



User Manual



Niveo NGS18T16

16 10/100/1000BaseT(X) UTP/SFP combo ports and

2 Gigabit SFP Open Slots Management Switch

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 in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. It may cause harmful interference to radio communications if the equipment is not installed and used in accordance with the instructions. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

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.

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Introduction

Product Overview

This switch is a Management Switch equipped with 16 10/100/1000BaseT(X) UTP/SFP combo ports + 2 Gigabit SFP Open Slots. It is designed for easy installation and high performance in an environment where traffic is on the network and the number of users increased continuously. The compact rigid 19" rack-mount size is specifically designed for small to medium workgroups. It provides smooth network migration and is easy to upgrade the network capacity.

In addition, the switch features comprehensive and useful function such as QoS (Quality of Service), Spanning Tree, VLAN, Port Trunking, Bandwidth Control, Port Security, SNMP, IGMP Snooping capability via the intelligent software. It is suitable for both metro-LAN and office application.

Web Management Features

- Port Management
Port Mirroring
Bandwidth Control
Broadcast Strom Control
- VLAN Setting
Port-based/ Tag-based
- Trunking
Aggregation / LACP
- QoS Setting
802.1p/DSCP
- Spanning tree
STP/RSTP
- Security Setting
802.1X /IP Filter/SNMP
- IGMP Snooping

Specifications

- Standard
IEEE 802.3 10BaseT
IEEE 802.3u 100BaseTX
IEEE 802.ab 1000BaseT

IEEE 802.3z 1000BaseSX/LX
IEEE 802.3x Flow Control
IEEE 802.1x Port-based Network Access Control
IEEE 802.1Q VLAN Tagging
IEEE 802.3ad Port Aggregation
IEEE 802.1d Spanning tree protocol
IEEE 802.1w Rapid Spanning tree protocol
IEEE 802.1p Class of service, Priority Protocols

➤ Number of Port

16 10/100/1000BaseT(X) UTP/SFP combo ports + 2 Gigabit SFP Open Slots

Mechanical

➤ LED Indicator

Per Port: LINK/ ACT, 1000

Per Unit: Power

➤ Power Input: 100~240V/AC, 50~60HZ

➤ Product Dimensions/ Weight

44 x 440 x 220 mm (H x W xD) / 3kg

Performance

➤ MAC Address: 8K

➤ Buffer Memory: 500K Bytes

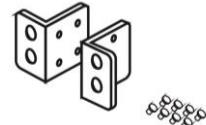
➤ Jumbo Frames: 9.6K

➤ Transmission Method: Store and Forward

Package Contents

Before you start to install this switch, please verify your package that contains the following items:

- One Gigabit Ethernet Switch
- One Power Cord
- CD : User Manual
- Rack-mount kit



Hardware Description

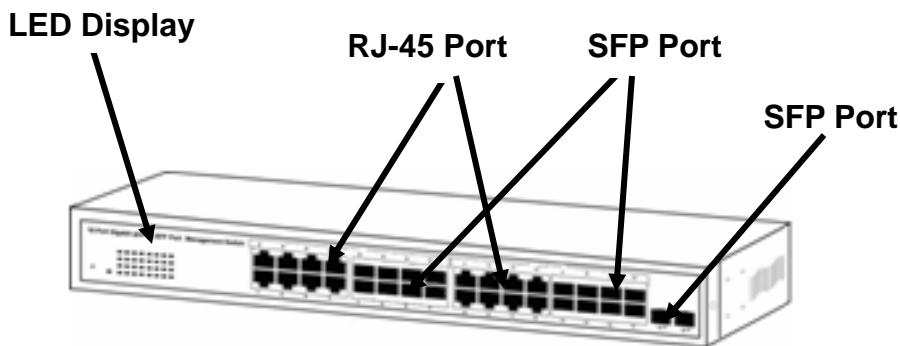
This part primarily presents hardware of the web-smart switch, physical dimensions and functional overview would be described.

Physical Dimensions/ Weight

44 × 440 × 220 mm (H × W × D) /3kg

Front Panel

The front Panel of the web-smart Switch consists of 16 10/100/1000BaseT(X) UTP/SFP combo ports + 2 Gigabit SFP Open Slots. All of LED Indicators are also located on the front panel.

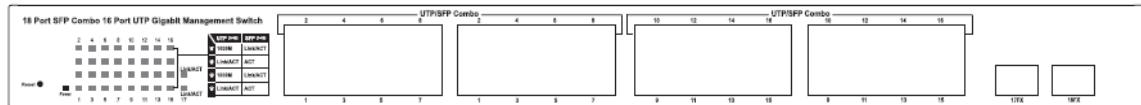


LED Indicators

All of LED Indicators present real-time information of systematic operation status. The following table provides descriptions of LED status and their meaning.

Table 1-1 LED Indicators

LED		Status	Description
Power		On	Power on
		off	Power off
UTP (1-16)	1000	On	Port is linked to 1000M
		Off	Port isn't linked to 1000M
	Link/ACT	On	Link
		Flashing	Data activating
SFP (1-18)	Link/ACT (1-18)	On	Link
		Flashing	Data activating
	ACT (1-16)	On	Link
		Flashing	Data activating



Rear Panel

The 3-pronged power plug is placed at the rear panel which is on the right side of the switch shown as below.



