User Manual

Elinx ESW726 Family

26 Port 19 inch
Managed Rackmount Ethernet Switch

ESW726 Family

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International Headquarters:
707 Dayton Road
Ottawa, IL 61350 USA

Phone (815) 433-5100

Website: **www.bb-elec.com**
Sales e-mail: orders@bb-elec.com
Technical Support: support@bb.elec.com –

European Headquarters

B&B Electronics

Westlink Commercial Park

Oranmore, Co. Galway, Ireland

Phone +353 91-792444
Website: **www.bb-europe.com**
Sales e-mail: sales@bb-europe.com
Technical Support: support@bb-europe.com

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Chapter 1 – Introduction

Overview

B&B Electronics Elinx family of Industrial rack mount Ethernet switches have been designed to meet light Industrial communication requirements.

The ESW726 Managed family offers a variety of Industrial models. The switch configurations range from 26 ports RJ45 copper to RJ45 copper with multi mode, single mode, and or SFP gigabit ports.

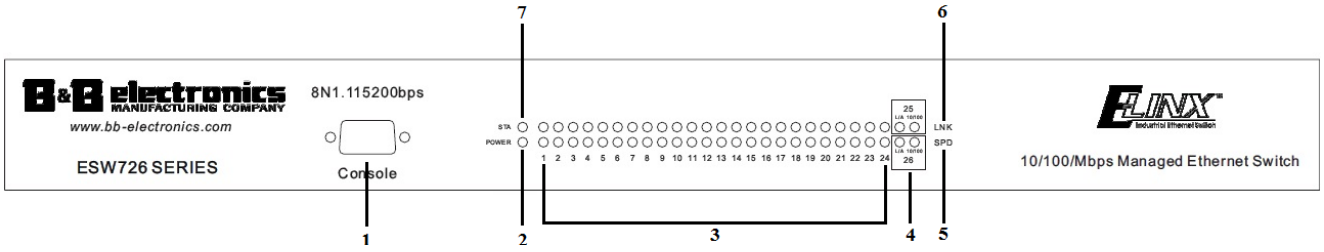
Two ports can be used for network redundancy by implementing our RingOn technology. RingOn has been developed to provide a rapid recovery system for Industrial networks. If any part of the ring disconnects the network communications will automatically be restored by RingOn technology.

All RJ45 copper ports support auto-negotiation, 10/100Mbps data rate, full/half duplex, flow control and auto-MDI/MDIX. The Elinx switches provide advanced management functions such as: RingOn™, VLAN, Trunking, QoS (Quality of Service), IGMP Snooping, Port Rate Control, Port Mirroring, Static Mac Address Forwarding Table, SNMP (Simple Network Management Protocol), Diagnosis, Email/Relay fault warning and field Firmware Update.

Package Check List

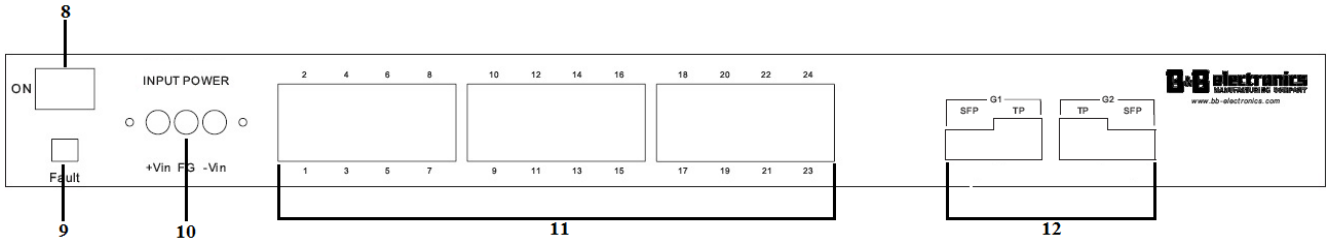
- B&B Managed Switch
- AC Power Cord (AC Models only)
- Serial cable for console port
- Installation Guide
- CD-with User's Manual

Front Panel



1. Console Port
2. Power LED
3. RJ45 LED
4. Fiber, Combo RJ45 / SFP LED
5. Speed
6. Link
7. System Ready

Back Panel

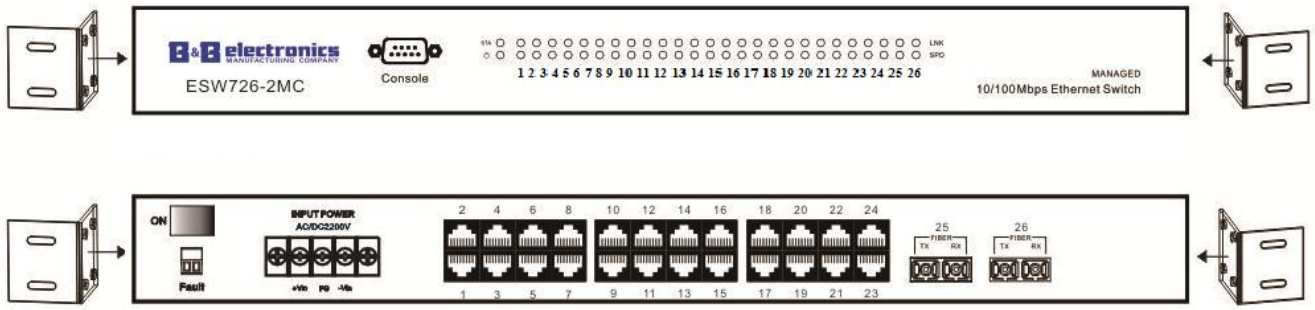


8. On / OFF Switch
9. Fault Relay
10. Power Input
11. RJ45 Port
12. Combo SFP or RJ45 Port

LED Description

LED	Status	Description
PWR	Green	Power Applied
	Off	No power
STA	Green	System Ready
	Off	System down
10/100 Copper Upper LED	Green	100Mbps
	Off	10Mbps
10/100 Copper Lower LED	Green	Link
	Blinking	Activity
	Off	Not connected to network
Fiber LED	Green	Link
	Blinking	Activity
	Off	Not connected to network
10/100/1000 Copper Upper LED	Green	1000Mbps
	Off	10/100Mbps
10/100/1000 Copper Lower LED	Green	Link
	Blinking	Activity
	Off	Not connected to network
SFP LED	Green	1000Mbps
	Blinking	Activity
	Off	Not connected to network

Mounting Options



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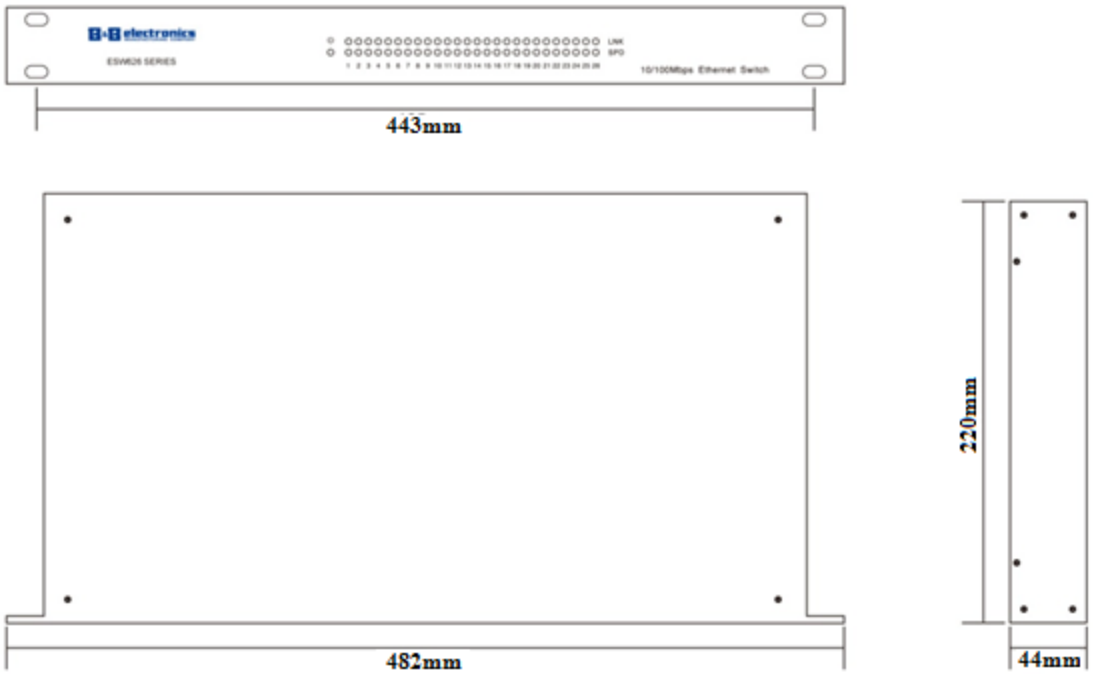
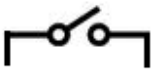
Dimensional Drawing



DC Power Connections

+Vin FG –Vin

Fault Relay



Relay (Normally Open)

Default Settings

Console Port (DB9 Male)

- Serial baud rate: 115200
- Data Bits: 8
- Parity: NONE
- Stop bits: 1
- Flow Control: NONE

Serial Cable Pin out

PC Serial Port DB 9	Console Port DB9
5	1
3	3
2	4

Network Settings

- IP address: 192.168.118.100
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.118.1

Default Security

- User Name: admin
- Password: admin

VLAN

- All Ports are members of VLAN 1 (management VLAN

Ethernet Port Configurations

RJ45 Copper Ports:

- Half Duplex
- Full Duplex
- Auto Negotiation

100Base Fiber Ports:

- Full Duplex

1000Base Copper/Fiber Ports:

- Full Duplex

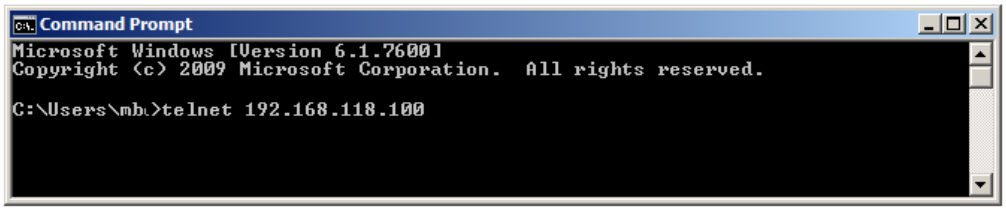
Chapter 2 – Initial Setup / Configuration

The following information will explain how to access the unit for the first time. There are three ways to configure the IP address setting, console mode, telnet, and a web browser.

Telnet Mode

Before the Managed switch is installed the **Telnet Mode** feature can be used to enter network settings. To open a telnet session select the Start button then either open the Command window by selecting the icon or in some operating systems the Run command line can be used to open the Command window by typing cmd and selecting enter.

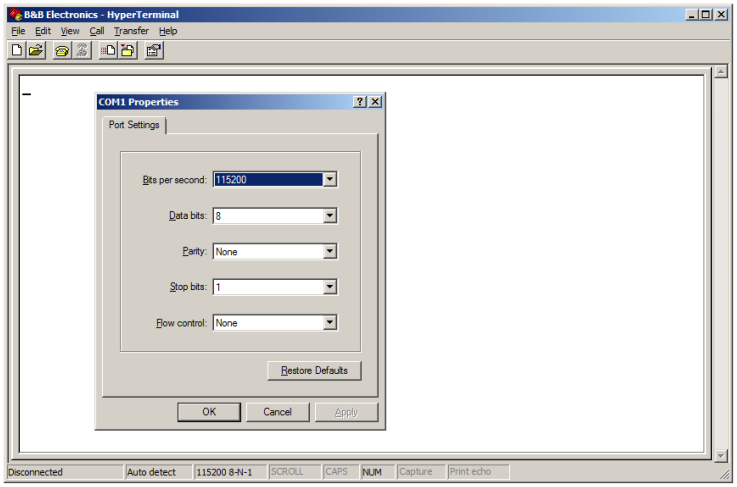
Once the window is opened type telnet then the IP address of the unit as shown below. Default IP address is 192.168.118.100. Select enter and the User Login screen will open. Once the login screen opens follow the instructions listed under the Console mode section on the following page.



Console Mode

Before the Managed switch is installed on a LAN the **Console Mode** feature can be used to change the network settings from the defaults.

Console Mode, allows the configuration of the Managed switch network settings (using an RS-232 connection through the RS232 Console port of the switch) from a PC running a VT100 terminal emulation program such as HyperTerminal. When the serial connection is made and HyperTerminal has opened the Console Mode screen will appear in the program window. The serial port settings must be 8-N-1 at 115200 baud. If Console screen does not appear select Enter.



NOTE:

1. Supplied RS-232 cable must be used. Straight through or cross over will not work.
2. If Console screen does not appear select Enter.

1. Using a VT100 Terminal emulation program (typically HyperTerminal in Windows) open the computer COM port connected to the switch (using supplied RS-232 cable).

