

D-Link

**D-LINK™ DGS-3100 SERIES
GIGABIT STACKABLE MANAGED SWITCH**

**HARDWARE INSTALLATION
GUIDE
V3.0**

Information in this document is subject to change without notice.

© 2009 D-Link Computer Corporation. All rights reserved.

Reproduction in any manner whatsoever without the written permission of D-Link Computer Corporation is strictly forbidden.

Trademarks used in this text: D-Link and the D-Link logo are trademarks of D-Link Computer Corporation; Microsoft and Windows are registered trademarks of Microsoft Corporation.

Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. D-Link Computer Corporation disclaims any proprietary interest in trademarks and trade names other than its own.

FCC Warning

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

CE Mark Warning

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Warnung!

Dies ist ein Produkt der Klasse A. Im Wohnbereich kann dieses Produkt Funkstoerungen verursachen. In diesem Fall kann vom Benutzer verlangt werden, angemessene Massnahmen zu ergreifen.

Precaución!

Este es un producto de Clase A. En un entorno doméstico, puede causar interferencias de radio, en cuyo case, puede requerirse al usuario para que adopte las medidas adecuadas.

Attention!

Ceci est un produit de classe A. Dans un environnement domestique, ce produit pourrait causer des interférences radio, auquel cas l'utilisateur devrait prendre les mesures adéquates.

Attenzione!

Il presente prodotto appartiene alla classe A. Se utilizzato in ambiente domestico il prodotto può causare interferenze radio, nel cui caso è possibile che l'utente debba assumere provvedimenti adeguati.

VCCI Warning

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

August 2009

Table of Contents

PREFACE	I
System Overview	ii
Device Management Methods.....	ii
Installation Guide Overview	iii
Intended Audience	iii
Notes, Notices, and Cautions	iii
Safety Cautions	iii
General Precautions for Rack-Mountable Products	v
IDENTIFYING EXTERNAL COMPONENTS	1
Viewing the Front Panel	1
Viewing Rear Panel	2
Side Panels	3
LED Indicators	4
UNPACKING AND SETUP	8
Unpacking the Device	9
Safety Instructions.....	9
General Precautions for Rack-Mountable Products	10
Protecting Against Electrostatic Discharge.....	11
Installing the Device	12
Installing the Device on a Desktop or Shelf.....	12
Installing the Device on a Rack.....	12
Powering on the Device	14
Using the External Redundant Power Supply	15
Web-Based Network Management	16
Login to Web Manager	16
Using the Web-Based User Interface	17
Understanding the D-Link Embedded Web Interface.....	17
CONNECTING AND CONFIGURING THE DEVICE	19
Connecting to an End Node	20
Connecting to HUB or Switch	21
Connecting to the Console Port.....	22
Connecting the Device in a Stack	26
Troubleshooting Device Connections	27
INITIAL DEVICE CONFIGURATION	28
Booting the Device.....	29
Configuration Overview	30
Initial Configuration.....	31
Device Configuration	31
Static IP Address and Subnet Mask	31
User Name	32
Defining SNMP Community Strings	32
SNMP Trap Management	33
Advanced Initial Device Configuration	34
Assigning IP Addresses.....	34
Retrieving an IP Address from a DHCP Server	34

Retrieving an IP Address from a BOOTP Server.....	35
Security Management and Password Configuration	36
Software Download Through TFTP Server	37
Boot Image Download	38
Restore Default Button.....	39
DEVICE SPECIFICATIONS	40
Technical Specifications	40
Cable Lengths	42
GLOSSARY	43

Preface

This preface provides an overview to the guide, and includes the following sections:

- System Overview
- Device Management Methods
- Installation Guide Overview
- Intended Audience
- Notes, Notices, and Cautions
- Safety Cautions
- General Precautions for Rack-Mountable Products

System Overview

The DGS-3100 Series Gigabit Ethernet Switch enhances networks by providing a powerful switch that eliminates network bottlenecks, enabling network administrators to fine tune network configurations. The DGS-3100 Series is perfect for departmental and enterprise connections, and is ideal for backbone and server connections.

The DGS-3100 Series range of devices includes:

- DGS-3100-24 — 24-port 10/100/1000Base-T L2 Stackable Management Switch with 4 Combo SFP
- DGS-3100-24P — 24-port 10/100/1000Base-T PoE L2 Stackable Management Switch with 4 Combo SFP
- DGS-3100-48 — 48-port 10/100/1000Base-T L2 Stackable Management Switch with 4 Combo SFP
- DGS-3100-48P — 48-port 10/100/1000Base-T PoE L2 Stackable Management Switch with 4 Combo SFP
- DGS-3100-24TG — 8-port 10/100/1000Base-T L2 Stackable Management Switch with 16 SFP

The DGS-3100 Series provides twenty-four/forty-eight high performance 1000BASE-T ports. The 1000BASE-T ports operate at 10/100/1000, and connect to backbones, end-stations, and servers. The DGS-3100 Series also provides Four Mini-GBIC (SFP) combo ports which connect fiber optic media to switches, servers, or network back-bones. The DGS-3100 Series provides an additional RS-232 DEC Diagnostic port (console port) for managing the switch via a console terminal or PC with a Terminal Emulation Program.

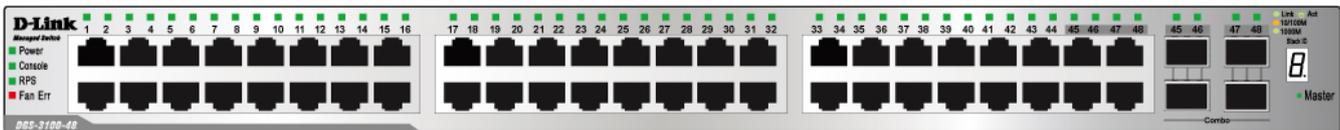


Figure 1. DGS-3100 Series 48 Port Front Panel

For a complete list of the DGS-3100 Series Gigabit Ethernet Switch features, see Device Specifications.

Device Management Methods

The DGS-3100 Series provides different methods for managing the device including:

- Web Based Management Interface
- SNMP-Based Management
- Command Line Console

Web Based Management Interface

Once the device is installed, network managers can configure the switch, monitor the LED panel, and display statistics graphically via a web browser, including:

- Netscape Navigator (version 6.2 and higher)
- Microsoft® Internet Explorer (version 5.0)
- Mozilla Firefox (version 2.0)

SNMP-Based Management

The system also provides SNMP-compatible console program, and supports SNMPv1, SNMPv2, and SNMPv3. The SNMP agent decodes the incoming SNMP messages, and replies to requests with MIB objects stored in the database. The SNMP agent updates the MIB objects to generate statistics and counters.

Command Line Console

The device also supports device configuration using the *Command Line Interface*. The system is connected via a computer or terminal to the serial console port.

Installation Guide Overview

This section provides an overview to the DGS-3100 Series Installation Guide, including the guide structure and a chapter overview:

- **Section 1, Identifying External Components** — Provides a description for the system hardware components, including the front panels, ports, and LEDs.
- **Section 2, Unpacking and Setup** — Provides instructions for unpacking and setting up the DGS-3100 Series.
- **Section 3, Connecting and Configuring the Device** — Provides information on how to connect the DGS-3100 Series to a Gigabit Ethernet network.
- **Section 4, Initial Device Configuration** — Provides information for booting the device, configuration overview, initial and advanced initial device configuration.
- **Appendix A, Technical Specifications** — Provides technical specification information.
- **Glossary** — Provides a list of terms used in the DGS-3100 documentation

Intended Audience

- The *DGS-3100 Series Installation Guide* contains information for installing and configuring the DGS-3100 Series Switch. This guide is intended for network managers familiar with network management concepts and terminology.

Notes, Notices, and Cautions



NOTE: A NOTE indicates important information that helps you make better use of your device.



NOTICE: A NOTICE indicates *either* potential damage to hardware or loss of data and tells you how to avoid the problem.



CAUTION: A CAUTION indicates a potential for property damage, personal injury, or death.

Safety Cautions

Use the following safety guidelines to ensure your own personal safety and to help protect your system from potential damage. Throughout this safety section, the caution icon () is used to indicate cautions and precautions that you need to review and follow.

To reduce the risk of bodily injury, electrical shock, fire, and damage to the equipment, observe the following precautions. Observe and follow service markings.

- Do not service any product except as explained in your system documentation. Opening or removing covers that are marked with the triangular symbol with a lightning bolt may expose you to electrical shock. Only a trained service technician should service components inside these compartments.
- If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your trained service provider:
 - The power cable, extension cable, or plug is damaged.
 - An object has fallen into the product.

- The product has been exposed to water.
- The product has been dropped or damaged.
- The product does not operate correctly when you follow the operating instructions.
- Keep your system away from radiators and heat sources. Also, do not block the cooling vents.
- Do not spill food or liquids on your system components, and never operate the product in a wet environment. If the system gets wet, see the appropriate section in your troubleshooting guide or contact your trained service provider.
- Do not push any objects into the openings of your system. Doing so can cause a fire or an electric shock by shorting out interior components.
- Use the product only with approved equipment.
- Allow the product to cool before removing covers or touching internal components.
- Operate the product only from the type of external power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult your service provider or local power company.
- To help avoid damaging your system, be sure the voltage selection Switch (if provided) on the power supply is set to match the power available at your location:
 - 115 volts (V)/60 hertz (Hz) in most of North and South America and some Far Eastern countries such as South Korea and Taiwan
 - 100 V/50 Hz in eastern Japan and 100 V/60 Hz in western Japan
 - 230 V/50 Hz in most of Europe, the Middle East, and the Far East
- Also be sure that attached devices are electrically rated to operate with the power available in your location.
- Use only approved power cable(s). If you have not been provided with a power cable for your system or for any AC-powered option intended for your system, purchase a power cable that is approved for use in your country. The power cable must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cable should be greater than the ratings marked on the product.
- To help prevent an electric shock, plug the system and peripheral power cables into properly grounded electrical outlets. These cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cable, use a 3-wire cable with properly grounded plugs.
- Observe extension cable and power strip ratings. Make sure that the total ampere rating of all products plugged into the extension cable or power strip does not exceed 80 percent of the ampere ratings limit for the extension cable or power strip.
- To help protect your system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- Position system cables and power cables carefully; route cables so that they cannot be stepped on or tripped over. Be sure that nothing rests on any cables.
- Do not modify power cables or plugs. Consult a licensed electrician or your power company for site modifications. Always follow your local/national wiring rules.
- When connecting or disconnecting power to hot-pluggable power supplies, if offered with your system, observe the following guidelines:
 - Install the power supply before connecting the power cable to the power supply.
 - Unplug the power cable before removing the power supply.
 - If the system has multiple sources of power, disconnect power from the system by unplugging all power cables from the power supplies.

Move products with care; ensure that all casters and/or stabilizers are firmly connected to the system. Avoid sudden stops and uneven surfaces.



General Precautions for Rack-Mountable Products

Observe the following precautions for rack stability and safety. Also refer to the rack installation documentation accompanying the system and the rack for specific caution statements and procedures.

Systems are considered to be components in a rack. Thus, "component" refers to any system as well as to various peripherals or supporting hardware.



CAUTION: Installing systems in a rack without the front and side stabilizers installed could cause the rack to tip over, potentially resulting in bodily injury under certain circumstances. Therefore, always install the stabilizers before installing components in the rack.

After installing system/components in a rack, never pull more than one component out of the rack on its slide assemblies at one time. The weight of more than one extended component could cause the rack to tip over and may result in serious injury.

- Before working on the rack, make sure that the stabilizers are secured to the rack, extended to the floor, and that the full weight of the rack rests on the floor. Install front and side stabilizers on a single rack or front stabilizers for joined multiple racks before working on the rack.

Always load the rack from the bottom up, and load the heaviest item in the rack first.

Make sure that the rack is level and stable before extending a component from the rack.

Use caution when pressing the component rail release latches and sliding a component into or out of a rack; the slide rails can pinch your fingers.

After a component is inserted into the rack, carefully extend the rail into a locking position, and then slide the component into the rack.

Do not overload the AC supply branch circuit that provides power to the rack. The total rack load should not exceed 80 percent of the branch circuit rating.

Ensure that proper airflow is provided to components in the rack.

Do not step on or stand on any component when servicing other components in a rack.



NOTE: A qualified electrician must perform all connections to DC power and to safety grounds. All electrical wiring must comply with applicable local or national codes and practices.



CAUTION: Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.



CAUTION: The system chassis must be positively grounded to the rack cabinet frame. Do not attempt to connect power to the system until grounding cables are connected. Completed power and safety ground wiring must be inspected by a qualified electrical inspector. An energy hazard will exist if the safety ground cable is omitted or disconnected.