Hardware Installation

Set the switch on a large flat space with a power socket close by. The flat space should be clean, smooth, level and sturdy. Make sure there is enough clearance around the switch to allow attachment of cables, power cord and allow air circulation. The last, use twisted pair cable to connect this switch to your PC then user could start to operate the switch.

Software Description

This part instructs user how to set up and manage the switch through the web user interface. Please follow the description to understand the procedure.

At the first, open the web browser, and go to 192.168.2.1 site then the user will see the login screen. Key in the password to pass the authentication then clicks the **Apply**. The login process is completed and comes out the sign “Password successfully entered”.

Login

Password: admin

Please enter password to login

Password:	<input type="password"/>	
-----------	--------------------------	--

Apply

Figure 1-1

After the user login, the right side of website shows all functions as Fig. 1-2.

Configuration

- [System](#)
- [Ports](#)
- [VLANs](#)
- [Aggregation](#)
- [LACP](#)
- [RSTP](#)
- [802.1X](#)
- [IGMP Snooping](#)
- [Mirroring](#)
- [Quality of Service](#)
- [Filter](#)
- [Rate Limit](#)
- [Storm Control](#)

Monitoring

- [Statistics Overview](#)
- [Detailed Statistics](#)
- [LACP Status](#)
- [RSTP Status](#)
- [IGMP Status](#)
- [VeriPHY](#)
- [Ping](#)

Maintenance

- [Warm Restart](#)
- [Factory Default](#)
- [Software Upload](#)
- [Configuration File](#)
- [Transfer](#)
- [Logout](#)

Figure 1-2

Configuration

System

System Configuration

This page shows system configuration information. User can configure lots of information as below:

System Configuration

MAC Address	00-03-ce-07-3a-5c
S/W Version	G18 V110516
H/W Version	1.0
Temperature	0 °C
Active IP Address	192.168.2.1
Active Subnet Mask	255.255.255.0
Active Gateway	192.168.2.254
DHCP Server	0.0.0.0
Lease Time Left	0 secs

DHCP Enabled	<input type="checkbox"/>
Fallback IP Address	192.168.2.1
Fallback Subnet Mask	255.255.255.0
Fallback Gateway	192.168.2.254
Management VLAN	1
Name	
Password	
Inactivity Timeout (secs)	0
SNMP enabled	<input checked="" type="checkbox"/>
SNMP Trap destination	0.0.0.0
SNMP Read Community	public
SNMP Write Community	private
SNMP Trap Community	public

Apply **Refresh**

Figure 2-1

- MAC Address: Displays the unique hardware address assigned by manufacturer (default).
- S/W Version: Displays the switch's firmware version.
- H/W Version: Displays the switch's Hardware version.
- DHCP Enabled: Click the box to enable DHCP
- Fallback IP address: Manually assign the IP address that the network is using. The default IP is 192.168.2.1
- Fallback Subnet Mask: Assign the subnet mask to the IP address
- Fallback Gateway: Assign the network gateway for industrial switch. The default gateway is 0.0.0.0.

- Management VLAN: ID of a configured VLAN (1-4094) through which you can manage the switch. By default, all ports on the switch are members of VLAN 1. However, if the management VLAN is changed, the management station must be attached to a port belonging to this VLAN.
- Name: Type in the new user name (The default value is ‘admin’).
- Password: Type in the new password (The default value is ‘admin’).
- SNMP Enabled: Enables or disables SNMP on the switch. Supports SNMP version 1and 2c management clients.
- SNMP Trap Destination: IP address of the trap manager to receive notification messages from this switch. Traps indicating status changes are issued by the switch to specified trap managers. You must specify trap managers so that key events are reported by this switch to your management station.
- SNMP Read Community: A community string that acts like a password and permits access to the SNMP database on this switch.
- SNMP Trap Community: Community string sent with the notification operation.

Ports

Port Security ensures access to a switch port based on MAC address, limits the total number of devices from using a switch port, and protects against MAC flooding attacks.

Port Configuration

In Port Configuration, you can set and view the operation mode for each port.

- Enable Jumbo Frames: This switch provides more efficient throughput for large sequential data transfers by supporting jumbo frames on Gigabit Ethernet ports up to 9216 bytes. Compared to standard Ethernet frames that run only up to 1.5 KB, using jumbo frames significantly reduces the per-packet overhead required to process protocol encapsulation fields.
- Power Saving Mode: Adjusts the power provided to ports based on the length of the cable used to connect to other devices. Only sufficient power is used to maintain connection requirements.
- Mode: allow user to manually set the port speed such as Auto, 10 half, 10 Full, 100 Half, 100 Full, 1000 Full or Disabled. User may press Apply button to complete the configuration procedure.



VLAN

A Virtual LAN (VLAN) is a logical network grouping that limits the broadcast domain, which would allow you to isolate network traffic, so only the members of the same VLAN will receive traffic from the ones of the same VLAN. Basically, creating a VLAN from a switch is logically equivalent of reconnecting a group of network devices to another Layer 2 switch. However, all the network devices are still plugged into the same switch physically.

