Baseline Switch 2250 Plus (3C16476BS) User Guide

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ABOUT THIS GUIDE

This guide is intended for use by network administators who are responsible for installing and setting up network equipment. Consequently, it assumes a basic working knowledge of LANs (local area networks).

Diese Anleitung ist für die Benutzung durch Netzwerkadministratoren vorgesehen, die für die Installation und das einstellen von Netzwerkkomponenten verantwortlich sind; sie setzt Erfahrung bei.

If release notes are shipped with your product and the information there differs from the information in this guide, follow the instructions in the release notes.

Most user guides and release notes are available in Adobe Acrobat Reader Portable Document Format (PDF) on the 3Com World Wide Web site:

http://www.3com.com

Conventions

Table 1 and Table 2 list conventions that are used throughout this guide.

Table 1 Notice Icons

Icon	Notice Type	Description
	Information note	Information that describes important features or instructions
	Caution	Information that alerts you to potential loss of data or potential damage to an application, system, or device
	Warning	Information that alerts you to potential personal injury

Table 2 Text Conventions

Convention	Description
Screen displays	This typeface represents information as it appears on the screen.
The words "enter" and "type"	When you see the word "enter" in this guide, you must type something, and then press Return or Enter. Do not press Return or Enter when an instruction simply says "type."
Words in *italics*	Italics are used to: ■ Emphasize a point. ■ Denote a new term at the place where it is defined in the text. ■ Identify menu names, menu commands, and software button names. Examples: From the *Help* menu, select *Contents*. Click *OK*.

Related Documentation

In addition to this guide, each 3Com Baseline Switch 2250 Plus documentation set includes the following:

- Online Help – Accessible from the Web interface, provides information that helps you perform tasks using the Web interface.

- Release Notes – Provide information about the current software release, including new features, modifications, and known problems.

Documentation Comments

Your suggestions are very important to us. They will help make our documentation more useful to you. Please e-mail comments about this document to 3Com at:

pddtechpubs_comments@3com.com

Please include the following information when contacting us:

- Document title
- Document part number (on the title page)
- Page number (if appropriate)

Example:

- 3Com Baseline Switch 2250 Plus User Guide
- Part number: DUA16476B-SAA01
- Page 25

> **i** *Please note that we can only respond to comments and questions about 3Com product documentation at this e-mail address. Questions related to technical support or sales should be directed in the first instance to your network supplier.*

1 INTRODUCING THE BASELINE SWITCH

This chapter provides an overview of the features and capabilities of the 3Com® Baseline Switch 2250 Plus. It also identifies the contents of the Switch package and helps you get to know the physical features of the device.

Overview of the Baseline Switch 2250 Plus

The 3Com® Baseline Switch 2250 Plus is a versatile, easy-to-use unmanaged switch. It is ideal for users who want the high-speed performance of 10/100 switching with the added functionality of Gigabit links but do not need sophisticated management capabilities.

The Switch is shipped ready for use. No configuration is necessary, unless you want to configure advanced features such as VLAN support and link aggregation.

Features and Capabilities

The Switch has 48 shielded RJ-45, 10/100 Mbps auto-negotiating ports and two 10/100/1000BASE-T ports that operate in conjunction with two Small Form Factor Pluggable (SFP) transceiver slots on the front panel. Use these SFP transceiver slots for easy, flexible connection to fiber-based Gigabit media.

While there are four physical Gigabit ports, only a maximum of two can be operational at any given time.

Autosensing of MDI/MDIX Connections

All ports on the Switch can autosense both medium dependent interface (MDI) and medium dependent interface crossover (MDIX) connections. This allows you to connect network devices to each port using either a normal straight-through TP (twisted pair) cable or a 'crossover' TP cable.

Any port can therefore be used to connect to another switch port, server, or workstation without additional configuration.

Autonegotiating 10/100 Mbps Ports

Each 10/100 Mbps port automatically determines the speed and duplex mode of the connected equipment and provides a suitable switched connection. The 1000BASE-T ports also support automatic 10/100/1000 Mbps speed detection.

The 10/100 Mbps connections on these 1000BASE-T ports operate in full-duplex mode.

SFP Ports

The two SFP ports support fiber Gigabit Ethernet short-wave (SX) and long-wave (LX) SFP transceivers in any combination. This offers you the flexibility of using SFP transceivers to provide connectivity between the Switch and a 1000 Mbps core network. When an SFP port is in operation, the corresponding 10/100/1000BASE-T port is disabled.

Traffic Prioritization

The Switch offers priority queuing, which means all packets that are received are examined to see if they have been priority encoded. If a packet has been priority encoded, then the Switch will read the priority level and determine whether the packet should be directed through the normal or high priority channel. This feature is useful during excessive loads when one type of traffic may require priority over another. The Switch is configured to comply with 802.1p, VLAN tagged frames.

Traffic prioritization ensures that high priority data is forwarded through the Switch without being delayed by lower priority data. It differentiates traffic into classes and prioritizes those classes automatically. Traffic prioritization uses the multiple traffic queues that are present in the hardware of the Switch to ensure that high priority traffic is forwarded on a different queue from lower priority traffic, and is given preference over that traffic. This ensures that time-sensitive traffic gets the highest level of service. The 802.1D standard specifies eight distinct levels of priority (0 to 7), each of which relates to a particular type of traffic. The priority levels and their traffic types are shown in the following table.

Table 3   Priority Levels for Traffic Types

Priority Level	Traffic Type
0	Best effort
1	Background
2	Standard (spare)
3	Excellent effort (business critical)
4	Controlled load (streaming multimedia)
5	Video (interactive media), less than 100 milliseconds latency and jitter
6	Voice (interactive voice), less than 10 milliseconds latency and jitter.
7	Network control reserved traffic

Forwarding of BPDU Packets

Within an extended local area network that implements a spanning tree protocol topology, switches communicate with each other using bridge protocol data unit (BPDU) packets.

If your network is implementing a spanning tree topology across multiples switches, you can configure 3Com Baseline Switch 2250 Plus to forward or to block and discard bridge protocol data unit (BPDU) packets to another switch. Switches that support the spanning tree protocol communicate with each other using BPDU packets.

The spanning tree protocol (STP) is a mechanism that prevents looping and broadcast storms. A spanning tree uses the spanning tree algorithm to detect avail-

able communication paths between switches and to determine the best available path and block less optimal paths.

For information on configuring BPDU forwarding and blocking, refer to <u>"Configuring the Spanning Tree"</u> on <u>page 41</u>.

Physical Features

<u>Figure 1</u> shows the front and rear panels of the Switch. The numbers in this diagram refer to numbered sections in <u>"Front Panel"</u> on <u>page 9</u> and <u>"Rear Panel"</u> on <u>page 12</u>.

Figure 1   Front and Rear Panels
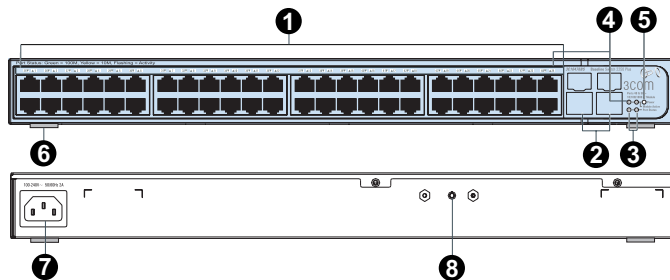
Front Panel

The front panel of the Switch contains a series of indicator lights (LEDs) that help describe the state of various networking and connection operations.

(1) 48 RJ-45 Ports

WARNING: *RJ-45 Ports. These are shielded RJ-45 data sockets. They cannot be used as standard traditional telephone sockets, or to connect the unit to a traditional PBX or public telephone network. Only connect RJ-45 data connectors, network telephony systems, or network telephones to these sockets.*

Either shielded or unshielded data cables with shielded or unshielded jacks can be connected to these data sockets.

AVERTISSEMENT: *Points d'accès RJ-45. Ceux-ci sont protégés par des prises de données. Ils ne peuvent pas être utilisés comme prises de téléphone conventionnelles standard, ni pour la connection de l'unité à un réseau téléphonique central privé ou public. Raccorder seulement connecteurs de données RJ-45, systèmes de réseaux de téléphonie ou téléphones de réseaux à ces prises.*

Il est possible de raccorder des câbles protégés ou non protégés avec des jacks protégés ou non protégés à ces prises de données.

WARNHINWEIS: *RJ-45-Porte. Diese Porte sind geschützte Datensteckdosen. Sie dürfen weder wie normale traditionelle Telefonsteckdosen noch für die Verbindung der Einheit mit einem traditionellem privatem oder öffentlichem Telefonnetzwerk gebraucht werden. Nur RJ-45-Datenanscluße, Telefonnetzsysteme or Netztelefone an diese Steckdosen anschließen.*

Entweder geschützte oder ungeschützte Buchsen dürfen an diese Datensteckdosen angeschlossen werden.

The Switch has 48 10/100 Mbps autonegotiating ports (ports 1 to 48). Their speed and duplex mode (half-duplex or full-duplex) are automatically determined by the capabilities of the connected device. Each port also supports automatic MDI/MDI-X detection and can be connected to either a 10BASE-T, or a 100BASE-TX device.

⚠ *CAUTION: The Switch supports full-duplex autonegotiation. If the connected device does not support autonegotiation, the Switch will operate in half-duplex mode (even if the attached device is operating in full-duplex mode).*

In such a configuration, you may notice some degradation of network performance. 3Com recommends that you use devices that are capable of autonegotiation (and that you ensure that autonegotiation is enabled, if it is a configurable option). (see "Troubleshooting" *on* page 43*).*

(2) 10/100/1000BASE-T/SFP Ports

Ports 49 and 50 are combination Gigabit RJ-45 ports with shared Small Form Factor Pluggable (SFP) transceiver slots. If an SFP transceiver (purchased separately) is installed in a slot and is active, the associated RJ-45 port of the same number is disabled.

The 1000BASE-T RJ-45 ports support automatic MDI/MDI-X operation, so you can use straight-through or crossover cables for all network connections to workstations or servers, or to other switches or hubs.

The two SFP ports support fiber Gigabit Ethernet short-wave (SX) and long-wave (LX) SFP transceivers in any combination. This offers you the flexibility of using SFP transceivers to provide connectivity between the Switch and remote 1000 Mbps workgroups or to create a high-capacity aggregated link backbone connection.

ℹ *SFP ports are numbered 49 and 50 on the Switch. When an SFP port is active, it has priority over the 10/100/1000 port of the same number. The corresponding 10/100/1000 port is disabled when an SFP transceiver is plugged in.*

(3) Link/Activity LEDs

The following tables describe the LEDs visible on the front of the Switch, and how to read their status according to color.

Table 4   10BASE-T/100BASE-TX Ports

Status	Meaning
Green	Link established, operating at 100 Mbps
Yellow	Link established, operating at 10 Mbps

Status	Meaning
Flashing	Packets are being received or transmitted on the port
Off	Link not established, either nothing is connected to the port, or there is a problem. ■ Verify that the attached device is powered on ■ Verify that the cable or fiber is the correct type and is not faulty ■ For fiber connections, ensure that the receive (RX) and transmit (TX) cable connectors are not swapped If these checks do not identify the cause of the problem, it may be that the unit or the device connected to the port is faulty. Contact your 3Com network supplier for further advice.

Table 5   10BASE-T/100BASE-TX/1000BASE-T Ports

Status	Meaning
Green	Link established, operating at 1000 Mbps
Yellow	Link established, operating at 10 or 100 Mbps
Flashing Green	Packets are being received or transmitted on the port at 1000 Mbps
Flashing Yellow	Packets are being received or transmitted on the port at 10 or 100 Mbps

Status	Meaning
Flashing Yellow to Green	Port disabled or link loopback error
Off	Link not established, either nothing is connected to the port, or there is a problem. ■ Verify that the attached device is powered on ■ Verify that the cable or fiber is the correct type and is not faulty ■ For fiber connections, ensure that the receive (RX) and transmit (TX) cable connectors are not swapped If these checks do not identify the cause of the problem, it may be that the unit or the device connected to the port is faulty. Contact your 3Com network supplier for further advice.

(4) Module Active LEDs

The Module Active LEDs show the status of any SFP modules that are installed.

Status	Meaning
Green	Fiber SFP is inserted in the slot
Off	No fiber SFP is inserted in the slot

(5) Power LED

The Power LED shows the power status of the Switch.

