

## DES-3204 4-Port Gigabit Ethernet Switch D-View Management Module User's Guide

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# DGS-3204 Management

## User's Guide

## About this Guide

This User's Guide tells you how to use the D-View network management system (version 4.1 or later) to manage your DGS-3204 intelligent Gigabit Ethernet switch, including how to install the D-View management module for the switch, and how to use the module to control and monitor the switch. Additional information on installing your switch and configuring it for management can be found in the DGS-3204 *User's Guide*.

About this Guide

## Introduction

## DGS-3204 Intelligent Ethernet Switch

This guide discusses how to manage the DGS-3204 switch using the D-View network management system. The DGS-3204 combines conventional Ethernet, Gigabit Ethernet and switching technologies into one package. This device features four ultra high-speed 1000BASE-SX Gigabit Ethernet switching ports supporting.

Additional information about configuring the DGS-3204 Ethernet switch may be found in the Ethernet switch's hardware *User's Guide*.

## Network Management

As networks grow larger, network management becomes more and more of a necessity. A large network requires a considerable amount of work to keep it running smoothly, including time and effort spent on user support, troubleshooting, network planning, and performance monitoring. The intent of a network management system (NMS) is to make it possible to monitor a widely spread-out network (possibly spanning many different sites) from a centralized location.

Network management works by placing a small degree of "intelligence" in the network elements (routers, switches, hubs, hosts, etc.) to be managed. This intelligence takes the form of an *agent* that is capable of collecting statistics and status information, as well as performing control operations that affect the operation of the network. The agent responds to commands and requests for information from the centralized network management system, allowing the health and performance of the network to be monitored and adjusted.

Introduction

A network protocol known as the Simple Network Management Protocol (SNMP) is generally used to communicate between network management stations and the devices they manage. SNMP was originally developed for controlling the devices that made up the infrastructure of the Internet, and has become the primary standard for network management. SNMP commonly runs "on top of" the TCP/IP Internet Protocol, though other transmission methods are possible.

Because a network management station can be used to manage a wide range of devices, network management software is generally divided into two different parts: a base *platform* consisting of software common to the management of all devices; and a set of *modules*, each of which can communicate with a narrow range of devices by way of their SNMP-based agents. If a new device type is added to the network, then a new module (compatible with the particular platform being used) needs to be added to facilitate its management.

This manual describes the module used on the D-View platform for controlling DGS-3204 intelligent Gigabit Ethernet switches.

Introduction

# Installing the Management Module

This section describes the requirements and procedures for installing the DGS-3204 management module on your network management system.

## Requirements

We recommend that your system meet the following requirements to be able to use the DGS-3204 switch management module:

- A PC-compatible computer with a 486DX2-66 or faster processor
- Microsoft Windows version 3.1x or Microsoft Windows 95 or later operating system.
- D-View SNMP Network Management Program, version 4.1 or later.
- 8 megabytes (16M preferred) of main memory (RAM)
- At least 10 megabytes of free hard disk space
- A Windows-compatible mouse or other pointing device
- An Ethernet network card with appropriate drivers
- CD-ROM drive

Installing the Management Module

## Installing the Module Software

Note: Please ensure that the D-View platform program has been installed on the computer you are using for network management before proceeding.

Take the following steps to install the module on your network management system:

- **1.** Exit D-View if you are running it.
- **2.** Insert the Setup/Application CD-ROM containing the module into your CD-ROM drive (**E:** will be used in this manual although your CD-ROM drive letter may be different).
- 3. If you are using Windows 3.1, choose Run... from the Program Manager's File menu. Under Windows 95, choose Run... from the Start menu on the taskbar. When the dialog box appears, type the pathname of the Install program on the CD-ROM drive (E:\INSTALL)

un T	Type the name of a pro Windows will open it fo	ogram, folder, or de ir you.	ocument, and
<u>O</u> pen:	E:MNSTALL		•
	ОК	Cancel	Browse

- 4. Click OK. The installation program will start.
- **5.** When the program prompts for your D-View Directory, enter the pathname of the directory where you installed D-View, and click **Continue**.

<b>R</b> Installation	×
D. Uiser Dimeterer	
C:NDVIEW	
ļ	
Continue	Exit

Installing the Management Module

**6.** The installation program will install all of the necessary files onto your system. When it is finished, it will display the following dialog:

🚮 Installation		×
Installation Complet	ed	
	Exit	

Click on the **Exit** button. The D-View network management system is now ready to manage DGS-3204 Ethernet switches.

## Preparing the Switch for Management

You will need to make sure that your switch is properly set up before you can use the management module:

- Ensure that the switch is connected to the same network as the network management station.
- Ensure that the switch's TCP/IP settings are set properly. If the switch is on the same local network, the network portion of the switch's IP address needs to be the same as that of the network management station. If they are on separate LANs, the TCP/IP gateway (router) field of both the switch and the router need to be set properly so that information can be routed properly between the switch and the management station.

For more information about these and other items, consult the DGS-3204 hardware *User's Guide*.

Installing the Management Module

# DGS-3204 Management

## Adding your DGS-3204 Switch to the Map

Before you can manage individual DGS-3204 Ethernet switches, you need to add them to your D-View network map. You can do this either by:

- Using D-View's Auto Discover capability to add all new SNMPmanageable devices to the map.
- Using the Add-Modify Map Device command to place each switch on the map.

