



# DES-5200 Fast Ethernet Switching System User's Guide

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Rev. A2w (October, 2004)

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651ES5200K15  
Printed In Taiwan



RECYCLABLE

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Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie keine Flüssig- oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.

Um eine Beschädigung des Gerätes zu vermeiden sollten Sie nur Zubehörteile verwenden, die vom Hersteller zugelassen sind.

Das Gerät ist vor Feuchtigkeit zu schützen.

Bei der Aufstellung des Gerätes ist auf sichern Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen. Verwenden Sie nur sichere Standorte und beachten Sie die Aufstellhinweise des Herstellers.

Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor Überhitzung schützt. Sorgen Sie dafür, daß diese Öffnungen nicht abgedeckt werden.

Beachten Sie beim Anschluß an das Stromnetz die Anschlußwerte.

Die Netzanschlußsteckdose muß aus Gründen der elektrischen Sicherheit einen Schutzleiterkontakt haben.

Verlegen Sie die Netzanschlußleitung so, daß niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.

Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.

Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.

Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. Elektrischen Schlag auslösen.

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Netzkabel oder Netzstecker sind beschädigt.

Flüssigkeit ist in das Gerät eingedrungen.

Das Gerät war Feuchtigkeit ausgesetzt.

Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.

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Wenden Sie sich mit allen Fragen die Service und Reparatur betreffen an Ihren Servicepartner. Somit stellen Sie die Betriebssicherheit des Gerätes sicher.

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## About This Guide

This section defines the scope of this guide and gives a summary of the contents of each chapter. It describes the features of the D-Link DES-5200 Fast Ethernet Switching System. Information about the DES-5200 and other D-Link products is available on our web site at [www.dlink.com](http://www.dlink.com).

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## Audience

This user guide is intended for the networking or computer technician who is installing the DES-5200 on a network. Refer to other sources for information about networking in general.

All the information you need to install, configure and troubleshoot the DES-5200 is contained in this user guide.

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## Organization

Chapter 1, *Introduction*, gives a physical and functional overview of the DES-5200. The DES-5200 features, LEDs, and management methods are covered.

Chapter 2, *Installing the DES-5200*, covers installation and powering on.

Chapter 3, *Connecting the DES-5200 to the Network*, covers connecting the DES-5200 to the network, maximum cable length, cable specifications and connections between multiple DES-5200 switches.

Chapter 4, *LEDs*, covers reading and interpreting the LED panel.

Chapter 5, *Console Based Management*, covers managing the DES-5200 over Local Console.

Chapter 6, *Web Management*, covers managing the DES-5200 over the web.

Chapter 7, *Troubleshooting*, covers troubleshooting the DES-5200.

Appendix A, *DES-5200 Technical Specifications*, covers the technical specifications of the DES-5200.



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# Introduction

This chapter gives a physical and functional overview of the DES-5200. The DES-5200 is an intelligent, managed, modular switch, designed for use on medium sized networks as part of the backbone or for use with other switches and hubs on a larger network.

The chapter is divided into the following sections. Each section briefly describes the features of the DES-5200. Most of the topics discussed will be explained in greater detail later in the manual. This manual refers to all models as the DES-5200.

The topics covered are:

- Summary of Features
- Modules of the DES-5200
- Explanation of Front and Rear Panels
- Management Methods
- Updating Firmware

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## Features

There are three models available:

- The DES-5224TX comes with two 12-Port 10/100-TX modules.
- The DES-5220TF comes with one 12-Port 10/100-TX module and one 8-Port 100BASE-FX module.
- The DES-5216FX comes with two 8-Port 100BASE-FX modules.

All DES-5200's have two half size slots that support the following optional modules:

- 2-Port 10/100-TX module
- 2-Port 100BASE-FX module
- 1-Port 1000BASE-SX module supporting Gigabit Ethernet

Both half size slots are available.

The DES-5200 has the following features:

- All TX ports auto-negotiate 10/100 Mbps.
- Supports up to twenty-eight 10/100-TX ports.
- Supports up to twenty 100BASE-FX ports.
- Supports two 1000BASE-SX ports.

- The DES-5200 can be managed through four methods: Console Management, Telnet Management, SNMP Management and Web Management.
- Supports Store-and-Forward switching.
- Supports Full and Half Duplex for both 10 Mbps and 100 Mbps.
- Supports Spanning Tree Protocol to eliminate network loops.
- Eight thousand active MAC address table entries per device with self-learning and table aging.
- The DES-5200 supports SNMP for RFC 1213, RFC 1757, and RFC 1493.
- VLAN support for 31 broadcast domains.
- Port Trunking support for bandwidth aggregation between two DES-5200 switches.
- The 1000BASE-SX port supports flow control compliant with IEEE 802.3x standard.
- Modular chassis that support RJ-45, fiber optic and gigabit expansion modules
- Support four RMON statistics through SNMP software.

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## Front Panel

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The DES-5200 is designed for management at a glance. The front of the DES-5200 has LEDs that give you essential information at a glance.

The DES-5200 is a modular unit. The chassis has a CPU slot and four slots for media modules. All the modules have LEDs. See Chapter 4, LEDs, for information on interpreting the LEDs. All models come with the CPU module in the top slot. The slots are in the following order: CPU module is in the top slot, as shown in figures. Slots one and two are full sized. Slots three and four are half-sized. All slots support modules and can be used simultaneously.

All ports can be used for network connections. The RS-232 port is used for Console Management.

All LEDs are located on the front panel of the DES-5200. Their purpose is to enable you to monitor the operation and performance of the DES-5200.

Refer to Table 1: DES-5200 Series Model List, Table 2: DES-5200 Full Size Modules and Table 3: DES-5200 Optional Modules for information about part numbers and ordering modules. Contact D-Link, Inc. sales to purchase modules.

### Models

There are three models available:

- The DES-5224TX has two 12-Port 10/100-TX modules.
- The DES-5220TF has one 12-Port 10/100-TX module and one 8-Port 100BASE-FX module.
- The DES-5216FX has two 8-Port 100BASE-FX modules.

**Table 1: DES-5200 Series Model List**

Model Name	Part Number	Description
DES-5224TX	DES5224TX.A2	Two 12-Port 10/100-TX modules
DES-5220TF	DES5220TF.A2	One 12-Port 10/100-TX module and one 8-Port 100BASE-FX module
DES-5216FX	DES5216FX.A2	Two 8-Port 100BASE-FX modules

## Full Size Modules

**Table 2: DES-5200 Full Size Modules**

Module Name	Part Number	Description
12 TX Module	0DES5200T.A2	12-Port 10/100-TX module
8 FX Module	0DES5200F.A2	8-Port 100BASE-FX module
CPU Module	0DES5200I.A2	CPU Module
Back Plane*	1ES5200B..A1 (PCBA)	Back Plane

\* **Note:** Back Plane refers to the internal back plane of all models of the DES-5200 series. It is not visible or accessible without opening the case. All modifications and repairs to the back plane must be done by D-Link Systems, Inc. or authorized repair facilities. Do not open the case. Opening the case can cause injury and/or damage. If there is a problem with the modules or the back plane, contact D-Link System, Inc. Technical Support for assistance.

## Optional Modules

The optional modules are half size modules. The half size modules work in slots 3 and 4 of the chassis. The following optional modules are available:

- The DES-5005T is a 2-Port TX module.
- The DES-5005 is a 2-Port FX module.
- The DES-5008 is a 1-Port gigabit module.

**Table 3: DES-5200 Optional Modules**

Module	Part Number	Description
DES-5005T	DES5005T..A1	2-Port 10/100-TX module
DES-5005	DDES5005..A2	2-Port 100BASE-FX module
DES-5008	DDES5008..A2	1-Port 1000BASE-SX gigabit module

## Power Plug

The three pronged power plug is located at the front of the DES-5200. The switch will work with AC in the range 100-240 VAC, 50-60 Hz. The power requirements are indicated on the rear panel of the DES-5200.

## DES-5224TX

The DES-5224TX, displayed in Figure 1, is shown with 2 12-Port 10/100-TX modules. The DES-5224TX is shown with two optional modules, one 2-Port 100BASE-FX in slot 3 and one 2-Port 10/100BASE-TX in slot 4.

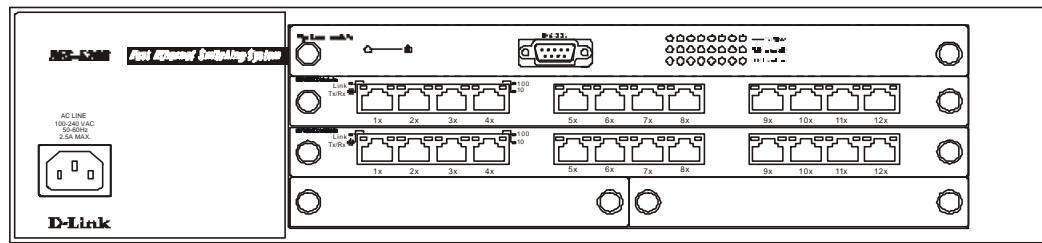


Figure 1: DES-5224TX

## DES-5220TF

The DES-5220TF, displayed in Figure 2, comes with one 12-Port 10/100-TX module and one 8-Port 100BASE-FX module. The DES-5220TF is shown with two optional modules, one 2-Port 100BASE-FX module in slot 3 and one 1000BASE-SX module in slot 4.

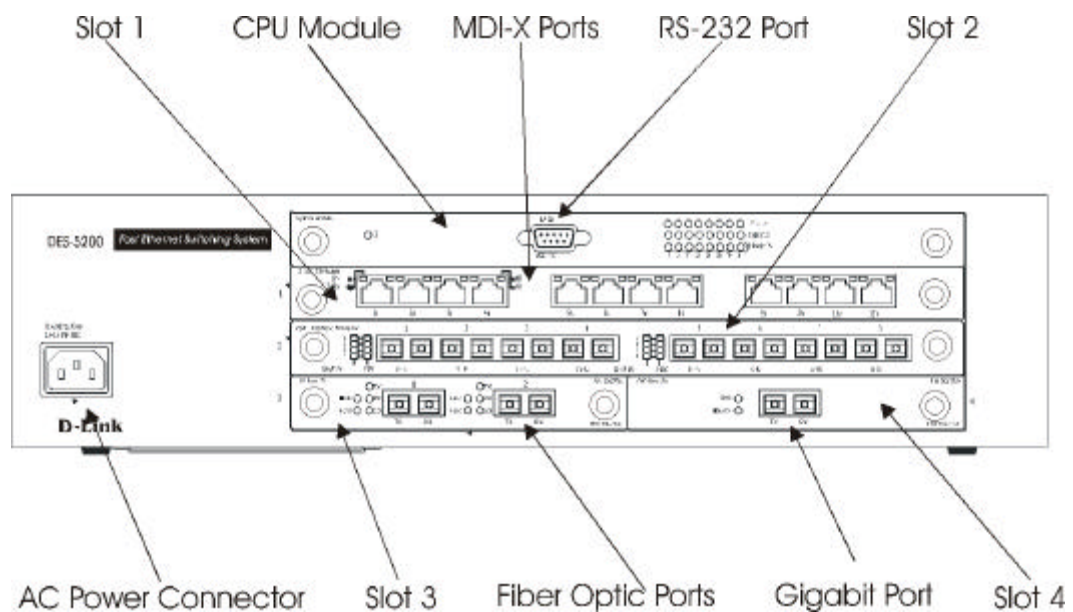
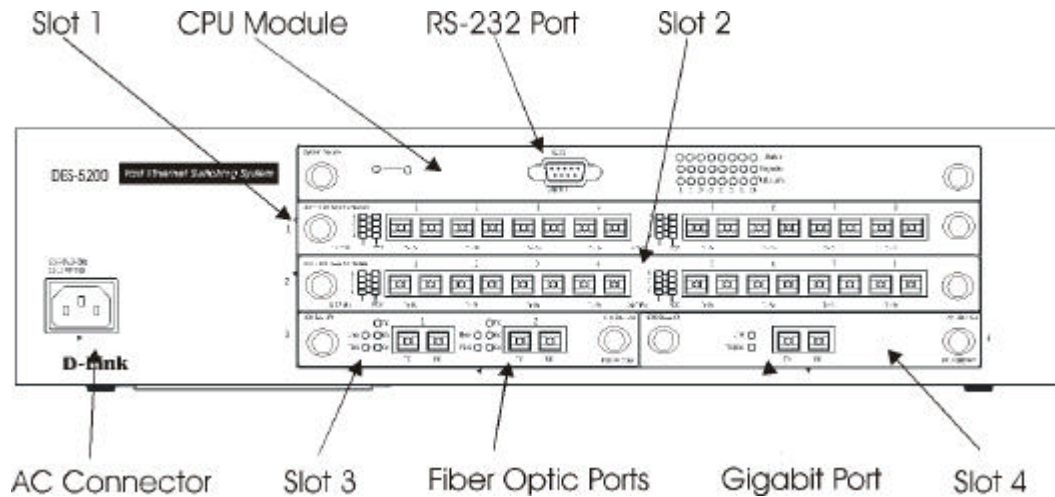


Figure 2: 5220TF

## DES-5216FX.A1

The DES-5216FX, displayed in Figure 3, has two 16-Port 100BASE-SX modules. The DES-5216FX is shown with two optional modules, one 2-Port 100BASE-FX module is shown in slot 3 and one 1-Port 1000BASE-SX module is shown in slot 4.



**Figure 3: DES-5216FX**

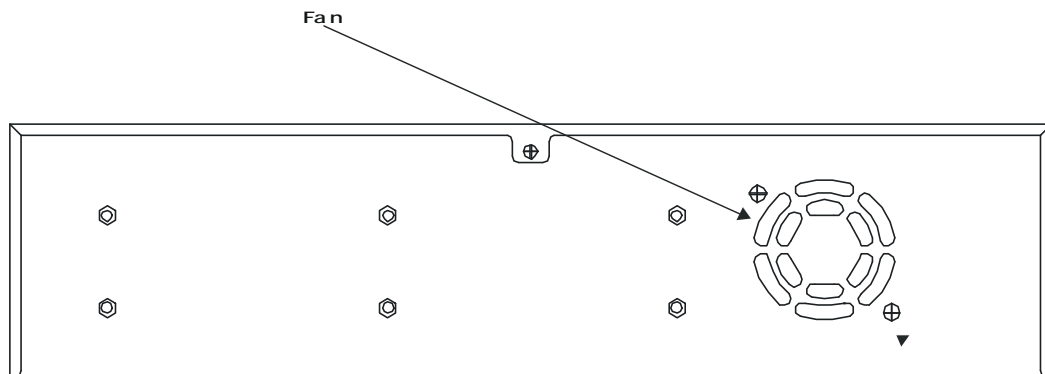
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## Rear Panel

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The ventilation fan is located at the rear of the DES-5200, displayed in **Figure 4**.

There are heat vents located on the sides. The fans and the vents help to cool the DES-5200. Always leave two inches of space around the DES-5200 so that air can circulate and cool the DES-5200.



**Figure 4: DES-5200 Rear Panel**

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## Management Methods

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The DES-5200 supports four management methods:

- Local Console Management
- Telnet Management
- Web Management
- D-View/ SNMP Management

### Local Console Management

Local Console Management is done through the RS-232 Console port. Managing the DES-5200 in this mode requires a direct connection between a PC and the DES-5200.

### Telnet Management

Telnet is done over the network. Once the DES-5200 is on the network, you can use Telnet to log in and change the configuration.

### D-View/ SNMP Management

The DES-5200 supports SNMP through D-View, D-Link's proprietary SNMP application and through other vendor's SNMP applications. Please refer to the appropriate documentation for instructions on installing and using D-View and other SNMP applications.

### Web Management

Web Management is done over the Internet. Once an Internet Protocol (IP) address has been assigned to the DES-5200 it can be accessed over the web.

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## Software Update

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Software can be updated quickly and easily. See the section Software Update Menu, Chapter 5, for instructions on updating software.



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## Installing the DES-5200

This chapter covers the following:

- Unpacking the DES-5200
- Installation Options
- Installing Optional Modules
- Powering on the DES-5200

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### Unpacking the DES-5200

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Open the box and carefully unpack the DES-5200. You should have all the items on the following checklist:

- DES-5200 Fast Ethernet Switching System
- RS-232 DCE serial cable
- Two mounting brackets and eight screws
- Four rubber pads with adhesive backing
- One 1.82 m (6 foot) power cord
- DES-5200 User's Guide CD ROM, part number 651ES5200K15
- Registration Card

If any items are missing, contact the retailer where you purchased the DES-5200 for assistance.

Be sure to register the DES-5200 immediately. Failure to register the DES-5200 may void the warranty.

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## Installation Options

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There are two options for installing the DES-5200: desktop/ shelf installation or rack installation.

Follow these guidelines for desktop/ shelf installation or rack installation:

- The surface must support 8 kg (18 lbs.)
- The power source must be within 1.82 m (6 feet)
- The power cord and cables should never be stretched.
- Leave at least 5.08 cm (2 in.) around the DES-5200 for ventilation

The following tools and materials may be necessary to install the DES-5200:

- Screwdriver to install the brackets as needed.
- Wire cutters to cut cable as needed for network connections.
- Crimpers to crimp cable as needed.
- RJ-45 connectors as needed.
- SC fiber optic cable connectors as needed.

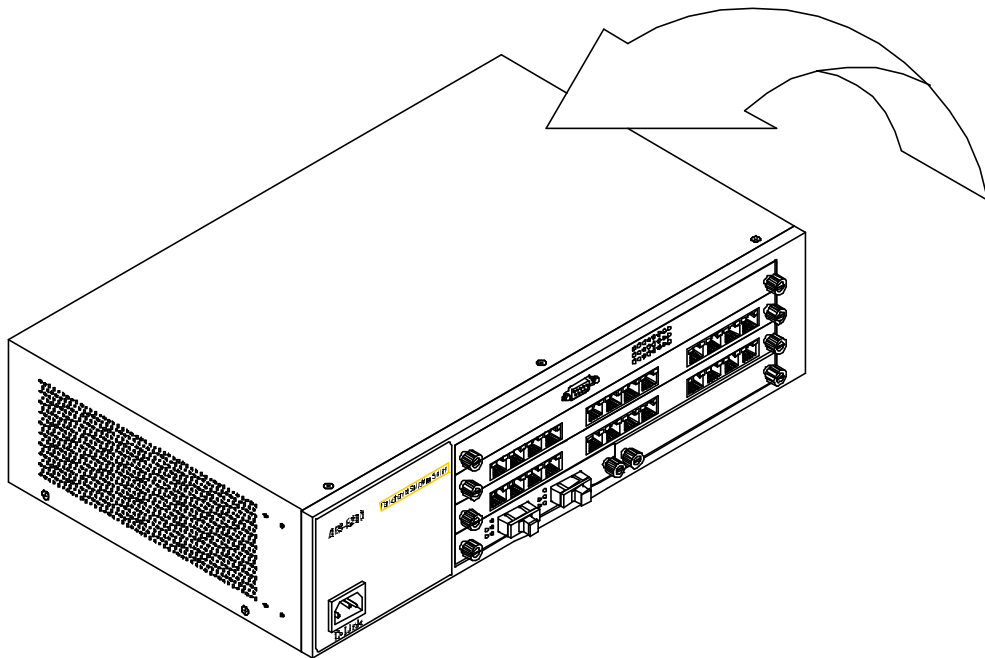
Refer to Chapter 3, Cable Specifications for cable types and specifications.

## Desktop/ Shelf Installation

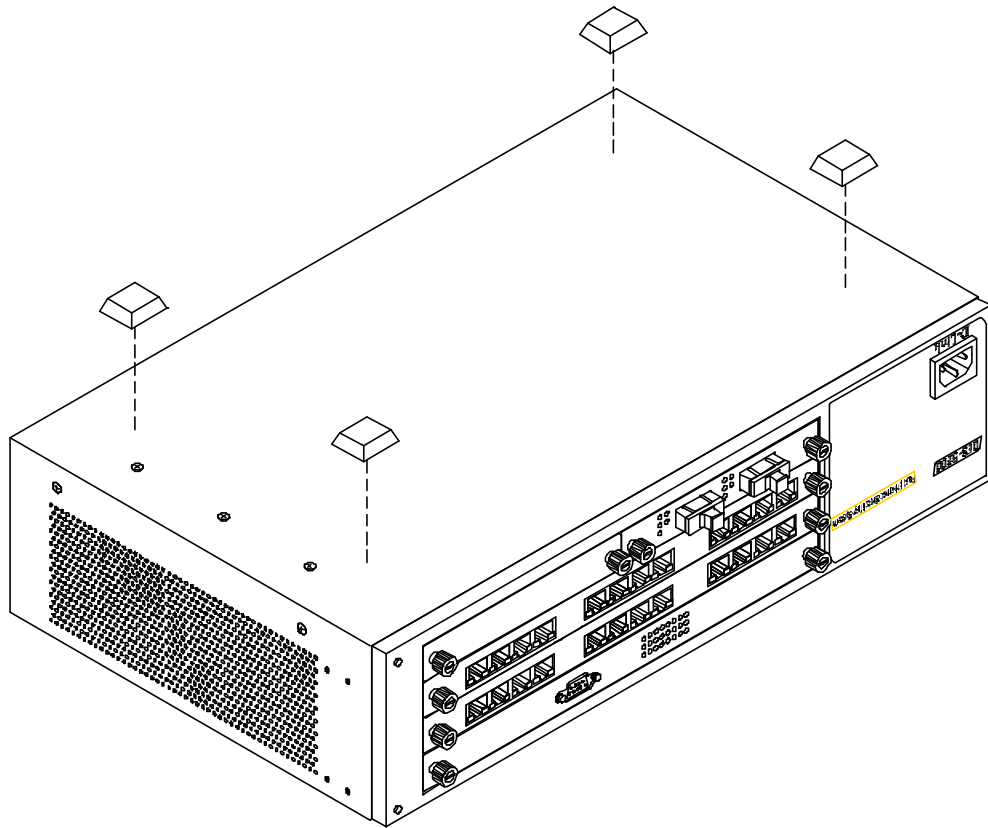
The dimensions of the DES-5200 are 17.36 inches (441 mm) x 10.39 inches (264 mm) x 4.64 inches (118 mm). These measurements include the 8 mm rubber feet provided with the DES-5200.

Follow these steps to install the DES-5200 on a desktop or shelf:

1. Place the four rubber feet at the corners of the DES-5200. See Figure 5.
2. Place the DES-5200 on a desktop/ shelf. See Figure 6.



**Figure 5: Install Feet on Bottom**



**Figure 6: Attach Feet**

## Rack Installation

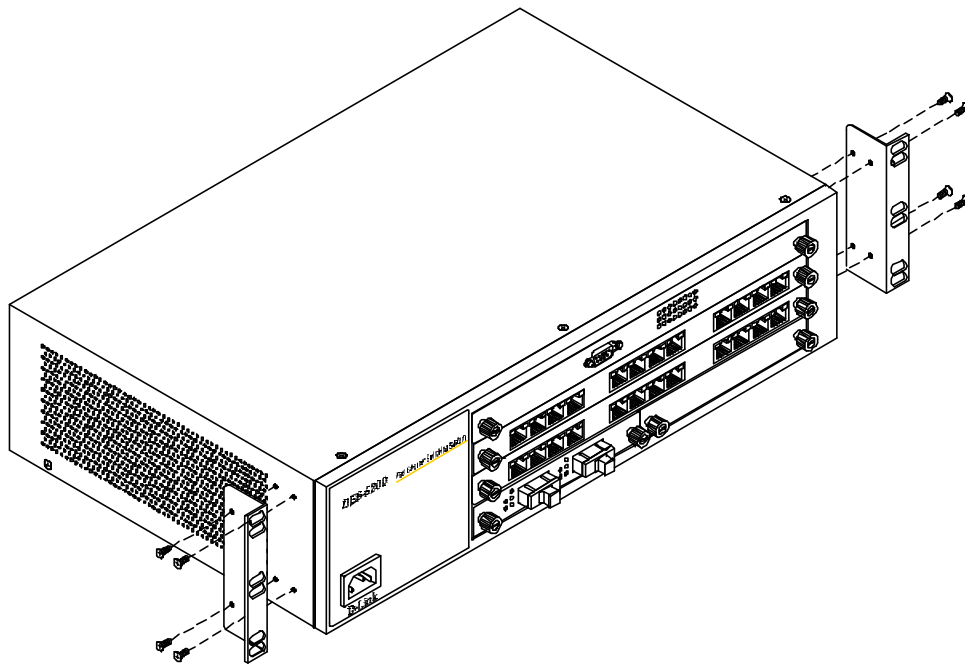
The DES-5200 can be mounted in an EIA standard size, 19 inch rack. The dimensions of the DES-5200 are 4.4 inches (112 mm) x 10.39 inches (264 mm) x 17.32 inches (440 mm). The DES-5200 can be placed in a wiring closet along with other equipment.

Follow these steps to install the DES-5200 on a rack:

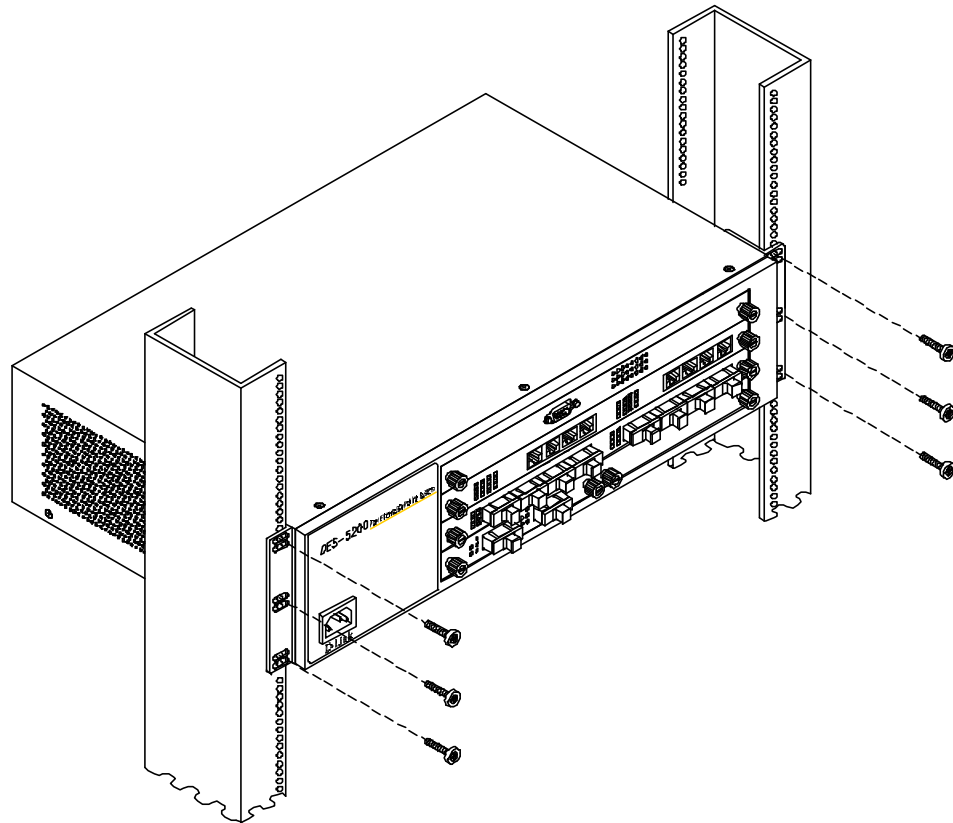
1. Attach a mounting bracket to each side of the DES-5200 with the screws provided. See Figure 7.

Slide the DES-5200 into the rack and use the screws provided to secure the DES-5200 to the rack. See Figure 8.

Connect the power cord and verify that the DES-5200 is receiving adequate power.



**Figure 7: Attach Mounting Brackets**



**Figure 8: Insert into Rack**

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## Installing Optional Modules

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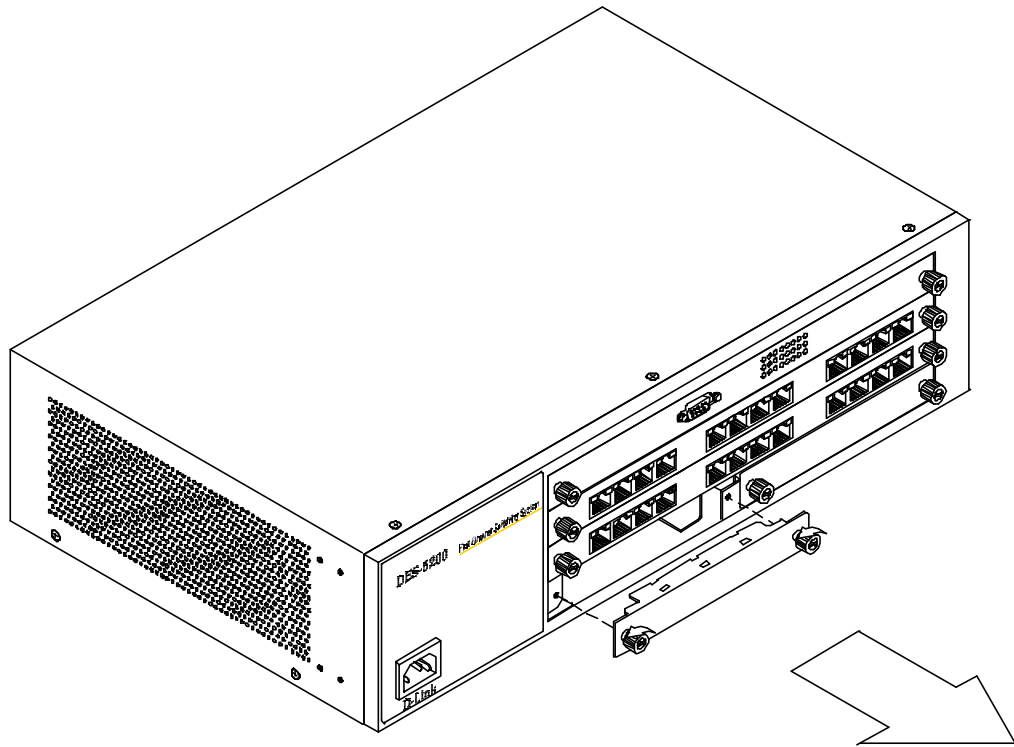
The process for installing all modules is the same. You cannot change the position of the CPU module. It must remain in the CPU slot. The DES-5200 will not work unless the CPU module is installed in the CPU slot.

You can purchase optional modules separately in order to meet the needs of your network. The procedure for installing all optional modules is the same for full size and half size modules.

Follow these steps to install modules:

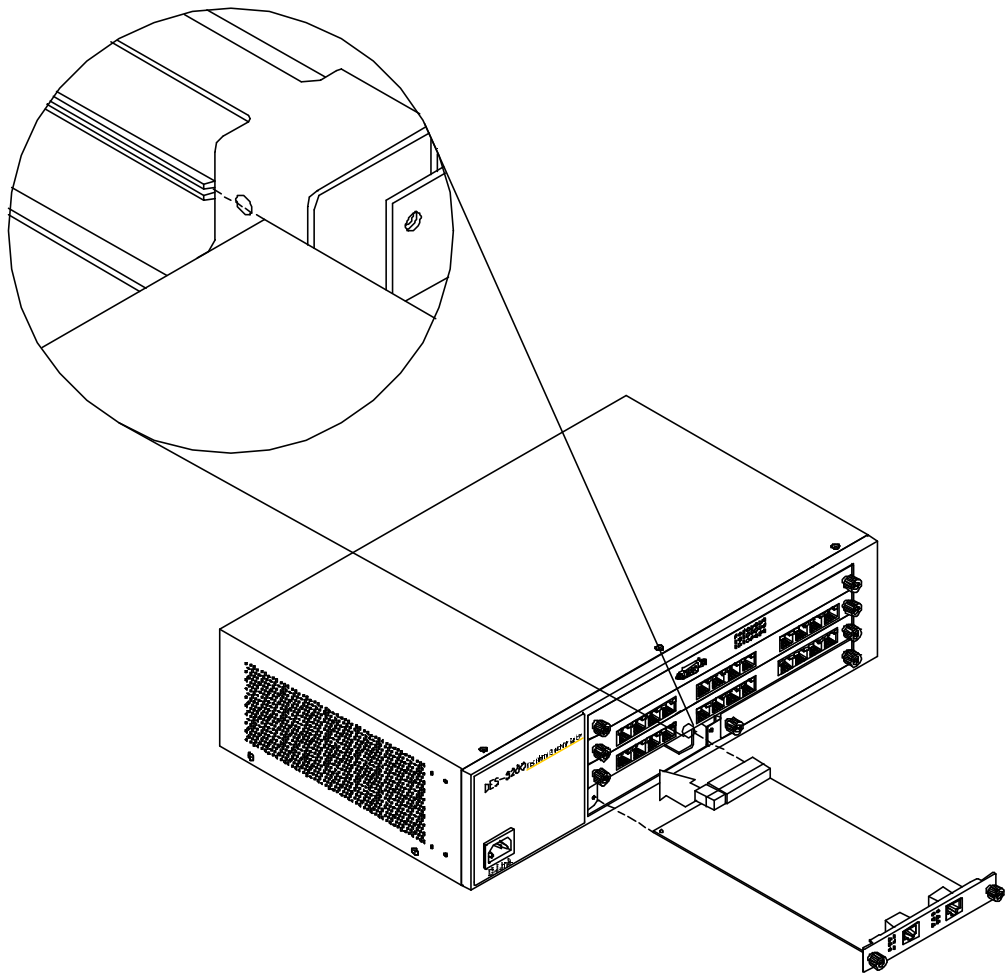
1. Power the DES-5200 off before installing or removing modules. None of the modules are hot swappable. Removing or installing modules while the DES-5200 is powered on can damage the DES-5200 and the modules.
2. Grasp the thumbscrews on the side of the module or blank bracket and turn counterclockwise to unscrew them. Remove the old module or the blank bracket, as shown in Figure 9 and set aside. Do not discard the module or blank bracket. Put the old module or blank bracket back in if you remove the new module.
3. Install the new module by inserting it into the guides, see Figure 10 and sliding it in until it stops. Press in firmly until you feel the module snap into place. The module should be level and flush with the rest of the DES-5200. Never force, twist or bend the module. The module slides in smoothly.
4. Gently push the thumbscrews in and turn clockwise to tighten. Do not over tighten the thumbscrews.
5. Power the DES-5200 on after the new module is installed. The DES-5200 will auto detect the module and it will appear on the menu.
6. The 100BASE-FX and 1000-BASE-SX ports have dust covers over the transceivers. Remove the dust covers before plugging in the cable.
7. Check the LEDs to verify that there is a link at the port.

