line	:00:72:c7	FC Address: Firmware Versio	630000 n:∀1.4.0.26-5
Chassis Name: IBN IP Address: 10.	I BladeCent 20.78.93	er Switch	MAC address:	00:c0:dd:00:72:c6
Chassis Name:	IBM BladeC	enter Switch		
Administrative State:	online	•	Timeout Value	S
Domain ID:	99		R_A_TOV:	10000
Domain ID lock:	Enable	O Disable	R_T_TOV:	100
Broadcast Support:	• Enable	O Disable	E_D_TOV:	2000
In-band Management:	Enable	O Disable		

- 4. From the Switch Properties—IBM BladeCenter SAN Utility dialog box Administrative State list, select offline. Click OK.
- 5. Re-enter the **Switch Properties—IBM BladeCenter SAN Utility** dialog box (see step 2). Do the following:
 - a. In the **R_A_TOV** box, enter **10000**.
 - b. In the **E_D_TOV** box, enter **2000**.
 - c. Click OK.
- 6. Re-enter the Switch Properties—IBM BladeCenter SAN Utility dialog box (see step 2). In the Administrative State list, select Online. Click OK.

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM BladeCenter SAN Browser. The **IBM BladeCenter SAN Browser—Faceplate** dialog box displays.
- 2. From the IBM BladeCenter SAN Browser—Faceplate dialog box Switch menu, select Switch Properties.



3. From the **Switch Properties—IBM BladeCenter SAN Browser** dialog box, verify that **R_A_TOV** is set to **10000** and **E_D_TOV** is set to **2000**. If the settings are *not* correct, proceed to step 4. If the settings are correct, no changes need to be made; proceed to the next appropriate section.

world wide Name: 10:00:00:00:00:02:10:88	First Port Address:	7c0000	
Operational State: online	Firmware Version:	/4.1.0.17-0	
Symbolic Name: Switchblade2	MAC address:	00:c0:dd:02:10	1:67
IP Address: 10.20.67.24			
Symbolic Name: Switchblade2	Domain ID lock:	• Enable) Dis
Administrative State: online 🗸	Broadcast Support:	• Enable) Dis
Domain ID: 124 0x 7c	In-band Management:	• Enable	() Dis
FDMI HBA Entry Limit: 1000	FDMI:	• Enable) Dis
Timeout Values	FC CM 2 Compliants	o	0.00
R_A_TOV: 10000	FC-SVV-2 Complianc	Enable	() Dis
	Legacy Address Format	O Enable	Dis

4. To modify the timeout value settings, do the following:

5.

6.

- a. In the Administrative State drop-down box, select offline. Click OK.
- b. In the Timeout Values section, do the following:
 - (1) In the **R_A_TOV** box, enter **10000**.
 - (2) In the **E_D_TOV** box, enter **2000**.
- c. Click OK.
- d. In the Administrative State drop-down box, select online. Click OK.

World Wide Name: 10:00:00:c0:dd:02:1d:ea	First Port Address:	010000	
Operational State: offline	Firmware Version:	V4.1.0.17-0	
Symbolic Name: Switchblade1	MAC address:	00:c0:dd:02:10	d:e9
IP Address: 10.20.67.24			
Symbolic Name: Switchblade1	Domain ID lock:	• Enable	O Disab
Administrative State: online	Broadcast Support:	• Enable	O Disab
Domain ID: 123 0x 7b	In-band Management:	• Enable	O Disab
FDMI HBA Entry Limit: 1000	FDMI:	• Enable	O Disab
Timeout Values R_A_TOV: 10000	FC-SW-2 Compliant:	Enable	O Disab
E D 1010 2000	Legacy Address Forma	t: O Enable	Disab

7. From the **Switch Properties—IBM BladeCenter SAN Utility** dialog box, verify your changes (see step 3).

IBM BladeCenter CLI

<u>ATTENTION!!</u> The following steps take the switch offline; therefore, do not perform them on a switch being managed in-band.