Port Segmentation (VLAN) Configuration

- VLAN ID: ID of configured VLAN (1-4094, no leading zeroes).
- VLAN Configuration List: Lists all the current VLAN groups created for this system. Up to 16 VLAN groups can be defined. VLAN 1 is the default untagged VLAN.

Port Segmentation (VLAN) Configuration

Add a VLAN

VLAN ID	<input type="text"/>
---------	----------------------

VLAN Configuration List

No VLANs defined.

Figure 2-3

Aggregation

Port trunk allows multiple links to be bundled together and act as a single physical link for increased throughput. It provides load balancing, and redundancy of links in a switched inter-network. Actually, the link does not have an inherent total bandwidth equal to the sum of its component physical links. Traffic in a trunk is distributed across an individual link within the trunk in a deterministic method that called a hash algorithm. The hash algorithm automatically applies load balancing to the ports in the trunk. A port failure within the trunk group causes the network traffic to be directed to the remaining ports. Load balancing is maintained whenever a link in a trunk is lost or returned to service.

Aggregation / Trunking Configuration

To assign a port to a trunk, click the required trunk number, then click Apply.

Aggregation/Trunking Configuration

Group\Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Normal	<input checked="" type="radio"/>																	
Group 1	<input type="radio"/>	<input type="radio"/>																
Group 2																		
Group 3																		
Group 4																		
Group 5																		
Group 6																		
Group 7																		
Group 8																		

Figure 2-4

LACP

IEEE 802.3ad Link Aggregation Control Protocol (LACP) increases bandwidth by automatically aggregating several physical links together as a logical trunk and providing load balancing and fault tolerance for uplink connections.

LACP Port Configuration

- Port: The port number.
- Enabled: Enables LACP on the associated port.
- Key Value: Configures a port's LACP administration key. The port administrative key must be set to the same value for ports that belong to the same link aggregation group (LAG). If this administrative key is not set when an LAG is formed (i.e., it has the null value of 0), this key will automatically be set to the same value as that used by the LAG.

LACP Port Configuration

Port	Protocol Enabled	Key Value
1	<input type="checkbox"/>	auto
2	<input type="checkbox"/>	auto
3	<input type="checkbox"/>	auto
4	<input type="checkbox"/>	auto
5	<input type="checkbox"/>	auto
6	<input type="checkbox"/>	auto
7	<input type="checkbox"/>	auto
8	<input type="checkbox"/>	auto
9	<input type="checkbox"/>	auto
10	<input type="checkbox"/>	auto
11	<input type="checkbox"/>	auto
12	<input type="checkbox"/>	auto
13	<input type="checkbox"/>	auto
14	<input type="checkbox"/>	auto
15	<input type="checkbox"/>	auto
16	<input type="checkbox"/>	auto
17	<input type="checkbox"/>	auto
18	<input type="checkbox"/>	auto

Figure 2-5

RSTP

IEEE 802.1w Rapid Spanning tree protocol (RSTP) provides a loop-free network and redundant links to the core network with rapid convergence to ensure faster

recovery from failed links, enhancing overall network stability and reliability.

RSTP System Configuration

- System Priority: This parameter configures the spanning tree priority globally for this switch. The device with the highest priority becomes the STP root device. However, if all devices have the same priority, the device with the lowest MAC address will then become the root device. Number between 0 - 61440 in increments of 4096. Therefore, there are 16 distinct values.
- Hello Time: Interval (in seconds) at which the root device transmits a configuration message (BPDU frame). Number between 1-10 (default is 2).
- Max Age – The maximum time (in seconds) a device can wait without receiving a configuration message before attempting to reconfigure. That also means the maximum life time for a BPDU frame. Number between 6-40 (default is 20).
- Forward Delay: The maximum time (in seconds) the root device will wait before changing states (i.e., discarding to learning to forwarding). Number between 4 – 30 (default is 15).
- Force Version: Set and show the RSTP protocol to use. Normal - use RSTP, Compatible - compatible with STP.

RSTP System Configuration

System Priority	32768
Hello Time	2
Max Age	20
Forward Delay	15
Force version	Normal

Figure 2-6-1

RSTP Port Configuration

- Port: The port ID. It cannot be changed. Aggregations mean any configured trunk group.
- Enabled: Click on the tick-box to enable/disable the RSTP protocol for the port.
- Edge: Expect the port to be an edge port (linking to an end station) or a link to another STP device.
- Path Cost: This parameter is used by the STP to determine the best path between devices. Therefore, lower values should be assigned to ports attached to faster media, and higher values assigned to ports with slower media. Set the RSTP path cost on the port. Number between 0 - 200000000. 0 means auto generated path cost.