See the Troubleshooting section if the optional module is not working properly.



**Figure 9: Remove Blank Bracket**





**Figure 10: Insert Optional Module**

---

## Power On

---

The power supply will adjust to the local power source automatically. The DES-5200 may be plugged in without having any or with all LAN segment cables connected.

The power plug is located in front of the DES-5200. Plug the cable into the wall socket and plug the other end into the DES-5200. The power LED will light and all ports will auto negotiate the proper speed and duplex mode.

Reboot the DES-5200 if there is a problem. Contact D-Link Systems, Inc. for technical support. Check the configuration of the DES-5200 after a power failure but do not reset unless it is necessary.

The DES-5200 can be used with power sources in the range 100 to 240 VAC., 50 to 60 Hz.

# Connecting the DES-5200 to the Network

This chapter covers the following:

- Cable Specifications
- Ports
- Connecting the DES-5200 to another DES-5200
- Connecting the DES-5200 to other switches and hubs

This section deals with making cables and connecting the DES-5200 to other devices. It is extremely important that cables have the correct pin arrangement and that the proper cables be used when connecting to servers, switches, hubs, workstations and other devices.

---

## Cable Specifications

---

Use the following guidelines when handling cables:

- Do not stretch or bend cables.
- Do not put copper cables near sources of electromagnetic interference. Fiber optic cables are immune to most electromagnetic interference.
- Do not create trip hazards by laying cables in aisles and walkways.
- Secure cables to the floor when routing in aisles or walkways.

Do not use telephone cable. Telephone cable does not support Ethernet or Fast Ethernet.

### Copper Cable

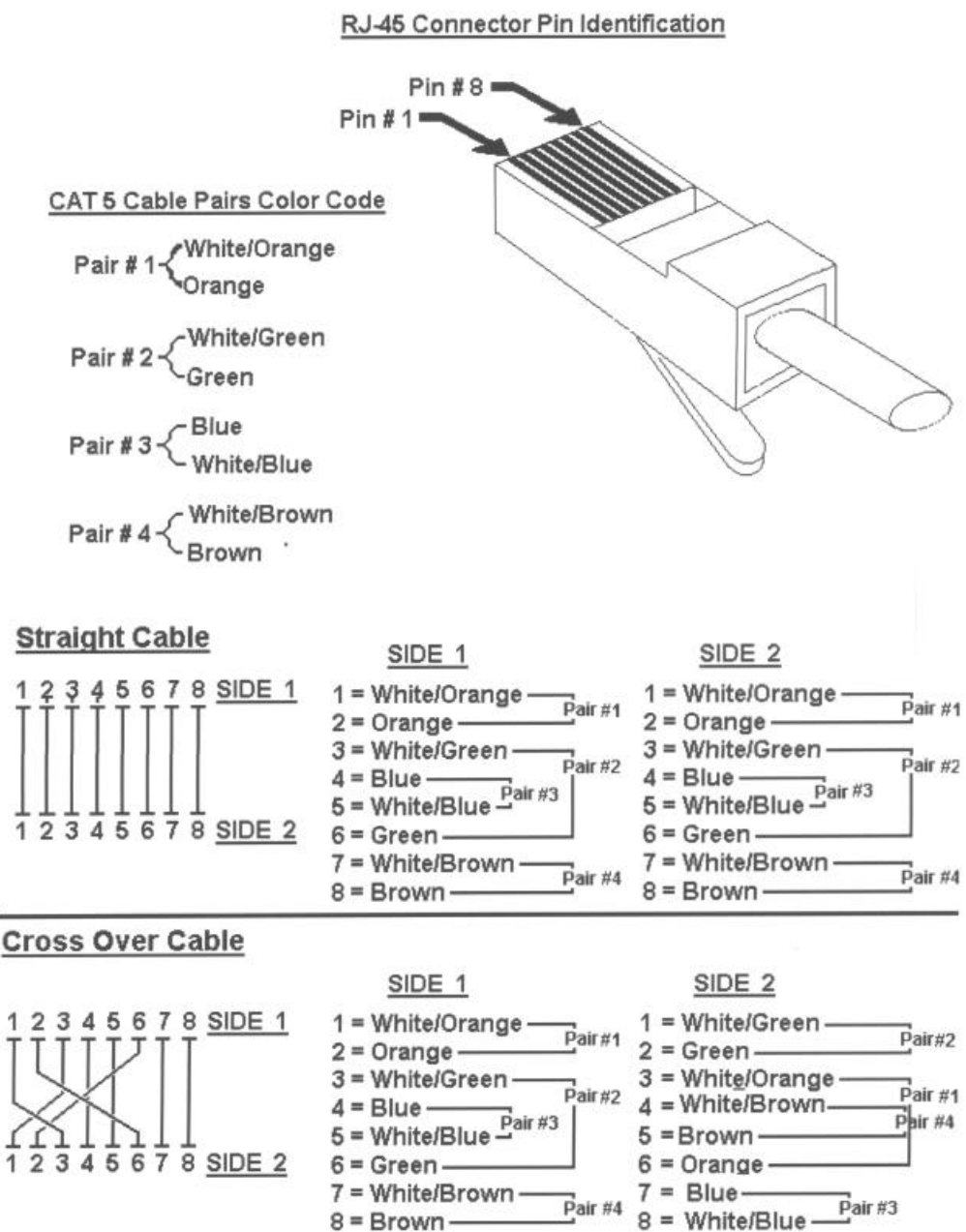
In order for Ethernet or Fast Ethernet to work the wires must be arranged correctly inside the RJ-45 connector. The most common problem on Ethernet or Fast Ethernet networks is the cable. If you migrate from Ethernet to Fast Ethernet, make sure the cables are pinned out properly.

There are two types of cables: straight through and crossover. Category 3, 4, and 5 UTP/STP cable has eight wires inside the sheath. The wires form four pairs. Straight through cable has the same pin out, inside the RJ-45 connector, at both ends. Crossover cable has a different pin arrangement at each end. Fast Ethernet does not tolerate incorrect pin arrangements. You must use the correct pin arrangement in order for the DES-5200 to work properly. See Figure 11, for an example of straight through and crossover cable.

The type of cable you use depends on the speed of your network. A network running at 10 Mbps can use lower grade cable than a network running at 100 Mbps. Table 4: Cable Specifications for Copper Connection, shows the cable requirements for Ethernet and Fast Ethernet networks.

**Table 4: Cable Specifications for Copper Connection**

Ethernet Type	Cable Requirements	Maximum Length
10BASE-T	Category 3, 4, and 5 UTP or STP	100 M (328 ft.)
100BASE-TX	Category 3, 4, and 5 UTP or STP	100 M (328 ft.)

**568B Specification - Cable Fabrication Instructions****Figure 11: Cable Diagram**

## Fiber Optic Cable

Data can travel much farther over fiber optic cable than over Category 3, 4, or 5 cable. Cable length can be up to two kilometers (1.25 miles) in full duplex and 412 meters (1350 feet) in half duplex transmitting at 100 Mbps.

Fiber optic cables connected to the fiber expansion module for 100 Mbps must meet the following specifications to carry 1300 nm wavelength for the specified distance:

- Multi-mode cable ISO/IEC 793-2 type B1 and ITU-T G.652 standards
- Cable must have SC connectors

Fiber optic cables attached to the gigabit expansion module must meet the following specifications to carry 850 nm wavelength for the specified distance:

- Multi-mode cable ISO/IEC 793-2 type B1 and ITU-T G.652 standards
- Cable must have SC connectors

Gigabit traffic can travel the following distances using the specified cable:

- 62.5 um cable 220 meters (720 feet)
- 50 um cables 500 meters (1639 feet)

---

## Ports

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### MDI-X Ports

The ports in the 12-Port 10/100-TX module are MDI-X crossover ports. The pin arrangement is the same as the arrangement in a crossover cable. The advantage of MDI-X ports is that you can connect a device with an MDI-II port without using a crossover cable. The steps for connecting the DES-5200 to 10 Mbps devices or 100 Mbps devices are the same. All the ports will auto negotiate the proper speed and duplex mode. There are two full sized TX modules and one half sized TX module available for the DES-5200. The chassis supports a maximum of 28 10/100-TX ports.

### Fiber Optic Ports

The DES-5200 supports 100BASE-FX and 1000BASE-SX. The chassis supports a maximum of 20 100BASE-FX ports and a maximum of 2 1000BASE-SX ports.

There are two 100BASE-FX modules available: a full size 8-Port 100BASE-FX module and a 2-Port 100BASE-FX half size module. The 100BASE-FX ports support full and half duplex at 100 Mbps. The ports do not support 10 Mbps.

A half size 1-Port 1000BASE-SX module is available. The 1000BASE-SX module only supports full duplex at 1000 Mbps.

Refer to Installing Optional Modules for installation instructions. Refer to Cable Specifications for information on cable types and connectors.

Follow these steps to connect cables to the DES-5200:

1. Check for the appropriate cable configuration for each device.
2. Plug one end of the cable into any of the ports.
3. Plug the other end into the appropriate port on the other device.
4. Verify that the LED indicates connection at the proper speed and duplex mode.

### RS-232 Port

Follow these steps to connect the DES-5200 and another device:

1. Plug one end of the cable provided into the port.
2. Plug the other end into the PC.
3. Run HyperTerminal or a terminal emulation program using the settings given for Local Console Management at the beginning of Chapter 5.

---

## **DES-5200 to DES-5200 Connection**

---

Two or more DES-5200s can be connected together through one or more media ports. When connecting multiple ports to another DES-5200 use port trunking for better performance. When bandwidth aggregation is desired, connect multiple ports to another DES-5200. Refer to Chapter 5 for information about port trunking.

---

## **Connecting the DES-5200 to other Switches and Hubs**

---

You can connect the DES-5200 to other switches and hubs on the network. The DES-5200 is compatible with the DES-3216, DES-3224, DES-5016 and DES-5024.



## LEDs

The LED panel is designed to enable you to manage the DES-5200 at a glance. The LEDs on each module are dealt with in detail.

The LEDs indicate the following:

- Power
- Status
- Diagnostic
- Utilization
- TxRx
- Link
- 100/10
- Link/ TxRx
- Duplex
- Collision
- Receiving
- Transmitting
- Act

All LEDs are described in detail. Use the tables to determine the meaning of each LED. All LEDs are located on the front of the DES-5200, displayed in Figure 12.

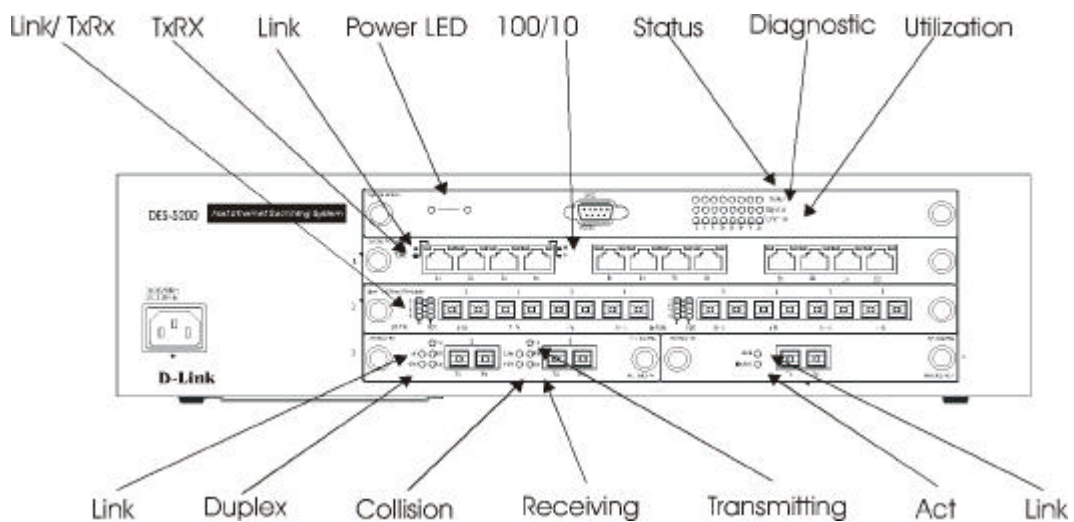


Figure 12: DES-5200 LEDs

## CPU Module

The CPU module, displayed in Figure 13, is at the top of the chassis. This is the only slot it will work in. If it is not at the top of the chassis, the DES-5200 will not work. See Table 6: CPU Module LEDs for an explanation of the LEDs on the CPU module.

Each LED is explained in detail.

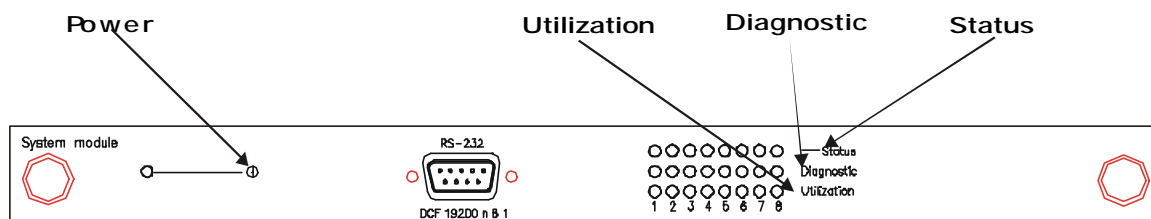


Figure 13: CPU Module

### Power

The power LED lights when the DES-5200 is powered on. The purpose is to confirm that the DES-5200 is getting adequate power. See Table 5: Power LED.

Table 5: Power LED

Status	Color	Meaning
On	Green	DES-5200 is powered on
Off	Dark	DES-5200 is powered off, check power cable and connection

### Status

The Status LED indicates the status of a firmware download. The LED will increment from left to right while firmware is being downloaded. It will be dark during normal operation.

### Diagnostic

The Diagnostic LED is used to diagnose any problems on the DES-5200. If any part of the DES-5200 fails the POST or if a problem occurs the Diagnostic LED displays a code indicating the problem. See Chapter 6 for the meaning of the LED code and a recommended action.

### Utilization

The Utilization LED indicates the utilization of the DES-5200's CPU. It increments from left to right. The higher the number the greater the utilization.

**Table 6: CPU Module LEDs**

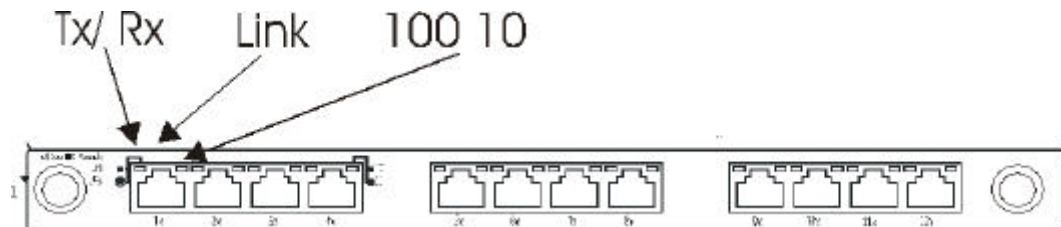
LED	Lit or Flashing	Dark
Status	Status LED increments when firmware is being loaded to the DES-5200	Normal if firmware is not being loaded
Diagnostic	Displays the error codes if there is a failure during the POST or during operation	Normal if there are no problems. See Chapter 7 for a chart showing the meaning of the Diagnostic LED.
Utilization	Displays the utilization of the DES-5200. LED increments left to right, higher numbers indicate greater utilization.	Check Diagnostic LED if the DES-5200 is on and all Utilization LED are dark

---

## 12-Port 10/100-TX Module

---

This section covers the LEDs on the 12-Port 10/100 TX Module, displayed in Figure 14. The meaning of the LEDs is displayed in Table 7: 12-Port 10/100-TX Module LEDs.



**Figure 14: 12-Port 10/100-TX Module LEDs**

### **Tx/Rx**

LED indicates transmission and reception at the port. Packets are being transmitted and received at the port.

### **Link**

The Link LED indicates there is a link at the port. If a cable is plugged into the port and the Link LED is off, check the cable and connection. The default value is that all ports auto-negotiate the proper speed and duplex mode. If the port has been manually configured for a particular speed and duplex mode, verify that the speed and duplex mode of the port match the speed and duplex mode of the device you are connecting to. The LED will be steady at orange or green when there is no activity.

The color of the Link LED indicates the port's speed. Orange indicates the port is operating at 10 Mbps. Green indicates the port is operating at 100 Mbps.

### **100 10**

Indicates the speed the port is in. Each port can be set for a particular speed and duplex mode. Off indicates the port is running at 10 Mbps. Green indicates the port is running at 100 Mbps.

**Table 7: 12-Port 10/100-TX Module LEDs**

LED	Green	Dark
Link	Green indicates port speed is 100 Mbps LED flashes when there is activity.	No link or link is down
100 10	Port is working at 100 Mbps	Port is working at 10 Mbps

## 2-Port 10/100-TX Module

The LEDs on the 2-Port 10/100-TX Module are different than on the 12-Port 10/100-TX Module. Refer to Table 8: 2-Port Tx Module LEDs.

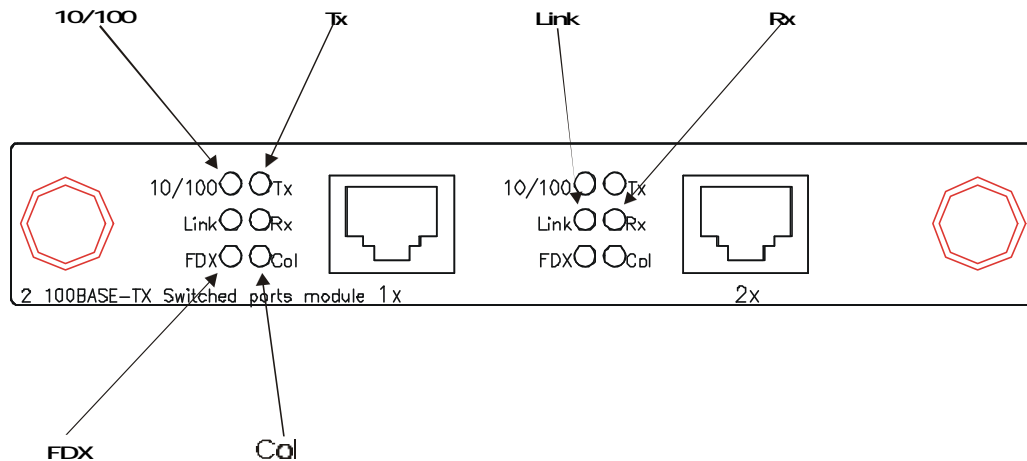


Figure 15: 2-Port 10/100-TX Module

### 100/10

The 100/10 LED indicates the speed of the port. It is lit when the port is running at 100 Mbps and dark when the port is at 10 Mbps.

### Tx

Tx means transmitting. The Tx LED lights to indicate the port is transmitting data.

### Link

Link means link. The Link LED lights to indicate there is a link at the port.

### FDX

FDX means duplex mode. The FDX LED indicates the port's duplex mode. The LED is lit when the port is in full duplex and dark when the port is in half duplex.

### Rx

Rx means receiving. The Rx LED is lit when the port is receiving data.

## Col

Col means collision. The Col LED is amber when collisions occur at the port. Collisions are normal on the network. You should be concerned when a high number of collisions happen at the port.

**Table 8: 2-Port Tx Module LEDs**

LED	Lit	Dark
100/10 (Speed) (Green)	Port is set for 100 Mbps	Port is set for 10 Mbps
Link (Link) (Green)	Port is linked to another device	No link
FDX (Duplex Mode) (Green)	Port is in full duplex	Port is in half duplex
Tx (Transmission) (Green)	Port is transmitting data	Port is not transmitting data
Rx (Receiving) (Green)	Data is being received at the port	Port is not receiving data
Col (Collision) (Amber)	Collisions are occurring at the port	No collisions are occurring

## 8-Port FX Module

This section covers the LEDs on the 8-Port FX Module, displayed in Figure 16. Refer to Table 9: 8-Port FX Module LEDs.

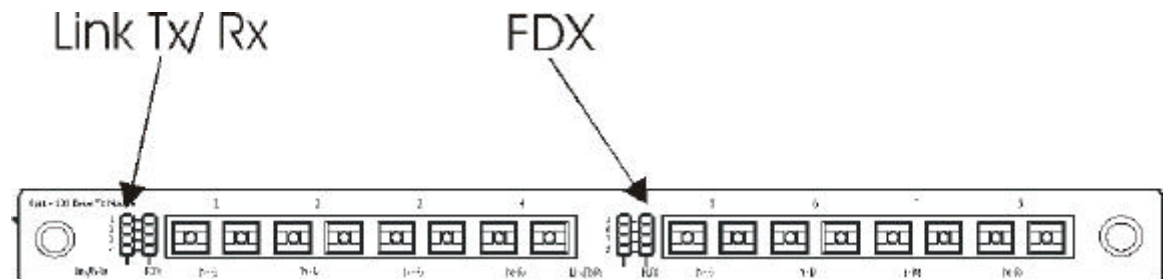


Figure 16: 8-Port FX Module

### Link Tx/ Rx

Indicates there is a link between devices at a specific port and that there is activity at the port. The LED lights when there is a link at the port. It is dark when there is no link. Tx/ Rx refers to data passing through the port. The LED flashes when there is activity at the port.

### FDX

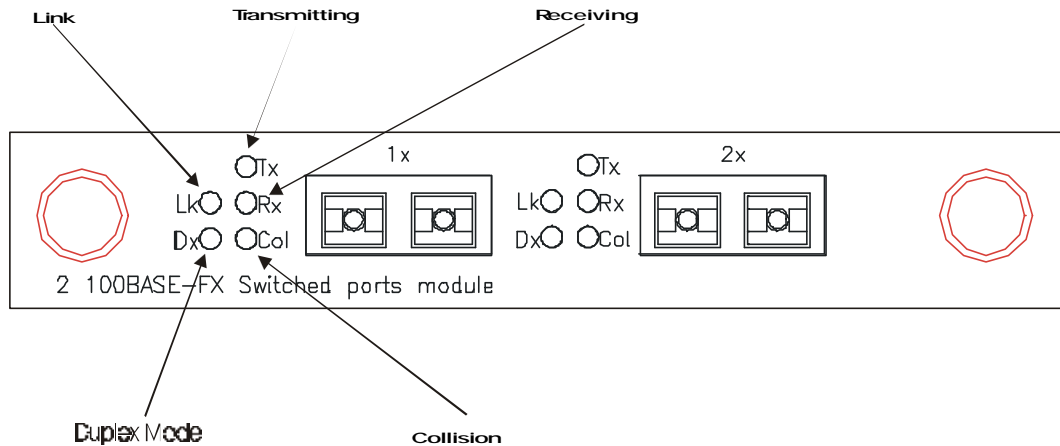
On indicates the port is in full duplex mode. Off indicates the port is in half duplex. The LED is lit in full duplex and dark in half duplex.

Table 9: 8-Port FX Module LEDs

LED	Lit or Flashing	Dark
Link/ Tx Rx	Indicates the port has an active connection. Flashing indicates transmission or receiving	There is no link or activity
FDX	Indicates port is in full duplex	Indicates port is in half duplex



## 2-Port 100BASE-FX Module



**Figure 17: 2-Port 100BASE-FX Module**

The LEDs on the 2-Port 100BASE-FX Module, displayed in Figure 17, are different from the LEDs on the modules. The information given is the same but it is presented differently. Refer to Table 10: FX Module LED.

### Lk

Lk indicates there is a link. The Lk LED lights to indicate there is a link at the port.

### Dx

Dx means duplex mode. The Dx LED indicates the port's duplex mode. The ports will not auto negotiate the duplex mode. The default value is half duplex. They can be manually set for full duplex. The LED is lit when the port is in full duplex and dark when the port is in half duplex.

### Tx

Tx means transmitting. The Tx LED lights to indicate the port is transmitting data.

### Rx

Rx means receiving. The Rx LED flashes when the port is receiving data.

### Col

Col means collision. The Col LED lights amber when collisions occur at the port. Collisions are normal on the network. You should only be concerned when a high number of collisions happen at the port.

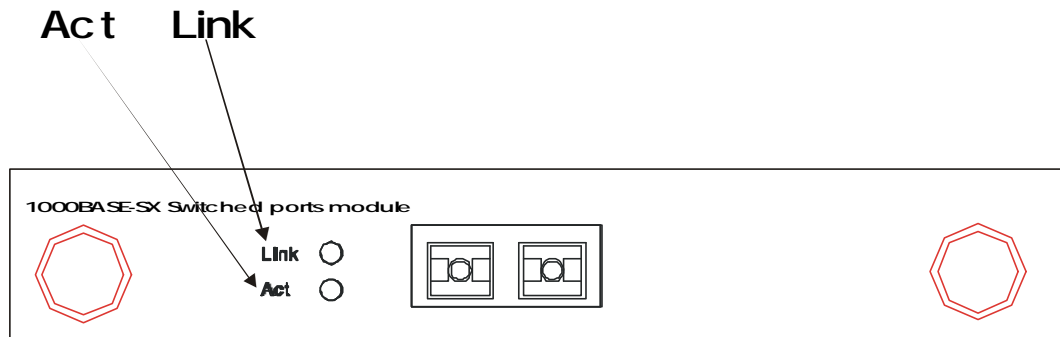
**Table 10: FX Module LED**

LED	Lit	Dark
Lk (Link) (Green)	Port is linked to another device	No link
Dx (Duplex mode) (Green)	Port is in full duplex	Port is in half duplex
Tx (Transmitting) (Green)	Port is transmitting data	No data is being transmitted
Rx (Receiving) (Green)	Data is being received	No data is being received
Col (collisions) (Amber)	Collisions are occurring at the port	No collisions are occurring

---

## 1-Port 1000BASE-SX Module

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**Figure 18: 1-port 1000BASE-SX Module**

The gigabit module, displayed in Figure 18, has one port. Refer to Table 11: Gigabit Module LED.

### Link

The Link LED lights to indicate there is a link at the port.

### Act

Act means activity. The Activity LED indicates the port is transmitting or receiving data.

**Table 11: Gigabit Module LED**

LED	Lit	Dark
Link (Green)	Port is linked to another device	No link
Act (Flashing Green)	Port is transmitting or receiving data	Port is not transmitting or receiving data

---

## Console Based Management

This chapter covers three types of management:

- Console Management (out-of-band)
- Telnet Management (in-band)
- D-View/ SNMP Management

Web management is covered in Chapter 6.

The DES-5200 can be managed in-band or out-of-band. In-band management refers to managing the DES-5200 through Telnet, using one of the ports.

The interface and options are the same with Console and Telnet Management. The difference is the type of connection and the port that is used to manage the DES-5200. Telnet is In-Band Management.

D-View is a proprietary SNMP management program. D-View module is provided with the DES-5200. The DES-5200 supports other SNMP management applications and uses standard MIB. Refer to appropriate documentation for installing and using other SNMP application programs. The look and feel of D-View is different from other management types. Refer to other documentation if you are using other vendors' SNMP applications.

All instructions given in this chapter assume that you are logged into the DES-5200 and are at the appropriate panel for carrying them out.

---

## Console Management

---

Console Management is always done through the RS-232 serial port and requires a direct connection between the DES-5200 and a PC. This type of management is very useful when the network is down and the DES-5200 cannot be reached by any other means.

Use Console Management to log into the DES-5200 for the first time. You do not need to know the IP address to log in using Console Management. You can change all the settings and configure the DES-5200, set the IP address and perform other management functions. The management session will timeout after five minutes if you have not taken any action. Press Enter or Control + r to refresh the screen. You will have to log in again after a timeout.

Follow these steps to begin a management session using Console Management:

1. Attach the male end of the RS-232 serial cable provided with the DES-5200 to the RS-232 port located at the front of the DES-5200.
2. Attach the other end to the serial port of a PC or workstation.
3. Run a terminal emulation program using the following settings:
  - **Emulation:** VT-100/ANSI compatible
  - **BPS:** 19200
  - **Parity:** None
  - **Stop bits:** 1
  - **Flow Control:** Xon/Xoff
  - **Terminal Keys:** Enabled
4. Press Enter to display the login panel.
5. Log in using the default User Name and Password. The User Name and Password are case sensitive.
  - **User Name:** D-Link
  - **Default Password:** D-Link
6. Press Enter to reach the Main menu.

---

## Telnet Management

---

You can manage the DES-5200 via Telnet session. However, first you must assign a unique IP address to the DES-5200. Use Console Management to log into the DES-5200 for the first time so that you can assign an IP address. Once you have assigned an IP address to the DES-5200, you can use the management method of your choice.

Telnet management can be done through any of the ports on the switch. You can use any Telnet application that emulates a VT100 terminal. You must install TCP/IP on the workstation before using Telnet. Only one Telnet session can be active at a time.

### Configuring Through the Ethernet Port

Follow these steps to manage the DES-5200 through a Telnet session:

1. Assign an IP address to the DES-5200.
2. Attach one end of an Ethernet cable to one of the Ethernet ports on the DES-5200.
3. Attach the other end of the cable to a workstation.
4. Access the DES-5200 through Telnet.
5. Log into the DES-5200 using your user name and password.

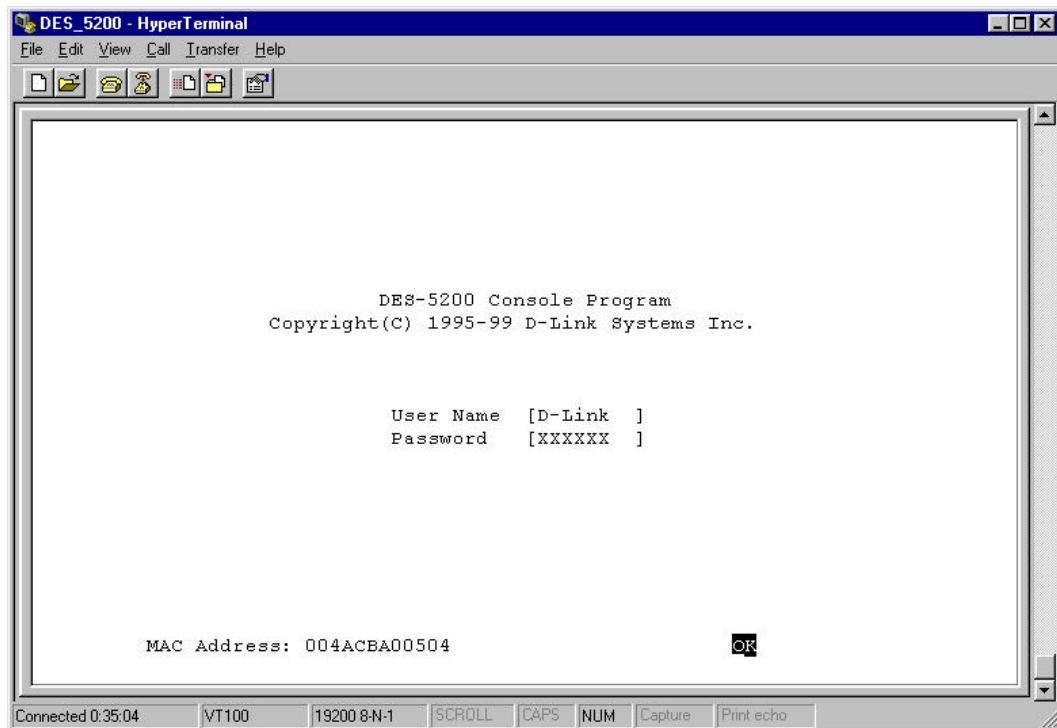
The Telnet session will timeout after five minutes. Any changes that have not been saved are lost. Press Enter to reconnect after a timeout.

---

## Log In

---

The Log In panel, displayed in Figure 19, is the first panel you see when connecting to the DES-5200. All management methods require you to log into the DES-5200 with your user name and password before beginning a management session. For security, you should change the default User Name and Password.



**Figure 19: Login**

Follow these steps to log into the DES-5200 for the first time:

Enter the default User Name and Password and press Enter. The User Name and Password are case sensitive.