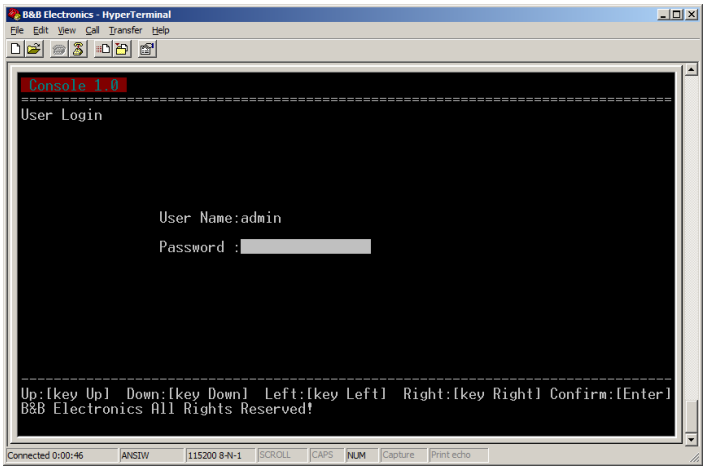
2. In the HyperTerminal Port Settings window set:
   HyperTerminal configuration:
   - Serial baud rate: 115200
   - Data Bits: 8
   - Parity: NONE
   - Stop bits: 1
   - Flow Control: NONE

3. If Console screen does not appear select Enter.

Navigating Console Mode

The Console Login Screen will appear prompting the user for User Name and Password.

Default settings:
- User Name: admin
- Password: admin

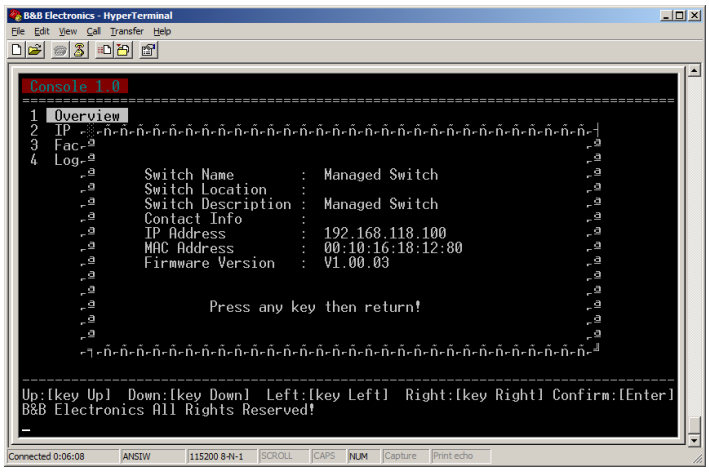


The Console mode screen has 4 configuration options.
1. Overview
2. IP Settings
3. Factory Default
4. Logout

Overview

The Overview page displays the current switch IP address, MAC address, Firmware version, configured name, location, and description.
- Select Enter to view information
- Select Enter to return to main menu

Default settings
- IP address: 192.168.118.100
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.118.1



IP Settings

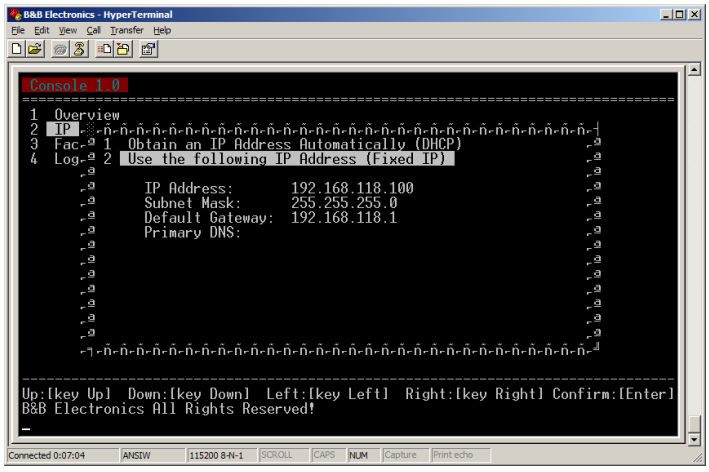
The IP Settings page allows two methods of network address configuration, DHCP or static.

DHCP Setup

- Use down arrow key to IP Settings / select Enter
- Select #1: Obtain IP address Automatically (DHCP) / select Enter
- The confirmation window will open. Select Yes.

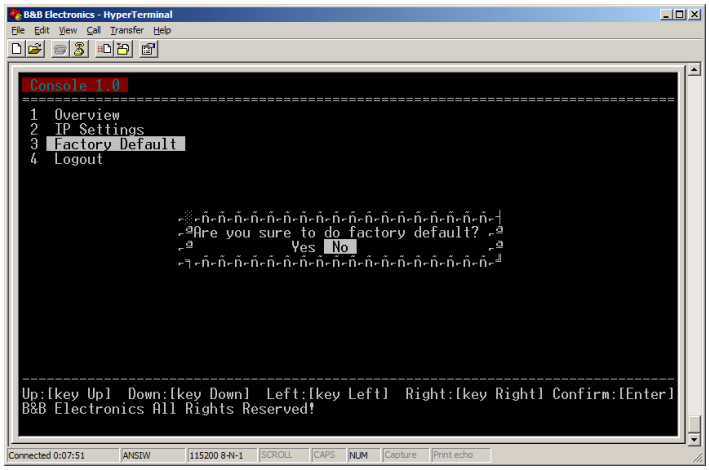
Static IP Address Setup

- Use down arrow key to IP Settings / select Enter
- Select #2: Use the following IP Address (Fixed IP) select Enter
- Add IP address, Subnet Mask, Default Gateway.
- The confirmation window will open. Select Yes.



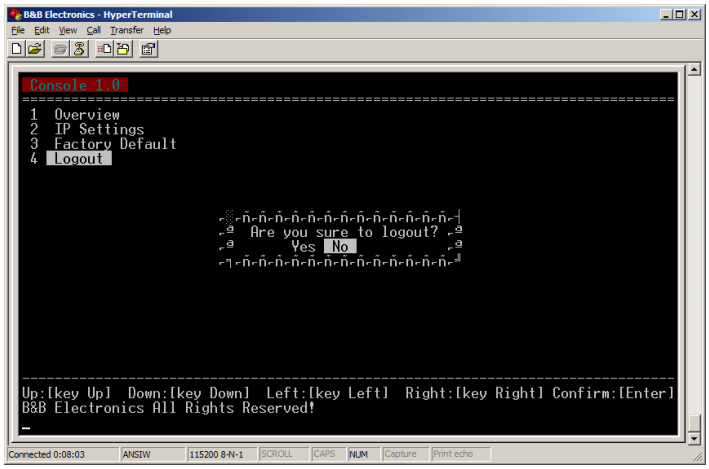
Factory Default

The Factory Default page allows the managed switch to be set back to default settings. This will include the user name, password, and network settings.



Logout

When finished with viewing and configuring the settings in Console Mode arrow down to the Logout page and select Yes.



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Chapter 3 – Web Browser Configuration

The Web Server provides a convenient way to configure the managed switch from web browser software (such as Internet Explorer).

To use the web server management and monitoring functions from a host PC connected to the same LAN they must be configured with the appropriate network settings.

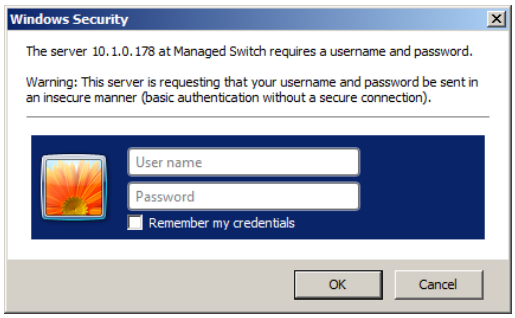
Web Server Access

Two web servers types are supported, HTTP and HTTPS. Open the web browser and enter the IP address of the managed switch. (MS Internet Explorer and Firefox supported)

The security login window will open requesting login user name and pass word.

Default:

- User Name: admin
- Password: admin

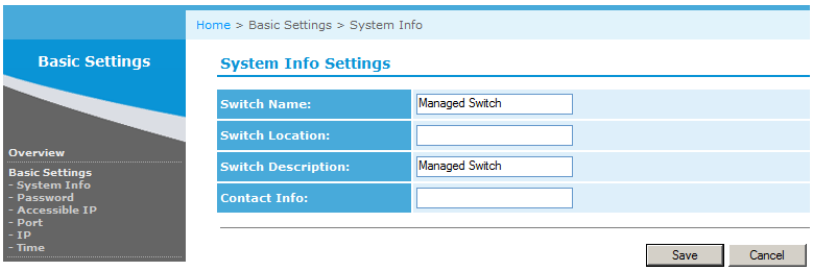


The home page will now open displaying the Overview page. The left column will display a list of configurable options. At the top right the Help button is available to assist in configuration. At the right an overview of page function is available.

Basic Settings

System Information

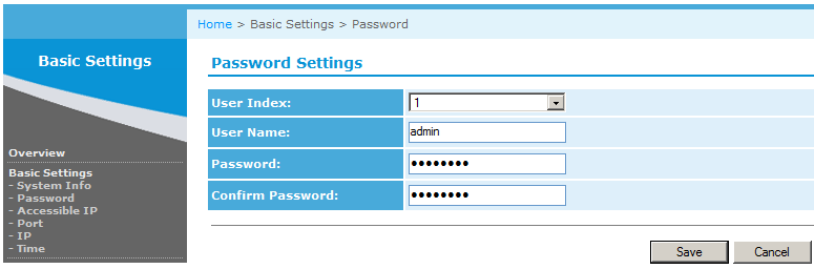
The System Information Page allows the user to assign a unique name, location of the switch, type of function, and contact name which will assist in developing a network layout. The information will also be available in SNMP.



Each setting in the System Info Settings page allows a maximum length of 64 characters.

Password Settings

The Password Settings page allows up to 3 users to assign unique Users Names and Passwords. The User Index is used to select the individual users.



The maximum number of characters is 32 and a blank password can be configured. If a blank password is used the log file will not trace the login of this user.

Accesable IP

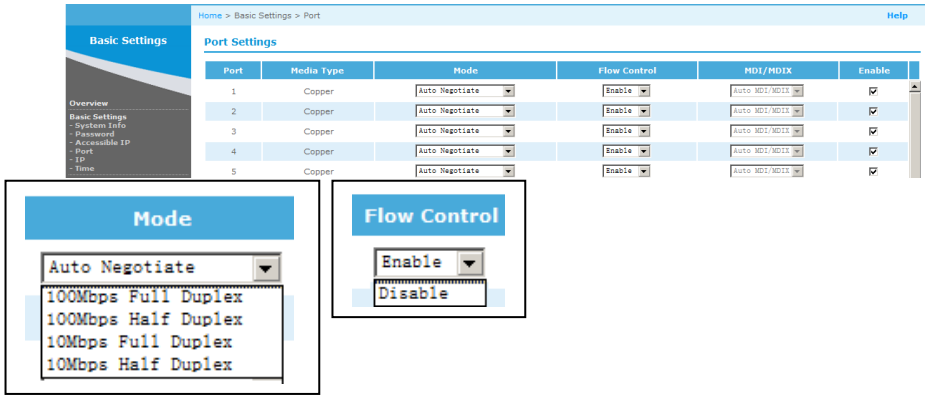
Two web server types are available, HTTP and HTTPS. When Access Control is enabled, access to the managed switch web server is limited to the IP address listed on this page. Connections from clients with other IP addresses will be refused.

The web server connection, HTTP (Hypertext Transfer Protocol), is a communications protocol used to transfer or convey information on the World Wide Web using default port 80. Https is a URL that implements a Secure HTTP connection using default port 443.

All entered access IP Addresses must be a legal IP address. Accessible IP addresses cannot be broadcast address or net mask (for example: 255.255.255.0). Each switch is allowed up to ten accessible IP addresses. When this feature is enabled at least one of these IP addresses must be in the same subnet and a member of VLAN 1 for management changes. By default all ports are members of VLAN 1.

Port

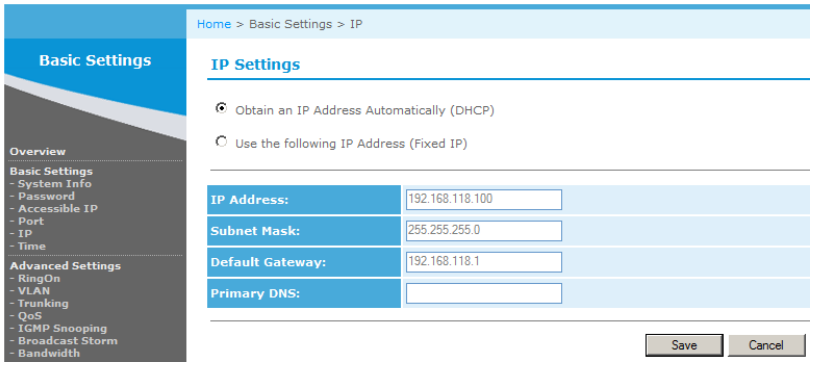
Each port can be individually configured to meet communication requirements using Mode, Flow Control, and MDI/MDIX.



Setting	Description	Default value
Media Type	The type of media, copper or fibber	Copper or Fiber
Mode	The transmit speed between two nodes	Auto-Negotiation
Flow Control	Managing data transmission between two Nodes	Enable
MDI/MDIX	Medium dependent interface of nodes	Auto MDI/MDIX
Enable	Enable port configuration options	Disable

IP Setting

There are two options that can be used to configure the network settings of the Ethernet managed switch, DHCP and Fixed (Static) IP Address. DHCP will allow a DHCP server to automatically assign an IP Address setting. The Fixed (Static) IP Address setting allows the user to manually configure the IP Address, Subnet Mask, and Gateway settings.

