Layer2 Gigabit Smart Switch
BS-GS20 Series
BS-GS20P Series

User Manual

Americas: www.buffaloamericas.com
Europe: www.buffalo-technology.com

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Chapter 1 Initial Settings

Product Requirements

Compatible Devices, Browsers, and OSs

Compatible Devices to Connect to BS-GS

1000BASE-T/100BASE-TX/10BASE-T compatible devices (PCs, Mac, NAS, switches)

Compatible Browsers to Enter Settings

Microsoft Edge
Internet Explorer 8/9/10/11
Mozilla Firefox
Google Chrome
Safari
Refer to our website to confirm the latest information of the compatible browser versions.

Business Switch Configuration Tool's Compatible OSs

Windows 10 (64-bit/32-bit),
Windows 8.1 (64-bit/32-bit), Windows 8 (64-bit/32-bit),
Windows 7 (64-bit/32-bit), Windows Vista (64-bit/32-bit), Windows XP (32-bit)

Install Business Switch Configuration Tool

Install "Business Switch Configuration Tool" before you perform the following procedure. (Compatible with Windows only.)

Note: You can download the latest version of Business Switch Configuration Tool from the URLs below:
BS-GS2008: http://d.buffalo.jp/BS-GS2008/
BS-GS2008P: http://d.buffalo.jp/BS-GS2008P/
BS-GS2016: http://d.buffalo.jp/BS-GS2016/
BS-GS2016P: http://d.buffalo.jp/BS-GS2016P/
BS-GS2024: http://d.buffalo.jp/BS-GS2024/
BS-GS2024P: http://d.buffalo.jp/BS-GS2024P/
BS-GS2048: http://d.buffalo.jp/BS-GS2048/

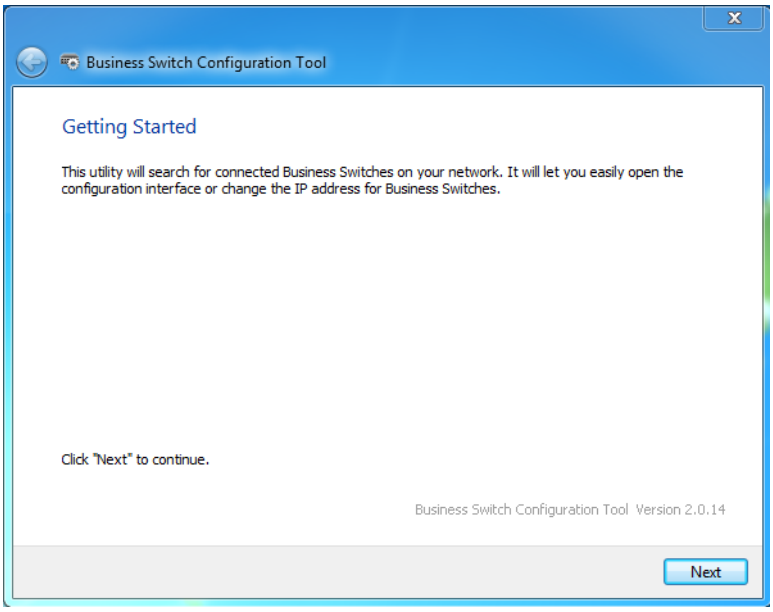
Change Switch's IP Address

To enter Settings, the switch's web user interface, the switch's IP address should belong to the same segment as your PC's IP address.

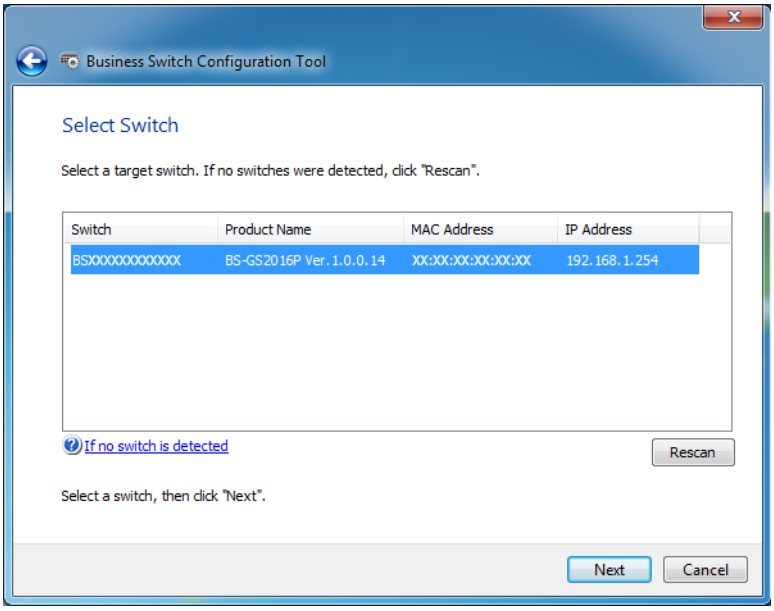
1 Connect the switch to your PC and your network with an Ethernet cable (sold separately). Confirm that link/act LED of the connected port is on.

2 Double-click the "Business Switch Configuration Tool" icon to open Business Switch Configuration Tool.

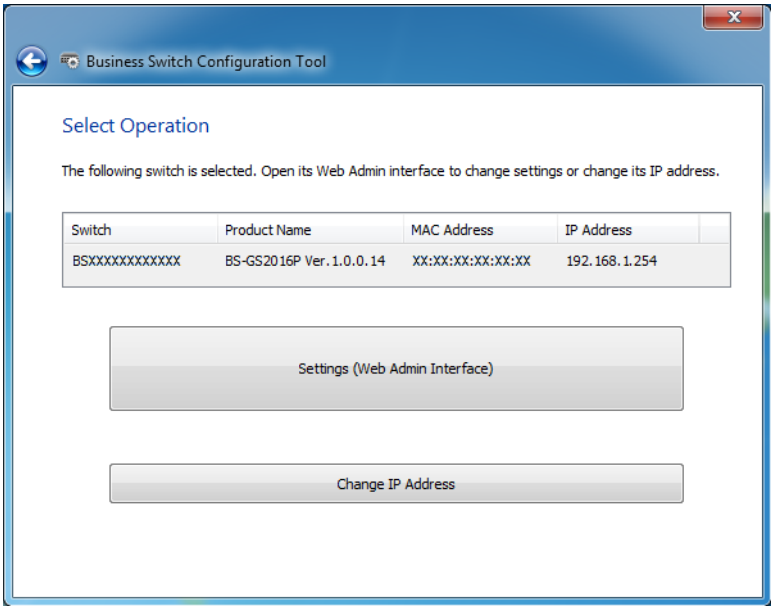
3 Click [Next] to start searching for the switch.



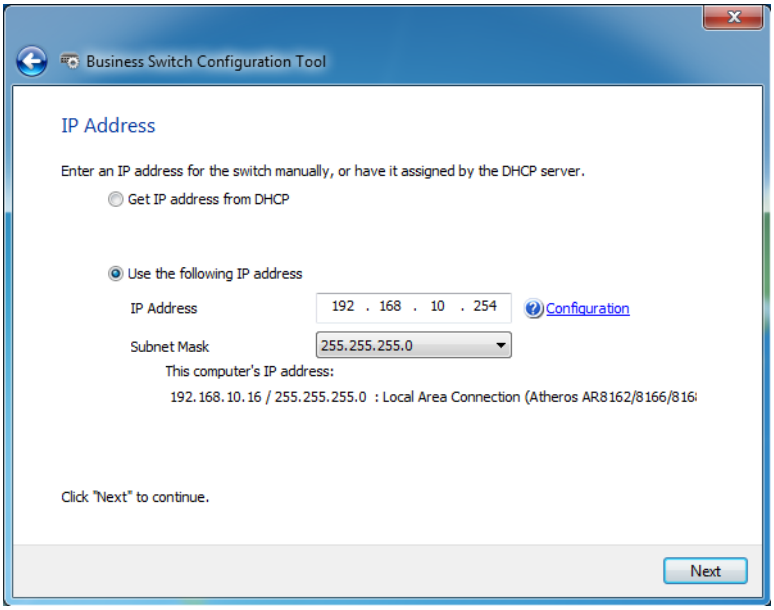
4 Select the switch and click [Next].



5 Click [Change IP Address].



6 Configure the switch's IP address to match the segment of the IP address of your PC and click [Next]. If the password input screen is displayed, enter "password" and click [Next].



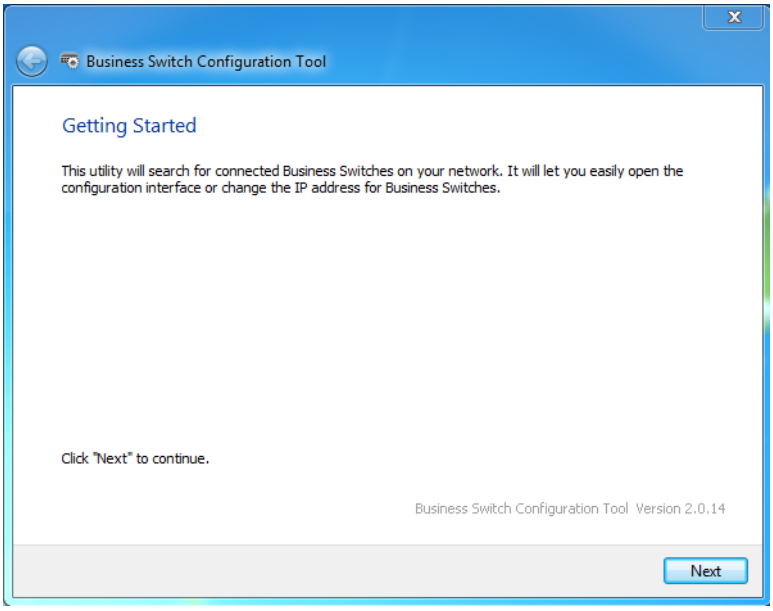
7 Click [Back to Select Switch].

Open Settings

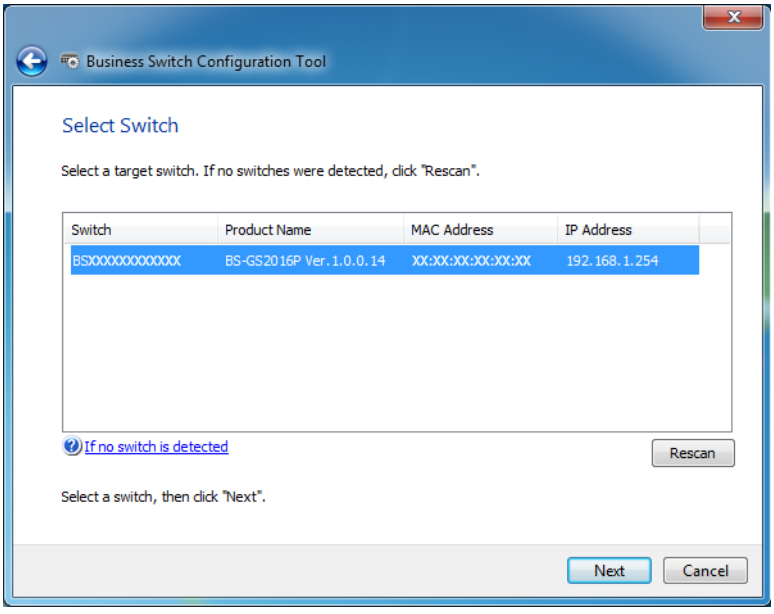
1 Configure the switch's IP address referring to the "Change Switch's IP Address" section above.

2 Double-click the "Business Switch Configuration Tool" icon to open Business Switch Configuration Tool.

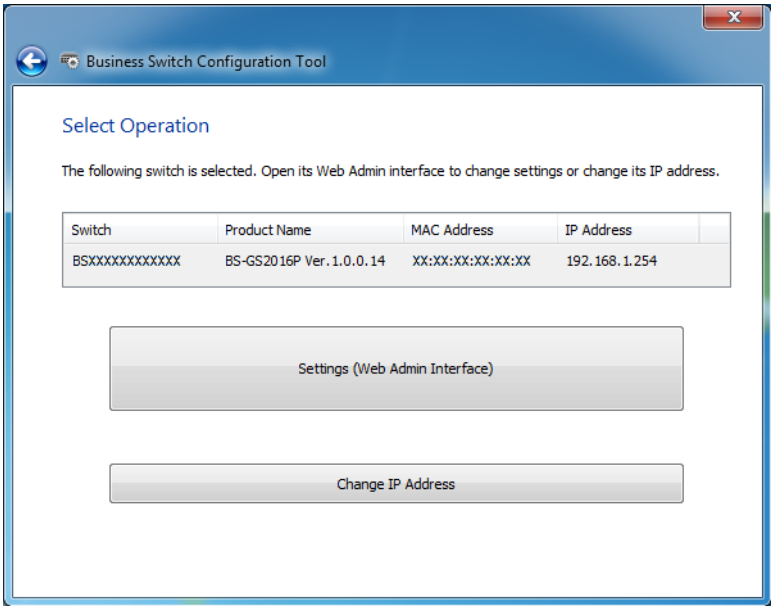
3 Click [Next] to start searching for the switch.



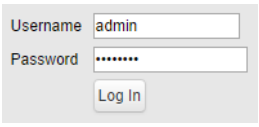
4 Select the switch and click [Next].



5 Click [Settings (Web Admin Interface)].



6 Click OK to launch a web browser and display the login screen. Enter "admin" as the username and "password" as the password, then click [Log In].



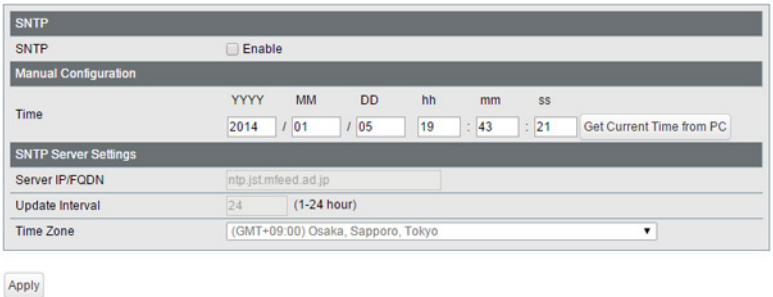
Configure Date and Time

To configure the date and time, refer to the following procedure.

1 Open Settings.

2 Navigate to [Basic] - [Date & Time].

3 Configure each settings and click [Apply].



Note: Enter the IP address or FQDN of the NTP server to change the NTP server. You may enter 4-255 characters. To use FQDN, you have to configure DNS settings separately.

Change Username and Password

To change the default username and password from "admin" and "password", refer to the following procedure.