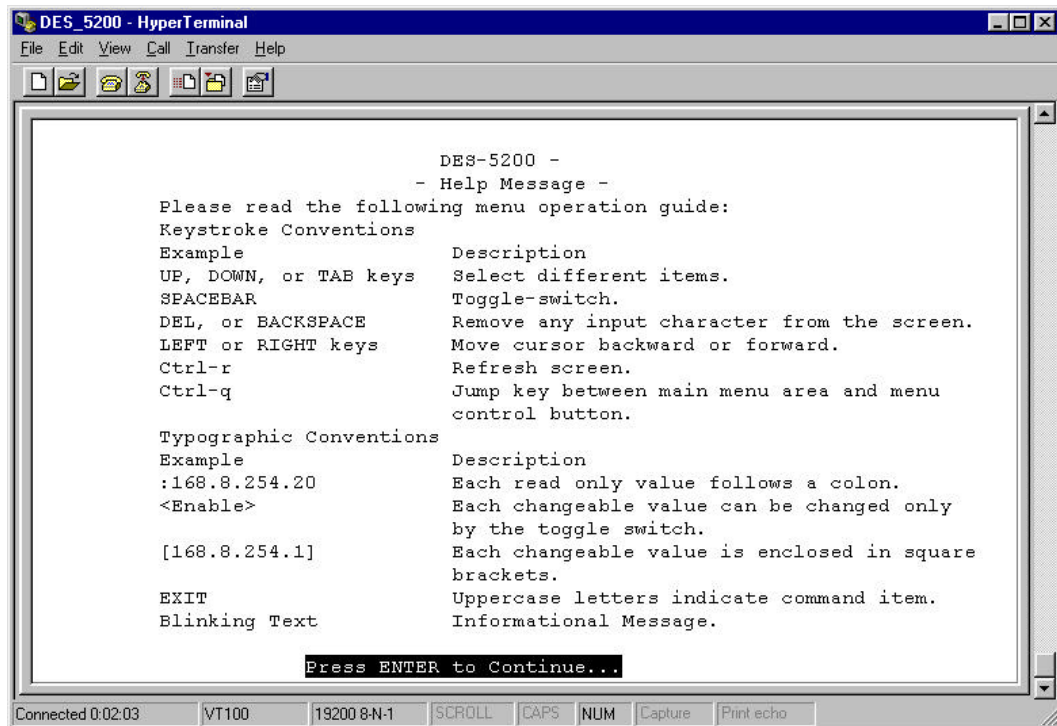
- **Default User Name:** D-Link
- **Default Password:** D-Link

The MAC Address at the bottom of the screen cannot be changed.

## Help Message

---

A one page panel, displayed in Figure 20, is available. The menu lists the keystroke and typographic conventions available on the DES-5200.



**Figure 20: Help Message**



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## Panel Conventions

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### Keystroke Conventions

Example	Description
UP, DOWN, or TAB keys	Select different items
SPACEBAR	Toggle-switch
DEL, or BACKSPACE	Remove an input character from the screen.
LEFT or RIGHT keys	Move cursor backward or forward.
Ctrl-r	Refresh Screen

### Typographic Conventions

Example	Description
:168.8.254.20	Each read only value can be changed only by the toggle switch.
[168.8.254.1]	Each changeable value is enclosed in square brackets.
EXIT	Uppercase letters indicate a COMMAND item.
Blinking Text	Warning Message.

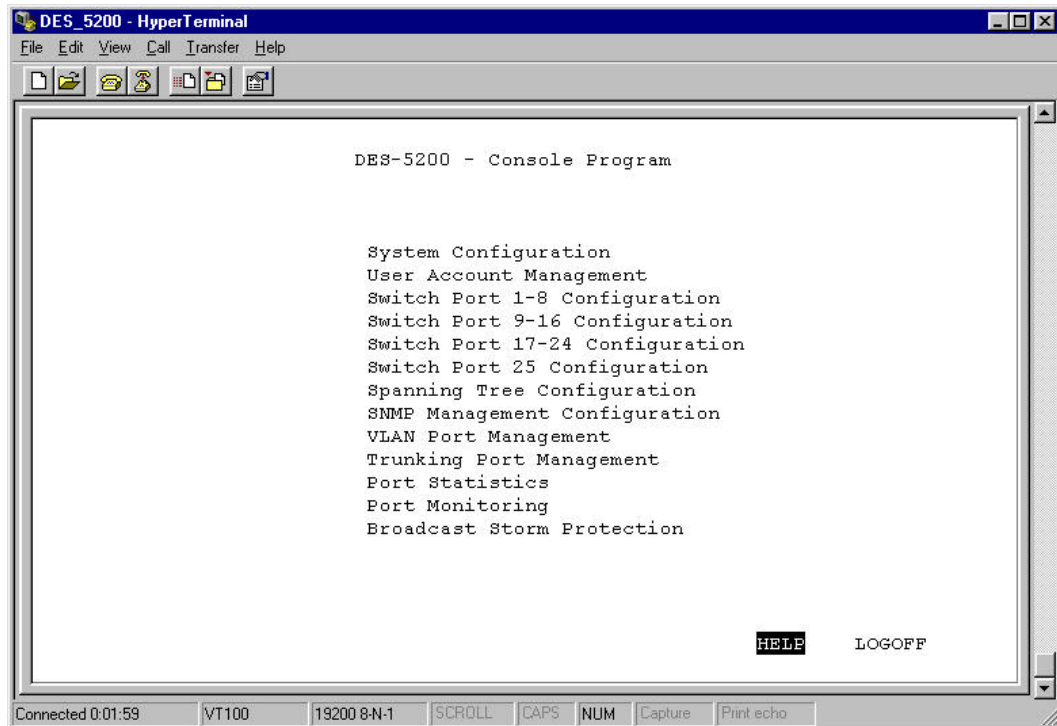
After you are finished viewing the help panel, press Enter to return to the main menu.

---

## Console Program

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The Console Program, shown in Figure 21, is the main menu of the DES-5200.



**Figure 21: Console Program**

### System Configuration

The System configuration menu shows general information about the DES-5200 and enables you to assign a LAN IP Address, Subnet Mask, LAN Default Gateway and the contact information of the system administrator.

### User Account Management

The User Account Management menu enables you to add users, delete users and modify user account information.

### Switch Port Configuration

The Switch Port Configuration menu enables you to configure individual ports. You can set the speed, duplex mode, enable and disable ports and make other changes. The panels and options may be different, depending on the DES-5200 model you purchased and the modules you have installed. Refer to Chapter 4, LEDs, for an explanation of the differences between the modules.

## **Spanning Tree Configuration**

The menu enables you to enable or disable Spanning Tree Algorithm, set the Bridge Priority, Hello Time, Forward Delay Time and Max Age Time.

## **SNMP Management Configuration**

The SNMP Management Configuration menu enables you to create SNMP Communities and configure SNMP Trap Manager Settings.

## **VLAN Port Management**

The VLAN Port Management menu enables you to create, delete, and modify VLANs quickly and easily.

## **Trunking Port Management**

The Trunking Port Management menu enables you to create, delete and modify Trunking Ports quickly and easily.

## **Port Statistics**

The Port Statistics panel displays statistical information about each port.

## **Port Monitoring**

Port Monitoring allows users to monitor specific ports for several types of information without using an SNMP application.

## **Broadcast Storm Protection**

Broadcast Storm Protection provides optional protection against broadcast storms. The option can be enabled or disabled.

Follow these steps to select a menu:

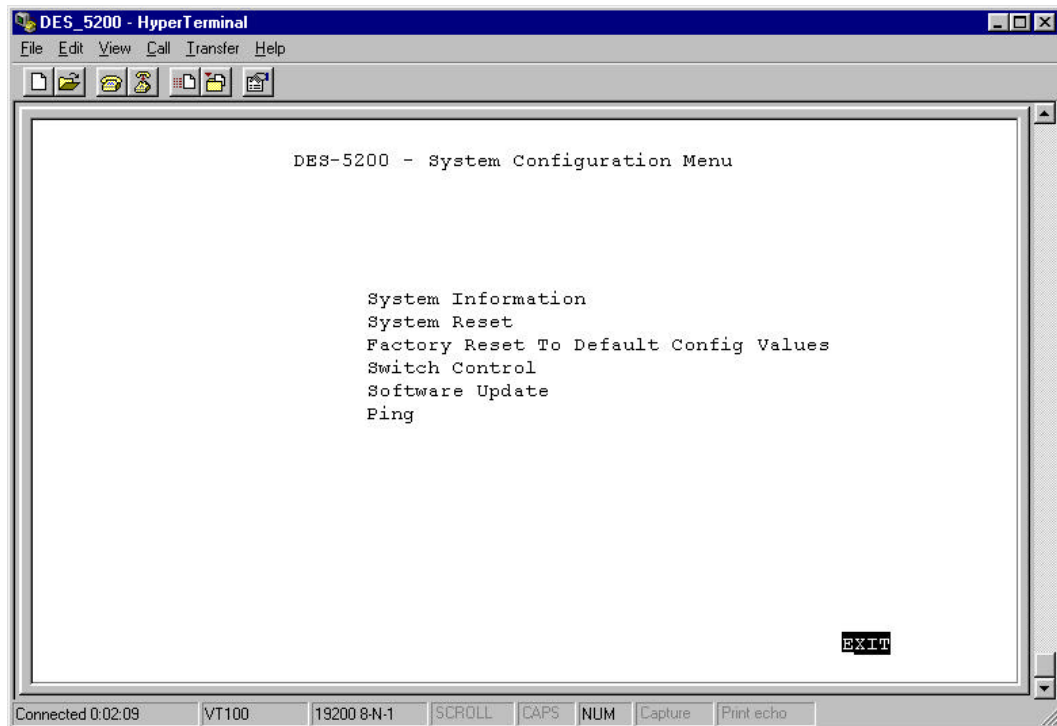
1. Use the tab key or the up and down arrow keys to select an option.
2. Press Enter.

---

## System Configuration Menu

---

Managing the DES-5200, displayed in Figure 22, enables you to change the configuration of the DES-5200.



**Figure 22: System Configuration Menu**

### System Information

The System Information menu displays the Hardware Revision, MAC address, LAN IP address and other information on the DES-5200.

### System Reset

The System Reset menu enables you to reset the DES-5200 through software rather than powering off.

### Factory Reset to Default Config Values

Enables you to reload factory default configurations.

### Switch Control

The advantages and disadvantages of this method each are explained in a later section.

## Software Update

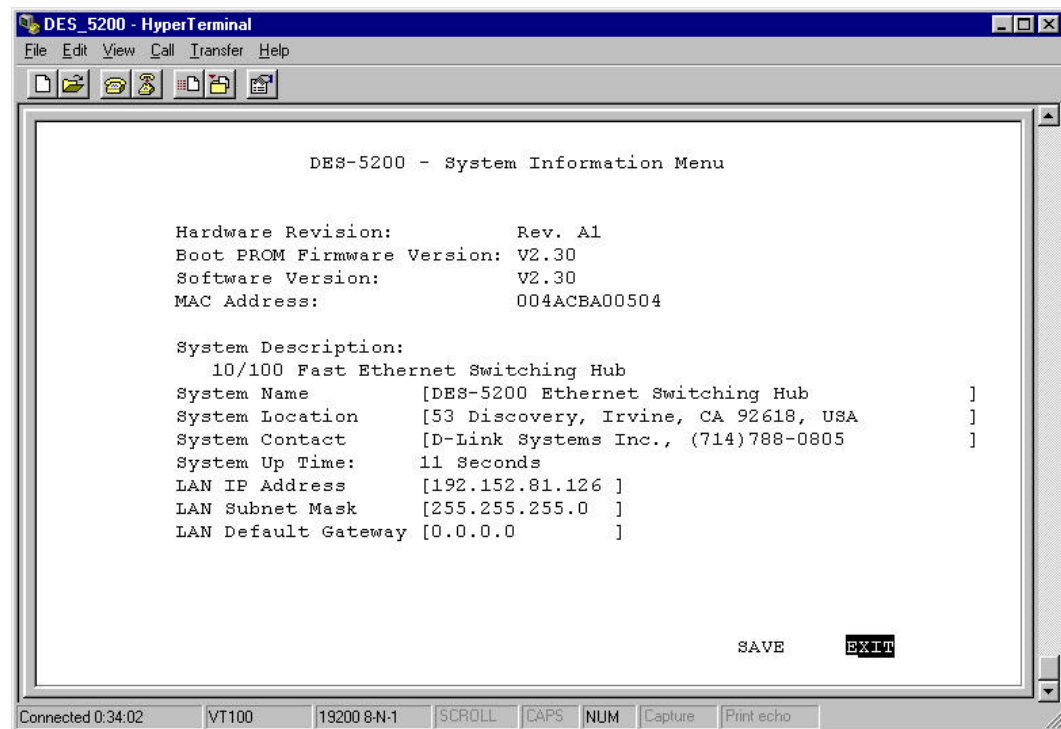
There are two ways to update software: XMODEM and TFTP. XMODEM requires a direct connection between the DES-5200 and a PC. TFTP is done through Telnet and can be done from a remote location using a TFTP server.

## Ping

Ping enables users to ping devices and check to see if they are on the network.

## System Information Menu

The System Information menu, displayed in Figure 23, enables you to enter management and configuration information on the DES-5200. Remember that information in brackets can be changed.



**Figure 23: System Information**

### Hardware Revision

Specifies the hardware revision and the product generation. Each revision is numbered incrementally.

### Boot PROM Firmware Version

Specifies the version of the Boot PROM being used on the DES-5200. Each version is numbered incrementally.

### **Software Version**

Specifies the software version being used on the DES-5200. You can update the software. Each version is numbered incrementally.

### **MAC Address**

Specifies the hardwired address of the DES-5200. This address cannot be changed.

### **System Description**

Brief manufacturer description of the DES-5200. This value cannot be changed.

### **System Name**

Specifies the full name of the DES-5200. This value can be changed, enabling you to assign a unique name. The field holds 44 characters.

### **System Location**

Specifies the physical location of the DES-5200. A building number or street address can be entered in this field. The field holds 44 characters.

### **System Contact**

Specifies the group or individual to contact if there is a problem with the DES-5200. The field holds 44 characters.

### **System Up Time**

Indicates the length of time the DES-5200 has been running without being rebooted.

### **LAN IP Address**

Specifies the unique IP address of your LAN. Enter up to 15 characters. A LAN IP Address must be assigned before using Web Management or updating software through TFTP.

### **LAN Subnet Mask**

Specifies the subnet mask, if you are subnetting. You can enter up to 15 characters. A LAN Subnet Mask must be assigned in order to update software through a TFTP server that is not on the same subnet as the DES-5200.

### **LAN Default Gateway**

Specifies the default gateway. You can enter up to 15 characters. A LAN Default Gateway must be assigned in order to update software through a TFTP server that is not on the same subnet as the DES-5200.

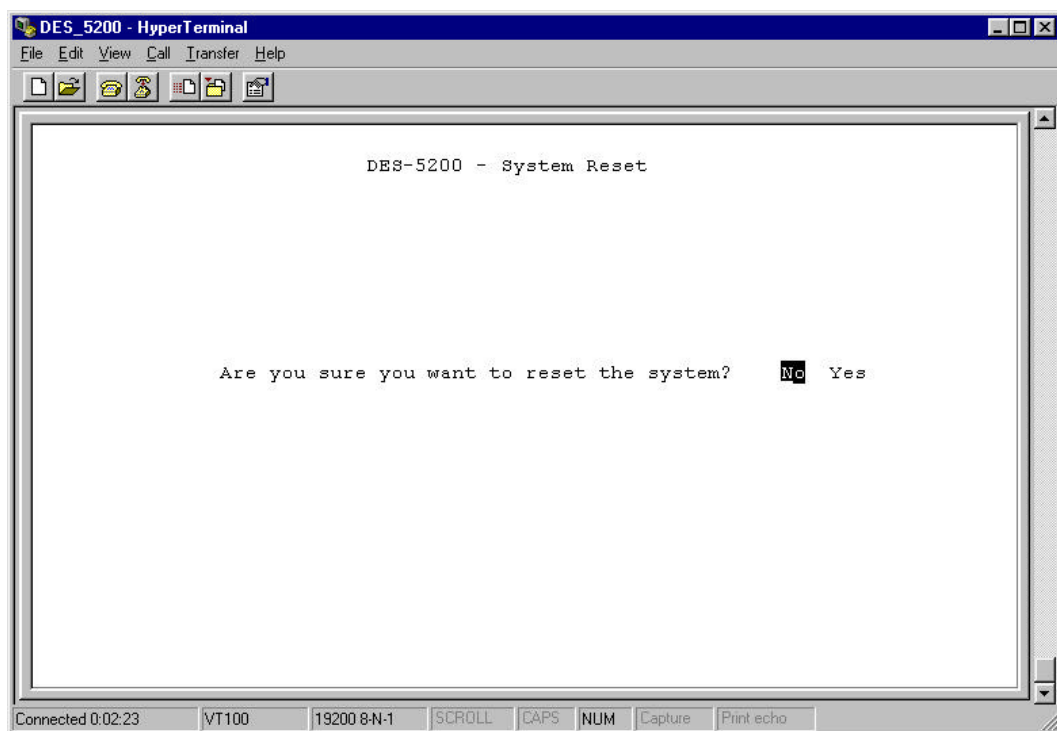
Follow these steps to enter user changeable information:

Select the field you would like to edit.

1. Delete the default information.
2. Enter the new information.
3. Select Save and press Enter. Follow screen prompts.

## System Reset

The System Reset panel, displayed in Figure 24, enables you to reset the DES-5200 without powering off.



**Figure 24: System Reset**

Some configurations require that the DES-5200 be reset in order for them to take effect. Screen prompts instruct you to reset as needed.

Follow these steps to reset the DES-5200:

1. Select Yes.
2. Press Enter.

To exit without resetting:

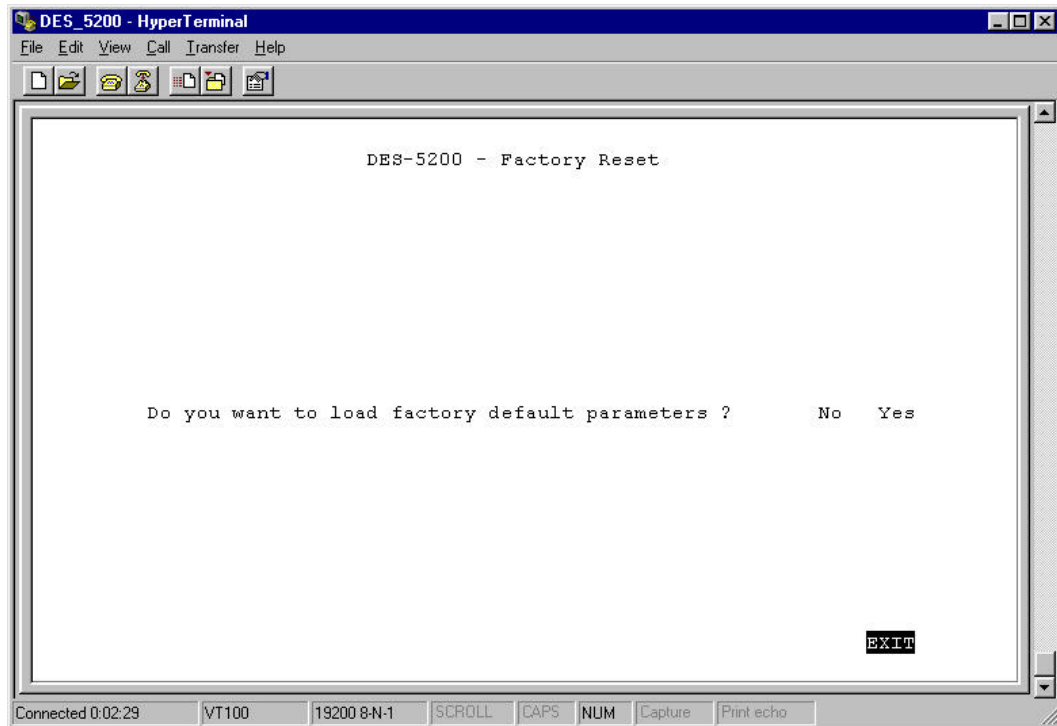
1. Select No.

2. Press Enter.



## Factory Reset

The Factory Reset panel, displayed in Figure 25, is used to reset the DES-5200 and restore all factory default values. Using this panel erases all configurations and customization.



**Figure 25: Factory Reset**

Follow these steps to restore factory default configurations:

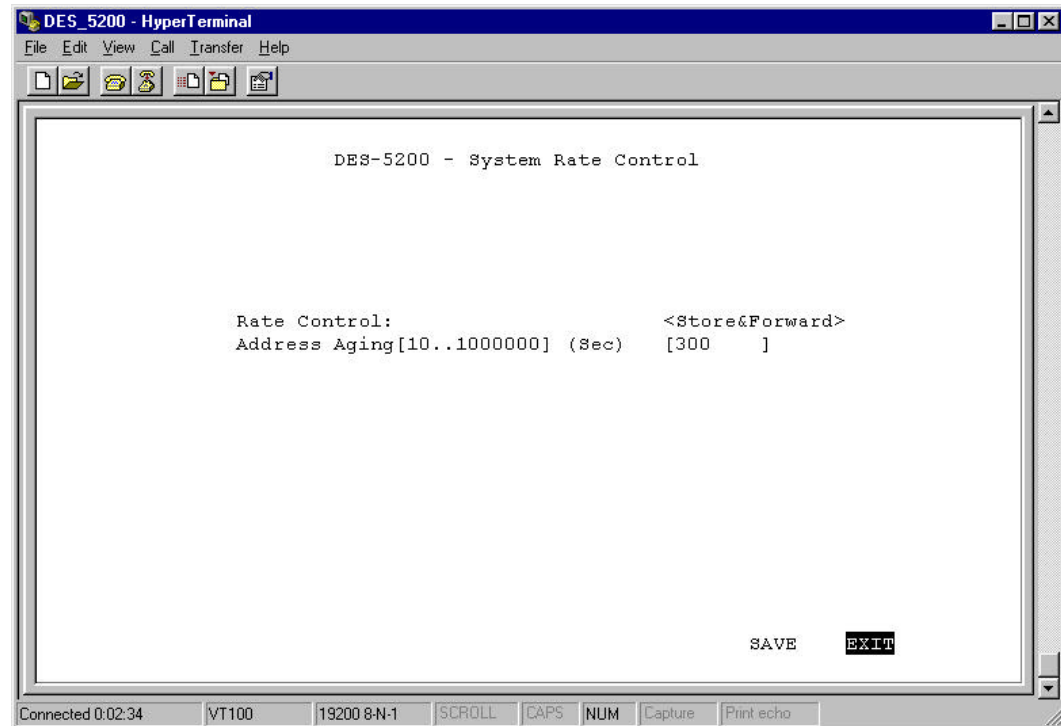
1. Select Yes.
2. Press Enter.

To exit without resetting:

1. Select No or EXIT.
2. Press Enter.

## Switch Control

Switch Control, displayed in Figure 26, enables you to set the Address Aging.



**Figure 26: System Rate Control**

## Rate Control

Store and Forward is a global setting that affects all the ports except the RS-232 port.

Store and Forward means that when the DES-5200 receives an incoming packet it “stores” the packet until the entire data packet has been received before it “forwards” the packet to a destination.

### Advantages of Store and Forward

Store and Forward only sends out valid data packets. Bad packets created by collisions on the network or damaged packets are filtered out.

Store and Forward is necessary when some devices on the network run at 10 Mbps and others run at 100 Mbps.

### Disadvantages of Store and Forward

Store and Forward requires more time because it receives the whole packet before sending it out. Every byte buffered is an additional eight microseconds of delay.

Store and Forward requires more memory because the DES-5200 must store the packet before sending it out.

### **Address Aging**

Address aging is the length of time the address will remain in the MAC address table.

Follow these steps to change the address aging:

1. Highlight the address aging and enter a new value from 10 to 1000000.
2. Select Save and press Enter. Select Exit and press Enter to exit the menu.

### **Software Update Menu**

The Software Update menu is used to update the software on the DES-5200. Software can be updated using either XMODEM or TFTP.

XMODEM requires a direct physical connection between a PC and the DES-5200.

TFTP requires a TFTP server and that you know the Internet Protocol (IP) address of the server and the complete path and filename. TFTP can be done over the network or from a remote location.

### **Software Update Configuration**

#### **XMODEM**

There are two options on the menu displayed in Figure 27. XMODEM is the default option.

#### **Download Mode**

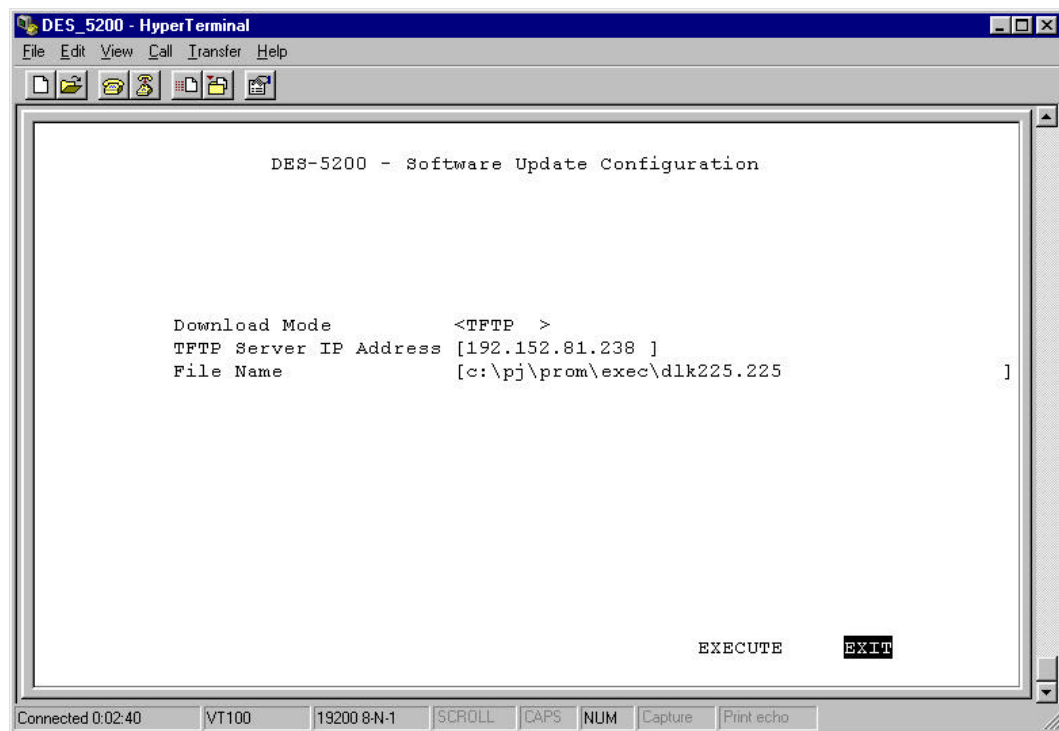
Enables you to select the method for downloading firmware.

#### **TFTP Server IP Address**

Enter the address of the TFTP server the firmware is going to be downloaded from.

#### **File Name**

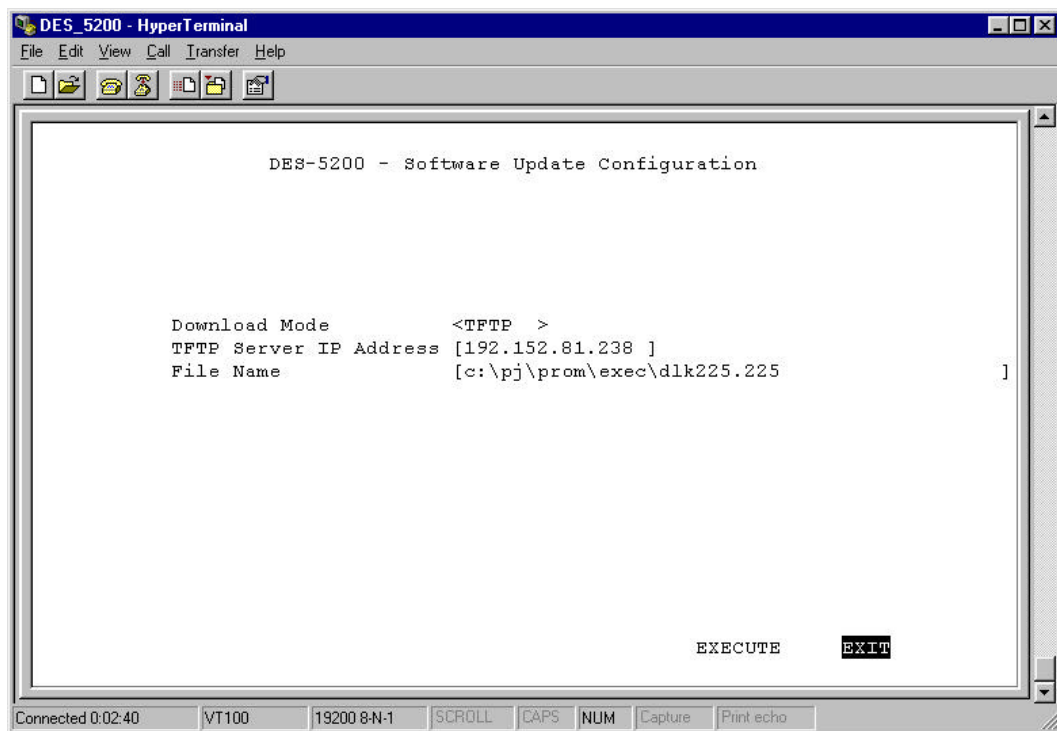
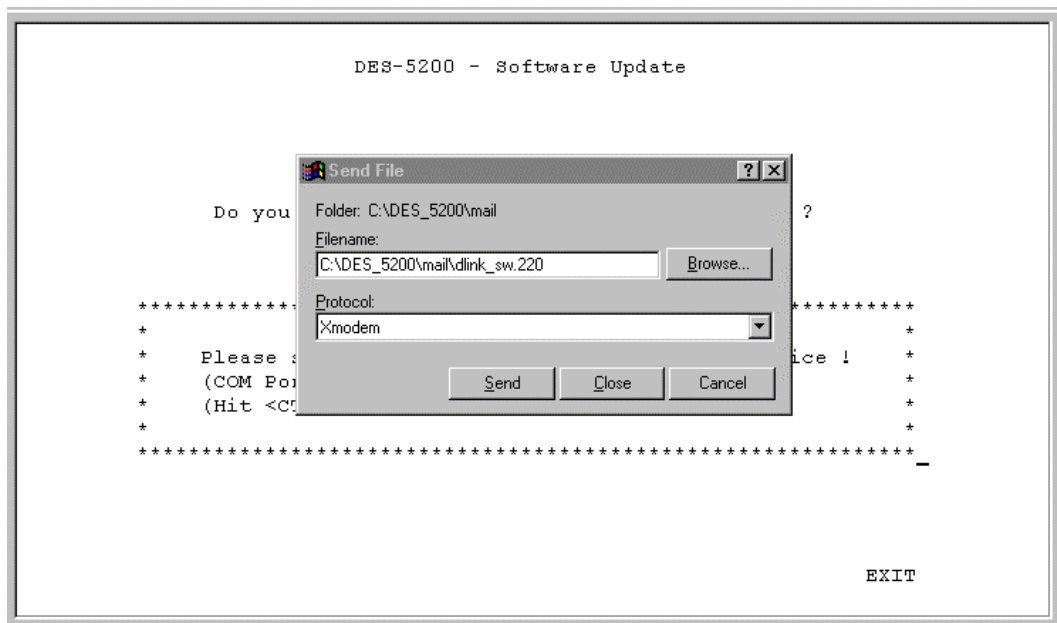
The name of the file to be downloaded.



**Figure 27: Software Update Configuration**

Follow these steps to download using XMODEM:

1. Use HyperTerminal with the settings given under Local Console Management.
2. Verify the download mode is set for XMODEM.
3. Select EXECUTE and press Enter.
4. You will see a confirmation panel, displayed in Figure 28. If you do not want to update software select No and press Enter to return to the previous panel.
5. Go to Transfer on the HyperTerminal menu and select Send File, Figure 29. Browse to the location of the software update and send the file. You will see the panel displayed in Figure 30, that shows elapsed time and other information about the software update.
6. Reset the DES-5200 when you see the final update panel, displayed in Figure 31.