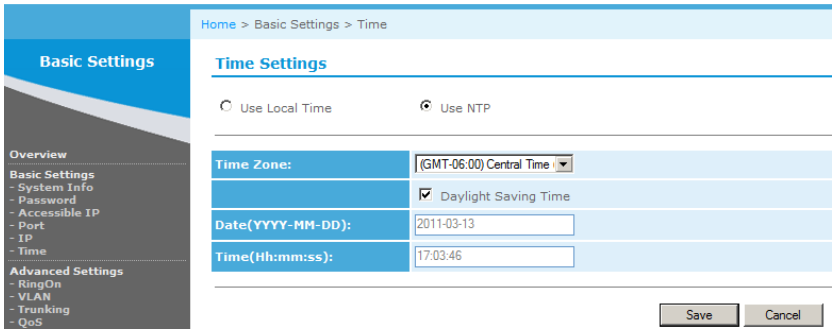


Setting	Description	Default value
DHCP/Fixed IP	Network configuration	Fixed (Static) IP
IP Address	The unique IP Address of the switch	192.168.118.100
Subnet Mask	The range of logical addresses within the address space	255.255.255.0
Default Gateway	The node that serves as an entrance to another network	192.168.118.1
DNS	Domain Name System (DNS)	blank

Note: Incorrect Subnet Mask configuration may cause erratic RingOn functionality.

Time Setting

Time Settings allows the user to select the appropriate Time Zone for his location. The NTC (Network Time Protocol) synchronizes the clocks of computer systems over packet-switched, variable-latency data networks. NTP uses UDP port 123 as its transport layer. It is designed particularly to resist the effects of variable latency.



Setting	Description	Default value
Local Time/NTP	Time setting for switch system	Local Time
Time Zone	a region of the Earth	GMT-6
DST	Daylight saving time	Disable
Date	The format must be yyyy-mm-dd	2011-01-01
Time	The format must be hh:mm:ss	00:00:00

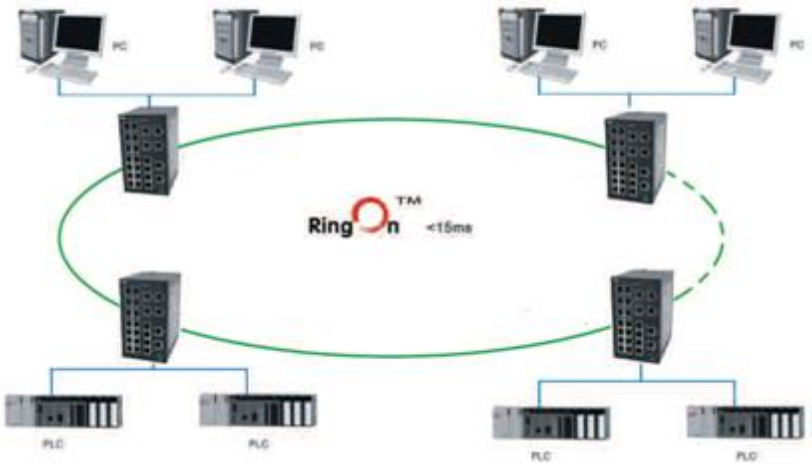
Chapter 4 – Advanced Settings

RingOn

RingOn is Rapid Rescue and Recovery System for Ethernet networks which is designed to provide a backup system (path) for communications. RingOn uses two ports on each switch to form a ring with the switch automatically selecting an active port and a blocked port. If a break occurs in the active line the RingOn recovery system will automatically switch ports, enable the blocked port, and continue to communications. A break in the ring network will also activate the Fault Relay warning the administrator of the problem. The recovery time in the event of a break is less than 15 ms.

Two types of RingOn configurations are available: single loop and dual loop. Dual loop configurations connect two or more single loops. When configuring dual rings unique ID's are used for each ring.

Single RingOn configuration



Single Ring

The web configuration screen shot illustrates the steps needed to implement a single ring. In this case the switch is automatically configured as Master. Port 1 used for communications and Port 2 blocked. Only the master will display a Port Status of Blocked port.

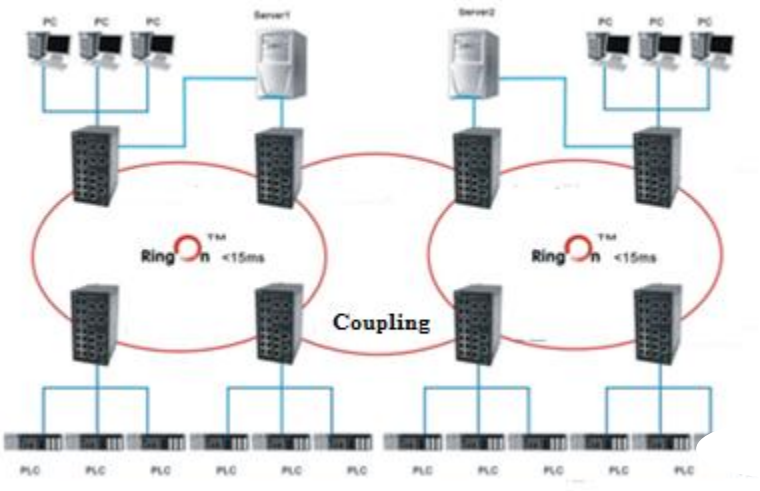
Redundancy Settings

Redundancy Setting : RingOn

ID	Type	Port	Status	Port State	Enabled
1	RingOn	Port-1,2	Completed	Port 1: Fwd, Port 2: Block	☑
2	RingOn	Port-3,4	Not Applied	Port 3: Fwd, Port 4: Fwd	☐
3	RingOn	Port-25,26	Not Applied	Port 25: Fwd, Port 26: Fwd	☐
4	Couple	Port-1	Not Applied	Port 1: Fwd	☐

Dual RingOn Configuration

Two types of RingOn configurations are available: single loop and dual loop. Dual loop configurations connect two or more single loops. When configuring dual rings, unique ID's are used for each ring. The following diagram is the typical dual loop illustration.



Dual Ring

The web configuration screen shot illustrates the steps needed to implement a dual ring. Both ID 1 and 2 are enabled. Ports 1 and 2 connect single rings. Ports 3 and 4 connect the single rings together. Both rings are connected together using ID 4 coupling port. Once ports are connected and configuration saved the Status displays Complete.

Redundancy Settings

Redundancy Setting : RingOn

ID	Type	Port	Status	Port State	Enabled
1	RingOn	Port-1,2	Incomplete	Port 1: Fwd, Port 2: Fwd	☑
2	RingOn	Port-3,4	Incomplete	Port 3: Fwd, Port 4: Fwd	☑
3	RingOn	Port-25,26	Not Applied	Port 25: Fwd, Port 26: Fwd	☐
4	Couple	Port-25	Incomplete	Port 1: Fwd	☑

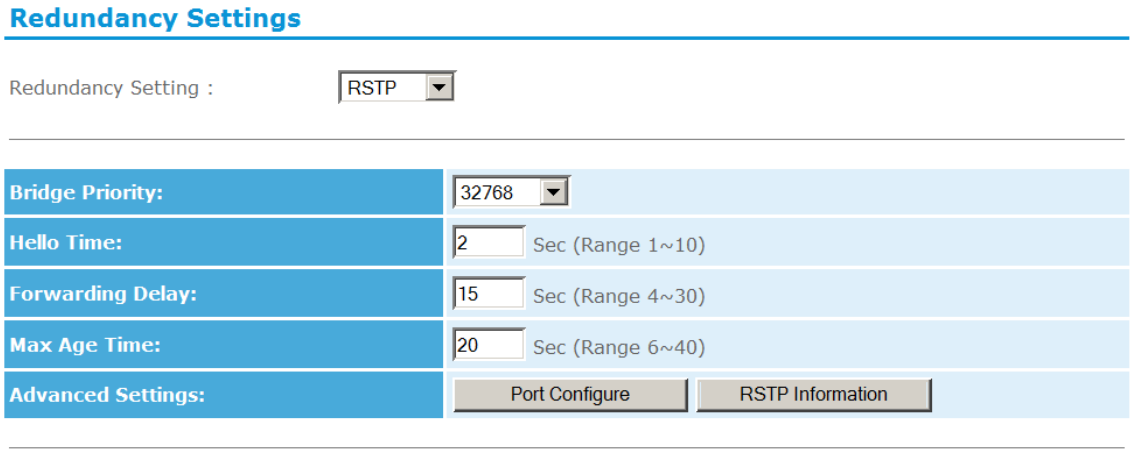
Status and Port State definition

Status	Port State	
Not Applied	P1 Fwd, P2 Fwd	RingOn not enabled
Complete	P1 Fwd, P2 Block	RingOn Master
Complete	P1 Fwd, P2 Fwd	Ring Slave
Incomplete	P1 Fwd, P2 Down	P 2 RJ45 link broken
	P 2 Down	P 2 not connected to RingOn port

Rapid Spanning Tree Protocol (RSTP)

The Rapid Spanning Tree Protocol (RSTP) has evolved from the Spanning Tree Protocol (STP) to provide faster spanning tree convergence after a topology change. Rapid Spanning Tree Protocol will assist in network link failures by including spare (redundant) links to provide automatic backup paths. Another basic function of RSTP is to prevent unintended loops and protect against broadcast storms.

RSTP Setup

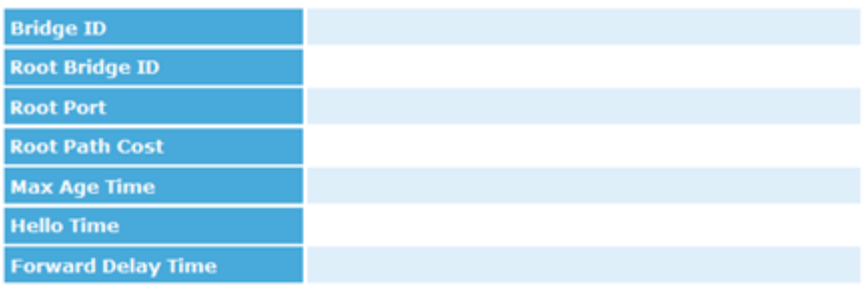


RSTP Configuration Screen

- **Redundancy Setting:** RSTP
- **Bridge Priority:** (o – 61440) Switches configured with the lowest numerical value have the highest priority and will operate as the root. The value can be changed using multiples of 4096. Once the change is completed the switch must be rebooted.
- **Hello Time:** (1-10): Determines the frequency BPDU (Bridge Protocol Data Units) packets are transmitted. BPDU packets are used to check RSTP current status. (Health of RSTP configuration)
- **Forwarding Delay:** (4-30) Number of seconds the port waits before changing from its Rapid Spanning-Tree Protocol learning and listening states to the forwarding state.
- **Max Age Time:**(6-40) Number of seconds the switch waits without receiving Spanning-tree Protocol configuration messages before attempting a reconfiguration

RSPT Information

- **Root Bridge:** Displays spanning tree Root Bridge information.



Root Bridge Information

- **Port Information**

Port Information:

Port	Priority	PathCost	P2P	Edge	Partner	Role	State
1							
2							
3							
4							
5							
6							

Port Information

Port Configuration

- **Priority:** (0 – 240) A method of prioritizing how ports are blocked. The value is configured in multiples of 16 with the highest value being blocked.

- **Port Cost:** (1 – 200,000,000) RSTP method of ensuring that optimal paths will be selected after a link failure. The paths are between a transmitting bridge to a receiving bridge.

- **Admin P2P:** Some rapid state transactions used within RSTP are dependent upon whether the port concerned can only be connected to exactly one point to point bridge or can be connected to two or more bridges. This function allows the P2P status of the link to be manipulated administratively.

    - P2P True – Enabled
    - P2P False - Disabled

- **Admin Edge:** Used to define ports as end stations which prevents bridging loops in the network.
    - True - configures it as an End port

- Admin Non Stp: The port includes the STP mathematic calculation. True is not including STP mathematic calculation, false is including the STP mathematic calculation.

Port Configuration

Port	Port Cost	Priority	Admin P2P	Admin Edge	Admin Non Stp
1	200000	128	AUTO	TRUE	FALSE
2	200000	128	AUTO	TRUE	FALSE
3	200000	128	AUTO	TRUE	FALSE
4	200000	128	AUTO	TRUE	FALSE
5	200000	128	AUTO	TRUE	FALSE

Port Configuration

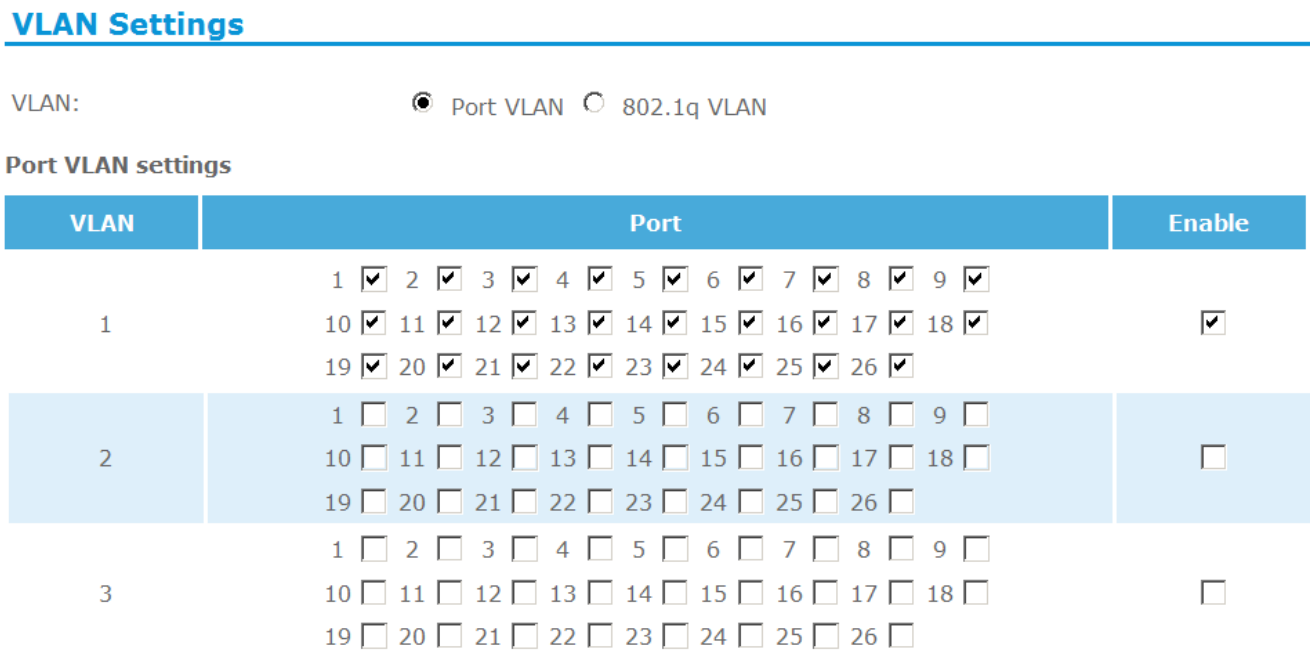
VLAN (Virtual LAN)

A Virtual LAN, commonly known as a VLAN are used to creating independent logical networks within a physical network. Several VLANs may co-exist within such a network.

