Black Box Corporation
The World's Source for Cabling and Network Connectivity

FiberSwitch™

FOR 10 & 100MBPS

WORKGROUPS
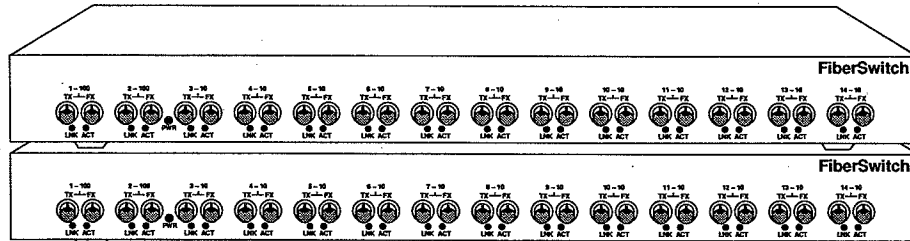
Installation & User Guide

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FiberSwitch Installation & User Guide

Product Overview

The Black Box FiberSwitch delivers the high-bandwidth connectivity needed for power-user workgroups by providing multiple 10Mbps and 100Mbps F/O ports for dedicated client connections as well as server or backbone uplinks. Each port on the FiberSwitch can be individually configured for half or full-duplex by means of DIP switches located on the back of the unit. This provides convenient user-selectable control of interoperability options as required by the user's specific networking needs. Two cascade ports on the back of the switch provides a 200Mbps full-duplex data connection between two FiberSwitches and will support a stacked configuration of up to 24 Ethernet and 4 Fast Ethernet ports.

The FiberSwitch has the following features:

- 12 10BASE-FL ports for dedicated client connections.
- 2 100BASE-FX ports for high-speed uplinks.
- DIP switch for full or half-duplex operation of each port.
- 4MB of dynamically allocated packet buffer memory.
- Auto-learning capability for up to 2,000 MAC addresses.
- Link and Activity status LEDs for each port.
- High-performance ASIC-based switching.
- Packet filtering with receive errors by store and forward capability.
- 1U height saves space and is compatible with standard 19" rackmount systems.
- IEEE 802.3/802.3u compliant.

The FiberSwitch is available in three models with the following connector configurations:

Model Number	# of Ports	Connectors	Maximum Supported Link Length
LB9550A-SC	12	10BASE-FL F/O multimode ST	2km
	2	100BASE-FX F/O multimode SC	2km
LB9550A-SMSC	12	10BASE-FL F/O multimode ST	2km
	2	100BASE-FX F/O singlemode SC	15km
LB9550A-ST	12	10BASE-FL F/O multimode ST	2km
	2	100BASE-FX F/O multimode ST	2km

Installation Guide

Follow the five simple steps outlined in this section of the manual to install and start using your Black Box FiberSwitch.

1 Unpack the FiberSwitch.

Check that the following components have been included:

- FiberSwitch
- Power Cord
- Rack Mounting Hardware: 2 rack mount brackets, 4 screws
- 1 DB-25 Cascade Cable (Part Number LB9950-CASC); for cascading two FiberSwitches
- Four (4) Rubber Feet
- Installation & User Guide (this guide)

Your order has been provided with the safest possible packaging, but shipping damage does occasionally occur. Inspect your order carefully for damage that may have occurred during shipment. If you discover any shipping damage, notify the carrier and follow their instructions for damage and claims. Be sure to save the original shipping carton if return or storage of the unit is necessary.

2 Choose an Appropriate Location.

The FiberSwitch is intended for use in normal office environments and requires few restrictions on placement:

- Select a location that is within 6 feet of an AC power receptacle.
- Do not connect the unit to a power strip.
- Make sure the location allows for adequate ventilation with a clearance of at least 1/2" on the sides of the unit.
- Make sure the location is as far away as possible from electrical noise generating equipment such as copiers, electrostatic printers or other motorized devices.

The FiberSwitch was designed to be mounted in a standard 19-inch equipment rack. Use the rackmounting hardware included with the unit to secure the mounting brackets to the unit. Use the separate screws provided with the equipment rack

to mount the unit on the rack. Be sure that the mounting of the equipment in the rack does not impose a hazardous condition due to uneven mechanical loading.