To use the second method:

**1.** Press the Add/Modify a device on the map button shown below.



**2.** Select the DGS-3204 from the icon list at the right of the Add-Modify Map Device dialog.

Network	p Device			1 1
Device Name	DGS-3204			
IP Address	172.16.133.77		eilie	
SNMP Read	public			
SNMP Write	private			
Local				
Contact Name			M M	
Contact Phone			<b>#</b> #	
Location			4	
Poll Options			*	
Snmp	Ping	Jone		
Polling Interva	l 10 sec		pinnin	
Poll this device via S	NMP query			•
N	lew Chan	ge C	lose	

- **3.** Give the switch a name, and enter its IP address and SNMP community names.
- 4. Click on New.

The DGS-3204 switch icon should now be displayed on your network map as shown below.

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## The Module Display

Double-clicking on the icon in the network map causes the module display to open. The module display is used to monitor and perform network management functions on the selected device. The module display for the DGS-3204 appears as follows:

	🖬 DGS-3204 : 172.16.133.77 🛛 🗙	
Error Status	Configuration V Monitor V Reset V Help V	Menu Button:
Line	DGS-3204 Gigabit Switch Desensition #5-305 DES-5800, 0,11	
Port Status – Indicators –		- Ports

• **Menu Buttons** The *Configuration, Monitor, Reset,* and *Help* buttons display their respective pull-down menus. The items listed in these menus are described later on in this manual.

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- Error Status Line This line displays messages describing errors that occur when the module is unable to obtain information it needs. When an error occurs, a red border appears around the error status line.
- **Ports** Each of the 1000BASE-SX ports on the front panel are depicted. You can select individual ports to perform operations on them. Clicking on the gray area immediately surrounding the ports will deselect the port and select the switch as a whole.
- **Port Status Indicators** There are corresponding port status indicators for each of the ports on the switch. Each port indicator can be interpreted as follows:
  - Link Lights green when the port is connected to a powered-on Gigabit Ethernet device.
  - ♦ Act Lights blink off briefly when information is transmitted or received on the port.
  - **Full** Lights green when the port is operating in full-duplex.

#### Selecting Ports

Many of the switch management functions can be applied to the switch itself, or to a particular port. You can select an individual port by clicking on the port itself. The color of the port will change to indicate that you have selected it (as shown below). You can select the switch itself by clicking in the gray area surrounding the ports, so that none of the ports are selected.



#### Menu Buttons

The menu buttons on the module - *Configuration, Monitor, Reset*, and *Help* – are used to access all the configuration settings, polling parameters and viewing

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tables used in management. The section below addresses the function and use of each item in the menu button's drop-down menus.

## **Configuration Menu Button**

The Configuration menu contains options that allow you to get information about current settings, configure switch parameters and setup the switch for monitoring. The configuration menu appears as follows:

Configuration •	Information Set Configuration	Reset	•	Help	-			
DGS-3204 Pow. Du <b>T ing l</b> a	MIB Capability IP Interfaces Trap Receivers Port Mirroring	4 4 • Link/ 8	Diagnostic: DCE,960	s RS-232 0.n.8.1 9		¢.		
	Static Fwd Table Filtering Table							

#### Information

There are two Information windows; one for the switch as a whole, and one for the individual ports.

#### Switch Information

Choosing the first item – **Information** - in the *Configuration* menu when the switch is selected (an individual port is not selected) causes the following window to open:

Iua	me:	DES-3204	IPAddress:	172.16.133.77	1
Ope	ened:	05:21:23 pm 10/05/19	Target:	Device	samples
ndex	Object	ts	Description		Refresh
1	SysDe	escr	D-Link DGS3204	4 Gigabit Switch	<b></b>
2	SysOl	D	1.3.6.1.4.1.171.	10.23.1.1	Set
3	SysUp	Time	20 h: 21 m: 30 s		
4	SysNa	ame	DGS-3204		
5	SysLo	ocation	6F		
6	SysCo	ontact	Test		
7	Snmp	Authentication	enabled		
8	Physic	cal (MAC) Address	00:80:c8:32:04:13		
9	Runtin	ne Software Version	V1.00.00		
10	PROM	Firmware Version	1.00-B01		
11	Mgmt I	Hardware Revision	08		
12	Mgmt I	Protocol	snmp-ip		
13	Numbe	er of IP Supported	1		
14	RS232	2 Port Used As	Console		
15	Out-O	f-Band Baud Rate	9600 baud		
16	Softw	are Update Mode	Network		
17	Last E	Boot Server Address	172.16.131.183		
18	Boot S	Server Address	172.16.131.183		
19	Firmw	are Filename	a:dgs3204.tfp		
20	Config	juration Filename	sdfsdfs		
21	Boot F	Protocol	TFTP		
22	Unaut	h SNMP Packet IP	Not available		
23	Unaut	h Packet Community			
24	HOL E	locking Prevention	disabled		
25	Lock /	Address Table	disabled		
26	Spann	ning Tree Protocol	disabled		
	•			F	<b>V</b>

The values in the window that are displayed in black can be changed either in the D-View management module or by using the console program; values in blue are fixed either by the hardware or by the switch's firmware.

Clicking on the **Set** button allows you to configure settings for the switch, and opens the *Set Configuration* window described later in this manual.

The items displayed in the Switch Information table are described as follows:

- **SysDescr** A description of the switch type.
- **SysOID** The SNMP Object Identifier for this switch model.