RSTP Port Configuration

Port	Protocol Enabled	Edge	Path Cost
Aggregations	<input type="checkbox"/>		
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	auto
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	auto
3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	auto
4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	auto
5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	auto
6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	auto
7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	auto
8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	auto
9	<input type="checkbox"/>	<input checked="" type="checkbox"/>	auto
10	<input type="checkbox"/>	<input checked="" type="checkbox"/>	auto
11	<input type="checkbox"/>	<input checked="" type="checkbox"/>	auto
12	<input type="checkbox"/>	<input checked="" type="checkbox"/>	auto
13	<input type="checkbox"/>	<input checked="" type="checkbox"/>	auto
14	<input type="checkbox"/>	<input checked="" type="checkbox"/>	auto
15	<input type="checkbox"/>	<input checked="" type="checkbox"/>	auto
16	<input type="checkbox"/>	<input checked="" type="checkbox"/>	auto
17	<input type="checkbox"/>	<input checked="" type="checkbox"/>	auto
18	<input type="checkbox"/>	<input checked="" type="checkbox"/>	auto

Figure 2-6-2

802.1X

802.1X provides port-based authentication, which involves communications between a supplicant, authenticator, and authentication server. Port refers to a single point of attachment to the LAN infrastructure. The supplicant is often software on a client device, such as a laptop; the authenticator is a network device, such as an Ethernet switch or wireless access point; and the authentication server is typically a host running software supporting the RADIUS and EAP protocols.

Port-based Network access control (PNAC) ensures all users are authorized before being granted access to the network. User authentication is carried out using any standard-based RADIUS server.

802.1X Configuration

- Mode: Enables or disables 802.1X globally for all ports on the switch. The 802.1X protocol must be enabled globally for the switch before the port settings are active. (Default: Disabled)
- RADIUS IP: Address of authentication server.
- RADIUS UDP Port: Network port of authentication server used for authentication messages. (Range: 1-65535; Default: 1812)
- RADIUS Secret: Sets the text string used for encryption between the switch and the RADIUS server. This key is used to authenticate logon access for the client. Do not use blank spaces in the string. (Maximum length: 48 characters).

802.1X Configuration

Mode:	Disabled
RADIUS IP	0.0.0.0
RADIUS UDP Port	1812
RADIUS Secret	

Port	Admin State	Port State	Re-authenticate	Force Reinitialize	Statistics
1	Force Authorized	802.1X Disabled	Re-authenticate	Force Reinitialize	Statistics
2	Force Authorized	802.1X Disabled	Re-authenticate	Force Reinitialize	Statistics
3	Force Authorized	802.1X Disabled	Re-authenticate	Force Reinitialize	Statistics
4	Force Authorized	802.1X Disabled	Re-authenticate	Force Reinitialize	Statistics
5	Force Authorized	802.1X Disabled	Re-authenticate	Force Reinitialize	Statistics
6	Force Authorized	802.1X Disabled	Re-authenticate	Force Reinitialize	Statistics
7	Force Authorized	802.1X Disabled	Re-authenticate	Force Reinitialize	Statistics
8	Force Authorized	802.1X Disabled	Re-authenticate	Force Reinitialize	Statistics
9	Force Authorized	802.1X Disabled	Re-authenticate	Force Reinitialize	Statistics
10	Force Authorized	802.1X Disabled	Re-authenticate	Force Reinitialize	Statistics
11	Force Authorized	802.1X Disabled	Re-authenticate	Force Reinitialize	Statistics
12	Force Authorized	802.1X Disabled	Re-authenticate	Force Reinitialize	Statistics

Figure 2-7

IGMP Snooping

IGMP Snooping is the process of listening to IGMP network traffic. IGMP Snooping, as implied by the name, is a feature that allows a layer 2 switch to “listen in” on the IGMP conversation between hosts and routers by processing the layer3 IGMP packets sent in a multicast network.

When IGMP Snooping is enabled in a switch, it analyzes all IGMP packets between hosts connected to the switch and multicast routers in the network. When a switch hears an IGMP report from a host for a given multicast group, the

switch adds the host's port number to the multicast list for that group. Moreover, when the switch hears an IGMP Leave, it removes the host's port from the table entry.

Prevents flooding of IP multicast traffic, and limits bandwidth intensive video traffic to only the subscribers.

IGMP Configuration

- IGMP Enabled: When enabled, the switch will monitor network traffic to determine which hosts want to receive multicast traffic.
- Router Ports: Set if ports are connecting to the IGMP administrative routers.
- Unregistered IPMC Flooding enabled: Set the forwarding mode for unregistered (not-joined) IP multicast traffic. The traffic will flood when enabled, and forward to router-ports only when disabled.
- IGMP Snooping Enabled: When enabled, the port will monitor network traffic to determine which hosts want to receive the multicast traffic.
- IGMP Querying Enabled: When enabled, the port can serve as the Querier, which is responsible for asking hosts if they want to receive multicast traffic.

IGMP Configuration

IGMP Enabled	<input type="checkbox"/>						
Router Ports	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input checked="" type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input checked="" type="checkbox"/> 17 <input type="checkbox"/> 18						
Unregistered IPMC Flooding enabled	<input checked="" type="checkbox"/>						
<table border="1"><thead><tr><th>VLAN ID</th><th>IGMP Snooping Enabled</th><th>IGMP Querying Enabled</th></tr></thead><tbody><tr><td>1</td><td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr></tbody></table>		VLAN ID	IGMP Snooping Enabled	IGMP Querying Enabled	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
VLAN ID	IGMP Snooping Enabled	IGMP Querying Enabled					
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Apply Refresh							

Figure 2-8

Mirroring

Port Mirroring is used on a network switch to send a copy of network packets seen on one switch port (or an entire VLAN) to a network monitoring connection on another switch port. This is commonly used for network appliances that require monitoring of network traffic, such as an intrusion-detection system.