The FiberSwitch can also be installed on a tabletop. For tabletop installation, install the four rubber feet and select a location with the power and ventilation requirements cited above.

TUV Compliance Note

For pluggable equipment, the socket outlet must be installed near the equipment and be easily accessible.

Bei Geräten mit Steckanschluß muß die Steckdose nahe dem Gerät angebracht und leicht zugänglich sein.

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3 Connect to the Network.

All network connections are made through the front panel. The FiberSwitch provides 12 10BASE-FL ports for dedicated client connections, and 2 100BASE-FX ports for high-speed uplinks. Connecting to the network is as simple as plugging in the network cables to the appropriate TX and RX connectors. The unit is shipped with covers on each connector for protection. Leave the covers in place on any unused connectors.

Each port is numbered and each connector is labeled. The first two sets of connectors on the left side of the front panel are for the 100Mbps connections. The remaining twelve connectors are for the 10Mbps connections.

Refer to the illustration below for proper port location.
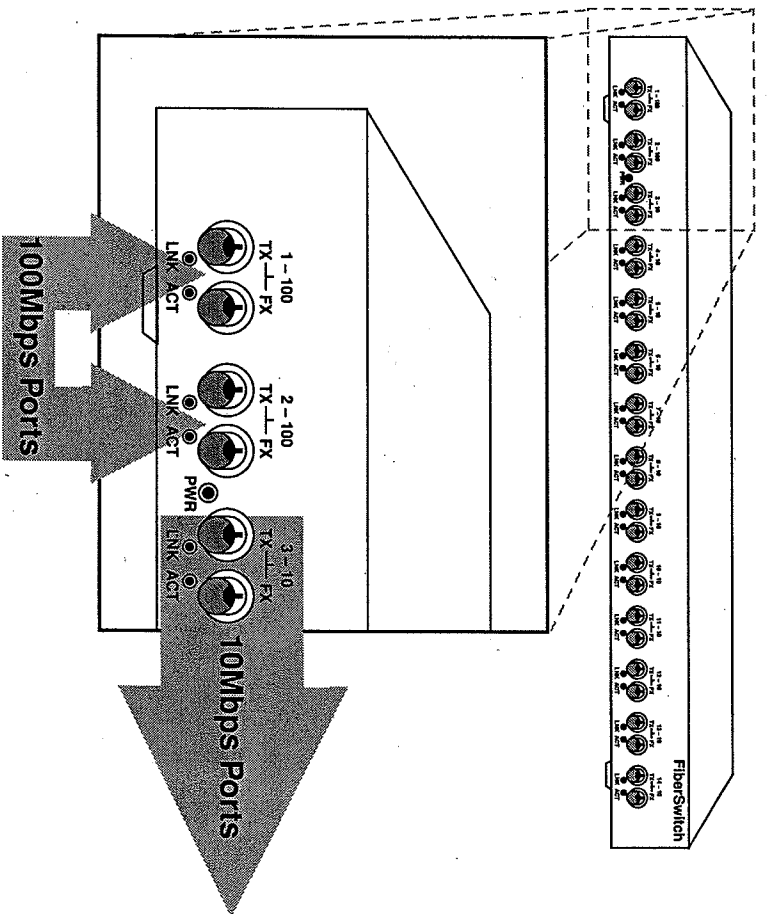
Each fiber optic port consists of a separate transmit (TX) and receive (RX) connector receptacle. When making fiber optic connections, be sure that a TX optical conductor on the FiberSwitch connects to an RX optical conductor on the connected device; and be sure that the corresponding TX optical conductor of the device connects to the corresponding RX optical conductor on the FiberSwitch. Once power is applied to the unit, use the individual Link (LNK) LEDs on the front panel of the switch to verify correct segment connectivity.

Each port on the FiberSwitch can be individually configured for half or full-duplex operation by means of DIP switches located on the back of the unit. This provides convenient user-selectable control of interoperability options as required by the user's specific networking needs. The DIP switches are numbered to correspond to the appropriate port on the front of the unit.