Status	Meaning
Green	The unit is powered on and ready for use

Off	The unit is not receiving power:
	■ Verify that the power cord is connected correctly
	■ If the unit still does not operate, contact your 3Com network supplier
Flashing Green	■ Power-on self-test is in progress
Yellow	■ Power-on self-test or loopback test failed. If this occurs, reset the Switch to factory defaults. Refer to "Resetting to Factory Defaults"

(6) Self-Adhesive Pads

The unit is supplied with four self-adhesive rubber pads.

i *Do not apply the pads if you intend to rack-mount the unit.*

If the unit is to be part of a free-standing stack, apply the pads to each marked corner area on the underside of the unit. Place the unit on top of the lower unit, ensuring that the pads locate with the recesses of the lower unit.

Rear Panel

(7) Power Supply

The Switch automatically adjusts to the supply voltage. Only use the power cord that is supplied with the unit.

(8) Recovery Button

Use the Recovery button on the rear panel to reset the Switch to its factory defaults. For more information, refer to "Resetting to Factory Defaults" on page 43.

Package Contents

The 3Com Baseline Switch 2250 Plus package includes the following items:

■ One 3Com Baseline Switch 2250 Plus unit

■ One power cord

■ Four standard height, self-adhesive rubber pads

■ One mounting kit

■ One CD-ROM, which contains this *User Guide* and the 3Com Discovery application

■ One warranty flyer

Before installing and using the Switch, verify that your Switch package has all these items. If any of the above items are damaged or missing, contact your 3Com network supplier immediately.

2 INSTALLING THE SWITCH

This chapter contains information that you need to install and set up the Switch. It covers the following topics:

- Positioning the Switch
- Rack-Mounting or Free-Standing
- Supplying Power to the Switch
- Connecting a Network Device
- Connecting a Network Device
- Performing Spot Checks

Before You Begin

⚡ *WARNING: Safety Information. Before installing or removing any components from the Switch or carrying out any maintenance procedures, read the safety information provided in* Appendix B *of this guide.*

⚡ *AVERTISSEMENT: Consignes de sécurité. Avant d'installer ou d'enlever tout composant du Switch ou d'entamer une procédure de maintenance, lisez les informations relatives à la sécurité qui se trouvent dans* Appendix B *(l'Appendice B) de ce guide.*

⚡ *WARNHINWEIS: Sicherheitsinformationen. Bevor Sie Komponenten aus dem Switch entfernen oder dem Switch hinzufuegen oder Instandhaltungsarbe-*

iten verrichten, lesen Sie die Sicherheitsanweisungen, die in Appendix B *(Anhang B) in diesem Handbuch aufgefuehrt sind.*

Positioning the Switch

The Switch is suitable for use in an office environment where it can be free-standing or mounted in a standard 19-inch equipment rack.

Alternatively, the Switch can be rack-mounted in a wiring closet or equipment room. A mounting kit, containing two mounting brackets and four screws, is supplied with the Switch.

When deciding where to position the Switch, ensure that:

- It is accessible and cables can be connected easily.
- Cabling is away from sources of electrical noise. These include lift shafts, microwave ovens, and air conditioning units. Electromagnetic fields can interfere with the signals on copper cabling and introduce errors, therefore slowing down your network.
- Water or moisture cannot enter the case of the unit.
- Air flow around the unit and through the vents in the side of the case is not restricted (3Com recom-

mends that you provide a minimum of 25 mm or 1 in. clearance).

- The air is as free of dust as possible.

- Temperature operating limits are not likely to be exceeded. It is recommended that the unit is installed in a clean, air conditioned environment.

i *It is always good practice to wear an anti-static wrist strap when installing network equipment, connected to a ground point. If one is not available, try to keep in contact with a grounded rack and avoid touching the unit's ports and connectors, if possible. Static discharge can cause reliability problems in your equipment.*

Aufstellen des Switch

Bei der Entscheidung wo Sie den Switch positionieren, stellen Sie sicher das:

- Der Switch zugänglich ist und die Kabel leicht angeschlossen werden können.

- Die Kabel nicht in der nähe von elektrischen Störquellen befinden. Das schließt Aufzugsschächte, Mikrowellen und Klimaanlagen ein. Elektromagnetische Felder können die Signale in den Kupferleitungen stören, und Fehler verursachen, was die Verlangsamung Ihres Netzwerkes zur Folge haben kann.

- Weder Wasser noch Feuchtigkeit in das Gehäuse eindringen kann.

- Die Luftzirkulation um den Switch und durch die Öffnungen des Gehäuses nicht behindert wird.

3Com empfiehlt das Sie 25mm (1 Inch) Zwischenraum sicherstellen.

- Die Luft so frei wie möglich von Staub ist.

- Es unwahrscheinlich ist das die Betriebstemperatur überschritten wird. 3Com empfiehlt das Sie den Switch in einer sauberen, klimatisierten Umgebung installieren.

Rack-Mounting or Free-Standing

The unit can be mounted in a 19-inch equipment rack using the supplied mounting kit, (see <u>"Using the Mounting Kit"</u> on <u>page 14</u>), or it can be free-standing. Do not place objects on top of the unit or stack.

! *CAUTION: If installing the Switch in a free-standing stack of different size Baseline or SuperStack® 3 units, the smaller units must be installed above the larger ones. Do not have a free-standing stack of more than six units.*

Using the Mounting Kit

The Switch is supplied with two mounting brackets and four screws. These are used for rack mounting the unit. When mounting the unit, take note of the guidelines given in <u>"Positioning the Switch"</u> on <u>page 13</u>.

The Switch is 1U (1.75 in.) high and will fit in a standard 19-inch rack.

! *CAUTION: Before continuing, disconnect all cables from the unit. Remove the self-adhesive pads from the underside of unit, if already fitted.*

To rack-mount the Switch:

1 Place the unit the right way up on a hard, flat surface with the front facing towards you.

2 Locate a mounting bracket over the mounting holes on one side of the unit.

3 Insert the two screws supplied in the mounting kit and fully tighten with a suitable screwdriver.

Figure 2 Inserting the Screws
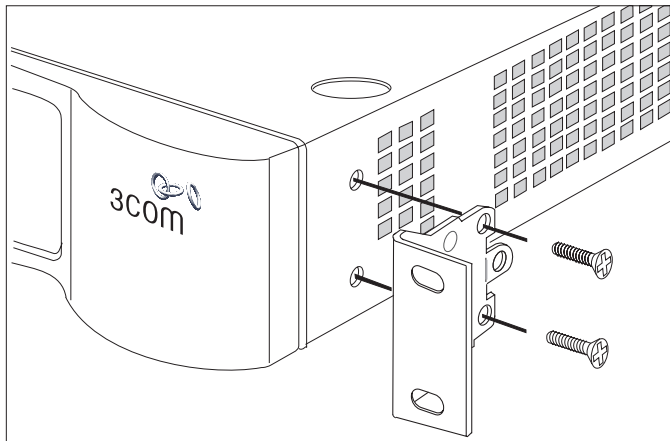
4 Repeat the two previous steps for the other side of the unit.

5 Insert the unit into the 19-inch rack and secure with suitable screws (not provided). Ensure that the ventilation holes are not obstructed.

6 Reconnect the network cables.

Montagesatz Anweisungen

Der Switch wird mit zwei Halterungen und vier Schrauben geliefert. Diese werde für den Einbau in einen Baugruppenträger benutzt. Bei der Montage der Baugruppe beachten Sie die Anweisungen aus "Aufstellen des Switch".

Der Switch ist eine Baueinheit hoch und passt in einen Standard 19'' (Zoll) Baugruppenträger.

⚠ *ACHTUNG: Entfernen Sie alle Kabel, bevor Sie fortfahren. Entfernen Sie die selbstklebenden Polster (Füße) von der Unterseite der Baugruppe, falls diese bereits angebracht sind.*

1 Plazieren Sie die Baugruppe aufrecht auf einer harten, ebenen Fläche mit der Vorderseite zu Ihnen.

2 Ordnen Sie eine der Halterungen über den Löchern an der Seite der Baugruppe an.

3 Stecken Sie zwei der mitgelieferten Schrauben in die Löcher und drehen Sie diese mit einem geeigneten Schraubendreher fest.

4 Widerholen Sie letzten beiden Schritte auf der anderen Seite der Baugruppe.

5 Führen Sie die Baugruppe in den 19" (Zoll) Baugruppenträger ein und sichern sie die Baugruppe mit geeigneten Schrauben. (Nicht im Lieferumfang enthalten.)

6 Schließen Sie alle Kabel wieder an.

Placing Units On Top of Each Other

If the Switch units are free-standing, up to four units can be placed one on top of the other. If you are

mixing a variety of Baseline and SuperStack units, the smaller units must be positioned at the top.

If you are placing Switch units one on top of the other, you must use the self-adhesive rubber pads supplied. Apply the pads to the underside of each Switch, sticking one in the marked area at each corner. Place the Switch units on top of each other, ensuring that the pads of the upper unit line up with the recesses of the lower unit.

Supplying Power to the Switch

Power problems can be the cause of serious failures and downtime in your network. Ensure that the power input to your system is clean and free from sags and surges to avoid unforeseen network outages. 3Com recommends that you install power conditioning, especially in areas prone to black outs, power dips and electrical storms.

The unit is intended to be grounded. Ensure it is connected to earth ground during normal use. Installing proper grounding helps to avoid damage from lightning and power surges.

Before powering on the Switch, verify that network cables and the power cable are securely connected.

CAUTION: *The Switch has no ON/OFF switch; the only method of connecting or disconnecting main power is by connecting or disconnecting the power cord.*

To power on the Switch:

1 Plug the power cord into the power socket on the rear panel of the Switch. Refer to "(7) Power Supply" on page 12 for more information.

2 Plug the other end of the power cord into a power outlet.

When the Switch is powered on, the Power LED lights up. If the Power LED does not light up, refer to "(5) Power LED" on page 11 for more information.

Checking for Correct Operation

After you power on the Switch, it automatically performs a power-on self-test (POST). During POST, the Power LED on the front panel of the Switch flashes green.

When POST is complete, the Power LED turns green. If the Power LED turns yellow after POST, it means that POST failed.

Table 6 summarizes the possible colors for the Power LED after POST.

Table 6   Possible Power LED Colors After POST

Color	State
Green	The unit is powered on and ready for use

Color	State
Yellow	Power-on self-test or loopback test failed. This can happen if a ports or ports fail when the Switch was powered on.
Off	The unit is not receiving power:
	■ Verify that the power cord is connected correctly, and then try powering on the Switch again
	■ If the Switch still does not operate, contact your 3Com network supplier

If POST fails, try the following:

■ Power off the Switch, and then power it on again. Check the Power LED and see if POST was successfully completed.

■ Reset the Switch. See "Resetting to Factory Defaults" on page 43.

⚠ *CAUTION: Resetting the Switch to its factory defaults erases all your settings. You will need to reconfigure the Switch after you reset it.*

If these do not resolve the issue:

■ Check the 3Com Knowledgebase for a solution. To visit the 3Com Knowledgebase Web site, start your Web browser, and then enter
http://knowledgebase.3com.com.

■ Contact your 3Com network supplier for assistance.

Connecting a Network Device

To connect a network device to the Switch, use Category 5 unshielded or shielded (screened) 100 Ohm TP cables (or Category 3 cables for 10 Mbps connections).

For optimal connections, ensure that the cable length for each connection is not longer than 100 m (328 ft).

Figure 3 Connecting Devices to the Switch
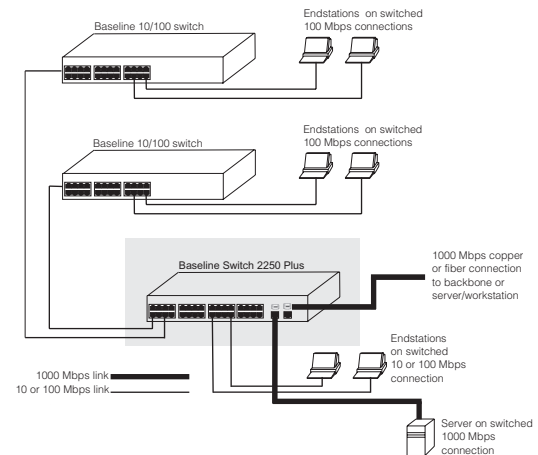
To connect a device to the Switch:

1 Connect one end of the cable to an RJ-45 port on the Switch.

2 Connect the other end to the appropriate RJ-45 port on the connecting device.

For 1000BASE-T operation, 3Com recommends using Category 5e or 6 cables.