**Figure 28: Software Update Confirmation****Figure 29: Send File**

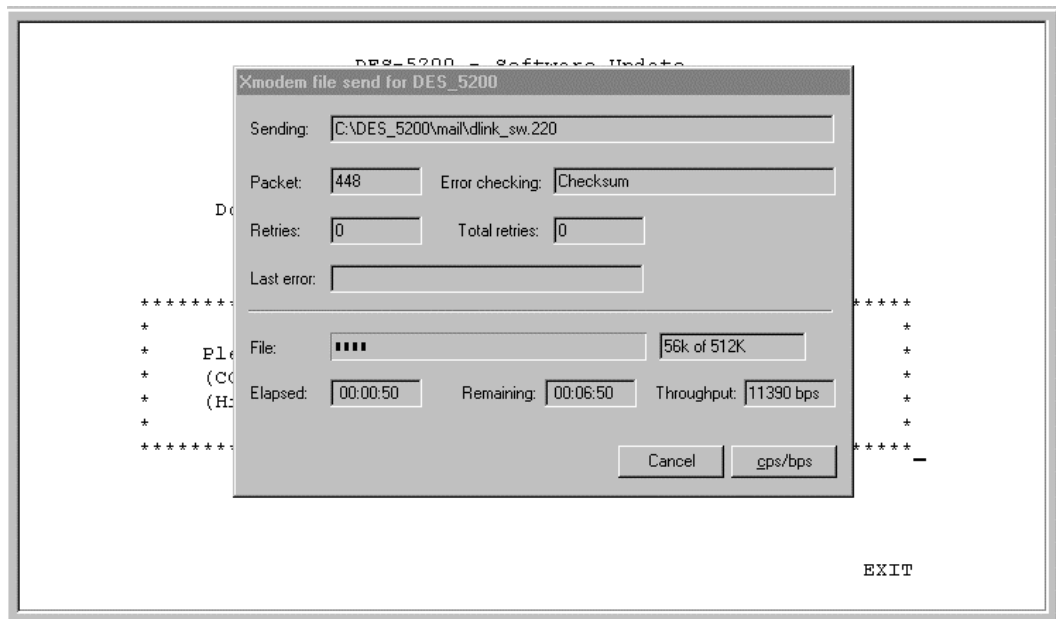


Figure 30: XMODEM

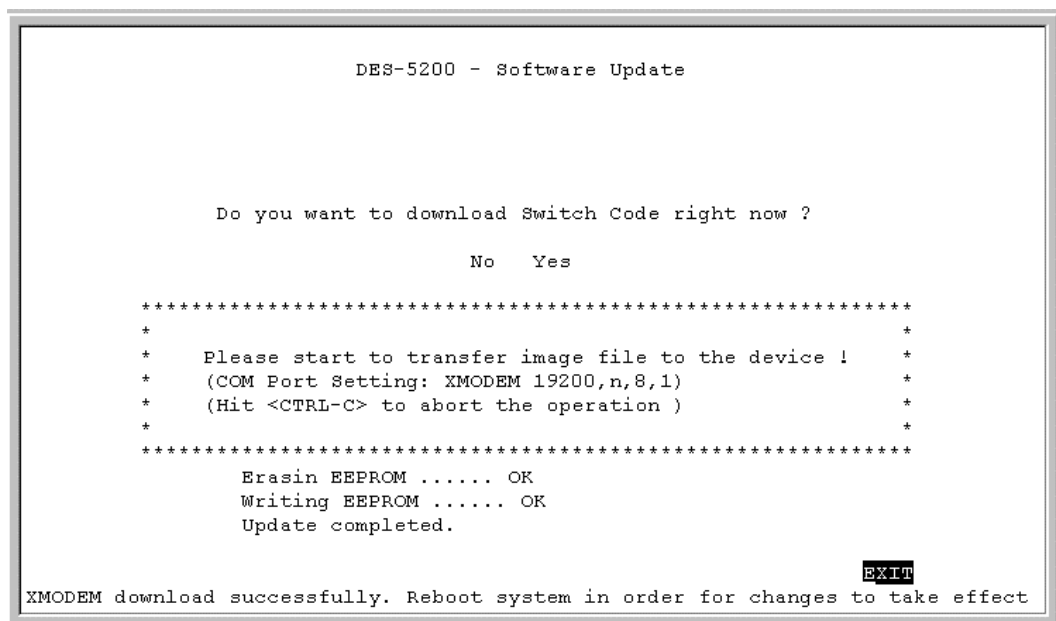


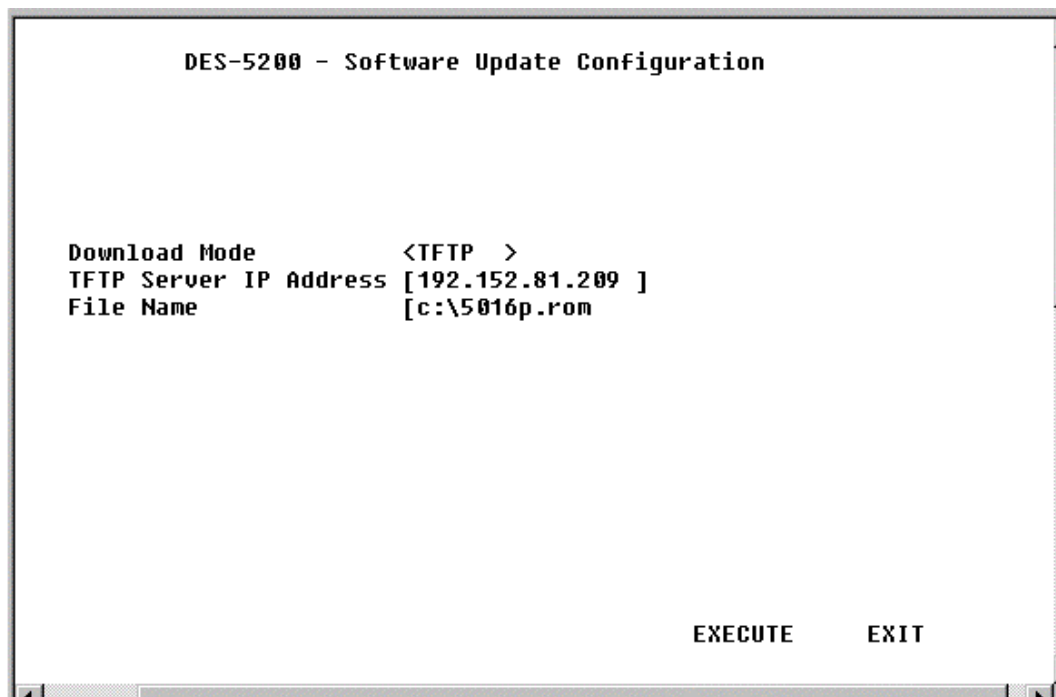
Figure 31: EEPROM

## TFTP

TFTP is done using Telnet. It can be done from a remote location using a TFTP server. The TFTP server and the DES-5200 must be on the same subnet. For example, if the IP address of the DES-5200 is 100.100.100.001 then the TFTP server must have an IP address beginning with 100.100.100. Only the last three digits will be unique to the server and the DES-5200. Remember that two devices cannot have the same IP address.

Follow these steps to update software using TFTP.

1. Verify the download mode is TFTP. Use the space bar to toggle between XMODEM and TFTP.
2. Enter the Internet Protocol (IP) address of the TFTP server.
3. Enter the complete path and filename of the software and select Execute, Figure 32.
4. When the transfer is complete, Figure 33, reset the DES-5200 for the changes to take effect.



**Figure 32: TFTP Transfer**

```
DES-5200 - Software Update

Do you want to download Switch Code right now ?

      No   Yes

File Name:c:\5016p.rom
TFTP Server IP:192.152.81.209

Exchanged Bytes      Exchanged Blocks      Retry
-----
      524288              1024              0

Erasing EEPROM ..... OK
Writing EEPROM ..... OK
Update completed.

EXIT
TFTP transfer successfully. Reboot system in order for changes to take effect
```

Figure 33: TFTP Transfer Complete



## Ping

Ping, shown in Figure 34, is a utility to determine if a specific IP address is accessible. Ping sends a packet to the specified address and waits for a reply. Its primary purpose is to troubleshoot LAN connections.

A successful reply displays the IP Address and packet size in bytes, sequencing and the port number the reply was received through. An unsuccessful reply displays a timeout and the sequence number.



**Figure 34: Ping Menu**

### IP Address

Specify the IP Address to be tested.

### Ping Count

Ping has several modes: single, multiple and continuous.

Single mode sends out a single ping.

Multiple sends three pings with a one second interval between each ping.

Continuous sends one ping per second until user stops the pinging process. To stop the pinging process user must select the stop command from the menu.

A successful ping is displayed as a reply and indicates the IP address the reply came from, bytes, sequence and port number.

An unsuccessful ping results in a request timed out and gives the sequence number.

---

## User Account Management

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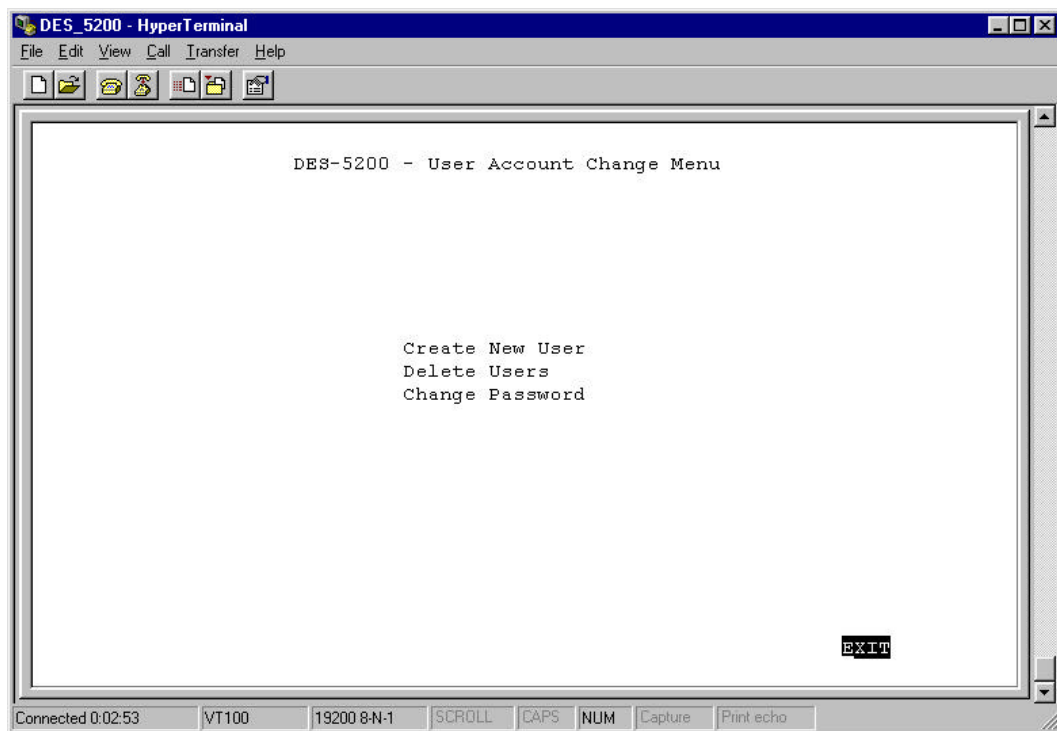
The User Account Management panels enable you to add users, delete users and modify user access rights.

Follow these steps to reach the User Account Management panels:

1. Select User Account Management on the Main menu.
2. Press Enter.

### User Account Change Menu

The User Account Change menu, displayed in Figure 35, enables you to add users, delete users, and modify user rights.



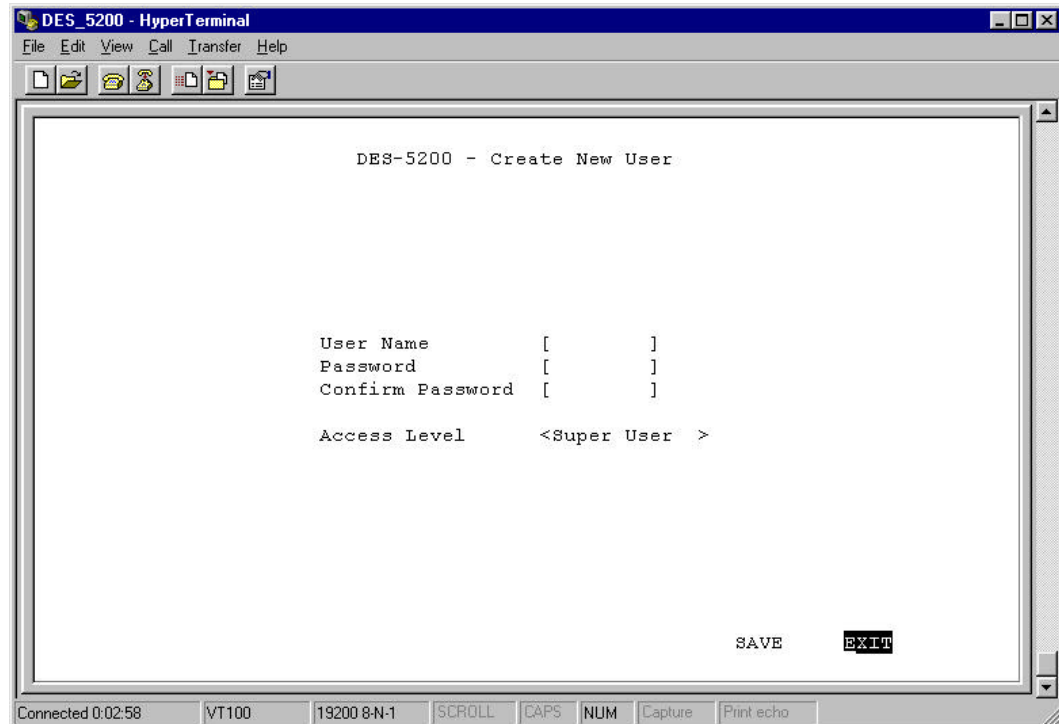
**Figure 35: User Account Change**

Follow these steps to select a menu option:

1. Select an option.
2. Press Enter.

## Create New User

The Create New User panel, displayed in Figure 36, enables you to add new users. You can have a total of three users on the DES-5200.



The screenshot shows a HyperTerminal window titled "DES\_5200 - HyperTerminal". The menu bar includes File, Edit, View, Call, Transfer, and Help. Below the menu bar is a toolbar with icons for file operations. The main window displays the "DES-5200 - Create New User" panel. The panel contains the following text:

```
DES-5200 - Create New User

User Name      [      ]
Password       [      ]
Confirm Password [      ]
Access Level   <Super User >
```

At the bottom right of the panel are two buttons: "SAVE" and "EXIT". The status bar at the bottom of the HyperTerminal window shows "Connected 0:02:58", "VT100", "19200 8-N-1", and several function keys: SCROLL, CAPS, NUM, Capture, and Print echo.

**Figure 36: Create New User**

### User Name

Enter the user's name in this field. User names are case sensitive. You can enter a maximum of eight characters.

### Password

Enter the user's password in this field. Passwords are case sensitive. You can enter a maximum of eight characters in this field.

### Confirm Password

Reenter the user's password to confirm it in this field.

### Access Level

There are two access levels available on the DES-5200: Super User and General User. Super Users have administrative rights on the DES-5200. They can add and delete users, change the configuration of the DES-5200 and perform all management functions.

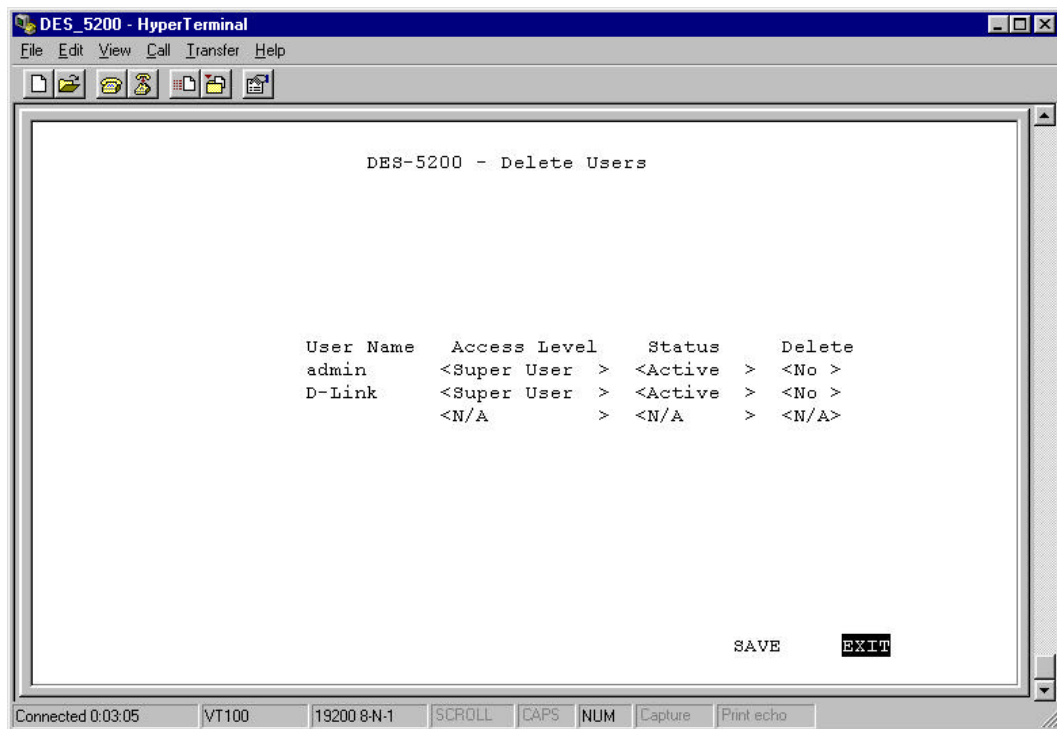
General Users have read only access to the DES-5200. They can look at the panels but they cannot make any changes to existing settings or configurations.

Follow these steps to add users:

1. Enter the User Name.
2. Enter the Password.
3. Reenter the password in the Confirm Password field.
4. Toggle the space bar to set the access level of the new user.
5. Select Save and press Enter.

## Delete Users

The Delete Users panel, displayed in Figure 37, enables you to delete users from the DES-5200. As a safety precaution, the DES-5200 will not enable the user who is currently logged in to delete themselves by accident.



**Figure 37: Delete Users**

### User Name

Identifies the users listed on the DES-5200.

### Access Level

Determines whether the user is a Super User with full administrative rights on the network or a General User with read only access rights.

### Status

A user's status can be active or inactive. Only active users can log in and make changes. Inactive users cannot.

### Delete

Enables you to delete users.

The following operations can be performed independently of each other or combined.

Follow these steps to change user Access Level:

1. Select the user's Access Level.
2. Toggle the space bar to change the current Access Level.
3. Select Save and press Enter.

Follow these steps to change user Status Level:

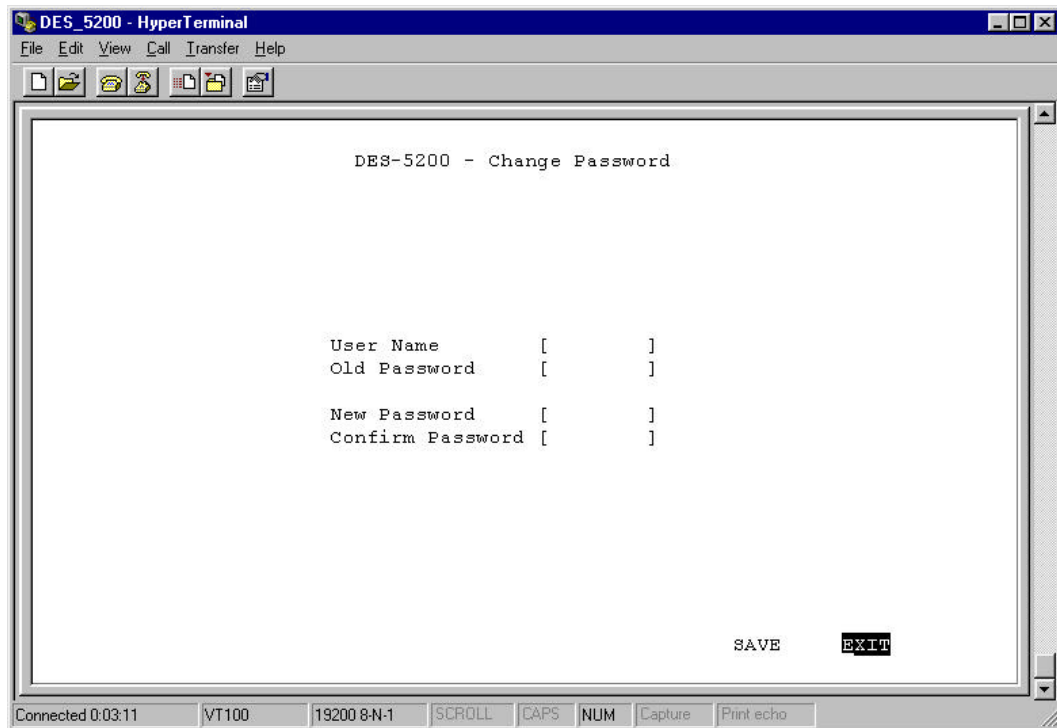
1. Select the user's Status Level.
2. Toggle the space bar to select the new Status Level.
3. Select Save and press Enter.

Follow these steps to delete users:

1. Select the Access Level of the user you want to delete.
2. Move the cursor to the Delete column and use the space bar to toggle the option from No to Yes.
3. Press Enter.
4. Select Save and press Enter.

## Change Password

The Change Password panel, displayed in Figure 38, enables you to change user passwords.



The screenshot shows a HyperTerminal window titled "DES\_5200 - HyperTerminal". The menu bar includes File, Edit, View, Call, Transfer, and Help. Below the menu bar is a toolbar with icons for file operations and terminal functions. The main window displays the "DES-5200 - Change Password" panel. The panel contains four input fields, each with a label and a pair of square brackets for text entry: "User Name", "Old Password", "New Password", and "Confirm Password". At the bottom right of the panel are two buttons labeled "SAVE" and "EXIT". The status bar at the bottom of the window shows "Connected 0:03:11", "VT100", "19200 8-N-1", and several function keys: SCROLL, CAPS, NUM, Capture, and Print echo.

**Figure 38: Change Password**

### User Name

The name of the user whose password is being changed.

### Old Password

The user's old password.

### New Password

The user's new password.

### Confirm Password

Reenter the new password in this field to confirm it.

Follow these steps to change user passwords:

1. Enter the user's name in the User Name field.
2. Enter the user's old password in the Old Password field.



3. Enter the new password in the New Password field.
4. Reenter the new password in the Confirm Password field.
5. Select Save and press Enter to save your changes.

---

## Switch Port Configuration

---

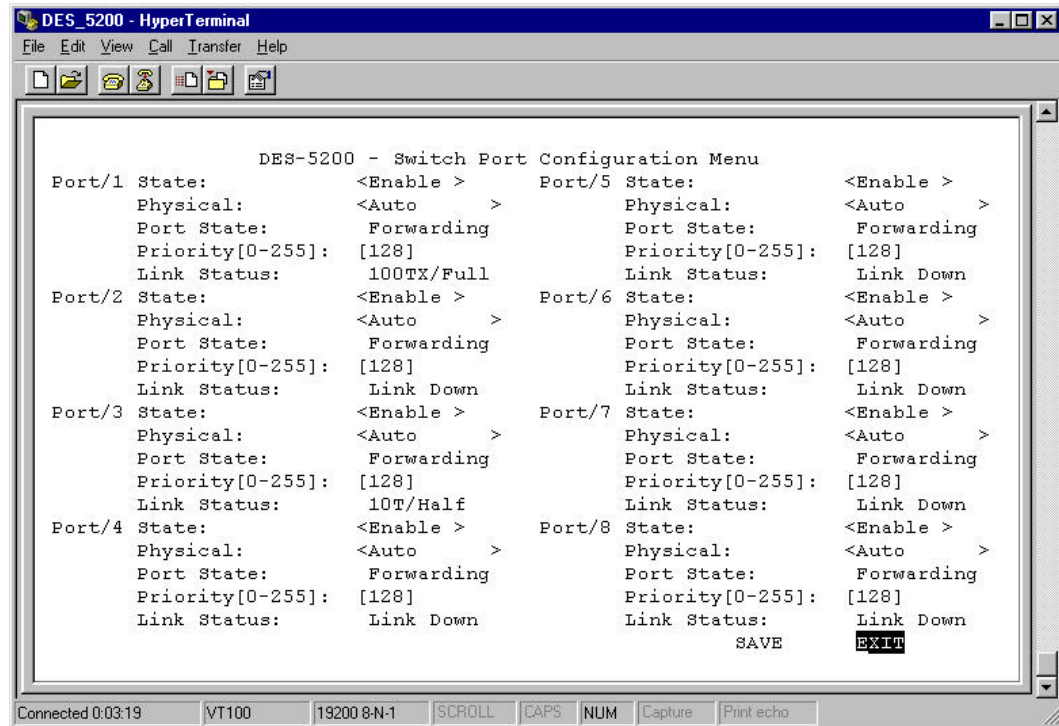
The Switch Port Configuration panels are used to configure individual ports on the DES-5200. The only difference between the panels is the port number that they deal with. The options and settings are the same for each. Select the group of ports that you want to configure and then go to the appropriate panel.

Follow these steps to select a panel:

1. Decide which group of ports you would like to work with.
2. Select the group on the Console Program panel.
3. Press Enter to go to the appropriate panel.

## Switch Port Configuration Menu

The Switch Port Configuration menu, displayed in Figure 39, enables you to change the configurations of individual ports.



**Figure 39: Switch Port Configuration**

### State

All ports have two states: enabled or disabled. Enabled ports transmit and receive data packets. Disabled ports can not transmit or receive packets. Disabled ports cannot be used.

### Physical

Refers to the physical state of the port. If the port state is manually changed it will not change states. It will not auto negotiate speed and duplex mode. All TX ports can be in the following physical states:

- Auto
- 1000SX/Full
- 100TX/Half
- 100TX/Full
- 10TX/Half
- 10TX/Full

The 1000SX/Full state is not shown unless the gigabit module is installed.

Ports in the Auto state automatically negotiate speed and duplex mode. This is the default setting.

Ports set in the 1000SX/Full physical state are set to work at 1000 Mbps Full Duplex.

Ports set in the 100TX/Half physical state are set to work at 100 Mbps half duplex.

Ports set in the 100TX/Full state are set to work at 100 Mbps full duplex.

Ports set in the 10T/ Half state are set to work at 10 Mbps half duplex.

Ports set in the 10T/Full state are set to work at 10 Mbps full duplex.

The 100BASE-FX ports can only be in the 100/ Half or 100/Full states. The 1000BASE-SX port can only be in 1000SX/Full. Half-duplex operation is not supported.

## **Port State**

All ports have four states: blocking, listening, learning and forwarding. Blocking means that nothing is coming through the port. If the Spanning Tree Algorithm detects a loop it will change the state of the port where the loop is detected to the Blocking State. You can disable the Spanning Tree Algorithm. Forwarding means the port is forwarding data packets to their destination. Listening means that the port is listening for data packets. Learning means the port is learning the MAC address for data packets. This setting cannot be changed manually.

## **Priority**

The port priority can be set from zero to 255. Zero is the highest port priority. The default setting will work in most situations.

## **Link Status**

The Link Status shows whether the link is active and displays the speed and duplex mode of active ports.

- Link Down indicates the port is not active
- 10T/Half indicates the link is connected at 10 Mbps half duplex
- 10T/Full indicates the link is connected at 10 Mbps full duplex
- 100X/Half indicates the link is connected at 100 Mbps half duplex
- 100X/Full indicates the link is connected at 100 Mbps full duplex
- 1000SX Full Duplex indicates the link is connected at 1000 Mbps full duplex

Follow these steps to change the port state:

1. Select the State setting of the appropriate port.
2. Toggle the space bar to change the current setting.

3. Select Save and press Enter.

Follow these steps to change a port's physical state:

1. Select the physical setting of the appropriate port.
2. Toggle the space bar until you find the appropriate setting.
3. Select Save and press Enter.

Follow these steps to change the port priority:

1. Select the priority of the appropriate port.
2. Enter a new value between zero and 255.
3. Select Save and press Enter.

## Spanning Tree Configuration

The Spanning Tree Configuration panel is used to configure the Spanning Tree Algorithm. The Spanning Tree Algorithm (STA) in the DES-5200 enables you to create alternative paths (using multiple switches or bridges) in your network. These backup paths are idle until the DES-5200 determines that a problem has developed in the primary path. If the primary path breaks down STA will activate the backup path. STA is very complicated and you should understand it well before changing the default settings. See Table 12: User Selective STA Parameters.

### STA Operation Levels

STA operates on the bridge level and the port level. On the bridge level, STA calculates the Bridge Identifier for each DES-5200, then sets the Root Bridge and the Designated Bridges. On the port level, STA sets the Root Port and Designated Ports.

### Spanning Tree Configuration Menu

The Spanning Tree Configuration menu, displayed in Figure 40, enables you to enable or disable STA, set the bridge priority and other configurations.

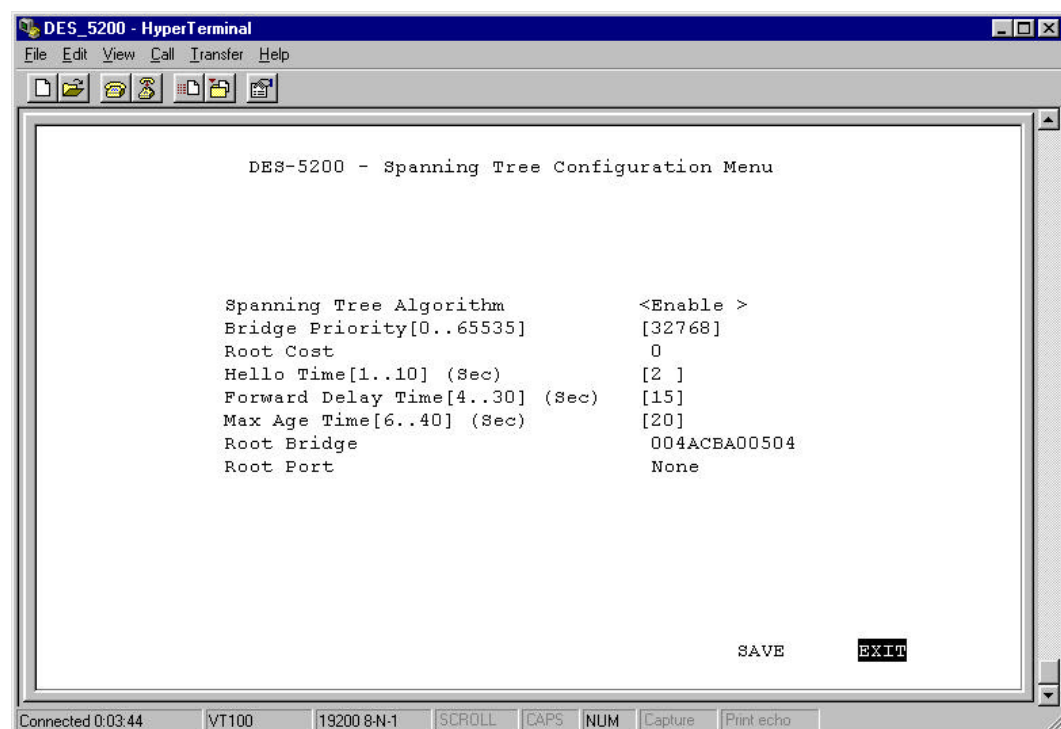


Figure 40: Spanning Tree Configuration Menu

## **Spanning Tree Algorithm**

Spanning Tree Algorithm can be enabled or disabled. Use Spanning Tree to prevent network loops.

### **Bridge Priority**

The Bridge Priority can be from 0 to 65535. Zero is the highest Bridge Priority. The higher the Bridge Priority the greater the chance that the DES-5200 will be selected as the Root Bridge. The DES-5200 with the highest Bridge Priority is the Root Bridge.

### **Root Cost**

The Root Cost is the number of times a packet is regenerated before reaching its destination. A source sends a packet to the first device (switch or hub) on the network. When the packet reaches the next hub or switch and is sent out again, the Path Cost becomes two. Each switch and active hub regenerates the packet. To determine the Root Path Cost, count the number of times the packet is regenerated.

The switch with the lowest Path Cost is the Root Bridge. Make the Root Bridge the best switch on the network.

### **Hello Time**

Is the interval between two transmissions of packets sent by the Root Bridge to tell all other switches that it is the Root Bridge. The Hello Time can be set manually, with a range in seconds from 1 to 10. If the Hello Time is set for the switch and the switch is not the Root Bridge then the Hello Time will not take effect until the switch becomes the Root Bridge.

### **Forward Delay Time**

This is the time any port on the DES-5200 spends in the listening state while moving from the listening state to the forwarding state. It can be set from 4 to 30 seconds.

Use the following formula when setting the Hello Time and the Forward Delay Time:

$$2 \times (\text{Forward Delay minus 1 second}) \geq \text{Max Age}$$

$$2 \times (\text{Hello Time plus 1 second}) \leq \text{Max Age}$$

### **Max Age Time**

Is the time a non-root bridge waits for a packet to be sent. At the end of the Max Age, if a packet has not been received from the Root Bridge, the DES-5200 will start sending its own packets and request permission to become the Root Bridge.

The switch with the lowest Bridge Identifier is the Root Bridge. It is best to make the Root Bridge the best switch on the network to ensure the best network performance and reliability.

### Root Bridge

Specifies the MAC address of the Root Bridge. The DES-5200 may or may not be the root bridge. The DES-5200 is the default root bridge.

### Root Port

Specifies the preferred path to the Root Bridge. Only one path per bridge can exist. The default setting is none.

**Table 12: User Selective STA Parameters**

STA Parameters	Settings	Effects	Comment
Enable/Disable	Enable/Disable	Participate in or remove from STA	Enable in a SNMP network
Bridge Priority	Lower the #, higher the priority	Increases chance of becoming the Root Bridge	Avoid, if the switch is used in workgroup level of a large network
Hello Time	1 – 10 seconds	No effect, if not Root Bridge	Never set greater than Max Age Time
Max Age Time	6 – 40 seconds	Compete for Root Bridge, if BPDU is not received	Avoid low number for unnecessary reset of Root Bridge
Forward Delay Time	4 – 30 seconds	High # delays the change in state	$2 \times (\text{Forward Delay minus 1 second}) \geq \text{Max Age}$ , $2 \times (\text{Hello Time plus 1 second}) \leq \text{Max Age}$
Port Level STA parameters			
Enable/ Disable	Enable/ disable	Enable or disable LAN segment	Disable a port for security or problem isolation
Port Priority	Lower the #, higher the priority	Increases chance of becoming the Root Port	No comment



---

## SNMP Management Configuration

---

The SNMP Management Configuration panel is used to configure the DES-5200 for SNMP management. Leave the default values in place if you are not managing your network through SNMP.