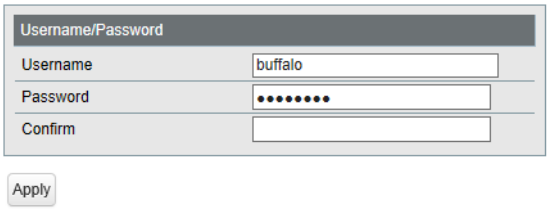
1 Open Settings.

2 Navigate to [Basic] - [System Security] - [Administration Account].

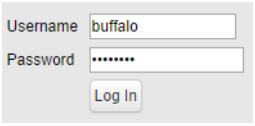
3 Enter your new username and password (also fill the "Confirm" field), then click [Apply].

Notes:

- For the new username, you may enter up to 8 alphanumeric characters, hyphens (-), and underscores (_).
- For the new password, you may enter up to 32 alphanumeric characters, hyphens (-), and underscores (_).



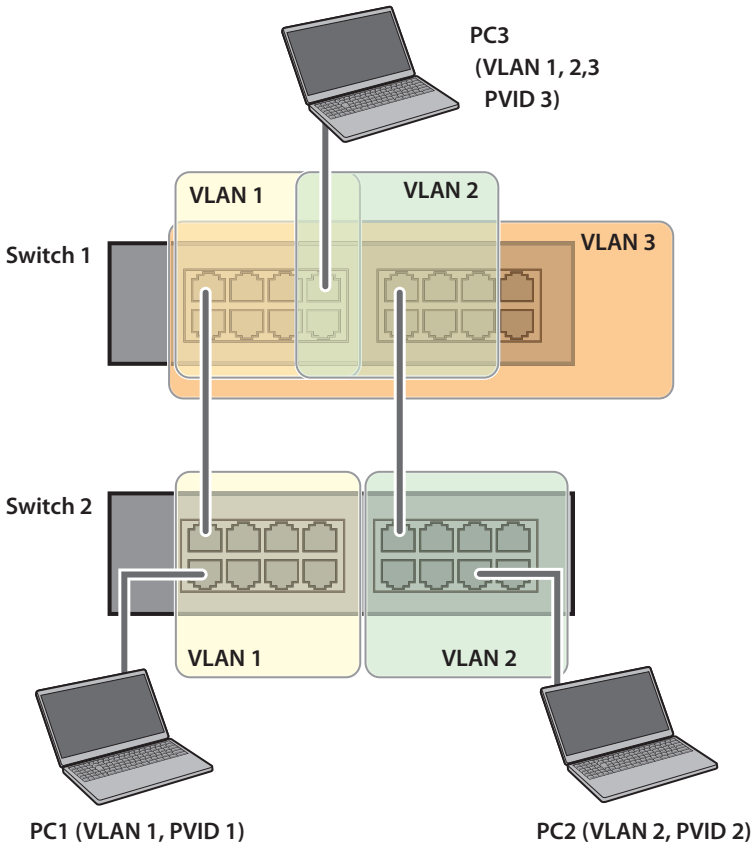
4 Enter the new username and password, then click [Log In].



MAC Address Learning

This switch uses SVL (Shared VLAN Learning) to learn MAC addresses. SVL is a method that retains a shared MAC address table for the entire switch. It differs from IVL, which retains a MAC address table for each VLAN. Be sure you understand how SVL works before you create a VLAN with the switch.

Differences between Operation of SVL and IVL



SVL

When PC 1 and PC 3 communicate, PC 3 is learned by port 1 on switch 2 so PC 2 and PC 3 cannot communicate.

IVL

When PC 1 and PC 3 communicate, PC 3 is learned by both VLAN 1 and VLAN 2 so PC 2 and PC 3 can communicate. However, frames sent from PC 3 to PC 1 are also delivered to PC 2.

Chapter 2 Settings

Refer to the "Open Settings" section in chapter 1 to access Settings.

Menu

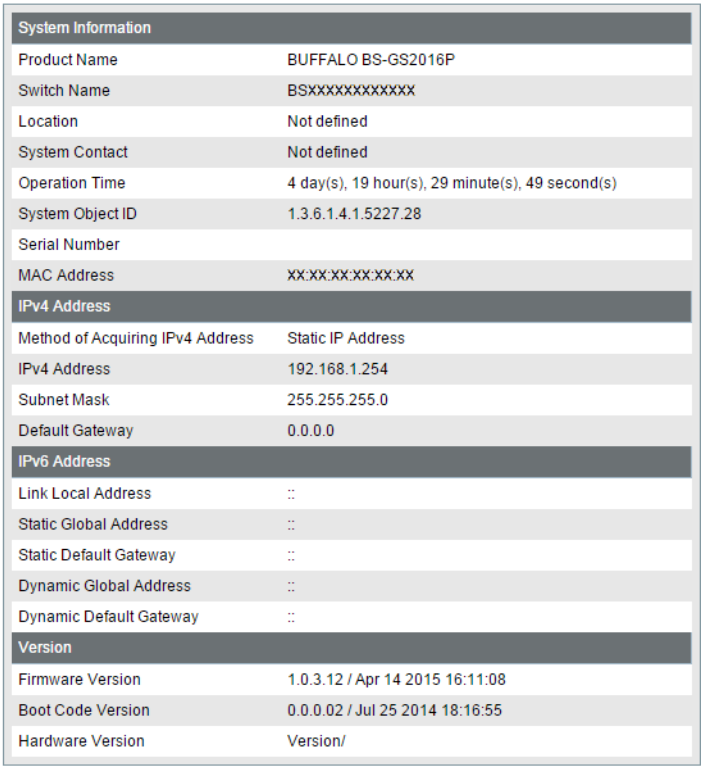
System Information		Displays the switch's information.
Basic		
System		Configure the switch's name, location, and contact.
VLAN	**VLAN Settings**	Confirm VLAN status and create new VLAN. This switch's IP address can also be configured on this page.
	VLAN Ports	Configure PVID (Port VLAN ID).
Routing	**L2/L3 Settings**	Switch between L2 mode and L3 mode.
	Static Routing (L3 mode only)	Configure the gateway to access the specific destination.
SNMP	**SNMP Community Table**	Configure SNMP community table.
	SNMP Host Table	Configure SNMP host table.
	SNMP Trap	Configure SNMP trap.
	SNMPv3 User	Configure SNMPv3 user information.
LLDP	**LLDP Properties**	Configure LLDP.
	LLDP Port	Configure LLDP for each port.
	LLDP-MED Port	Configure LLDP-MED for each port.
	Neighbor Table	Displays the information of LLDP-compatible products connected to the switch.
MAC Addresses	**Static MAC Filtering**	Configure static MAC address-based filtering.
	Dynamic MAC Filtering	Configure dynamic MAC address-based filtering.
	Convert MAC Address	Add dynamic MAC addresses to the static MAC address table to filter them in static MAC filtering.
	Static MAC Address	Register static MAC addresses to the MAC address table.
	MAC Address Aging	Configure MAC address aging time.
Port Settings	**Status**	Displays port status.
	Speed/Mode Settings	Configure transmission rate and flow control for each port.
System Security	**Administration Account**	Configure administration username and password.
	Access Management	Configure each administration interface.
	Certificate	Configure certificate.
Date & Time		Configure date and time by using SNTP or manually.
PoE (PoE-compatible switches only)	**Status**	Displays PoE status.
	PoE Profiles	Configure PoE settings.
	Power Profiles	Configure power saving schedules.
Advanced		

QoS	**QoS Settings**	Configure QoS priority.
	QoS Mapping	Configure QoS mapping for each priority.
	VoIP Auto Priority	Configure priority for SIP, H.323, SCCP.
	DiffServ	
	IPv4/MAC Policy	Create DiffServ policies based on IPv4 or MAC addresses.
	IPv6 Policy	Create DiffServ policies based on IPv6 addresses.
	Port Settings	Configure ports to assign each DiffServ policy.
	IPv4/MAC Priority	Configure priority of each DiffServ policy based on IPv4 or MAC address.
	IPv6 Priority	Configure priority of each DiffServ policy based on IPv6 address.
	Status	Displays DiffServ status.
Security	**Auto DoS Attack Prevention**	Configure to drop specified packets.
	DHCP Snooping	Configure DHCP snooping.
	DHCP Table	Displays the list of DHCP clients that obtain IP addresses from a DHCP server via the switch.
Authentication	**Status**	Displays authentication server status.
	RADIUS	Configure authentication (RADIUS) server.
	Port Authentication	Configure authentication for each port.
Port Trunking		Configure port trunking.
Traffic Control		Configure traffic storm control.
Mirroring		Configure to monitoring traffic.
Spanning Tree Protocol	**STP Settings**	Configure STP/RSTP/MSTP.
	Status	Displays STP/RSTP/MSTP status of each port.
	Ports	Configure STP/RSTP/MSTP priority for each port.
IGMP	**Status**	Displays IGMP status.
	IGMP Settings	Configure IGMP snooping.
	IGMP Querier	Configure IGMP querier.
	IGMP Router Port	Specify ports to connect to multicast routers.
MLD	**Status**	Displays MLD status.
	MLD Settings	Configure MLD snooping.
	MLD Querier	Configure MLD querier.
	MLD Router Port	Specify ports to connect to multicast routers.
ACL	**ACL Wizard**	Configure ACL with wizard.
	MAC ACL	Create MAC address-based ACL.
	IPv4 ACL	Create IPv4 address-based ACL.
	IPv6 ACL	Create IPv6 address-based ACL.
	Ports	Configure ports to assign each ACL group.
	IPv4/MAC Priority	Configure priority of each IPv4 or MAC ACL group.
	IPv6 Priority	Configure priority of each IPv6 ACL group.
	Status	Displays ACL status.
Loop Prevention		Configure loop prevention settings.
DHCP Relay (L3 mode only)		Configure DHCP relay settings.
Management		
Update Firmware		Update firmware from a local file.

Dual Image		Select a firmware image to be read when booting.
Back Up and Restore Settings		Save settings to a file or restore settings from a file.
Reboot		Reboot the switch.
Initialize		Initialize the switch.
ARP Table (L3 mode only)	**Port Order**	Displays the ARP table ordered by ports.
	IP Address Order	Displays the ARP table ordered by IP addresses.
MAC Address Table	**Port Order**	Displays the MAC address table ordered by ports.
	MAC Order	Displays the MAC address table ordered by MAC addresses.
Statistics		Displays the switch's statistics.
Logs		Displays log information.
Syslog Settings		Configure to transfer logs to syslog server.
Network Diagnostics		Execute communication test to the specified IP address.
Cable Diagnostics		Confirm abnormalities of each Ethernet cable connected to the switch.

System Information

Displays the switch's information.



System Information	
Product Name	BUFFALO BS-GS2016P
Switch Name	BSXXXXXXXXXXXX
Location	Not defined
System Contact	Not defined
Operation Time	4 day(s), 19 hour(s), 29 minute(s), 49 second(s)
System Object ID	1.3.6.1.4.1.5227.28
Serial Number	
MAC Address	XX:XX:XX:XX:XX:XX
IPv4 Address	
Method of Acquiring IPv4 Address	Static IP Address
IPv4 Address	192.168.1.254
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
IPv6 Address	
Link Local Address	::
Static Global Address	::
Static Default Gateway	::
Dynamic Global Address	::
Dynamic Default Gateway	::
Version	
Firmware Version	1.0.3.12 / Apr 14 2015 16:11:08
Boot Code Version	0.0.0.02 / Jul 25 2014 18:16:55
Hardware Version	Version/

System Information	Displays system information such as the switch name, serial number, and MAC address.
IPv4 Address	Displays information such as the switch's IPv4 address, subnet mask, and default gateway.
IPv6 Address	Displays information such as the switch's IPv6 addresses and default gateways.
Version	Displays the switch's firmware, boot code, and hardware version.

System

Configure the switch's name, location, and contact.



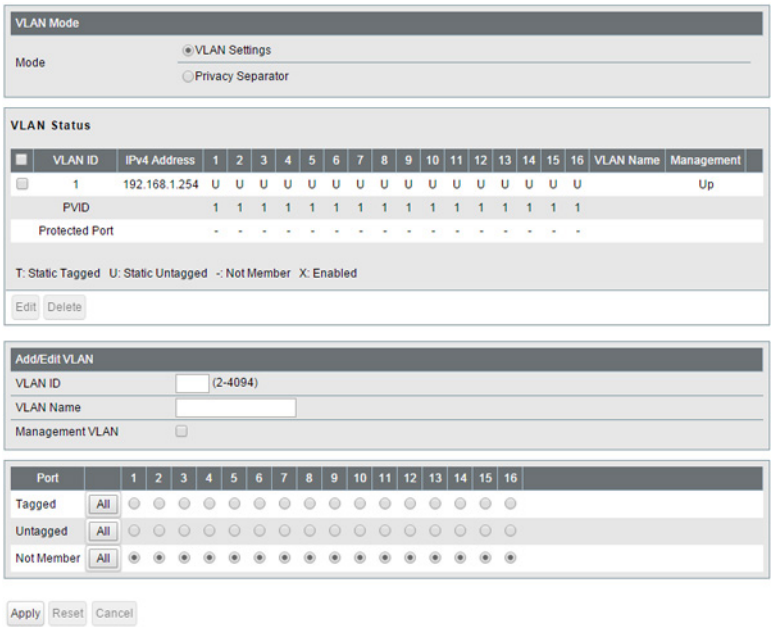
Switch Name	Enter the switch's name. You may enter up to 50 alphanumeric characters, hyphens, and underscores.
Location	Enter the location of the switch. You may enter up to 50 alphanumeric characters, hyphens, underscores, and spaces.
Contact	Enter the contact information of the switch. You may enter up to 50 alphanumeric characters, hyphens, underscores, and spaces.

VLAN

VLAN Settings

Confirm VLAN status and configure new VLAN. The switch's IP address, default gateway, and DNS server can also be configured on this page.

In L2 mode

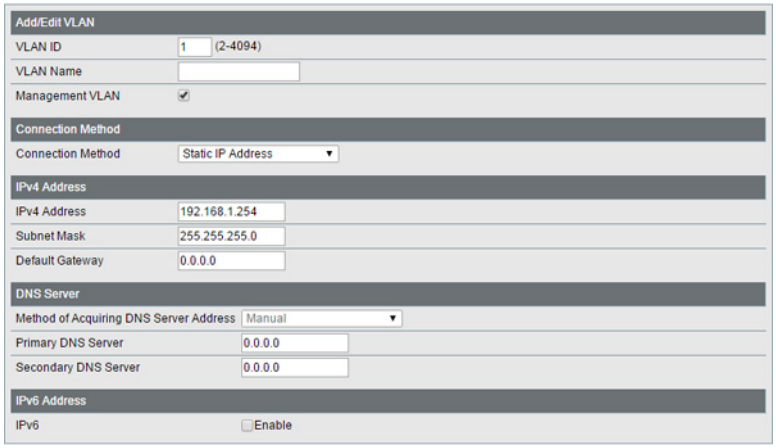


Mode	Select a VLAN mode from "VLAN Settings" or "Privacy Separator". Privacy separator is a mode that enables communication to the router from a port but blocks communication between ports. **Note:** VLAN and privacy separator cannot be used at the same time.