Protecting Against Electrostatic Discharge

Static electricity can harm delicate components inside your system. To prevent static damage, discharge static electricity from your body before you touch any of the electronic components, such as the microprocessor. You can do so by periodically touching an unpainted metal surface on the chassis.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

1. When unpacking a static-sensitive component from its shipping carton, do not remove the component from the antistatic packing material until you are ready to install the component in your system. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.
2. When transporting a sensitive component, first place it in an antistatic container or packaging.
3. Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads and an antistatic grounding strap.

IDENTIFYING EXTERNAL COMPONENTS

This chapter describes the front panel, rear panel, side panels, and LED indicators of the DGS-3100 Series. This section contains the following topics:

- Viewing the Front Panel
- Viewing Rear Panel
- Side Panels
- LED Indicators

Viewing the Front Panel

The front panels of the switches consist of LED indicators, 8/24/48 1000BASE-T ports, four mini-GBIC combo ports, and 16 SFP ports.

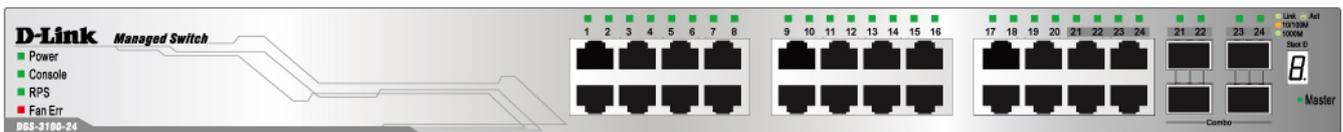


Figure 1-1. DGS-3100-24 Front Panel View

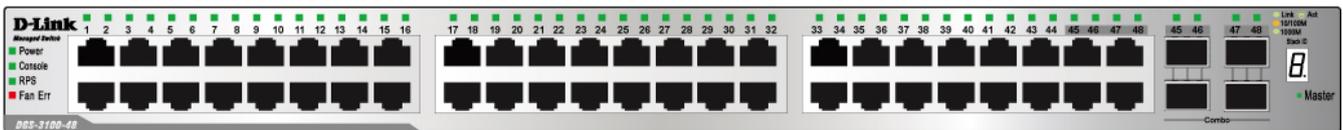


Figure 1-2. DGS-3100-48 Front Panel View

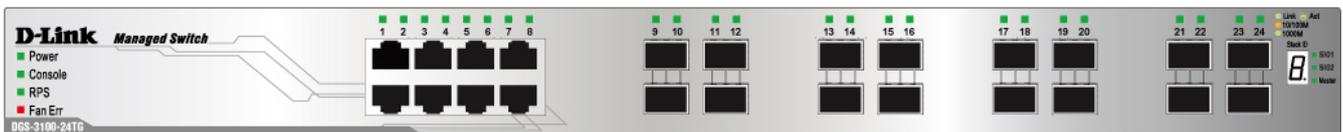


Figure 1-3. DGS-3100-24TG Front Panel View

- Comprehensive LED indicators display the status of the switch and the network (see the LED Indicators section below).
- Eight/Twenty-four/Forty-eight 1000BASE-T Ethernet ports for 10/100/1000 connections to a backbone, end stations, and servers.
- Four mini-GBIC combo ports to connect fiber optic media to another switch, server, and core router switch, or network backbone.
- The DGS-3100-24TG device contains 16 SFP ports to connect fiber optic media to another switch, server, and core router switch, or network backbone
- A Restore Default Button that is used to restore default settings. To restore defaults settings the button must be held down for five seconds.

Viewing Rear Panel

The rear panels of the switches contain an external Redundant Power Supply connector, an AC power connector, and a RS-232 console port for setting up and managing the switch via a connection to a console terminal or PC using a terminal emulation program.



Figure 1-4. DGS-3100 24P/48P Rear Panel View



Figure 1-5. DGS-3100-24/48/24TG Rear Panel View

- The external Redundant Power Supply connector is used to connect the DGS-3100 Series to one of the following supported units:

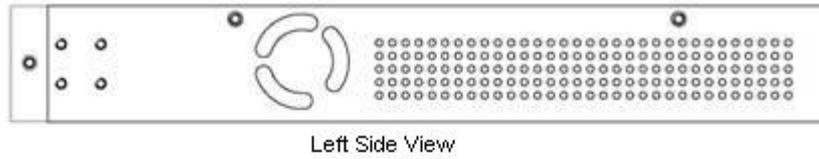
DGS-3100 Series Device	Supported RPS Unit
DGS-3100-24/24TG	DPS-200
DGS-3100-48	DPS-500
DGS-3100-24P/48P	DPS-600

An auto-switch circuit automatically switches to the external RPS once the internal power supply fails. Transition from internal to external supply does not disturb normal operation.

- The AC power connector is a standard three-pronged connector that supports the power cord. Plug the female connector of the provided power cord into this socket, and the male side of the cord into a power outlet. Supported input voltages range from 100 ~ 240 VAC at 50 ~ 60 Hz.

Side Panels

The right side panel of the switch contains two system fans (see the top part of the diagram below). The left side panel contains heat vents.



Left Side View



Right Side View

Figure 1-6. Side Panel Views of the Switch

The system fans dissipate heat, and the heat vents located on the sides serve the same purpose. The openings must remain clear of obstructions. Ensure there is at least 6 inches of clear space at the rear and sides of the switch for proper ventilation. System components can overheat, which potentially, can lead to system failure without proper heat dissipation and air circulation.

The number of fans on the devices are:

DGS-3100-24 & DGS-3100-24TG – 2 fans.

DGS-3100-24P, DGS-3100-48 & DGS-3100-48P – 4 fans.

LED Indicators

The LED indicators of the switch include Power, Console, RPS, Speed, and Link/Activity. The following figure shows the LED indicators for the switch along with an explanation of each indicator.

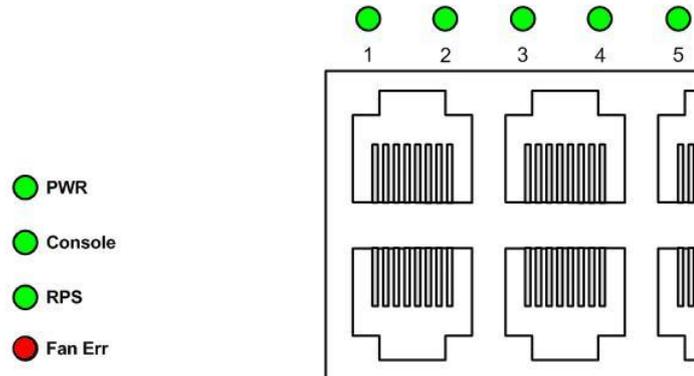


Figure 1-7. LED Indicators

- **PWR** – Located on the front panel, the indicator is a solid green light when the system is powered up, and remains dark when the system is off.
- **Console** – This indicator flashes green when the system is booting up. It remains solid green when the system is operating properly. The LED is solid amber when the POST fails.
- **RPS** – This indicator is solid amber when the external Redundant Power Supply is on, and remains dark when it is not in use or the main power supply is working.
- **Fan Err** – This indicator flashes red when any fans fail. The indicator remains dark (off) when all fans work normally.

This table describes the LED indicators for the *DGS-3100-24* and *DGS-3100-48*:

Location	LED Indicative	Color	Status	Description
Per Device	Power	Green	Solid Light	Power On
			Light off	Power Off
	Console	Green	Solid Light	Console login CLI success
			Light off	Console logout CLI or time out
	RPS	Green	Solid Light	RPS connected and RPS power on
			Light off	RPS not connected or RPS power off
	Fan Err	Red	Flashing	When any fans fail
			Light off	When all fans work normally
	Master	Green	Solid Light	When device is configured or selected to be a stacking master
			Light off	When device is stacking slave
	Stacking ID	Green	Number 1-6	Display the Stacking Unit ID
			Flashing Character 'L'	Locates the master unit when the locator function is enabled from user interface
			Light off	Indicates the device is in stand alone mode
	SIO1/ SIO2	Green	Solid Light	A valid link is established on the stacking HX port
			Flashing	Data transmission or reception is occurring on the stacking HX port
Light off			No link is established on the stacking HX port	
LED Per 10/100/1000 Mbps copper Port	Link/Act/Speed	Green	Solid Light	Link on 1000Mbps
			Flashing	Activity
		Orange	Solid Light	Link 10Mbps or 100Mbps
			Flashing	Activity
		Off	Light off	No link
		LED Per SFP Port	Link/Act	Green
Flashing	Activity			
Orange	Solid Light			Link 100Mbps
	Flashing			Activity
Off	Light off			No link
LED Per Stacking Port	Link/Act			Green
		Flashing	Activity	
		Light off	No link	

This table describes the LED indicators for the *DGS-3100-24P* and *DGS-3100-48P*:

Location	LED Indicative	Color	Status	Description
Per Device	Power	Green	Solid Light	Power On
			Light off	Power Off

Location	LED Indicative	Color	Status	Description
	Console	Green	Solid Light	Console login CLI success
			Light off	Console logout CLI or time out
	RPS	Green	Solid Light	RPS connected and RPS power on
			Light off	RPS not connected or RPS power off
	Fan Err	Red	Flashing	When any of the fans has failed
			Light off	When all fans work normally
	Master	Green	Solid Light	When device is configured or selected to be a stacking master
			Light off	When device is stacking slave
	Stacking ID	Green	Number 1-6	Display the Stacking Unit ID
			Flashing Character 'L'	Locates the master unit when the locator function is enabled from user interface
			Light off	Indicates the device is in stand alone mode
	Port LED Mode Indicator	Green	Solid Light	A LED Mode Select Button to switch Link/Act/Speed Mode
			Solid Light	A LED Mode Select Button to switch PoE Mode
	SIO1/ SIO2	Green	Solid Light	A valid link is established on the stacking HX port
			Flashing	Data transmission or reception is occurring on the stacking HX port
Light off			No link is established on the stacking HX port	
LED Per 10/100/1000 Mbps copper Port	Link/Act/Speed	Green	Solid Light	Link on 1000Mbps
			Flashing	Activity
		Orange	Solid Light	Link 10Mbps or 100Mbps
			Flashing	Activity
	Off	Light off	No link	
	PoE Mode	Green	Solid Light	Power Feeding
		Orange	Solid Light	Error Condition
Off		Light off	No Power Feeding	
LED Per SFP Port	Link/Act	Green	Solid Light	Link on 1000Mbps
			Flashing	Activity
		Orange	Solid Light	Link 100Mbps
			Flashing	Activity
		Off	Light off	No link
		LED Per Stacking Port	Link/Act	Green
Flashing	Activity			
Light off	No link			

This table describes the LED indicators for the *DGS-3100-24TG* :

Location	LED Indicative	Color	Status	Description
Per Device	Power	Green	Solid Light	Power On
			Light off	Power Off
	Console	Green	Solid Light	Console login CLI success
			Light off	Console logout CLI or time out
	RPS	Green	Solid Light	RPS connected and RPS power on
			Light off	RPS not connected or RPS power off
	Fan Err	Red	Flashing	When any of the fans has failed
			Light off	When all fans work normally
	Master	Green	Solid Light	When device is configured or selected to be a stacking master
			Light off	When device is stacking slave
	Stacking ID	Green	Number 1-6	Display the Stacking Unit ID
			Flashing Character 'L'	Locates the master unit when the locator function is enabled from user interface
			Light off	Indicates the device is in stand alone mode
	SIO1/ SIO2	Green	Solid Light	A valid link is established on the stacking HX port
			Flashing	Data transmission or reception is occurring on the stacking HX port
Light off			No link is established on the stacking HX port	
LED Per 10/100/1000 Mbps copper Port	Link/Act/Speed	Green	Solid Light	Link on 1000Mbps
			Flashing	Activity
		Orange	Solid Light	Link 10Mbps or 100Mbps
			Flashing	Activity
		Off	Light off	No link
		LED Per SFP Port	Link/Act	Green
Flashing	Activity			
Orange	Solid Light			Link 100Mbps
	Flashing			Activity
Off	Light off			No link
LED Per Stacking Port	Link/Act			Green
		Flashing	Activity	
		Light off	No link	

UNPACKING AND SETUP

This chapter contains information for unpacking and setting up the DGS-3100 Series. Before beginning the Installation and Configuration process, see *Safety Instructions*.

This section contains the following topics:

- Unpacking the Device
- Safety Instructions
- General Precautions for Rack-Mountable Products
- Protecting Against Electrostatic Discharge
- Installing the Device
- Powering on the Device
- Using the External Redundant Power
- Web-Based Network Management

Unpacking the Device

This section provides information for unpacking the DGS-3100 series and the contents shipped with the device. Open the DGS-3100 Series shipping carton and carefully unpack the following items:

- A DGS-3100 Series -Port Gigabit Layer 2 Ethernet Switch
- A mounting kit: 2 mounting brackets and screws
- Four rubber feet with adhesive backing
- One or two AC power cords
- A Quick Installation Guide
- D-View 5.1 demo CD-ROM
- This Manual with Registration Card on CD-ROM

In the event of any missing or damaged items, please contact your local D-Link reseller for replacement.