PORT SETTINGS

10Mbps Ports   100Mbps Ports

HALF-DUPLEX
FULL-DUPLEX
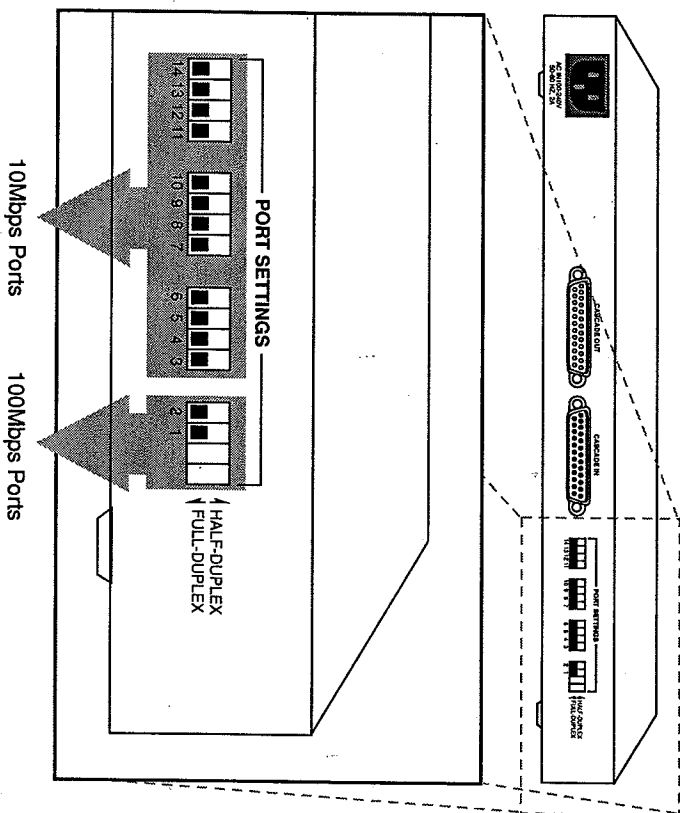
These DIP switches must be set appropriately for proper operation mode of each segment. This should be done before applying power to the switch. Use a pen point or small sharp object to change the DIP switch settings as necessary.

• A DIP switch set in the UP position indicates half-duplex.
• A DIP switch set in the DOWN position indicates full-duplex.

NOTE: The FiberSwitch ships with the DIP switches set at full-duplex as the default setting.

Cascading the FiberSwitch.

A set of DB-25 ports provides the means for cascading two FiberSwitches. These ports, working in tandem, provide a 200Mbps full-duplex data connection between two FiberSwitches and will support a stacked configuration of up to 24 Ethernet and 4 Fast Ethernet ports.

CASCADE OUT   CASCADE IN

DB-25 Male Connector   DB-25 Female Connector
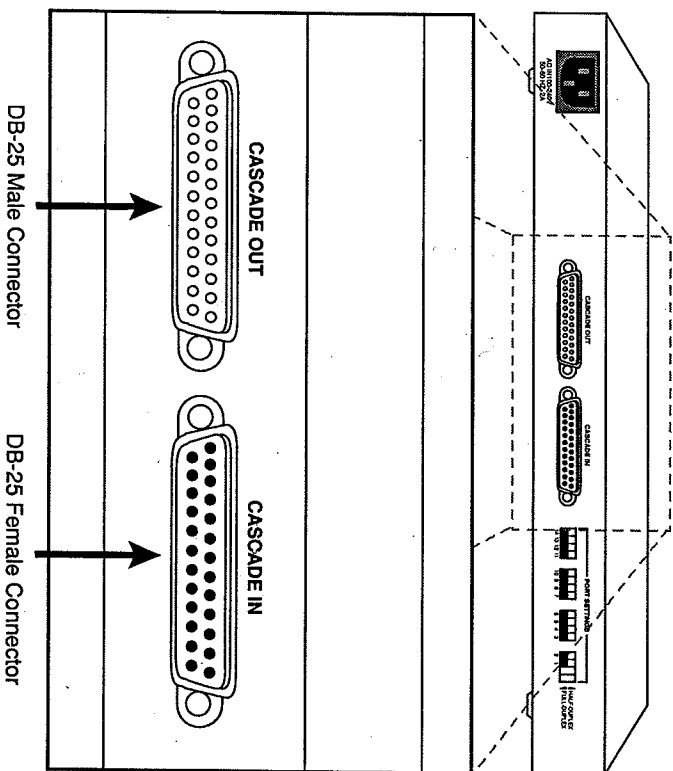
These ports are labeled CASCADE OUT and CASCADE IN. Use only the DB-25 male-to-female Cascade Cables provided to connect the units.