VLAN's help in reducing the broadcast domain and aids network administrators by separating logical segments of a LAN that should not exchange data. B&B Electronics Managed switches support port-based VLAN and 802.1Q VLAN.

Port VLAN Setup

The default Virtual LAN is VLAN 1 which all ports are members. VLAN 1 operates as the management VLAN meaning at least one port must be a member of VLAN 1 to access and manage the switch. VLAN 1 also allows the switch to operate as a standard switch. Every port must belong to a VLAN and ports may belong to more than one VLAN ID. B&B Electronics Managed switches will support up to 26 port based VLAN groups.



802.1Q VLAN Setup

B&B Electronics Managed switches also support IEEE 802.1q VLAN. Implemented 802.1q VLANs can extend over multiple switches. Switches can be from different manufactures as long as they support 802.1q

A typical 802.1Q VLAN network and the web server configuration page can be found below. Keep in mind while looking at the diagram the difference between VLAN ID (frames that are tagged) and PVID (frame that are untagged).

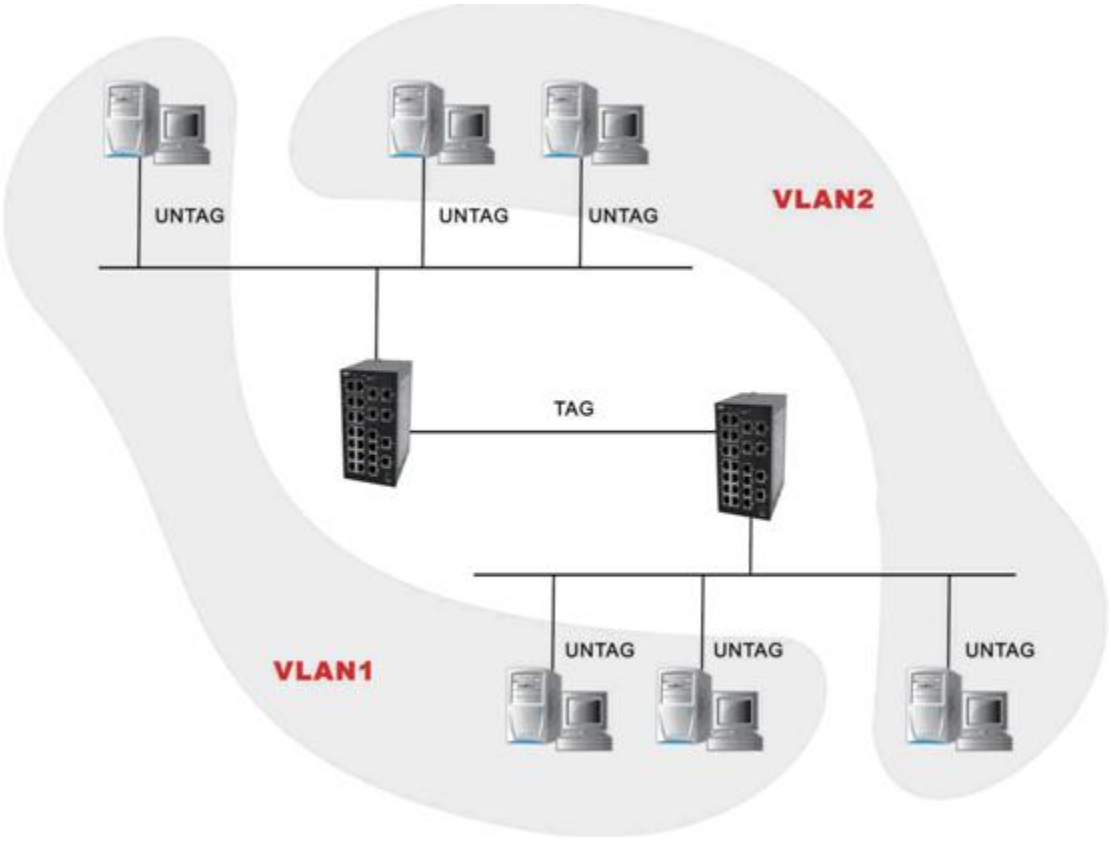
The configuration page displays the default PVID value for 802.1Q VLAN. Each port can be configured to filer (remove) the 802.1Q tag or pass the 802.1Q tag to the connected device.

Tag Filter Setting:

- Untagged - 802.1Q tag removed
- Tagged - 802.1Q tag passed on. If the tag is not present an 802.1Q tag will be added.

The illustration below shows an example of when the Tag Filter is configured for both untagged and tagged port settings. Most PC's would be connected to a switch port that was configured for

Untag. The two ports connecting the switches together are uplink ports and should be setup as Tag ports.



VLAN Settings

VLAN: Port VLAN 802.1q VLAN

Port Settings

PVID	1 1 2 1 3 1 4 1 5 1 6 1 7 1 8 1 9 1 10 1 11 1 12 1 13 1 14 1 15 1 16 1 17 1 18 1 19 1 20 1 21 1 22 1 23 1 24 1 25 1 26 1
Tag Filter	1 Unta 2 Unta 3 Unta 4 Unta 5 Unta 6 Unta 7 Unta 8 Unta 9 Unta 10 Unta 11 Unta 12 Unta 13 Unta 14 Unta 15 Unta 16 Unta 17 Unta 18 Unta 19 Unta 20 Unta 21 Unta 22 Unta 23 Unta 24 Unta 25 Unta 26 Unta

802.1q VLAN Settings

Index	VID	Port	Enable
1	1	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26	
2	2	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26	

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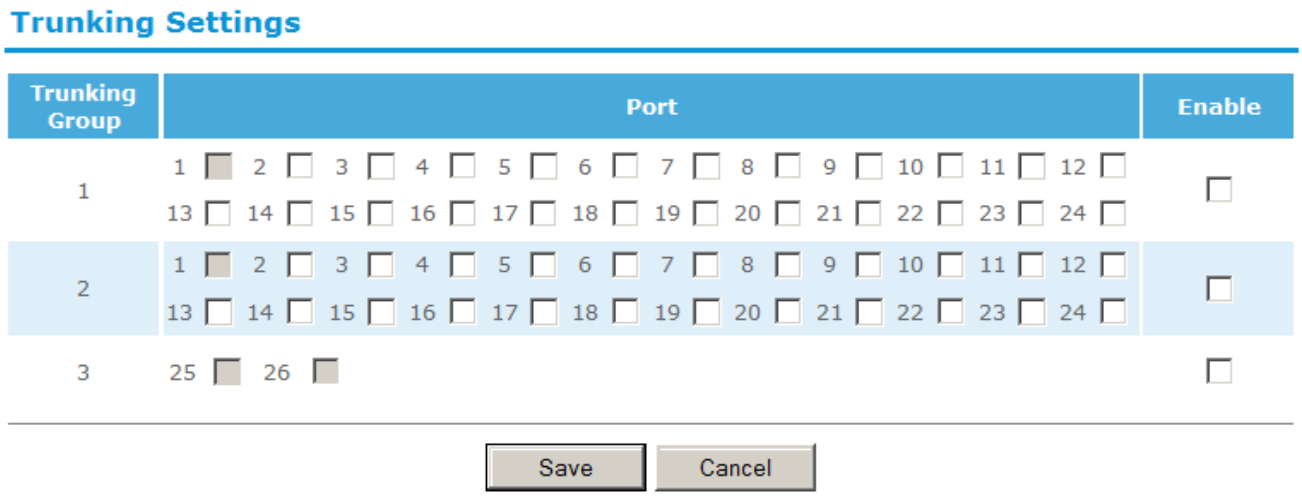
Trunking

Trunking sometimes called Link aggregation is a method of paralleling more multiple ports between two switches. The ability to configure this type of connection will increase the speed beyond the limits of a single port. The multiple links between switches can also act as a redundant path if one port losses communication.

Limitations:

- Port 1 cannot be part of a Trunking group
- Ports are not allowed to become members of multiple Trunking groups.



QoS (Quality of Service)

Quality of Service is a method of prioritizing Ethernet applications or device communications on a LAN. Once a packet is received by the switch it can take persistence over other packets being received thus reducing latency and establishing a reliable method of data delivery.

Service quality features 4 different levels of queue, (high, middle, nomal, low). High- priority data packet stays in the switch for a short time. The data packets are assigned priority levels in accordance to 802.1 priority tag and DiffServ priority tag settings. QoS full wire-speed mechanism can be configured using the relative priority and absolute priority.

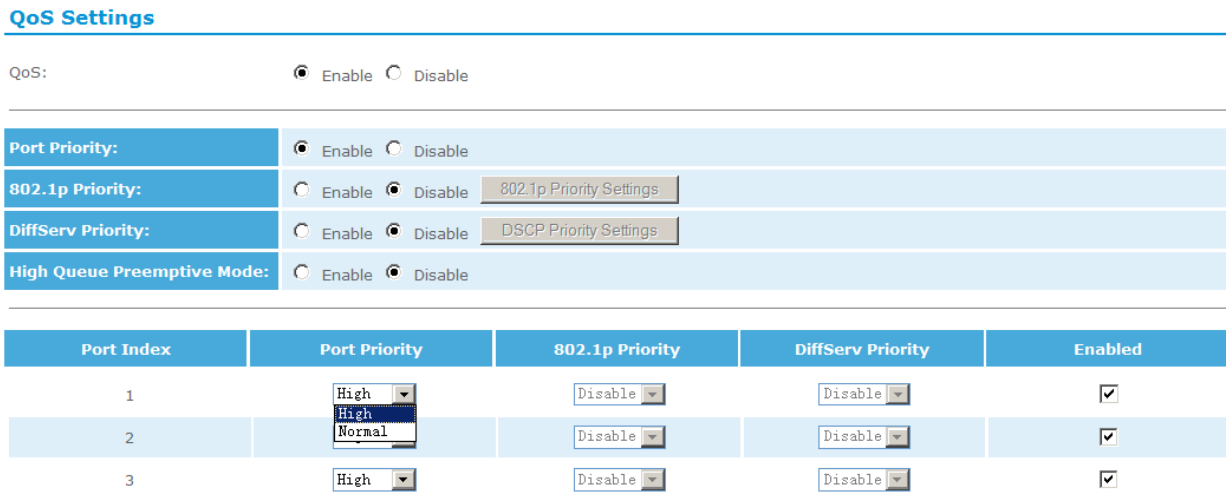
QoS Setup

QoS

- Enable - all QoS options become available.
  - Port Priority
  - 802.1 Priority
    - 802.1 Priority Settings
  - DiffServ Priority
    - DSCP Priority Settings
  - High Queue Preemptive Mode

Port Priority

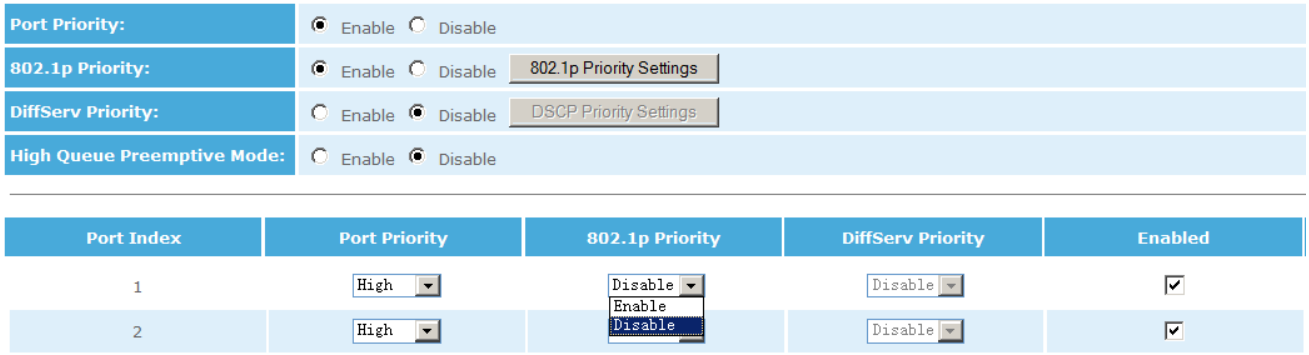
- Two settings are available, Normal and High. When set to high packets have the lowest latency.



802.1p Priority

The 802.1p header includes a three-bit field for prioritization, which allows packets to be grouped into various traffic classes. 802.1p traffic is simply classified and sent to the destination.