The DES-5200 uses the standard MIB-II Management Information Base module. The MIB values can be retrieved from any SNMP based network manager. The DES-5200 supports its own proprietary enterprise as an extended MIB. The MIB can be retrieved by specifying their Object-Identity (OID). MIB values can be read-only or read-write.

Read-only MIB variables can be constants that are programmed into the DES-5200 or variables that change while the DES-5200 is running. For example, the number and type of ports on the DES-5200 is a read-only constant. The number and type of ports is fixed. Statistics, such as the number of errors that have occurred, are read-only variables.

Read-write MIBs are usually related to user customized configurations. Examples of these are the DES-5200's IP address, STA parameters and port status.

If you use third party vendors' SNMP software to manage the DES-5200, a diskette listing the DES-5200's proprietary enterprise MIB can be obtained by request. If your software provides functions to browse or modify MIB, you can get the MIB values and change them (if the MIB's attributes permit the write option). This process can be difficult. You must know the MIB OID's and retrieve them individually.

## SNMP Management Configuration Menu

The SNMP Management Configuration menu, displayed in Figure 41, enables you to configure the DES-5200 for SNMP management.

```

DES-5200 - HyperTerminal
File Edit View Call Transfer Help

DES-5200 - SNMP Management Configuration Menu

SNMP Manager Setting

SNMP Community String      Access Right      Status
[public                    ] <Read Only >     <Valid >
[private                   ] <Read/Write>     <Valid >
[                           ] <Read Only >     <Invalid>
[                           ] <Read Only >     <Invalid>

SNMP Trap Manager Setting

IP Address      SNMP Community String      Status
[0.0.0.0        ] [                    ] <Invalid>
[0.0.0.0        ] [                    ] <Invalid>
[0.0.0.0        ] [                    ] <Invalid>
[0.0.0.0        ] [                    ] <Invalid>

SAVE      EXIT

Connected 0:04:01  VT100  19200 8-N-1  SCROLL  CAPS  NUM  Capture  Print echo

```

Figure 41: SNMP Management Configuration menu

### SNMP Manager Setting

The fields under this setting are used to configure the DES-5200 for SNMP Management. You must configure these settings in order to manage the DES-5200 through SNMP.

#### SNMP Community String

The SNMP Community String field enables you to name the SNMP Communities. The names public and private are only default names. For security you should change these names to help prevent unauthorized access to the DES-5200.

You can name the SNMP communities anything you like. You can enter up to 32 characters in each of the four fields. You can create up to four SNMP Communities.

## **Access Right**

Enables you to set the access rights that members of the SNMP Communities have. Read Only access rights mean that members of the community can view the information on the DES-5200 but they can not make changes to the configurations. Read/ Write access rights enable the members of the community to make any changes they desire.

## **Status**

Can be Valid or Invalid. Only communities with Valid status can access the DES-5200. Communities with Invalid status cannot access the DES-5200.

## **SNMP Trap Manager Setting**

Enables you to enter the IP address of Trap Managers. Traps are messages the DES-5200 sends out to inform trap managers of events on the network. The DES-5200 generates traps and sends them to the network manager. Trap managers are special network users who are given certain rights and access to oversee and maintain the network. This feature is available only in D-View or by using other SNMP management software.

You can specify which network managers may receive traps from the DES-5200 by creating a list of IP Addresses of the authorized network managers.

Trap managers can receive the following trap types:

- Cold Start
- Authentication Failure
- Link Change Event

## **Cold Start**

Signifies that the DES-5200 has been powered up. Software settings are reconfigured and hardware systems are rebooted. A cold start is different from a factory reset.

## **Authentication Failure**

Signifies that an addressee (or manager/ user) on the DES-5200 is not a valid user of the DES-5200 and may have entered an incorrect community name.

## **Link Change Event**

Signifies that the link of a port has changed from link up to link down or vice versa.

## **IP Address**

This field is used to enter the IP Addresses of Trap Managers.

## **SNMP Community String**

Enter the Community String of the Trap Managers in this field.

### **Status**

The DES-5200 will not send out traps unless the status is Valid.

Follow these steps to enter the SNMP Community String:

1. Enter the name of the SNMP Community.
2. Select the Access Right field and toggle the space bar to select Read Only or Read/Write.
3. Select the Status field and toggle the space bar to select Valid or Invalid.
4. Select Save and press Enter.

Follow these steps to configure the SNMP Trap Manager Setting:

1. Enter the IP Address of the Trap Manager.
2. Enter the name of the SNMP Community String.
3. Select Status and toggle the space bar to select Valid or Invalid.
4. Select Save and press Enter.

---

## VLAN Port Management

---

A Virtual Local Area Network (VLAN) is a logical subgroup within a LAN that is created with software rather than physical connections. The purpose of a VLAN is to prevent broadcast storms and ease congestion on the network.

Each VLAN created is a broadcast domain. A broadcast is a packet that is sent to all nodes on the network. A broadcast domain is a domain in which every node in the domain receives the broadcast packet. The advantage of creating VLANs is that they permit you to group LAN segments together in order to get the most out of your network.

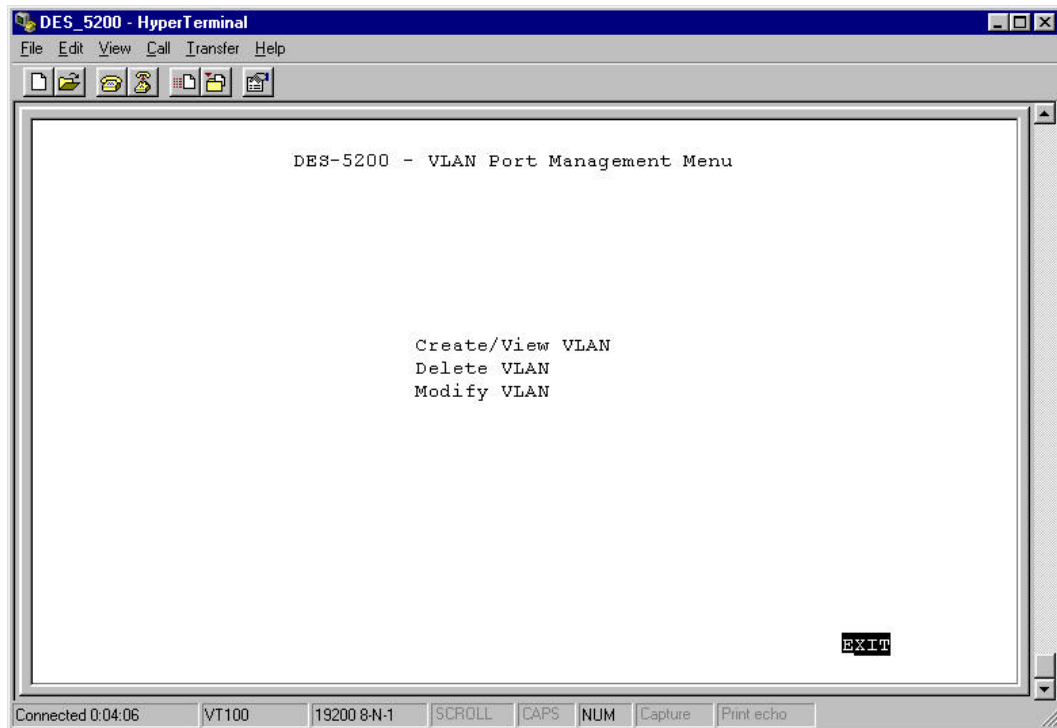
VLANs become more important as the network grows and traffic increases. VLANs are usually used on high traffic networks. You should consider a VLAN on a smaller network if a department or workgroup routinely does tasks that take up a lot of bandwidth and they are not already on their own LAN segment.

VLANs can be used to subdivide the network. The DES-5200 supports port based VLAN. Port based VLAN means that the VLAN is grouped by port. If a VLAN is created using three ports, then those ports become a separate broadcast domain.

By using VLANs, members of a particular department or workgroup can be partitioned from the rest of the network. For example, the marketing department can be on one VLAN and the accounting department can be on another. If a workstation in marketing sends a broadcast packet to another workstation in marketing the packet will remain on the marketing VLAN.

## VLAN Port Management Menu

The VLAN Port Management menu, displayed in Figure 42, enables you to create, delete and modify VLANs on the DES-5200.



**Figure 42: VLAN Port Management menu**

Follow these steps to create, delete and modify VLAN:

1. Select the appropriate option.
2. Press Enter.

## Create New VLAN

The Create New VLAN menu, displayed in Figure 43, is used to create a new VLAN. The default value is that all ports belong to one VLAN. You can create up to 31 separate VLANs. Ports can belong to two VLANs at the same time. Each VLAN is a broadcast domain. If you have created a trunking group, you must include the entire trunk group in the VLAN.

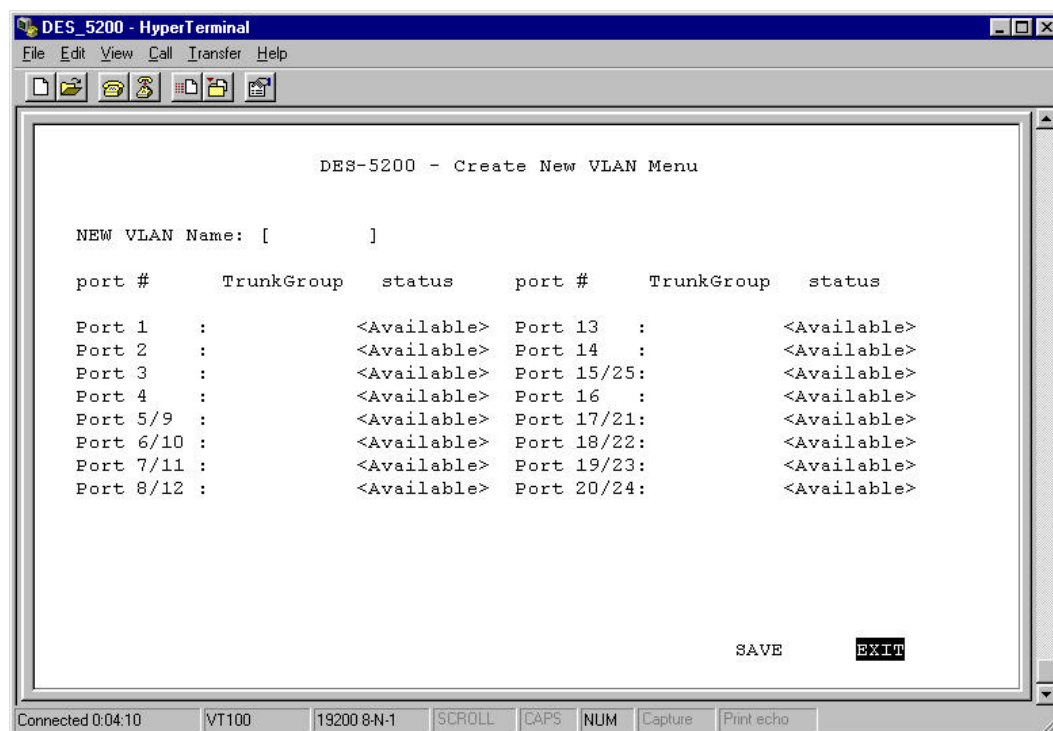


Figure 43: Create New VLAN Menu

### New VLAN Name

Is the name of the VLAN you are creating. All VLANs must have a unique name.

### Port #

Is the number of the port. The numbers on the panel match the ports on the DES-5200.

### TrunkGroup

This field identifies the trunk group that the port has been assigned to. The field is open if the port has not been assigned to a Trunk Group.

### Status

The Status field can be either available or selected. Available indicates that the port is available for inclusion in a VLAN. Selected indicates the port has been assigned to a VLAN. All ports will have a status of available on this panel, even after they have been selected as part of a VLAN. There is nothing on this panel that indicates the port is already part of a VLAN.

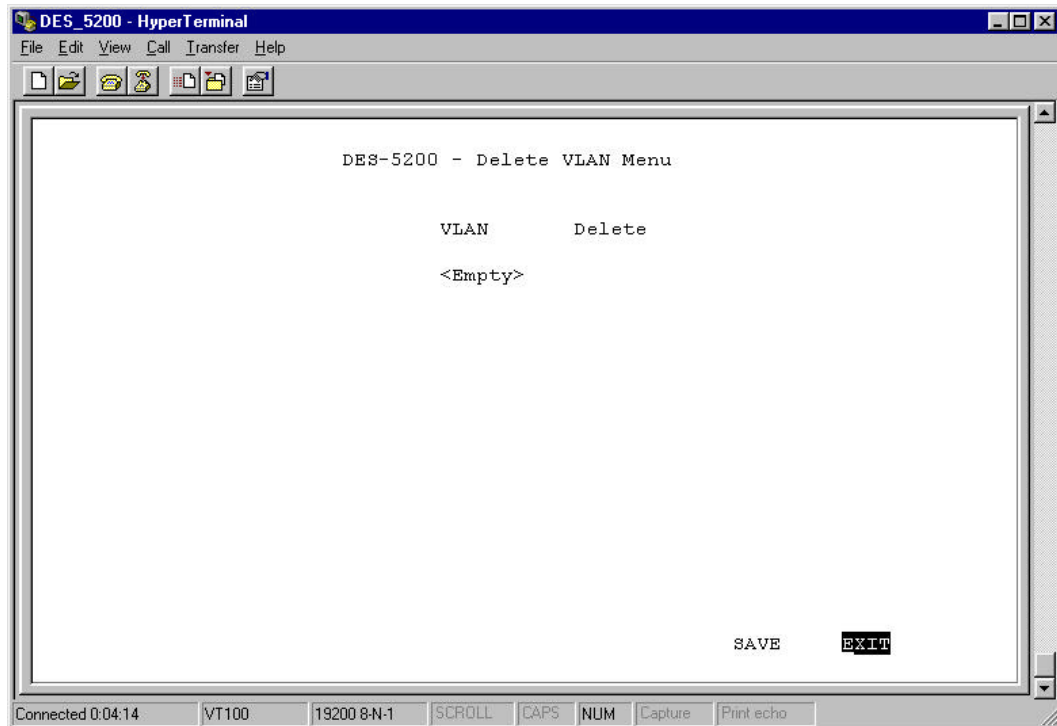
Follow these steps to create a VLAN:

1. Enter the name of the VLAN you are creating.
2. Select the ports you want to include in the VLAN and toggle the space bar to change the status from Available to Selected.
3. Select Save and press Enter.



## Delete VLAN Menu

The Delete VLAN menu, displayed in Figure 44, is used to delete VLANs.



**Figure 44: Delete VLAN Menu**

## VLAN

Is the name of the VLAN.

## Delete

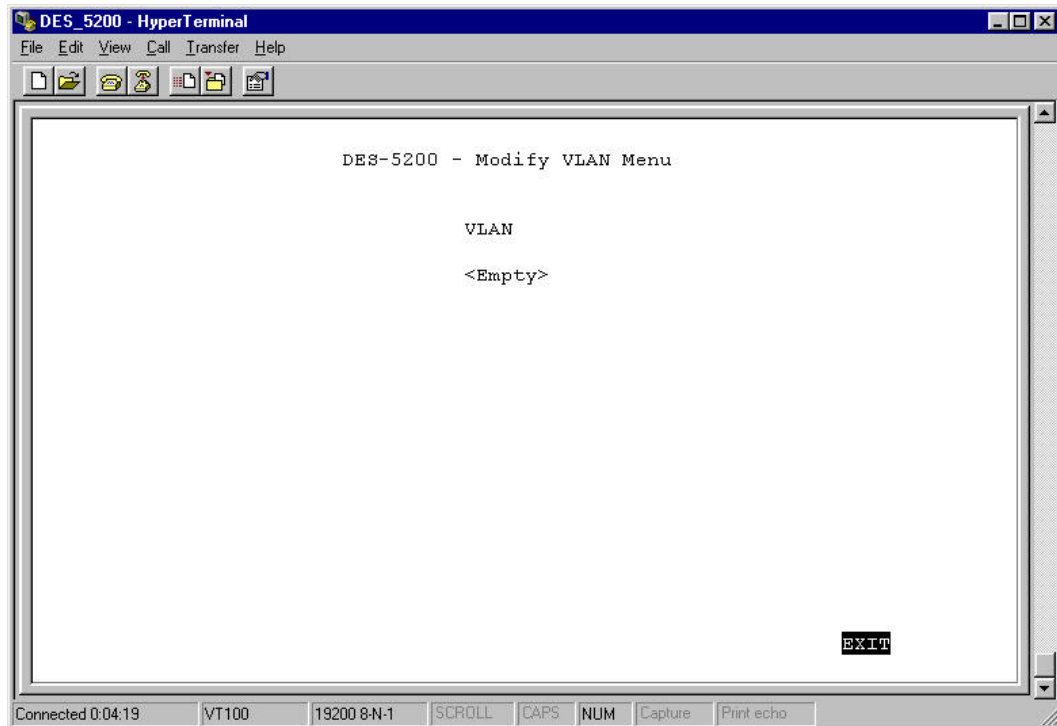
After you have created a VLAN, this column will have the option to delete it.

Follow these steps to delete VLANs:

1. Select the VLAN you want to delete in the Delete column.
2. Toggle the space bar to Yes to delete the VLAN.
3. Select Save and press Enter.
4. A screen prompt will warn you that you must reset the DES-5200 in order for the change to take effect.

## Modify VLAN Menu

The Modify VLAN menu, displayed in Figure 45, enables you to modify VLANs.



**Figure 45: Modify VLAN menu**

## VLAN

The names of all VLANs appear in this column.

Follow these steps to modify VLANs:

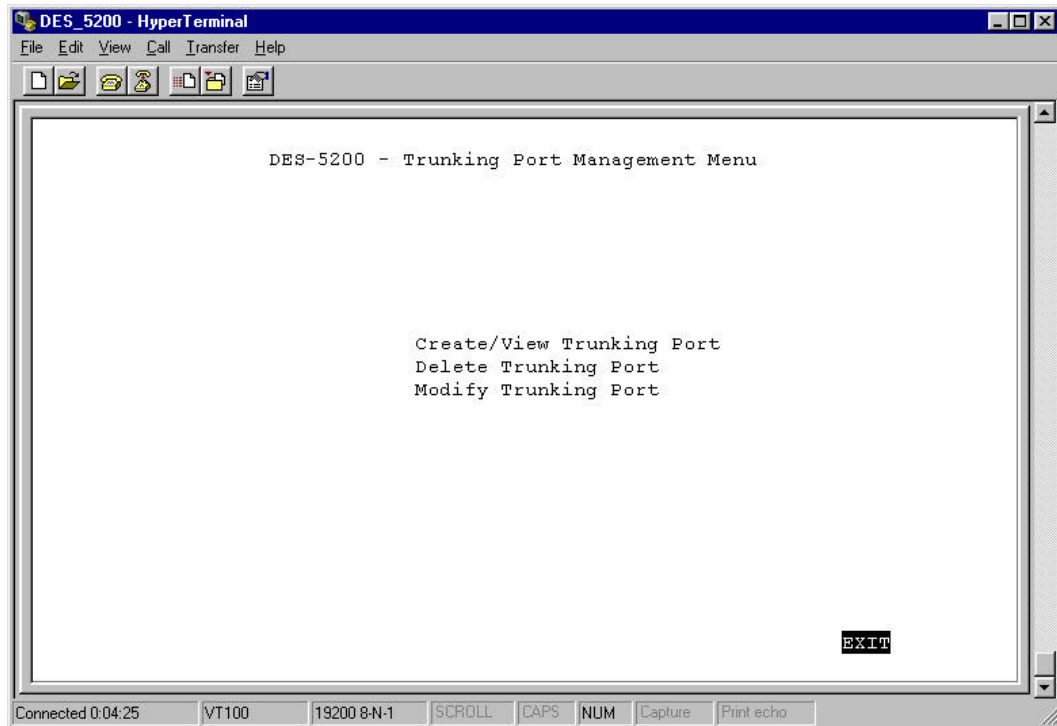
1. Select the name of the appropriate VLAN.
2. Press Enter.
3. You will see the VLAN Modify menu. Use this panel to modify a VLAN.
4. Select the ports that you want to include in the VLAN or delete from the VLAN. Toggle the space bar to change the current setting. Available means the port is available for inclusion in the VLAN. Selected means the port has been selected as part of a VLAN.
5. Select Save and press Enter to implement your changes.

---

## Trunking Port Management Menu

---

The Trunking Port Management panels, displayed in Figure 46, are used to create, delete and modify trunk ports. Some ports on some modules are not available for inclusion in any Trunking Groups.



**Figure 46: Trunking Port Management menu**

Follow these steps to create, delete and modify trunk ports:

1. Select the appropriate option.
2. Press Enter.

## Create New Trunking Port

The Create New Trunking Port panel, displayed in Figure 47, is used to create Trunk Ports. You can create up to seven trunking groups with up to eight ports in each group. Each Trunking Group acts like a single port. The trunking speed is 800 Mbps in half duplex and 1.6 gigabits in full duplex. Trunk group1 has been created as an example. Your screen may look different.

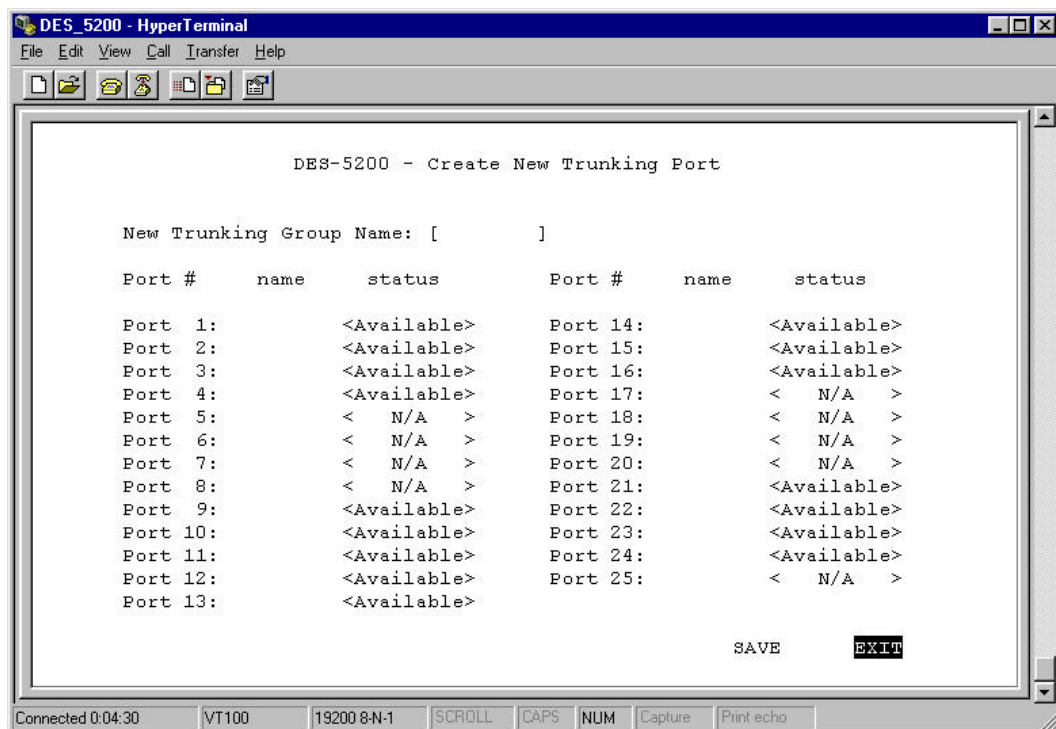


Figure 47: Create New Trunking Port

### New Trunking Group Name

Is the name of the Trunking Group you are going to create. All Trunking Groups must have a name.

### Port #

Is the number of the port. The numbers on the panel match the ports on the DES-5200.

### Name

This field identifies the TrunkGroup that the port has been assigned to. The field is open if the port has not been assigned to a TrunkGroup.

### Status

The status field can be either available or selected. Available indicates that the port is available for inclusion in a TrunkGroup. Selected indicates the port has been assigned to a TrunkGroup. In use indicates a port is part of a trunk group.

**N/A**

Indicates the port is not available for inclusion in the Trunking Group.

Follow these steps to create a TrunkGroup:

1. Enter the name of the TrunkGroup.
2. Select the port you want to include in the TrunkGroup and toggle the space bar to change the status from available to Selected.
3. Select Save and press Enter.

## Delete Trunking Port

The Delete Trunking Port panel, displayed in Figure 48, is used to delete Trunk Ports.



**Figure 48: Delete Trunking Port**

## Trunking Port

Is the name of the Trunking Group.

## Delete

All trunking groups can be deleted from this panel.

Follow these steps to delete a Trunking Group:

1. Select the Trunking Group to be deleted in the Delete column.
2. Toggle the space bar to Yes to delete the Trunking Group.
3. Select Save and press Enter.

## Modify Trunking Port

The Modify Trunking port panel, displayed in Figure 49, enables you to Modify Trunking Ports.



**Figure 49: Modify Trunkig Port**

## Trunking Port Name

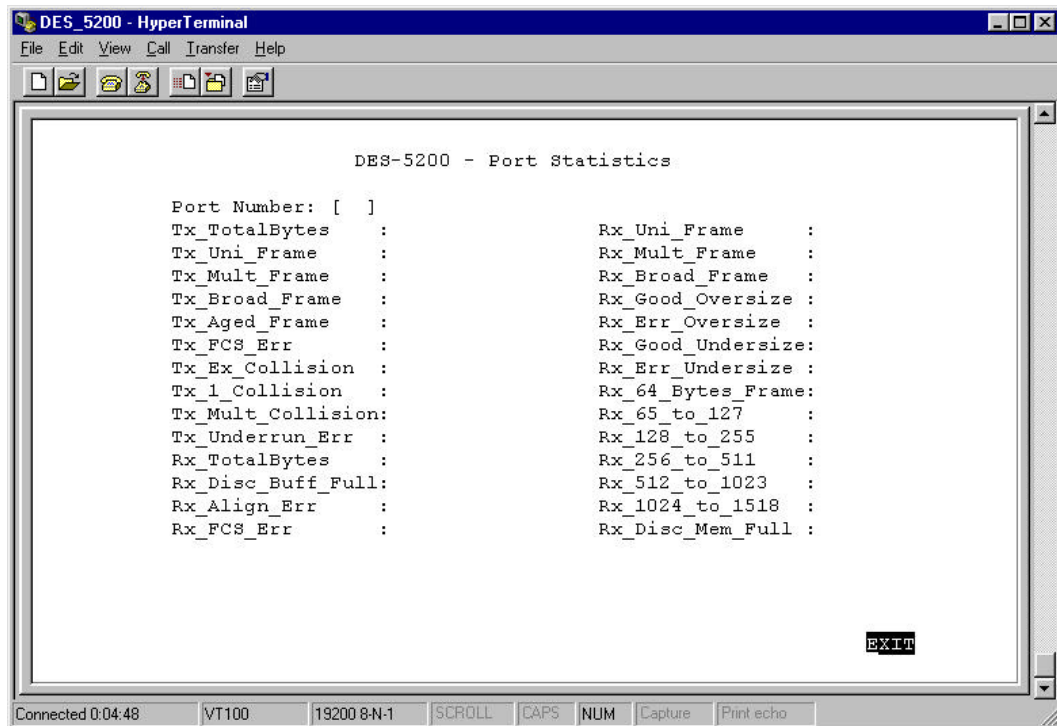
The names of all Trunked Ports appear in this column.

Follow these steps to modify Trunked Ports:

1. Select the name of the appropriate Trunked Ports.
2. Press Enter.
3. Use the Modify Trunking Port panel to modify a Trunking Group.
4. Select the ports that you want to include in the Trunking Group or delete from the Trunking Group. Toggle the space bar to change the current setting. Available means the port is available for inclusion in the Trunking Group. Selected means the port has been selected as part of a Trunking Group. N/A indicates ports that are not available for inclusion in any trunking group.
5. Select Save and press Enter to implement your changes.

## Port Statistics

The Port Statistics panel, displayed in Figure 50, shows statistical information about each port.



**Figure 50: Port Statistics**

### Port Number

The number of the port the statistics are being gathered from.

### Tx Total Bytes Transmitted

Number of bytes transmitted to the port.

### Tx Unicast Frames

Number of unicast frames transmitted.

### Tx Multicast Frames Out

Number of multicast frames transmitted.

### Tx Broadcast Frames Out

Number of broadcast frames transmitted.



### **Tx Aged Frames**

Number of frames dropped because they were in transmit too long.

### **Tx FCS Errors**

Number of frames that were discarded on the transit side because of FCS errors.

### **Tx Excessive Collision**

Number of frames that were dropped because of excessive collisions.

### **Tx One Collision**

Number of frames that were transmitted after one collision.

### **Tx Multiple Collisions**

Number of frames that were transmitted after multiple collisions.

### **Tx Underrun Err**

Number of frames on the transmit side that were discarded because of an underrun.

### **Rx Total Bytes Received**

Total number of bytes received on a port.

### **Rx Disc Buff Full**

Number of good frames that were discarded because the Rx Buffer was full.

### **Rx Align Errors**

Number of well-aligned frames that were received with alignment errors.

### **Rx FCS Errors**

Number of frames that were received with FCS errors.

### **Rx Unicast Frames In**

Number of unicast frames received.

### **Rx Multicast Frames**

Number of multicast frames received.

### **Rx Broadcast Frames**

Number of broadcast frames received.

**Rx Good Oversized**

Number of good oversized frames received.

**Rx Error Oversized**

Number of good oversized frames with errors (FCS, Alignment)

**Rx Good Undersized**

Number of good undersized frames received.

**Rx Error Undersized**

Number of undersized frames received with errors.

**Rx64**

Number of frames (including frames with errors) that were 64 bytes long.

**Rx65 to 127**

Number of frames (including frames with errors) 65 to 127 bytes long.

**Rx128 to 255**

Number of frames (including frames with errors) 128 to 255 bytes long.

**Rx256 to 511**

Number of frames (including frames with errors) 256 to 511 bytes long.

**Rx512 to 1023**

Number of frames (including frames with errors) 512 to 1023 bytes long.

**Rx1024 to 1518**

Number of frames (including frames with errors) 1024 to 1518 bytes long.

**Rx Disc Mem Full**

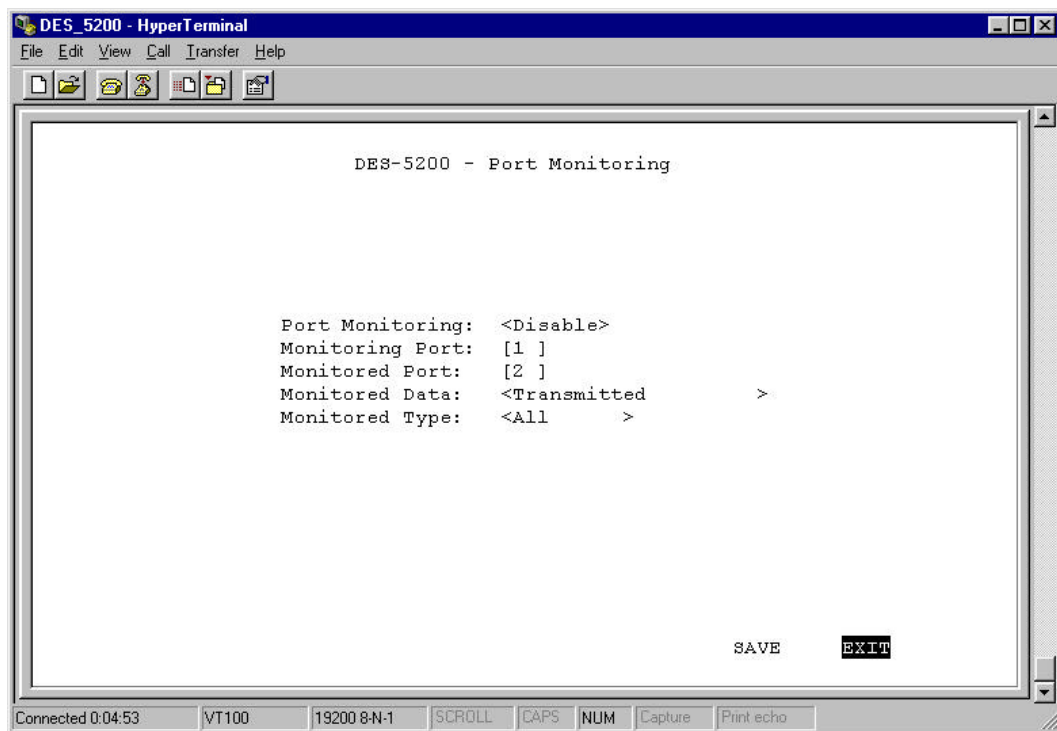
Number of good frames that were discarded because the memory was full.

---

## Port Monitoring

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The Port Monitoring panel, shown in Figure 51, is used to gather information about ports. The panel shows data traffic sent or received by the port being monitored. You can define which port is being monitored and which port will do the monitoring. You can define the packet types being monitored. Only one port at a time can be monitored.



**Figure 51: Port Monitoring**

### Port Monitoring

Enables or disables port monitoring. The default is disabled.

### Monitoring Port

The port that receives the monitoring data.