Cascading FiberSwitches requires two cables for the separate DB-25 ports on the back of the unit. Follow these simple steps to make the proper cascade connections:

• Remove the additional hex nuts from the connectors on the cascade cable.

• Connect the CASCADE OUT port of the first switch to the CASCADE IN port of the second switch.
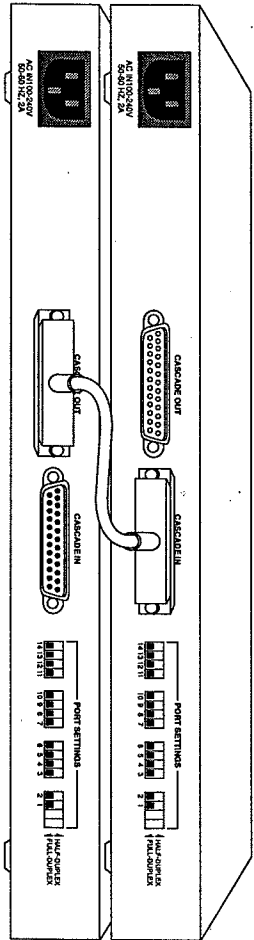
• Connect the CASCADE IN port of the first switch to the CASCADE OUT port of the second switch.
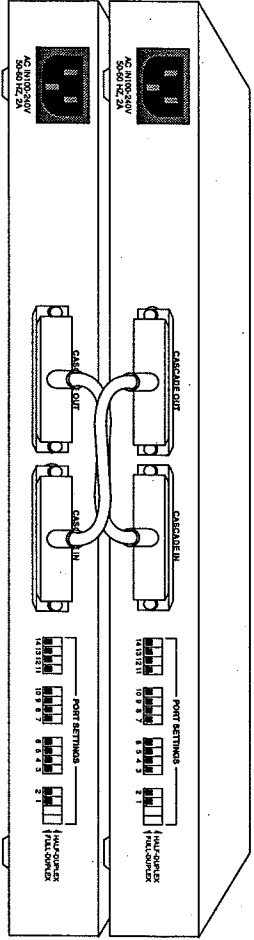
The resulting connections should resemble an "X." Refer to the illustration below.

5 *Applying Power to the FiberSwitch.*

The FiberSwitch is equipped with an auto-adjusting 100–240V, 50–60Hz 2A power supply. When making power connections, connect the power cord to the input jack located on the back of the switch before making the connection to the outlet or appropriate AC voltage source.

The FiberSwitch is shipped with a standard North American 3-pin power cord which is UL (USA), CSA or CUL (Canada) listed or approved. For installation in regions outside North America, replace the power cord with a cord approved by appropriate safety agencies. Any cord used must have a CEE-22 standard V female connector on one end and meet IEC 320-030 specifications. European power cords must be harmonized and designated with a HAR marking on the outside of the cord jacket to comply with the CENELEC Harmonized Document HD-21.

The FiberSwitch does not have a power switch. After connecting the unit to the AC receptacle, check that the PWR (power) LED is illuminated. A steady green light indicates the unit is receiving power.

Once power has been applied to the unit, use the individual Link (LNK) LEDs on the front panel of the switch to verify correct segment connectivity.

Refer to the illustration included under *LED Operation* in the *User Guide* section of this manual.

User Guide

This section contains more detailed user information regarding operating features of your FiberSwitch.

LED Operation

In addition to the unit power (PWR) LED, each port on the front panel has two LEDs that indicate link status (LNK) and port activity (ACT).