Mirroring Configuration

- Port to Mirror to: The port that will “duplicate” or “mirror” the traffic on the source port. Only incoming packets can be mirrored. Packets will be dropped when the available egress bandwidth is less than ingress bandwidth.
- Ports to Mirror: Select the ports that you want to mirror from this section of the page. A port will be mirrored when the “Mirroring Enabled” check-box is checked.

Mirroring Configuration

Port	Mirror Source
1	<input type="checkbox"/>
2	<input type="checkbox"/>
3	<input type="checkbox"/>
4	<input type="checkbox"/>
5	<input type="checkbox"/>
6	<input type="checkbox"/>
7	<input type="checkbox"/>
8	<input type="checkbox"/>
9	<input type="checkbox"/>
10	<input type="checkbox"/>
11	<input type="checkbox"/>
12	<input type="checkbox"/>
13	<input type="checkbox"/>
14	<input type="checkbox"/>
15	<input type="checkbox"/>
16	<input type="checkbox"/>
17	<input type="checkbox"/>
18	<input type="checkbox"/>

Mirror Port	<input type="button" value="1"/> <input type="button" value="▼"/>
-------------	---

Figure 2-9

Quality of Service (QoS)

In QoS Mode, select QoS Disabled, 802.1p, or DSCP to configure the related parameters.

QoS Configuration

- Strict: Services the egress queues in sequential order, transmitting all traffic in the higher priority queues before servicing lower priority queues.
- WRR: Weighted Round-Robin shares bandwidth at the egress ports by using scheduling weights with default values of 1, 2, 4, 8 for queues 0 through 7, respectively. (This is the default selection.)

※Note: WRR can only be selected if Jumbo Frame mode is disabled on the Port Configuration page

QoS Configuration

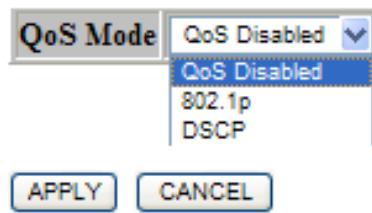


Figure 2-10-1

QoS Mode: QoS Disabled

When the QoS Mode is set to QoS Disabled, the following table is displayed.

QoS Mode: 802.1p

Packets are prioritized using the 802.1p field in the VLAN tag. This field is three bits long, representing the values 0 - 7. When the QoS Mode is set to 802.1p, the 802.1p Configuration table appears, allowing you to map each of the eight 802.1p values to a local priority queue (low, normal, medium or high). The default settings are shown below.

When the QoS Mode is set to 802.1p, the 802.1p Configuration table is displayed as shown below.

QoS Configuration



802.1p Configuration							
802.1p Value	Priority	802.1p Value	Priority	802.1p Value	Priority	802.1p Value	Priority
0	normal	1	low	2	low	3	normal
4	medium	5	medium	6	high	7	high



Figure 2-10-2

QoS Mode: DSCP

DSCP: Packets are prioritized using the DSCP (Differentiated Services Code Point) value. The Differentiated Services Code Point (DSCP) is a six-bit field that is contained within an IP (TCP or UDP) header. The six bits allow the DSCP field to take any value in the range 0 - 63. When QoS Mode is set to DSCP, the DSCP Configuration table is displayed, allowing you to map each of the DSCP values to a hardware output queue (low, normal, medium or high). The default settings map

all DSCP values to the high priority egress queue.

User can use the Prioritize Traffic drop-down list to quickly set values into the DSCP Configuration table which is a common priority queue. Use Custom if you want to set each value individually.

When the QoS Mode is set to DSCP, the DSCP Configuration table is displayed as shown below.

QoS Configuration

QoS Mode	DSCP
Prioritize Traffic	All High Priority
Custom All Low Priority All Normal Priority All Medium Priority	
DSCP Configuration	
DSCP Value(0..63)	Priority
	high
All others	high

APPLY CANCEL

Figure 2-10-3

Filter Configuration

To let administrators easily set management source IP addresses to the ports on the switch. Press <Apply> button to make change take effect.

Port	Source IP Filter			DHCP Server Allowed
	Mode	IP Address	IP Mask	
1	Disabled			<input checked="" type="checkbox"/>
2	Disabled			<input checked="" type="checkbox"/>
3	Disabled			<input checked="" type="checkbox"/>
4	Disabled			<input checked="" type="checkbox"/>
5	Disabled			<input checked="" type="checkbox"/>
6	Disabled			<input checked="" type="checkbox"/>
7	Disabled			<input checked="" type="checkbox"/>
8	Disabled			<input checked="" type="checkbox"/>
9	Disabled			<input checked="" type="checkbox"/>
10	Disabled			<input checked="" type="checkbox"/>
11	Disabled			<input checked="" type="checkbox"/>
12	Disabled			<input checked="" type="checkbox"/>
13	Disabled			<input checked="" type="checkbox"/>
14	Disabled			<input checked="" type="checkbox"/>
15	Disabled			<input checked="" type="checkbox"/>
16	Disabled			<input checked="" type="checkbox"/>
17	Disabled			<input checked="" type="checkbox"/>
18	Disabled			<input checked="" type="checkbox"/>
	<input type="button" value="Disabled"/> <input type="button" value="Static"/> <input type="button" value="DHCP"/>			
	<input type="button" value="Apply"/> <input type="button" value="Refresh"/>			

Figure 2-11

Source IP Filter:

- Mode: There are three types of mode in this drop-down menu. Default is disabled.