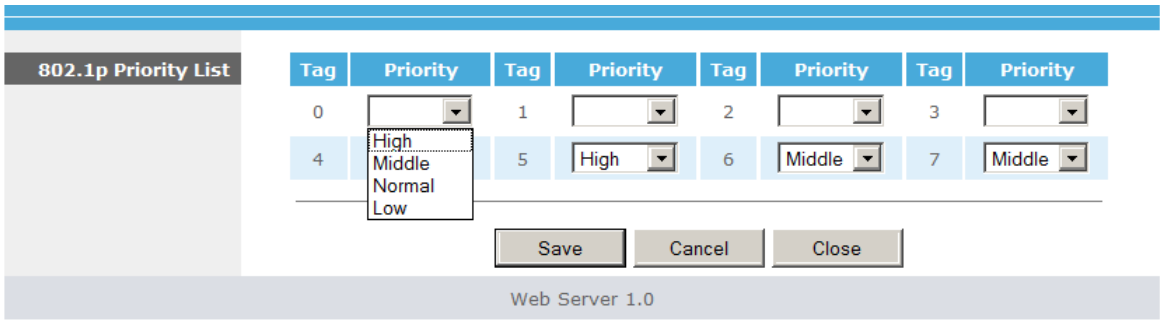
- Choose Enable to start priority features based on 802.1p for each port.



802.1p Priority Settings

After selecting the 802.1p Priority Settings button the 802.1q Priority List window opens. 802.1p establishes eight levels of priority. The highest priority is seven, used for network critical traffic, five and six used for delay-sensitive applications, four through one used in controlled data applications (streaming data). The zero value is used as default (no other setting is uses).

- 802.1p priority setting, assign tag of 0-7 (High, Middle, Low, Lowest) to each queue.



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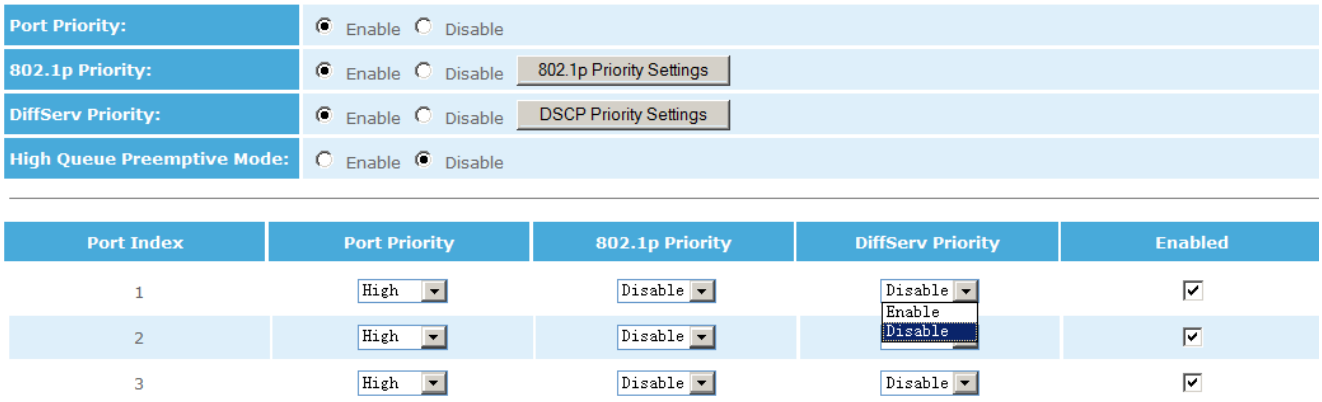
DiffServ Priority

DiffServ or Differentiated Services is a computer networking architecture that specifies, scalable and coarse-grained mechanism for classifying, managing network traffic and providing quality of service (QoS) guarantees on modern IP networks. DiffServ can, for example, be used to provide low-latency, guaranteed service (GS) to critical network traffic such as voice or video while providing simple best-effort traffic guarantees to non-critical services such as web traffic or file transfers.

The Managed switch can classify traffic based on the DSCP field in the IP Header. DSCP in both IPv4 and IPv6 will be supported. If DSCP priority is enabled, the switch classifies traffic based on the DSCP value.

DiffServ is a Layer 3 marking scheme that uses the DiffServ Code Point (DSCP) field in the IP header to store the packet priority information. DSCP is an advanced intelligent method of traffic marking as you can choose how your network prioritizes different types of traffic. DSCP uses 64 values that map to user-defined service levels, allowing you to establish more control over network traffic.

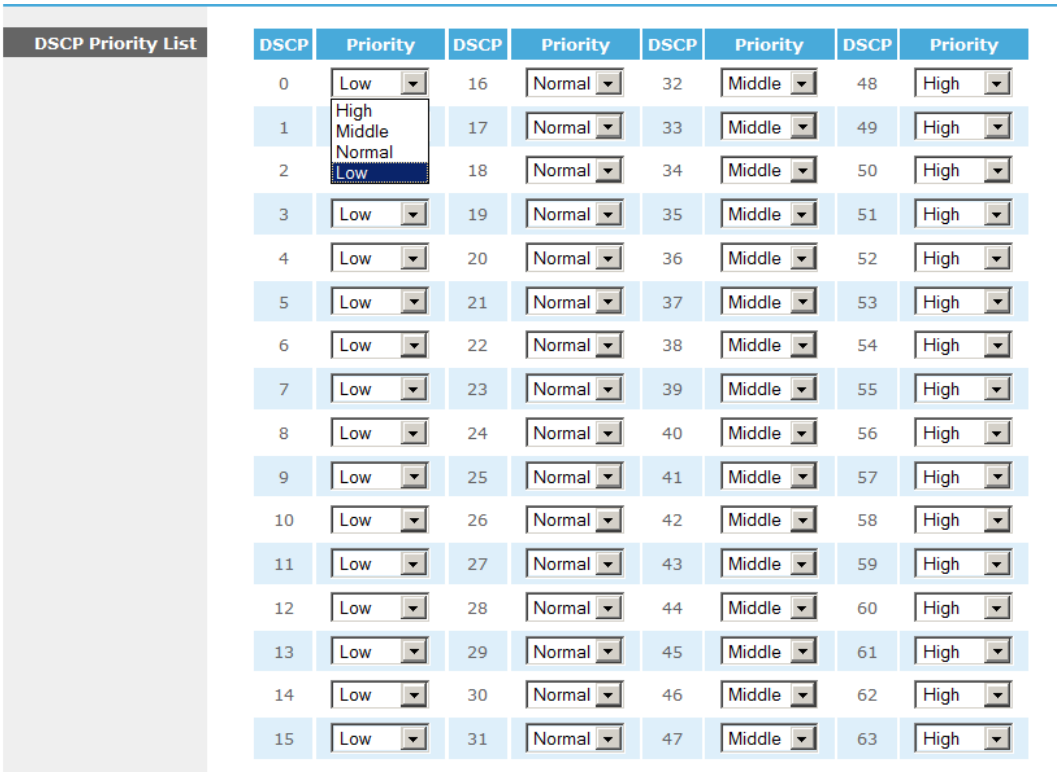
Choose Enable to start priority features based on DiffServ. Then select the DSCP Priority Settings button.



DSCP Priority Settings (Differentiated Services Code Point)

An advantage of DiffServ allows the administrator to configure how selected applications and types of traffic are handled by assigning various grades of network service to them. DSCP uses the IP header of a packet and therefore priority is preserved across the Internet. DSCP is backward compatible with IPV4 TOS, which allows operation with existing devices that use a layer 3 TOS enabled prioritization scheme.

Once DiffServ Priority is selected, open the DSCP Priority Settings which will allow a value (0-63) to be assigned to different queues.



Setting	Description	Default value
QoS enable	Enable QoS function	Disable
Port-based QoS enable	Enable Port-based QoS function	Enable this group
802.1p QoS enable	Enable 802.1p QoS function	Disable
802.1p QoS Settings	Configure 802.1p priority	----
DiffServ QoS enable	Enable DiffServ QoS function	Disable
DiffServ QoS Settings	Configure DiffServ priority	----
Port priority	Configure port priority	High

IGMP Snooping (Internet Group Management Protocol)

IGMP Snooping provides a way to route multicast traffic and reduce unwanted traffic. IP multicasting is commonly used when sending the same information to many receivers. IGMP routes the multicast traffic to the correct devices and will not broadcast the message to unintended devices. IP multicast addresses are in the range of 224.0.0.0 through 239.255.255.255.

Enabling IGMP allows the ports to detect IGMP queries, report packets, and manage IP multicast traffic through the switch. IGMP have three fundamental types of message shown as follows:

Query

A message sent from the querier (IGMP router or switch) asking for a response from each host belonging to the multicast group.

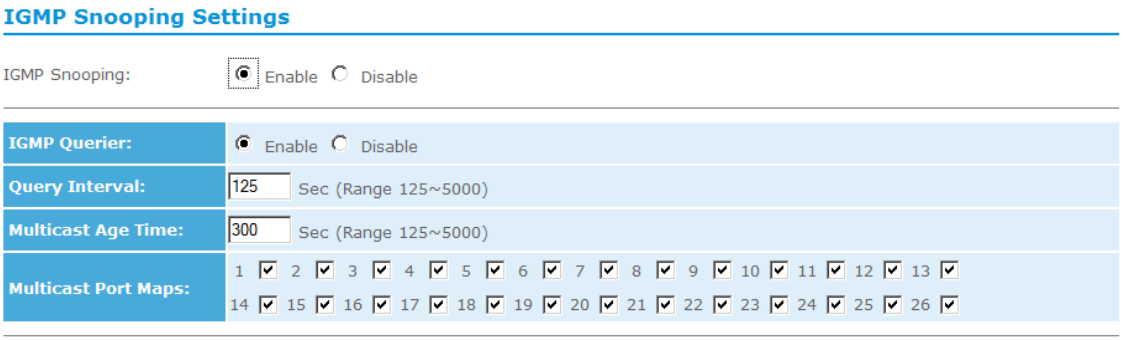
Report

A message sent by a host to the querier to indicate that the host wants to be or is a member of a given group indicated in the report message.

Leave Group

A message sent by a host to the querier to indicate that the host has quit being a member of a specific multicast group.

IGMP snooping has been expanded, overcoming some limitation of old versions. It works with GMRP by sending GMRP notifications when PC's change port. This will avoid multicast traffic lose.

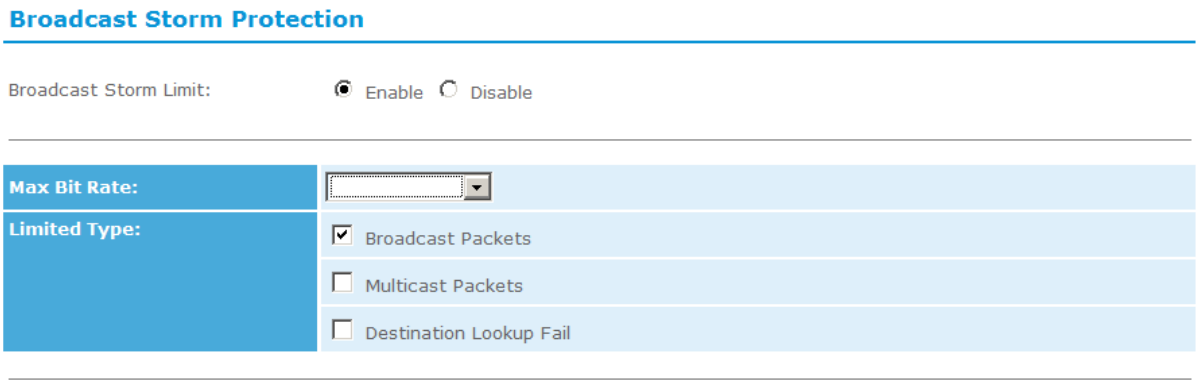


Query Interval
Query interval time (125-5000 seconds) between IGMP Query transmitions.

Multicast Age Time
The length of the MAC address will remain in the multicast table. The switch will delete this group and send leave message.

Broadcast Storm Protection

Broadcast storm protection prevents network problems due to accidental network redundant loops reproducing broadcasts and multicasts. Without this type of control the packets are received by all switches on the network and transmitted out all ports.