The function of each LED is specified as follows:

LED Label	Color (Status)	Indication
PWR	Green (steady)	Power ON
LNK	Green (steady)	Receiving linked pulses
ACT	Green (steady or blinking)	Receiving data

Link Status LED

Port Activity LED

Unit Power LED

LNK ACT

TX — FX

1–100

2–100

3–10

PWR

FiberSwitch

Topology Solutions

Server Cluster "A"

Servers with
100Mbps NICs

Servers with
100Mbps NICs

Server Cluster "C"

Server Cluster "B"

Servers with
100Mbps NICs

FiberSwitch

FiberSwitch
cascade cable

FiberSwitch

Server Cluster "D"

Servers with
100Mbps NICs

100Mbps F/O Link
10Mbps F/O Link
Cascade Cable
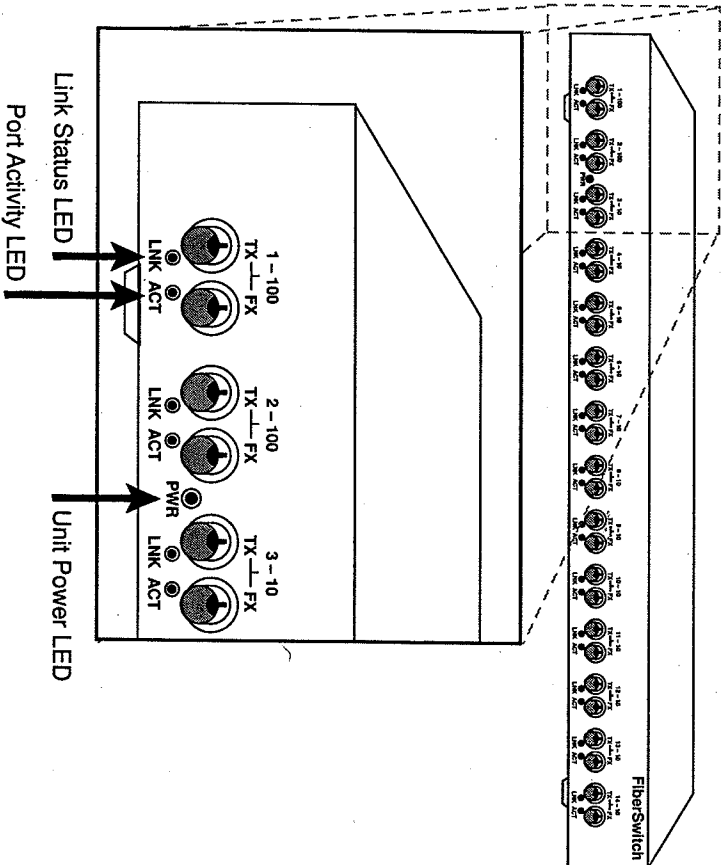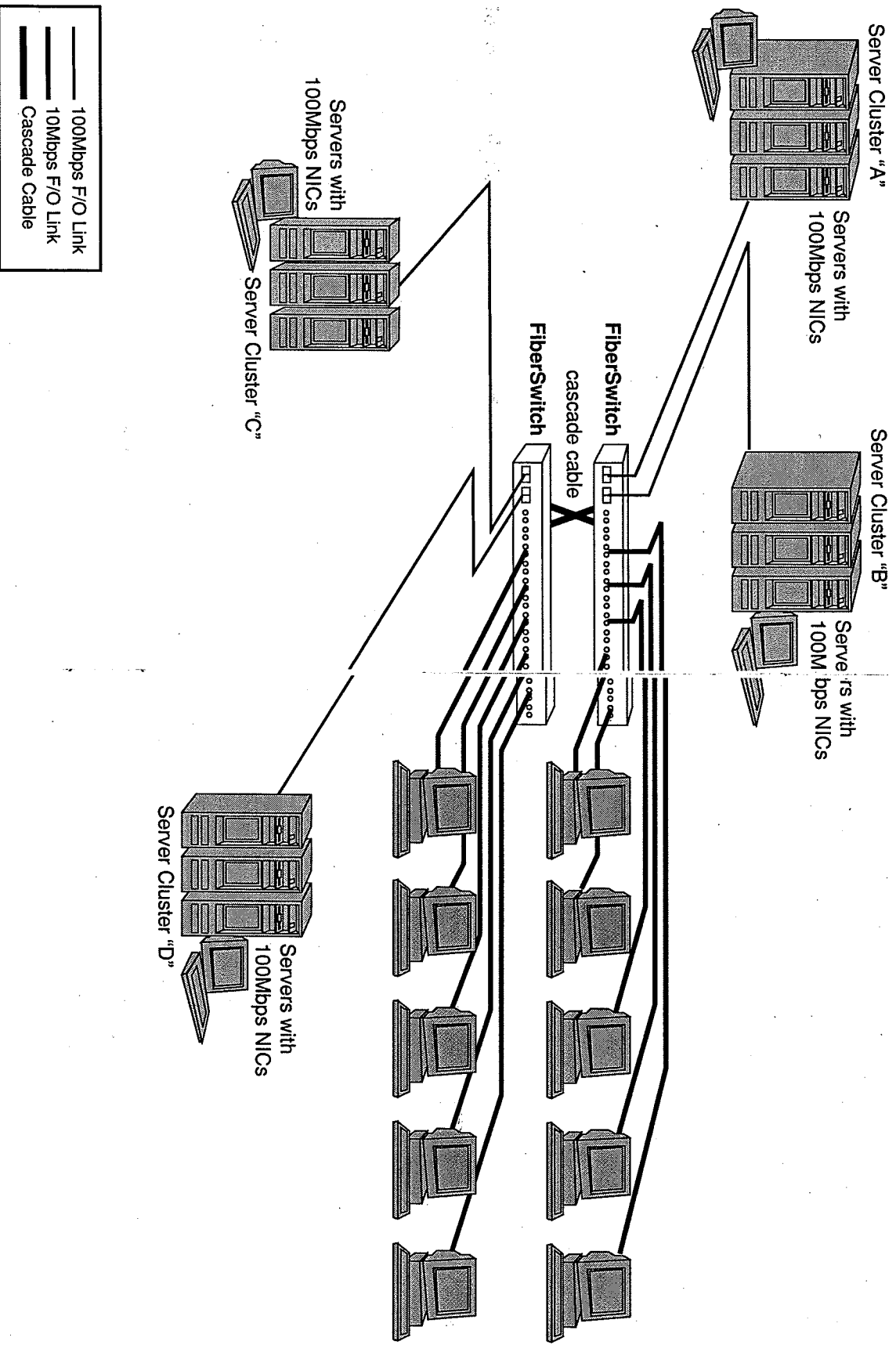
Technical Specifications