Disabled: Allow all IP network addresses to login to this switch and manage it.

Static: Only the configured IP network address (IP with IP mask) is allowed to login to this switch and manage it. And, only those received IP packets containing the configured source network address are not filtered and can be forwarded by the switch.

Note: *In this mode, the received packets are filtered except the IP packets with configured source network address.*

For examples:

1. **IP Address: 192.168.3.2, IP Mask: 255.255.255.0 Network address 192.168.3.x (254 IP Addresses) can be forwarded on the port.**
2. **IP Address: 192.168.3.2, IP Mask: 255.255.255.255 Only IP 192.168.3.2 can be forwarded on the port.**

DHCP: Allow the IP Address got from DHCP server can login to this switch and manage it. And only the IP packets contained the source IP are allowed to forward through the switch.

- IP Address: Setting up the IP Address, it can be one IP Address or a LAN.
- IP Mask: Setting up the IP Subnet Mask related with the IP Address.
- DHCP Server Allowed: Just tick the check box under the port x to allow the DHCP Server on this port and valid port is Port 1~18.

Rate Limit Configuration

Select the “Port no.” which you want to configure the mode of the speed.

Policer : Set up the limit of Ingress bandwidth for the port you choose. Incoming traffic will be discarded if the rate exceeds the value you set up in Data Rate field. Pause frames are also generated if flow control is enabled.
The format of the packet limits to unicast, broadcast and multicast. Valid value of Port 1~18 ranges is from 128~3968 kbps. Default: No Limit

Shaper: Set up the limit of Egress bandwidth for the port you choose. Outgoing traffic will be discarded if the rate exceeds the value you set up in Data Rate field. Pause frames are also generated if flow control is enabled.
The format of the packet limits to unicast, broadcast and multicast. Valid value of Port 1~18 ranges is from 128~3968 kbps. Default: No Limit

Rate Limit Configuration

Port	Policer	Shaper
1	No Limit	No Limit
2	No Limit	No Limit
3	No Limit	No Limit
4	No Limit	No Limit
5	No Limit	No Limit
6	No Limit	No Limit
7	No Limit	No Limit
8	No Limit	No Limit
9	No Limit	No Limit
10	No Limit	No Limit
11	No Limit	No Limit
12	No Limit	No Limit
13	No Limit	No Limit
14	No Limit	No Limit
15	No Limit	No Limit
16	No Limit	No Limit
17	No Limit	No Limit
18	No Limit	No Limit

Figure 2-12

Storm Control

Broadcast storms may occur when a device on your network is malfunctioning, or if application programs are not well designed or properly configured. If there is too much broadcast traffic on your network, performance can be severely degraded or everything can come to complete halt.

You can protect your network from broadcast storms by setting a threshold for broadcast traffic for each port. Any broadcast packets exceeding the specified threshold will then be dropped.

Storm Control Configuration

Storm Control is used to block unnecessary multicast and broadcast frames that reduce switch's performance. When the function is enabled and Storm Control rate settings are detected as exceeded, the unnecessary frames would be dropped. There are five types of traffic which can be rate limited, including

ICMP Rate, Learn Frames Rate, Broadcast Rate, Multicast Rate and Flooded unicast Rate. The setting range is 1k~32768k per second. Default of four Rates is No Limit.

Storm Control Configuration

Storm Control Number of frames per second	
ICMP Rate	No Limit <input type="button" value="▼"/>
Learn Frames Rate	No Limit <input type="button" value="▼"/>
Broadcast Rate	No Limit <input type="button" value="▼"/>
Multicast Rate	No Limit <input type="button" value="▼"/>
Flooded unicast Rate	No Limit <input type="button" value="▼"/>

1k
2k
4k
8k
16k
32k
64k
128k
256k
512k
1024k
2048k
4096k
8192k
16384k
32768k
No Limit

Figure 2-13

After completing the function's setting, press <Apply> button to have this function taken effect.

Monitoring

Statistics Overview

Statistic Overview for all ports

User can mirror traffic from any source port to a target port for real-time

analysis the following figures shows clearly the statistics overview.

Statistics Overview for all ports							
Port	Tx Bytes	Tx Frames	Rx Bytes	Rx Frames	Tx Errors	Rx Errors	
1	0	0	0	0	0	0	
2	0	0	0	0	0	0	
3	0	0	0	0	0	0	
4	0	0	0	0	0	0	
5	0	0	0	0	0	0	
6	92493	157	27674	234	0	0	
7	0	0	0	0	0	0	
8	0	0	0	0	0	0	
9	0	0	0	0	0	0	
10	0	0	0	0	0	0	
11	0	0	0	0	0	0	
12	0	0	0	0	0	0	
13	0	0	0	0	0	0	
14	0	0	0	0	0	0	
15	0	0	0	0	0	0	
16	0	0	0	0	0	0	
17	0	0	0	0	0	0	
18	0	0	0	0	0	0	

Figure 3-1

Detailed Statistics

Display the detailed counting number of each port's traffic. In the list, the window can show all counter information each port at one time.