VLAN Status	Displays current VLAN and PVID (Port VLAN ID) status. Click [Edit] to edit the VLAN selected. Click [Delete] to delete the VLAN selected. VLAN 1 cannot be deleted.
VLAN ID	Specify VLAN ID from 2-4094.
VLAN Name	Enter the VLAN name. You may enter up to 17 alphanumeric characters, hyphens, and underscores.
Management VLAN	Check it if the VLAN is a management VLAN. Only devices which belong to the management VLAN can open Settings.
Tagged	Select when you assign the port to tag member.
Untagged	Select when you assign the port to untag member.
Not Member	Select when you do not assign the port to any member.
Reset	Click to reset the changes to the previous settings.
Uplink	Appears when "Privacy Separator" is selected. A router should be connected to the uplink port to connect to the Internet. Uplink ports can communicate with all downlink ports. Specify at least 1 port to an uplink port.
Downlink	Appears when "Privacy Separator" is selected. Downlink ports are the ones which each device connected to. Downlink ports can communicate with uplink ports, but cannot communicate with each downlink port.

Note: In privacy separator mode, only the device connected to an uplink port can open Settings. If you configure the port that your PC is connected as a downlink port, you cannot open Settings any more.

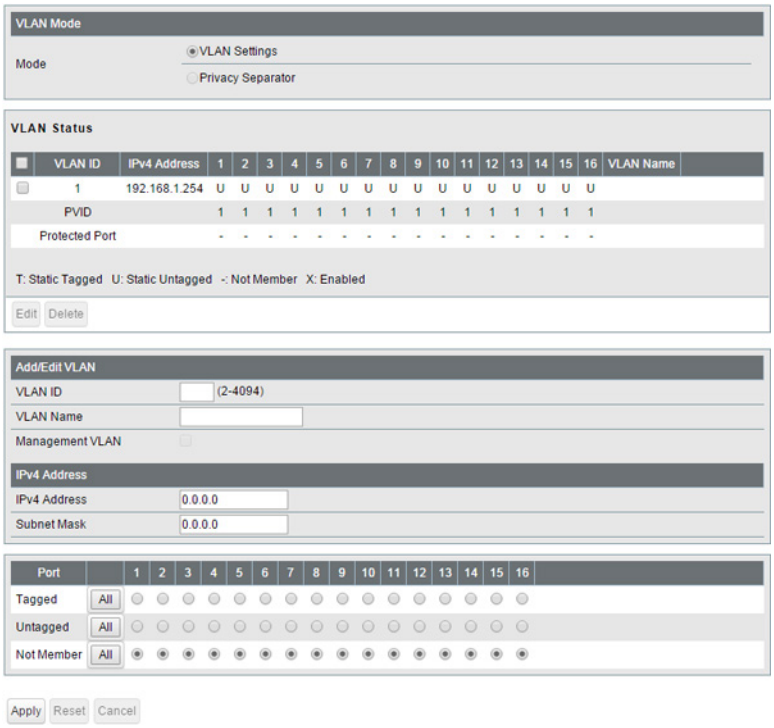
The following screen is displayed when you select VLAN 1 and click [Edit] or click [Edit] next to the IP address field in privacy separator mode.



Connection Method	Select a method of obtaining the switch's IP address. **Static IP Address** Enter the IP address manually. **Obtain from DHCP Server** Obtain the switch's IP address from DHCP server.
IPv4 Address	Enter the switch's IPv4 address if you select [Static IP Address] as the connection method.
Subnet Mask	Enter the switch's subnet mask if you select [Static IP Address] as the connection method.
Default Gateway	Enter the switch's default gateway if you select [Static IP Address] as the connection method.

Method of Acquiring DNS Server Address	Select a method of obtaining the DNS server's IP address.
Primary DNS Server	Enter the primary DNS server's IP address.
Secondary DNS Server	Enter the secondary DNS server's IP address.
IPv6	Check "Enable" to enable IPv6.
Obtain IPv6 address automatically	Check "Enable" if the switch need to obtain router advertisement from IPv6-compatible router.
DHCPv6 Client	Check "Enable" if using DHCPv6 client. When "Rapid Commit" is checked, the communication speed with DHCPv6 server will be increased if the DHCPv6 server is also compatible with rapid commit.
Link Local Address	Displays the switch's link local address. This is generated automatically when IPv6 is enabled.
Static Global Address	Enter the global address and prefix length to configure an IPv6 address manually. The prefix length may contain 1-128. When "EUI-64" is checked, the bottom 64-bit of the IPv6 address will be generated automatically based on the switch's MAC address, in accordance with Modified EUI-64 (RFC4291).
Static Default Gateway	Enter the default gateway to configure an IPv6 default gateway manually. The default gateway prefix should be the same as the static global address.
Dynamic Global Address	Displays the dynamic global address obtained from DHCPv6 or router advertisement. The address with the trailing "SF" means that the address was obtained from DHCPv6. The address with the trailing "SL" means that the address was obtained from router advertisement.
Dynamic Default Gateway	Displays the default gateway obtained from router advertisement.

In L3 mode

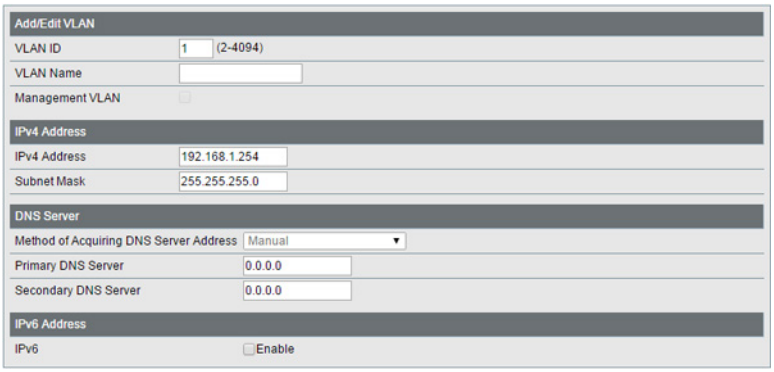


Mode	Privacy separator cannot be used when the switch is in L3 mode.
VLAN Status	Displays current VLAN and PVID (Port VLAN ID) status. Click [Edit] to edit the VLAN selected. Click [Delete] to delete the VLAN selected. VLAN 1 cannot be deleted.

VLAN ID	Specify the VLAN ID from 2-4094.
VLAN Name	Enter the VLAN name. You may enter up to 17 alphanumeric characters, hyphens, and underscores.
Management VLAN	If an IP address is assigned to the VLAN, that VLAN will become a management VLAN in L3 mode.
IPv4 Address	Enter an IPv4 address and a subnet mask to assign them to the VLAN. Up to 32 VLANs that a unique IPv4 addresses is assigned can be created.
Tagged	Select when you assign the port to tag member.
Untagged	Select when you assign the port to untag member.
Not Member	Select when you do not assign the port to any member.
Reset	Click to reset the changes to the previous settings.
Uplink	Appears when "Privacy Separator" is selected. A router should be connected to the uplink port to connect to the Internet. Uplink ports can communicate with all downlink ports. Specify at least 1 port to an uplink port.
Downlink	Appears when "Privacy Separator" is selected. Downlink ports are the ones which each device connected to. Downlink ports can communicate with uplink ports, but cannot communicate with each downlink port.

Note: In privacy separator mode, only the device connected to an uplink port can open Settings. If you configure the port that your PC is connected as a downlink port, you cannot open Settings anymore.

The following screen is displayed when you select VLAN 1 and click [Edit].



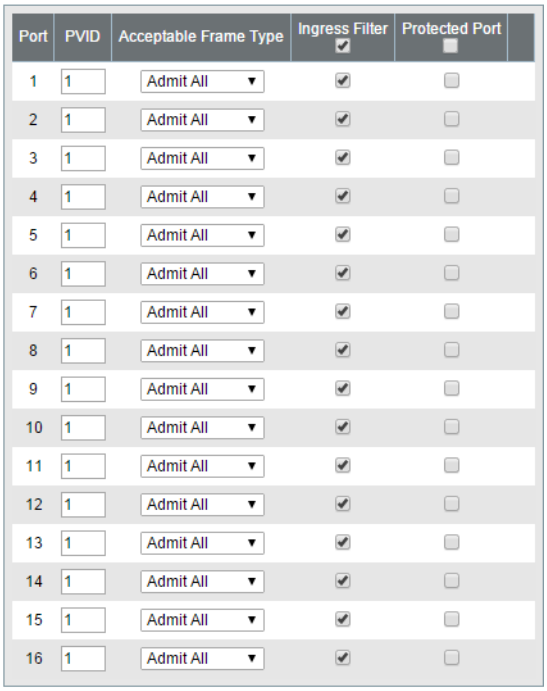
Method of Acquiring DNS Server Address	Select a method of obtaining the DNS server's IP address.
Primary DNS Server	Enter the primary DNS server's IP address.
Secondary DNS Server	Enter the secondary DNS server's IP address.
IPv6	Check "Enable" to enable IPv6.
Obtain IPv6 address automatically	Check "Enable" if the switch need to obtain router advertisement from IPv6-compatible router.
DHCPv6 Client	Check "Enable" if using DHCPv6 client. When "Rapid Commit" is checked, the communication speed with the DHCPv6 server will be increased if the DHCPv6 server is also compatible with rapid commit.
Link Local Address	Displays the switch's link local address. This is generated automatically when IPv6 is enabled.
Static Global Address	Enter the global address and prefix length to configure an IPv6 address manually. The prefix length may contain 1-128. When "EUI-64" is checked, the bottom 64-bit of the IPv6 address will be generated automatically based on the switch's MAC address, in accordance with Modified EUI-64 (RFC4291).

Static Default Gateway	Enter the default gateway to configure an IPv6 default gateway manually. The default gateway prefix should be the same as the static global address.
Dynamic Global Address	Displays the dynamic global address obtained from DHCPv6 or router advertisement. The address with the trailing "SF" means that the address was obtained from DHCPv6. The address with the trailing "SL" means that the address was obtained from router advertisement.
Dynamic Default Gateway	Displays the default gateway obtained from router advertisement.

Note: In L3 mode, you can configure the default gateway from the [Routing] - [Static Routing] page.

VLAN Ports

Configure PVID (Port VLAN ID).

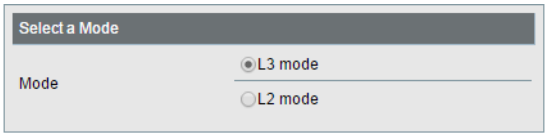


PVID	Specify the port VLAN ID. The received untagged frames will be recognized as the specified VLAN ID. (1-4094)
Acceptable Frame Type	**Admit All** Receive both untagged and tagged frames. **Tag Only** Receive tagged frames only and drop untagged frames.
Ingress Filter	**Enable** Drop frames if the received frame's VLAN ID is not a member of incoming port's VLAN. **Disable** All tagged and untagged frames will be received.
Protected Port	"Protected Port" enabled ports cannot communicate with each other.

Routing

L2/L3 Settings

Configure the layer mode of the switch.



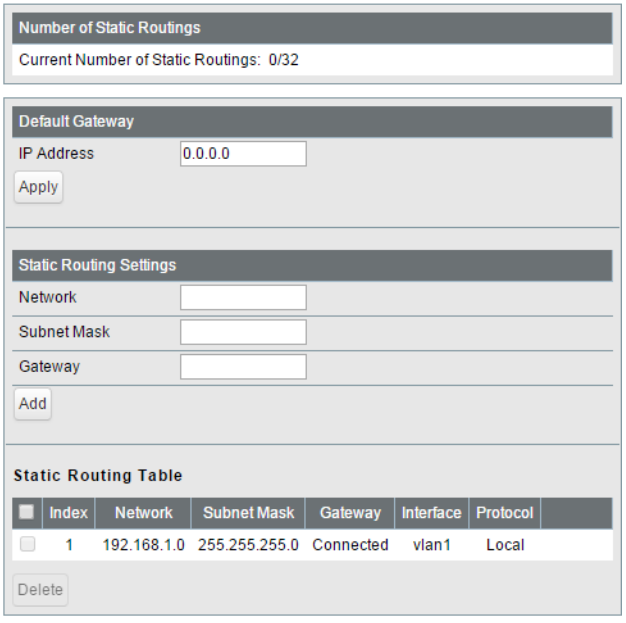
Apply

Mode	Specify the layer mode from the following. **L3 mode** The switch works as a layer 3 switch. **L2 mode** The switch works as a layer 2 switch.

Note: Switching the mode will delete static routing settings and all VLANs except VLAN 1.

Static Routing

Displayed only when the switch is in L3 mode. Configure the gateway to reach the specified network.



Number of Static Routings	Displays the number of enabled static routings.
Default Gateway	Enter the IP address of the gateway to reach an unspecified network.

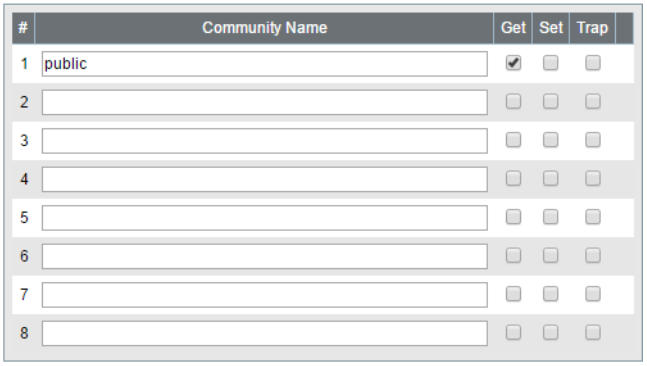
Static Routing Table Setting	Add the static routing setting to the table by entering the following items. Up to 32 static routes can be created. **Network** Enter the IP address of the network that you need to configure the static routing for. **Subnet Mask** Enter the subnet mask of the network. **Gateway** Enter the IP address of the gateway to reach the specified network.
Static Routing Table	Displays the static routing information.

SNMP Settings

To use SNMP, SNMP monitoring software is needed.

SNMP Community Table

Configure SNMP community table.