Data Rate

10BASE-FL ports	10Mbps half-duplex/20Mbps full-duplex
100BASE-FX ports	100Mbps half-duplex/200Mbps full-duplex
Cascade Ports	200Mbps full-duplex

Multimode F/O Interface

Connector	ST or SC
RX Input Sensitivity	-31 dBm peak minimum
Output Power	-14 dBm to -23.5 dBm (50/125 μm)
	-14 dBm to -20 dBm (62.5/125 μm)
Supported Link Length	up to 2km full duplex
Cable Type	50/125, 62.5/125, 100/140 μm F/O

Singlemode F/O Interface

Connector	SC
RX Input Sensitivity	-31 dBm peak minimum
Output Power	-8 dBm to -15 dBm (9/125 μm)
Supported Link Length	up to 15km full duplex
Cable Type	8.3/125, 8.7/125, 9/125, 10/125 μm F/O

Cascade Interface

Connectors	Cascade Out: DB-25 (male)
	Cascade In: DB-25 (female)
Cable Type	DB-25 male-to-female (supplied)

Power Requirements

auto-adjusting	100-240 VAC, 50/60Hz, 2A, 40W

Environmental

Operating Temperature	0 — 50° C
Storage Temperature	-30 — 70° C
Operating Humidity	5% — 95% non-condensing

Physical

Dimensions	12"L x 17.25"W x 1.7"H
Weight	5 lbs.

Product Safety, EMC and Compliance Statements

This equipment complies with the following requirements:

- UL
- CSA
- EN60950 (safety)
- FCC Part 15, Class A
- EN55022 Class A (emissions)
- EN50082-1 (immunity)
- IEEE 802.3/802.3u
- IEC 825-1 Classification
  Class 1 Laser Product

The following *FCC* and *Industry Canada* compliance information is applicable to North American customers only.

USA FCC Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution: Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Canadian Radio Frequency Interference Statement

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.