Statistics for Port 1														
Receive Total		Transmit Total												
Rx Packets		Tx Packets												
Rx Octets		Tx Octets												
Rx High Priority Packets		- Tx High Priority Packets												
Rx Low Priority Packets		- Tx Low Priority Packets												
Rx Broadcast		- Tx Broadcast												
Rx Multicast		- Tx Multicast												
Rx Broad- and Multicast		0 Tx Broad- and Multicast												
Rx Error Packets		0 Tx Error Packets												
Receive Size Counters					Transmit Size Counters									
Rx 64 Bytes		- Tx 64 Bytes												
Rx 65-127 Bytes		- Tx 65-127 Bytes												
Rx 128-255 Bytes		- Tx 128-255 Bytes												
Rx 256-511 Bytes		- Tx 256-511 Bytes												
Rx 512-1023 Bytes		- Tx 512-1023 Bytes												
Rx 1024+ Bytes		- Tx 1024+ Bytes												
Receive Error Counters					Transmit Error Counters									
Rx CRC/Alignment		- Tx Collisions												
Rx Undersize		- Tx Drops												
Rx Oversize		- Tx Overflow												
Rx Fragments		-												
Rx Jabber		-												
Rx Drops		-												

Figure 3-2

LACP Status

LACP Aggregation Overview

LACP Aggregation Overview

Group/Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Normal	Red	Red	Red	Red	Red	Green	Red											

Legend

Red	Down	Port link down
0	Blocked	Port Blocked by RSTP. Number is Partner port number if other switch has LACP enabled
Yellow	Learning	Port Learning by RSTP
Green	Forwarding	Port link up and forwarding frames
0	Forwarding	Port link up and forwarding by RSTP. Number is Partner port number if other switch has LACP enabled

[Refresh](#)

Figure 3-3-1

- Port: The port number.
- Port Active: Shows if the port is a member of an active LACP group.
- Partner Port Number: A list of the ports attached at the remote end of this LAG link member.
- Operational Port Key: Current operational value of the key used by this LAG.

LACP Port Status

LACP Port Status

Port	Protocol Active	Partner Port Number	Operational Port Key
1	no		
2	no		
3	no		
4	no		
5	no		
6	no		
7	no		
8	no		
9	no		
10	no		
11	no		
12	no		
13	no		
14	no		
15	no		
16	no		
17	no		
18	no		

Figure 3-3-2

RSTP Status

RSTP VLAN Bridge Overview

RSTP VLAN Bridge Overview

VLAN Id	Bridge Id	Hello Time	Max Age	Fwd Delay	Topology	Root Id
1	32769:00-03-ce-07-3a-5d	2	20	15	Steady	This switch is Root!

[Refresh](#)

Figure 3-4-1

- Bridge Id: Show this switch's current bridge priority setting and bridge ID which stands for the MAC address of this switch.
- Hello Time: Interval (in seconds) at which the root device transmits a configuration message.
- Max Age: The maximum time (in seconds) a device can wait without receiving a configuration message before attempting to reconfigure. All device ports (except for designated ports) should receive configuration messages at regular intervals. Any port that ages out STA information (provided in the last configuration message) becomes the designated port for the attached LAN. If it is a root port, a new root port is selected from among the device ports attached to the network.
- Fwd Delay: The maximum time (in seconds) the root device will wait before changing states (i.e., discarding to learning to forwarding). This delay is required because every device must receive information about topology changes before it starts to forward frames. In addition, each port needs time to listen for conflicting information that would make it return to a discarding state; otherwise, temporary data loops might result.
- Topology: Indicates if spanning tree topology is steady or undergoing reconfiguration. (The time required for reconfiguration is extremely short, so no values other than "steady" state are likely to be seen in this field.)
- Root ID: The priority and MAC address of the device in the Spanning Tree that this switch has accepted as the root device. Each port has been connected to the root device.

RSTP Port Status

RSTP Port Status

Port/Group	Vlan Id	Path Cost	Edge Port	P2p Port	Protocol	Port State
Port 1						Non-STP
Port 2						Non-STP
Port 3						Non-STP
Port 4						Non-STP
Port 5						Non-STP
Port 6						Non-STP
Port 7						Non-STP
Port 8						Non-STP
Port 9						Non-STP
Port 10						Non-STP
Port 11						Non-STP
Port 12						Non-STP
Port 13						Non-STP
Port 14						Non-STP
Port 15						Non-STP
Port 16						Non-STP
Port 17						Non-STP
Port 18						Non-STP

Figure 3-4-2

- Port/Group: The number of a port or the ID of a static trunk.
- Path Cost: The cost for a packet to travel from this port to the root in the current Spanning Tree configuration. The slower the media, the higher the cost.
- Edge Port: Shows if this port is functioning as an edge port, either through manual selection (see the RSTP Port Configuration table) or auto-detection. Note that if the switch detects another bridge connected to this port, the manual setting for Edge Port will be overridden and the port will be instead of function as a point-to-point connection.
- P2P Port: Shows if this port is functioning as a Point-to-Point connection to exactly one other bridge. The switch can automatically determine if the interface is attached to a point-to-point link or to shared media. If shared media is detected, the switch will assume that it is connected to two or more bridges.
- Protocol: Shows the spanning tree protocol functioning on this port, either RSTP or STP (that is, STP-compatible mode).