Safety Instructions

The following safety guidelines are provided to ensure personal safety and to protect the device from potential damage. Throughout the Safety Instructions, the Caution icon indicates cautions and precautions that must be reviewed and followed. Systems are considered to be components in a rack. *Component* refers to any system as well as to various peripherals or supporting hardware.



SAFETY CAUTIONS:

To minimize the risk of bodily injury, electric shock, fire, or equipment damage, observe the following precautions:

- Observe and follow the service markings.
- Do not service any product other than as explained in the system documentation.
- Opening or removing covers that are marked with a lightning bolt enclosed by a triangular symbol potentially exposes you to electrical shock. Only a trained service technician can service components inside such compartments.

Ensure the following operating conditions are maintained:

- Keep the device from radiators and heat sources.
- Do not obstruct the cooling vents.
- Do not spill food or liquids on the device components
- Do not operate the product in a wet environment. If the system gets wet, see the *Troubleshooting Guide*, or contact a trained service provider.
- Do not push any objects into the device openings. Doing so can cause fire or electric shock.
- Use the device only with approved equipment.
- Allow the device to cool before removing covers or touching internal components.
- Operate the device only from the external power source type indicated on the *Electrical Ratings* label. If you are unsure of the power source type required, consult a service provider or a local power company.

In the event of equipment damage, unplug the device from the electrical outlet.

Either replace a part, or contact your trained service provider if any of the following conditions occur:

- The power cable, extension cable, or plug is damaged.
- An object falls into the device.
- The device is exposed to water.
- The device is dropped or damaged.

To help avoid damaging the device:

- Ensure the voltage selection switch (if provided) on the power supply is set to match the local power supply:

- 115 volts (V)/60 hertz (Hz) in most of North and South America and some Far Eastern countries such as South Korea and Taiwan
- 100 V/50 Hz in eastern Japan and 100 V/60 Hz in western Japan
- 230 V/50 Hz in most of Europe, the Middle East, and the Far East
- Ensure that the device is electrically rated to operate with the local power supply.
- Use only approved power cables. If power cables are not provided, purchase a power cable that is approved for use in the relevant country. The power cable must be rated for the product, the voltage and the power current must be marked on the product's electrical ratings label. The voltage and current rating of the cable must be greater than the ratings marked on the product.

To help prevent electric shock:

- Plug the system and peripheral power cables into properly grounded electrical outlets. These cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If an extension cable is necessary, use a 3-wire cable with properly grounded plugs.
- Observe extension cable and power strip ratings. Ensure that the total ampere rating of all products plugged into the extension cable or power strip does not exceed 80 percent of the ampere ratings limit for the extension cable or power strip.

To help protect your system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or *Uninterruptible Power Supply* (UPS).

- Position system cables and power cables carefully; route cables so that they cannot be stepped on or tripped over. Ensure that nothing rests on any of the cables.
- Do not modify power cables or plugs. Consult a licensed electrician or the power company for site modifications. Always follow the local/national wiring standards.
- When connecting or disconnecting power to hot-pluggable power supplies, if offered with the device, observe the following guidelines:
 - Install the power supply before connecting the power cable to the power supply.
 - Unplug the power cable before removing the power supply.
 - If the system has multiple sources of power, disconnect power from the system by unplugging all power cables from the power supplies.
- Move products with care; ensure that all casters and/or stabilizers are firmly connected to the system.
- Avoid sudden stops and uneven surfaces.

Observe the following precautions for rack stability and safety. Also refer to the rack installation documentation accompanying the system and the rack for specific caution statements and procedures.

General Precautions for Rack-Mountable Products



CAUTION: Always install the stabilizers before installing components in the rack. Installing systems in a rack without the front and side stabilizers installed could cause the rack to tip over, potentially resulting in bodily injury under certain circumstances.

After installing system/components in a rack, never pull more than one component out of the rack on its slide assemblies at one time. The weight of more than one extended component could cause the rack to tip over, and may result in serious injury.

Before working on the rack:

- Ensure that the stabilizers are secured to the rack and extended to the floor.
- Ensure that the entire rack weight rests on the floor.
- Install front and side stabilizers on a single rack or front stabilizers for joined multiple racks before working on the rack.
- Always load the rack from the bottom up, and load the heaviest item in the rack first.
- Ensure that the rack is level and stable before extending a component from the rack.
- Use caution when pressing the device rail release latches and sliding a device into or out of a rack; the slide rails can pinch your fingers.

- After a device is inserted into the rack, carefully extend the rail into a locking position, and then slide the device into the rack.
- Do not overload the AC supply branch circuit that provides power to the rack. The total rack load should not exceed 80 percent of the branch circuit rating.
- Ensure that proper airflow is provided to components in the rack.
- Do not step on or stand on any component when servicing other components in a rack.



NOTE: A qualified electrician must perform all connections to DC power and to safety grounds. All electrical wiring must comply with applicable local or national codes, standards and practices.



CAUTION: Never override the ground conductor or operate the equipment in the absence of a suitably installed ground conductor.

Contact the appropriate electrical inspection authority or an electrician if uncertain that suitable grounding is available.



CAUTION: The system chassis must be positively grounded to the rack cabinet frame. Do not attempt to connect power to the system until grounding cables are connected. Completed power and safety ACL Profile List Page ground wiring must be inspected by a qualified electrical inspector. An energy hazard exists if the safety ground cable is omitted or disconnected.

Protecting Against Electrostatic Discharge

Static electricity can harm delicate device components. To prevent static damage, discharge static electricity before touching any of the electronic components, such as the microprocessor.

To discharge static electricity:

- Make contact by touching an unpainted metal surface on the chassis.
- Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads, and an antistatic grounding strap.
- Do not remove the component from the antistatic packing material until you are ready to install the system component. Just before unwrapping the antistatic packaging, discharge static electricity from your body.
- Place all sensitive components in antistatic containers or packaging when transporting.

Battery Handling Reminder



CAUTION: The battery can explode if incorrectly replaced. Only replace batteries with the same or equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.

Installing the Device

Use the following guidelines when choosing a place to install The DGS-3100 Series device:

- The surface must support at least 4kg.
- The power outlet should be within 1.82 meters/6 feet of the device.
- Inspect the power cord and see that it is secured to the AC power connector.
- Ensure proper heat dissipation from and adequate ventilation around the DGS-3100 Series device. Do not place heavy objects on the DGS-3100 Series device.

This section contains the following topics:

- Installing the Device on a Desktop or Shelf
- Installing the Device on a Rack

Installing the Device on a Desktop or Shelf

When installing the DGS-3100 Series device on a desktop or shelf, the rubber feet included should be attached first. Attach the cushioning feet on the bottom at each corner of the device. Allow adequate space for ventilation between the device and the objects around it.

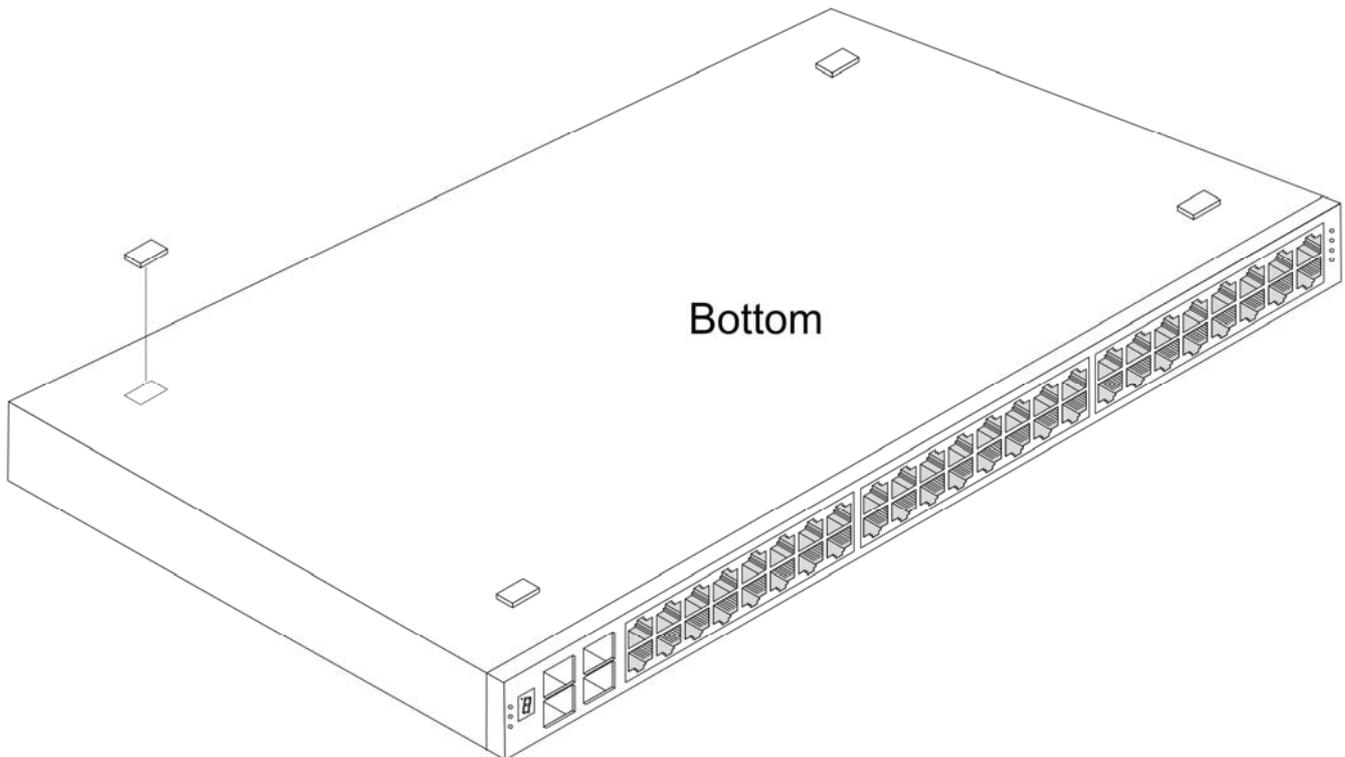


Figure 2-1. Installing Rubber Feet for Desktop Installation

Installing the Device on a Rack

The DGS-3100 Series can be mounted in an EIA standard-sized, 19-inch rack, which can be placed in a wiring closet with other equipment. To install:

1. Attach the mounting brackets on the device side panels (one on each side).
2. Secure the device with the screws provided.