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, use the following CLI commands when the IBM eServer BladeCenter SAN Utility is not available:

```
Login: admin
Password: xxxxxxx
```

```
Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.
```

```
IBM BladeCenter #> show config switch
```

If these timeout values are *not* correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
IBM BladeCenter #> admin start
IBM BladeCenter (admin) #> config edit
IBM BladeCenter (admin-config) #> set config switch
  The following options display:
  AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
  BroadcastEnabled (True / False) [True]
  InbandEnabled (True / False) [True]
  DefaultDomainID (decimal value, 1-239) [1]
  DomainIDLock (True / False) [True]
  SymbolicName (string, max=32 chars) [Fibre Channel Switch Module]
  R T TOV (decimal value, 1-1000 msec) [100]
  R A TOV (decimal value, 100-100000 msec) [9000]
                                                     10000
  E D TOV (decimal value, 10-20000 msec) [1000]
                                                   2000
  FS TOV (decimal value, 100-100000 msec) [5000]
  DS TOV (decimal value, 100-100000 msec) [5000]
  PrincipalPriority (decimal value, 1-255) [254]
  ConfigDescription (string, max=64 chars) [Default Config]
IBM BladeCenter (admin-config) #> config save
IBM BladeCenter (admin) #> config activate
The configuration will be activated. Please confirm (y/n): [n] y
```

For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, use the following CLI commands when the IBM eServer BladeCenter SAN Browser is not available:

Login: **admin** Password: **xxxxxxx**

Use the following command to verify that R_A_TOV is set to 10000 and E_D_TOV is set to 2000.

Switchblade2: admin> show config switch

If these timeout values are *not* correct, continue with this section. If the settings are correct, no changes need to be made; proceed with the next appropriate section.

```
Switchblade2: admin>
Switchblade2: admin> admin start
Switchblade2 (admin): admin> config edit
The config named default is being edited.
Switchblade2 (admin-config): admin> set config switch
A list of attributes with formatting and current values will follow.
Enter a new value or simply press the ENTER key to accept the current
value. If you wish to terminate this process before reaching the end of
the list press 'q' or 'Q' and the ENTER key to do so.
AdminState (1=Online, 2=Offline, 3=Diagnostics) [Online]
```

BroadcastEnabled (True / False) [True] InbandEnabled (True / False) [True] FdmiEnabled (True / False) [True] FdmiEntries (decimal value, 0-1000) [1000] DefaultDomainID (decimal value, 1-239) [124] DomainIDLock (True / False) [True] SymbolicName (string, max=32 chars) [Switchblade2] R_A_TOV (decimal value, 100-100000 msec) [9000] 10000 E_D_TOV (decimal value, 10-20000 msec) [1000] 2000 PrincipalPriority (decimal value, 1-255) [254] ConfigDescription (string, max=64 chars) [IBM eServer BladeCenter(TM) 6-port Enterprise Fibre Channel Swit] FC-SW-2 Compliant (True / False) [True] Finished configuring attributes.