Using SFP Transceivers

The following sections describe how to insert and remove an SFP transceiver from an SFP slot.

SFP transceivers are hot-insertable and hot-swappable. You can remove them from and insert them into any SFP port without having to power off the Switch.

Approved SFP Transceivers

The following list of approved SFP transceivers is correct at the time of publication:

■ 3CSFP91 SFP (SX)

■ 3CSFP92 SFP (LX)

To access the latest list of approved SFP transceivers for the Switch on the 3Com Corporation World Wide Web site, enter this URL into your Internet browser:

`http://www.3com.com`

3Com recommends using 3Com SFPs on the Switch. If you insert an SFP transceiver that is not supported, the Switch will not recognize it.

Inserting an SFP Transceiver

To be recognized as valid, the SFP transceiver must be one of the following:

■ 1000BASE-SX SFP transceiver – Use this transceiver to connect the Switch directly to a multimedia fiber-optic cable.

■ 1000BASE-LX SFP transceiver – Use this transceiver to connect the Switch directly to a single-mode fiber-optic cable or to multimode fiber using a conditioned launch cable.

If the SFP transceiver is faulty, it will not operate within the Switch. See

To insert an SFP transceiver:

1 Hold the transceiver so that the fiber connector is toward you and the product label is visible, as shown in Figure 4. Ensure the wire release lever is closed (in the upright position).

Figure 4 Inserting the SFP Transceiver
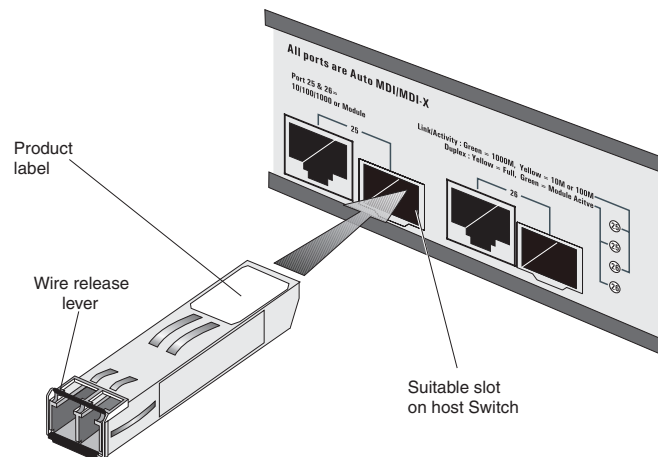
2 Gently slide the transceiver into the SFP slot until it clicks into place.

⚠️ **CAUTION:** *SFP transceivers are keyed and can be properly inserted only one way. If the transceiver does*

not click when you insert it, remove it, turn it over, and then re-insert it.

3 Remove the plastic protective cover, if fitted.

4 Connect the fiber cable.

5 The transceiver connects to the network using a duplex LC connector. Attach a male duplex LC connector on the network cable into the duplex LC connector on the transceiver.

6 Connect the other end of the cable to a device fitted with an appropriate Gigabit Ethernet connection.

7 Check the Module Active LEDs on the front of the Switch to ensure that it is operating correctly.

Removing an SFP Transceiver

Removing an SFP transceiver does not require powering off the Switch.

To remove an SFP transceiver:

1 Disconnect the cable from the transceiver.

2 Move the wire release lever downwards until it is pointing toward you.

3 Pull the wire release lever toward you to release the catch mechanism.

The SFP transceiver should slide out easily.

Performing Spot Checks

At frequent intervals, you should visually check the Switch. Regular checks can give you an early warning of a possible failure; any problems can then be attended to when there will be least effect on users.

3Com recommends periodically checking the items listed in Table 7.

Table 7   Items to Check

Item	Verify That
Cabling	All external cabling connections are secure and that no cables are pulled taut
Cooling fan	Where possible, check that the cooling fan is operating by listening to the unit. The fan is fitted near to the front right hand side of the unit (when viewed from the front).

If you experience any problems operating the Switch, refer to .

3 CONNECTING TO THE WEB INTERFACE

The Switch has a built-in Web interface that you can use to set the admin password, change the IP address that is assigned to the Switch, and configure its advanced settings.

> *If you only want the Switch to function as a basic layer 2 switch, you do not need to access the Web interface and configure the Switch.*

This chapter provides information on how the gain access to the Web interface using the Discovery application. It also introduces the menu items and buttons that are available on the Web interface.

The following topics are covered:

- Requirements for Accessing the Web Interface
- Running the Discovery Application
- Logging On to the Web Interface
- Navigating the Web Interface

Requirements for Accessing the Web Interface

To connect to the Web interface, you need the following:

- The Discovery application, which is included on 3Com Baseline Switch 2250 Plus CD-ROM that is supplied with your Switch

- A computer that is connected to the Switch and that has a Web browser

Running the Discovery Application

The 3Com Baseline Switch 2250 Plus CD-ROM contains, among others, the Discovery application.

To use Discovery to connect to the Web interface, do the following:

1 On a computer that is connected to the Switch, insert the CD-ROM into its CD drive.

Discovery should start automatically. If it does not start automatically, go to the `\Discovery` folder on the CD-ROM, and then double-click `discovery.exe`.

The Welcome screen of Discovery appears.

Figure 5   Welcome Screen of Discovery
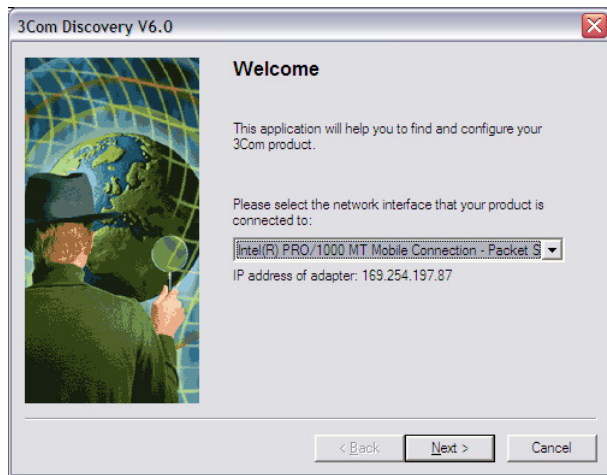
2   If the computer has multiple network adapters, select the adapter that connects the computer to the Switch, and then click *Next*.

If the computer has only one adapter, click *Next*.

Discovery searches the network for 3Com devices. When detection is complete, the Discovered Devices screen displays detected network devices.

Figure 6   Discovered Devices Screen
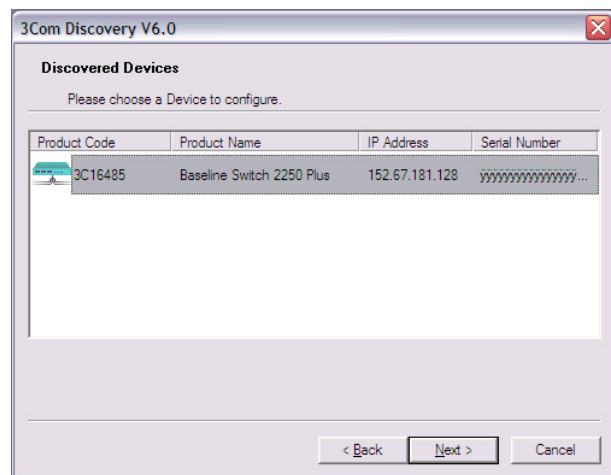
3   On the Discovered Devices screen, click *Baseline Switch 2250 Plus*, and then click *Next*.

The Completing the 3Com Discovery Application screen appears.

4   Click *Finish*.

The logon dialog box for the Web interface appears.

Logging On to the Web Interface

On the log on dialog box, enter the administration user name and password to gain access to the Web interface.

Figure 7   Logon Dialog Box
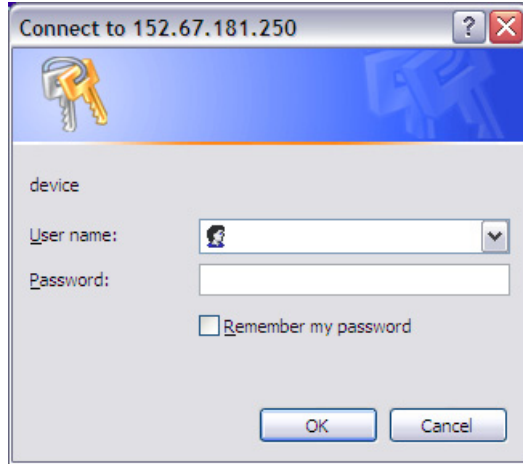
To log on to the Web interface:

1 In *User name*, type **admin**.

2 Leave the *Password* field blank.

3 Click *OK*.

Navigating the Web Interface

The Web interface has been designed to enable you to easily perform advanced configuration tasks and view information about the Switch.

Menu

The menu is located on the left side of the Web interface. When you click an item on the menu, the related screen appears in the main part of the interface.

Figure 8   Switch Screen Layout

Buttons

Menu   Port Status
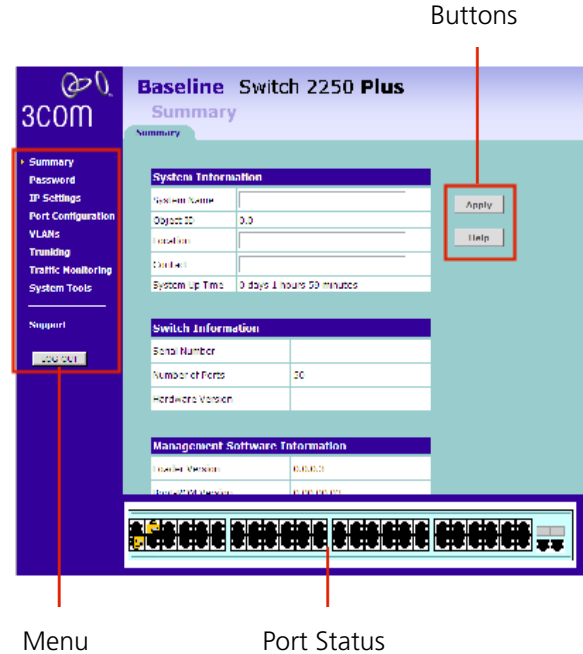
Table 8 lists the available items on the menu.

Table 8   Available Menu Items

Menu Item	Description
Summary	Provides a summary of the Switch's basic settings and versions of current components
Password	Allows you to change the administrator password
IP Settings	Allows you to configure the IP address settings of the Switch

Menu Item	Description
Port Configuration	Allows you to configure the Switch's port settings
VLANs	Allows you to create VLAN groups, add port members, and specify how VLAN tagging is used
Trunking	Allows you to set up and maintain trunk membership for port groups
Traffic Monitoring	Allows you to perform port traffic monitoring on the Switch. To monitor a port, you will also need a network analyzer.
System Tools	Contains tabs that allow you to: ■ Restart and reset the Switch ■ Back up and restore configuratio ■ Upgrade the firmware ■ Configure forwarding of BPDU packets to support a spanning tree topology ■ Enable and disable 802.1p prioritization
Support	Displays 3Com contact information and describes how to use the online help system
Log Out	Allows you to securely log off the Web interface

Buttons

Depending on the screen that is currently displayed, the following buttons may appear:

■ *Apply* – Click to save and apply any changes that you have made

■ Cancel – Click to discard any unsaved changes

■ *Help* – Click to display the context-sensitive help information for the screen that is currently displayed. The help pages provide information on the tasks that you can perform on each screen.

Port Status

At the bottom of each screen is an image of the Switch's front panel, which indicates ports that are currently in use.

To configure a port, click the port on the image. This takes you to the Basic Port Configuration tab, where you can:

■ Assign a name (or label) to the port

■ Enable or disable the port

■ Enable or disable flow control

■ Configure the speed duplex settings

Accessing the Interface Without Using Discovery

The Discovery application works by automatically detecting the IP address that is assigned to the Switch, and then using that address to connect to the Web interface. If you know the Switch's IP address, you can access the Web interface without using Discovery.

This section describes how to access the interface directly, without using Discovery.

DHCP Assigned IP Address

If you set the IP address mode to DHCP, check the DHCP server for the IP address that is assigned to the Switch, and then use that IP address to access the Web interface.