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- **SysUpTime** The amount of time that the switch has been powered on, or since the last time the switch was reset.
- **SysName** A user-assigned name for the switch. Information on changing this setting can be found in the *Set Configuration* section below.
- **SysLocation** A user-assigned description for the physical location of the switch. Information on changing this setting can be found in the *Set Configuration* section below.
- **SysContact** User-defined contact information describing how to find the person responsible for the switch. Information on changing this setting can be found in the *Set Configuration* section below.
- Snmp Authentication Enables a trap to be sent to the network manager whenever an attempt is made to access the switch using an invalid SNMP login password.
- Physical (MAC) Address The physical (MAC) address of the switch.
- **Runtime Software Version** Version number for the switching software that drives the switch.
- PROM Firmware Version Version number for the software stored in a PROM chip that takes the switch through that startup sequence.
- Mgmt Hardware Revision Version number for the switch's management hardware.
- Mgmt Protocol Protocols supported by the switch's management hardware.
- Number of IP Supported The number of TCP/IP channels available for use for switch management. This will be 2 if the SLIP (Outof-Band) interface is enabled, and 1 if only the in-band Gigabit Ethernet interface is available.
- RS232 Port Used As Displays whether the RS232 port is configured to support a console terminal connection or a SLIP connection.

- Out-Of-Band Baud Rate Displays the baud the RS232 port is set to operate at.
- **Software Update Mode** Displays whether the switch is setup to download new software from a TFTP server on the *Network*, or directly from a *SLIP* server.
- ◆ Last Boot Server address Displays the last IP Address used when using BootP or TFTP to boot up the server.
- Boot Server Address Displays the IP Address of the server currently used to boot up the switch.
- Firmware Filename Displays the complete path and filename of the firmware image file. This file is switching software used to replace (upgrade) the existing switching software in the switch.
- **Configuration Filename** Displays the filename of the configuration file, which contains all settings in the switch.
- **Boot Protocol** Displays the protocol BootP or TFTP that will be used to boot the switch.
- Unauth SNMP Packet IP When a request with an unknown (unauthorized) SNMP community name is received, this entry shows the source IP address of the most recent unauthorized packet.
- Unauth packet community When a request with an unknown (unauthorized) SNMP community name is received, this entry shows the community name the most recent unauthorized packet was using.
- ♦ HOL State Displays whether Head-Of-Line blocking is *enabled* or *disabled*.
- Lock Address Table Displays whether the Forwarding Table is *locked* or *unlocked*.
- **Spanning Tree Protocol** Displays whether the Spanning Tree Protocol is *enabled* or *disabled* on the switch.

For more detailed explanations on the function and use of the above items, please refer to the DGE-3204 User's Guide.

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#### **Port Information**

Choosing the first item – **Information** - in the *Configuration* menu when an individual port is selected (colored blue) causes the following window to open:

Na	me:	DGS-3204	IPAddress:	172.16.133.77	1
Ope	ened:	06:31:13 pm 10/08/	Target:	Group 1 Port 2	samples
ndex	Objects E		Des	cription	Refresh
	Туре		100	OBASE-SX	
	Link Status		pas	s	Set
	Spee	d/Duplex	100	0M bps/Full	
	Admin State		ena	bled	
;	Link Status Alarm State		disa	abled	
;	Flow Control State		disa	abled	
	Lock	State	disa	abled	
	Priority		nor	mal	
	STP :	State	ena	bled	
0	HOL State		disa	abled	
1					
	•			<u>۲</u>	
Resp	onse re	eceived at 06:31:13 pm 10i	08/1999		

Tip: Double-clicking on the port will also cause the above window to open.

The values in the window that are displayed in black can be changed either in the D-View management module or by using the console program; values in blue are fixed either by the hardware or by the switch's firmware.

Clicking on the **Set** button allows you to configure settings for the selected port, and opens the *Port Configuration* window described later in this manual.

The items displayed in the Port Information table are described below

- **Type** The type of connection supported by the port.
- Link Status Displays *Pass* when the port has a connection to another Gigabit Ethernet device that is powered on. If no such connection exists, it will display *Fail*.

- Speed/Duplex Displays the current speed and duplex settings for the port. All ports on the DGS-3204 can only be set to run at 1Gbps (1000Mbps) at Full duplex.
- Admin State When you *disable* the Admin State, the port will be partitioned from the rest of the network. In this partitioned state, it will only be able to accept management packets. All other packets will be dropped.
- Link Status Alarm State Displays whether the Link Status Alarm, which sends a *trap* to the network manager whenever the Link Status changes, is *enabled* or *disabled*.
- Flow Control State Displays whether IEEE 802.3x flow control is *enabled* or *disabled* on the port.
- Lock State Displays whether the Forwarding Table for this port is locked or not. When *locked*, automatic learning for all stations connected to this port will stop and entries in the Forwarding Table for all devices residing on this port will age out. The only traffic this port will allow is traffic from machines manually entered in the Static Forwarding Table.
- **Priority** Displays the whether traffic arriving at this port will be given a high, normal or low priority in the switch's packet queuing.
- STP State Displays whether Spanning Tree Protocol is *enabled* or *disabled* on this port.
- ♦ HOL State Displays whether Head-Of-Line Blocking Prevention is enabled or disabled on this port.

For more detailed explanations on the function and use of the above items, please refer to the DGE-3204 User's Guide.

#### Set Configuration

There are two Configuration windows; one for the switch as a whole, and one for the individual ports.

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#### Switch Configuration

Choosing the second item – **Set Configuration** - in the *Configuration* menu when the switch is selected (an individual port is not selected) causes the following window to open.