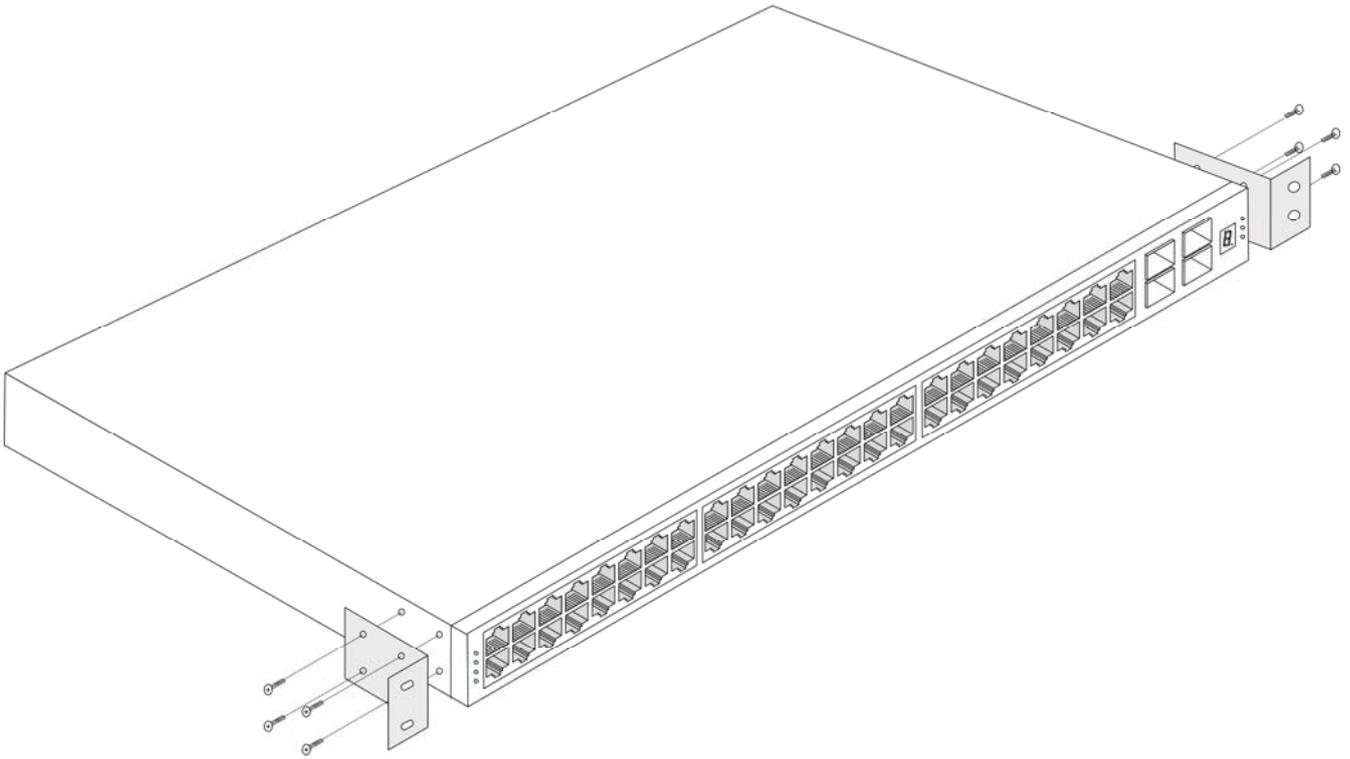


Figure 2-2. Attaching the Mounting Brackets

3. Use the screws provided with the equipment rack to mount the switch on the rack.

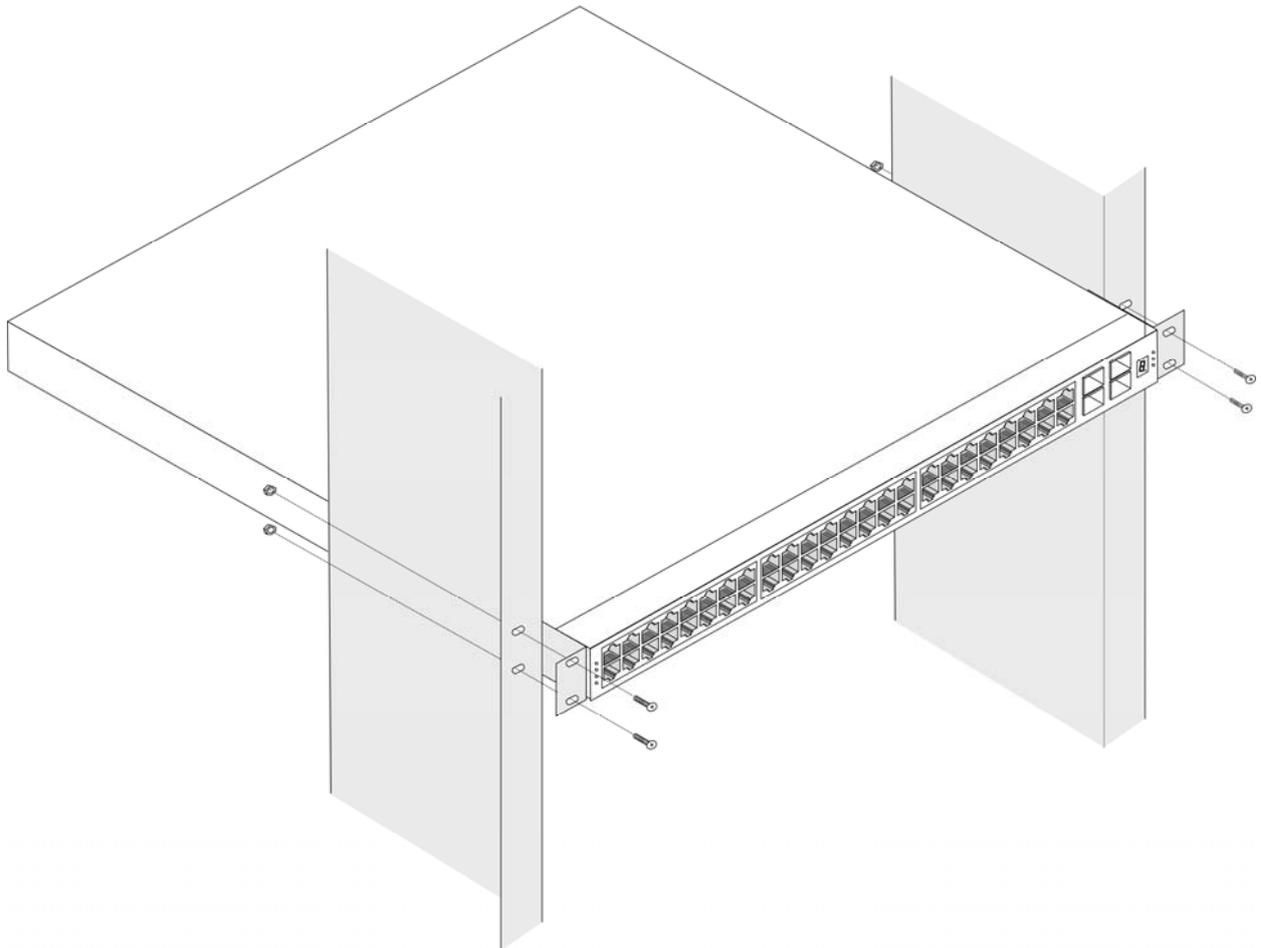


Figure 2-3. Installing in an Equipment Rack

Powering on the Device

The device can be used with AC power supply 100-240 VAC, 50 - 60 Hz. The device's power supply adjusts to the local power source automatically, and can be powered on without having any or all LAN segment cables connected.

After the device is plugged in:

- All LED indicators, except console, momentarily flash. Flashing LEDs indicate the system is being reset.
- The console LED indicators flash while the device loads software and performs a self-test. When the POST is passed, the LED darkens. If the POST fails, the LED lights solid amber. This indicator lights solid green when the device is being logged-in via a local console management port (RS-232) using a straight-through serial cable.



CAUTION: In the event of a power failure, unplug the device. When power is resumed, plug the device back in.

Using the External Redundant Power Supply

The device supports an external Redundant Power Supply.

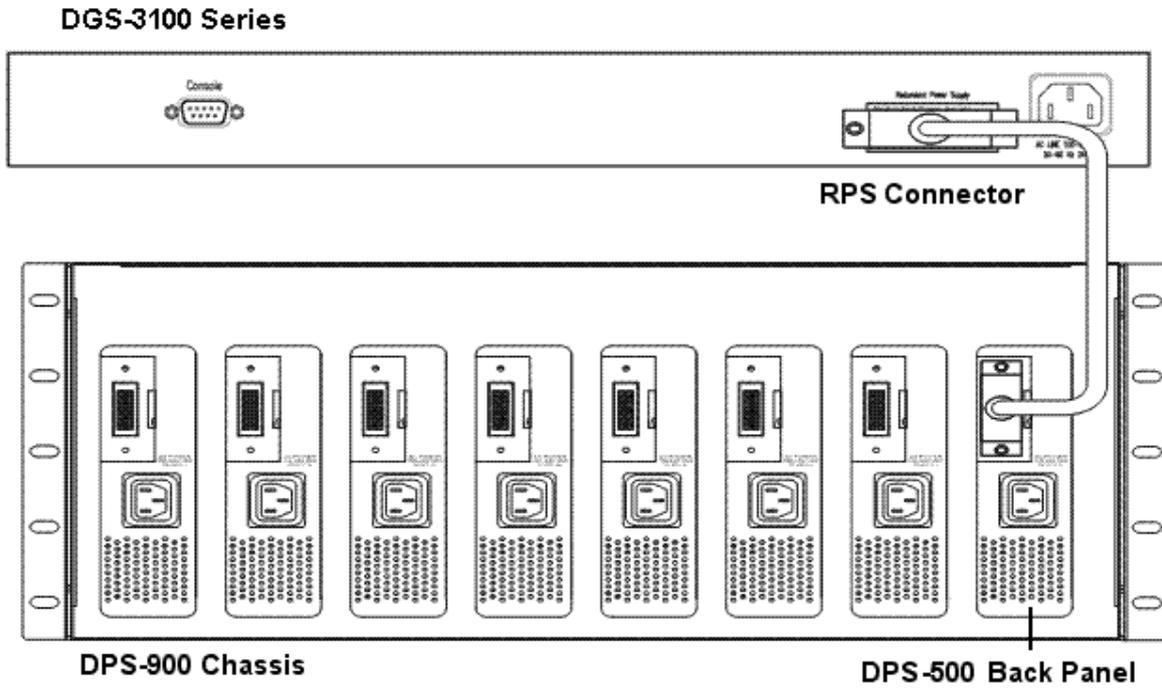


Figure 2-4. DPS-500 in DPS-900 Chassis

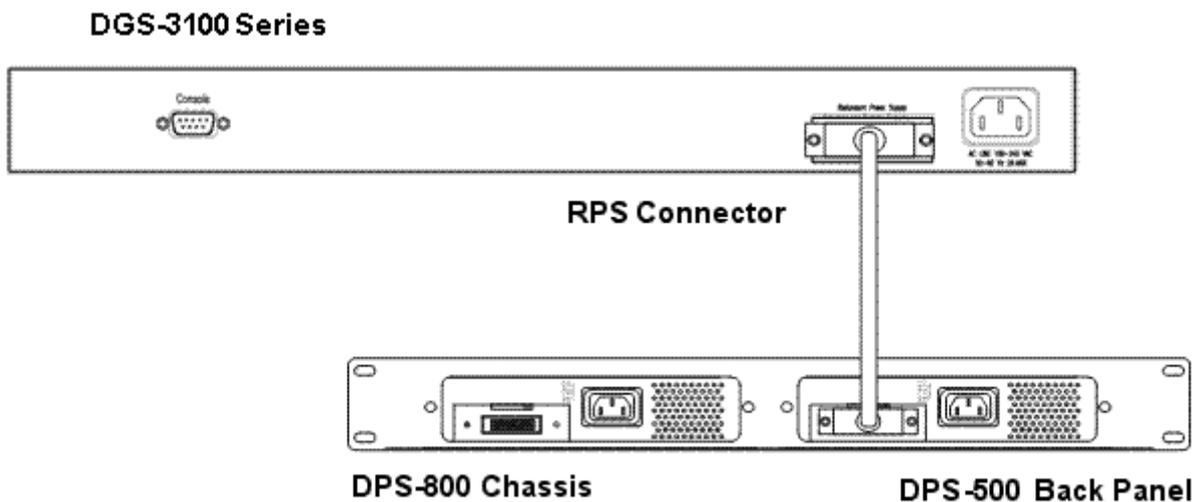


Figure 2-5. DPS-500 in DPS-800 Chassis



CAUTION: Do not use the device with any Redundant Power Supply other than a device supported RPS.



NOTE: See Section 1, Viewing Rear Panel for more information.

Web-Based Network Management

Introduction

The DGS-3100 Series offers an embedded Web-based (HTML) interface allowing users to manage the device from anywhere on the network through a standard browser, such as Netscape Navigator/Communicator, Microsoft Internet Explorer, or Mozilla Firefox. The Web browser acts as a universal access tool and can communicate directly with the Switch using the HTTP protocol. The browser window may vary with the screen shots (pictures) in this manual.

The Web-based management module and the Console program (and Telnet) are different ways to access the same internal switching software and configure it. Thus, all settings encountered in Web-based management are the same as those found in the console program.



NOTE: This Web-based Management module does not accept Chinese language input (or other languages requiring 2 bytes per character).



NOTE: The Web browser needs to be upgraded to the latest Java version (Java™ Plug-in: version 1.5.0 or later)

Login to Web Manager

To begin managing the device, simply run the browser installed on the management station and point it to the IP address defined for the device., for example; <http://123.123.123.123>, where the numbers 123 represent the IP address of the switch. Please note that the proxy for session connection should be turned off.



NOTE: The Factory default IP address for the Switch is 10.90.90.90

This section contains information on starting the D-Link Embedded Web Interface. To access the D-Link user interface:

Open an Internet browser. Ensure that pop-up blockers are disabled. If pop-up blockers are enabled, edit, add, and device information messages may not open.

Enter the device IP address in the address bar and press *Enter*.



Figure 2-6. Enter Username and Password Dialog Box

Using the Web-Based User Interface

The user interface provides access to various switch configuration and management windows, allows you to view performance statistics, and permits you to graphically monitor the system status. The screen captures in this Guide represent the 48 port device. The Web pages in the 24 port device may vary slightly.

Understanding the D-Link Embedded Web Interface

The D-Link Embedded Web Interface Device Information Page contains the following information:

- **Tree View** — Displays the different system features, and configuration options.
- **Zoom View** — Located at the top of the home page, the port LED indicators provide a visual representation of the ports on the D-Link front panel.
- **Menu Information View** — Located below the Zoom View, displays *Save*, *Tool* menu, *Stack ID*, and *Logout* buttons. Also displays Up Time information and User Loggin Identification.
- **Device Information View** — Located in the main part of the home page, the device view provides a view of the device, an information or table area, and configuration instructions.