For example, if the DHCP server assigned the IP address 192.168.0.123 to the Switch, start your Web browser, and then type `http://192.168.0.123`.

Manually Assigned (Static) IP Address

If you assigned a static IP address to the Switch, you need to use that IP address to access the Web interface the next time you want to configure the Switch.

For example, if you assigned the Switch the IP address 192.168.0.123, start your Web browser, and then type `http://192.168.0.123`.

4 CONFIGURING THE SWITCH

This chapter provides information on how to configure the Switch's advanced features. Topics include:

- Viewing Summary Information
- Changing the Admin Password
- Modifying the IP Address Settings
- Configuring Port Settings
- Configuring VLANs
- Configuring Trunking
- Monitoring Traffic
- Using the System Tools

Configuration Overview

The Switch is shipped ready for use. If you only want the Switch to function as a basic layer 2 switch, you do not need to access the Web interface and configure the Switch.

You only need to access the Web interface if you want to:

- Set the administration password to the Web interface
- Assign an IP address to the Switch
- Configure the Switch's advanced features

- Upgrade the firmware

Viewing Summary Information

The Summary screen, which automatically loads after you log on to the Web interface, provides a snapshot of the Switch's basic settings and versions of current components.

Information that you can view on the Summary screen include:

- System Information — Contains optional fields that you can fill out to identify the Switch. It also shows the object ID and the time elapsed since the Switch was last started. After you update any of the editable fields in this section, click *Apply* to save your changes.
- Switch Information – Shows the serial number, total number of ports, and the version of the hardware (board) on the Switch
- Management Software Information – Shows the versions of the loader (firmware), boot ROM, and code
- IP Information – Shows the IP address settings of the Switch. To modify any of these settings, click *IP Settings*. This takes you to the IP Settings screen, as shown in Figure 11.

Figure 9   Top Half of the Summary Screen

System Information		
System Name		
Object ID	0.0	
Location		
Contact		
System Up Time	0 days 1 hours 59 minutes	

Switch Information	
Serial Number	
Number of Ports	50
Hardware Version	

Management Software Information	
Loader Version	0.0.0.3
Boot-ROM Version	0.00.00.03

If you request for technical assistance from 3Com Support, you may be asked to print out the information on this screen.

Changing the Admin Password

To prevent unauthorized users from accessing the Web interface and modifying the Switch's settings, the interface is password-protected.

The default admin account settings are:

- User name – `admin`
- Password – blank (no password)

To ensure that unauthorized users do not access the Web interface, 3Com recommends that you set an admin password when you first configure the Switch.

ⓘ *Even if you do not intend to actively manage the switch, 3Com recommends that you change the password to prevent unauthorized access to your network.*

Figure 10   Change Administration Password Screen

Change Administration Password	
Old Password	
New Password	
Confirm Password	
Note: Password is case sensitive.	

To set the admin password:

1 On the menu, click *Password*. The Change Administration Password screen appears.

2 In *Old Password*, type your current password.

By default, the Switch does not have any password. If this is your first time to access this screen or if you have not previously set a password, leave this field blank.

3 In *New Password*, type the password that you want to set.

4 In *Confirm Password*, retype the password you typed in step 3 to confirm.

The password is case-sensitive.

5 Click *Apply*.

If you want to modify the admin password later on, follow the same procedure.

If you forget the administration password after you set it, refer to "Forgotten Password" *on* page 43 *for information on how to regain access to the Web interface.*

Modifying the IP Address Settings

To enable devices on the network to communicate with the Switch, you need to assign an IP address to it — either by DHCP or by assigning a static IP address.

By default, the Switch performs automatic IP configuration and assigns an IP address to itself. This is necessary for the Discovery application to be able to connect to the Web interface.

Automatic IP Configuration

When you power on the Switch for the first time, it automatically uses the default IP address 169.254.x.y, where x and y are the last two bytes of its MAC address.

To determine the exact IP address that the Switch assigns to itself during auto IP configuration, check the sticker on the base of the Switch. This sticker contains the MAC address and default IP address of the Switch.

To detect its IP information using the automatic configuration process, the Switch goes through the following sequence of steps:

1 The Switch tries to configure itself with the default IP address 169.254.x.y, where x and y are converted from the last two bytes of its MAC address.

For example, if the MAC address is 08004E000102, the IP address would be 169.254.1.2. This address is used if the Switch is operating in a standalone mode, or no other switches on the network have this IP address.

The Switch also assigns the subnet mask 255.255.0.0 (default class B mask) to itself.

2 If this default IP address is already in use on the network, then the Switch detects this, and increments the last byte of the MAC address by one to generate its IP address.

The IP address would therefore become 169.254.1.3.

3 The Switch repeats step 2 until an unused IP address is found.

3Com recommends using automatic IP configuration only for the initial setup. Once you gain access to the console, you should assign an IP address to the Switch (either by using DHCP or assigning a static IP address) to ensure successful communication between the Switch and other network devices.

Setting the IP Address

To set the IP address for the Switch:

1 Click *IP Settings* on the menu. The IP Settings screen appears.

Figure 11   IP Settings Screen

2 Configure the Switch's IP settings. Available options are listed in Table 9.

Table 9   IP Setting Options

Option	Description
IP Address Mode	Specify how the Switch will get its IP address. Available options include:
	■ DHCP – Select this option if you have a DHCP server on the network and you want the Switch to automatically obtain an IP address from it
	■ Static – Select this option if you want to manually assign an IP address to the Switch
IP Address	Specify an IP address that you want to assign to the Switch. This option is only available if *IP Address Mode* is set to *Static*.
	The IP address that is assigned to the Switch also becomes the IP address for VLAN 1.
Subnet Mask	Specify a subnet mask address that you want to assign to the Switch. This option is only available if *IP Address Mode* is set to *Static*.
	The default subnet mask is `255.255.0.0`.
Default Gateway	Specify the IP address of the gateway router between this Switch and management stations on other network segments. This option is only available if *IP Address Mode* is set to *Static*.
MAC Address	Read-only field that displays the Switch's MAC or physical address

3 After you configure the Switch's IP address settings, click *Apply* to save your changes.

Configuring Port Settings

Using the Web interface, you can configure the speed/duplex and flow control settings of each port. You can also view the current connection status of each port or shut down or disable ports.

Two tabs are available on the Port Configuration page:

- Basic Port Configuration
- Advanced Port Configuration

Basic Port Configuration

Use the Basic Port Configuration tab to enable and disable the port and its flow control settings and to set the speed/duplex of the port.

The following options are available:

- Number – Physical port number

- Label – Optional name for the port to help you identify the device connected to it. For example, if an access point is connected to this port, you can label it as Access Point.

- Status – Enables and disables the port

- Flow Control – Enables and disables flow control on the port. When flow control is enabled for the port, the Switch regulates the packet flow so that a sending device does not transmit more packets than a receiving device can process. If flow control is disabled, packets may be dropped under certain periods of high traffic.

  Flow control is enabled by default.

- Speed Duplex – Sets the speed and duplex mode of the port. Available options include auto, 10 half-duplex, 10 full-duplex, 100-half duplex, and 100 full-duplex. For 1000 Mbps connections, see "Speed/Duplex for 1000 Mbps Connections" below.

  Auto (or autonegotiation), which is enabled by default, sets the optimum combination of speed and duplex that can be supported by both ends of the link.

If you modify any of these settings, click *Apply* to save your changes.

Figure 12 Basic Port Configuration Screen

Speed/Duplex for 1000 Mbps Connections

You cannot preset the speed to 1000Mbps. To run a port at 1000Mbps, you must enable autonegotiation for the port. When autonegotiation is enabled, the

Switch will automatically connect at 1000Mbps, providing the connected device also supports this speed.

1000Mbps connections are always full-duplex. Half-duplex connections are only available for 10Mbps and 100Mbps settings.

CAUTION: Before manually setting a port to full-duplex, verify that the device connected to the port is also manually set to the same speed and duplex setting. If connecting link partners are left to autonegotiate for a link manually set on this switch to full-duplex, they will always negotiate to half-duplex, resulting in a duplex mismatch. This can result in a significant reduction in network performance. If you are unsure of how to configure the speed/duplex setting, simply enable autonegotiation for the port.

You cannot modify the speed/duplex settings of ports that are members of a trunk or aggregated link.

Supported SFP transceivers only operate at 1000Mbps full-duplex. Inserting an SFP transceiver into a gigabit port disables the corresponding RJ-45 port, even if no fiber cable is inserted.

Advanced Port Configuration

Use the Advanced Port Configuration tab to set the Switch's broadcast storm control and threshold limits. A broadcast storm is an incorrect packet sent out on a network that causes most hosts to respond all at once, typically with wrong answers that start the process over again. Broadcast storms use substantial network bandwidth and may cause network time-outs.

Advanced settings include:

- Broadcast Storm Control – Enables and disables broadcast storm control
- Packet Rate Threshold – Sets the broadcast storm threshold (64 to 95232000 bytes per packet)

Figure 13   Advanced Port Configuration Screen
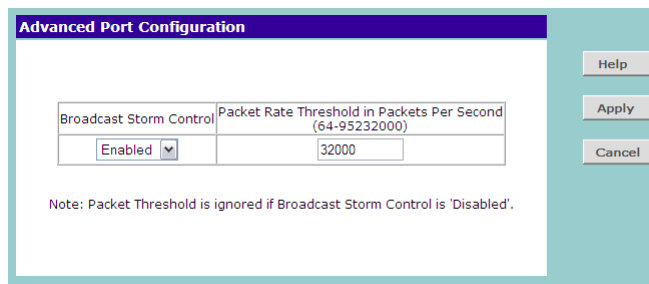
Default Port Settings

If you do not configure the Switch's port settings, the ports will use the following default settings:

- All ports are enabled
- Autonegotiation is enabled
- Flow control is enabled
- All ports are set to priority zero

Configuring VLANs

You can use the Switch to create VLANs to organize any group of ports into separate broadcast domains. VLANs confine broadcast traffic to the originating group and help eliminate broadcast storms in large

networks. This also provides for a more secure and cleaner network environment.

You can create up to 256 VLANs, add specific ports to a chosen VLAN (so that the port can only communicate with other ports on the VLAN), or configure a port make it a member of all VLANs.

Communication between different VLANs can only take place if they are all connected to a router or layer 3 switch.

Creating a VLAN

Use the Create VLANs screen to create VLANs on the Switch. To propagate information about VLAN groups used on this Switch to external devices, you must specify a VLAN ID for each VLAN.

Figure 14   Create VLANs Screen

Available options on the Create VLAN screen include:

■ VLAN ID – ID of configured VLAN (1-4094, no leading zeroes)

■ Name – Name of the VLAN (1 to 32 characters)

For examples on setting up VLANs, refer to "Sample VLAN Configurations".

CAUTION: At least one port must always be a member of VLAN 1 (the management VLAN). If you choose to connect all ports to VLANs other than VLAN 1, you will no longer be able to access the Web interface. If this happens, you will need to reset the Switch to factory settings.

By default, all ports belong to VLAN 1.

Deleting VLANs

Use the Delete screen to remove a VLAN group from the current list.

Figure 15   Delete Screen

■ VLAN ID – ID of the VLAN to be deleted. If any port is assigned to this group as untagged, it will be reassigned to VLAN group 1 as untagged.

Modifying VLANs

Use the Modify VLAN screen to change the VLAN to which a port belongs, and configure the port to communicate with all other VLANs, or a selected VLAN.

Figure 16   Modify VLANs Screen
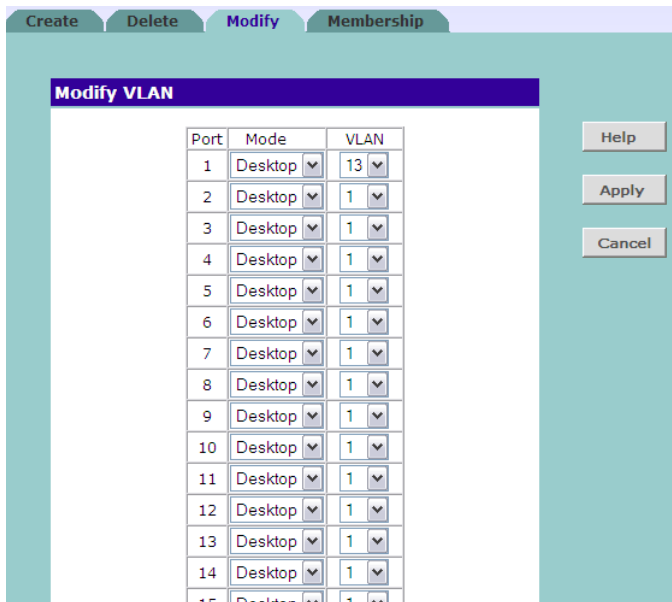
- Port – Displays the port number
- Mode – The mode option determines if the port can communicate with all VLANs, or only with a selected VLAN
- Uplink – If you select this, the port is able to communicate with all VLANs on the Switch

- Desktop - If you select this, the port can only communicate with other ports assigned to the VLAN selected in the VLAN ID drop-down list.