```
This configuration must be saved (see config save command) and
activated (see config activate command) before it can take effect.
To discard this configuration use the config cancel command.
Switchblade2 (admin-config): admin> config save
The config named default has been saved.
Switchblade2 (admin): admin> config activate
The currently active configuration will be activated.
Please confirm (y/n): [n] y
Switchblade2 (admin): admin> admin end
```

Principal Switch Configuration

QLogic switches and IBM switch modules negotiate for principal switch automatically. Therefore, there are no steps to take.

Zone Configuration

This section discusses configuring active Zone Set names and Zone types.

Active Zone Set Names

The Zone and Zone Set names on each switch must be unique. If not, change one of the duplicate names. All Zone Set and Zone names must conform to the Fibre Channel (FC) Standards for Zone Naming (ANSI T11/00-427v3):

- 1. Must be 1–64 characters in length.
- 2. All characters are ASCII.
- 3. First character is [a–z] or [A–Z].
- 4. All other characters must be [a–z], [A–Z], [0–9], or the _ character. Other characters (\$-^) may not be supported by all vendors and should be avoided.

QLogic SANbox Manager GUI

- 1. Start the SANbox Manager application. The **SANbox Manager—Faceplate** dialog box displays.
- 2. From the SANbox Manager—Faceplate dialog box Zoning menu, select Edit Zoning.

For the QLogic SANbox 5200, the following displays:



For the QLogic SANbox2-8 and SANbox2-16, the following displays:





For the QLogic SANbox2-64, the following displays:

3. From the **Edit Zoning—SANbox Manager** dialog box, compare the Zone Set and Zone names from each switch to ensure there are none with the same name and the names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 342.

For the QLogic SANbox2-8 and SANbox2-16, the following displays:



🕵 Edit Zoning - SANbox Manager File Edit Q **B** Alias Remove Zone Set Zone Sets Members QLogic SANbox2-64 🐻 ZoneSet: ORPHAN ZONE SET Domain:120 Port#0 Domain:120 Port#1 Domain:120 Port#1 Domain:120 Port#2 Domain:120 Port#3 🕈 🛅 ZoneSet: Atlanta_ZoneSet -- Zone: Disaster_Recovery (Soft) Zone: Network_Operations (Soft) Zone Set Domain:120 Port #4 🕈 🛅 ZoneSet: Building_1_ZoneSet Domain:120 Port #5 Domain:120 Port#6
 Domain:120 Port#7 Zone: Accounting (Soft) Zone - Zone: Corporate_Web_Servers (Soft) Domain:120 Port #8 ConeSet: Building_2_ZoneSet Domain:120 Port #9 Domain:120 Port#10 - Zone: Research_And_Development (Soft) Domain:120 Port#11 Domain:120 Port#13 Domain:120 Port#14 Domain:120 Port #15 Domain:120 Port#16 Domain:120 Port #18 Domain:120 Port #18 Domain:120 Port #19 Domain:120 Port #20 Domain:120 Port#21 Domain:120 Port #23 Domain:120 Port #24 <u>o</u>ĸ Apply Cancel

For the QLogic SANbox2-64, the following displays:

QLogic CLI

NOTE: Use the following CLI commands when the QLogic SANbox Manager GUI is not available. The procedures are the same for the QLogic SANbox 5000 series and SANbox2 series switches.

Login: **admin** Password: **xxxxxxx** SANbox2 **#**> **zone list**

IBM BladeCenter GUI

NOTE: The procedures differ based on the IBM switch module model.

For the IBM eServer BladeCenter Fibre Channel Switch Module, do the following using the IBM BladeCenter SAN Utility:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN** Utility—Faceplate dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

BM BladeCenter® SAN Utility - Face	plate	
File Fabric Switch Port Zoning	view Help	
🗔 🤿 💾 Edit Zonii	ng	
Add Open Save Edit Zoni	ng <u>C</u> onfig	
EC Exprise Description	Zone Set	
© 10.20.67.16 Pestore	te zone set i ownen	
P • 10.20.67.17		
IBM BladeCenter Switch	Image: Constraint of the second state of the second sta	
	Name Server Switch Port Stats Port Info Configured Zonesets Alarm Log	
اد (بــــــــــــــــــــــــــــــــــــ		5 -

3. From the Edit Zoning— IBM BladeCenter SAN Utility dialog box, compare the Zone Set and Zone names from each switch to ensure that none have the same name and the names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 342.



For the QLogic 6-port Enterprise Fibre Channel Switch Module for IBM eServer BladeCenter, do the following using the IBM BladeCenter SAN Browser:

- 1. Start the IBM eServer BladeCenter SAN Utility. The **IBM BladeCenter SAN** Utility—Faceplate dialog box displays.
- 2. From the IBM BladeCenter SAN Utility—Faceplate dialog box Zoning menu, select Edit Zoning.

IBM BladeCenter® SAN Utility - Fac	eplate	
File Fabric Switch Port Zoning	<u>V</u> iew <u>H</u> elp	
🗔 🥽 🖺 Edit Zon	ning	
Add Open Save	ning <u>C</u> onfig	ηα
Activate	e Zone Set	
FC Fabrics Deactive	ate Zone Set	r Switch
P ◆ 10.20.67.16 <u>Restore</u>	e Default Zoning	
IBM BladeCenter Switch	Dev	Switch Port Address Type WWNN Switch Port Stats Port Info Configured Zonesets Alarm Log
		트===

3. From the **Edit Zoning—IBM BladeCenter SAN Utility** dialog box, compare the Zone Set and Zone names from each switch to ensure that none have the same name and the names conform to the standards for zone naming as discussed under "Active Zone Set Names" on page 342.



IBM BladeCenter CLI

NOTE: Use the following CLI commands when the IBM BladeCenter GUI is not available.

Login: admin Password: xxxxxxx IBM BladeCenter #> zone list

Zone Types

This configuration supports all QLogic switch and IBM switch module Zone types.

Operating Mode Configuration

NOTE: Perform the following steps only when connecting from a QLogic SANbox2-8 or SANbox2-16 with version 1.3.xxx firmware.

QLogic SANbox Manager GUI

- 1. Start the SANbox Manager application. The **SANbox Manager—Faceplate** dialog box displays.
- 2. From the SANbox Manager—Faceplate dialog box Zoning menu, select Edit Zoning Config.

🏂 SANbox Manager - Faceplat	
File Fabric Switch Port	Zoning View Help
Add Open Save	Edit Zoning Edit Zoning Config Activate Zone Set
FC Fabrics	Deactivate Zone Set
P • 10.20.67.17	Restore Default Zoning
Simplify	(a.a.a.a.a.a.a.a.a.
	Dev Switch Port Address Type WWNN WV
Simplify	
	Name Server Switch Port Stats Port Info Configured Zonesets Alarm Log
	±≠=

3. The Zoning Config—SANbox Manager dialog box displays.

In the **Merge Mode** list, select **Merge Active Zonesets Only**. This is equivalent to SW2 mode in the CLI.

🗟 Zoning Config -	SANbox Manager	
Auto Save	N	
Merge Mode	Merge active zone sets only	•
Default Visibility	All	

QLogic CLI

NOTE: Use the following CLI commands when the QLogic SANbox Manager GUI is not available. The procedures are the same for the QLogic SANbox2-8 and SANbox2-16.