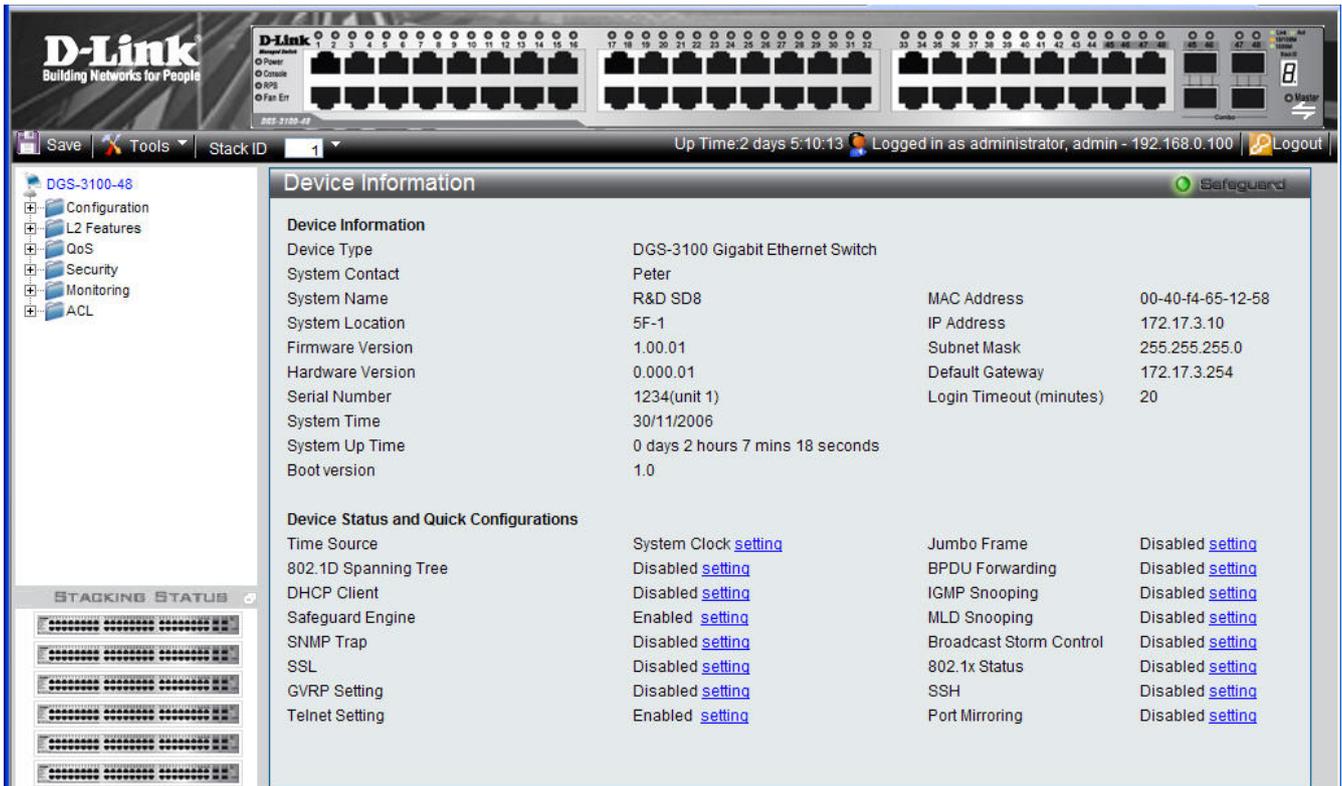


Figure 2-7. Device Information Page

The following table describes the four main areas on the Device Information Page:

Tree View	Select the folder or window to be displayed. The folder icons can be opened to display the hyperlinked menu buttons and subfolders contained within them.
Zoom View	Presents a graphical near real-time image of the front panel of the Switch. This area displays the Switch's ports, showing port activity, duplex mode, or flow control, depending on the specified mode. Various areas of the graphic can be selected for performing management functions, including port configuration
Menu Information View	Presents the <i>Save</i> button, a menu for accessing device tools, and a menu for Stack ID selection. The current Up Time and current User Login information is reported. The <i>Logout</i> button is also here.
Device Information View	Presents Switch information based on the selection and the entry of configuration data

Table 2-1

CONNECTING AND CONFIGURING THE DEVICE

This chapter describes how to connect the DGS-3100 Series to a Gigabit Ethernet network. This section includes the following topics:

- Connecting to an End Node
- Connecting to HUB or Switch
- Connecting to the Console Port
- Connecting the Device in a Stack
- Troubleshooting Device Connections

Connecting to an End Node

The section provides instructions for connecting the device to end nodes, including PCs outfitted with a 10, 100, or 1000 Mbps RJ-45 Ethernet/Fast Ethernet/Gigabit *Ethernet Network Interface Card* (NIC) and most routers. An end node can be connected to the switch via a Category 3, 4, 5, or 5e UTP/STP cable. For optimal performance, Category 5e cables are recommended. The end node should be connected to any of the device ports.

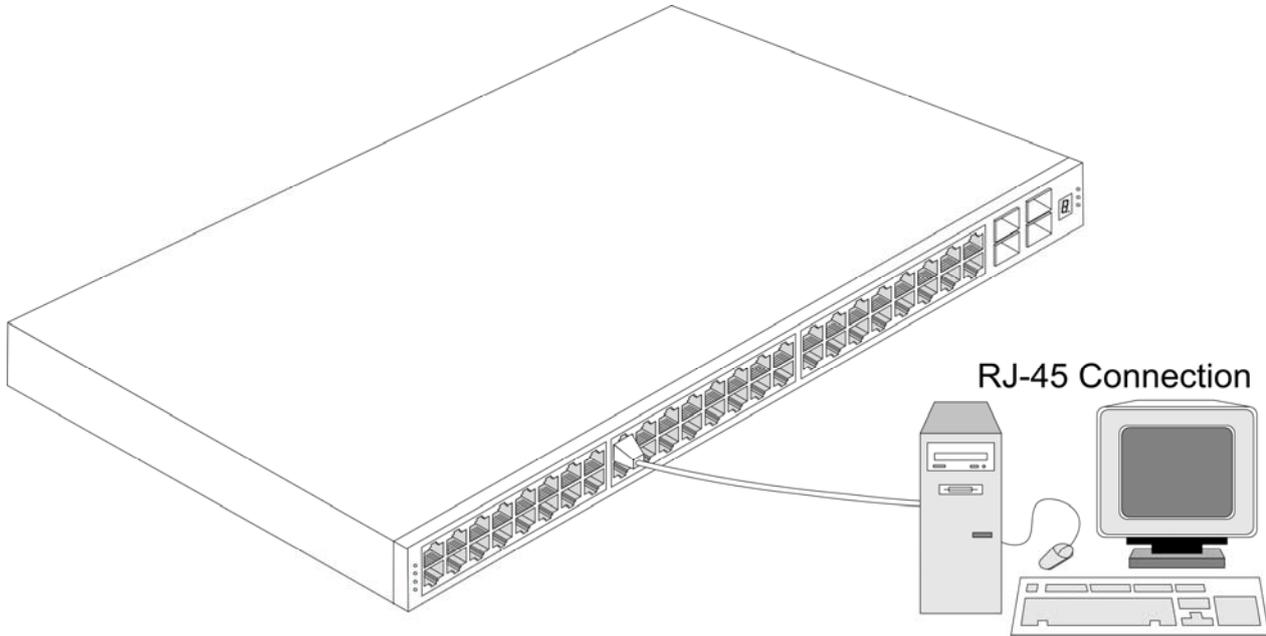


Figure 3-1. Connecting the Device to an End Node

The Link/Act LEDs light green a link is valid. A flashing green LED indicates that the port is currently receiving or transmitting packets. The Speed LEDs indicate port speed and lights solid green for 1000 Mbps and Orange for 100 Mbps connections.

Connecting to HUB or Switch

The device can be connected to a HUB using a normal cable. The device is connected to the different port types, using:

- A 10BASE-T HUB or switch is to the switch via a two-pair Category 3, 4, 5, or 5e UTP/STP cable.
- A 100BASE-TX HUB or switch is connected to the switch via a two-pair Category 5 or 5e UTP/STP cable.
- A 1000BASE-T Switch is connected to the switch via four-pair Category 5 or 5e UTP/STP cable.

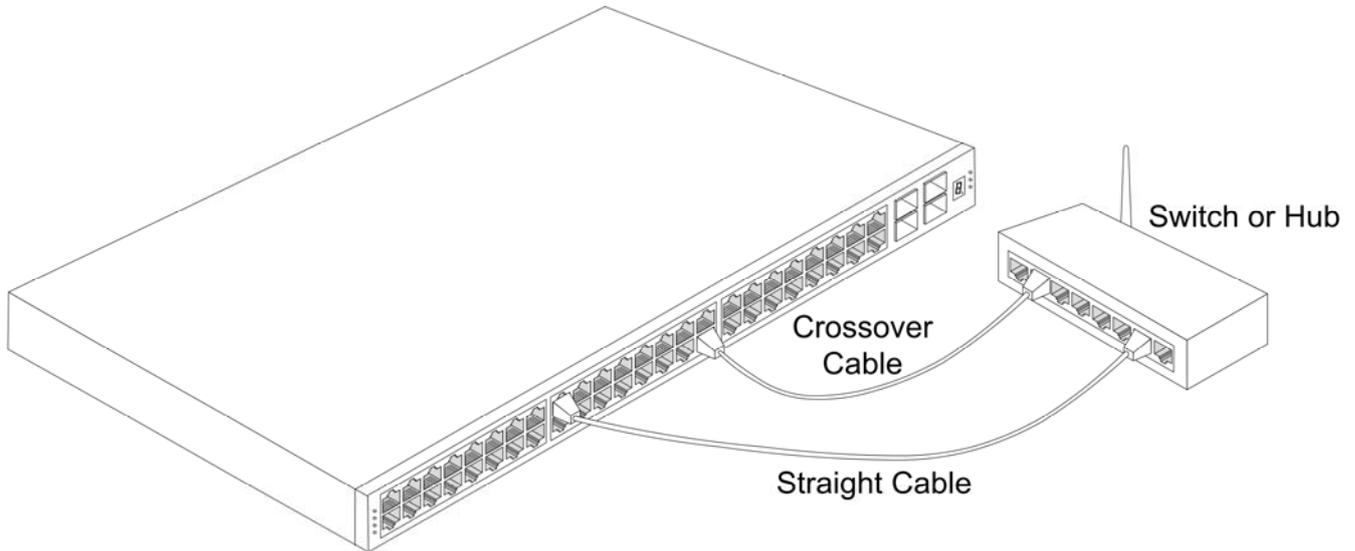


Figure 3-2. Connecting to a Hub or Switch Using a Straight or Crossover Cable

Connecting to the Console Port

The device provides an RS-232 serial port that enables connecting to a computer or terminal for monitoring and configuring the switch. The RS-232 serial port is a female DB-9 connector; implemented as a *Data Terminal Equipment (DTE)* connection. To use the console port, the following equipment is needed:

- A terminal or a computer with both a serial port and the ability to emulate a terminal.
- A null modem or crossover RS-232 cable with a female DB-9 connector for the console port on the switch.

To connect a terminal to the console port:

1. Connect the female connector of the RS-232 cable directly to the console port.
2. Tighten the captive retaining screws.
3. Connect the other end of the cable to a terminal or to the serial connector of a computer running terminal emulation software.

Set the terminal emulation software as follows:

1. Select either serial port:
 - COM port 1
 - COM port 2
2. Set the Baud Rate to 9600.
3. Set the data format to 8 Data Bits, 1 Stop Bit, and No Parity.
4. Set flow control to None.
5. Select Properties > VT100 for Emulation Mode.
6. Select Terminal Keys for Function, Arrow, and Ctrl keys. Ensure that Terminal Keys is selected and not Windows Keys.



NOTE: When using a HyperTerminal with the Microsoft® Windows® 2000 operating system, ensure that Windows 2000 Service Pack 2 or later is installed. Windows 2000 Service Pack 2 using arrow keys in HyperTerminal's VT100 emulation. See www.microsoft.com for information on Windows 2000 service packs.

7. After setting up the terminal, plug the power cable into the power receptacle on the back of the switch. The boot sequence appears in the terminal.

```
100%
Decompressing SW from image-1
  92%

----- Performing the Power-On Self Test (POST) -----

UART Channel Loopback Test.....PASS

Testing the System SDRAM.....PASS

Boot1 Checksum Test.....PASS

Boot2 Checksum Test.....PASS

Flash Image Validation Test.....PASS

BOOT Software Version 1.0.0.0 Built  04-Mar-2007 12:42:48

Network Switch based on 88E6218 with ARM946E-S.
64MByte SDRAM. I-Cache 8 KB. D-Cache 8 KB. Cache Enabled.

Autoboot in 2 seconds - press RETURN or Esc. to abort and enter prom.
Preparing to decompress...
  100%
Decompressing SW from image-1
  100%

OK
Running from RAM...
```

Figure 3-3. Boot Screen

After the boot sequence completes, the console login screen displays.