An uplink port is sometimes referred to as a tagged port. The two terms refer to the same feature.

- VLAN ID – Enter the ID of the configured VLAN to which you want this port to belong

Defining VLAN Membership

Use the Membership screen to configure port members for the selected VLAN.

Figure 17   Membership Screen
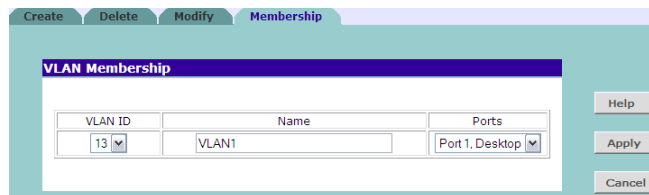
- VLAN ID – ID of the configured VLAN (1-4094, no leading zeroes)
- Name – Name of the VLAN (1 to 32 characters)
- Ports – Port identifier

Sample VLAN Configurations

To illustrate how you can segment network devices that are connected to the Switch, the following sample configurations are provided.

Setting Up Two VLANs on the Same Switch

Figure 18 illustrates how you can set up a simple VLAN on the Switch using desktop connections.

Figure 18   Desktop VLAN Configuration

Endstations
in VLAN 2

Endstations
in VLAN 1

Port 1

Port 3

Baseline Switch 2250 Plus

Port 26

Server
in VLAN 2

Server
in VLAN 1
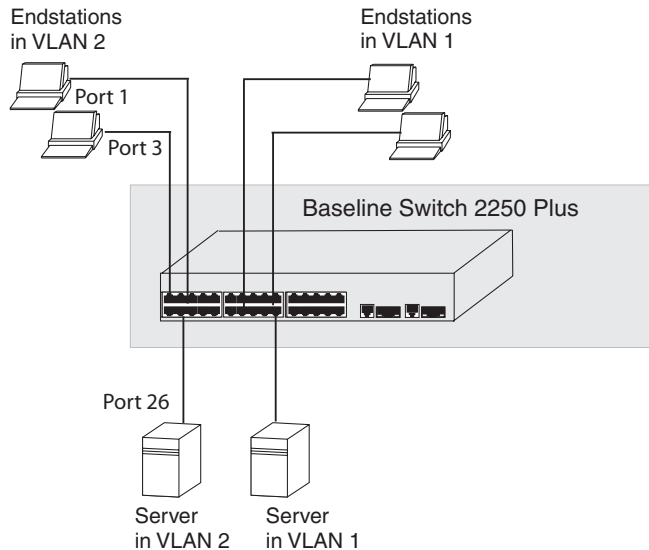
If you want to add ports 1, 3, and 26 to VLAN2 (as shown in Figure 18), so that the ports on the default VLAN1 and the ports on VLAN2 cannot communicate with each other, do the following:

1 Create a new VLAN and set the VLAN ID to 2. Refer to "Creating a VLAN" for instructions. VLAN1 is the default VLAN and already exists.

2 Set ports 1, 3, and 26 to *Desktop* mode.

3 Click *Apply.*

Ports 1, 3, and 26 now belong to VLAN2, and will not communicate with any other ports, unless you add other ports to the VLAN or change the port configuration.

Setting Up VLAN Across Two Switches

This example explains how you can set up a VLAN across two Switches using uplink connections. This enables ports that are members of the same VLAN (but are on different switches) to communicate, provided that a port on each Switch is set to uplink, and that these ports are connected.

Figure 19   Uplink VLAN Configuration
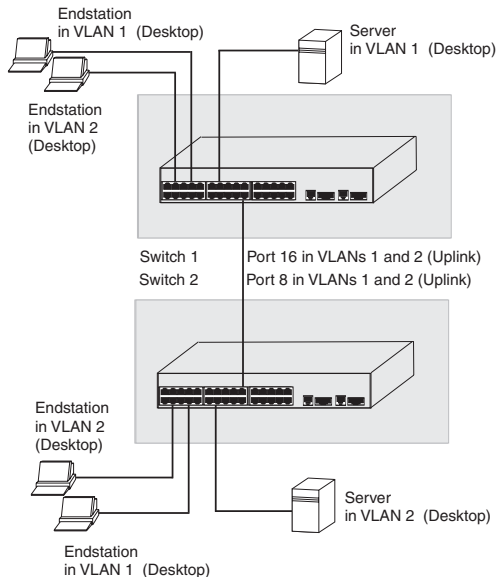
To set up the configuration shown in Figure 19, do the following:

1 Create VLAN2 on both Switch 1 and Switch 2, and assign the same name to it. You need not create VLAN1 since it exists by default.

2 On Switch 1, set the ports that you want to be part of VLAN2 to *Desktop* mode. Set one port (for example, port 16) to *Uplink* mode.

Click *Apply.*

3 On Switch 2, set the ports that you want to be part of VLAN2 to *Desktop* mode. Set one port (for example, port 8) to *Uplink* mode.

Click *Apply.*

4 Connect the uplink port on Switch 1 (in this example, port 16) to the uplink port on Switch 2 (in this example, port 8).

Those ports on Switch 1 that are members of VLAN2 can now communicate with those ports on Switch 2 that are members of VLAN2.

Configuring Trunking

Trunking, also called "link aggregation", refers to bonding multiple ports into a single group to effectively combine the bandwidth into a single connection or a "trunk". If you are connecting the Switch to another switch or to an Internet backbone, you can aggregate links on the Switch to increase throughput and prevent packet loopback between switches.

For link aggregation to work, the trunks must be configured on both ends (switches).

The Switch does not support the Link Aggregation Control Protocol (LACP), which is specified in IEEE 802.3ad.

Guidelines for Creating Trunks

- Any port on the Switch can be used for creating a trunk.

- This switch supports a maximum of four trunks.

- Each trunk may contain up to eight members.

- A port may only be a member of one trunk at any one time.

■ All ports in a trunk must be configured in an identical manner, including communication mode (that is, speed, duplex mode and flow control).

Creating, Modifying, and Deleting Trunks

Use the Modify/Delete tabe under Trunking to create, configure or remove ports groups from trunks.

Figure 20   Modify/Delete Screen
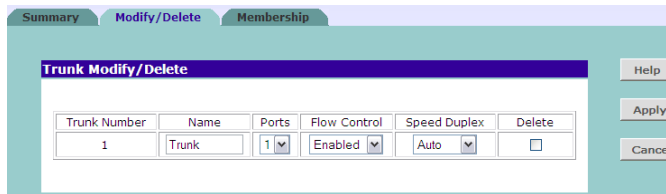
■ Trunk Number – Displays the number of the trunk.

■ Name – Allows you to label an interface. (Range: 1-64 characters)

■ Flow Control – Allows automatic or manual selection of flow control.

■ Speed Duplex – Allows auto-negotiation to be enabled or disabled. When auto-negotiation is disabled, you can force the settings for speed, duplex mode and flow control.

Defining Trunk Membership

Use the Membership screen to add ports to a group membership.

Figure 21   Membership Screen
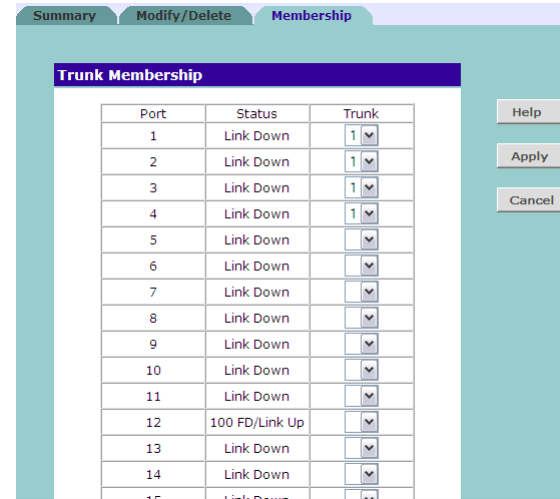
■ Port – The port number

■ Status – The status refers to the speed and duplex mode of the trunk members

■ Trunk – ID of trunk

Viewing Trunk Information

To view information on the configuration settings for the created trunks, click the Summary tab under-Trunking.

Figure 22   Summary Screen

Monitoring Traffic

The Switch allows you to monitor traffic going in and out of a particular port. For traffic monitoring to work, you need to attach a network analyzer to one port and use it to monitor the traffic of other ports in the stack.

To set up traffic monitoring, you need to set an analysis port (the port that is connected to the analyzer), and a monitor port (the port that is to be monitored). Once the pair is defined, and you enable traffic monitoring, the Switch takes all the traffic going in and out of the monitor port and copies it to the analysis port.

⚠️ *CAUTION: The analyzer port should have a higher bandwidth than the mirror port. Otherwise, the Switch may not be able to copy all traffic effectively during periods of high traffic.*

To set up traffic monitoring for a port:

1 Connect a network analyzer to a port.

2 Access the Web interface, and then click *Traffic Monitoring* on the menu. The Port Traffic Monitoring Screen appears.

3 On the *Monitor Port* menu, select the port number that you want to monitor.

4 On the *Analyzer Port* menu, select the port number to which you connected the network analyzer. Traffic to and from the port selected in *Monitor Port* will be forwarded to this port.

Figure 23   Port Traffic Monitoring Screen

ℹ️ *Only one port can be selected from the Mirror Form row, which means that you can only monitor one port at any given time.*

5 In *Mirror Type*, select the type of packet that you want to monitor.

ℹ️ *You can monitor only one type of packet at a time. Select either* TX *or* RX *from the* Mirror Type *drop-down menu.*

6 Click *Apply.*

For information on how to interpret the output on the port analyzer, refer to its accompanying documentation.

Using the System Tools

The System Tools menu includes five administration items:

- Restart
- Configuration
- Upgrade
- Spanning Tree
- 802.1p Prioritization

Restarting the Switch

Pressing the *Restart the Switch* button has the same effect as power cycling the unit. No configuration information will be lost. Restart the Switch if you are experiencing problems and you want to re-establish your Internet connection.

Figure 24   Restart Screen
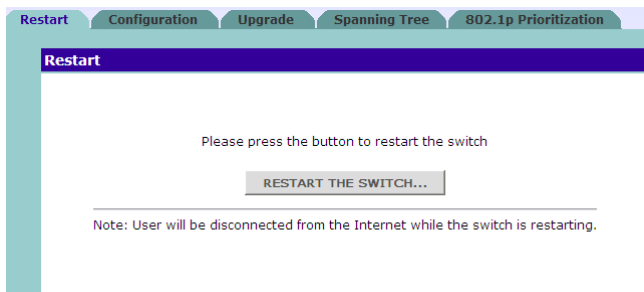
Any network users that are currently accessing the Internet will have their access interrupted while the restart takes place, and they may need to reboot their computers when the restart has completed and the Switch is operational again.

Resetting and Backing Up/Restoring Configuration

Select the Configuration tab to display the Configuration screen.

Figure 25   Configuration Screen
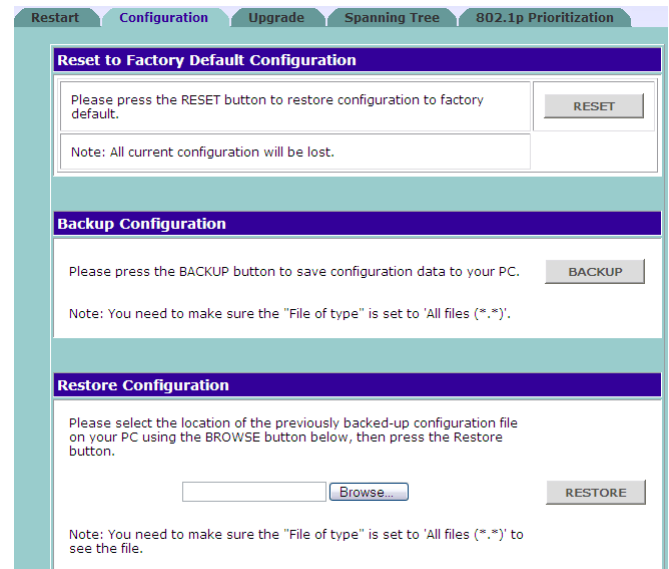
- Click *BACKUP* to save the current configurations of the Switch. You will be prompted to download and save a file to disk.