IGMP Status

IGMP Status

IGMP Status shows the IGMP Snooping statistics for the whole switch.

- VLAN ID: VLAN ID number.
- Querier: Show whether Querying is enabled.
- Queries transmitted: Show the number of transmitted Query packets.
- Queries received: Show the number of received Query packets.
- v1 Reports: Show the number of received v1 Report packets.
- v2 Reports: Show the number of received v2 Report packets.
- v3 Reports: Show the number of received v2 Report packets.
- v3 Leave: Show the number of v3 leave packets received.

IGMP Status							
VLAN ID	Querier	Queries transmitted	Queries received	v1 Reports	v2 Reports	v3 Reports	v2 Leaves
12	Active	1	0	0	0	0	0

Figure 3-5

VeriPHY

VeriPHY Cable Diagnostics

User can perform cable diagnostics for all ports or selected ports to diagnose any cable faults (short, open etc..) and feedback a distance to the fault.

- Cable Diagnostics: Cable diagnostics is performed on a per-port basis.
Select the port number from the drop-down list.
- Cable Status: Shows the cable length, operating conditions and isolates a variety of common faults that can occur on Category 5 twisted pair cabling.

VeriPHY Cable Diagnostics

The screenshot shows the VeriPHY Cable Diagnostics software interface. At the top, there is a dropdown menu for 'Port' set to 'Port 1'. Below it is another dropdown menu for 'Mode' with three options: 'Full', 'Anomaly', and 'Anomaly w/o X-pair'. The 'Full' option is currently selected. A blue 'Apply' button is located at the bottom left of this panel. To the right, there is a table titled 'Cable Status' with four rows labeled A, B, C, and D. Each row has columns for 'Pair', 'Length [m]', and 'Status', all of which contain a single dash '-'.

Cable Status		
Pair	Length [m]	Status
A	-	-
B	-	-
C	-	-
D	-	-

Figure 3-6

Ping

This command sends ICMP echo request packets to another node on the network.

Ping Parameters

- Target IP Address: IP address of the host
- Count: Number of packets to send. Four type of number can choose (1, 5, 10 and 20). Default : 1
- Time Out: setting the time period of host will be Ping. Four type of number can choose (1, 5, 10 and 20). Default : 1

Use the ping command to see if another site on the network can be reached.

The following are some results of the **ping** command:

- Normal response: The normal response occurs in one to ten seconds, depending on network traffic.
- Destination does not respond: If the host does not respond, a "timeout" appears in ten seconds.
- Destination unreachable: The gateway for this destination indicates that the destination is unreachable.
- Network or host unreachable: The gateway found no corresponding entry in the route table.

Press <Esc> to stop pinging.

Ping Parameters

Target IP address	<input type="text"/>
Count	<input type="text" value="1"/> <input type="button" value="▼"/>
Time Out (in secs)	<input type="text" value="1"/> <input type="button" value="▼"/>
	1 5 10 30
<input type="button" value="Apply"/>	

Ping Results	
Target IP address	0.0.0.0
Status	Test complete
Received replies	0
Request timeouts	0
Average Response Time (in ms)	0

Figure 3-7

Maintenance

The switch offers many approaches to reboot your switch, such as: power up, hardware reset and software reset. You can press RESET button in the front panel of your switch to reset the device and to retrieve default settings. After upgrading software, you have to reboot the device to have new configuration take effect. The function being discussed here is software reset.

Warm Restart

Press “Yes” button to restart the switch, the reset will be complete when the power lights stop blinking.

Warm Restart

Are you sure you want to perform a Warm Restart?

Figure 4-1

Factory Default

Factory Default provides the function to retrieve default settings and replace current configuration. Except the IP address setting, all settings will be restored to the factory default values when “Factory Default” function is performed. If you want to restore all configurations including the IP address setting to the factory default, please press the “RESET” button on the front panel.



Figure 4-2

Software upload

Select “Upgrade Firmware” from the Tools drop-down list then click on the “Browse” button to select the firmware file. Click the “APPLY” button to upgrade the selected switch firmware file. User can download firmware files for user’s switch from the Support section of your local supplier.

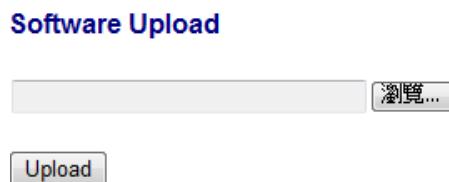


Figure 4-3

Configuration File Transfer

Configuration file transfer allows you to save the current configuration of the switch or restore a previously saved configuration back to the device. Configuration files can be saved to any location on the web management station. To upload the configuration file to save a configuration or click "Download" to restore a configuration. Use the Browse button to choose a file location on the web management station, or to find a saved configuration file.

Configuration Upload

Configuration Download

Figure4-4

Logout

The administrator has the authority to write and access for all parameters governing the onboard agent. User should therefore assign a new administrator password as soon as possible, and store it in a safe place.

Please enter password to login

Password:	<input type="text"/>
-----------	----------------------

Figure 4-5