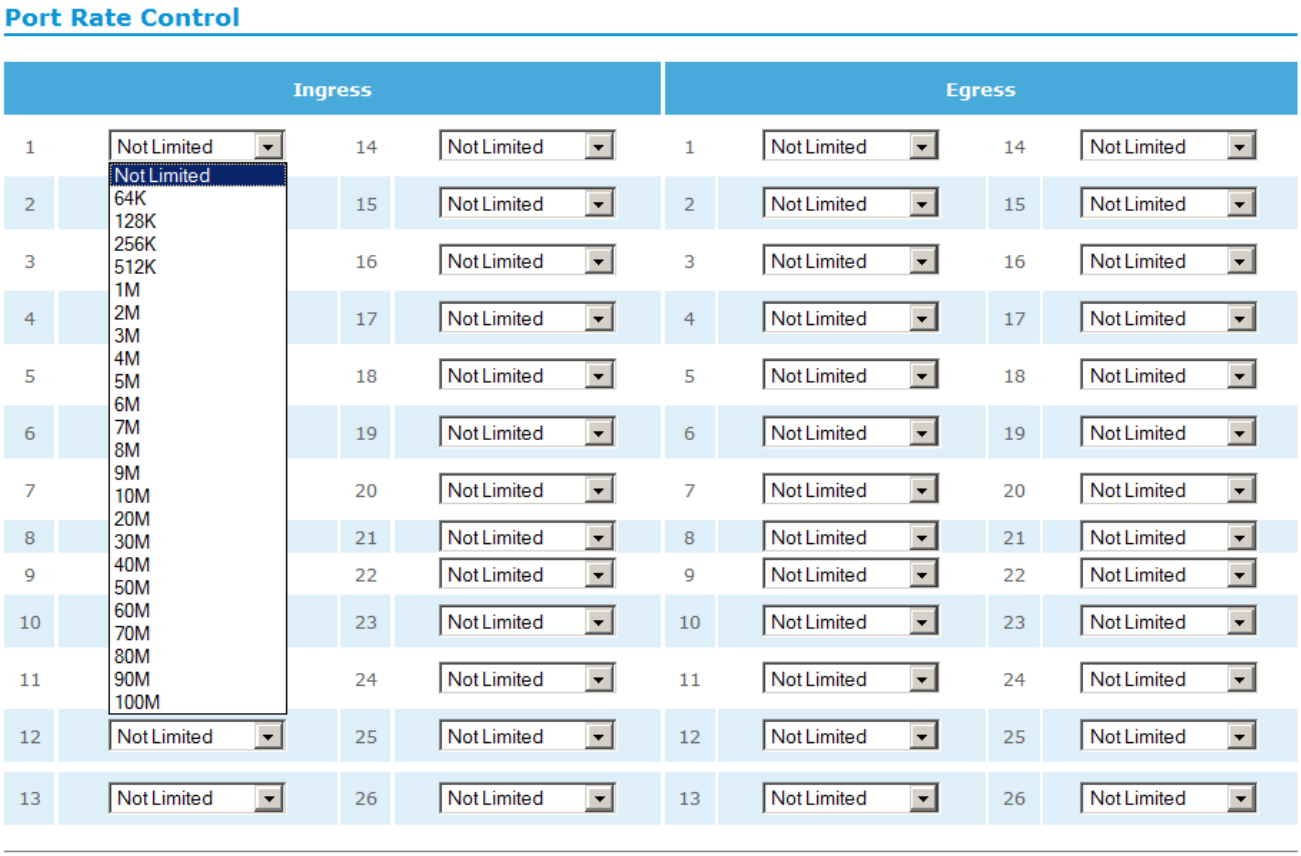


Max Bit Rate is the bit rate setting which can be adjusted between 65K bps and 90M bps or set to no limit. The storm protection feature will also allow the administrator to select the types of packets that are controlled.
Destination Lookup Failure is also called DLF Message which means a packet type table does not match the MAC address table, and the message does not belong to broadcast or multi broadcast message. The way the switch handles such DLF message is just the same as it handles the acceptance of broadcast messages.

Bandwidth

Bandwidth is a rate of data transfer related to channel capacity for communication. Rate limiting is used to control the rate of traffic sent or received on a network interface. Traffic that is less than or equal to the specified rate is sent, whereas traffic that exceeds the rate is dropped or delayed.

Rate limiting is performed by policing (discarding excess packets), queuing (delaying packets in transit) or congestion control (manipulating the protocol's congestion mechanism). Policing and queuing can be applied to any network protocol. Congestion control can only be applied to protocols with congestion control mechanisms, such as the Transmission Control Protocol (TCP).



Note:
1. Switch monitor all type packets and not limited decreases overall latency.
2. Switch will drop packets at limited rate when flow control is disabled.

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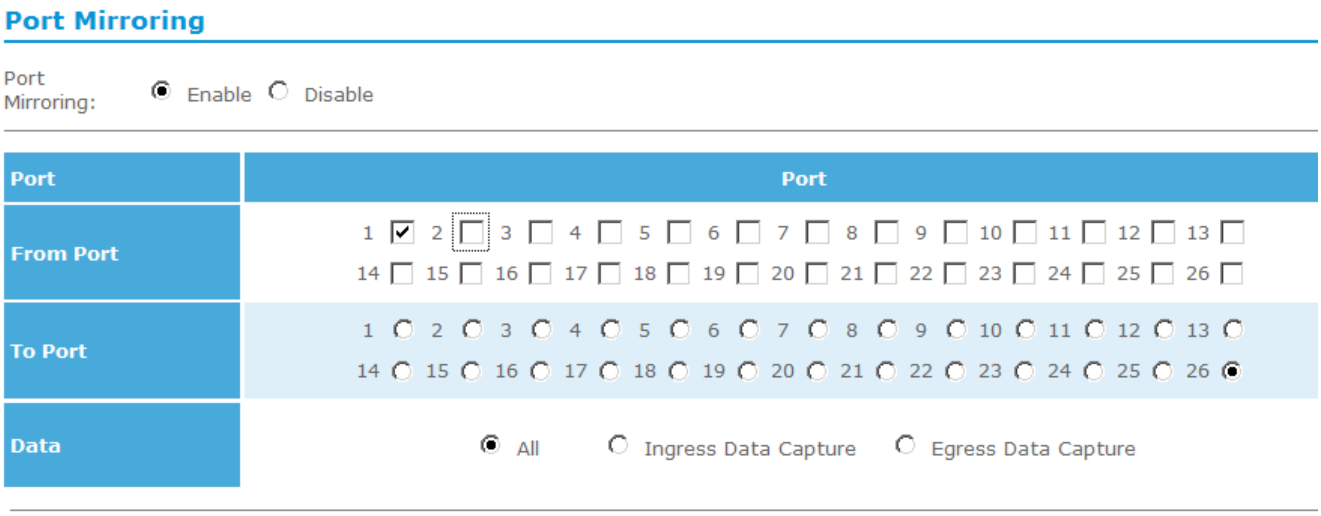
Port Mirroring

Port mirroring is used on a network switches to monitor the network traffic of a specific port. The selected port's Ethernet traffic is duplicated and sent out a 2nd specified port. This is commonly used with network monitoring hardware or software.



From Port: This is the source port, data that is to be copied and monitored.

To Port: This is the destination port, data is received from source port and analyzed.

Data: Each port being monitored will transmit and receive data. During port mirroring the ingress data, egress data, or both can be mirrored to the selected port.

Note:
1. Port mirroring will disable IGMP snooping.
2. Port mirroring will reduce the switch performance.

Static MAC Address Forwarding Configuration

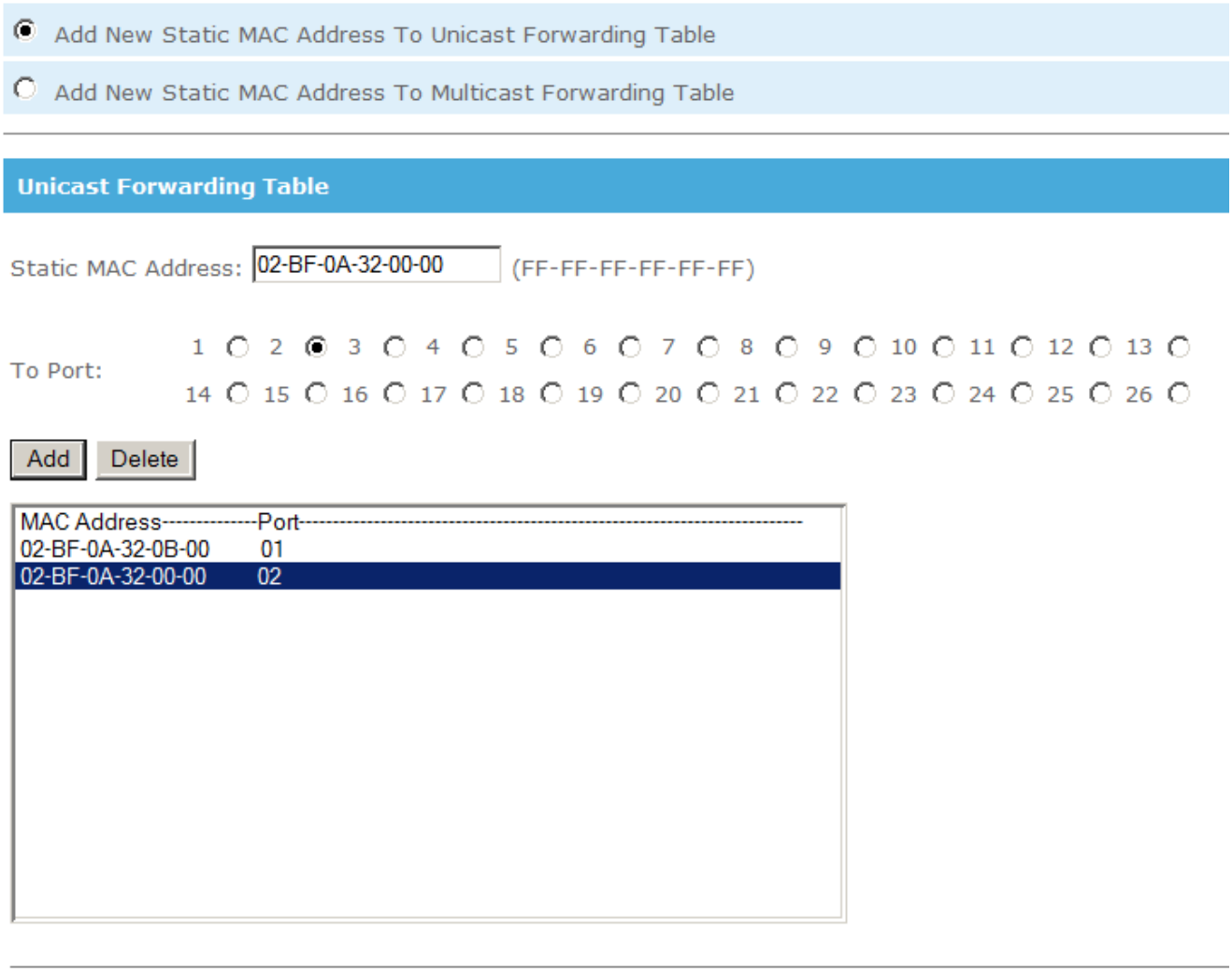
The MAC address forwarding table will not only hold learned addresses, but also up to 10 static unicast or 10 static multicast addresses. Static addresses perform as learned addresses, but are not subject to the aging process. A normal or high priority can also be applied to messages containing the entered MAC address.

The action field can be toggled between "Add" and "Delete". The "Static MAC Address" field requires a valid input from the user; it is not case sensitive. When invalid addresses are entered the switch will display a warning message.

Table configuration:

- Select Add new Unicast or Multicast forwarding table
- Add Static MAC Address to field
- Select the desired port
- Select add button

Static MAC Address Forwarding Configuration



Note:

1. Defined MAC addresses assigned port can be modified.
2. Improper static unicast address may cause communication problems.
3. All static addresses can be found in MAC Address Table.
4. Do not add reserved addresses such as GMRP address to the address table. Reserved addresses are often used as managed address.

SNMP

The simple network management protocol (SNMP) is used by network management systems to monitor network attached devices for conditions that warrant administrative attention. The SNMP V1/V2c. SNMP V1, and SNMP V2c use a community string match for authentication, which means that SNMP servers access all objects with read-only or read/write permissions using the community string public/private.

It consists of a set of standards for network management, including an application layer protocol, a database schema, and a set of data objects. SNMP exposes management data in the form of variables on the managed systems, which describe the system configuration. These variables can then be queried (and sometimes set) by managing applications.
Over TCP/IP, SNMP usually uses UDP ports 161 (SNMP) and 162 (SNMP-traps). SNMP agents reside in network devices where they use MIBs (information specific to the device) to interface the devices with the NMS--which then monitors and controls devices via these agents. An SNMP Trap is a message that is transmitted when a trap event occurs. A valid trap receiver will receive a trap message upon a trap event occurring.

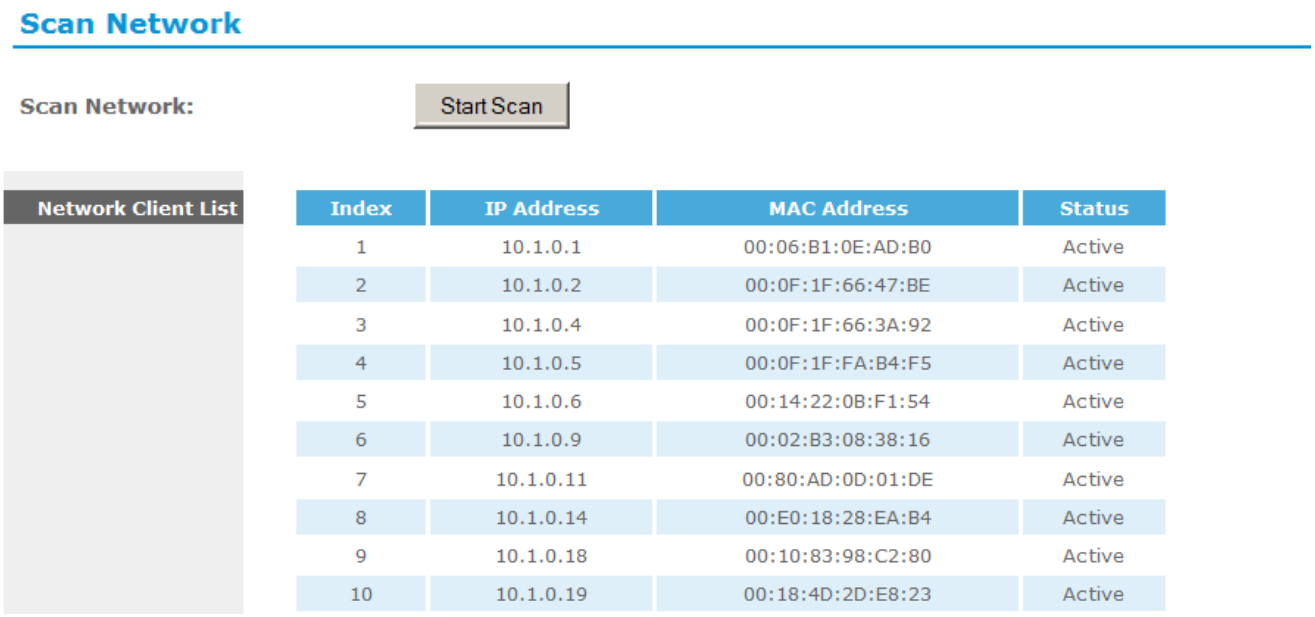
- RFC1213-MIB supported
- Cold start trap supported.