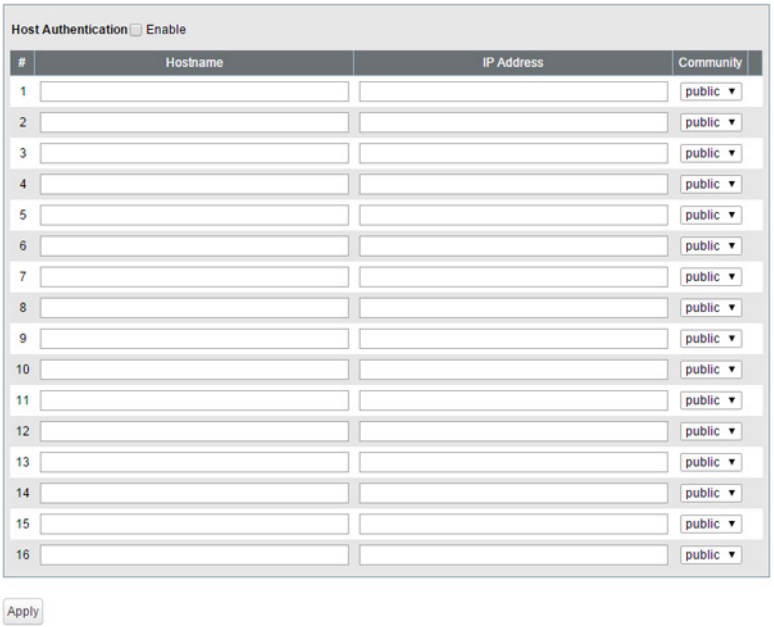


Community Name	Enter the community name. You may enter up to 31 alphanumeric characters, hyphens, and underscores.
Get	If checked, community members are allowed to read the switch's SNMP information.
Set	If checked, community members are allowed to write the switch's SNMP information.
Trap	If checked, communication members can receive SNMP traps.

SNMP Host Table

Configure the SNMP host table.

Note: To delete the registered host, make "Hostname" and "IP Address" field blank and click [Apply].

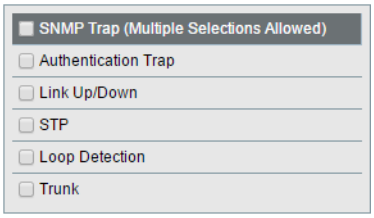


Host Authentication	Enable/disable SNMP host authentication. **Enable** SNMP service will be provided from SNMP manager only. Read/write authority depends on the community. **Disable** Receive SNMP requests from any hosts. Read/write authority depends on the community.
Hostname	Enter a hostname to permit SNMP requests. You may enter 1-31 alphanumeric characters, hyphens, and underscores.
IP Address	Enter an IPv4/IPv6 address of the host. To communicate with the host using an IPv6 address, enable IPv6 in advance.
Community	Select the host's community. Communities should be configured on the [SNMP Community Table] page in advance.

SNMP Trap

Configure SNMP traps.

Note: To use SNMP traps, register the host to the host table on the [Basic] - [SNMP] - [SNMP Host Table] page and enable "trap" for that community.



Apply

Compatible traps:
0 coldStart
1 warmStart
2 LinkDown (Link Up/Down)
3 LinkUp (Link Up/Down)
4 authenticationFailure (Authentication Trap)
6 topoligyChange (STP)
7 Loop detection (Loop Detection)
Private MIB OID: 1.3.6.1.4.1.5227.28.1.1.1
8 Trunk (Trunk)
Private MIB OID: 1.3.6.1.4.1.5227.28.1.1.2 (the value differs depending on the trunk's link status as below)
1.3.6.1.4.1.5227.28.1.2.1 (trunk key 1-8)
1.3.6.1.4.1.5227.28.1.2.2 (link up: 1, link down: 2)

All traps can be enabled/disabled except "coldStart" and "warmStart".

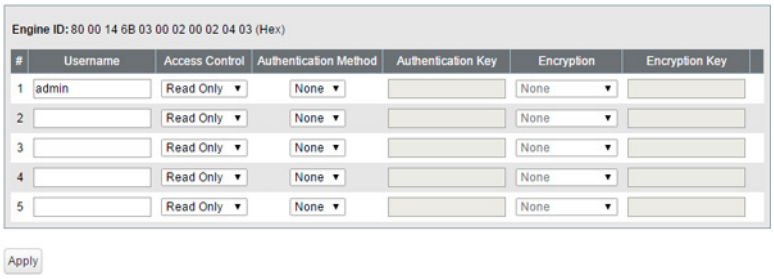
SNMP Trap	Enable or disable all of the following traps.
Authentication Trap	If enabled, the trap will be sent when SNMP is requested from an unallowed IP address.
Link Up/Down	If enabled, the trap will be sent when link up/down of the port is detected.
STP	If enabled, the trap will be sent when STP/RSTP/MSTP topology change is occurred.
Loop Detection	If enabled, the trap will be sent when the loop is detected.
Trunk	If enabled, the trap will be sent when the trunk is configured or unconfigured.

SNMPv3 User

Configure information of users who are authenticated with SNMPv3. SNMPv3 will authenticate users using username and the authentication can be encrypted. This switch is compatible with the following authentication and encryption method.

Authentication method: HMAC-MD5-96/HMAC-SHA-96

Encryption method: CBC-DES/CFB-AES-128

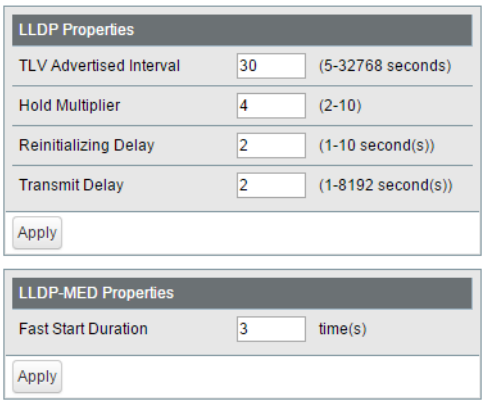


Engine ID	This is the switch's unique ID to identify SNMP engine. This ID will be notified to other side when SNMPv3 communication is done.
Username	Enter the username to authenticate. The username should be up to 32 alphanumeric characters, hyphens (-), and underscores (_).
Access Control	Limit the access depending on the user. **Read Only** Prohibit writing. **Read/Write** Permit any access.
Authentication Method	Configure the authentication method.
Authentication Key	Enter the key phrase compatible with the authentication method.
Encryption	Configure the encryption method.
Encryption Key	Enter the key phrase compatible with the encryption method.

LLDP

LLDP Properties

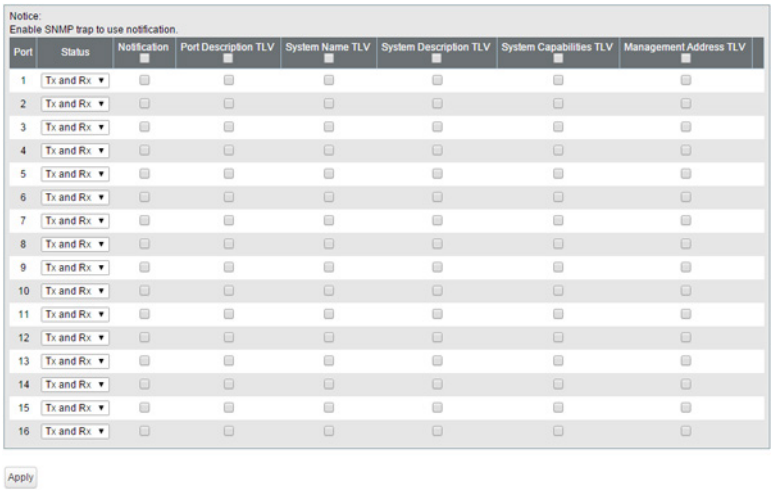
Configure LLDP.



TLV Advertised Interval	Enter the interval of sending LLDP packets. (5-32768 seconds)
Hold Multiplier	Enter the amount of time of TTL (Time To Live: the time that LLDP packets are held before the packets are discarded) measured in multiples of the TLV advertised interval. (2-10)
Reinitializing Delay	Enter the time that passes between disabling and reinitializing LLDP. (1-10 seconds)
Transmit Delay	Enter the time that passes between changing the LLDP settings and transmitting LLDP frame. (1-8192 seconds)
Fast Start Duration	Enter the number of times that LLDP packets are sent when the LLDP-MED-compatible device is detected.

LLDP Port

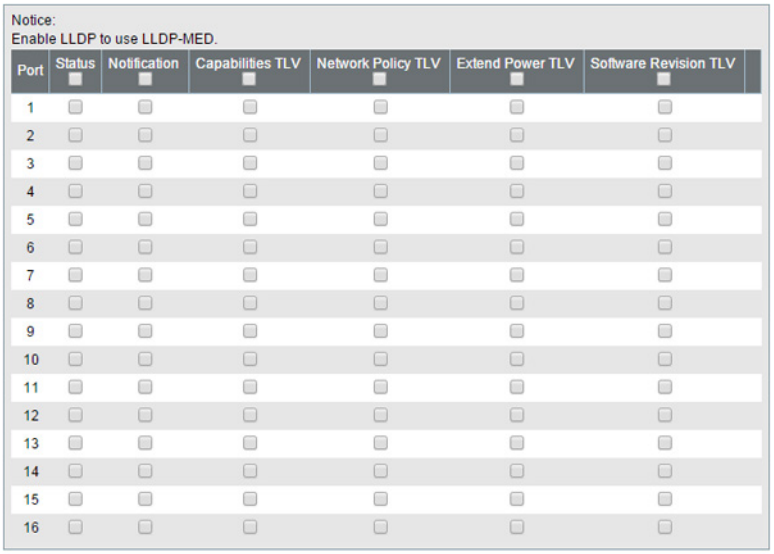
Configure LLDP for each port.



Status	**Disable** Disable LLDP. **Tx Only** Enable transmitting LLDP packets only. **Rx Only** Enable receiving LLDP packets only. **Tx and Rx** Enable transmitting and receiving LLDP packets.
Notification	If enabled, SNMP traps will be sent to the SNMP server when the neighbor table is updated. **Note:** To use notification, configure SNMP manager and SNMP trap settings.
Port Description TLV	If enabled, the port information (port number) will be included in LLDP packets.
System Name TLV	If enabled, the switch name will be included in LLDP packets. **Note:** The switch name can be configured on the [Basic] - [System] page.
System Description TLV	If enabled, the product name will be included in LLDP packets.
System Capabilities TLV	If enabled, the system capabilities will be included in LLDP packets.
Management Address TLV	If enabled, the switch's IP address will be included in LLDP packets.

LLDP-MED Port

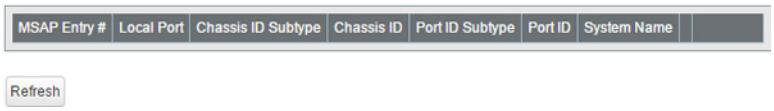
Configure LLDP-MED for each port.



Status	If enabled, LLDP-MED will be transmitted. **Note:** To use this functionality, configure the status to [Tx Only] or [Tx and Rx] on the [LLDP Port] page.
Notification	If enabled, the SNMP trap will be sent to the SNMP server when the LLDP-MED information in the neighbor table is updated. **Note:** To use notification, configure SNMP manager and SNMP trap settings.
Capabilities TLV	If enabled, the capabilities will be included in LLDP packets.
Network Policy TLV	If enabled, the network policy will be included in LLDP packets.
Extend Power TLV	If enabled, the extend power will be included in LLDP packets. **Note:** This functionality is compatible with PoE switches only.
Software Revision TLV	If enabled, the firmware version will be included in LLDP packets.

Neighbor Table

Displays the information of the LLDP-compatible devices connected to the switch.



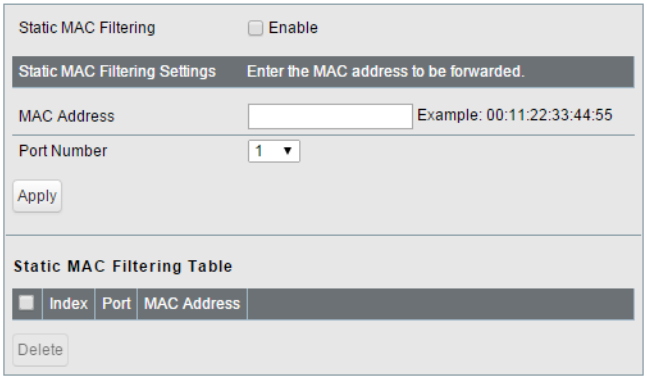
MSAP Entry #	Displays the entry number of the detected devices.
Local Port	Displays port number that the detected devices are connected to.
Chassis ID Subtype	Displays the chassis ID subtype of the detected devices.
Chassis ID	Displays the chassis ID of the detected devices.
Port ID Subtype	Displays the port ID subtype of the detected devices.
Port ID	Displays the port ID of the detected devices.
System Name	Displays the system name of the detected devices.

Note: To use this functionality, configure the status to [Rx Only] or [Tx and Rx] on the [Basic] - [LLDP] - [LLDP Port] page.

MAC Addresses

Static MAC Filtering

Configure the filtering of MAC addresses that are registered manually. Only the frames with the registered MAC address as a source MAC address can pass through the ports that the MAC address is registered to.

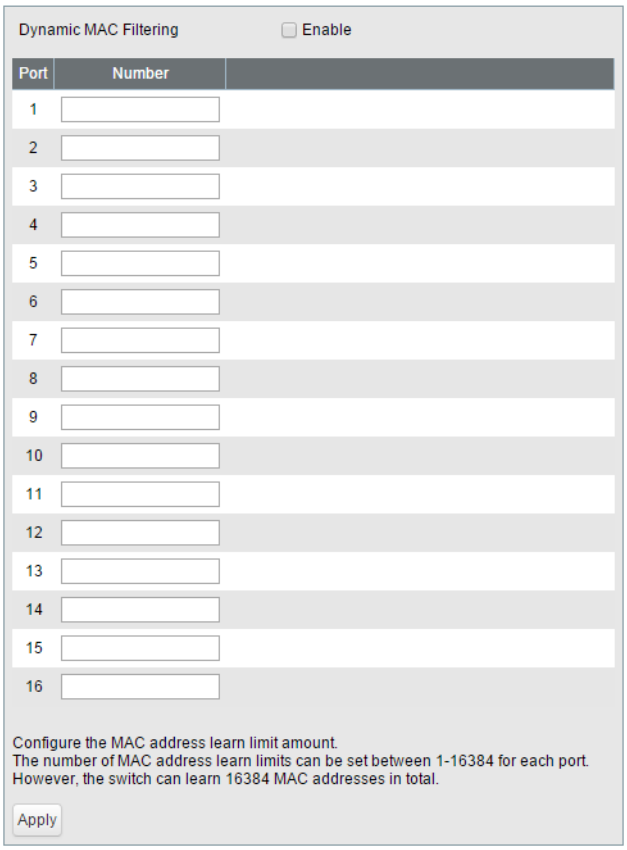


Static MAC Filtering	Check "Enable" to enable static MAC filtering.
MAC Address	Enter the MAC address you want to filter. (Example: 00:11:22:aa:bb:cc) Up to 16 addresses can be registered per port.
Port Number	Select a port to apply the static MAC filter.
Static MAC Filtering Table	Displays the registered MAC addresses and port numbers.