8. Log On to the CLI.

```

--- Unit Number 1 Master Enabled --
-----

Running eeprom code for 98DX269 Dev 0. Please wait...
Running eeprom code for 98DX269 Dev 1. Please wait...
01-Jan-2000 01:01:55 %INIT-I-InitCompleted: Initialization task is completed

>Tapi Version: v1.3.3.1
01-Jan-2000 01:01:56 %Box-I-FAN-STAT-CHNG: FAN# 1 status is - operational.
01-Jan-2000 01:01:56 %Entity-I-SEND-ENT-CONF-CHANGE-TRAP: entity configuration
change trap.
01-Jan-2000 01:01:56 %Box-W-PS-STAT-CHNG: PS# 1 status is - not operational.
Core Version: v1.3.3.1
01-Jan-2000 01:01:57 %SNMP-I-CDBITEMSNUM: Number of running configuration
items loaded: 0

01-Jan-2000 01:01:57 %SNMP-I-CDBITEMSNUM: Number of startup configuration
items loaded: 0
01-Jan-2000 01:01:57 %Box-I-STCK-CFG-CHNG: Configuration changed: chain .

>lcli
01-Jan-2000 01:01:58 %Box-I-SFP-PRESENT-CHNG: unit_id 1 SFP 0 status is not
present.
01-Jan-2000 01:01:58 %Box-I-SFP-PRESENT-CHNG: unit_id 1 SFP 1 status is not
present.
01-Jan-2000 01:01:58 %Box-I-SFP-PRESENT-CHNG: unit_id 1 SFP 2 status is not
present.
01-Jan-2000 01:01:58 %Box-I-SFP-PRESENT-CHNG: unit_id 1 SFP 3 status is not
present.
01-Jan-2000 01:01:58 %LINK-W-Down: 1:1
01-Jan-2000 01:02:00 %Box-I-SFP-PRESENT-CHNG: unit_id 1 SFP 0 status is not
present.
01-Jan-2000 01:02:00 %Box-I-SFP-PRESENT-CHNG: unit_id 1 SFP 1 status is not
present.
01-Jan-2000 01:02:00 %Box-I-SFP-PRESENT-CHNG: unit_id 1 SFP 2 status is not
present.
01-Jan-2000 01:02:00 %Box-I-SFP-PRESENT-CHNG: unit_id 1 SFP 3 status is not
present.
01-Jan-2000 01:02:00 %LINK-W-Down: 1:2

User Name:PoE software version:
  H.W. Version 0: Identifies the PCB version.
  Full S.W. version is: Prod#.SW Ver.Param# - 0.400.0
  Build Num 1, Internal SW 321.

PoE device version:
  PoE Device 0, hw Version: 2. 12 ports.
  PoE Device 1, hw Version: 2. 12 ports.

User Name:admin
DGS3100#

```

Figure 3-4. User Name and Password Prompt

9. Enter the *user name* and *password* at the prompt. By default, a single user name is defined, *admin*, with no password. After connecting to the system through the console port, the login screen displays:

User Name:admin

10. Enter the necessary commands to complete your desired tasks.

For more information on assigning administration access levels, see "Security Management and Password Configuration".

For the complete CLI list, see the DGS-3100 Series Managed Switch CLI Manual.

To exit the configuration session:

- Enter `logout`, or close the Emulator program.

Connecting the Device in a Stack

The device can operate as member of a stack. The two HDMI stacking ports on the back of the device are used for full-duplex stacking between units, and each port supports 5Gbps full-duplex traffic.

There are two stacking topologies supported by the device, the Ring topology or Chain topology.

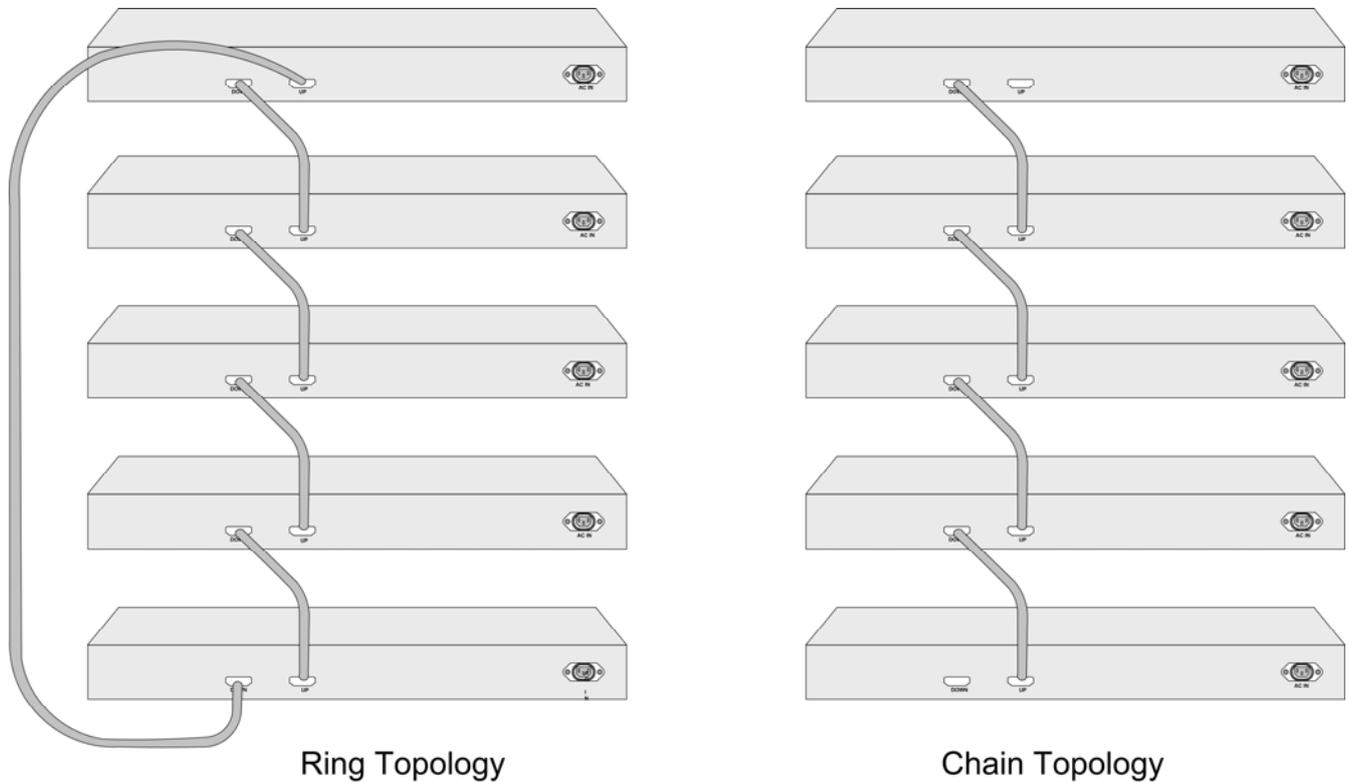


Figure 3-6. Connecting the Device in a Stack

The device is “Plug and Play” in terms of stacking connection and configuration. Before powering up the device, connect the devices into the required stacking topology. The Stacking Master and slave designations are configured through automatic discovery. Manually changing the stacking configuration is through switch’s web page and CLI commands, and once the device has been booted and is operational.

Troubleshooting Device Connections

Ensure the terminal or PC connection is configured to match the below settings.

If problems occur while connecting to the PC, ensure the emulation is set to VT-100. To set the emulation, select **File > Properties > Settings** tab in the *HyperTerminal* window. The Emulation options are displayed in the *HyperTerminal Window*:

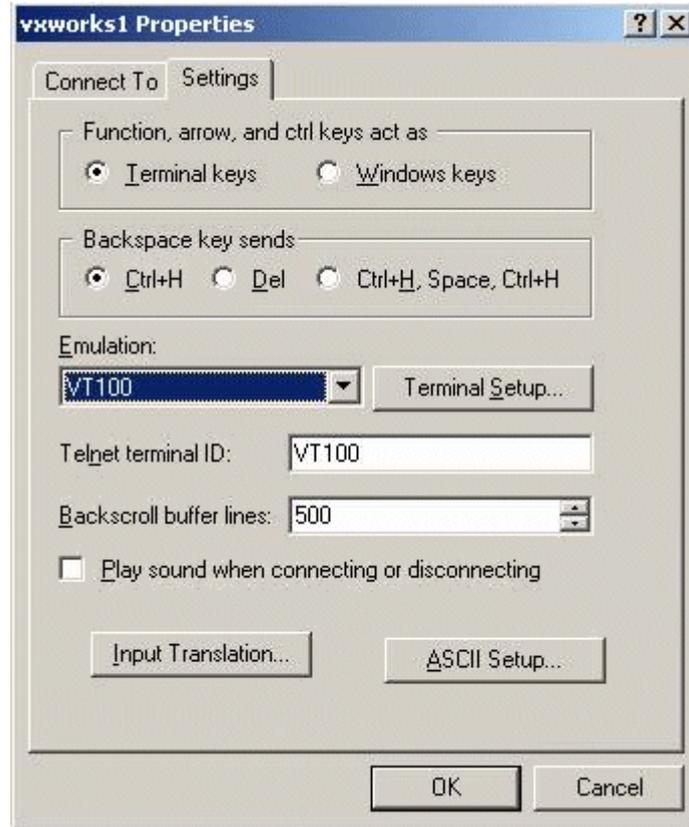


Figure 3-7. Settings Tab in HyperTerminal Window

If the Emulation options are not displayed in the HyperTerminal window, reboot the device by disconnecting the power supply.

INITIAL DEVICE CONFIGURATION

After completing all external connections, connect a terminal to the device to monitor the boot and other procedures. This section contains information for configuring initial device, including:

- Booting the Device
- Configuration Overview
- Initial Configuration
- Advanced Initial Device Configuration
- Restore Default Button

Booting the Device

To boot the switch, perform the following procedure:

1. Ensure that the device console is connected to a VT100 terminal device or VT100 terminal emulator.
2. Deactivate the AC power receptacle.
3. Connect the device to the AC receptacle.
4. Activate the AC power receptacle.

When the power is turned on with the local terminal already connected, the switch goes through *Power On Self Test (POST)*. POST runs every time the device is initialized and checks hardware components to determine if the device is fully operational before completely booting. If a critical problem is detected, the program flow stops. If POST passes successfully, a valid executable image is loaded into RAM. POST messages are displayed on the terminal and indicate test success or failure.

As the switch boots, the bootup test first counts the device memory availability and then continues to boot.

The following screen is an example of the displayed POST.

```
----- Performing the Power-On Self Test (POST) -----
UART Channel Loopback Test.....PASS
Testing the System SDRAM.....PASS
Boot1 Checksum Test.....PASS
Boot2 Checksum Test.....PASS
Flash Image Validation Test.....PASS
BOOT Software Version 1.0.0.0 Built 01-Feb-2007 14:05:13
Network Switch based on 88E6218 with ARM946E-S.64MByte SDRAM.
I-Cache 8 KB. D-Cache 8 KB. Cache Enabled.
Autoboot in 2 seconds - press RETURN or Esc. to abort and enter prom.
```

The boot process runs approximately 30 seconds.

The auto-boot message that appears at the end of POST (see the last lines) indicates that no problems were encountered during boot.

If the system boot is not interrupted by pressing <Esc> or <Enter>, the system continues operation by decompressing and loading the code into RAM. The code starts running from RAM and the list of numbered system ports and the port states are displayed. The following screen is an example configuration (Items such as addresses, versions, and dates may differ for each device):

```
Preparing to decompress...
Decompressing SW from image-1
638000
OK
Running from RAM...
*****
*** Running SW Ver. 1.2.0.6 Date 18-Feb-2007 Time 16:12:30 ***
*****
```

HW version is 01.00.00

Base Mac address is: 00:00:00:24:25:37

Dram size is: 64M bytes

Dram first block size is: 45056K bytes

Dram first PTR is: 0x1400000

Flash size is: 16M

01-Jan-2000 01:01:05 %CDB-I-LOADCONFIG: Loading running configuration.

01-Jan-2000 01:01:05 %CDB-I-LOADCONFIG: Loading startup configuration.

Device configuration:

CPLD revision: 0.00

Slot 1 - DGS-3100-48P ST HW Rev. 0.0

```
-----
-- Unit Standalone          --
-----
```

Running eeprom code for 98DX269 Dev 0. Please wait...

Running eeprom code for 98DX269 Dev 1. Please wait...