🚮 Network (	Configurations			×
General	Console	Servers	Advanced	
Name	DGS-3204		1	
Location	6th floor			
Contact	Nick Didovic		]	
Send Auth	entication Fail Trap	<b>√</b> mmunity		
	Apply		Refresh	

There are four tabs running along the top – *General, Console, Servers, Advanced* – which allow you to configure a number of settings for the switch.

#### General

As shown in the **Information** window, the switch maintains the SysName, SysLocation, and SysContact variables to assist with tracking and accounting. You can set these fields in the Network Configurations dialog box in this window.

The *Send Authentication Fail Trap* setting, if checked, enables a trap to be sent to the network manager whenever an attempt is made to access the switch using an invalid SNMP login password.

After making changes in the window, be sure to click on the *Apply* button to activate them on the switch before clicking on another tab or closing the window.

#### Console

The Console tab of the Network Configuration dialog allows you to set parameters for the Diagnostics RS232 port located on the front of the switch.

Network Configurations		
General Consol	e Servers Advanced	
RS232 Port Used As	Console	
Out-Of-Band Baud Rate	9600 baud	
Send trap if queried with invalid S	NMP community	
Annl	v Refresh	

Each field is described below:

- RS-232 Port Used As Sets the Diagnostic RS232 port to either *Console* or *SLIP*. The *Console* setting allows the port to be used for terminal-based console management. The *SLIP* setting configures the RS232 port for SLIP communications.
- **Out-of-band Rate** Determines the bit rate of the RS232 port. When being used in Console mode, it should be set to 9600 baud.

Changes will not take affect unless the Apply button is clicked on.

#### Servers

The DGS-3204 Ethernet switch stores its internal software (firmware) in flash memory, which allows you to update the switch with new versions of the firmware when they become available. In addition, many of the switch's operational parameters can be set using a flexible configuration file stored on a centralized server.

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General Consol	e Servers	Advanced
IFTP Server 172.16.1	31.183	
Software Update Mode	Network	]▼
Firmware File Update		
Firmware File	d:\dgs3204.tfp	
Configure File Update		
Configure File	3204CFG	
Enable Boot <mark>P</mark> On Startu	p?	
Response received at 05:25:55	om 10/05/1999	

Each item is described below:

- **TFTP Server** This box should contain the IP address of the TFTP server, if any, you are using on your network.
- Software Update Mode Defines the method you wish to use to upload new runtime switching software onto the switch. Choosing *Network* causes the switch to look for the software image file on the TFTP server defined above; choosing *SLIP* allows the software to be uploaded from a *SLIP* workstation or server directly connected to the RS232 port.
- ◆ Firmware File Update Clicking on the box to the right so that a check
  (✓) appears in it, tells the switch to upload new runtime switching software the next time it is restarted or rebooted.
- **Firmware File** This field should contain the complete path and filename for the switching software image file.
- ◆ Configuration File Update Clicking on the box to the right so that a check (✓) appears in it, tells the switch to upload settings from a configuration file the next time it is restarted or rebooted.

- **Configuration File** This field should contain the complete path and filename for the configuration file you wish to use to upload settings to this switch.
- ◆ Enable BootP On Startup When checked (✓), the server will utilize the BootP protocol to get its IP address, subnet mask and gateway IP the next time it is restarted or rebooted.

For more information about DGS-3204 configuration files, consult the appendix to the DGS-3204 hardware *User's Guide*, or the samples included on the management module installation disk. For more information about using the TFTP and BOOTP servers, consult the D-View *User's Guide*.

#### Advanced

Clicking on the Advanced tab displays the following window and allows you to configure the switch for more advanced functions.

General Console Servers	Advanced
MAC Address Entry Expire Time (sec)	300
Lock Address Table	disabled 🖉
Spanning Tree Protocol	disabled 🖉
Head Of Line (HOL) Blocking Prevention	disabled 🔷

Each of the fields is described below:

- MAC Address Entry Expire Time (sec) This field allows you to set the aging time for entries in the Forwarding table.
- Lock Address Table When *Enabled*, the forwarding table will not learn any more addresses and all entries in the forwarding table will be static

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and will not age out. When *Disabled*, the automatic learning function of the switch will be turned on.

- **Spanning Tree Protocol** *Enables/Disables* Spanning Tree on the switch.
- Head Of Line (HOL) Blocking Prevention *Enables/Disables* Head-Of-Line Blocking on the switch.

For more detailed explanations, please refer to the Port Configuration section below.

#### **Port Configuration**

Choosing the second item – **Set Configuration** - in the *Configuration* menu when an individual port is selected (colored blue) causes the following window to open:

Admin State	enabled	*
Flow Control State	disabled	
Lock State	disabled	].
Priority	normal	
STP State	enabled	
HOL State	disabled	
Broadcast Storm Rising Action	Block and Trap	].
Broadcast Storm Falling Action	Forward and Tra	a d
Response received at 06:33:08 pm 10/08/199	99	
	Defeat	

Tip: Double-clicking on the port will also cause the above window to open.

Items in the above window are described as follows:

• Admin State When you *disable* the Admin State, the port will be partitioned from the rest of the network. In this partitioned state, it will only be able to accept management packets. All other packets will be dropped.