Note: This function is not compatible with multicast MAC addresses, VRRP MAC addresses (00:00:5E:00:01:XX), and broadcast MAC addresses.

Dynamic MAC Filtering

Configure the dynamic MAC filtering that enables you to set the number of MAC address learn limits for each port.



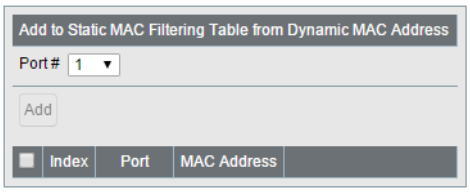
Dynamic MAC Filtering	Check "Enable" to enable dynamic MAC filtering.
Number	Enter the number of MAC address learning limits of each port. (1-16384)

Notes:

- If the port's "Number" field is left blank, all MAC addresses can pass through that port.
- The number of MAC address learn limits can be set between 1-16384 for each port. However, the switch can learn 16384 MAC addresses in total. If the number of MAC address is over 16384, MAC addresses will never be learned and will be dropped.
- When both static and dynamic MAC filtering are enabled, MAC addresses in the static MAC address table are not counted towards the number of dynamic MAC address.

Convert MAC Address

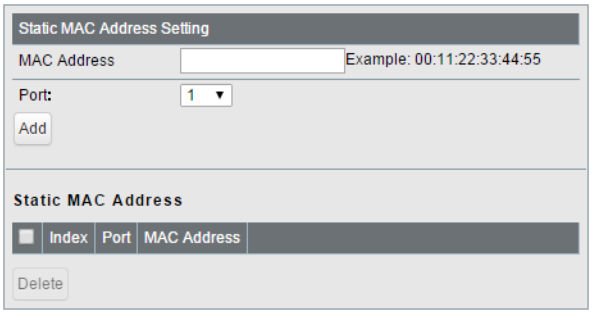
Add dynamic MAC addresses to static MAC filtering table to filter them in static MAC filtering.



Add to Static MAC Filtering Table from Dynamic MAC Address	Select a port number to display the dynamic MAC addresses that was learned from the port. Select MAC addresses to add to the static MAC filtering table and click [Add].

Static MAC Address

Register the static MAC address to the MAC address table. The device with a registered MAC address can communicate only when it is connected to the specified port. You can confirm the status of static MAC addresses registration in [Management] - [MAC Address Table].



MAC Address	Enter a MAC address. Up to 256 MAC addresses can be registered to the switch in total.
Port	Specify the port number to register the static MAC address.
Static MAC Address	Displays the registered static MAC addresses.

Notes:

- This function is not compatible with multicast MAC addresses, VRRP MAC addresses (00:00:5E:00:01:XX), and broadcast MAC addresses.
- The registered device cannot communicate when it is not connected to the specified port.

MAC Address Aging

Configure MAC address aging time. MAC address aging time is the time between the last reference of the MAC address and deleting MAC address.



Apply

Aging Time	Enter the aging time.

Port Settings

Status

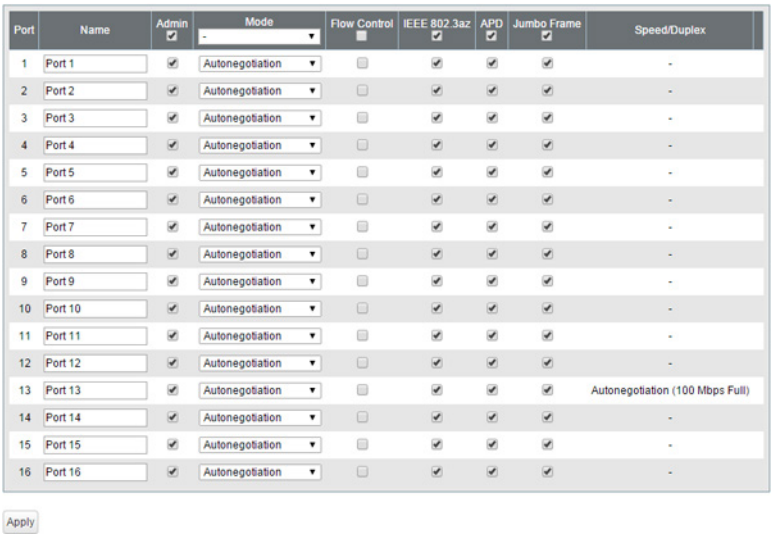
Displays the port status.

Port	Name	Admin	Link Status	Autonegotiation	Speed/Duplex	Flow Control	IEEE 802.3az	APD	Jumbo Frame
1	Port 1	On	Down	On	1000Mbps-Full	Off	On	On	On
2	Port 2	On	Down	On	1000Mbps-Full	Off	On	On	On
3	Port 3	On	Down	On	1000Mbps-Full	Off	On	On	On
4	Port 4	On	Down	On	1000Mbps-Full	Off	On	On	On
5	Port 5	On	Down	On	1000Mbps-Full	Off	On	On	On
6	Port 6	On	Down	On	1000Mbps-Full	Off	On	On	On
7	Port 7	On	Down	On	1000Mbps-Full	Off	On	On	On
8	Port 8	On	Down	On	1000Mbps-Full	Off	On	On	On
9	Port 9	On	Down	On	1000Mbps-Full	Off	On	On	On
10	Port 10	On	Down	On	1000Mbps-Full	Off	On	On	On
11	Port 11	On	Down	On	1000Mbps-Full	Off	On	On	On
12	Port 12	On	Down	On	1000Mbps-Full	Off	On	On	On
13	Port 13	On	Up	On	100Mbps-Full	Off	On	On	On
14	Port 14	On	Down	On	1000Mbps-Full	Off	On	On	On
15	Port 15	On	Down	On	1000Mbps-Full	Off	On	On	On
16	Port 16	On	Down	On	1000Mbps-Full	Off	On	On	On

Name	Displays the port name.
Admin	Displays whether the port is enabled (on) or disabled (off).
Link Status	Displays whether the link is up or down.
Autonegotiation	Displays whether the autonegotiation is enabled (on) or disabled (off).
Speed/Duplex	Displays the speed and duplex status.
Flow Control	Displays whether the flow control is enabled (on) or disabled (off).
IEEE 802.3az	Displays whether IEEE 802.3az is enabled (on) or disabled (off).
APD	Displays whether APD is enabled (on) or disabled (off).
Jumbo Frame	Displays whether jumbo frame is enabled (on) or disabled (off). **Note:** Jumbo frames of up to 9216 frames (including header 14 bytes + FCS 4 bytes) can be forwarded.

Speed/Mode Settings

Configure ports settings such as the transmission rate or flow control.

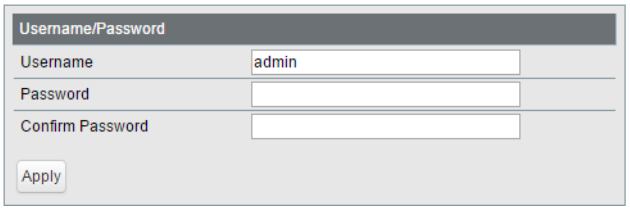


Name	Enter the port name. You may enter up to 15 alphanumeric characters, hyphens, underscores, and spaces.
Admin	Check to enable the port.
Mode	Select the transmission rate and duplex.
Flow Control	Check to enable flow control.
IEEE 802.3az	Check to enable IEEE802.3az.
APD	Check to enable APD (auto power down). If enabled, power consumption of link down ports can be reduced.
Jumbo Frame	Check to enable jumbo frame settings.
Speed/Duplex	Displays the current transmission rate and duplex.

System Security

Administration Account

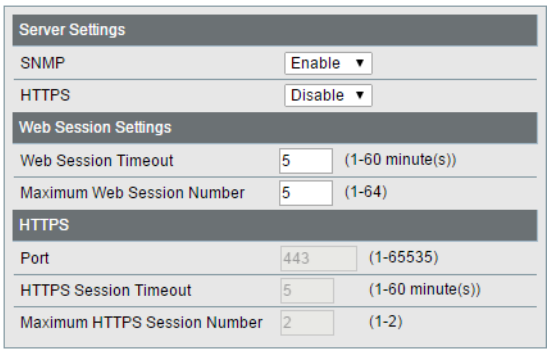
Configure the username and password.



Username	Enter the new username. You may enter up to 8 alphanumeric characters, hyphens, and underscores.
Password	Enter the new password. You may enter up to 32 alphanumeric characters, hyphens, and underscores.
Confirm	Enter the new password again.

Access Management

Configure each administration interface.



Apply

SNMP	Enable or disable SNMP administration interface.
HTTPS	Enable or disable HTTPS administration interface. **Note:** To use this functionality, upload SSL certificate on the [Basic] - [System Security] - [Certificate] page.
Web Session Timeout	Enter the timeout period for accessing Settings using HTTP.
Maximum Web Session Number	Enter the number of users who can access Settings using HTTP at the same time.
Port	Specify the port number for HTTPS connections.
HTTPS Session Timeout	Enter the timeout period for accessing Settings using HTTPS.
Maximum HTTPS Session Number	Enter the number of users who can access Settings using HTTPS at the same time.

Certificate

Upload or download the certificate. For HTTPS communication, prepare a certificate by yourself, or use the certificate automatically created on the switch.

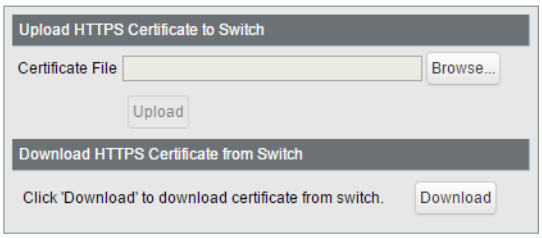
A certificate will be automatically created on the switch when no certificate is uploaded and the switch is rebooted.

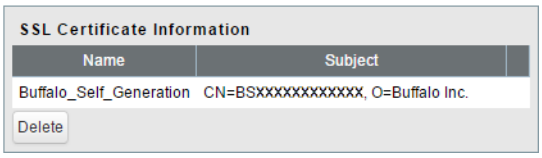
The compatible certificate types are:

Certificate Type	X.509
Private Key	RSA up to 2048-bit (no encryption only)
Hash Algorithm	SHA1, SHA256, SHA384, SHA512

The certificate must include the private key as the following:

```
-----BEGIN CERTIFICATE-----
…
…
-----END CERTIFICATE-----
-----BEGIN RSA PRIVATE KEY-----
…
…
-----END RSA PRIVATE KEY-----
```

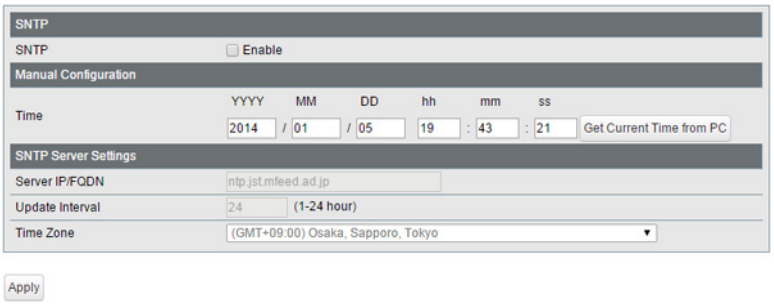




Upload HTTPS Certificate to Switch	Upload HTTPS certificate.
Download HTTPS Certificate from Switch	Download HTTPS certificate.
SSL Certificate Information	Displays the uploaded certificate information. Click [Delete] to delete the uploaded certificate. **Note:** If the certificate is deleted, a certificate will be automatically created next time the switch reboots.

Date & Time

Configure whether to manually set the date and time or automatically using a SNTP server.



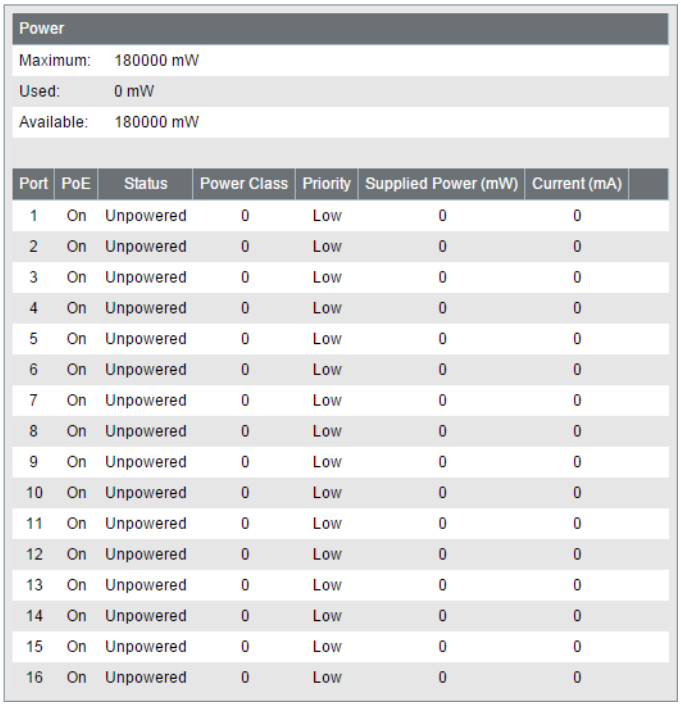
SNTP	Enable to automatically obtain the time from SNTP server.
Time	Configure the time when SNTP is disabled.
Server IP/FQDN	Enter the SNTP server IP address or FQDN. To enter the FQDN, DNS settings must be configured.
Update Interval	Enter the interval which time is obtained from the SNTP server.
Time Zone	Configure the time zone.

PoE

This functionality is for PoE-compatible switches only.

Status

Displays the PoE status.