■ To reload configuration settings that you previously saved to a file, scroll down the page, and then click *Browse* to locate the backup file on your computer, and then *RESTORE* to copy the configuration back to the Switch.

For security purposes, restoring the configuration does not change the password.

■ If you want to reset the settings on your Switch to those that were loaded at the factory, click *RESET*. You will lose all your configuration changes. The Switch LAN IP address will revert to the default IP address 169.254.x.y. (see "Automatic IP Configuration" on page 29). You may need to restart your computer to re-establish communication with the Switch.

Upgrading the System Software

The Upgrade facility allows you to install on the Switch any new releases of system software that 3Com may make available.

Newer versions of software can be downloaded via HTTP and copied to the Switch; the Switch will restart and apply the newer system software version.

Figure 26   Upgrade Screen
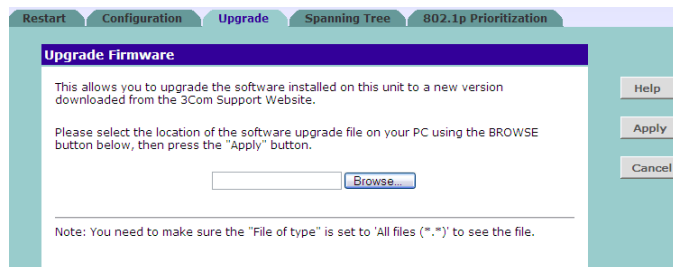
Once you have downloaded the software, use the *Browse* button to locate the file on your computer, and then click *Apply.*

ℹ️ *You may need to change the file type in the dialog box displayed by your Web browser to *.* to be able to see the file.*

The file will be copied to the Switch, and once this has completed, the Switch will restart. Although the upgrade process has been designed to preserve your configuration settings, 3Com recommends that you make a backup of the configuration beforehand, in case the upgrade process fails for any reason (for example, the connection between the computer and the Switch is lost while the new software is being copied to the Switch).

A progress screen displays while the upgrade is taking place.

The upgrade procedure can take a few minutes, and is complete when the progress bar has finished running and the Power LED has stopped flashing and is permanently green.

⚠ *CAUTION: Do not interrupt power to the Switch during the upgrade procedure. If you do, the software may be corrupted and the Switch may not start up properly afterwards.*

Configuring the Spanning Tree

This administrative tool supports the configuration of the Switch to forward, or block and discard 802.1D spanning tree BPDU packets.

Spanning tree is a bridge-based system for providing fault tolerance on networks and can be used to detect and disable network loops. The spanning tree ensures that the optimal path is maintained between spanning tree-compliant networked devices by:

- Disabling redundant paths when the main paths are operational.
- Enabling redundant paths if the main paths fail.

Spanning tree uses a distributed algorithm to select a bridging device that serves as the root of the spanning tree network. The bridging device, known as the Root Bridge, generates bridge protocol data units (BPDUs) on all ports at a regular interval known as the Hello Time. All other spanning tree-compliant devices on the network have a designated Root Port. This is the Port nearest the Root Bridge and it is used for receiving the BPDUs initiated by the Root Bridge. If a bridge does not get a Hello BPDU after a predetermined interval, the bridge assumes that the link to the Root Bridge is down. This bridge will then initiate negotiations with other bridges to reconfigure the network to reestablish a valid network topology.

After all the bridges on the network have determined the configuration of their ports, each bridge only forwards traffic between the Root Port and the ports that are the Designated Bridge Ports for each network segment. All other ports are blocked, which means that they are prevented from forwarding traffic.

Figure 27   Spanning Tree Screen
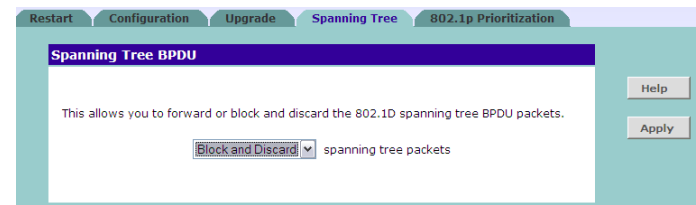
- Forward – Spanning tree BPDU packets received on a port are forwarded to all other ports
- Block and Discard – Spanning tree BPDUs received on a port are dropped. The Switch does not forward BPDUs to other ports.

The Switch does not participate as a bridge node in the spanning tree, it can only be configured to forward or block spanning tree BPDUs. If the Switch is connected to other bridging devices, such as switches, that are part of the spanning tree network, set the Switch to "Forward." If the Switch is connected only to workstations, it can be set to "Block and Discard."

802.1p Prioritization

The Switch has priority queuing enabled, which means all packets that are received are examined to see if they have been priority encoded. If a packet has

been priority encoded, then the Switch will read the priority level and determine whether the packet should be directed through the normal or high priority channel. This feature can be useful for example during excessive loads when one type of traffic may require priority over another.

The Switch is configured to comply with 802.1p, VLAN tagged frames.

Traffic prioritization ensures that high priority data is forwarded through the Switch without being delayed by lower priority data. It differentiates traffic into classes and prioritizes those classes automatically. Traffic prioritization uses the multiple traffic queues that are present in the hardware of the Switch to ensure that high priority traffic is forwarded on a different queue from lower priority traffic, and is given preference over that traffic. This ensures that time-sensitive traffic gets the highest level of service.

The 802.1D standard specifies eight distinct levels of priority (0 to 7), each of which relates to a particular type of traffic. The priority levels and their traffic types are shown in the following table.

Table 10   Priority Levels for Traffic Types

Priority Level	Traffic Type
0	Best effort
1	Background
2	Standard (spare)
3	Excellent effort (business critical)
4	Controlled load (streaming multimedia)
5	Video (interactive media), less than 100 milliseconds latency and jitter
6	Voice (interactive voice), less than 10 milliseconds latency and jitter.
7	Network control reserved traffic

The traffic prioritization feature supported by the Switch is compatible with the relevant sections of the IEEE 802.1D standard (incorporating IEEE 802.1p).

This switch uses the Weighted Round Robin (WRR) algorithm to determine the frequency at which it services each priority queue. The Switch allows you to choose between using IP Precedence or DSCP (Differentiated Services Code Point) priority. When either of these services is enabled, the priorities are mapped to a Class of Service value by the Switch, and the traffic then sent to the corresponding output queue.

Figure 28   802.1p Prioritization Screen
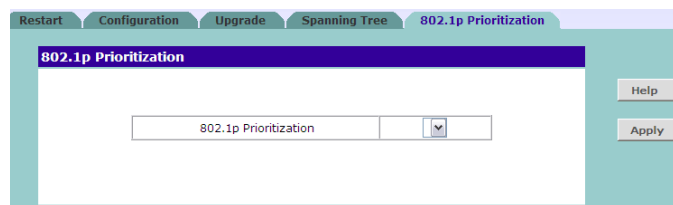
5   TROUBLESHOOTING

This chapter lists some issues that you may encounter while installing, using, and managing the Switch, with suggested courses of corrective action to take.

If you encounter an issue that is not listed here and you cannot solve it, check the 3Com Knowledgebase at `http://knowledgebase.3com.com` before contacting your local technical support representative.

For more information on how to obtain support for your Switch, refer to Appendix A.

Resetting to Factory Defaults

If the Switch does not operate normally or if the firmware becomes corrupted, you can reset the Switch to factory defaults.

⚠ *CAUTION: Resetting the Switch to factory defaults erases all your settings. You will need to reconfigure the Switch after you reset it.*

To reset the Switch to its factory defaults:

1 Using the tip of a pen (or a similar object), press the Recovery button on the rear panel of the Switch. See Figure 1 for illustration.

2 Power off the Switch, and then power it back on, while keeping the Recovery button pressed.

3 Release the Recovery button.

4 Reset the Switch either by:

■ Accessing the Web interface using Discovery, and then pressing the *RESET* button on the Configuration tab (see Figure 29) of *System Tools*. After you click *RESET,* a confirmation message appears. Click *OK* to confirm.

■ Powering off the Switch, and then powering it back on.

ⓘ *The Switch will perform automatic IP configuration after you reset it. See "Automatic IP Configuration" on page 29 for more information.*

Figure 29   Configuration Tab
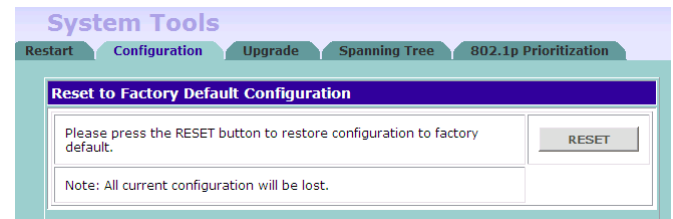
Forgotten Password

If you forget the password to the Web interface after you set it, you will need to reset the Switch to regain

access. See "Resetting to Factory Defaults" on page 43 for instructions.

After resetting the Switch, log on to the Web interface using the default admin account settings:

■ User name – **admin**

■ Password – blank (no password)

Forgotten Static IP Address

If you forget the static IP address that you assigned to the Switch and you need to access the Web interface, use the Discovery application to automatically detect the IP address and connect to the interface.

For information on using the Discovery application, refer to "Running the Discovery Application" on page 21.

Solving LED Issues

This section lists some issues that are related to the LEDs on the front panel of the Switch. For information on basic LED checks, refer to the following topics in Chapter 1:

■ (4) Module Active LEDs

■ (4) Module Active LEDs

■ (3) Link/Activity LEDs

■ (5) Power LED

A link is connected, but the Link/Activity LED for the port is off.

There is a problem with this connection. Verify that:

■ The device being connected to is powered on and operating correctly.

■ The cable is connected at both ends.

■ The cable is not damaged.

■ If the connection is to a workstation, that the workstation's network interface is installed and configured correctly.

■ The correct category of cable is being used for the required link speed. Category 3 cables can be used for 10BASE-T operation only. Category 5 cable is required for 100BASE-TX or 1000BASE-T. 3Com recommends Category 5e or 6 cables for 1000BASE-T operation.

A fiber cable is connected, but the Module Active LED is off.

Verify that:

■ The fiber cable is in good condition.

■ The SFP module is correctly inserted.

■ A 3Com SFP module is being used. Refer to "Approved SFP Transceivers" on page 18 for details.

■ The equipment at the far end is installed and correctly configured.

The Link/Activity LED is on, but network performance is poor

The Switch supports full-duplex autonegotiation. If the connected device does not support autonegotiation, ensure that it is configured for half-duplex operation only. If the connected device has autonegotiation disabled or overridden, and is configured as full-duplex, the Switch will configure the link as half-duplex, causing a mismatch that will reduce network performance when data is transmitting and receiving simultaneously on the same link.

Ensure that the connected device has either:

■ Autonegotiation enabled, or

■ The ports are configured for half-duplex operation

All ports appear to show continual activity.

There may be broadcast storms on the network. Remove port connections one at a time, waiting a few seconds between each port. If the LEDs go off after removing a port connection, the device that was connected to that port is introducing an excessive amount of broadcast frames to the network. Some pieces of network equipment operate by sending out broadcast frames regularly.

Refer to the documentation that accompanies the device for information on disabling the broadcast operation.

If the Problem Persists

If the problem persists and the unit still does not operate successfully, contact your 3Com network supplier with the following information before returning the unit:

■ Product number and serial number (printed on a label supplied with the unit).

■ A brief description of the issue

A OBTAINING SUPPORT FOR YOUR PRODUCT

Register Your Product

Warranty and other service benefits start from the date of purchase, so it is important to register your product quickly to ensure you get full use of the warranty and other service benefits available to you.

Warranty and other service benefits are enabled through product registration. Register your product at **http://eSupport.3com.com/**. 3Com eSupport services are based on accounts that you create or have authorization to access. First time users must apply for a user name and password that provides access to a number of eSupport features including Product Registration, Repair Services, and Service Request. If you have trouble registering your product, please contact 3Com Global Services for assistance.