- Flow Control State Enables or disables IEEE 802.3x flow control on the port. Flow control allows the port to send a Pause packet to a transmitting IEEE 802.3x-compliant device, so that it's buffers don't overflow and data is not lost.
- Lock State When *locked*, automatic learning for all stations connected to this port will stop and entries in the Forwarding Table for all devices residing on this port will age out. The only traffic this port will allow is traffic from machines whose MAC address is manually entered in the Static Forwarding Table.
- **Priority** Sets the priority for traffic arriving at this port to high, normal or low. Higher priority packets are processed first in the switch's packet queue.
- STP State Enables or disables Spanning Tree on this port. Spanning Tree allows backup connections and prevents signal loops on the network.
- ♦ HOL State Enables or disables Head-Of-Line Blocking Prevention on this port. Head-of Line blocking occurs when a packet originating on Port 1, for instance, needs to be forwarded to Ports 2 and 3. If Port 2 is occupied (causing the packet to be held in memory until the port is free), the packet destined for Port 3 will also be delayed. Cumulatively, these delays can have a noticeable effect on overall network performance. Enabling the HOL State prevents Head-of-Line blocking from occurring.
- Broadcast Storm Rising Action This setting will be activated when the switch detects that 80% of packets on the segment connected to the port are broadcast packets and the port surpasses 30% utilization. When these criteria are met, the port can be configured to *Do Nothing*, *Block* or *Block and Trap*. The *Do Nothing* setting causes the switch to operate normally, in other words, ignore the broadcast storm condition. The *Block* setting causes the port to drop all broadcast frames, thus isolating the broadcast storm. *Block and Trap* performs the same action as *Block*, except it also sends a trap to the designated Trap Recipient informing them of the situation.
- Broadcast Storm Falling Action This setting will be activated when a Broadcast Storm Rising Action has occurred and the switch detects that port utilization has dropped below 10%. This setting

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can be configured to *Do Nothing, Forward* or *Forward and Trap.* The *Do Nothing* setting causes the switch to operate normally, in other words, ignore the situation. If the port had met the Broadcast Storm Rising Action criteria and started *Blocking* broadcast packets, it will continue doing so. The *Forward* setting causes the port to begin forwarding broadcast frames, thus removing the *Blocking* state imposed by the Broadcast Storm Rising Action. *Forward and Trap* performs the same action as *Forward*, except it also sends a trap to the designated Trap Recipient informing them of the situation.

#### **MIB Capability Table**

The **MIB Capability Table** shows which MIBs are used by the DGS-3204 switch.

o view the **MIB Capability Table**, choose **MIB Capability** from the **Configuration** menu. The **MIB Capability Table** dialogue box will appear.

± M	IB Co	pability Tabl	9			_ 🗆 🗵
Na	me:	DGS-3294	IPAddress:	172.16.133.77		5
Ope	ned:	10:12:45 am 10.0	Target:	Device		Entries
Index	Index	Description	Version	Туре		Refresh
1	1	RFC1213-MB	2	standard		rienean
2	2	RFC1493-MB	2	standard		
3	3	RFC1757-MB	2	standard		
4	4	COMMON-MIB	1	proprietary		
6	5	DGS-3204-MB	1	proprietary		
6	1				-	
End-	of-Table			_	-	
					-	

Press the Refresh button to force the display to match the switch's current status.

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#### **IP Interfaces**

IP parameters can be viewed and changed from the management modules when necessary. After changing the IP address, your connection to the switch will be cut off. Change the settings in the D-View map by selecting the DGS-3204 icon in the map and clicking on the *Add/Modify a device on the map* button (shown below) to update the IP address to the new setting.



Clicking on IP Intefaces in the *Configuration* menu displays the following window:

	Name:	DES-3204		IPAddress: 172.16.133.77		33.77	] 1	
(	Opened:	11:09:33 am	n 10/06/1999		l'arget:	Device		Entries
×  1	f Index IP /	Address	Net Mask	Default Gateway IF	Phys Addr	ess	If Type	Refresh
1	1 17.	2.16.133.77	255.255.240.0	172.16.128.254	00:80:c8:3	2:04:13	Ethernet-CSMACD	
								Modify
8								
h	•		1	- 1			•	
of-	Table							7

The fields displayed in the table are:

- IF Index Displays the IP Interface which the other settings are used on. The DGS-3204 contains only one IP Interface.
- **IP Address** Shows the IP address of the given Interface.
- Net Mask Shows the subnet mask for the network that the switch is connected to.

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- **Default Gateway IP** Shows the IP Address of the gateway router where packets destined for IP addresses outside of the local network should be sent for forwarding.
- **Phys Address** Shows the physical (MAC) address of the switch.
- If Type Describes the type of IP Interface. The DGS-3204 supports CSMA/CD the standard Ethernet protocol.

To change the switch's IP settings, press the *Modify* button in the IP Interface Table window. The *Set IP Interfaces* (shown below) window will be displayed:

P Address	172.16.133.77
Vet Mask	255.255.240.0
Default Gateway IP	172.16.128.254
Response received at 11:10	0:17 am 10/06/1999

When all changes have been made, press **Apply** then **restart** the switch to let the changes take effect.

**NOTE** Changing the IP settings may make the switch temporarily inaccessible from the management station. Be sure to update the switch's map entry after changing its IP address.

### **Trap Receivers**

Your DGS-3204 Ethernet switch can send SNMP *traps* to network management stations when exceptional events happen. These include:

- When the switch is powered on.
- Whenever a user-defined threshold condition occurs.

DGS-3204 Management

The switch requires you to designate the network management stations that will receive these traps. To view the trap recipients, select **Trap Receivers** from the **Configuration** menu.

Na Ope	ime: ened:	DES-3	204 56 am 10/06	IPAd Ta	ldress: irget:	172.16.133.77 Device	1 #Entries
lex	Entry	<sup>,</sup> status	Manager IP /	Address	Comn	nunity String	Refresh
	enab	led	172.16.133.0	59	priva	te	Add
							Delete
		1					
End-o	of-Tabl	e					

The fields displayed are:

- Entry Status Shows whether or not this entry is valid.
- Manager IP Address The IP address of the trap recipient.
- **Community** Shows the SNMP community name that will be used for the traps sent to this recipient.