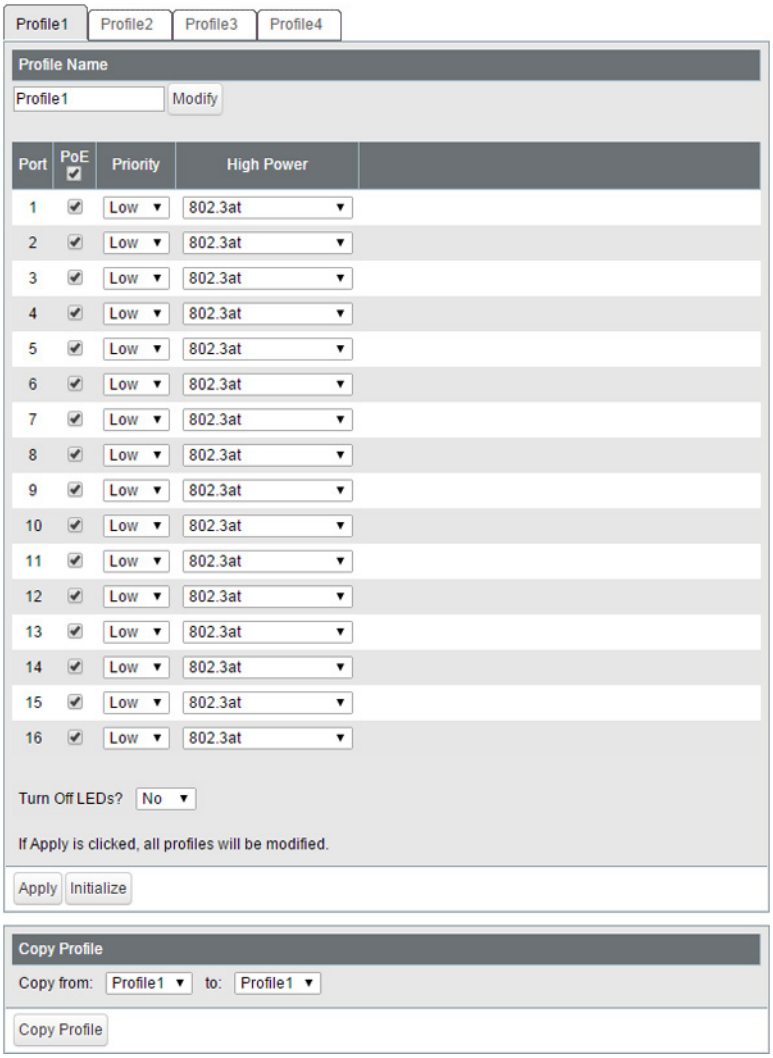
Power	
Maximum:	180000 mW
Used:	0 mW
Available:	180000 mW

Port	PoE	Status	Power Class	Priority	Supplied Power (mW)	Current (mA)
1	On	Unpowered	0	Low	0	0
2	On	Unpowered	0	Low	0	0
3	On	Unpowered	0	Low	0	0
4	On	Unpowered	0	Low	0	0
5	On	Unpowered	0	Low	0	0
6	On	Unpowered	0	Low	0	0
7	On	Unpowered	0	Low	0	0
8	On	Unpowered	0	Low	0	0
9	On	Unpowered	0	Low	0	0
10	On	Unpowered	0	Low	0	0
11	On	Unpowered	0	Low	0	0
12	On	Unpowered	0	Low	0	0
13	On	Unpowered	0	Low	0	0
14	On	Unpowered	0	Low	0	0
15	On	Unpowered	0	Low	0	0
16	On	Unpowered	0	Low	0	0

Power	Displays the maximum power, power being used, and available power.
PoE	Displays if PoE is enabled (on) or disabled (off). **Notes:** • If you connect a PoE device to the switch while available power (shown to the right of "Available") is 16000 mW (16 W) or lower, the switch will not supply PoE power to the device. • The maximum power of BS-GS20P series is 180000 mW (180 W).
Status	Displays the power feeding status.
Power Class	Displays the connected device's class.
Priority	Displays the priority of each port.
Supplied Power	Displays the supplied power of each port.
Current	Displays the supplied current of each port.

PoE Profiles

Configure PoE settings for each profile that is used in [Power Profile] page.



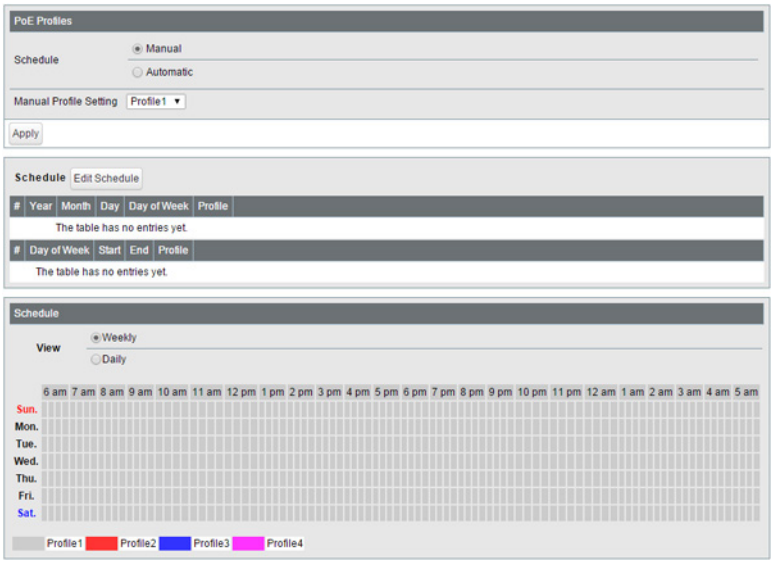
Profile Name	To change the profile name, enter a new profile name and click [Modify].
PoE	Enable or disable PoE functionality.
Priority	Configure the priority of PoE power feeding. When the supplied power exceeds maximum power, the switch will supply power to the ports in the order of priority.
High Power	Configure the high-powered power feeding function. **Disable** The switch will supply power up to 15.4 W to the 802.3af-compatible devices. High-powered power feeding is disabled. **802.3af High Power** This is the expansion of 802.3af standard. The switch will supply power up to 15.4 W to the class 0-3 devices and up to 30 W to the class 4 devices. **802.3at** The switch will supply power up to 30 W to the 802.3at-compatible devices.
Turn Off LEDs?	Select "Yes" to turn off all LEDs except the power LED.
Initialize	Click to initialize the selected profile.
Copy Profile	Select the source and destination profiles and click [Copy Profiles] to copy them.

Notes:

- Click [Apply] to apply the current settings to all profiles.
- To use dynamic power feeding by LLDP, configure the status to [Tx and Rx] on the [Basic] - [LLDP] - [LLDP Port] page.
- If the supplied power exceeds the maximum power, the switch will supply power to the port in the order of the port number.

Power Profile

Configure the power saving schedule.



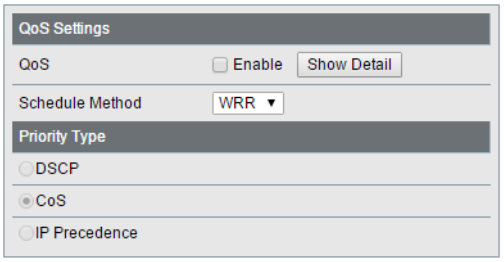
Schedule	**Manual** Switch the profile manually. **Automatic** Switch the profile automatically in accordance with the settings below. **Note:** To set to [Automatic], SNTP must be enabled. If the time cannot be obtained from SNTP server, the configured profile will be applied in accordance with the switch's internal clock.
Manual Profile Setting	Select a profile to be used when the schedule is set to [Manual].
Profiles	Displays the list of the profiles. Click [Edit Profiles] to edit the profile. **Note:** To edit the profile, set the schedule to [Manual].
Schedule	Displays the list of the schedule. Click [Edit Schedule] to edit the schedule.
View	**Weekly** Displays the weekly schedule. **Daily** Displays the daily schedule.
The screen appears when [Edit Schedule] is clicked	
Unscheduled Profile	Select a profile to be used when no schedules are configured.
Specify by	Select a timetable type.
Date	Enter the date to add to the schedule if "Date" is selected as the timetable type.
Day of Week	Select the day of week to add to the schedule if "Day of week and time" is selected as the timetable type.
Period	Select the time frame while the schedule is enabled if "Day of week and time" is selected as the timetable type.

Select Profile	Select a method of specifying the profile. "Copy profile from a different day" cannot be selected when "Day of week and time" is selected as the timetable type.
Profile	Select a profile name if "Use profile below" is selected as the method of specifying the profile. Click [Check] to confirm each profile's settings.
Use profile from	Select a day of week to copy the profile if "Copy profile from a different day" is selected as the method of specifying the profile.
Schedule	Displays the list of configured schedule.

QoS

QoS Settings

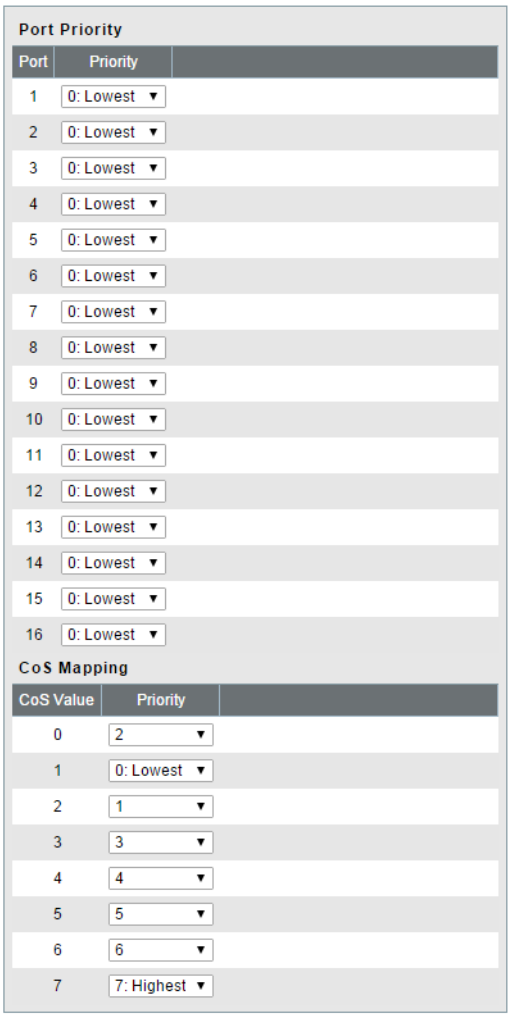
Configure the priority.



QoS	Check to enable QoS. Click [Show Detail] to enable/disable QoS for each port.
Schedule Method	Configure the queue scheduling type. **Strict** Execute the queue scheduling based on strict priority. High-prioritized queues are always forwarded strictly; low-prioritized queue will never be forwarded if any data remains in the high prioritized queue. **WRR** Execute the queue scheduling based on WRR (Weighted Round Robin). This will forward queues in order of a round robin; even lower priority queues will be forwarded at a constant rate. The priority can be specified from 0 (lowest) to 7 (highest). **Note:** Packets without VLAN tag will belong to the lowest priority queue.
Priority Type	Select a priority parameter from DSCP, CoS, and IP precedence.

QoS Mapping

Configure port-based priority for DSCP, CoS, and IP precedence.

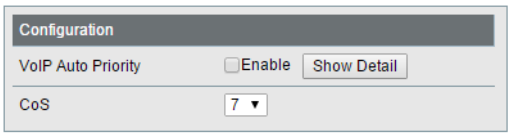


Port Priority	Configure the priority of each port.
DSCP Mapping	Configure the DSCP priority value from 0-63.
CoS Mapping	Configure the CoS priority value from 0-7.
IP Precedence Mapping	Configure the IP precedence priority value from 0-7.
Priority	Configure the priority from 0-7.

Note: DSCP mapping, CoS mapping, and IP precedence mapping is displayed when each type is selected.

VoIP Auto Priority

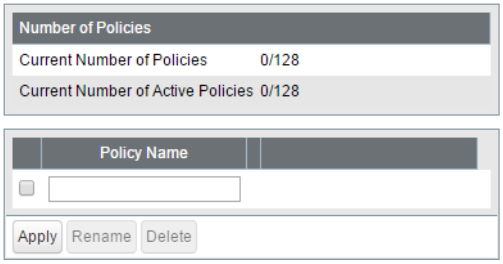
Configure the priority of SIP, H.323, SCCP.



VoIP Auto Priority	Check to enable VoIP auto priority. Click [Show Detail] to enable or disable this functionality for each port.
CoS	Applied to the VoIP packets of SIP, H.323, SCCP only. If QoS is enabled, it is handled in accordance with CoS priority.

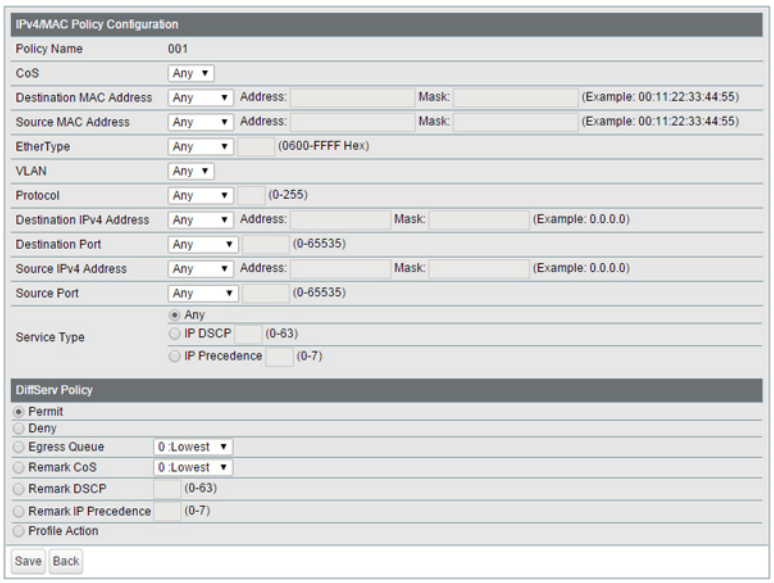
IPv4/MAC Policy

Create DiffServ policies. IPv4 and MAC addresses can be specified here. The enabled policies will be applied when the packet or frame enters to the switch.



Current Number of Policies	Displays the number of created policies.
Current Number of Active Policies	Displays the number of active policies.
Policy Name	Enter the policy name into the blank field and click [Apply] to create a new policy. Click [Show Detail] to configure the policy in detail. Check the created policy name, enter the new name and click [Rename] to rename the policy.

The following screen appears when [Show Detail] is clicked.



Policy Name	Displays the selected policy name.
CoS	Adds the CoS value to the policy condition.
Destination MAC Address	Adds the frame's destination MAC address to the policy condition. For instructions on how to enter the address, refer to "About Address and Mask" section below.
Source MAC Address	Adds the frame's source MAC address to the policy condition. For instructions on how to enter the address, refer to "About Address and Mask" section below.
EtherType	Adds the frame's ether type to the policy condition.
VLAN	Adds the frame's VLAN ID to the policy condition.
Protocol	Adds the packet's protocol to the policy condition.
Destination IPv4 Address	Adds the packet's destination IPv4 address to the policy condition. For instructions on how to enter the address, refer to "About Address and Mask" section below.
Destination Port	Adds the packet's destination port to the policy condition.
Source IPv4 Address	Adds the packet's source IPv4 address to the policy condition. For instructions on how to enter the address, refer to "About Address and Mask" section below.
Source Port	Adds the packet's source port to the policy condition.
Service Type	Adds the packet's service type to the policy condition. Only 1 value can be specified when "IP DSCP" or "IP Precedence" is selected.