Purchase Value-Added Services

To enhance response times or extend warranty benefits, contact 3Com or your authorized 3Com reseller. Value-added services like 3Com Express[SM] and Guardian[SM] can include 24x7 telephone technical support, software upgrades, onsite assistance or advance hardware replacement. Experienced engineers are available to manage your installation with minimal disruption to your network. Expert assessment and implementation services are offered to fill resource gaps and ensure the success of your networking

projects. More information on 3Com maintenance and Professional Services is available at **http://www.3com.com/**

Contact your authorized 3Com reseller or 3Com for a complete list of the value-added services available in your area.

Troubleshoot Online

You will find support tools posted on the 3Com web site at **http://www.3com.com/**

3Com Knowledgebase helps you troubleshoot 3Com products. This query-based interactive tool is located at **http://knowledgebase.3com.com** and contains thousands of technical solutions written by 3Com support engineers.

Access Software Downloads

Software Updates are the bug fix / maintenance releases for the version of software initially purchased with the product. In order to access these Software Updates you must first register your product on the 3Com web site at **http://eSupport.3com.com/**.

First time users will need to apply for a user name and password. A link to software downloads can be

found at **http://eSupport.3com.com/**, or under the Product Support heading at **http://www.3com.com/**

Software Upgrades are the software releases that follow the software version included with your original product. In order to access upgrades and related documentation you must first purchase a service contract from 3Com or your reseller.

Telephone Technical Support and Repair

To obtain telephone support as part of your warranty and other service benefits, you must first register your product at **http://eSupport.3com.com/**

Warranty and other service benefits start from the date of purchase, so it is important to register your product quickly to ensure you get full use of the warranty and other service benefits available to you.

When you contact 3Com for assistance, please have the following information ready:

■ Product model name, part number, and serial number

■ Proof of purchase, if you have not pre-registered your product

■ A list of system hardware and software, including revision level

■ Diagnostic error messages

■ Details about recent configuration changes, if applicable

To send a product directly to 3Com for repair, you must first obtain a return authorization number (RMA). Products sent to 3Com, without authorization numbers clearly marked on the outside of the package, will be returned to the sender unopened, at the sender's expense. If your product is registered and under warranty, you can obtain an RMA number online at **http://eSupport.3com.com/**. First time users will need to apply for a user name and password.

Contact Us

3Com offers telephone, e-mail and internet access to technical support and repair services. To access these services for your region, use the appropriate telephone number, URL or e-mail address from the list below.

Telephone numbers are correct at the time of publication. Find a current directory of support telephone numbers posted on the 3Com web site at **http://csoweb4.3com.com/contactus/**

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Country	Telephone Number
Asia, Pacific Rim Telephone Technical Support and Repair	
Australia	1 800 678 515
Hong Kong	800 933 486
India	+61 2 9424 5179 or
	000800 6501111
Indonesia	001 803 61 009
Japan	00531 616 439 or
	03 3507 5984
Malaysia	1800 801 777
New Zealand	0800 446 398
Pakistan	+61 2 9937 5083
Philippines	1235 61 266 2602 or
	1800 1 888 9469
P.R. of China	800 810 3033
Singapore	800 6161 463
S. Korea	080 333 3308
Taiwan	00801 611 261
Thailand	001 800 611 2000

You can also obtain support in this region using the following e-mail: `apr_technical_support@3com.com`

Or request a repair authorization number (RMA) by fax using this number: +65 543 6348

Europe, Middle East, and Africa Telephone Technical Support and Repair	
From anywhere in these regions, call:	+44 (0)1442 435529

From the following countries, you may use the numbers shown:

Country	Telephone Number
Austria	01 7956 7124
Belgium	070 700 770
Denmark	7010 7289
Finland	01080 2783
France	0825 809 622
Germany	01805 404 747
Hungary	06800 12813
Ireland	1407 3387
Israel	1800 945 3794
Italy	199 161346
Luxembourg	342 0808128
Netherlands	0900 777 7737
Norway	815 33 047
Poland	00800 441 1357
Portugal	707 200 123
South Africa	0800 995 014
Spain	9 021 60455
Sweden	07711 14453
Switzerland	08488 50112
U.K.	0870 909 3266

You can also obtain support in this region using the following URL: `http://emea.3com.com/support/email.html`

Country	Telephone Number
Latin America Telephone Technical Support and Repair	

From the Caribbean, Central and South America, call:

Country	Telephone Number
Antigua	1 800 988 2112
Argentina	0 810 444 3COM
Aruba	1 800 998 2112
Bahamas	1 800 998 2112
Barbados	1 800 998 2112
Belize	52 5 201 0010
Bermuda	1 800 998 2112
Bonaire	1 800 998 2112
Brazil	0800 13 3COM
Cayman	1 800 998 2112
Chile	AT&T +800 998 2112
Colombia	AT&T +800 998 2112
Costa Rica	AT&T +800 998 2112
Curacao	1 800 998 2112
Ecuador	AT&T +800 998 2112
Dominican Republic	AT&T +800 998 2112
Guatemala	AT&T +800 998 2112
Haiti	57 1 657 0888
Honduras	AT&T +800 998 2112
Jamaica	1 800 998 2112
Martinique	571 657 0888
Mexico	01 800 849CARE
Nicaragua	AT&T +800 998 2112
Panama	AT&T +800 998 2112
Paraguay	54 11 4894 1888
Peru	AT&T +800 998 2112
Puerto Rico	1 800 998 2112
Salvador	AT&T +800 998 2112
Trinidad and Tobago	1 800 998 2112
Uruguay	AT&T +800 998 2112
Venezuela	AT&T +800 998 2112
Virgin Islands	57 1 657 0888

Country	Telephone Number

You can also obtain support in this region using the following:

Spanish speakers, enter the URL:
http://lat.3com.com/lat/support/form.html

Portuguese speakers, enter the URL:
http://lat.3com.com/br/support/form.html

English speakers in Latin America should send e-mail to:
lat_support_anc@3com.com

US and Canada Telephone Technical Support and Repair

1 800 876 3266

B   SAFETY INFORMATION

Important Safety Information

Please read the following safety information carefully before installing the 3Com Baseline Switch 2250 Plus.

⚠⚡ *WARNING: Installation and removal of the unit must be carried out by qualified personnel only.*

- If installing the Switch unit in a stack with other units, the Switch unit must be installed below the narrower units and above the deeper units.

- The unit must be connected to an earthed (grounded) outlet to comply with international safety standards.

- Do not connect the unit to an AC outlet (power supply) without an earth (ground) connection.

- The appliance coupler (the connector to the unit and not the wall plug) must have a configuration for mating with an EN60320/IEC320 appliance inlet.

- The socket outlet must be near to the unit and easily accessible. You can only remove power from the unit by disconnecting the power cord from the outlet.

- This unit operates under SELV (Safety Extra Low Voltage) conditions according to IEC 60. The conditions are only maintained if the equipment to which it is connected also operates under SELV conditions.

France and Peru Only

This unit cannot be powered from IT[†] supplies. If your supplies are of IT type, this unit must be powered by 230 V (2P+T) via an isolation transformer ratio 1:1, with the secondary connection point labelled Neutral, connected directly to earth (ground).

† Impédance à la terre

Power Cord Set

This must be approved for the country where it will be used.

U.S.A. and Canada	■ The cord set must be UL-approved and CSA certified.
	■ The minimum specifications for the flexible cord are: No. 18 AWG Type SV or SJ 3-conductor
	■ The cord set must have a rated current capacity of at least 10 A.
	■ The attachment plug must be an earth-grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.
Denmark	The supply plug must comply with Section 107-2-D1, Standard DK2-1a or DK2-5a.
Switzerland	The supply plug must comply with SEV/ASE 1011.
UK	■ The supply plug must comply with BS1363 (3-pin 13-amp) and be fitted with a 5 A fuse which complies with BS1362.
	■ The mains cord must be <HAR> or <BASEC> marked and be of type HO3VVF3GO.75 (minimum).
Europe	■ The supply plug must comply with CEE7/7 ("SCHUKO")
	■ The mains cord must be <HAR> or <BASEC> marked and be of type HO3VVF3GO.75 (minimum).

WARNING: Fiber Optic Ports – Optical Safety

CLASS I
LASER DEVICE

Never look at the transmit laser while it is powered on. Never look directly at the fiber ports and fiber cable ends when they are powered on.

WARNING: Use of controls or adjustments of performance or procedures other than those specified herein may result in hazardous laser emissions.

Consignes Importantes de Sécurité

Veuillez lire à fond l'information de la sécurité suivante avant d'installer le Baseline Switch 2250 Plus.

AVERTISSEMENT: L'installation et la dépose de ce groupe doivent être confiés à un personnel qualifié.

■ Si vous entassez l'unité Switch avec les unités SuperStack 3 Hub, l'unité 2900 doit être installée en dessous des unités Hub plus étroites.

■ Ne branchez pas votre appareil sur une prise secteur (alimentation électrique) lorsqu'il n'y a pas de connexion de mise à la terre (mise à la masse).

■ Vous devez raccorder ce groupe à une sortie mise à la terre (mise à la masse) afin de respecter les normes internationales de sécurité.

■ Le coupleur d'appareil (le connecteur du groupe et non pas la prise murale) doit respecter une configuration qui permet un branchement sur une entrée d'appareil EN60320/IEC 320.

■ La prise secteur doit se trouver à proximité de l'appareil et son accès doit être facile. Vous ne pouvez mettre l'appareil hors circuit qu'en débranchant son cordon électrique au niveau de cette prise.

■ L'appareil fonctionne à une tension extrêmement basse de sécurité qui est conforme à la norme IEC60950. Ces conditions ne sont maintenues que si l'équipement auquel il est raccordé fonctionne dans les mêmes conditions.

France et Pérou Uniquement

Ce groupe ne peut pas être alimenté par un dispositif à impédance à la terre. Si vos alimentations sont du type impédance à la terre, ce groupe doit être alimenté par une tension de 230 V (2 P+T) par le biais d'un transformateur d'isolement à rapport 1:1, avec un point secondaire de connexion portant l'appellation Neutre et avec raccordement direct à la terre (masse).

Cordon électrique

Il doit être agréé dans le pays d'utilisation.

Etats-Unis et Canada:	■ Le cordon doit avoir reçu l'homologation des UL et un certificat de la CSA.
	■ Le cordon souple doit respecter, à titre minimum, les spécifications suivantes: calibre 18 AWG type SV ou SJ à 3 conducteurs
	■ Le cordon doit être en mesure d'acheminer un courant nominal d'au moins 10 A.
	■ La prise femelle de branchement doit être du type à mise à la terre (mise à la masse) et respecter la configuration NEMA 5-15P (15 A, 125 V) ou NEMA 6-15P (15 A, 250 V).
Danemark:	La prise mâle d'alimentation doit respecter la section 107-2 D1 de la norme DK2 1a ou DK2 5a.
Suisse:	La prise mâle d'alimentation doit respecter la norme SEV/ASE 1011.
Europe	■ La prise secteur doit être conforme aux normes CEE 7/7 ("SCHUKO")
	■ LE cordon secteur doit porter la mention <HAR> ou <BASEC> et doit être de type HO3VVF3GO.75 (minimum).

AVERTISSEMENT: Ports pour fibres optiques – sécurité sur le plan optique

DISPOSITIF LASER
DE CLASSE I

Ne regardez jamais le laser tant qu'il est sous tension. Ne regardez jamais directement le port à fibres optiques et les embouts de câbles à fibres optiques tant qu'ils sont sous tension.

AVERTISSEMENT: L'utilisation de contrôles, de réglages de performances ou de procédures autres que ceux qui sont spécifiés au sein du présent document risquent d'entraîner l'exposition à des rayonnements laser dangereux.

Wichtige Sicherheitshinweise Informationen

Bitte unbedingt vor dem Einbauen des Baseline Switch 2250 Plus die folgenden Sicherheitsanweisungen durchlesen.

WARNUNG: Die Installation und der Ausbau des Geräts darf nur durch Fachpersonal erfolgen.

- Wenn der Baseline Switch 2250 Plus mit anderen 3Com Hubs oder Switche gestapelt werden soll, müssen grössere Geräte unter den schmaleren Hubs eingebaut werden.

- Das Gerät sollte nicht an eine ungeerdete Wechselstromsteckdose angeschlossen werden.