### Monitored Port

The port being monitored.

## Monitored Data

Selecting Transmitted monitors all outgoing packet types. Received enables you to choose either all packet types or one of the three packet types. Transmitted & Received defaults the monitoring to all packet types.

## Monitored Type

This option is only used when the monitored data is set to Received.

Select one of the following types:

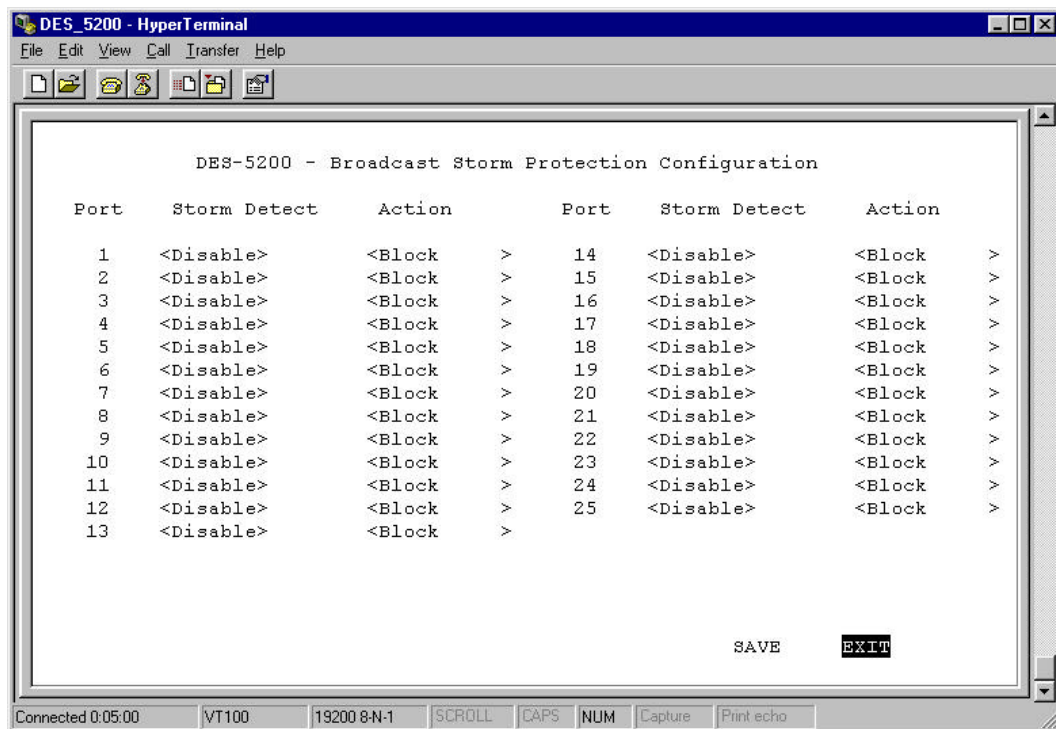
- All monitors all packet types.
- Unicast monitors only unicast packets.
- Broadcast monitors only broadcast packets.
- Discard monitors all packets discarded by the DES-5200.

Follow these steps to configure port monitoring:

1. Toggle the space bar to Enable Port Monitoring.
2. Enter the number of the Monitoring Port.
3. Enter the number of the Monitored Port.
4. Toggle the space bar to select the monitored data.
5. Toggle the space bar to select the packet type to be monitored.

## Broadcast Storm Protection

Broadcast Storm Protection, shown in Figure 52, protects the LAN from being downed by a broadcast storm. The protection can be enabled or disabled on each port according to your preference and the needs of your LAN. The default value is disabled.



**Figure 52: Broadcast Storm Protection**

### Port

Indicates the port number.

### Storm Detect

Detects the broadcast storm and takes the action you have specified.

### Action

Performs the action you have specified. There are three actions: Block, Block&Trap, Trap.

- Block prevents the port from receiving any data packets. Block is triggered when the port receives 3000 packets per second or more. The port will remain blocked until the number of data packets

received drops below 3000 packets per second and then it returns to normal.

- Block&Trap blocks the port and sends a message to the SNMP Trap Manager that a specific port is being partitioned from the rest of the DES-5200. You must configure the SNMP Trap Manager in order to benefit from this feature.
- Trap sends a message to the SNMP Trap Manager that a Broadcast Storm is going on. However, it does not block or partition the port no matter how many packets per second are passing through.

---

## Web Management

The DES-5200 can be managed through an Internet connection. This type of connection is called Web Management. The panels look different but they have the same information and function as Console Based Management.

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### Using Web Management

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You can use your web browser to configure and manage the DES-5200. The DES-5200 must have an IP address in order to be managed over the web. Log in through Local Console Management the first time and assign an IP address to the DES-5200. All subsequent management sessions can be done over the web.

Follow these steps to configure the DES-5200 for web based management:

1. Enter the IP address of the DES-5200 in the address field of your Web browser and press Enter.
2. Log in using your user name and password.

---

### Commands

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The following commands are used in Web based management.

#### **Apply**

Applies the changes that you have just made. Some settings require you to reset the DES-5200 in order for changes to take effect.

#### **Refresh**

Refresh enables you to refresh the panel after you have made changes. Use refresh to see the changes you have made.

---

## Logging In

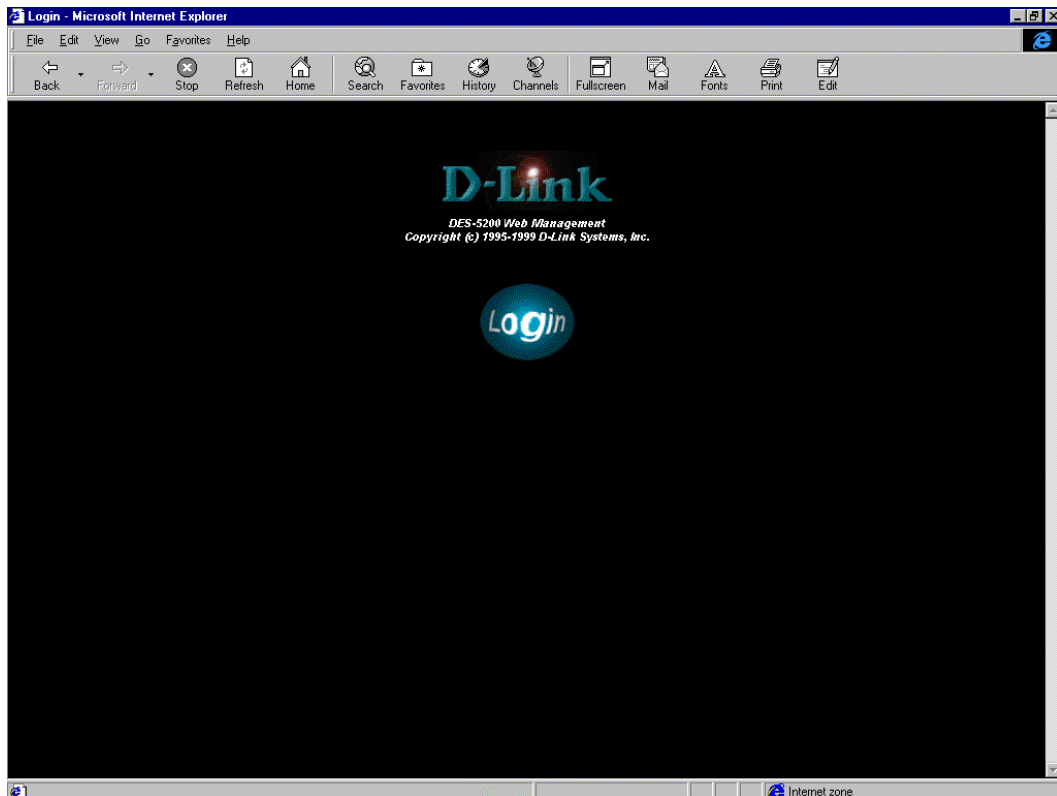
---

The Login panel, shown in Figure 53 and Figure 54, appears when you log in over the web. The user name and password are the same ones used on the console.

Select Login to display the Login panel.

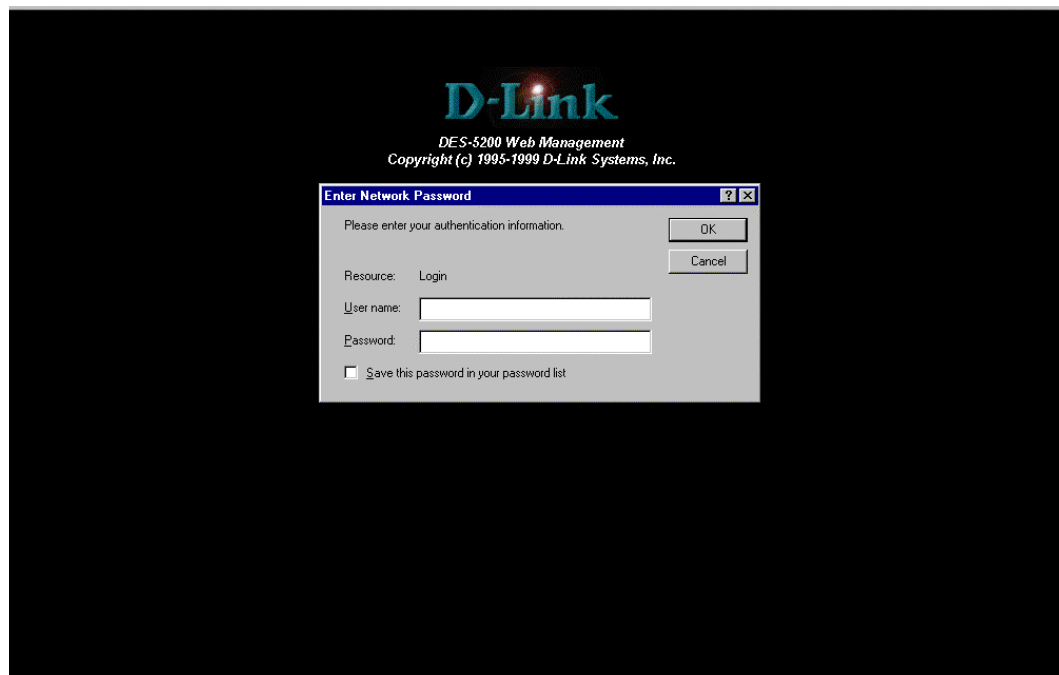
Follow these steps to login:

1. Enter your user name and password.
2. Select OK. Select the check box to save the password in your password list.
3. Select Cancel to cancel log in.



**Figure 53: Login**





**Figure 54: User Name and Password**

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## System Configuration

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The System Information panel is the first panel you see when logging into the DES-5200 for web management.

Select folders to view their contents. Select an option to move to that panel.

### System Configuration

The System configuration panel shows general information about the DES-5200 and enables you to assign a LAN IP Address, Subnet Mask, LAN Default Gateway and contact information on the system administrator.

### User Account Management

The User Account Management menu enables you to add users, delete users and modify user account information.

### Switch Port Configuration

The Switch Port Configuration menu enables you to configure individual ports. You can set the speed, duplex mode, enable and disable ports and make other changes. The panels and options may be different, depending on the DES-5200 model you purchased and the modules you have installed. Refer to Module Configuration, at the end of this chapter, for an explanation of the differences between the modules.

### Spanning Tree Configuration

The menu enables you to enable or disable Spanning Tree Algorithm, set the Bridge Priority, Hello Time, Forward Delay Time and Max Age Time.

### SNMP Management Configuration

The SNMP Management Configuration menu enables you to create SNMP Communities and configure SNMP Trap Manager Settings.

### SNMP Manager Setting

Enables you to create SNMP Communities.

### SNMP Trap Manager Setting

Enables you to configure SNMP Trap settings.

## **VLAN Port Management**

The VLAN Port Management menu enables you to create, delete, and modify VLANs quickly and easily.

## **Trunking Port Management**

The Trunking Port Management menu enables you to create, delete and modify Trunking Ports quickly and easily.

## **Port Statistics**

The Port Statistics panel displays statistical information about each port.

## **Port Monitoring**

Port Monitoring allows users to monitor specific ports for several type of information without using an SNMP application.

## **Broadcast Storm Protection**

Provides optional protection against broadcast storms. The option can be enabled or disabled.

Follow these steps to select a menu:

1. Click on the folder icon to select it.
2. Click on the menu to select it.

Follow these steps to select a menu:

1. Use the tab key or the up and down arrow keys to select an option.
2. Press Enter.

## **System Information**

The System Information menu displays the Hardware Revision, MAC address, LAN IP address and other information on the DES-5200.

## **System Reset**

The System Reset panel enables you to reset the DES-5200 through software rather than powering off.

## **Factory Reset to Default Config Values**

Enables you to reload factory default configurations.

## **Switch Control**

The advantages and disadvantages of each are explained in a later section.

## **Software Update**

Software can be updated in two ways: XMODEM and TFTP. XMODEM requires a physical connection between the DES-5200 and a workstation. TFTP can be done remotely. When updating software over the web, TFTP is the only option that can be used. Refer to Chapter 5, Software Update for information on updating software through XMODEM.

## **Ping**

Ping enables user to ping devices and check to see if they are on the network.

## System Information Menu

The System Information menu, displayed in Figure 55, enables you to enter management and configuration information on the DES-5200.

The screenshot shows the DES-5200 Web Management interface. On the left is a navigation tree with the following items: System Configuration (expanded), System Information, System Reset, Factory Reset to Default Config Values, Switch Control, Software Update, Ping, User Account Management, Switch Port Configuration, Spanning Tree Configuration, SNMP Management Configuration, VLAN Port Management, Trunking Port Management, Port Statistics, Port Monitoring, and Broadcast Storm Protection. The main area displays the 'System Information' form. The form has a teal header and contains the following fields:

Hardware Revision	Rev. A1
Boot PROM Firmware Version	V2.25T
Software Version	V2.25T
MAC Address	00:4a:cb:a0:05:04
System Description	10/100 Fast Ethernet Switching Hub
System Name	DES-5200 Ethernet Switching Hub
System Location	53 Discovery, Irvine, CA 92618, USA
System Contact	D-Link Systems Inc., (714)788-0805
System Up Time	32 Minutes, 18 Seconds
LAN IP Address	192.152.81.126
LAN Subnet Mask	255.255.255.0
LAN Default Gateway	0.0.0.0

At the bottom of the form are 'Refresh' and 'Apply' buttons.

Figure 55: System Information

### Hardware Revision

Specifies the hardware revision and the product generation. Each revision is numbered incrementally.

### Boot PROM Firmware Version

Specifies the version of the Boot PROM being used on the DES-5200. Each version is numbered incrementally.

### Software Version

Specifies the software version being used on the DES-5200. You can update the software. Each version is numbered incrementally.

### **MAC Address**

Specifies the hardwired address of the DES-5200. This address cannot be changed.

### **System Description**

Brief manufacturer description of the DES-5200. This value cannot be changed.

### **System Name**

Specifies the full name of the DES-5200. This value can be changed, enabling you to assign a unique name to the DES-5200. You can enter up to 44 characters.

### **System Location**

Specifies the physical location of the DES-5200. A building number or street address can be entered in this field. You can enter up to 44 characters.

### **System Contact**

Specifies the group or individual to contact if there is a problem with the DES-5200. The field holds 44 characters.

### **System Up Time**

Indicates the length of time the DES-5200 has been running without being rebooted.

### **LAN IP Address**

Specifies the unique IP address of your LAN. You can enter up to 15 characters.

### **LAN Subnet Mask**

Specifies the subnet mask, if you are subnetting. If you are not subnetting leave the default in place. You can enter up to 15 characters.

### **LAN Default Gateway**

Specifies the default gateway. You can enter up to 15 characters.

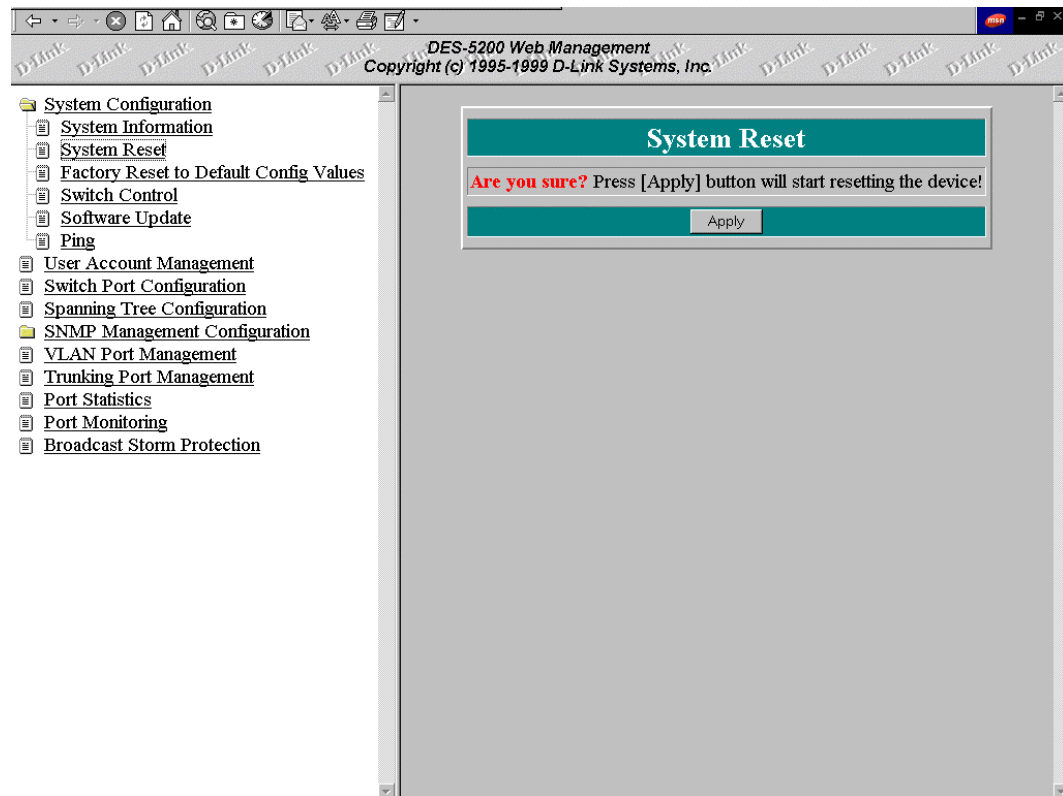
Follow these steps to enter user changeable information:

Select the field you would like to edit.

1. Delete the default information.
2. Enter the new settings.
3. Select Apply. Select Refresh to see the changes.

## System Reset

The System Reset panel, displayed in Figure 56, enables you to reset the DES-5200 without powering off.



**Figure 56: System Reset**

Some configurations will require you to reset the DES-5200 in order for them to take effect. Screen prompts will tell you to reset the DES-5200 as needed.

Follow these steps to reset the DES-5200:

1. Select Apply.

To exit without resetting:

1. Select another panel.

## Factory Reset

The Factory Reset panel, displayed in Figure 57, is used to reset the DES-5200 and restore all factory default values. Using this panel erases all configurations and customization. A confirmation panel appears, displayed in Figure 58, when the default configurations have been reloaded.

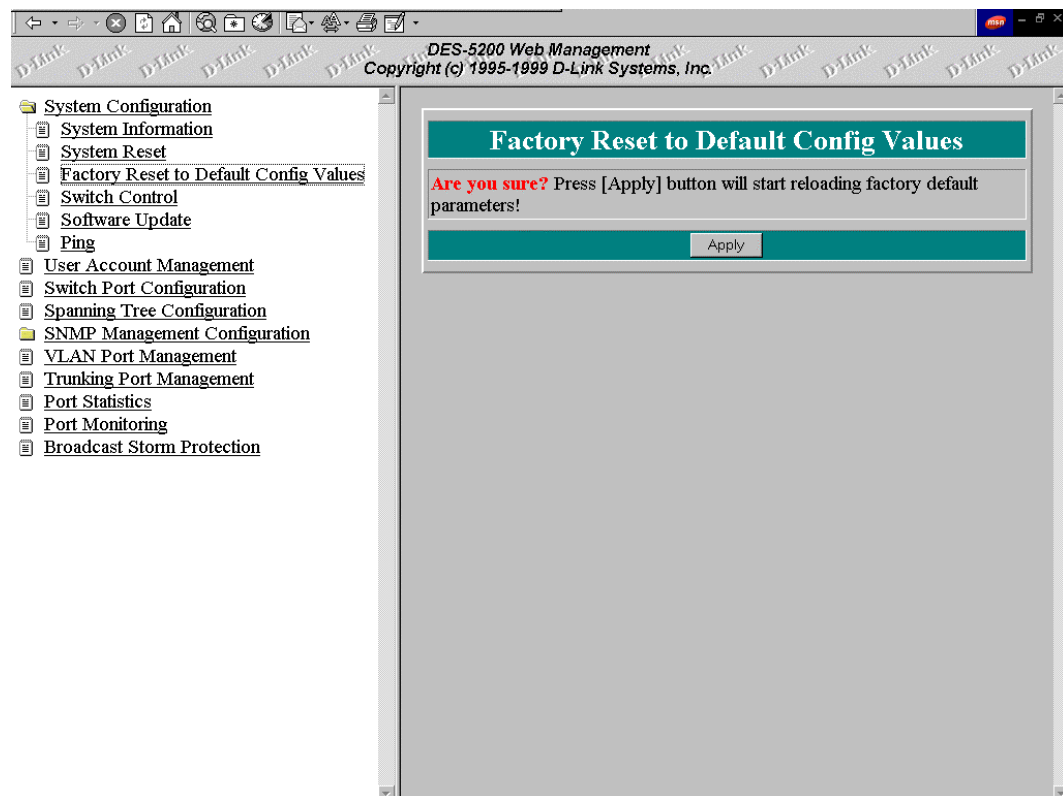
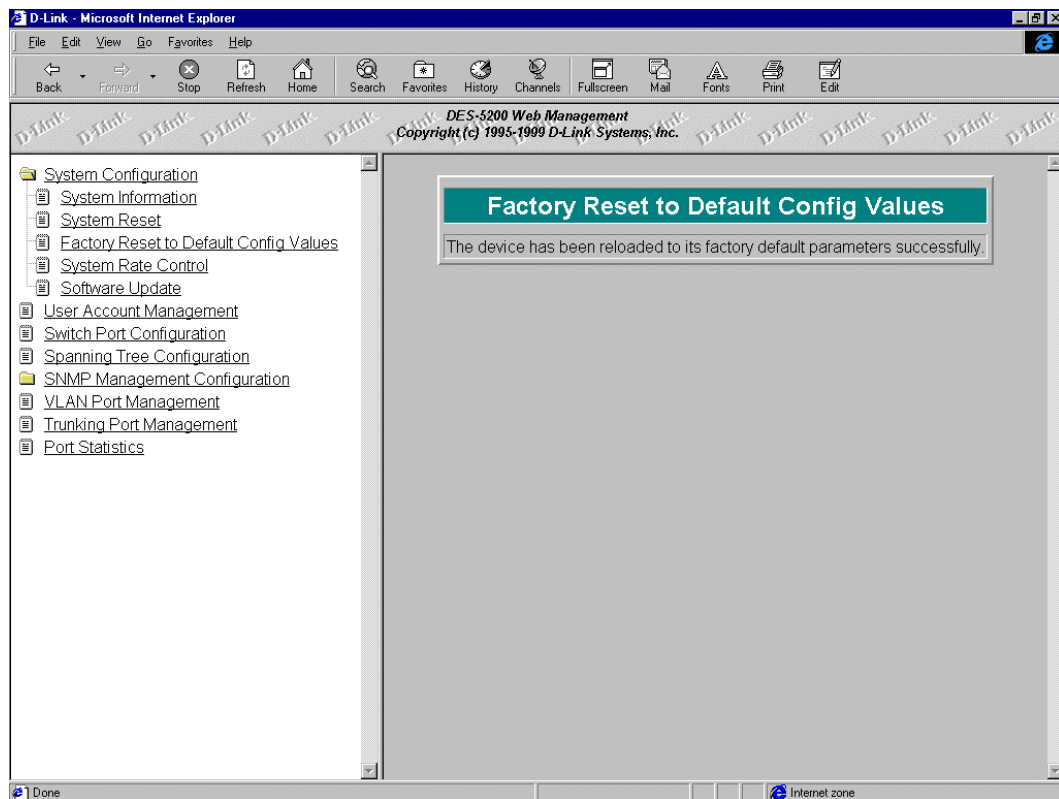


Figure 57: Factory Reset





**Figure 58: Factory Reset Confirmation**

Follow these steps to restore factory default configurations:

1. Select Apply.

To exit without resetting:

1. Select another menu to exit.

## Switch Control

The Switch Control panel, displayed in Figure 59, enables you to set the packet forwarding rate on the DES-5200.

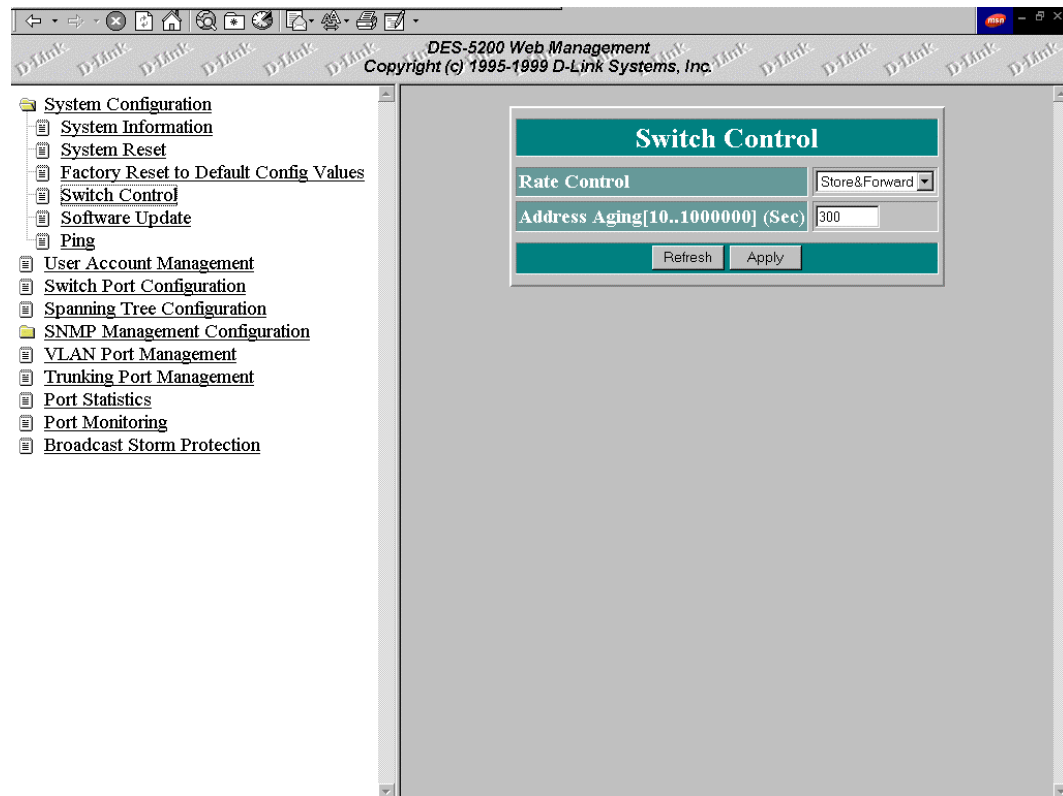


Figure 59: Switch Control

## Rate Control

Store and Forward means that when the DES-5200 receives an incoming packet it “stores” the packet until the entire data packet has been received before it “forwards” the packet to a destination.

### Advantages of Store and Forward

Store and Forward only sends out valid data packets. Bad packets created by collisions on the network or damaged packets are filtered out.

Always use Store and Forward when some devices on the network run at 10 Mbps and others run at 100 Mbps.

### Disadvantages of Store and Forward

Store and Forward requires more time because it receives the whole packet before sending it out. Every byte buffered is an additional eight microseconds of delay.

Store and Forward requires more memory because the DES-5200 must store the packet before sending it out.

### **Address Aging**

Address aging is the length of time the address remains in the MAC address table.

Follow these steps to change the address aging:

1. Highlight the address aging and enter a new value from 10 to 1000000.
2. Select Save and press Enter. Select Exit and press Enter to exit the menu.

---

## Software Update Menu

---

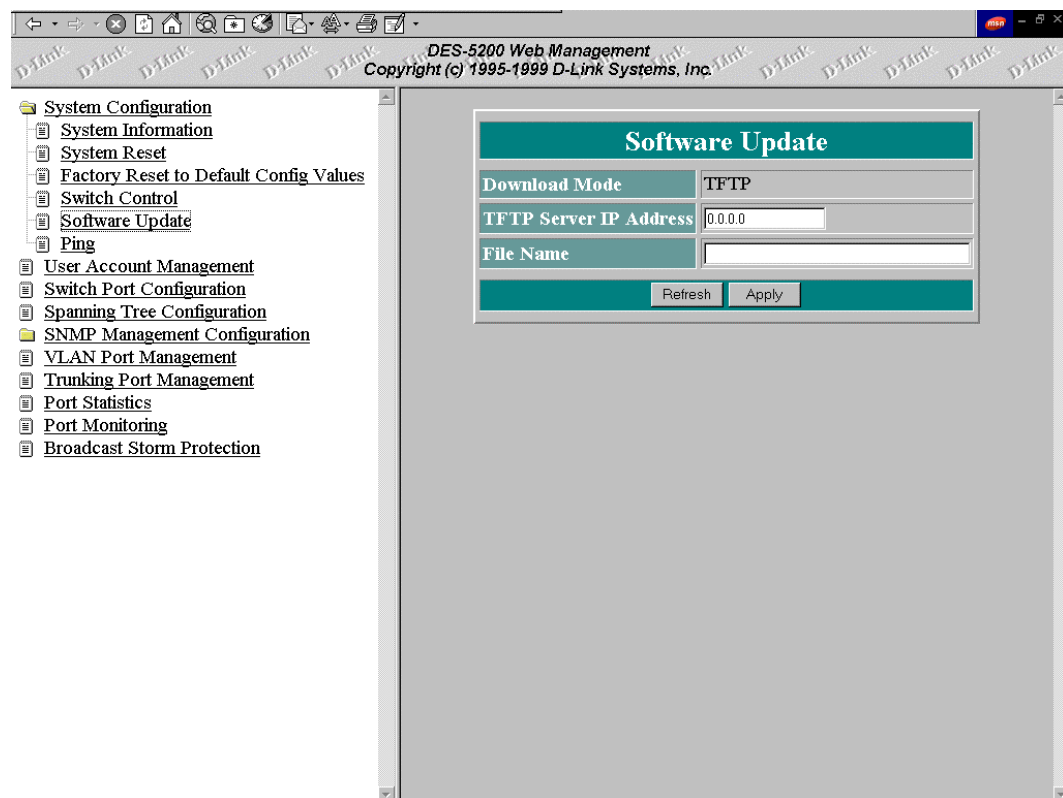
The Software Update menu is used to update the software on the DES-5200. Software can be updated using either XMODEM or TFTP.

XMODEM requires a direct physical connection between a PC and the DES-5200.

TFTP requires a TFTP server and that you know the Internet Protocol (IP) address of the server and the complete path and filename. TFTP can be done over the network or from a remote location.

### Software Update

The Software Update panel, displayed in Figure 60, is used to update software through TFTP.



**Figure 60: Software Update Configuration**

### Download Mode

TFTP is done using Telnet. It can be done from a remote location using a TFTP server. The TFTP server and the DES-5200 must be on the same domain. For example, if the IP address of the DES-5200 is 100.100.100.001 then the TFTP server must have an IP address beginning with 100.100.100. Only the last three

digits will be unique to the server and the DES-5200. Remember that two devices cannot have the same IP address.

### TFTP Server IP Address

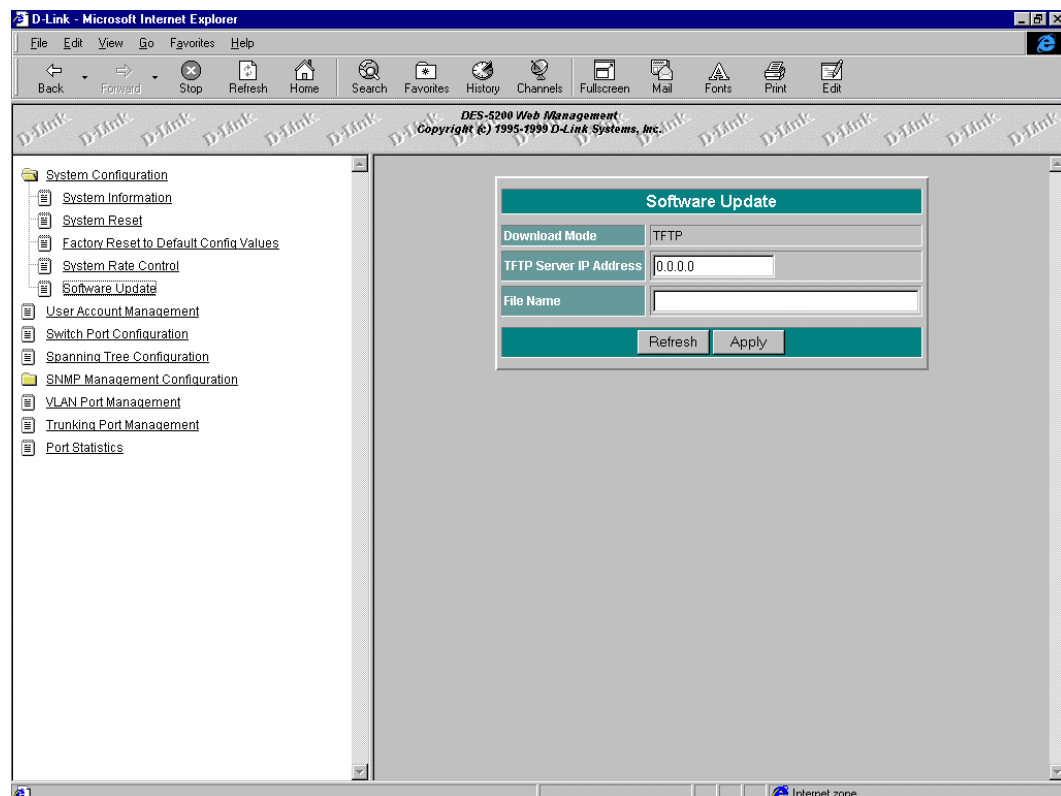
The IP address of the TFTP server being used to load the new software.