To Add a new trap receiver to the table, click on the Add button to the right.

To modify the Manager IP address or community string for an entry, click on the entry so that it is highlighted and then click on the Add button to the right. The *Set Trap Receiver* dialog box will be displayed:



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When all changes have been made, click on the **Add** button if adding a new entry, or click on the Modify button when modifying an existing entry.

For more information about changing the switch's trap configuration, see the DGS-3204 hardware User's Guide.

## **Port Mirroring**

The DGS-3204 allows you to mirror traffic on one port to another port for analysis. Once setup and enabled, the switch will take all traffic from the **Source** port and mirror it on the **Target** port.

Report Mirroring		×
Source Port	Port 1	
Target Port	Port 2	
Status	enabled	
Response received at 11:	12:48 am 10/06/1999 Refresh	

Each of the fields is described below:

- **Source Port** This is the port whose traffic you wish to analyze.
- **Target Port** The port where you have a **sniffer** or PC with packet analysis software directly attached to analyze data packets.
- Status *Enables/disables* port mirroring.

## Static Fwd Table

The Static Forwarding Table allows you to assign permanent forwarding criteria for specific MAC addresses. Thus, whenever the switch receives a packet destined for a MAC address in the table, it will always be forwarded to the associated port.

To view the **Static Forwarding Table**, select **Static Fwd Table** from the **Configuration** menu. This causes the following window to appear:

N	ame: DES	-3204	IPAddress:	IPAddress: 172.16.133.77		1
Ор	ened: 01:1	5:02 pm 10/06/1999	Target:	Device		Entries
idex (	MAC Address	Port		Status		Refresh
[	0008c8 f64b84	Port 1		in use	-	
						Add
-						Doloto
-						Delete
•						
-						
1						
· L	•			1	• •	
End-of	-Table					
End-of-	-Table				100	

To add an entry to the table, click on the *Add* button on the on the right side of the **Static Forwarding Table** window. The **Add MAC Static Forwarding Table Entry** dialog box will be displayed:

IAC Address	00:00:00:00:00:00			
ort	Port 1			

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The fields displayed are:

- MAC Address The MAC Address for the device you wish to create a static forwarding entry for.
- **Port** The port through which packets destined for the MAC address will always be forwarded.

When all changes have been made, Click **Apply** to let the change take effect.

#### Filtering Table

To prevent a particular machine from accessing the network, you can filter that machine's MAC address by entering it in the filtering table. The switch will then neither accept packets from, nor forward packets to, the device with that MAC address.

To view or edit the filtering table, choose **Filtering Table** from the **Configuration menu**. The Filtering Table window will appear:

	Name:	DES-	3204	IPAddress:	172.16.133.77		1
C	)pened:	04:35:	38 pm 10/06/1999	Target:	Device		Entries
Index	MAC Ad	ldress	Filter Conditions				Refresh
1	D-Link-2	23311	Destination and Sour	rce		<b></b>	realest
2							Add
3							
4							Delete
5							
6						- 19	
o a							
10							
11	-						
	•		1		1		
End-	of-Table				-		

The items in the window are described as follows:

• MAC Address All packets containing this MAC address will be dropped by the switch.

• **Filter Conditions** Automatically set by the DGS-3204 to *Destination and Source*, meaning that all packets having a destination or source MAC address defined in the MAC Address field will be dropped.

To remove an entry from the Filtering Table, simply click on the desired entry so that it is highlighted and then click on the *Delete* button on the right side of the window.

To add an entry to the filtering table click on the *Add* button on the right side of the window. The following window will appear:

Filtering MAC Addres	38
00:00:00:00:00:00	

Enter the MAC address you wish to filter from the network in the appropriate box. Click on the Add button to add it to the Filtering Table.

#### **Monitor Menu Button**

The DGS-3204 management module allows you to collect network statistics and to display them in several easy-to-read forms. This section describes how you can use the module to observe conditions on each individual port.



DGS-3204 Management

#### **Port Statistics**

The module allows you to display four network statistics:

- Port Utilization
- Traffic
- Errors
- Packet Analysis

Except for *Port Utilization*, Ethernet statistics for a given port can be displayed in:

- $\diamond$  table form,
- $\diamond$  line curve form, or
- $\diamond$  bar graph form.

You can display statistics for a particular port by selecting that port and choosing the appropriate **Monitor** menu item. When the switch itself selected (as opposed to a particular port), the management module will not display statistics.

#### Statistics Collected by the Switch

The management module can display the following network statistics:

- Utilization The percentage of network bandwidth that is being utilized.
- Good Bytes Sent (Bytes Tx) Counts the number of bytes successfully sent from the port.
- Good Bytes Received (Bytes Rx) Counts the total number of bytes (octets) included in valid (readable) frames.
- Total Bytes Received (Total Bytes Rx) Counts the total number of bytes received on the port, whether valid or invalid frames.
- Good Frames Sent (Frames Tx) Counts the total number of frames transmitted from the port.