DiffServ Policy	Select the action for when the frames satisfy the condition. **Permit** Permits forwarding the frames and packets. **Deny** Discards the frames and packets. **Egress Queue** Changes the processing priority of the frames and packets. **Remark CoS** Rewrites CoS value of the frames and packets. **Remark DSCP** Rewrites DSCP value of the frames and packets. **Remark IP Precedence** Rewrites IP precedence value of the frames and packets. **Profile Action** Processes the frames and packets depending on the committed rate. If the rate of the frames and packets is less than the committed rate, the switch will process the frames and packets in accordance with the in-profile action. Otherwise, the switch will process the frames and packets in accordance with the out-of-profile action. **Committed Rate** Specify the rate to determine the process method. **Committed Burst** Specify the burst size that the switch processes in accordance with the in-profile action when the rate of frames and packets exceeds the committed rate instantaneously. When the burst size exceeds the committed burst, the switch will process in accordance with the out-of-profile action. In-Profile Action Specify the action when the rate of frames and packets is less than the committed rate. **Out-of-profile Action** Specify the action when the rate of frames and packets exceeds the committed rate.

About Address and Mask

This product adopts "wildcard masks".

To configure the source MAC address or destination MAC address, refer to the following example.

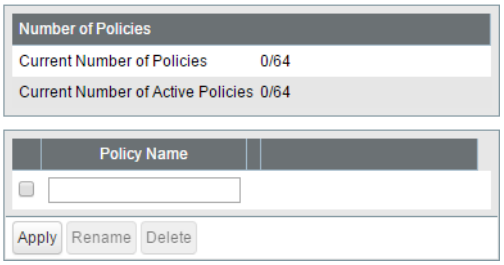
- To specify the range of "00:11:22:ab:cd:00" to "00:11:22:ab:cd:ff"
  Enter "00:11:22:ab:cd:00" in the address field and also enter "00:00:00:00:00:ff" in the mask field.
- To specify only "00:11:22:ab:cd:ef"
  Enter "00:11:22:ab:cd:ef" in the address field and also enter "00:00:00:00:00:00" in the mask field.

To configure the source IPv4 address or destination IPv4 address, refer to the following example.

- To specify the range of "192.168.1.0" to "192.168.1.254"
  Enter "192.168.1.0" in the address field and also enter "0.0.0.255" in the mask field.
- To specify only "192.168.1.1"
  Enter "192.168.1.1" in the address field and also enter "0.0.0.0" in the mask field.

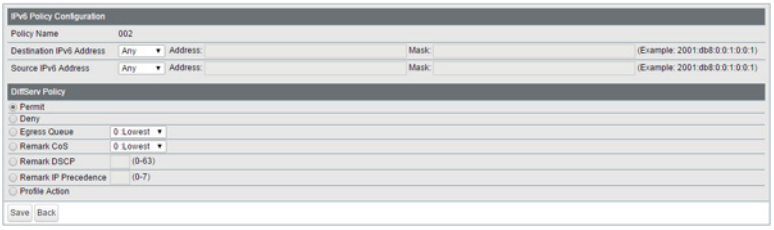
IPv6 Policy

Create DiffServ policies. IPv6 addresses can be specified here. The enabled policies will be applied when the packet or frame enters the switch.



Current Number of Policies	Displays the number of created policies.
Current Number of Active Policies	Displays the number of active policies.
Policy Name	Enter the policy name into the blank field and click [Apply] to create a new policy. Click [Show Detail] to configure the policy in detail. Check the created policy name, enter the new name and click [Rename] to rename the policy.

The following screen appears when [Show Detail] is clicked.



Policy Name	Displays the selected policy name.
Destination IPv6 Address	Adds the packet's destination IPv6 address to the policy condition. For instructions on how to enter the address, refer to "About Address and Mask" section below.
Source IPv6 Address	Adds the packet's source IPv6 address to the policy condition. For instructions on how to enter the address, refer to "About Address and Mask" section below.

DiffServ Policy	Select the action for when the frames satisfy the condition. **Permit** Permits forwarding the frames and packets. **Deny** Discards the frames and packets. **Egress Queue** Changes the processing priority of the frames and packets. **Remark CoS** Rewrites CoS value of the frames and packets. **Remark DSCP** Rewrites DSCP value of the frames and packets. **Remark IP Precedence** Rewrites IP precedence value of the frames and packets. **Profile Action** Processes the frames and packets depending on the committed rate. If the rate of the frames and packets is less than the committed rate, the switch will process the frames and packets in accordance with the in-profile action. Otherwise, the switch will process the frames and packets in accordance with the out-of-profile action. **Committed Rate** Specify the rate to determine the process method. **Committed Burst** Specify the burst size that the switch processes in accordance with the in-profile action when the rate of frames and packets exceeds the committed rate instantaneously. When the burst size exceeds the committed burst, the switch will process in accordance with the out-of-profile action. **In-Profile Action** Specify the action when the rate of frames and packets is less than the committed rate. **Out-of-profile Action** Specify the action when the rate of frames and packets exceeds the committed rate.

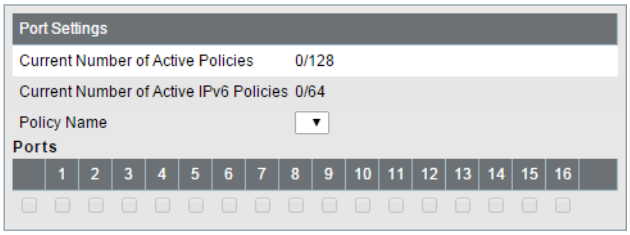
About Address and Mask

This product adopts "wildcard masks". To configure the source IPv6 address or destination IPv6 address, refer to the following example.

- To specify the range of "2001:db8::" to "2001:db8::ffff"
  Enter "2001:db8::" in the address field and also enter "::ffff" in the mask field.
- To specify only "2001:db8::"
  Enter "2001:db8::" in the address field and also enter "::" in the mask field.

Port Settings

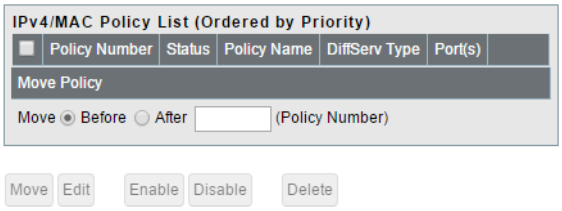
Configure the ports to apply DiffServ policies. The ports specified by ACL rules cannot be specified.



Current Number of Active Policies	Displays the number of active IPv4 and MAC address-based policies.
Current Number of Active IPv6 Policies	Displays the number of active IPv6 address-based policies.
Port Settings	Select a policy name and ports, then click [Apply].
IPv4/MAC (IPv6) ACL Rule List	Displays the selected policy's conditions.

IPv4/MAC Priority

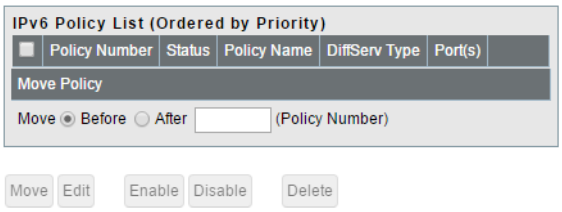
Configure IPv4 and MAC address-based policies priority.



IPv4/MAC Policy List	Displays the list of IPv4 and MAC address-based policy. Policies are listed in order of the priority.
Move Policy	Select a policy and enter the policy number that the selected policy moves to before (or after). Select [Before] or [After] and click [Move] to change the priority of the policy.

IPv6 Priority

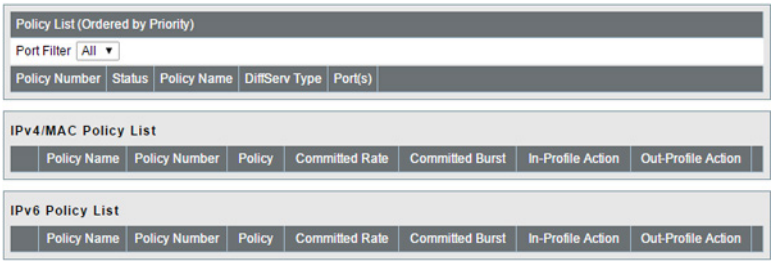
Configure IPv6 address-based policies priority.



IPv6 Policy List	Displays the list of IPv6 address-based policies. Policies are listed in order of the priority.
Move Policy	Select a policy and enter the policy number that the selected policy moves to before (or after). Select [Before] or [After] and click [Move] to change the priority of the policy.

Status

Displays the DiffServ status.

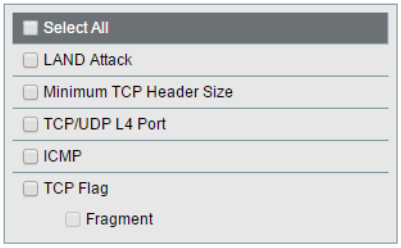


Policy List	Displays the list of policies. Policies are listed in order of the priority. Select a port from [Port Filter] to display only the policies that the selected port belongs to.
IPv4/MAC Policy List	Displays the list of IPv4 and MAC address-based policies. Click [+] next to a policy to show its conditions. Conditions are listed in order of the priority.
IPv6 Policy List	Displays the list of IPv6 address-based policies. Click [+] next to a policy to show its conditions. Conditions are listed in order of the priority.

Security

Auto DoS Attack Prevention

Configure packets to be dropped.

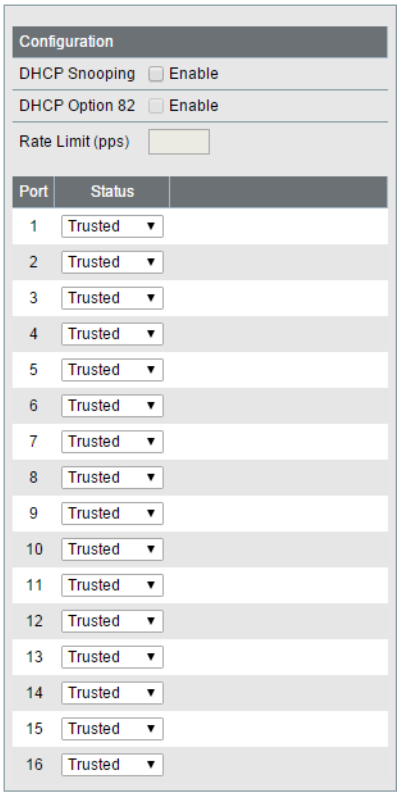


Apply

LAND Attack	If enabled, the packets whose source IP address and destination IP address are the same will be dropped.
Minimum TCP Header Size	If enabled, the packets whose TCP header size is less than 20 bytes will be dropped.
TCP/UDP L4 Port	If enabled, the packets whose source port number and destination port number are the same will be dropped. Disable when using SNTP, RADIUS, and DHCP relay.
ICMP	If enabled, the ICMP packets whose ICMP header+data is more than 512 bytes.
TCP Flag	If enabled, the illegal TCP flagged packets will be dropped. This will not be applied to the fragment packets.
Fragment	If checked, the configuration of [TCP Flag] will be applied also to the fragment packets.

DHCP Snooping

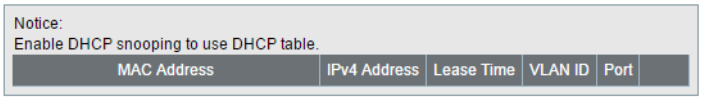
Configure DHCP snooping. DHCP snooping is a function to prevent leasing IP addresses when an illegal DHCP server is connected.



DHCP Snooping	Check to enable DHCP snooping.
DHCP Option 82	Add option 82 to the DHCP packets received from DHCP clients. To obtain an IP address from the DHCP server using this functionality, the DHCP server should be compatible with option 82.
Rate Limit (pps)	Limits the rate of the DHCP packets received from DHCP clients to all ports per a second. Exceeded DHCP packets from DHCP clients will be discarded.
Status	**Trusted** The DHCP server connected to the trusted port can lease IP addresses. **Untrusted** The DHCP packet from the DHCP server connected to the untrusted port will be blocked.

DHCP Table

Displays the DHCP clients that obtained an IPv4 address from the DHCP server via the switch. Up to 256 clients can be listed.



Refresh

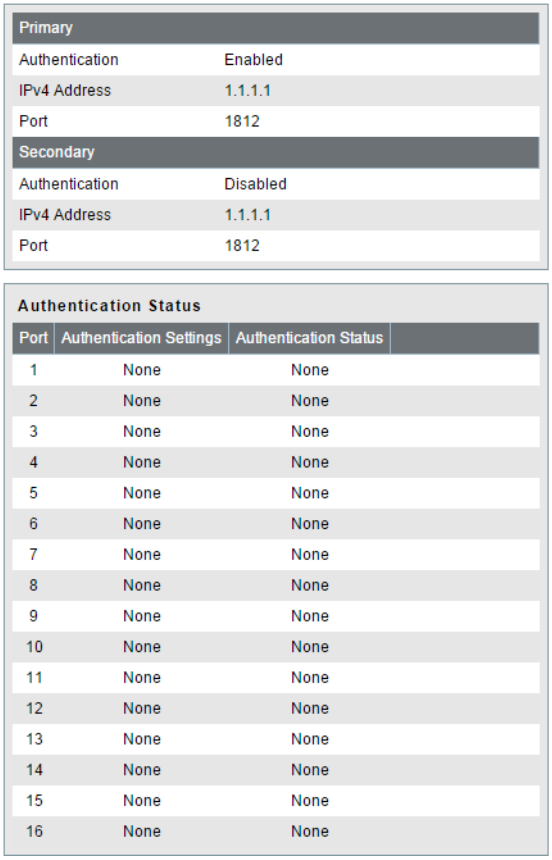
Note: DHCP table can be used only when DHCP snooping is enabled.

MAC Address	Displays the DHCP client's MAC address.
IPv4 Address	Displays the IPv4 address that DHCP client obtained.
Lease Time	Displays the lease period of the IPv4 address.
VLAN ID	Displays the VLAN ID that the DHCP client belongs to.
Port	Displays the port number that the DHCP client is connected to.

Authentication

Status

Displays the authentication server and port authentication status.



Primary	
Authentication	Enabled
IPv4 Address	1.1.1.1
Port	1812
Secondary	
Authentication	Disabled
IPv4 Address	1.1.1.1
Port	1812

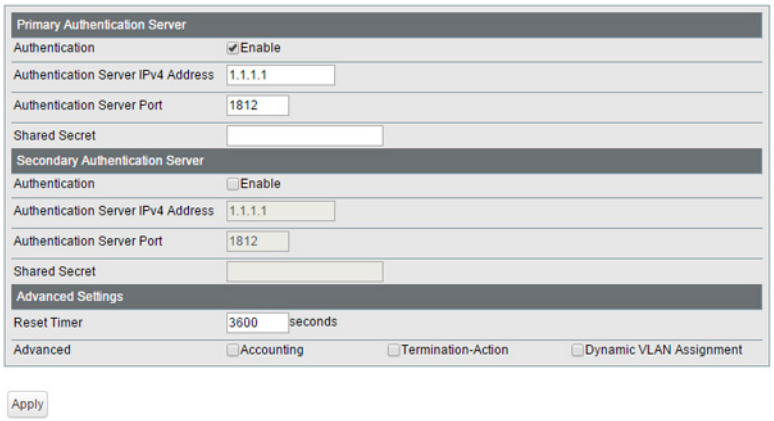
Authentication Status

Port	Authentication Settings	Authentication Status
1	None	None
2	None	None
3	None	None
4	None	None
5	None	None
6	None	None
7	None	None
8	None	None
9	None	None
10	None	None
11	None	None
12	None	None
13	None	None
14	None	None
15	None	None
16	None	None

Primary/Secondary	Displays if each server is enabled or disabled, and the server's IP address and port number.
Authentication Status	Displays the authentication status of each port.