```
Login: admin
Password: xxxxxxx
SANbox2 #> admin start
SANbox2 (admin) #> config edit
SANbox2 (admin-config) #> set config zoning
  The following options display:
  AutoSave
                (True / False) [True]
  Default
                (All / None)
                                 [All ]
                (Brocade / SW2) [SW2 ]
  MergeMode
SANbox2 (admin-config) #> config save
SANbox2 (admin) #> config activate
The configuration will be activated. Please confirm (y/n): [n] y
```

IBM eServer BladeCenter SAN Utility

Not applicable.

IBM BladeCenter CLI

Not applicable.

QLogic Specific Configuration

Not applicable.

IBM BladeCenter Specific Configuration

Not applicable.

Successful Integration Checklist

Perform the following steps after the E_port connection has been established and the fabric has had time to update. If everything verifies, the QLogic and IBM BladeCenter fabrics have successfully merged.

- ✓ Compare and verify that all Zoning information has been propagated on all switches.
- ✓ Verify that the correct Zone Set is activated.
- ✓ Compare and verify that all devices are in the Name Server of each switch.
- Verify that all initiators continue to detect and have access to all targets that existed prior to the fabric merger.

After everything is verified, your fabric has merged successfully and no additional steps need to be taken. If any of the above tasks did not complete successfully, contact IBM support.

Glossary

Activity LED

A port LED that indicates when frames are entering or leaving the port.

Alias

A collection of objects that can be zoned together. An alias is not a zone, and can not have a zone or another alias as a member.

ALFairness

On an arbitrated loop, the switch is always highest priority when arbitrating for the right to transfer. To prevent other devices from being locked out, the standard provides for a fairness mode, which if enabled, requires an arbitrator to let all other devices win arbitration before arbing a second time.

AL PA

Arbitrated loop physical address

ANSI

American National Standards Institute

API

Application programming interface

Arbitrated Loop

A Fibre Channel topology where ports use arbitration to establish a point-to-point circuit.

Arbitrated Loop Physical Address (AL PA)

A unique one-byte valid value assigned during loop initialization to each NL port on a loop.

ARB FF

When ARB_FF is enabled, it causes the switch to send the ARB_FF primitive when it is in monitoring mode, rather than idles. The only reason to do this is since the ARB FF has less bit transitions than does an idle, it produces less EMI. It has no other effect.

ASIC

Application specific integrated circuit

BootP

A type of network server.

Buffer Credit

A measure of port buffer capacity equal to one frame.

Class 2 Service

A service which multiplexes frames at frame boundaries to or from one or more N_Ports with acknowledgment provided.

Class 3 Service

A service which multiplexes frames at frame boundaries to or from one or more N_Ports without acknowledgment.

CLI

Command line interface

Domain ID

User defined name that identifies the switch in the fabric.

E_D_TOV

Error-detect timeout value

E_Port

Expansion port. A switch port that connects to another FC-SW-2 compliant switch.

Expansion Port

See E_Port.

ExtCredit

Allows full speed operation over distances greater than 10 kilometers. Additional credit buffers are borrowed from other ports (which must be set to donor state). Decimal value 0–65535.

Fabric Management Switch

The switch through which the fabric is managed.

Fabric Name

User-defined name associated with the file that contains user list data for the fabric.

FSPF

Fabric shortest path first

Fan Fail LED

An LED that indicates that a cooling fan in the switch is operating below standard.

FC PLDA

Fibre Channel-private loop direct attach

FC-SW-2

Fibre Channel switch fabric 2. For detailed information, see the **Introduction on** page 1.

Flash Memory

Memory on the switch that contains the chassis control firmware.

Frame

Data unit consisting of a start-of-frame (SOF) delimiter, header, data payload, CRC, and an end-of-frame (EOF) delimiter.

FRU

Field replaceable unit

GUI

Graphical user interface

Heartbeat LED

A chassis LED that indicates the status of the internal switch processor and the results of the power-on self-test.

Initiator