- Good Frames Received (Frames Rx) Counts all valid frames received on the port.
- **Total Frames Rx** Counts the total number of frames received on the port, whether valid or invalid frames.
- CRC Error Counts frames that fail the CRC frame integrity check. CRC errors are usually indicative of hardware problems.
- Oversize Frames Counts packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets) limit set by the Ethernet standard that were otherwise well formed. This is likely caused by a software problem.
- Fragments Counts packets received that were less than 64 octets in length (excluding framing bits but including FCS octets) and had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Errors). These are normally the result of collisions.
- Jabber Counts frames longer than the maximum 1518 bytes (octets) with either bad framing or an invalid CRC. This may be due to a hardware problem such as a malfunctioning NIC. A jabber condition can halt all traffic on a segment.
- Late Collision Counts collisions that occur at or after the 64th byte (octet) in the frame. This may indicate that delays on the Ethernet are too long, and you have either exceeded the repeater count or cable segment length specified in the IEEE 802.3z Ethernet standard.
- Dropped Frames Number of frames dropped by the switch.
- Undersized Frames The number of frames detected that are less than the minimum permitted frame size of 64 bytes and have a good CRC. Undersized frames usually indicate collision fragments, a normal network event.
- Collisions A collision occurs when two devices try to transmit at the same time. This counter tracks the number of times packets have collided on the collision domain connected to this port. Collisions are normal in an Ethernet network and tend to increase as network utilization rises. Therefore, is the collision rate increases without an increase in network utilization, it can indicate a problem.

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- Frames 64Bytes Displays the number of frames with 64 bytes of information.
- Frames 65~127Bytes Displays the number of frames with 65 to 127 bytes of information.
- Frames 128~255Bytes Displays the number of frames with 128 to 255 bytes of information.
- Frames 256~511Bytes Displays the number of frames with 256 to 511 bytes of information.
- Frames 512~1023Bytes Displays the number of frames with 512 to 1023 bytes of information.
- Frames 1024~1518Bytes Displays the number of frames with 1024 to 1518 bytes of information.
- Multicast Rx The number of multicast packets received on this port.
- Multicast Tx The number of multicast packets transmitted on this port.
- Broadcast Rx The number of broadcast packets received on this port.
- Broadcast Tx The number of broadcast packets transmitted on this port.

#### **Port Utilization**

This display permits you to observe the utilization of each individual port. Select the port that you wish to display statistics for.

To display the Port Utilization Line Curve:

- 1. Select a port by clicking on it. It should turn blue in color.
- 2. Choose Monitor from the main menu.
- 3. Choose Port Statistics from the Monitor menu.
- 4. Choose Utilization from the Port Statistics menu. The Port Utilization Line Curve will be displayed.

lame:	DES-3204	IPA	ddress:	172.16.133.77		Rate:	5 sec
)pened:	06:34:38 pm 10/06	7199 Targ	get:	Port 2		Dur:	8:20 m
75						Utiliza	ation J
50					-	Avg: Peak: Pk.at:	0% 0% 06:42:32 pm
0 + 0:0 п	n 1:23 m 2:	46 m 4:10 m	5:33 m	6:56 m	8:20 m	[	Pause

## Port Traffic

This display permits you to observe the network traffic on each individual port. Select the port that you wish to display statistics for.

To display the **Port Traffic**:

- 1. Choose Monitor from the main menu.
- 2. Choose Traffic from the Monitor menu.
- **3.** Choose **Table** from the **Traffic** menu. The **Port Traffic Table** will be displayed.

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Ma	me:	D G S-3204	IP.Address	172.16.	133.77	65
Орн	ned:	04:35:29 pm 10/01.	Target:	Port 2		samples
łю.	Object	ct Names	Total	Rate /s	Avg	5 sec 🌲
	Byte:	e Tx	2005149	86	87 🔺	Fall Interval
	Byte:	9 Rx	133873736	1814	2326	Reset
	Total	Bytes Rx	133873736	1814	2326	
	Fren	es Tx	19827	0	0	Pause
	Fren	es Rx	1101439	16	18	
	Total	Frames Rx	1101439	16	18	Resume
					_	
	1			-		
-	_					1
					-	-

Choose Curve from the Traffic menu and the Port Statistics Traffic Line Curve will be displayed.

Name	003-3294	IPAddress:	172.90.133.77	Rate:	6 280
Openedt	84-48:12 pm 10/01/19	Tarpet	Pot 2	Dur:	1:20 m
38° 7					
			3	Bitt	s Tx
85				Avg: Denk	95 /6
30			-44-1A	II Par	04:57:54 pm
	1.4A.AA.AA.AA.AA.AA.AA	mm	1	T	
. I					
6 <b>1</b>	¥			-	Pause
6	n 123 n 246 n	4:10 m 5:00	n 6.55m 0.23	n .	Pause
6 0 0:0	m 123 m 2.46 m	4:10 m 6:00	n 6.50m 0-22 diai Dytes Rx		Pause Start

Choose Bar from the Traffic menu and the Port Statistics Traffic Bar Graph will be displayed.



#### **Port Errors**

This display permits you to observe the various errors on each individual port. Select the port that you wish to display statistics for.

To display the **Port Errors**:

- 1. Choose Monitor from the main menu.
- 2. Choose Port Statistics from the Monitor menu.
- 3. Choose Errors from the Port Statistics menu.

Choose Table from the Errors menu. The Port Errors table will be displayed.

DGS-3204 Management

Na	rve:	D 0/5-3294	IPAddress	172.16.	130.77	4
Opt	neć.	05:28:49 pm 10/01.	Tarpet:	Port 2		samples
den	Object	t Nameo	Total	Rate /s	Avg	5 sec 🇘
	ORCI	Error	0	ü	0 🔺	Poli interval
	Over:	size Frames	0	a	0	Reset
	Frage	tients	0	0	0	
	Jabba	ল	0	0	0	Pause
	Late	Collision	0	0	0	
	Dropp	ped Franes	0	0	0	Resume
	Unde	rsize Frenes	0	0	0	
	Collin	ions	0	0	0	
	-					
	-					
	-					
5						
	4				- F 4	1
						1

Choose Curve from the Errors menu. The Port Statistics Errors Line Curve will be displayed.