Diagnostics

Scan Network and Ping are two diagnostic tools are provided with your unit. Scan Network will provide a list of active network devices. The Ping function uses the ping command to give users a simple but powerful tool for troubleshooting network problems.

Scan Network

Scan Network will display IP address, MAC address, and its current status (active or Inactive).

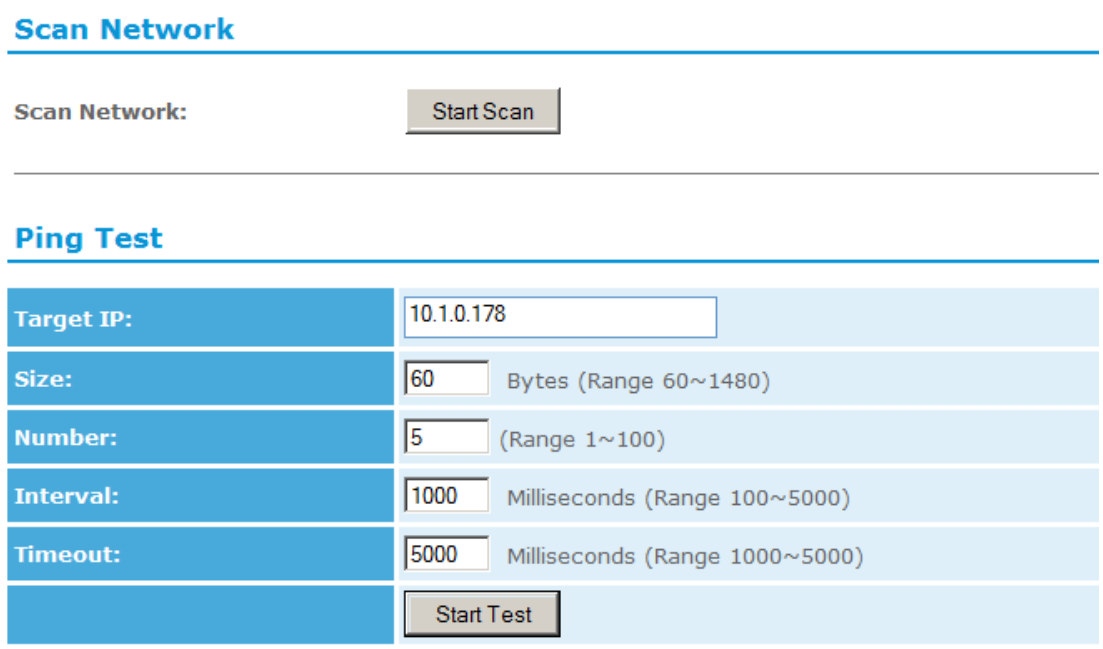


Index	IP Address	MAC Address	Status
1	10.1.0.1	00:06:B1:0E:AD:B0	Active
2	10.1.0.2	00:0F:1F:66:47:BE	Active
3	10.1.0.4	00:0F:1F:66:3A:92	Active
4	10.1.0.5	00:0F:1F:FA:B4:F5	Active
5	10.1.0.6	00:14:22:0B:F1:54	Active
6	10.1.0.9	00:02:B3:08:38:16	Active
7	10.1.0.11	00:80:AD:0D:01:DE	Active
8	10.1.0.14	00:E0:18:28:EA:B4	Active
9	10.1.0.18	00:10:83:98:C2:80	Active
10	10.1.0.19	00:18:4D:2D:E8:23	Active

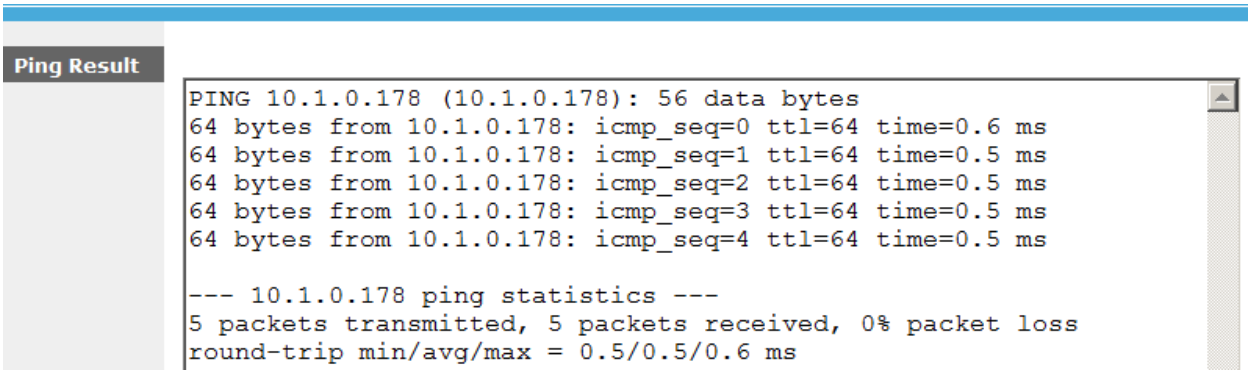
Ping Test

The Ping function implements the ping command to give users a simple but powerful tool for troubleshooting network problems. The function's most unique feature is the ping command is entered from the user's PC, the actual ping command originates from Managed switch itself. In this way, the user understands the LAN area being tested.

To use the Ping function, enter the target IP address, use the default settings or add your desired information then select "Start Test".



Once the ping test is started the following results will be displayed.



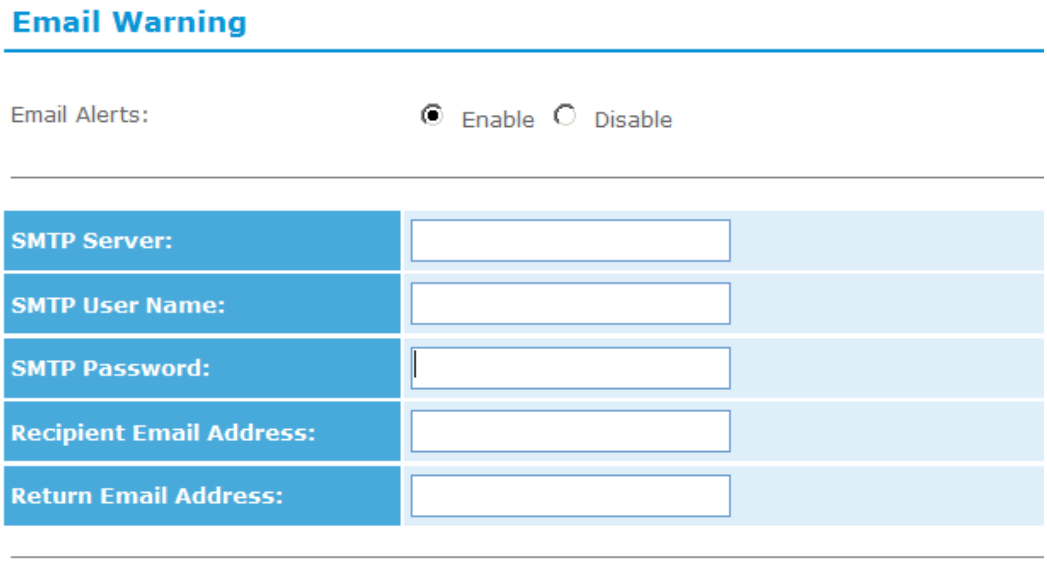
The default settings are:

Setting	Description	Default value
Target IP	IP address of device	blank
Size	Size of test (ping) packet	60
Number	The number of packet which will be sent	1
Interval	The interval time between transmitted ping packets	1000
Timeout	The no response timeout	5000

Note:
1. DNS is not support.

Email Warning

The Email Warning function allows e-mail alerts to be sent to defined users when, port link (Up or Down) changes state, Relay Warning is enabled, Broadcast Storm events take place, and every 12 hours. The 12 hour report displays a log file of switch activities.



Setting	Description	Default value
Email Alerts	IP address which is desired for you	disable
SMTP Server	The name or IP SMTP Server	blank
SMTP User	Account User Name of SMTP Server	blank
SMTP Password	Account password for this user name	blank
Recipient	Recipient address	blank
Return Email Address		blank

Once the settings are configured correctly and "Save" is selected a hello email will be sent.

1. Password - "●" not allowed
2. Recipient and "Return Email Address" must be legal email address.

Relay Warning

The managed switch has a relay output that can be used to signal the occurrence of one or more events when configured by the user. In addition to the events listed on this page the relay can be used to indicate the loss of a link or a Broadcast Storm has occurred.

Relay Warning

Relay Warning:	Enable / Disable
Warning State:	Clear
Warning Message:	

Port	Warning Type	Port Status
1	Warning When Link Down	Link Up
2	Warning When Link Up	Link Down
3	No Warning	Link Down
4	No Warning	Link Down

Performance Monitor

Performance monitoring is available for each port and displayed on the webpage. The data is captured and will display the total number of events that have occurred since last power cycle. All number will be reset to zero if you reset switch or there is a loss of power. The data will refreshed every 30 seconds.

Port Packets Monitor

RxPkts Statistics:

Port	Unicast	Multicast	Broadcast	Error	Drop	Pause
1	0	0	0	0	0	0
2	44541	240407	224392	0	0	0
3	0	0	0	0	0	0
4	1366	2109	1374	0	0	0
5	0	0	0	0	0	0
6	22932	16198	11214	0	0	0

TxPkts Statistics:

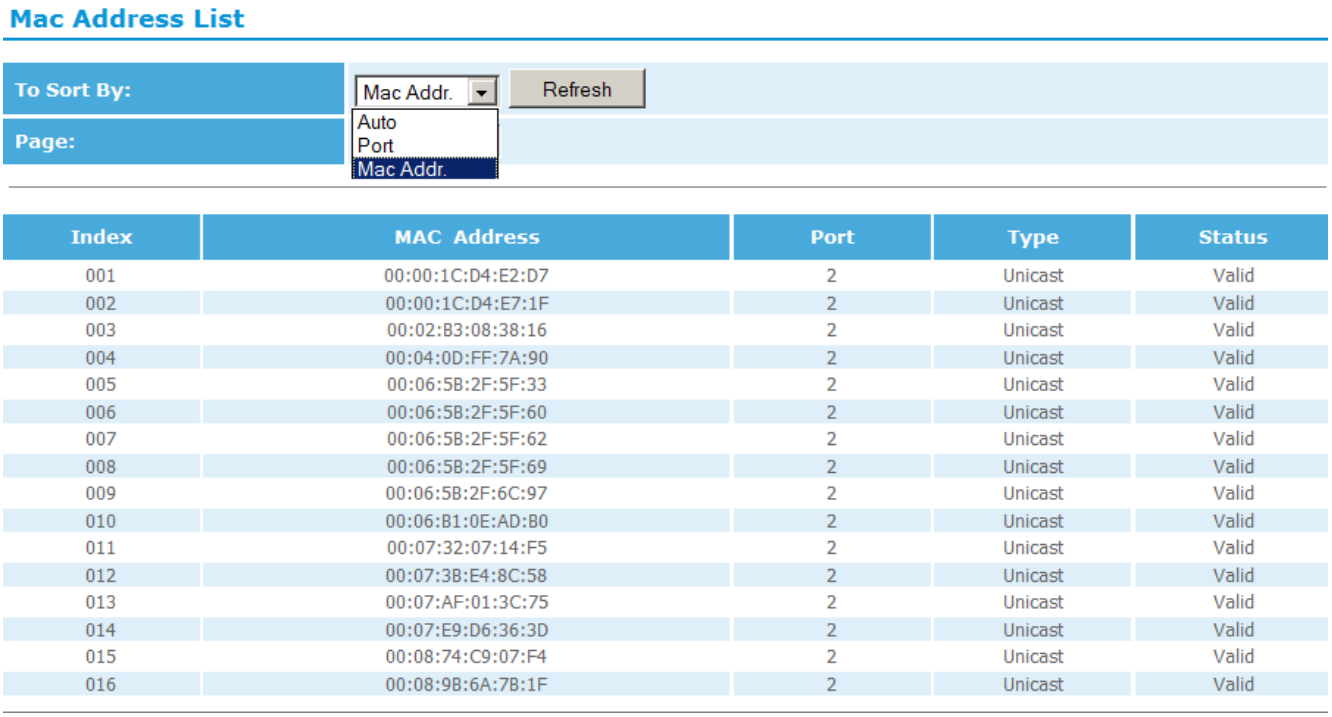
Port	Unicast	Multicast	Broadcast	Collision	Drop	Pause
2	38115	502	564	0	0	0
3	0	0	0	0	0	0
4	1445	10	83	0	0	0
5	0	0	0	0	0	0
6	19547	68	69	0	0	0

MAC Address Table

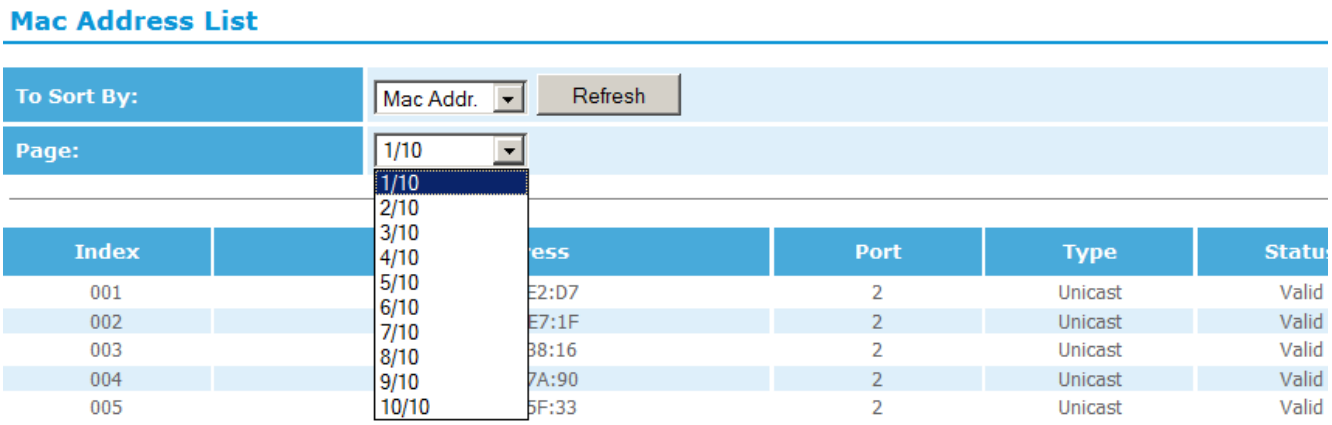
MAC (Media Access Control) address is a hardware address network adapters (NICs) are giving by the manufacturer. The managed switch provides a 8K MAC addresses table with automatic learning and aging. The MAC address table displays this table in a administrator viewable manner.