- Das Gerät muß an eine geerdete Steckdose angeschlossen werden, welche die internationalen Sicherheitsnormen erfüllt.

- Der Gerätestecker (der Anschluß an das Gerät, nicht der Wandsteckdosenstecker) muß einen gemäß EN 60320/IEC 320 konfigurierten Geräteeingang haben.

- Die Netzsteckdose muß in der Nähe des Geräts und leicht zugänglich sein. Die Stromversorgung des Geräts kann nur durch Herausziehen des Gerätenetzkabels aus der Netzsteckdose unterbrochen werden.

- Der Betrieb dieses Geräts erfolgt unter den SELV-Bedingungen (Sicherheitskleinstspannung) gemäß IEC 60950. Diese Bedingungen sind nur gegeben, wenn auch die an das Gerät angeschlossenen Geräte unter SELV-Bedingungen betrieben werden.

Stromkabel

Dies muss von dem Land, in dem es benutzt wird geprüft werden.

Schweiz	■ Dieser Stromstecker muß die SEV/ASE 1011Bestimmungen einhalten.
Europe	■ Das Netzkabel muß vom Typ HO3VVF3GO.75 (Mindestanforderung) sein und die Aufschrift <HAR> oder <BASEC> tragen.
	■ Der Netzstecker muß die Norm CEE 7/7 erfüllen ("SCHUKO").

WARNUNG: *Die Installation und der Ausbau des Geräts darf nur durch Fachpersonal erfolgen.*

LASERGERÄT
DER KLASSE I

Niemals ein Übertragungslaser betrachten, während dieses eingeschaltet ist. Niemals direkt auf die Faser-ansnchlüsse und auf die Faserkabelenden schauen, während diese eingeschaltet sind.

WARNUNG: *Die Verwendung von Steuerelementen oder die Anpassung von Leistungen und Verfahren in anderer als der hierin genannten Weise kann zu gefährlichen Laseremissionen führen.*

C TECHNICAL INFORMATION

Related Standards

The 3Com Baseline Switch 2250 Plus has been designed to the following standards:

Functional	ISO 8802-3, IEEE 802.3 (Ethernet), IEEE 802.3u (Fast Ethernet), IEEE 802.3ab (Gigabit Ethernet), IEEE 802.3x (Flow Control), IEEE 802.1D 1998 (Bridging)
MAC Address	8192
Safety	UL60950-1, EN60950, CSA60950-1, IEC60950
EMC Emissions	EN 55022 Class A, FCC Part 15 Subpart B Class A, ICES-003 Class A, VCCI Class A, AS/NZS 3548 Class A, CNS 13438 Class A
Immunity	EN 55024

Environmental

Operating Temperature	0–45 °C (32–113 °F)
Humidity	10–95% (non-condensing)
Standard	EN 60068 (IEC 68)—various parts

Physical

Width	440 mm (17.3 in.)
Depth	235.5 mm (9.2 in.)
Height	43.6 mm (1.7 in.) or 1U
Weight	3.1 kgs (6.83 lbs)
Mounting	Free standing, or 19 in. rack mounted using the mounting kit supplied

Electrical

Power Inlet	IEC 320
AC Line Frequency	50/60 Hz
Input Voltage	100–240 VAC
Current Rating	2 amperes (maximum)
Maximum Power Consumption	56 watts
Maximum Power Dissipation	184.3 BTU/hr

GLOSSARY

10BASE-T

The IEEE specification for 10 Mbps Ethernet over Category 3, 4 or 5 twisted pair cable.

100BASE-TX

The IEEE specification for 100 Mbps Fast Ethernet over Category 5 twisted-pair cable.

1000BASE-LX

IEEE 802.3z specification for Gigabit Ethernet over 9/125 micron core single-mode fiber cable.

1000BASE-SX

IEEE 802.3z specification for Gigabit Ethernet over two strands of 50/125 or 62.5/125 micron core multi-mode fiber cable.

1000BASE-T

IEEE 802.3ab specification for Gigabit Ethernet over 100-ohm Category 5, 5e or 6 twisted-pair cable (using all four wire pairs).

autonegotiation

Autonegotiation is where two devices sharing a link, automatically configure to use the best common speed. The order of preference (best first) is: 1000BASE-T full-duplex, 100BASE-TX full-duplex, 100BASE-TX half-duplex, 10BASE-T full-duplex, and 10BASE-T half-duplex. Autonegotiation is defined in the IEEE 802.3 standard for Ethernet and is an operation that takes place in a few milliseconds. Autonegotiation must be enabled for the 1000BASE-T ports to operate at 1000 Mbps, full-duplex.

bandwidth

The information capacity (measured in bits per second) that a channel can transmit. The bandwidth of Ethernet is 10 Mbps, the bandwidth of Fast Ethernet is 100 Mbps and Gigabit Ethernet is 1000 Mbps.

category 3 cable

One of five grades of Twisted Pair (TP) cabling defined by the EIA/TIA-568 standard. Category 3 is voice grade cable and can only be used in Ethernet networks (10BASE-T) to transmit data at speeds of up to 10 Mbps.

category 5 cable

One of five grades of Twisted Pair (TP) cabling defined by the EIA/TIA-568 standard. Category 5 can be used in Ethernet (10BASE-T) and Fast Ethernet networks (100BASE-TX) and can transmit data at speeds of up to 100 Mbps. Category 5 cabling is better to use for network cabling than Category 3, because it supports both Ethernet (10 Mbps) and Fast Ethernet (100 Mbps) speeds.

category 5e cables

One of five grades of Twisted Pair (TP) cabling defined by the EIA/TIA-568 standard. Category 5e can be used in Ethernet (10BASE-T), Fast Ethernet (100BASE-TX) and Gigabit Ethernet (1000BASE-T) networks, and can transmit data at speeds of up to 1000 Mbps.

category 6 cable

One of five grades of Twisted Pair (TP) cabling defined by the EIA/TIA-568-B standard. Category 6 can be used in Ethernet (10BASE-T), Fast Ethernet (100BASE-TX) and Gigabit Ethernet (1000BASE-T) networks, and can transmit data at speeds of up to 1000 Mbps.

client

The term used to describe the desktop PC that is connected to your network.

DHCP

Dynamic Host Configuration Protocol. This protocol automatically assigns an IP address for every computer on your network. Windows 95, Windows 98 and Windows NT 4.0 contain software that assigns IP addresses to workstations on a network. These assignments are made by the DHCP server software that runs on Windows NT Server.

Ethernet

A LAN specification developed jointly by Xerox, Intel and Digital Equipment Corporation. Ethernet networks use CSMA/CD to transmit packets at a rate of 10 Mbps and 100 Mbps over a variety of cables.

Ethernet address

See MAC address.

Fast Ethernet

An Ethernet system that is designed to operate at 100 Mbps.

Gigabit Ethernet

An Ethernet system that is designed to operate at 1000 Mbps.

full-duplex

A system that allows packets to be transmitted and received at the same time and, in effect, doubles the potential throughput of a link.

half-duplex

A system that allows packets to be transmitted and received, but not at the same time. Half-duplex is not supported for 1000 Mbps. Contrast with full-duplex.

IEEE

Institute of Electrical and Electronics Engineers. This American organization was founded in 1963 and sets standards for computers and communications.

IEEE 802.1D

Specifies a general method for the operation of MAC bridges, including the Spanning Tree Protocol.

IEEE 802.1Q

VLAN Tagging - Defines Ethernet frame tags that carry VLAN information. It allows switches to assign endstations to different virtual LANs, and defines a

standard way for VLANs to communicate across switched networks.

IEEE 802.1p

An IEEE standard for providing quality of service (QoS) in Ethernet networks. The standard uses packet tags that define up to eight traffic classes and allows switches to transmit packets based on the tagged priority value.

IEEE 802.3ad

A standard that defines link aggregation. 802.3ad is now incorporated into the relevant sections of the IEEE Std. 802.3-2002.

IETF

Internet Engineering Task Force. An organization responsible for providing engineering solutions for TCP/IP networks. In the network management area, this group is responsible for the development of the SNMP protocol.

IP

Internet Protocol. IP is a layer 3 network protocol that is the standard for sending data through a network. IP is part of the TCP/IP set of protocols that describe the routing of packets to addressed devices. An IP address consists of 32 bits divided into two or three fields: a network number and a host number or a network number, a subnet number, and a host number.

IP Address

Internet Protocol Address. A unique identifier for a device attached to a network using TCP/IP. The address is written as four octets separated with periods (full-stops), and is made up of a network section, an optional subnet section and a host section.

LAN

Local Area Network. A network of end stations (such as PCs, printers, servers) and network devices (hubs and switches) that cover a relatively small geographic area (usually not larger than a floor or building). LANs are characterized by high transmission speeds over short distances (up to 1000 meters).

Layer 2

Data Link layer in the ISO 7-Layer Data Communications Protocol. This is related directly to the hardware interface for the network devices and passes on traffic based on MAC addresses.

link aggregation

See Trunking.

MAC

Media Access Control. A protocol specified by the IEEE for determining which devices have access to a network at any one time.

MAC address

Media Access Control Address. Also called the hardware, physical, or Ethernet address. A layer 2 address associated with a particular network device. Most devices that connect to a LAN have a MAC address assigned to them as they are used to identify other devices on a network. MAC addresses are 6 bytes long.

network

A network is a collection of computers and other computer equipment that are connected for the purpose of exchanging information or sharing resources. Networks vary in size, some are within a single room, others span continents.

ping

Packet Internet Groper. An internet utility used to determine whether a particular IP address is online. It is used to test and debug a network by sending out a packet and waiting for a response.

protocol

A set of rules for communication between devices on a network. The rules dictate format, timing, sequencing and error control.

RJ-45

A standard connector used to connect Ethernet networks. The "RJ" stands for "registered jack."

server

A computer on a network that is shared by multiple end stations. Servers provide end stations with access to shared network services such as computer files and printer queues.

SFP

Small Form Factor Pluggable (SFP) Connectors are based on an open standard that enables hot swapping of various types of fiber optic and copper-based transceivers into the host equipment.

subnet address

An extension of the IP addressing scheme that allows a site to use a single IP network address for multiple physical networks.

subnet mask

A subnet mask, which may be a part of the TCP/IP information provided by your ISP, is a set of four numbers configured like an IP address. It is used to create IP address numbers used only within a particular network (as opposed to valid IP address numbers recognized by the Internet, which must assigned by InterNIC).

subnet

A network that is a component of a larger network.

switch

A device that interconnects several LANs to form a single logical LAN that comprises of several LAN segments. Switches are similar to bridges, in that they connect LANs of a different type; however they connect more LANs than a bridge and are generally more sophisticated.

TCP/IP

Transmission Control Protocol/Internet Protocol. This is the name for two of the most well-known protocols developed for the interconnection of networks. Originally a UNIX standard, TCP/IP is now supported on almost all platforms, and is the protocol of the Internet.

TCP relates to the content of the data travelling through a network — ensuring that the information sent arrives in one piece when it reaches its destination. IP relates to the address of the end station to which data is being sent, as well as the address of the destination network.
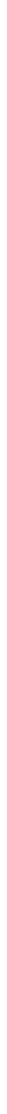
traffic monitoring

Enables the monitoring of port traffic by attaching a network analyzer to one switch port, in order to monitor the traffic of other ports on the Switch.

trunking

A method which specifies how to create a single high-speed logical link that combines several lower-speed physical links.

VLAN

Virtual LAN. A collection of network nodes that share the same collision domain regardless of their physical location or connection point in the network. A VLAN serves as a logical workgroup with no physical barriers, and allows users to share information and resources as though located on the same LAN.

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REGULATORY NOTICES

FCC 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 instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference to radio communications, in which case the user will be required to correct the interference at their own expense.

INFORMATION TO THE USER

If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

■ Reorient the receiving antenna.

■ Relocate the equipment with respect to the receiver.

■ Move the equipment away from the receiver.

■ Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

How to Identify and Resolve Radio-TV Interference Problems

This booklet is available from the U.S. Government Printing Office, Washington,

DC 20402, Stock No. 004-000-00345-4.

In order to meet FCC emissions limits, this equipment must be used only with cables which comply with IEEE 802.3.

CE STATEMENT (EUROPE)

This product complies with the European Low Voltage Directive 73/23/EEC and EMC Directive 89/336/EEC as amended by European Directive 93/68/EEC/.

CSA 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.

VCCI STATEMENT

　この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。