🗮 Port S	Statistics Errors Line	e Curve			_ 1	٦×
Name:	003-3294	IPAddress:	172.90.133.77	Rate:	6 280	÷.
Opened:	05.02:01 pre 10/01/19	Tarpet:	Pot 2	Dur	8:20 m	
387 T				÷ 1000	Brror	
195 -				Arg	0.0	
130				Peak III Picat	: 0 0 : 05:32:42 p	-
66				T	_	_
0		da da			Pause	
CNC Em	or 🚽 Oversize Fri 🚽	Prognerts	m sison su Titter	n T	Start	
		05 22 21 1	0 0000000		Close	

Choose Table from the Errors menu. The Port Errors table will be displayed.

atte:	009-3294	IPAddrecs:	172.10.132.77	Fate:	6 390	1
iened:	08.0715 pm 1040010	a Tarpet:	Pott 2			
5° T				A		
6				• <u>100</u>	1 E I C I	2
0 +				Peak	0 År	

#### Packet Analysis

This display permits you to observe the frequency that different types of packets arrive at an individual port. Select the port that you wish to display observe.

To display the **Packet Analysis**:

- 1. Choose Monitor from the main menu.
- 2. Choose Port Statistics from the Monitor menu.
- 3. Choose Packet Analysis from the Port Statistics menu.
- 4. Choose Table from the Packet Analysis menu. The Packet Analysis table will be displayed.

DGS-3204 Management

	Name:	DES-	3204		IPAddr	ess:	172.16.	133.77		39
C	Opened:	06:51	:07 pm 10/06/19	99	Targe	et:	Port 2			samples
index	Object Na	ames	Total	Rate /s	Avg Rate /s	Peak R	ate /s	Peak at		1 sec 🌲
1	64		256456	6	8	18		06:51:56 pm		Poll Interval
2	65 - 127		137692	8	4	8		06:51:14 pm		Reset
3	128 - 255	5	251024	2	5	66		06:52:10 pm		
4	256 - 511	1	11848	3	1	8		06:52:10 pm	1	Pause
6	512 - 102	23	734	0	0	0				
6	1024 - 15	518	352	0	0	0				Resume
7	Multicast	Rx	290414	4	3	17		06:52:08 pm	1	line second
8	Multicast	Tx	0	0	0	0				
9	Broadcas	st R×	349061	10	14	78		06:52:10 pm		
10	Broadcas	stT×	21	0	0	0				
11										
12										
13										
14										
15										
	•							•	-	

Choose Curve from the Packet Analysis menu. The Port Statistics Packet Analysis Line Curve will be displayed.

Port S	tatistics Packet An	alysis Line	Curve		_ 🗆 🗙
Name:	005-3294	IPAddress:	172.10.133.77	Fate	6 sec 🚔
Openedt	00.50.25 pm 10.03710	Tarpet:	Pot 2	Dur	8:20 m 🛱
387 T			1	AL 121	-
195				Ag	: 80
130				Peal E Peal	k: 8 0 s: 95:58:29 pm
66				T	
					Pause
8:0	n 1:23 n 2:46 n w: 58 - 127 w:	4:10 m 6:00 m	n 1.55 n 0:25	m i	Start
		6 astra	m 10001000		Close

Choose Bar from the Packet Analysis menu. The Port Statistics Packet Analysis Bar Graph will be displayed.

DGS-3204 Management

			172.30.122.77	Fate:	6 390 📮
ened:	08.57:58 pm 10.00118	Tarpet:	Pott 2	1	
r					
s				64	
				Page:	8 G 7 G
				1 2.4	90:57:55 pm
1.04	AvoReak Val AvoReak	Vali Avg Peak	Val Avg Reak		Daura
	AvoReak Val AvoReak	Val Avg Reak	Val Arg Reak		Daura

#### **Reset Menu Button**

Resetting the switch will restart the switch using any new configuration settings that have been saved. It also resets all counters and tables.

DGS-3204 Gigabit Switch DGE-sean, a, 1	

### Save Changes

When configuration settings are changed using the Apply button in the various windows, the changes will take effect until the switch is reset or powered off. Using the Save Changes feature writes the settings onto flash memory in the switch thereby becoming the new default settings. Settings stored in flash memory are impervious to system resets or loss of power.

To save changes,

- 1. Click on the **Reset** menu button.
- 2. Select Save Changes from the drop-down menu.

DGS-3204 Management

lame	DES-3204
9 Address	172.16.133.77
aves all con	figuration settings changed
uring this se	ssion to the flash memory
f the switch.	

Click Save to save all changes made to configuration settings in the switch.

#### Reset

The management module allows you to reset the switch remotely. Doing a reset is equivalent to turning the switch off and on again, which resets all statistic counters and restores settings to the values stored in flash memory.

To perform a reset,

**1.** Click on the **Reset** menu button.

2. Choose **Reset** from the drop-down menu.

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Name	DES-3204
IP Address	172.16.133.77
Resetting the	e switch will cause it to
revert to previ	iously saved settings.
To use settin	gs changed during this
session use	the Save Changes option
hoforo rocott	ing the switch.

Click **Reset** to initiate a system reset.

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