Tapi Version: v1.3.3.1

Core Version: v1.3.3.1

01-Jan-2000 01:04:01 %INIT-I-InitCompleted: Initialization task is completed

01-Jan-2000 01:04:01 %SNMP-I-CDBITEMSNUM: Number of running configuration items loaded:

0

01-Jan-2000 01:04:01 %SNMP-I-CDBITEMSNUM: Number of startup configuration items loaded:

0

01-Jan-2000 01:04:02 %Box-A-FAN-STAT-CHNG: FAN# 1 status is - not operational.

01-Jan-2000 01:04:02 %Entity-I-SEND-ENT-CONF-CHANGE-TRAP: entity configuration change trap.

01-Jan-2000 01:04:02 %Box-W-PS-STAT-CHNG: PS# 1 status is - not operational.

Configuration Overview

Before assigning a static IP address to the device, obtain the following information from the network administrator:

- A specific IP address allocated by the network administrator for the switch to be configured
- Network mask for the network

There are two types of configuration: Initial configuration consists of configuration functions with basic security considerations, whereas advanced configuration includes dynamic IP configuration and more advanced security considerations.

After making any configuration changes, the new configuration must be saved before rebooting. To save the configuration, enter the following CLI command:

```
DGS31000# save
```

Initial Configuration

Initial configuration, which starts after the device has booted successfully, includes static IP address and subnet mask configuration, and setting user name and privilege level to allow remote management. If the device is to be managed from an SNMP-based management station, SNMP community strings must also be configured. The following configurations are completed:

- Device Configuration
- Static IP Address and Subnet Mask
- User Name
- Defining SNMP Community Strings
- SNMP Trap Management

Device Configuration

```
CPLD revision: 0.00
Slot 1 - DGS-3100-48P ST HW Rev. 0.0
```

```
-----
-- Unit Standalone          --
-----
```

```
Running eeprom code for 98DX269 Dev 0. Please wait...
```

```
Running eeprom code for 98DX269 Dev 1. Please wait...
```

```
Tapi Version: v1.3.3.1
```

```
Core Version: v1.3.3.1
```

```
01-Jan-2000 01:04:01 %INIT-I-InitCompleted: Initialization task is completed
```

```
01-Jan-2000 01:04:01 %SNMP-I-CDBITEMSNUM: Number of running configuration items
loaded:
0
```

```
01-Jan-2000 01:04:01 %SNMP-I-CDBITEMSNUM: Number of startup configuration items
loaded:
0
```

```
01-Jan-2000 01:04:02 %Box-A-FAN-STAT-CHNG: FAN# 1 status is - not operational.
```

```
01-Jan-2000 01:04:02 %Entity-I-SEND-ENT-CONF-CHANGE-TRAP: entity configuration
change trap.
```

```
01-Jan-2000 01:04:02 %Box-W-PS-STAT-CHNG: PS# 1 status is - not operational.
```

Static IP Address and Subnet Mask

IP Interfaces can be configured on each VLAN configured the device. After entering the configuration command, check that the IP interface is configured according to the predefined parameters.

The commands to configure the device are port specific.

To manage the switch from a remote network, a static route must be created as an IP address to where packets are sent when no entries are found in the device tables. The configured IP address must belong to the same subnet of the device IP interface.

To configure a static route, enter the command at the system prompt as shown in the following example; where 0.0.0.0 defines the destination outside the subnet, and 100.1.1.3 is the static route (default gateway) to which packets with other subnet destinations are sent:

```
DGS3100# config ipif system vlan default ipaddress 100.1.1.1/8
DGS3100# sh ipif
Interface Name      : System
IP Address         : 100.1.1.1 (static)
Subnet Mask        : 255.0.0.0
Vlan Name          : default
Member port       : 1: (3-50),2: (1-50),3: (1-50),4: (1-50) ,5: (1-50)
Admin. State       : Enabled
Link Status        : Link Up
```

User Name

When creating a User name, it is possible to define its privilege level; a user with the privilege level of USER is allowed only to view the configuration, whereas a user with a privilege level of ADMIN is allowed to change the configuration as well as viewing it.

Create an account. The configured user name is entered as a login name for remote management sessions. To configure user name and privilege level, enter the command at the system prompt as shown in the configuration example:

```
DGS3100# create account user Tony
```

```
DGS3100# sh account
```

UserName	Access Level
Tony	User
user	User
admin	Admin

Defining SNMP Community Strings

Simple Network Management Protocol (SNMP) is an OSI Layer 7 (Application Layer) designed specifically for managing and monitoring network devices. SNMP enables network management stations to read and modify the settings of gateways, routers, switches, and other network devices. Use SNMP to configure system features for proper operation, monitor performance and to detect potential problems in the switch, switch group or network.

Managed devices that support SNMP include software (agent) that runs locally on the device. A defined set of variables (managed objects) is maintained by the SNMP agent and used to manage the device. These objects are defined in a *Management Information Base* (MIB) and provide a standard presentation of the information controlled by the on-board SNMP agent. SNMP defines both the MIB specification format and the protocol used to access this information over the network.

The device supports SNMP versions 1, 2c, and 3. The three versions of SNMP vary in the level of security provided between the management station and the network device.

SNMP v.1 and v.2 provides user authentication using *Community Strings*. Community Strings function passwords. The remote user SNMP application and the switch SNMP must use the same community string. SNMP packets from any station that has not been authenticated are dropped. The default community strings for the switch used for SNMP v.1 and v.2 management access are:

- public - Allows authorized management stations to retrieve MIB objects.
- private - Allows authorized management stations to retrieve and modify MIB objects.

SNMP v.3 uses a more sophisticated authentication process that is separated into two parts. The first part is to maintain a list of users and their attributes that are allowed to act as SNMP managers. The second part describes what each user on that list can do as an SNMP manager.

The switch allows groups of users to be listed and configured with a shared set of privileges. The SNMP version may also be set for a listed group of SNMP managers. Thus, one may create a group of SNMP managers that are allowed to view read-only information or receive traps using SNMP v.1 while assigning a higher level of security to another group, granting read/write privileges using SNMP v.3.

SNMP v.3 enables individual users or groups of SNMP managers to perform or be restricted from performing specific SNMP management functions. The functions allowed or restricted are defined using the *Object Identifier* (OID) associated with a specific MIB. In addition, SNMP v.3 encrypts SNMP messages.

All parameters are manageable from any SNMP management platform, except the SNMP management station IP address and community (community name and access rights). The SNMP management access to the switch is disabled if no community strings exist. The device switch is delivered with no community strings configured.

The following syntax displays the default device configuration:

```
DGS3100# create snmp community Tony read_write view Default
DGS3100# sh snmp community
Community-Name      View name      Access Right
-----
Access              Default        read write
Tony                Default        read write
Total Entries 2
```

```
DGS3100# create snmp host 100.1.1.3 v1 Tony
DGS3100# show snmp host
```

```
SNMP Host Table
Host IP Address      SNMP Version      Community Name / SNMPv3
-----
100.1.1.3           V1                Tony
Total Entries: 1
```

SNMP Trap Management

Traps are messages which alert network personnel of events that occur on the switch. The events can be as serious as a reboot, or less serious like a port status changes. The switch generates traps and sends them to the trap recipient.

This completes the initial configuration of the device from a local terminal. The configured parameters enable further device configuration from any remote location.

Advanced Initial Device Configuration

This section provides information about dynamic allocation of IP addresses and security management based on the *Authentication, Authorization, and Accounting (AAA)* mechanism, and includes the following topics:

- Assigning IP Addresses
- Retrieving an IP Address from a DHCP Server
- Retrieving an IP Address from a BOOTP Server
- Security Management and Password Configuration
- Software Download Through TFTP Server
- Boot Image Download

When configuring/receiving IP addresses through DHCP and BOOTP, the configuration received from these servers includes the IP address, and may include subnet mask and default gateway.

Assigning IP Addresses

Each switch must be assigned its own IP Address, which is used for communication with an SNMP network manager or other TCP/IP application.

Retrieving an IP Address from a DHCP Server

When using the DHCP protocol to retrieve an IP address, the device acts as a DHCP client. To retrieve an IP address from a DHCP server:

1. Select and connect any port to a DHCP server or to a subnet that has a DHCP server on it, in order to retrieve the IP address.
2. Enter the following commands to use the selected port for receiving the IP address. In the following example, the commands are based on the port type used for configuration.

To assign dynamic IP addresses, enter the following command:

```
DGS3100# config ipif system dhcp
```

The interface receives the IP address automatically.

To verify the IP address, enter the show ip interface command at the system prompt as shown in the following example:

```
DGS3100# showIPIF
```

```
02-Jan-2000 00:24:01 %bootp_DHCP_CL-I-DHCPCONFIGURED: The device has been configured on interface Vlan 1 , IP 10.6.41.72, mask 255.255.255.244, DHCP server 10.6.41.226
```

The device configuration does not have to be deleted to retrieve an IP address for the DHCP server. When copying configuration files, avoid using configuration files containing instructions to enable DHCP on an interface connected to the same DHCP server, or to one with the identical configuration. The switch retrieves the new configuration file and boots from it. The device then enables DHCP as instructed in the new configuration file, and the DHCP instructs it to reload the same file again.

Retrieving an IP Address from a BOOTP Server

The standard BOOTP protocol is supported and enables the switch to automatically download its IP host configuration from any standard BOOTP server in the network. In this case, the device acts as a BOOTP client.

To retrieve an IP address from a BOOTP server:

1. Select and connect any port to a BOOTP server or subnet containing such a server.
2. At the system prompt, enter the delete startup configuration command to delete the startup configuration from flash. The device reboots with no configuration and in 60 seconds starts sending BOOTP requests. The device receives the IP address automatically.

When the device reboot begins, any input at the ASCII terminal or keyboard automatically cancels the BOOTP process before completion and the device does not receive an IP address from the BOOTP server.

The following example illustrates the process:

```
DGS3100# config dhcp_auto enable
```

```
DGS3100# reboot
```

```
This command will reset the whole system and disconnect your current session.Do you  
want to continue (y/n)[n]?
```

```
Enter Y to reboot the switch.*****
```

Security Management and Password Configuration

System security is handled through the mechanism that manages user access rights, privileges, and management methods. AAA uses both local and remote user databases. Data encryption is handled through the SSH mechanism.

The system is delivered with no default password configured; all passwords are user-defined.



NOTE: If a user-defined password is lost or corrupted, please refer to the D-Link website and the White Paper entitled “Password Recovery Procedure”, which will guide you through the steps necessary to resolve this issue

The procedure is applicable for the local terminal only and allows a one-time access to the device from the local terminal with no password entered.

The security passwords can be configured for the following services:

- Console
- Telnet
- SSH

Passwords are user-defined.

When creating a User name, it is possible to define its privilege level; a user with the privilege level of USER is allowed only to view the configuration, whereas a user with a privilege level of ADMIN is allowed to change the configuration as well as viewing it. Without a password, it is recommended to always assign a password. If there is no specified password, privileged users can access the Web interface with any password. (config account command)

Configuring an Initial Console Local Access.

```
DGS3100# config authen_login default method local
DGS3100# config authen_enable default method local
DGS3100# config authen application console login default
DGS3100# config authen application console enable default
```

Configuring an Initial Telnet Password.

```
DGS3100# config authen_login default method local
DGS3100# config authen_enable default method local
DGS3100# config authen application telnet login default
DGS3100# config authen application telnet enable default
```

Configuring an Initial SSH password.

To configure an initial SSH password, enter the following commands:

```
DGS3100# config authen_login default method local
DGS3100# config authen_enable default method local
DGS3100# config authen application ssh login default
DGS3100# config authen application ssh enable default.
```

Software Download Through TFTP Server

This section contains instructions for downloading device software (system and Boot Images) through a TFTP server. The TFTP server must be configured before downloading the software.

The switch boots and runs when decompressing the system image from the flash memory area where a copy of the system image is stored. When a new image is downloaded, the image is saved in an area allocated for the additional system image copy.

On the next boot, the switch decompresses and runs the currently active system image.

To download an image through the TFTP server:

1. Ensure that an IP address is configured on one of the device ports and pings can be sent to a TFTP server.
2. Ensure that the file to be downloaded is saved on the TFTP server.
3. Enter the command `show version` to verify which software version is currently running on the device. The following is an example of the information that appears:

```
DGS31000# show version
```

```
SW version x.xx.xx (date xx-xxx-2004 time 13:42:41)Boot version x.xx.x (date x-xxx-2003 time 15:12:20) HW version.
```

Enter the command to copy a new system image to the device. When the new image is downloaded, it is saved in the area allocated for the other copy of system image (image-2, as given in the example), and then is automatically loaded on reboot.

The following is an example of the information that appears:

```
Download<firmware<tftpaddress><filename>
```

```
Loading file1 from 176.215.31.3:!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
```

```
Copy took 00:01:11 [hh:mm:ss]
```

Exclamation symbols indicate that a copying process is in progress. A period indicates that the copying process is timed out. Many periods in a row indicate that the copying process failed.