In the address table the MAC addresses can be sorted by specified type. The address list has three sort options, Auto, Port, and by MAC Address.
The MAC addresses and the ports to which they are associated with will also be displayed. The STATIC status indicates the entry is controlled by the management CPU and automatic learning

and aging of the entry will not take place. In this address table you will find multicast address if you use static multicast forwarding table or IGMP Snooping.



Index	MAC Address	Port	Type	Status
001	00:00:1C:D4:E2:D7	2	Unicast	Valid
002	00:00:1C:D4:E7:1F	2	Unicast	Valid
003	00:02:B3:08:38:16	2	Unicast	Valid
004	00:04:0D:FF:7A:90	2	Unicast	Valid
005	00:06:5B:2F:5F:33	2	Unicast	Valid
006	00:06:5B:2F:5F:60	2	Unicast	Valid
007	00:06:5B:2F:5F:62	2	Unicast	Valid
008	00:06:5B:2F:5F:69	2	Unicast	Valid
009	00:06:5B:2F:6C:97	2	Unicast	Valid
010	00:06:B1:0E:AD:B0	2	Unicast	Valid
011	00:07:32:07:14:F5	2	Unicast	Valid
012	00:07:3B:E4:8C:58	2	Unicast	Valid
013	00:07:AF:01:3C:75	2	Unicast	Valid
014	00:07:E9:D6:36:3D	2	Unicast	Valid
015	00:08:74:C9:07:F4	2	Unicast	Valid
016	00:08:9B:6A:7B:1F	2	Unicast	Valid

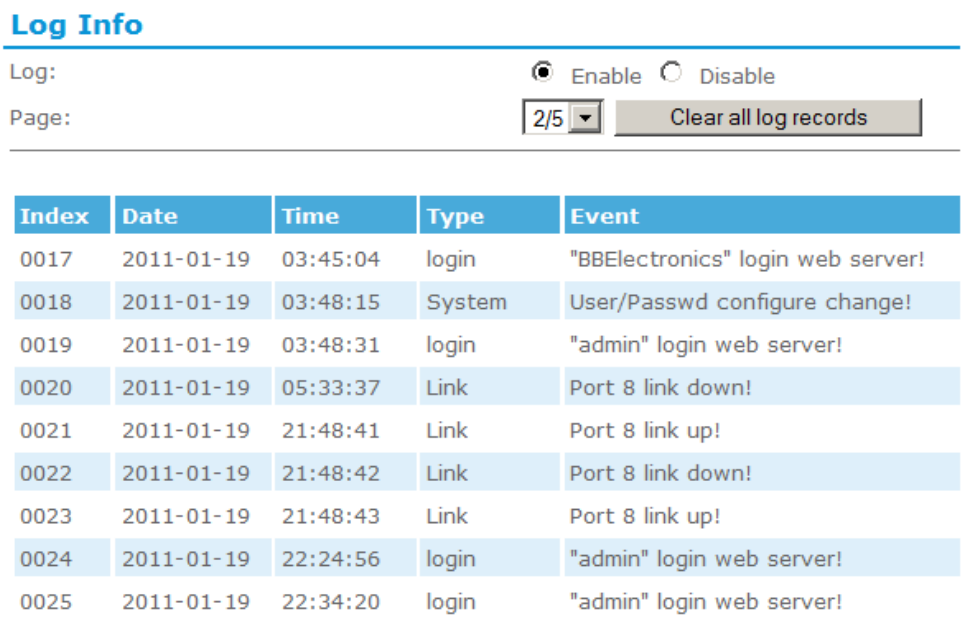


Index		Port	Type	Statu
001	E2:D7	2	Unicast	Valid
002	E7:1F	2	Unicast	Valid
003	38:16	2	Unicast	Valid
004	7A:90	2	Unicast	Valid
005	5F:33	2	Unicast	Valid

Log Information

The Log Info page will display the Index (event number), Date of event, Time of event, Type, and Event description. A total of 16 messages can be displayed on each page. Each available page is selectable using the Page: drop down menu.

All messages of event logs are saved to system. The managed switch will save up to 4000 messages. Once the saved messages exceed 4000 a first in first out method is used to add newer events.



Note: This operation is support by Java.

Logging Event Table:

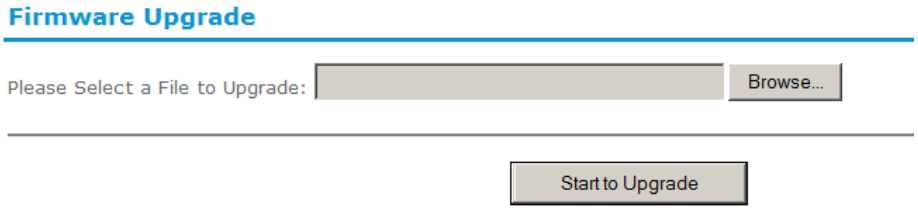
- Cold start
- Warm start
- Port link up and down
- Power off
- Authentication fail
- Port traffic overload
- Login info
- RingOn info

System Update

Firmware Update

To keep your managed switch up to date with the latest firmware a field upgrade procedure is available. Perform the following steps to upgrade the firmware:

1. Download the updated firmware (*.img) file and place in a folder.
2. Select Browse button, select file.
3. Select "Start to Upgrade" button.
4. The current installed version can be found in the Overview sections.

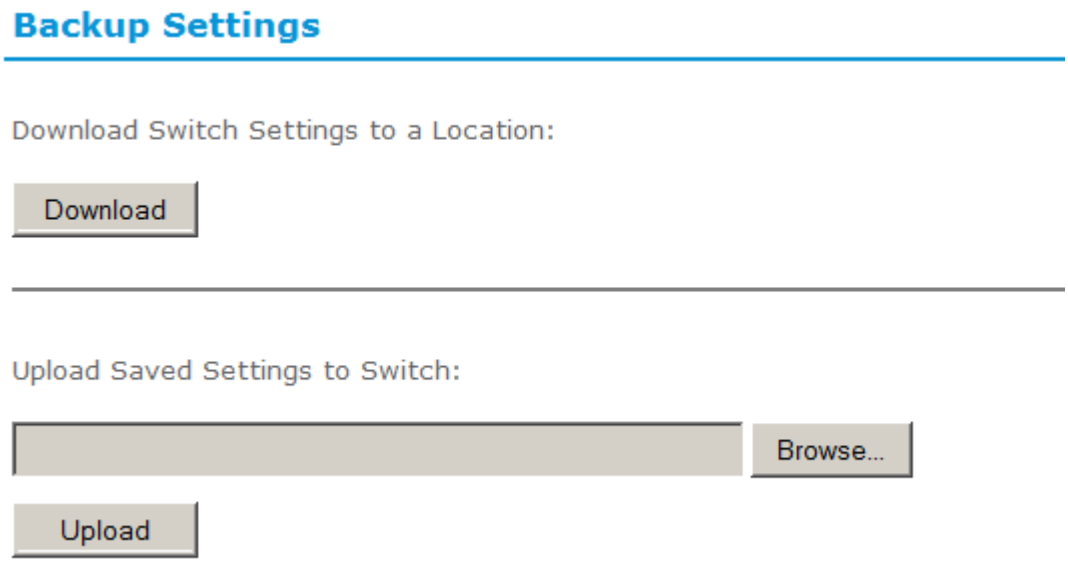


Note:
1. When upgrade firmware, the power should not be shut down.

The managed switches configuration can be saved as a .cfg file and stored for later use. Select Download then Save. At that point you will be able to select a file location.

Note:

1. The configuration file is saved with checksum. Do not edit this file.



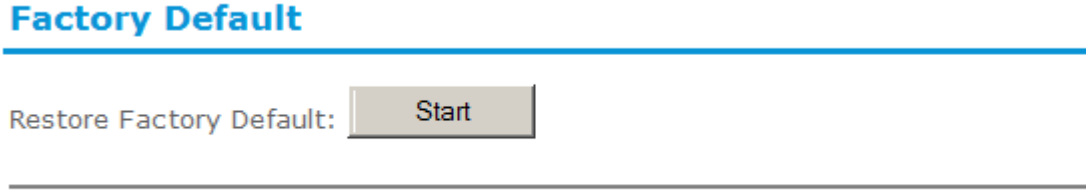
To restore a saved .cfg file select Browse and select the correct file. Next select the Upload button. When the transfer is complete the switch will restart.

Note:

1. Please use the extension file: *.cfg and ensure the file is not altered. Altered files will fail when the CRC check sum operation during uploading.
2. When restore configure, the power should not be shut down.

- Factory Default

The Factory Default is used to restore the shipped default configuration. To restore select "start" then "OK".



Note:

1. It is recommended to save a current .cfg file before restoring default settings.

SFP Modules

- **SFP-1000SX-M-550M-T** - 1000Base-SX, Multi-mode 550m, LC Connector (-40 to 85°C)
- **SFP-1000LX-S-10KM-T** - 1000Base-LX, Single-mode 10km, LC Connector (-40 to 85°C)
- **SFP-1000LX-S-20KM-T** - 1000Base-LX, Single-mode 20km, LC Connector (-40 to 85°C)

Specification

Power Requirements		
Voltage Range	18V-36VDC 25W MAX	
Connection		
	Terminal Block	
Protection	Reverse Polarity Protection	
RJ45 Ports		
	Shielded	
	10/ 100BaseT(X) auto-sensing	
	Full/Half Duplex	
	MDI /MDIX auto-Negotiate	
Multi Mode Fiber		
	100Base-FX	
Distance	2 km	
Wavelength	1310 nm	
Cable	62.5/125 um	
TX power	-23.5 to -14dbm	
RX Sensitivity	<-35dbm	
Connector Type	SC	
Single Mode Fiber		
	100Base-FX	
Distance	20 km	
Wavelength	1310 nm	
Cable	9/125 um	
TX power	-15 to -8dbm	
RX Sensitivity	<-35dbm	
Connector Type	SC	
SFP Ports		
Type	Mini-GBIC SFP Ports	
Connector Type	LC	
Metal Enclosure		
Material	Aluminum and Steel	
Rating	IP30	
Rack Mount		
Enclosure Dimensions(W×H×D)	443×44×220 mm	
IEEE Standards		
IEEE802.3	10Base-T	
IEEE802.3u	100BaseT(X), 100Base FX	
IEEE802.3ab	1000Base(X)	

IEEE802.3z	1000BaseSX/LX/LHX/ZX	
IEEE802.3x	Flow control	
Packet buffer	256k bytes	
MAC Address Size:	8 k	
Processing Type	Store and Forward	
Agency Approvals		
EMI	FCC Part 15, CISPR (EN55022)	
Generic Standard for Light Industrial Environments	Per EN61000-6-1	
EMC	EN61000-4-2 (ESD), level 2	Contact +/- 4kv
		Enclosure Air +/- 8kv
EMC	EN61000-4-3 (RS), level 2	3V/meter
EMC	EN61000-4-4 (EFT), level 2	
	Signal ports	+/- 0.5kV
	D.C. Power ports	+/- 1kV
	A.C. Power ports	NA
	Earth ground ports3	NA
EMC	EN61000-4-5 (Surge),level 2	
	Signal ports	+/- 1kV
	D.C. Power ports	+/- 0.5kV
	A.C. Power ports	NA
EMC	EN61000-4-6 (CS), level 2	
	Signal ports	3 V rms
	D.C. Power ports	3 V rms
	A.C. Power ports	NA
	Earth ground ports3	NA
Certifications		
Enclosure	IP30	
Certification	RoHS	
Op. Temperature	-10°C to 60°C or -40°C to 75°C （Wide Temperature Type）	
Storage Temperature	-40°C to 85°C	
Ambient Relative Humidity	5 to 95%（Non-condensing）	
MTBF	200,000h	