### File Name

The name of the file to be downloaded.

Follow these steps to update the software using TFTP.

1. Enter the Internet Protocol (IP) address of the TFTP server see Figure 61.
2. Enter the complete path and filename.
3. There is a confirmation panel and a status panel, see Figure 62 and Figure 63. Select Apply.
4. When the transfer is complete, reset the DES-5200 for the changes to take effect, see Figure 64.
5. Select Refresh to see the changes.



**Figure 61: TFTP Transfer**

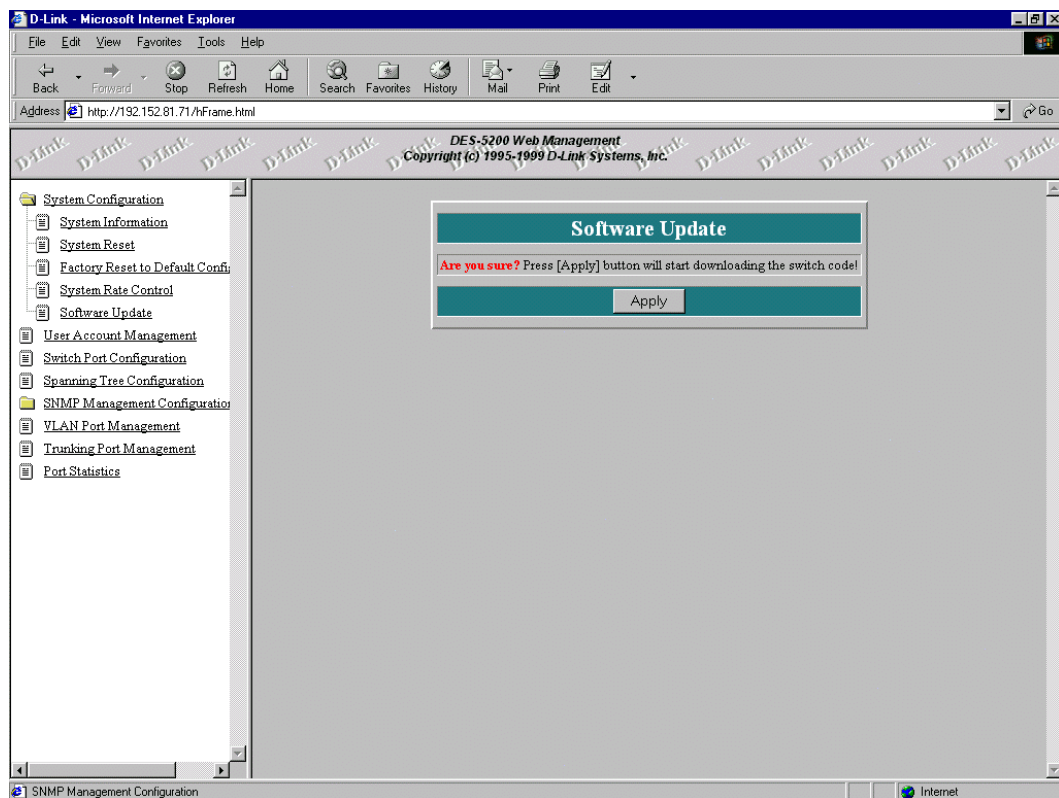


Figure 62: Software Update Confirmation

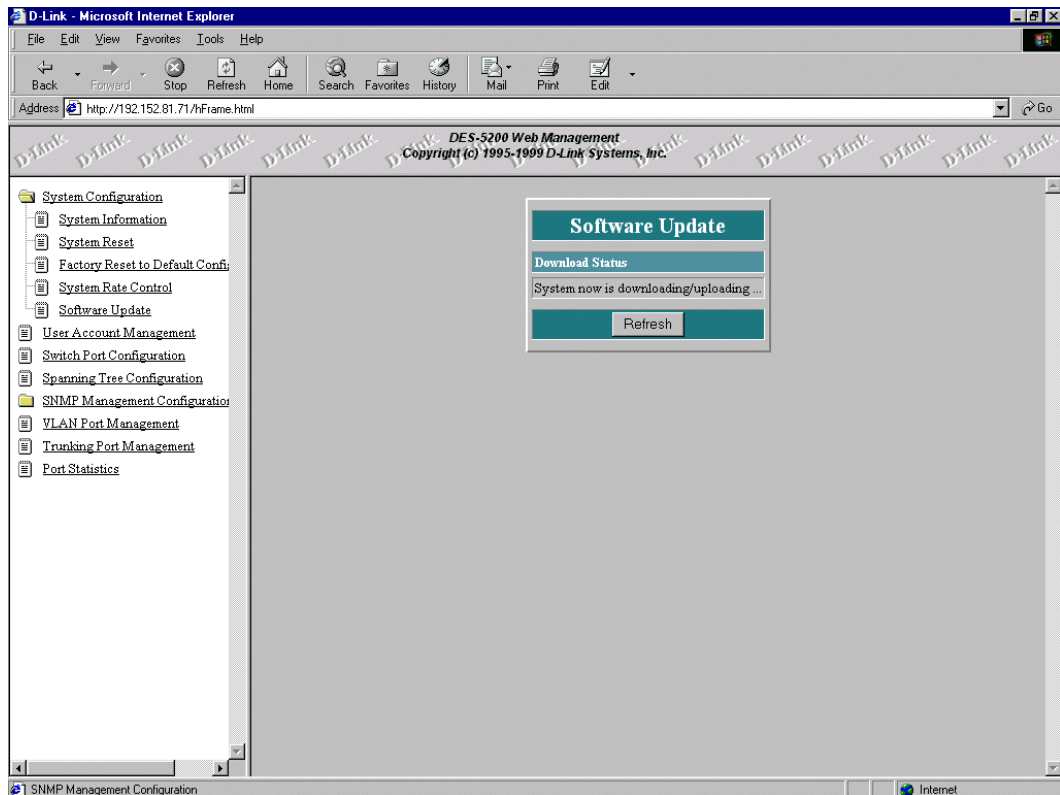


Figure 63: Software Download

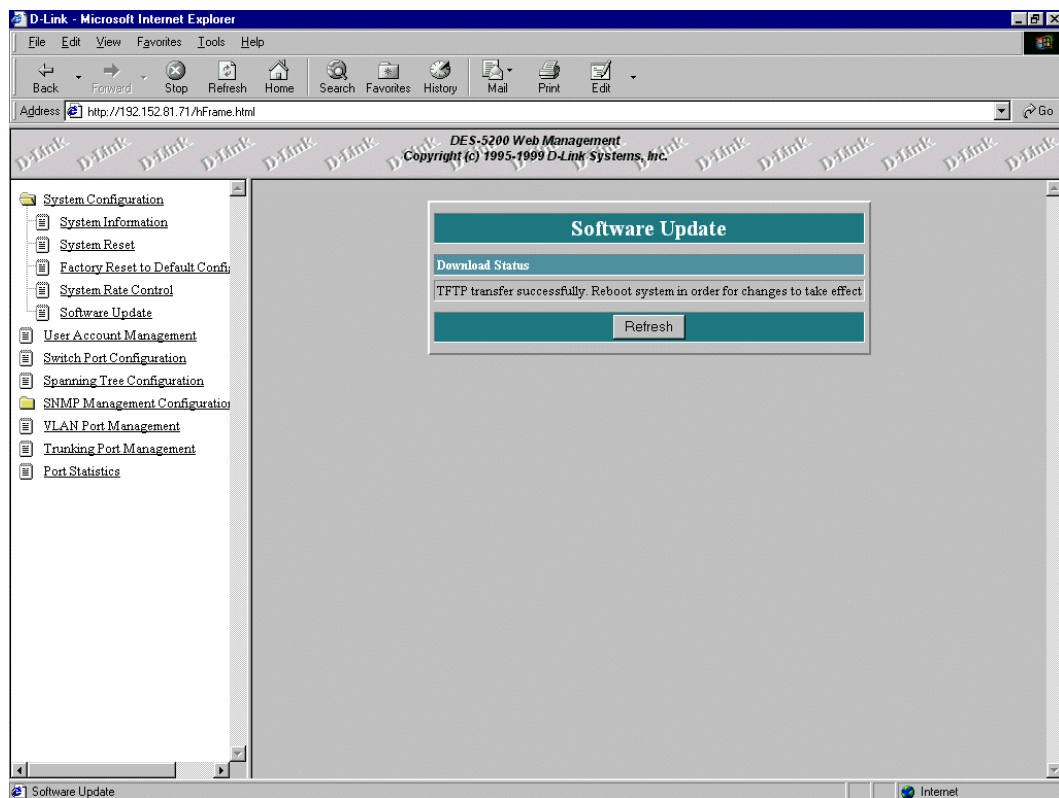


Figure 64: Download Successful

## Ping

Ping, shown in Figure 65, is a utility to determine if a specific IP address is accessible. Ping sends a packet to the specified address and waits for a reply. Its primary purpose is to troubleshoot LAN connections.

A successful reply displays the IP address and packet size in bytes, sequencing and the port number the reply was received through. An unsuccessful reply displays a timeout and the sequence number.

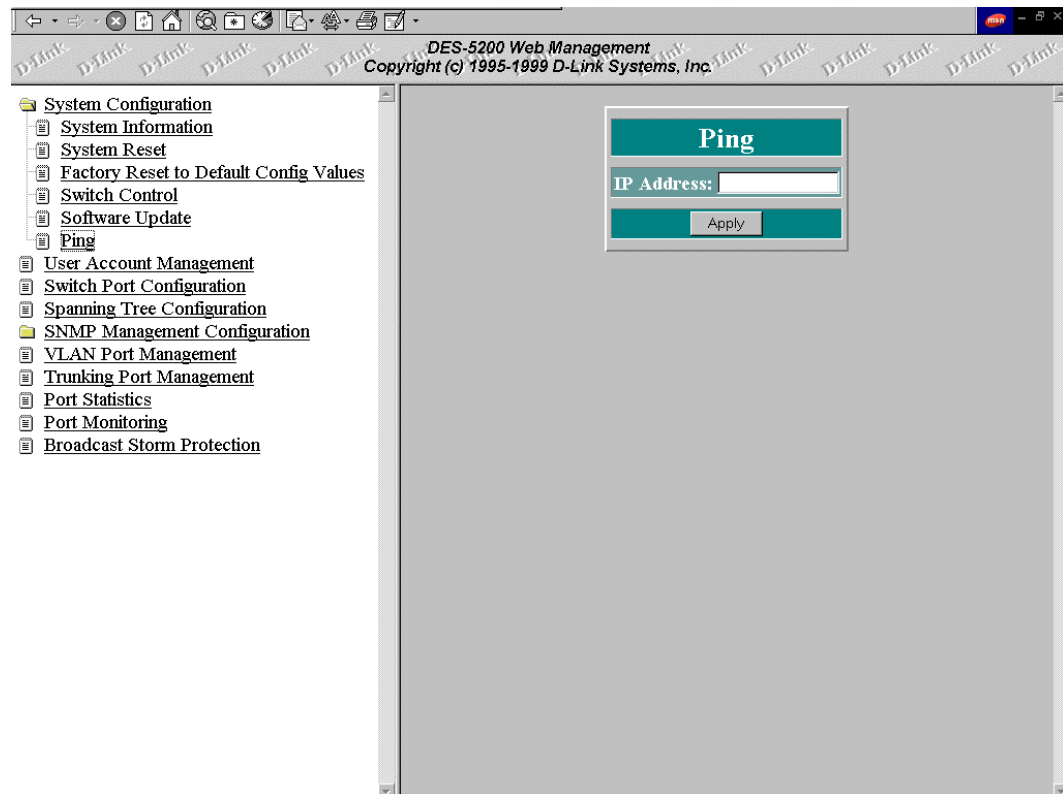


Figure 65: Ping

### IP Address

Specify the IP Address to be tested.

### Ping Count

Ping has several modes: single, multiple continuous.

Enter the IP address and select Apply to send out a single ping.

A successful ping is displayed as a reply and indicates the IP address the came from, bytes, sequence and port number.

An unsuccessful ping results in a request timed out and gives the sequence number.



## User Account Management

The User Account Management panel, displayed in Figure 66, enables you to add users, delete users and modify user access rights.

Follow these steps to reach the User Account Management panels:

1. Select User Account Management.

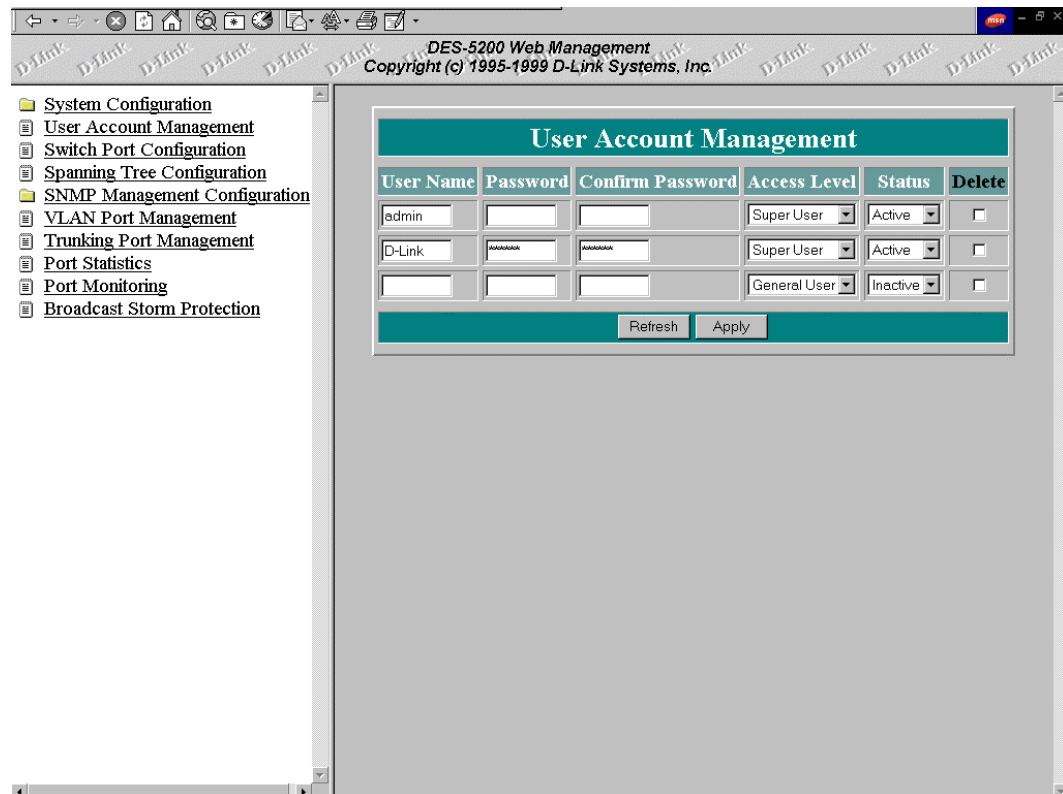


Figure 66: User Account Management

### User Name

Enter the user's name in this field. User names are case sensitive. You can enter a maximum of eight characters.

### Password

Enter the user's password in this field. Passwords are case sensitive. You can enter a maximum of eight characters in this field.

### Confirm Password

Reenter the user's password to confirm it in this field.

## **Access Level**

There are two access levels available on the DES-5200: Super User and General User. Super Users have administrative rights on the DES-5200. They can add and delete users, change the configuration of the DES-5200 and perform all management functions.

General Users have read only access to the DES-5200. They can look at the panels but they cannot make any changes to existing settings or configurations.

## **Status**

Indicates the user's status. Only active users can log in. Inactive users cannot.

## **Delete**

Enables you to delete users.

## **Change Password**

Passwords can be changed quickly and easily.

Follow these steps to add users.

1. Enter the new user's name and password.
2. Reenter the password to confirm it.
3. Select Access Level and Status.
4. Select Apply to save the changes. Select Refresh to see the changes.

Follow these steps to delete users:

1. Select the delete box across from the user name to delete it.
2. Select Apply. Select Refresh to see the changes.

Follow these steps to change user access level:

1. Press the down arrow and select the new access level.
2. Select Apply. Select Refresh to see the changes.

Follow these steps to change user passwords:

1. Select the user whose password will be changed.
2. Enter the new password in the Password field.
3. Confirm the new password by reentering the new password in the confirm password field.
4. Select Refresh to see changes.

## Switch Port Configuration

The Switch Port Configuration panel, displayed in Figure 67, is used to configure individual ports on the DES-5200.

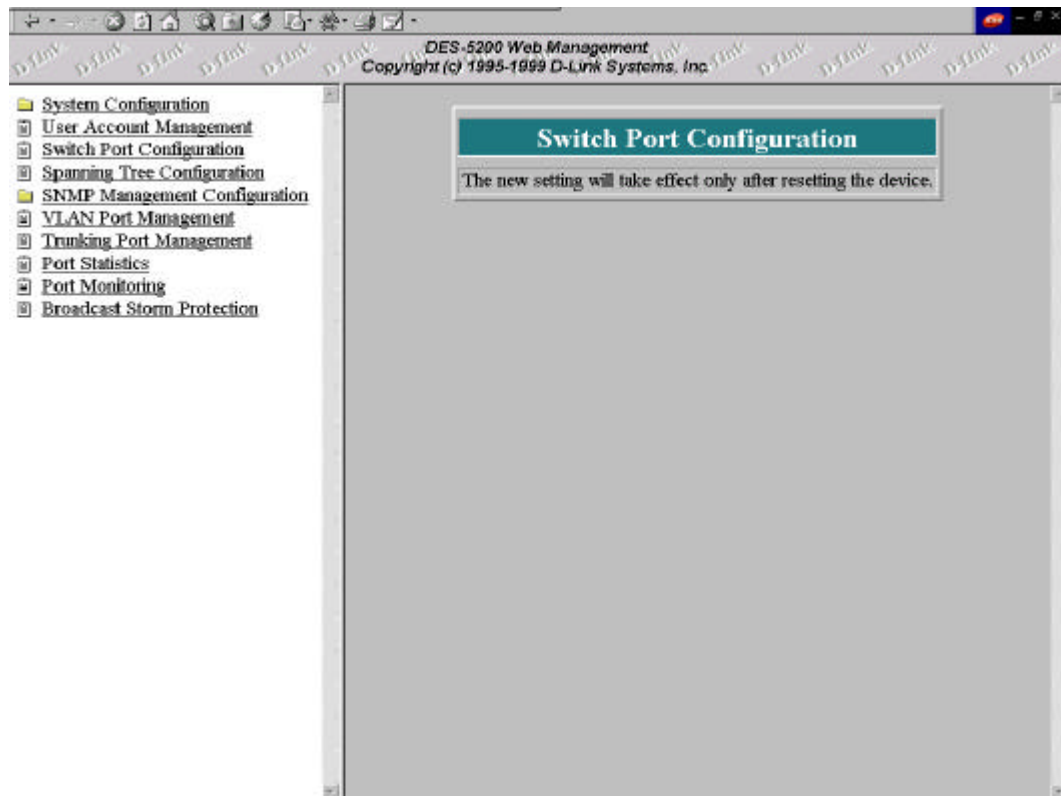
DES-5200 Web Management  
Copyright (c) 1995-1999 D-Link Systems, Inc.

- System Configuration
- User Account Management
- Switch Port Configuration
- Spanning Tree Configuration
- SNMP Management Configuration
- VLAN Port Management
- Trunking Port Management
- Port Statistics
- Port Monitoring
- Broadcast Storm Protection

Port	State	Physical	Port State	Priority[0-255]	Link Status
1	Enable	Auto	Forwarding	128	100TX/Full
2	Enable	Auto	Forwarding	128	Link Down
3	Enable	100TX/Half	Forwarding	128	Link Down
4	Enable	100TX/Full	Forwarding	128	Link Down
5	Enable	10T/Half	Forwarding	128	Link Down
6	Enable	10T/Full	Forwarding	128	Link Down
7	Enable	Auto	Forwarding	128	Link Down
8	Enable	Auto	Forwarding	128	Link Down
9	Enable	Auto	Forwarding	128	Link Down
10	Enable	Auto	Forwarding	128	Link Down
11	Enable	Auto	Forwarding	128	Link Down
12	Enable	Auto	Forwarding	128	Link Down
13	Enable	Auto	Forwarding	128	Link Down
14	Enable	Auto	Forwarding	128	Link Down
15	Enable	Auto	Forwarding	128	Link Down
16	Enable	Auto	Forwarding	128	Link Down
17	Enable	Auto	Forwarding	128	Link Down

Figure 67: Switch Port Configuration

A confirmation panel is shown when the settings are changed. See Figure 68.



**Figure 68: Switch Port Configuration Confirmation**

## **Port**

Indicates the number of the port being configured.

## **State**

All ports have two states: enabled or disabled. Enabled ports transmit and receive data packets. Disabled ports can not transmit or receive packets. You can disable ports. However, you will not be able to use a disabled port.

## **Physical**

Refers to the physical state of the port. If you manually change the state of a port it will remain in that state until you change it. It will not auto negotiate speed and duplex mode. All TX ports can be in the following physical states:

- Auto
- 1000SX/Full
- 100TX/Half
- 100TX/Full
- 10T/Half
- 10T/Full

Ports in the Auto state automatically negotiate speed and duplex mode. This is the default setting.

Ports set in the 1000SX/Full state are set to work at 1000 Mbps full duplex.

Ports set in the 100TX/Half physical state are set to work at 100 Mbps half duplex.

Ports set in the 100TX/Full state are set to work at 100 Mbps full duplex.

Ports set in the 10T/Half state are set to work at 10 Mbps half duplex.

Ports set in the 10T/Full state are set to work at 10 Mbps full duplex.

The 100BASE-FX ports can only be in the 100/Fx Half or 100/Fx Full states. The 1000BASE-SX port can only be in 1000SX/Full. Half-duplex operation is not supported. You only see this option when the 1000SX module is installed.

### **Port State**

All ports have four states: blocking, listening, learning and forwarding. Blocking means that nothing is coming through the port. If the Spanning Tree Algorithm detects a loop it will change the state of the port where the loop is detected to the Blocking State. You can disable the Spanning Tree Algorithm. Forwarding means the port is forwarding data packets to their destination.

### **Priority**

The port priority can be set from zero to 255. Zero is the highest port priority. The port assigned a zero will be the root port. The default setting will work in most situations.

Follow these steps to configure ports:

1. Select the State setting of the appropriate port.
2. Use the down arrow to change the setting.
3. Select Apply.
4. Use the same procedure to make other changes.

### **Link Status**

Displays the whether the link is active and indicates the speed and duplex mode of the active ports.

- Link Down indicates the port is not active

## Spanning Tree Configuration

The Spanning Tree Configuration panel is used to configure the Spanning Tree Algorithm. The Spanning Tree Algorithm (STA) in the DES-5200 enables you to create alternative paths (using multiple switches or bridges) in your network. These backup paths are idle until the DES-5200 determines that a problem has developed in the primary path. If the primary path breaks down STA will activate the backup path. STA is very complicated and you should understand it well before changing the default settings. See Table 13: User Selective STA Parameters.

### STA Operation Levels

STA operates on the bridge level and the port level. On the bridge level, STA calculates the Bridge Identifier for each DES-5200, then sets the Root Bridge and the Designated Bridges. On the port level, STA sets the Root Port and Designated Ports.

### Spanning Tree Configuration Menu

The Spanning Tree Configuration menu, displayed in Figure 69, enables you to enable or disable STA, set the bridge priority and other configurations.

The screenshot shows the 'Spanning Tree Configuration' window within the 'DES-5200 Web Management' interface. The interface has a sidebar menu on the left with the following items: System Configuration, User Account Management, Switch Port Configuration, Spanning Tree Configuration (highlighted), SNMP Management Configuration, VLAN Port Management, Trunking Port Management, Port Statistics, Port Monitoring, and Broadcast Storm Protection. The main content area displays the 'Spanning Tree Configuration' form with the following fields and values:

Spanning Tree Configuration	
Spanning Tree Algorithm	Enable
Bridge Priority[0..65535]	32768
Root Cost	0
Hello Time[1..10] (Sec)	2
Forward Delay Time[4..30] (Sec)	15
Max Age Time[6..40] (Sec)	20
Root Bridge	00:4a:cb:a0:05:04
Root Port	None
<input type="button" value="Refresh"/> <input type="button" value="Apply"/>	

Figure 69: Spanning Tree Configuration

## Spanning Tree Algorithm

Spanning Tree Algorithm can be enabled or disabled. Use Spanning Tree to prevent network loops.

## Bridge Priority

The Bridge Priority can be from 0 to 65535. Zero is the highest Bridge Priority. The higher the Bridge Priority the greater the chance that the DES-5200 will be selected as the Root Bridge. The DES-5200 with the highest Bridge Priority is the Root Bridge.

## Root Cost

The Root Cost is the number of times a packet is regenerated before reaching its destination. A source sends a packet to the first device (switch or hub) on the network. When the packet reaches the next hub or switch and is sent out again, the Path Cost becomes two. Each switch and active hub regenerates the packet. To determine the Root Path Cost, count the number of times the packet is regenerated.

The switch with the lowest Path Cost is the Root Bridge. Make the Root Bridge the best switch on the network.

## Hello Time

Is the interval between two transmissions of packets sent by the Root Bridge to tell all other switches that it is the Root Bridge. The Hello Time can be set manually, with a range in seconds from 1 to 10. If the Hello Time is set for the switch and the switch is not the Root Bridge then the Hello Time will not take effect until the switch becomes the Root Bridge.

## Forward Delay Time

This is the time any port on the DES-5200 spends in the listening state while moving from the listening state to the forwarding state. It can be set from 4 to 30 seconds.

Use the following formula when setting the Hello Time and the Forward Delay Time:

$$2 \times (\text{Forward Delay minus 1 second}) \geq \text{Max Age}$$

$$2 \times (\text{Hello Time plus 1 second}) \leq \text{Max Age}$$

## Max Age Time

Is the time a non-root bridge waits for a packet to be sent. At the end of the Max Age, if a packet has not been received from the Root Bridge, the DES-5200 will start sending its own packets and request permission to become the Root Bridge.

The switch with the lowest Bridge Identifier is the Root Bridge. It is best to make the Root Bridge the best switch on the network to ensure the best network performance and reliability.

### Root Bridge

Specifies the MAC address of the Root Bridge. The DES-5200 may or may not be the root bridge. The DES-5200 is the default root bridge.

### Root Port

Specifies the preferred path to the Root Bridge. Only one path per bridge can exist. The default setting is none.

**Table 13: User Selective STA Parameters**

STA Parameters	Settings	Effects	Comment
Enable/Disable	Enable/Disable	Participate in or remove from STA	Enable in a SNMP network
Bridge Priority	Lower the #, higher the priority	Increases chance of becoming the Root Bridge	Avoid, if the switch is used in workgroup level of a large network
Hello Time	1 – 10 seconds	No effect, if not Root Bridge	Never set greater than Max Age Time
Max Age Time	6 – 40 seconds	Compete for Root Bridge, if BPDU is not received	Avoid low number for unnecessary reset of Root Bridge
Forward Delay Time	4 – 30 seconds	High # delays the change in state	$2 \times (\text{Forward Delay minus 1 second}) \geq \text{Max Age}$ , $2 \times (\text{Hello Time plus 1 second}) \leq \text{Max Age}$
Port Level STA parameters			
Enable/ Disable	Enable/ disable	Enable or disable LAN segment	Disable a port for security or problem isolation
Port Priority	Lower the #, higher the priority	Increases chance of becoming the Root Port	No comment



Follow these steps to change the settings:

1. Use the down arrow or enter new settings.
2. Select Apply. Select Refresh to see the changes.

---

## SNMP Management Configuration

---

SNMP Management Configuration is used to configure the DES-5200 for SNMP management. Leave the default values in place if you are not managing your network through SNMP.

The DES-5200 uses the standard MIB-II Management Information Base module. The MIB values can be retrieved from any SNMP based network manager. The DES-5200 supports its own proprietary enterprise as an extended MIB. The MIB can be retrieved by specifying their Object-Identity (OID). MIB values can be either read-only or read-write.

Read-only MIB variables can be constants that are programmed into the DES-5200 or variables that change while the DES-5200 is running. For example, the number and type of ports on the DES-5200 is a read-only constant. The number and type of ports is fixed. Statistics, such as the number of errors that have occurred, are read-only variables.

Read-write MIBs are usually related to user customized configurations. Examples of these are the DES-5200's IP address, STA parameters and port status.

If you use third party vendors' SNMP software to manage the DES-5200, a diskette listing the DES-5200's proprietary enterprise MIB can be obtained by request. If your software provides functions to browse or modify MIB, you can get the MIB values and change them (if the MIB's attributes permit the write option). This process can be difficult. You must know the MIB OID's and retrieve them individually.

## SNMP Management Configuration Menu

The SNMP Management Configuration menu, displayed in Figure 70, enables you to configure the DES-5200 for SNMP management.

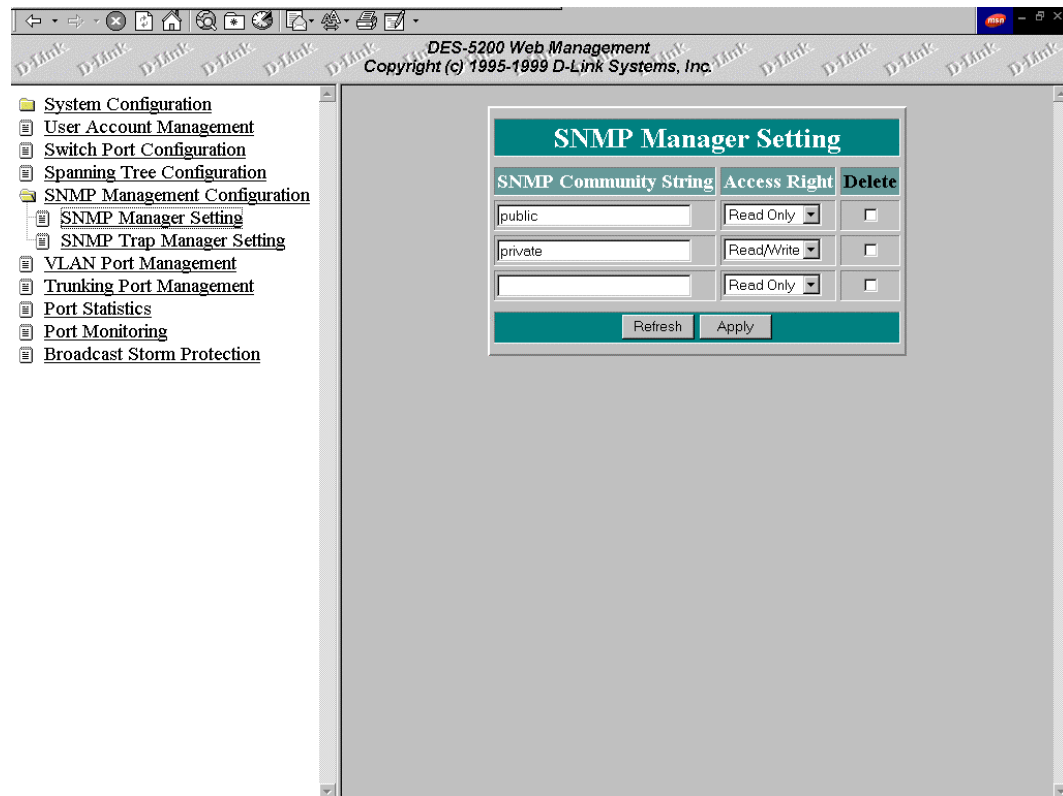


Figure 70: SNMP Manager Setting

### SNMP Manager Setting

The fields under this setting are used to configure the DES-5200 for SNMP Management. You must configure these fields in order to manage the DES-5200 through SNMP.

#### SNMP Community String

The SNMP Community String field enables you to name the SNMP Communities. The names public and private are only default names. For security you should change these names to help prevent unauthorized access to the DES-5200.

You can name the SNMP communities anything you like. You can enter up to 32 characters in each of the four fields. You can create up to four SNMP Communities.