Enter the command `reboot`. The following message is displayed:

```
DGS31000# reboot
```

```
This command will reset the whole system and disconnect your current session.Do you want to continue (y/n)[n]?
```

```
Enter Y to reboot the switch..
```

Boot Image Download

Loading a new boot image from the TFTP server and programming it into the flash updates the boot image. The boot image is loaded when the switch is powered on.

To download a boot file through the TFTP server:

Ensure that an IP address is configured on one of the device ports and pings can be sent to a TFTP server.

Ensure that the file to be downloaded (the .rfb file) is saved on the TFTP server.

Enter the command `show shift` to verify which boot shift is currently running on the device. The following is an example of the information that appears:

```
DGS31000# show shift
```

```
SW version x.xx.xx (date xx-xxx-2004 time 13:42:41)Boot version x.xx.xx (date xx-
xx-2004 time 15:12:20)HW version xx.xx.xx (date xx-xxx-2004 time 12:12:20)
```

Enter the command to copy the boot image to the switch. The following is an example of the information that appears:

```
DGS31000# download boot<TFTP address><boot file name>
```

```
Erasing
```

```
file ...done!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!Copy:393232      bytes
copied in 00:00:05 [hh:mm:ss]
```

Enter the command `reboot`. The following message is displayed:

```
DGS31000# reboot
```

Enter Y to reboot the switch. This command will reset the whole system and disconnect your current session. Do you want to continue (y/n)[n]?

Restore Default Button

Reboot Device

This section contains instructions for rebooting device. A Restore Default Button that is used to reboot device after press the button.

DGS3100#

To perform reset to factory defaults please do not release the button during 5 seconds

```
*****  
***** SYSTEM RESET *****  
*****
```

Restore Default Settings

This section contains instructions for restoring default settings. A Restore Default Button that is used to restore default settings. To restore defaults settings the button must be held down for five seconds. It will delete startup configuration automatically.

DGS3100#

To perform reset to factory defaults please do not release the button during 5 seconds

Deleting auto update backup file...OK

Deleting auto update instruction file...OK

Deleting startup configuration file... Done.

Please make sure that your terminal is set to the default baud rate - 9600 bps.

```
*****  
***** SYSTEM RESET *****  
*****
```

DEVICE SPECIFICATIONS

This appendix contains the device specifications, and contains the following topics:

- Technical Specifications
- Cable Lengths

Technical Specifications

Performance	
Transmission Method	Store-and-forward
RAM Buffer	512Kbytes per device
Packet Filtering/ Forwarding Rate	Full-wire speed for all connections. 1,488,095 pps per port (for 1000Mbps)
MAC Address Learning	Automatic update. Supports 8K MAC address.
Priority Queues	4 Priority Queues per port.
Forwarding Table Age Time	Max age: 0–630 seconds. Default = 300.

Physical and Environmental	
AC Inputs	100 – 240 VAC, 50/60 Hz (internal universal power supply)
Power Consumption	1) DGS-3100-24P: 126W (For system power) 370W (For POE power) 2) DGS-3100-24: 60W 3) DGS-3100-48P: 126W(For system power) 370W(For POE power) 4) DGS-3100-48: 139.5W 5) DGS-3100-24TG - 60W
DC Fans	2 built-in 40 x 40 x 10 mm fans
Operating Temperature	0 to 40 degrees Celsius (32 to 104 degrees Fahrenheit)
Storage Temperature	-40 to 70 degrees Celsius (-40 to 158 degrees Fahrenheit)
Humidity	Storage: 5% to 95% non-condensing
Dimensions	441mm (W) x 309mm (D) x 44mm (H), 19-inch rack-mount width 1U height
Weight	3.8 kg (8.38 lb)
EMI	FCC, CE Mark
Safety	CSA International

General	
Standards	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet IEEE 802.3z Gigabit Ethernet

General	
	IEEE 802.1Q Tagged VLAN IEEE 802.1P Tagged Packets IEEE 802.3ab 1000BASE-T IEEE 802.3x Full-duplex Flow Control ANSI/IEEE 802.3 NWay auto-negotiation
Protocols	CSMA/CD
Data Transfer Rates Ethernet: Fast Ethernet: Gigabit Ethernet:	Half-duplex Full-duplex 10 Mbps 20 Mbps 100 Mbps 200 Mbps 2000 Mbps (Full duplex only)
Topology	Star

Network Cables	
10BASE-T:	UTP Category 3, 4, 5 (100 meters max.) EIA/TIA- 568 150-ohm STP (100 meters max.)
100BASE-TX:	UTP Cat. 5 (100 meters max.) EIA/TIA-568 150-ohm STP (100 meters max.)
1000BASE-T:	UTP Cat. 5e (100 meters max.) UTP Cat. 5 (100 meters max.) EIA/TIA-568B 150-ohm STP (100 meters max.)
1000BASE-LX:	Single-mode fiber module (10km)
1000BASE-SX:	Multi-mode fiber module (550m)
100BASE-FX:	Fast Ethernet Single Mode fiber module (2km)
Mini-GBIC:	SFP Transceiver for 1000BASE-LX Single-mode fiber module (10km) SFP Transceiver for 1000BASE-SX Multi-mode fiber module (550m) SFP Transceiver for 100BASE-FX Single-mode fiber module (2km)
HDMI	High Definition Multimedia Interface Cable version 1.3 (1 meter)
Number of Ports:	DGS-3100-48/P - 48 x 10/100/1000 Mbps ports + 4 x GBIC ports DGS-3100-24/P - 24 x 10/100/1000 Mbps ports + 4 x GBIC ports DGS-3100-24TG - 8 x 10/100/1000 Mbps ports + 16 x GBIC ports

Cable Lengths

Use the following table to as a guide for the maximum cable lengths:

Standard	Media Type	Maximum Distance
Mini GBIC	DEM-310GT: SFP Transceiver for 1000BASE-LX, Single-mode fiber module	10km
	DEM-311GT: SFP Transceiver for 1000BASE-SX, Multi-mode fiber module	550m
1000BASE-T	Category 5e UTP Cable Category 5 UTP Cable (1000 Mbps)	100m
100BASE-TX	Category 5 UTP Cable (100 Mbps)	100m
10BASE-T	Category 3 UTP Cable (10 Mbps)	100m

GLOSSARY

1000BASE-T — Specification for Gigabit Ethernet over copper wire (IEEE Std. 802.3ab). The standard defines 1 Gb/s data transfer over distances of up to 100 meters using four pairs of CAT-5 balanced copper cabling and a 5-level coding scheme. Its benefits include compatibility with existing network protocols (i.e. IP, IPX, AppleTalk), existing applications, Network Operating Systems, network management platforms and applications.

100BASE-TX — 100Mbps Ethernet implementation over Category 5 and Type 1 twisted pair cabling.

10BASE-T — The IEEE 802.3 specification for Ethernet over Unshielded Twisted Pair (UTP) cabling.

aging — The automatic removal of dynamic entries from the Switch Database which have timed-out and are no longer valid.

ATM — Asynchronous Transfer Mode. A connection oriented transmission protocol based on fixed length cells (packets). ATM is designed to carry a complete range of user traffic, including voice, data and video signals.

auto-negotiation — A feature on a port that allows it to advertise its capabilities for speed, duplex and flow control. When connected to an end station that also supports auto-negotiation, the link can self-detect its optimum operating setup.

backbone — The part of a network used as the primary path for transporting traffic

backbone port — A port that does not learn device addresses, and receives all frames with an unknown address. Backbone ports are normally used to connect the Switch to the backbone of your network. Note that backbone ports were formerly known as designated downlink ports.

bandwidth — Information capacity, measured in bits per second, that a channel can transmit. The bandwidth of Ethernet is 10Mbps and the bandwidth of Fast Ethernet is 100Mbps.

baud rate — The switching speed of a line. Also known as *line speed* between network segments.

bridge — A device that interconnects local or remote networks no matter what higher level protocols are involved. Bridges form a single logical network, centralizing network administration.

broadcast — A message sent to all destination devices on the network.

broadcast storm — Multiple simultaneous broadcasts that typically absorb available network bandwidth and can cause network failure.

console port — The port on the Switch accepting a terminal. It changes the parallel arrangement of data within computers to the serial form used on data transmission links. This port is most often used for dedicated local management.

CSMA/CD — Channel access method used by Ethernet and IEEE 802.3 standards in which devices transmit only after finding the data channel clear for some period of time. When two devices transmit simultaneously, a collision occurs and the colliding devices delay their retransmissions for a random amount of time.

data center switching — The point of aggregation within a corporate network where a Switch provides high-performance access to server farms, a high-speed backbone connection and a control point for network management and security.

Ethernet — A LAN specification developed jointly by Xerox, Intel and Digital Equipment Corporation. Ethernet networks operate at 10Mbps using CSMA/CD to run over cabling.

Fast Ethernet — 100Mbps technology based on the Ethernet/CD network access method.

Flow Control — (IEEE 802.3z) A means of holding packets back at the transmit port of the connected end station. Prevents packet loss at a congested Switch port.

forwarding The process of sending a packet toward its destination by an internetworking device.

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

GBIC — Gigabit interface converter, a transceiver that converts serial electric signals to serial optical signals and vice versa. In networking, a GBIC is used to interface a fiber optic system with an Ethernet system, such as Fiber Channel and Gigabit Ethernet.

A GBIC allows designers to design one type of device that can be adapted for either optical or copper applications. GBICs also are hot-swappable, which adds to the ease of upgrading electro-optical communication networks.

half-duplex — A system that allows packets to be transmitted and received, but not at the same time. Contrasts with full-duplex.

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

IPX — Internetwork Packet Exchange. A protocol allowing communication in a NetWare network.

LAN — Local Area Network. A network of connected computing resources (such as PCs, printers, servers) covering a relatively small geographic area (usually not larger than a floor or building). Characterized by high data rates and low error rates.

latency — The delay between the time a device receives a packet and the time the packet is forwarded out of the destination port.

line speed — See *baud rate*.

main port — The port in a resilient link that carries data traffic in normal operating conditions.

MDI — Medium Dependent Interface. An Ethernet port connection where the transmitter of one device is connected to the receiver of another device.

MDI-X — Medium Dependent Interface Cross-over. An Ethernet port connection where the internal transmit and receive lines are crossed.

MIB — Management Information Base. Stores a device's management characteristics and parameters. MIBs are used by the Simple Network Management Protocol (SNMP) to contain attributes of their managed systems. The Switch contains its own internal MIB.

multicast — Single packets copied to a specific subset of network addresses. These addresses are specified in the destination-address field of the packet.

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

resilient link — A pair of ports that can be configured so that one will take over data transmission should the other fail. See also *main port* and *standby port*.

RJ-45 — Standard 8-wire connectors for IEEE 802.3 10BASE-T networks.

RMON — Remote Monitoring. Subset of SNMP MIB II that allows monitoring and management capabilities by addressing up to ten different groups of information.

RPS — Redundant Power System. A device that provides a backup source of power when connected to the Switch.

server farm — A cluster of servers in a centralized location serving a large user population.

SLIP — Serial Line Internet Protocol. A protocol that allows IP to run over a serial line connection.

SNMP — Simple Network Management Protocol. A protocol originally designed to be used in managing TCP/IP internets. SNMP is presently implemented on a wide range of computers and networking equipment and may be used to manage many aspects of network and end station operation.

Spanning Tree Protocol — (STP) A bridge-based system for providing fault tolerance on networks. STP works by allowing you to implement parallel paths for network traffic, and ensure that redundant paths are disabled when the main paths are operational and enabled if the main paths fail.

stack — A group of network devices that are integrated to form a single logical device.

standby port — The port in a resilient link that will take over data transmission if the main port in the link fails.

Switch — A device that filters, forwards and floods packets based on the packet's destination address. The Switch learns the addresses associated with each Switch port and builds tables based on this information to be used for the switching decision.

TCP/IP — A layered set of communications protocols providing Telnet terminal emulation, FTP file transfer, and other services for communication among a wide range of computer equipment.

Telnet — A TCP/IP application protocol that provides virtual terminal service, allowing a user log in to another computer system and access a host as if the user were connected directly to the host.

TFTP — Trivial File Transfer Protocol. Allows you to transfer files (such as software upgrades) from a remote device using your Switch's local management capabilities.

UDP — User Datagram Protocol. An Internet standard protocol that allows an application program on one device to send a datagram to an application program on another device.

VLAN — Virtual LAN. A group of location- and topology-independent devices that communicate as if they are on a common physical LAN.

VLT — Virtual LAN Trunk. A Switch-to-Switch link which carries traffic for all the VLANs on each Switch.

VT100 — A type of terminal that uses ASCII characters. VT100 screens have a text-based appearance.