The device that initiates a data exchange with a target device.

In-Order-Delivery

A feature that requires that frames be received in the same order in which they were sent.

Input Power LED

A chassis LED that indicates that the switch logic circuitry is receiving proper DC voltages.

InteropCredit

This variable determines the number of credits we will advertise on an ISL. Older versions of Brocade software required that we match their offering. Decimal value is 0-255.

IP

Internet protocol
ISLSecurity

ISLSecurity determines which switches a port will establish a link with. Any: we will link with any switch. Ours: we will only link to another QLogic switch. None: the port will not establish an ISL link.

LCFEnable

LCFEable gives preference to link controlframes (such as class 2 ACK frames) overother frames, when queued fortransmission in the switch. This mayprovide better performance when running-Class 2 traffic. LCFEable is incompatiblewith MFSEnable, and both cannot beselected.

LIP

Loop initialization primitive sequence

Logged-in LED

A port LED that indicates device login or loop initialization status.

Management Information Base

A set of guidelines and definitions for the Fibre Channel functions.

Management Workstation

PC workstation that manages the fabric through the fabric management switch.

MIB

Management information base

MSEnable

Determines whether GS 3 managementserver commands will be accepted on the port. It can be used to prevent in bandmanagement of the switch on any or allports.

NL_Port

Node Loop Port. A Fibre Channel device port that supports arbitrated loop protocol.

N _Port

Node Port. A Fibre Channel device port in a point-to-point or fabric connection.

NoClose

Causes the switch to keep the loop open, if no other device is arbitrating. It is intended to improve performance when there is a single L_Port device connected to the switch.

Output Power LED

A power supply LED that indicates that the power supply is providing DC voltage to the switch

Over Temperature LED

A chassis LED or a power supply LED that indicates that the switch or power supply is overheating.

POST

Power-on self-test

Power-On Self-Test

Diagnostics that the switch chassis performs at start up.

Principal Switch

A switch that has been selected to perform certain fabric configuration duties.

Private Device

A device that can communicate only with other devices on the same loop.

Private Loop

A loop of private devices connected to a single switch port.

pwwn

Port world wide name. See *World Wide Port Name*.

R_A_TOV

Resource-allocation timeout value

SAN

Storage area network

SANbox Manager

Switch management application

SFF

Small form-factor transceiver

SFP

Small form-factor pluggable. A transceiver device, smaller than a gigabit interface converter, that plugs into the Fibre Channel port.

Small Form Factor

A transceiver device, smaller than a gigabit interface converter, that is permanently attached to the circuit board.

Small Form-Factor Pluggable

A transceiver device, smaller than a gigabit interface converter, that plugs into the Fibre Channel port.

SNMP

Simple network management protocol

Target

A storage device that responds to an initiator device.

Timeout Values

The timeout values (TOV) required by the FC-SW-2 standard to successfully establish an E_port connection.

τον

Timeout values. The timeout values required by the FC-SW-2 standard to successfully establish an E_port connection.

VCCI

Voluntary control council for interference

VIEnable

Diagnostics that the switch chassis performs at start up.

World Wide Name (WWN)

A unique 64-bit address assigned to a device. The WWN consists of a world wide node name and a world wide port name.

World Wide Node Name (WWNN)

A unique address assigned to a device.

World Wide Port Name (WWPN)

A unique address assigned to a port on a device. There can be more than one WWPN per WWNN.

WWN

World wide name

WWNN

World wide node name

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WWPN

World wide port name

Zone

A set of ports or devices grouped together to control the exchange of information.

Zone Configuration

See Zone Set.

Zone Set

A set of zones grouped together. The active zone set defines the zoning for a fabric. For Brocade, Zone Set is referred to as Zone Configuration. Glossary

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