## Access Right

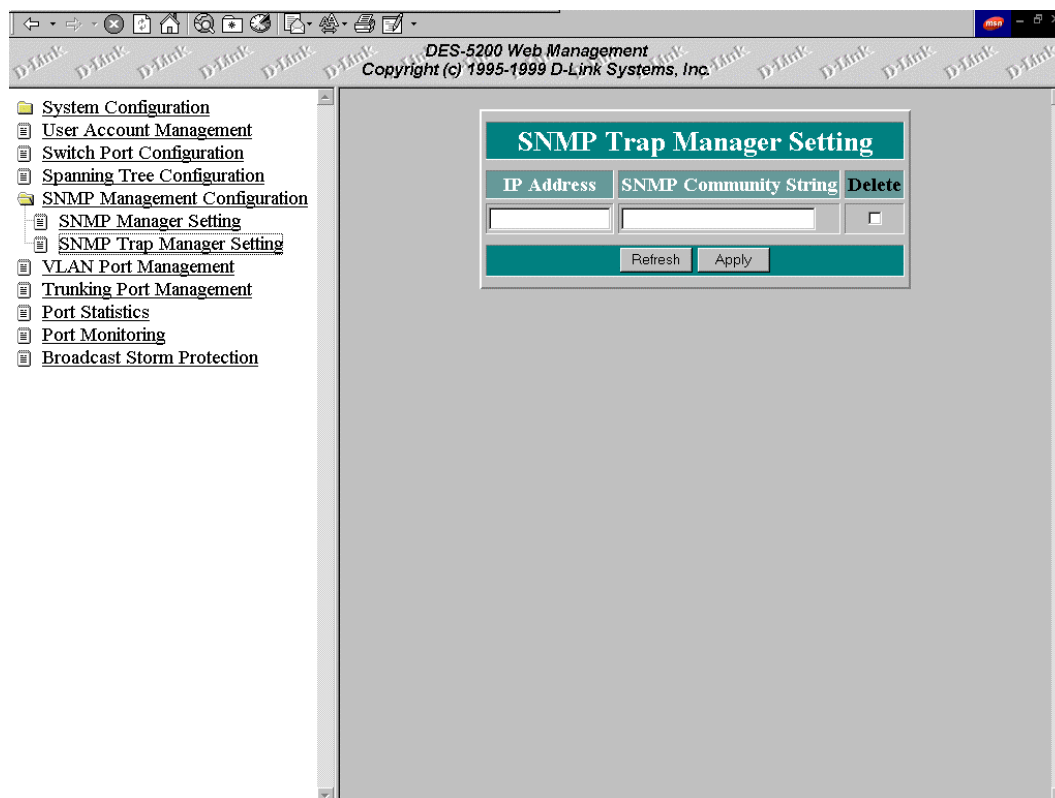
Enables you to set the rights that members of the SNMP Communities have. Read Only access rights mean that members of the community can view the information on the DES-5200 but they can not make changes to the configurations. Read/ Write access rights enable the members of the community to make any changes they desire.

## Delete

Delete enables you to delete the SNMP manager setting.

## SNMP Trap Manager Setting

Enables you to enter the IP address of Trap Managers, see Figure 71. Traps are messages the DES-5200 sends out to inform trap managers of events on the network. The DES-5200 generates traps and sends them to the network manager. Trap managers are special network users who are given certain rights and access to oversee and maintain the network. This feature is available only in D-View or by using other SNMP management software.



**Figure 71: SNMP Trap Manager Setting**

You can specify which network managers may receive traps from the DES-5200 by creating a list of IP Addresses of the authorized network managers.

Trap managers can receive the following trap types:

- Cold Start
- Authentication Failure
- Link Change Event

### **Cold Start**

Signifies that the DES-5200 has been powered up. Software settings are reconfigured and hardware systems are rebooted. A cold start is different from a factory reset.

### **Authentication Failure**

Signifies that an addressee (or manager/ user) on the DES-5200 is not a valid user of the DES-5200 and may have entered an incorrect community name.

### **Link Change Event**

Signifies that the link of a port has changed from link up to link down or vice versa.

### **IP Address**

This field is used to enter the IP Addresses of Trap Managers.

### **SNMP Community String**

Enter the Community String of the Trap Managers in this field.

### **Status**

The DES-5200 will not send out traps unless the status is Valid.

### **Delete**

Enables you to delete the current setting.

Follow these steps to enter the SNMP Community String:

1. Enter the name of the SNMP Community.
2. Select the Access Right field and use the down arrow to change the setting.
3. Select Apply. Select Refresh to see the changes.

Follow these steps to configure the SNMP Trap Manager Setting:

1. Enter the IP Address of the Trap Manager.
2. Enter the name of the SNMP Community String.
3. Press Apply. Select Refresh to see the changes.

Follow these steps to delete the SNMP Community String or the SNMP Trap Manager Setting:

1. Select Delete.
2. Select Apply. Select Refresh to see the changes.

---

## VLAN Port Management

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A Virtual Local Area Network (VLAN) is a logical subgroup within a LAN that is created with software rather than physical connections. The purpose of a VLAN is to prevent broadcast storms and ease congestion on the network.

Each VLAN created is a broadcast domain. A broadcast is a packet that is sent to all nodes on the network. A broadcast domain is a domain in which every node in the domain receives the broadcast packet. The advantage of creating VLANs is that they permit you to group LAN segments together in order to get the most out of your network.

VLANs become more important as the network grows and traffic increases. VLANs are usually used on high traffic networks. You should consider a VLAN on a smaller network if a department or workgroup routinely does tasks that take up a lot of bandwidth and they are not already on their own LAN segment.

VLANs can be used to subdivide the network. The DES-5200 supports port based VLAN. Port based VLAN means that the VLAN is grouped by port. If a VLAN is created using three ports, then those ports become a separate broadcast domain.

By using the VLANs, members of a particular department or workgroup can be partitioned from the rest of the network. For example, the marketing department can be on one VLAN and the accounting department can be on another. If a workstation in marketing sends a broadcast packet to another workstation in marketing the packet will remain in the marketing VLAN.

## VLAN Port Management

The VLAN Port Management menu, displayed in Figure 72, enables you to create, delete and modify VLANs on the DES-5200.

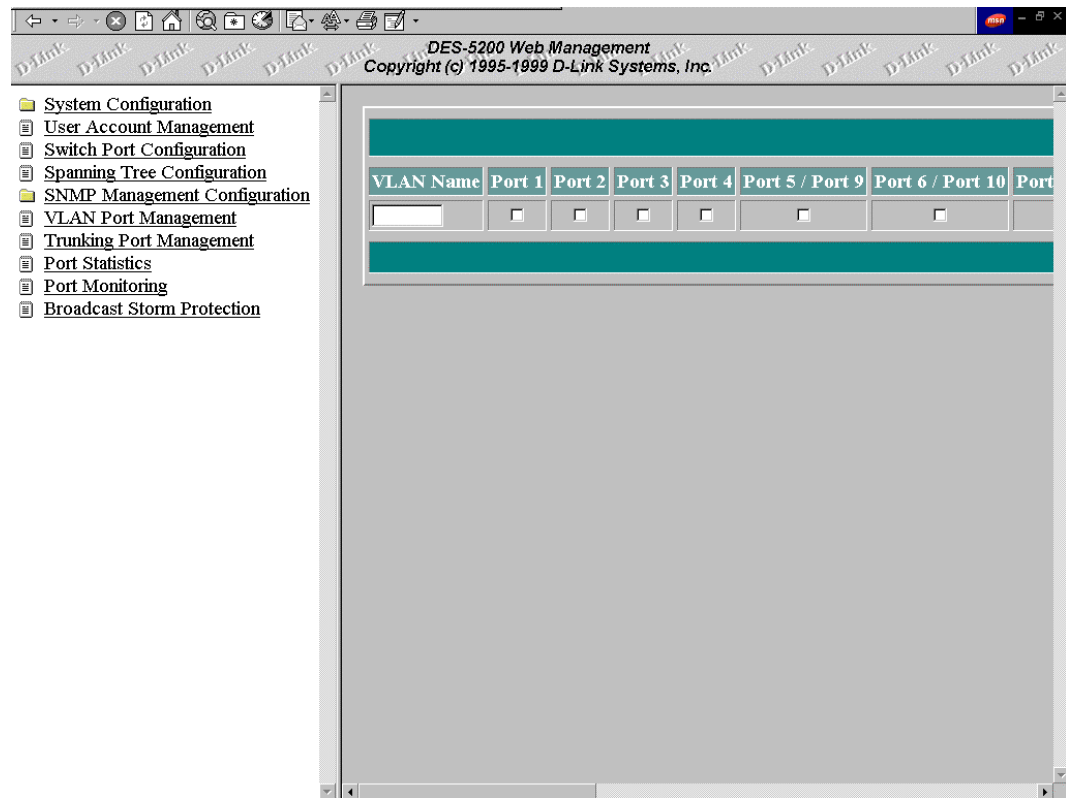


Figure 72: VLAN Port Management

### VLAN Name

Enter the name of the VLAN in this field. All VLANs must have a name.

### Ports

All ports are identified by their port number.

### Delete

Enables you to delete VLANs.

Follow these steps to create, delete and modify VLANs:

1. Enter the VLAN name in the VLAN Name field.
2. Select the ports to include in the VLAN.
3. Select Apply. Select Refresh to see the changes.



Follow these steps to delete a VLAN:

1. Select Delete on the right side of the panel.
2. Select Apply. Select Refresh to see the changes.

## Trunking Port Management Menu

The Trunking Port Management panel, displayed in Figure 73, is used to create, delete and modify trunk groups.

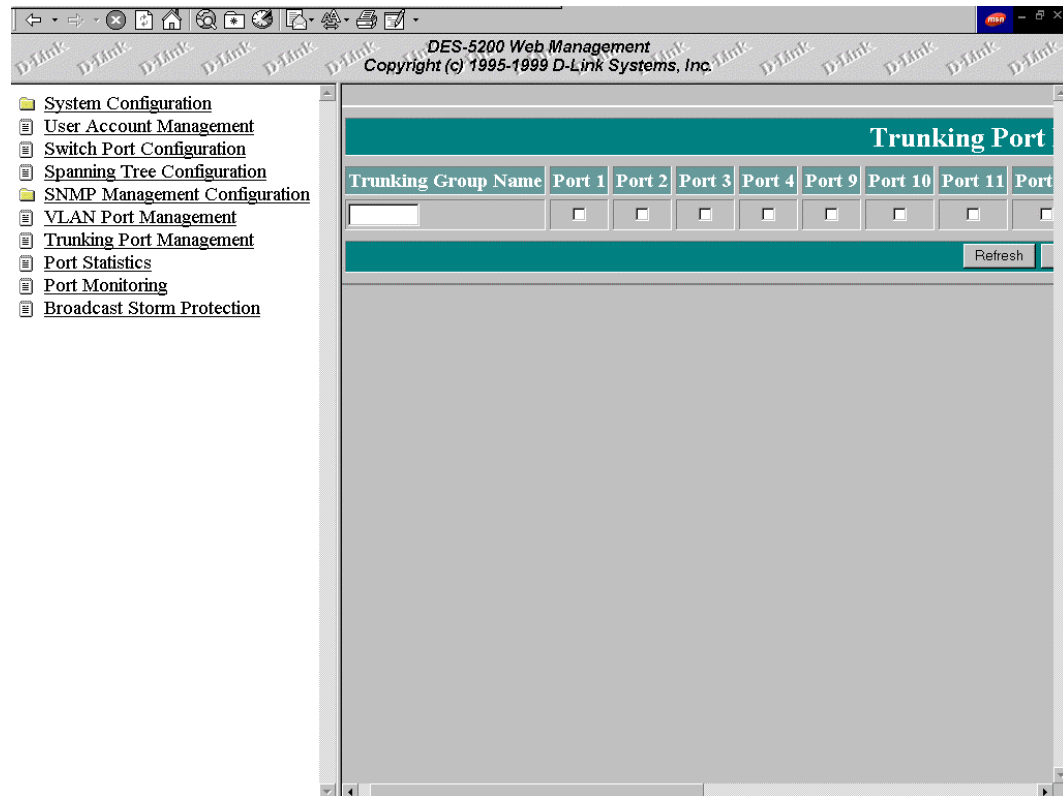


Figure 73: Trunking Port Management

### Trunking Group Name

Is the name of the Trunking Group.

### Port

Indicates the port number being added to the Trunking group.

Follow these steps to create, delete and modify trunk groups:

1. Enter the Trunking Group Name.
2. Select the ports that will be part of the Trunking Group.
3. Select Apply. Select Refresh to see the changes.

Follow this step to delete trunked groups:

1. Select delete.
2. Select Apply. Select Refresh to see the changes.

## Port Statistics

The Port Statistics panel, displayed in Figure 74, shows statistical information about the ports.

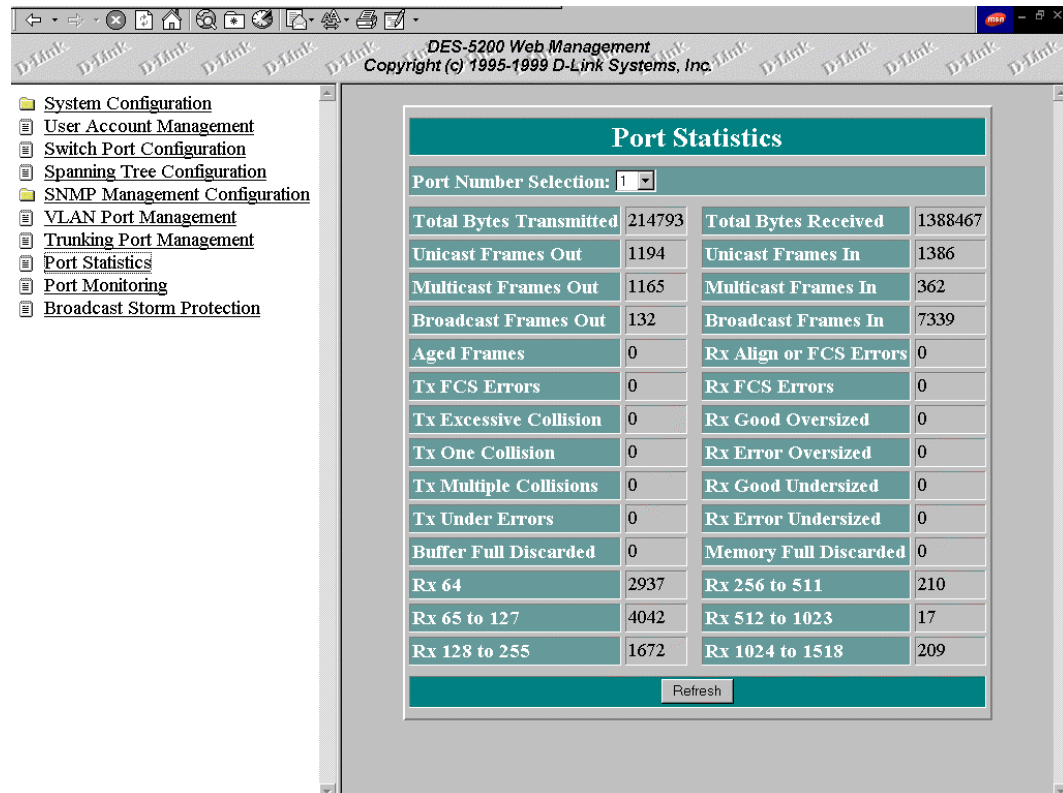


Figure 74: Port Statistics

### Port Number

The number of the port the statistics are being gathered from.

### Tx Total Bytes Transmitted

Number of bytes transmitted to the port.

### Tx Unicast Frames

Number of unicast frames transmitted.

### Tx Multicast Frames Out

Number of multicast frames transmitted.

### Tx Broadcast Frames Out

Number of broadcast frames transmitted.

### **Tx Aged Frames**

Number of frames dropped because they were in transmit too long.

### **Tx FCS Errors**

Number of frames that were discarded on the transmit side because of FCS errors.

### **Tx Excessive Collision**

Number of frames that were dropped because of excessive collisions.

### **Tx One Collision**

Number of frames that were transmitted after one collision.

### **Tx Multiple Collisions**

Number of frames that were transmitted after multiple collisions.

### **Tx Underrun Err**

Number of frames on the transmit side that were discarded because of an underrun.

### **Rx Total Bytes Received**

Total number of bytes received on a port.

### **Rx Disc Buff Full**

Number of good frames that were discarded because the Rx Buffer was full.

### **Rx Align Errors**

Number of well-aligned frames that were received with alignment errors.

### **Rx FCS Errors**

Number of frames that were received with FCS errors.

### **Rx Unicast Frames In**

Number of unicast frames received.

### **Rx Multicast Frames**

Number of multicast frames received.

### **Rx Broadcast Frames**

Number of broadcast frames received.

### **Rx Good Oversized**

Number of good oversized frames received.

### **Rx Error Oversized**

Number of good oversized frames with errors (FCS, Alignment)

### **Rx Good Undersized**

Number of good undersized frames received.

### **Rx Error Undersized**

Number of undersized frames received with errors.

### **Rx64**

Number of frames (including frames with errors) that were 64 bytes long.

### **Rx65 to 127**

Number of frames (including frames with errors) 65 to 127 bytes long.

### **Rx128 to 255**

Number of frames (including frames with errors) 128 to 255 bytes long.

### **Rx256 to 511**

Number of frames (including frames with errors) 256 to 511 bytes long.

### **Rx512 to 1023**

Number of frames (including frames with errors) 512 to 1023 bytes long.

### **Rx1024 to 1518**

Number of frames (including frames with errors) 1024 to 1518 bytes long.

### **Rx Disc Mem Full**

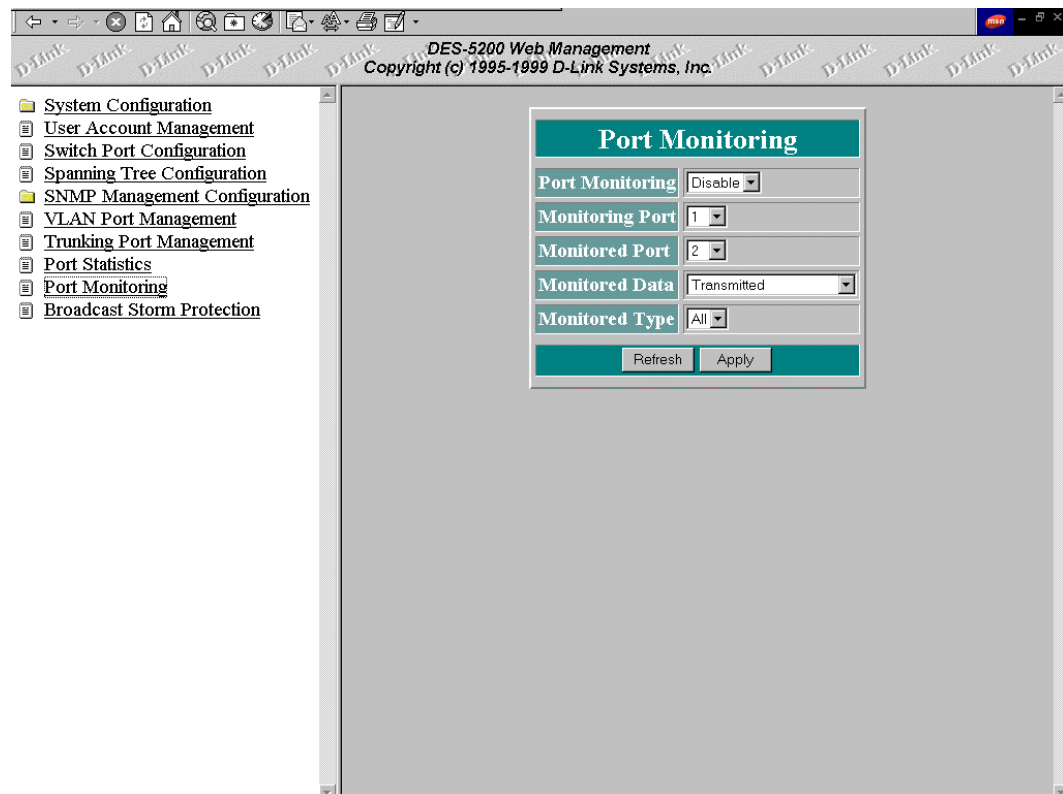
Number of good frames that were discarded because the memory was full.

---

## Port Monitoring

---

The Port Monitoring panel, shown in Figure 75, is used to gather information about ports. The panel shows data traffic sent or received by the port being monitored. You can define which port is being monitored and which port will do the monitoring. You can define the packet types being monitored. Only one port at a time can be monitored.



**Figure 75: Port Monitoring**

### Port Monitoring

Enables or disables port monitoring. The default is disabled.

### Monitoring Port

The port that receives the monitoring data.

### Monitored Port

The port being monitored.

## Monitored Data

Selecting Transmitted monitors all outgoing packet type. Received enables you to choose either all packet types or one to the three packet types. Transmitted & Received defaults the monitoring to all packet types.

## Monitored Type

This option is only used when the monitored data is set to Received.

Select on of the following types:

- All monitors all packet types.
- Unicast monitors only unicast packets.
- Discard monitors all packets discarded by the DES-5200.

Follow these steps to configure port monitoring:

1. Toggle the space bar to Enable Port Monitoring.
2. Enter the number of the Monitoring Port.
3. Enter the number of the Monitored Port.
4. Toggle the space bar to select the monitored data.
5. Toggle the space bar to select the packet type to be monitored.

## Broadcast Storm Protection

Broadcast Storm Protection, shown in Figure 76, protects the LAN from being downed by a broadcast storm. The protection can be enabled or disabled on each port according to your preference and the needs of your LAN. The default value is disabled.

Port	Broadcast Storm Detect	Action
1	Disable	Block
2	Disable	Block & Trap
3	Disable	Block
4	Disable	Block
5	Disable	Block
6	Disable	Block
7	Disable	Block
8	Disable	Block
9	Disable	Block
10	Disable	Block
11	Disable	Block
12	Disable	Block
13	Disable	Block
14	Disable	Block
15	Disable	Block
16	Disable	Block
17	Disable	Block
18	Disable	Block

Figure 76: Broadcast Storm Protection

### Port

Indicates the port number.

### Broadcast Storm Detect

Detects the broadcast storm and takes the action you have specified.

### Action

Performs the action you have specified. There are three actions: Block, Block&Trap, Trap.

Block prevents the port from receiving any data packets. Block is triggered when the port receives 3000 packets per second or more. The port will remain blocked



until the number of data packets received drops below 3000 packets per second and then it returns to normal.

Block & Trap blocks the port and sends a message to the SNMP Trap Manager that a specified port is being partitioned from the rest of the DES-5200. You must configure the SNMP Trap Manager in order to benefit from this feature.

Trap sends a message to the SNMP Trap Manager that a Broadcast Storm is going on. However, it does not block or partition the port no matter how many packets per second are passing through.

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# Troubleshooting

This troubleshooting section is intended to help you solve the most common problems on the DES-5200.

The Diagnostic LED displays a code if there is a problem. If an error cannot be resolved by implementing the solutions in this section, contact D-Link Technical Support.

All LEDs are explained in detail in Chapter 4, LEDs. If you are having a problem that is not discussed here, contact technical support.

<b>Problem</b>	<b>Solution</b>
<b>POST Errors</b>	<p>The DES-5200 performs a Power On Self Test (POST) every time it is powered on. If you are connected to the DES-5200 through Local Console Management during the POST you can see the results displayed on your monitor. The login panel appears after the DES-5200 has completed the POST.</p> <p>The POST checks all of the hardware components on the DES-5200. See Diagnostic LED. If the module fails the POST, see Table 16: Modular Status Error LED Indicator Chart.</p>
<b>Cables</b>	<p>Faulty cable is the most common source of problems on Ethernet and Fast Ethernet networks. Check the cable first if you are having any problems connecting to a device.</p> <p>Ethernet is more fault tolerant than Fast Ethernet. If you are moving from Ethernet to Fast Ethernet, make sure the cables are pinned out correctly. See Chapter 3, Connecting the DES-5200 to the Network, Cable Specifications, for a diagram showing the proper pin arrangement for Ethernet and Fast Ethernet.</p>
<b>Port States</b>	<p>All ports on the DES-5200 have two modes: auto negotiation and forced mode. Ports in auto negotiation mode auto negotiate the proper speed and duplex mode. Ports in forced mode have been manually set to a particular speed and duplex mode. Check the LEDs on the DES-5200 and on the link partner to verify settings. See Chapter 4, <i>LEDs</i>, for an explanation of all LEDs.</p> <p>The port settings on the DES-5200 and the port settings on the device you are connecting to must be the same in order</p>

for them to communicate. Check the speed and duplex setting on both the port and device you are connecting to.

**Power LED is Off** Check the three pronged power plug and verify that you are getting power from the wall socket. Return the DES-5200 if the unit is on and the power LED is not working properly. If the DES-5200 is not powering on while the power cord is plugged into the wall socket, the power supply is not working. Return the unit.

**All LEDs Are Off** Check the power plug and verify that the DES-5200 is receiving adequate power. Log in to the DES-5200 using Local Console Management, see Chapter 5, Console Management, for instructions.

Power the DES-5200 off and then power it on again. Use the monitor to check the error messages. Return the DES-5200 to D-Link for service if the problem persists.

**Forget Password** If you forget your password, contact D-Link Technical Support at (949) 788-0805 for assistance or check our web site at [www.dlink.com](http://www.dlink.com).

**Table 14: LED Error Chart**

















































System Error LED Indicators	Error Status	Action
Off - ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ On - ① ② ③ ④ ⑤ ⑥ ⑦ ⑧		
① ② ③ ④ ⑤ ⑥ ⑦ ⑧		Normal
① ② ③ ④ ⑤ ⑥ ⑦ ⑧	Boot Program Flash Damaged	Download firmware again. Record LED error code & contact D-Link.
① ② ③ ④ ⑤ ⑥ ⑦ ⑧	Run-Time Program	Download firmware again. Record LED error code & contact D-Link.
① ② ③ ④ ⑤ ⑥ ⑦ ⑧	CPU Memory Failure	Record LED indicators error code and return the unit.
① ② ③ ④ ⑤ ⑥ ⑦ ⑧	Peripheral Controller Fail	Record LED indicators error code and return the unit.
① ② ③ ④ ⑤ ⑥ ⑦ ⑧	Com Port Failure	Record LED indicators error code and return the unit.
① ② ③ ④ ⑤ ⑥ ⑦ ⑧	NPB Failure	Record LED indicators error code and return the unit.
① ② ③ ④ ⑤ ⑥ ⑦ ⑧	PSM Memory Failure	Record LED error code and contact D-Link for support.
① ② ③ ④ ⑤ ⑥ ⑦ ⑧	PSM Failure	Record LED error code and contact D-Link for support.
① ② ③ ④ ⑤ ⑥ ⑦ ⑧	FEU Failure	Record LED error code and contact D-Link for support.
① ② ③ ④ ⑤ ⑥ ⑦ ⑧	PHY Failure	Record LED error code and contact D-Link for support.
① ② ③ ④ ⑤ ⑥ ⑦ ⑧	ARL Failure	Record LED error code and contact D-Link for support.
① ② ③ ④ ⑤ ⑥ ⑦ ⑧	ARL Memory Failure	Record LED error code and contact D-Link for support.
① ② ③ ④ ⑤ ⑥ ⑦ ⑧	Exception Handler	Record LED Error code and contact D-Link for support.

Refer to Table 15: Explanation of LED Error Status for and explanation of the error codes.

**Table 15: Explanation of LED Error Status**

Explanation of LED Error Status	
Boot Program Flash Damaged	This error message indicates that the Boot Program section of Flash Memory is either corrupted or damaged. Signature/Checksum test of Boot Program has failed.
Run Time Program Flash Damaged	This error message indicates the Run Time Program section of Flash Memory is either corrupted or damaged. Signature/Checksum test of Run Time Program has failed.
CPU Memory Failure	This error message indicates the CPU Memory (total of 8MB DRAM) section of the System Memory has failed its read/write test.
Peripheral Controller Failure	This error message indicates the failure of the onboard 82C59 Interrupt Controller.
Com Port Test Failure	This error message indicates the SIO chip has failed its diagnostic test.
NPB Failure	This error message indicates general failure of NPB chip(s).
PSP Memory Failure	This error message indicates the port buffer (PSP Memory) has failed its on read/write test.
PSP Failure	This error message indicates general failure of PSP chip(s).
FEIU Failure	This error message indicates general failure of FEIU chip(s).
PHY Failure	This error message indicates general failure of PHY chip(s).
ARL Failure	This error message indicates general failure of ARL chip(s).
ARL Memory Failure	This error message indicates the MAC address table (ARL Memory) has failed its own read/write test.
Exception Handler	This error message indicates CPU exception occurs due to divide by zero, invalid opcode and other general protection. The content of all CPU registers will be dumped onto the console screen.

**Table 16: Modular Status Error LED Indicator Chart**

								Error Status
1	2	3	4	5	6	7	8	
								CPU Module Failure
								Slot #1 Failure
								Slot #2 Failure
								Slot #3 Failure
								Slot #4 Failure

If the CPU module fails, the first LED on the Utilization panel lights. If a module fails, the Utilization LED number indicates the slot the module is in.

# Appendix A

## DES-5200 Technical Specifications

### Switch Specifications

- Complies with IEEE 802.3 CSMA/CD 10/100-TX, 100BASE-FX and 1000BASE-SX
- Complies with IEEE 802.1d Spanning Tree
- Switched IEEE 802.3 MAC layer frame size: 64-1518
- NWAY Auto-negotiation for each 10/100-TX network port providing auto-detection of connected cable type, auto-sensing of full and half duplex signaling and auto-configuration
- Store-and-Forward switching for reliable error-free packet transfers
- Native SNMP management support with Ethernet MIB II (RFC 1213) and bridge MIB (RFC 1493), RMON MIB (RFC-1757)
- 8,192 maximum entries for MAC table
- Comprehensive LED indicators display of the system/ port status
- 512KB EEPROM (flash memory) for firmware upgrade
- RS-232 (DB-9) port for Out-of-Band management (asynchronous, 8-bit data, 1 stop bit, no parity, 19.2 K baud)
- Rack mountable (Fits standard 2.5 U EIA 19" rack)
- 12 port 10/100-TX module with built-in support of RMON and VLAN
- 2 port 10/100-TX module with built-in support of RMON and VLAN
- 8 port fiber optic (FX) module with built-in support of RMON and VLAN
- 2 port fiber optic (FX) expansion module with built-in support of RMON and VLAN
- 1 port gigabit (SX) expansion module with built-in support of RMON and VLAN
- Supports Trunking Group

## Port Specifications

- RJ-45 port for Category 3, 4, and 5 UTP cable (Cat. 5 required for 10/100-TX)
- 10, 100, 1000 Mbps data transfer rate
- NWAY Auto-negotiation for all 10/100-TX ports
- Full or Half Duplex for all 10/100-TX ports
- 100BASE-FX ports operate at full or half duplex requires 1300 nm multimode fiber optic cable, ISO/IEC 793-2 type B-1 and ITU-T G.652 with SC connectors
- 1 1000BASE-SX port, operates at full duplex and requires 850 nm multimode fiber optic cables with SC connectors. This port also negotiates flow control.



General	
Standards:	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100-TX, 100BASE-FX Fast Ethernet and 1000BASE-SX for Gigabit Ethernet ANSI/IEEE Std 802.3 NWAY <sup>TM</sup> Auto Negotiation IEEE 802.3 Frames types: Transparent IEEE 802.3 MAC layer frame size: 64-1518
Protocol:	CSMA/CD, Full Duplex
Data Transfer Rate:	Fast Ethernet: 100 Mbps (half duplex) 200 Mbps (full duplex) Gigabit: 2000 Mbps (full duplex)
Topology:	Star
Network Cables:	<ul style="list-style-type: none"><li>• 10BASE-T: 2-pair UTP Cat. 3 (100 m) 4-Pair UTP Cat. 4, 5 (100 m) EIA/ TIA-568 150ohm STP (100 m)</li><li>• 100-TX: 4-pair UTP cat. 5 (100 m) EIA/ TIA-568B 150-ohm STP (100 m) 100BASE-FX ports require 1300 nm multimode fiber optic cable with SC connectors, ISO/IEC 793-2 type B1 and ITU-T G.652 standards</li><li>• 1000BASE-FX ports require: 850 nm multimode fiber optic cables with SC connectors</li></ul>
Number of Ports: (depending on modules used)	12, 24 x 10/100 Mbps NWAY Ethernet ports plus optional module ports, maximum of 28 10/100 Mbps NWAY Ethernet ports 8, 16 fiber optic ports plus optional modules, maximum of 20 fiber optic ports Optional 2 gigabit ports using both 1 port gigabit optional modules

Physical and Environmental	
AC inputs:	100 – 240 VAC, 50/60 Hz (internal universal power supply)
Power Consumption:	105 watts maximum
DC fans:	2 built in 80 x 80 mm fans and 1 60 x 60 mm fan
Operating Temperature:	0 ~ 45 degrees Celsius
Storage Temperature:	-25 ~ 70 degrees Celsius
Humidity:	5% ~ 95% non-condensing
Dimensions:	441 x 264 x 110 mm (2.5 U), 19 inch rack-mount width
Weight:	6.94 kg 15.3 lbs
EMI:	FCC Class A, CE Mark Class A, VCCI Class A, C-Tick, BSMI Class-A
Safety:	UL (UL 1950), CSA (CSA950)

Performance	
Transmission Method:	Store-and-Forward
RAM Buffer:	2 M bytes per device
Filtering Address Table:	8 K entries per device
Packet Filtering/ Forwarding Rate:	148810 pps per port (for 100 Mbps)
MAC Address Learning:	Automatic Update Max age: five minutes

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