RADIUS

Configure the RADIUS server.



Authentication	Check to enable authentication server.
Authentication Server IP	Enter the authentication server's IP address.
Authentication Server Port	Enter the authentication server's port number. (1-65535)
Shared Secret	Enter the shared secret of the authentication server. You may enter up to 20 alphanumeric characters, hyphens, and underscores.
Reset Timer	Enter the time that passes before re-authentication.
Advanced	**Accounting** If enabled, notify the connection status to the RADIUS server. **Termination-Action** If you follow the termination-action notified by the server, enable this. **Dynamic VLAN Assignment** If enabled, the VLAN to which the port belongs to can change dynamically based on the authentication information received from the RADIUS server. You need to add attributes in the RADIUS server settings in advance to use dynamic VLAN . For more information, refer to "RADIUS Server Settings to Use Dynamic VLAN" section below. **Note:** This product's dynamic VLAN can only be used with 802.1X port authentication.

Notes:

- Use only the primary authentication server under normal conditions. Use the secondary server when a backup server is used.
- Session-timeout is fixed to 5 seconds and the number of confirmation times is fixed to 3 times.
- To delete configured shared secret, initialize the switch. You do not have to initialize the switch when you change the shared secret.

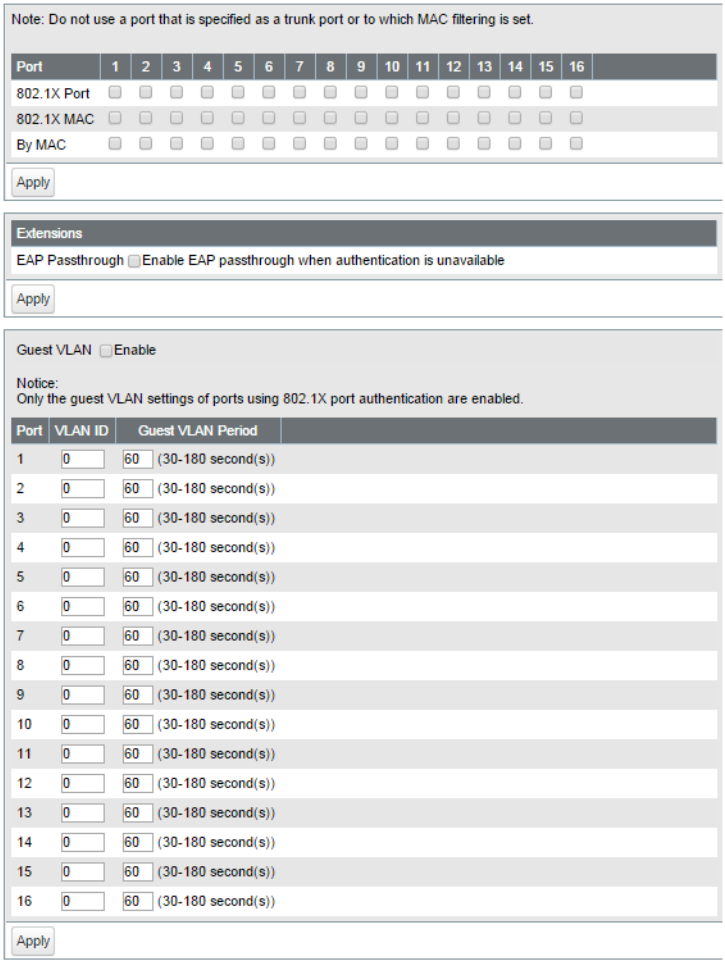
RADIUS Server Settings to Use Dynamic VLAN

When dynamic VLAN is enabled, add the following attributes to the RADIUS server.

Attribute	Value
Tunnel-Type	13 (VLAN)
Tunnel-Medium-Type	6 (IEEE-802)
Tunnel-Private-Group-ID	VLAN ID that the authenticated user will belong to

Port Authentication

Configure authentication settings for each port. Prepare an authentication server (RADIUS server) separately.



802.1X Port	Authenticate 802.1X based on the port. All devices connected to the port can communicate after the authentication.
802.1X MAC	Authenticate 802.1X based on the MAC address. Only the authenticated devices can communicate. Up to 12 MAC addresses can be authenticated per port.
By MAC	Enables MAC authentication. Up to 12 MAC addresses can be authenticated per port.
EAP Passthrough	If the authentication of all ports is disabled or received EAP frames should be transmitted, enable this.
Guest VLAN	Click "Enable" to enable guest VLAN functionality. Enter each port's guest VLAN period and the VLAN ID to be assigned to users who could not be authenticated by the time the guest VLAN period expires. **Notes:** • Only the guest VLAN settings of ports using 802.1X port authentication are enabled. • If the port's guest VLAN ID is "0", guest VLAN of that port is disabled.

The MAC authentication port authenticates using the source MAC address when it receives IP packets. Use the following username and password to authenticate to the RADIUS server.
Username: source MAC address
Password: source MAC address
Example: If the source MAC address of the IP packet is 00:11:22:33:AA:BB, the username and password is the following.
Username: 00112233aabb
Password: 00112233aabb
Enter letters in lower case.
RADIUS requests will be sent to the RADIUS server with this information. On the RADIUS server side, user registration is needed in advance.

Note: MAC authentication will not authenticate the same MAC address twice in a row. If MAC authentication fails, disconnect and reconnect the Ethernet cable or authenticate others, then try again.

This product's authentication is compatible with the following encryption method.

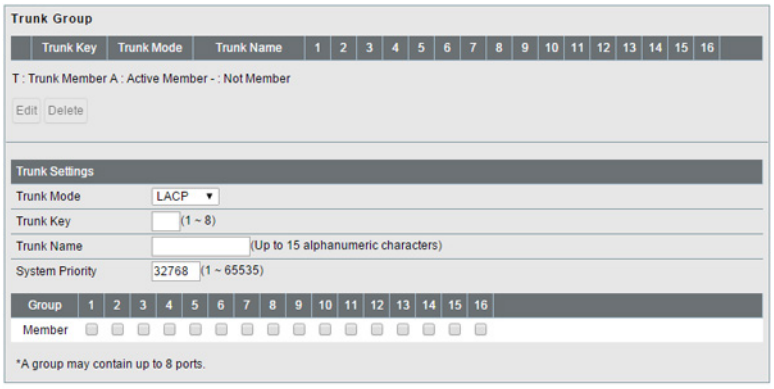
802.1X Port	802.1X (EAP-MD5, TLS, PEAP)	Cannot use with other methods at the same time
802.1X MAC	802.1X (EAP-MD5, TLS, PEAP)	Can use with other methods at the same time
By MAC	PAP	Can use with other methods at the same time

Notes:

- If 802.1X MAC is enabled, EAPOL-Start should be issued by the supplicant.
- You cannot use MAC filtering for the port that enables 802.1X port authentication.
- You cannot select a authentication type for the port that enables MAC filtering or trunk.

Port Trunking

Configure port trunking settings.



Apply

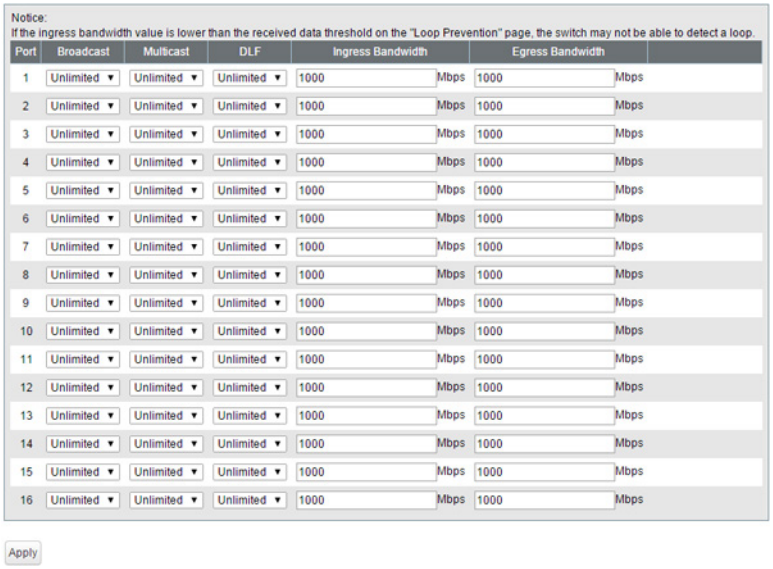
Trunk Mode	Select a trunk mode.
Trunk Key	Enter the key to identify the trunk group.
Trunk Name	Enter the trunk name.
System Priority	Enter the priority that is used to decide whose settings are used when the trunk is constructed. The settings of the device whose system priority is the minimum will be used. If the system priorities are the same, the settings of the device whose MAC address is smaller will be used.
Member	Select ports to join the trunk member.

Notes:

- 8 groups can be created in total between LACP and manual creation. Up to 8 port can be set to a group.
- The ports in the same trunk group should belong to the same VLAN.
- If you construct the trunk group using LACP, the opposing switch can set the LACP to both active and passive.

Traffic Control

Configure storm settings. If each packet exceeds the threshold configured on this page, exceeded packets will be dropped.

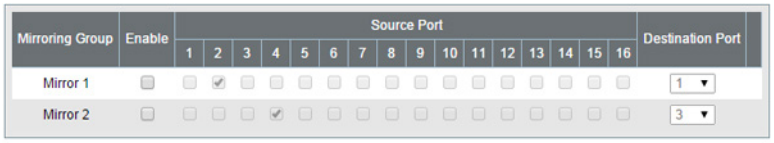


Broadcast	Select a rate to allow passing broadcasts.
Multicast	Select a rate to allow passing multicasts.
DLF	Select a rate to allow passing DLF (destination lookup failure) unicasts.
Ingress Bandwidth	Limits the bandwidth of ingress (input to the switch) speed as the configured value. **Note:** If the ingress bandwidth value is lower than the received data threshold on the "Loop Prevention" page, the switch may not be able to detect a loop.
Egress Bandwidth	Limits the bandwidth of egress (output from the switch) speed as the configured value.

Note: If the rate is configured based on broadcasts, multicasts, or DLF unicasts that sometimes cannot pass due to the difference of traffic, configure the minimum rate of frames for normal use.

Mirroring

Configure to monitor the traffic (copy the contents of communication from source to destination).

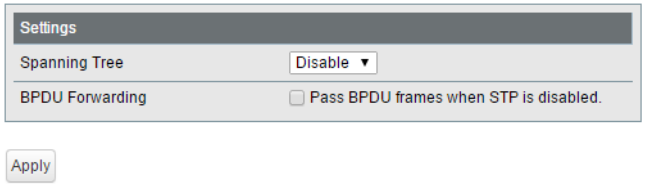


Enable	Check to enable mirroring.
Source Port	Select ports to be monitored.
Destination Port	Select ports to monitor the traffic.

Spanning Tree Protocol

STP Settings

Configure STP settings.



STP Version	Select a STP version from STP, RSTP or MSTP. **Note:** MSTP cannot be enabled when LDF is enabled. To disable LDF, navigate to [Advanced] - [Loop Prevention].
BPDU Forwarding (Only when STP is disabled)	Enable to forward BPDU frames when STP is disabled.
Hello Time	Enter the interval of BPDU transmission when this switch is the root bridge.
Max Age	Enter the maximum time that passes before trying to reconfigure when this switch doesn't receive BPDU.
Forward Delay	Enter the time spent in the status changes (listening-learning-forwarding) of the switch before forwarding packets.
Max Hop Count (MSTP only)	Specify the maximum hop count of BPDU.
Bridge Priority	Enter the priority of this switch for selecting the root bridge.
MST Configuration Name (MSTP only)	Enter an MST region name. The same name should be configured for all devices that belong to the same region.
MST Revision Level (MSTP only)	Configure MST revision. The same value should be configured for all devices that belong to the same region.
Configuration Digest (MSTP only)	Displays the MSTI status as MD5 digest message.
MSTI Settings (MSTP only)	To add MSTI ID, enter the MSTI ID and bridge priority, select VLAN ID(s) to belong to, then click [Add].

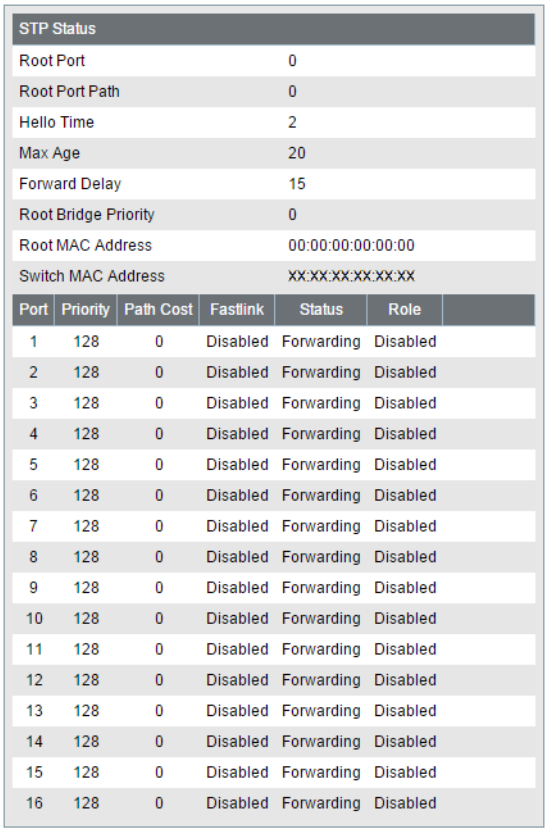
MSTP Status (MSTP only)	Displays the MSTI configuration status. Select an MSTI ID and click [Edit] to add or delete the VLAN ID(s) and change the bridge priority value.

Notes:

- To use spanning tree, all devices in the segment must be compatible with spanning tree.
- To configure each items, the following relational expression must be true.
  2 x (Forward Delay - 1) ≥ Max Age
  Max Age ≥ 2 x (Hello Time + 1)

Status

Displays the STP status of each port.



STP Status	
Root Port	0
Root Port Path	0
Hello Time	2
Max Age	20
Forward Delay	15
Root Bridge Priority	0
Root MAC Address	00:00:00:00:00:00
Switch MAC Address	xx:xx:xx:xx:xx:xx

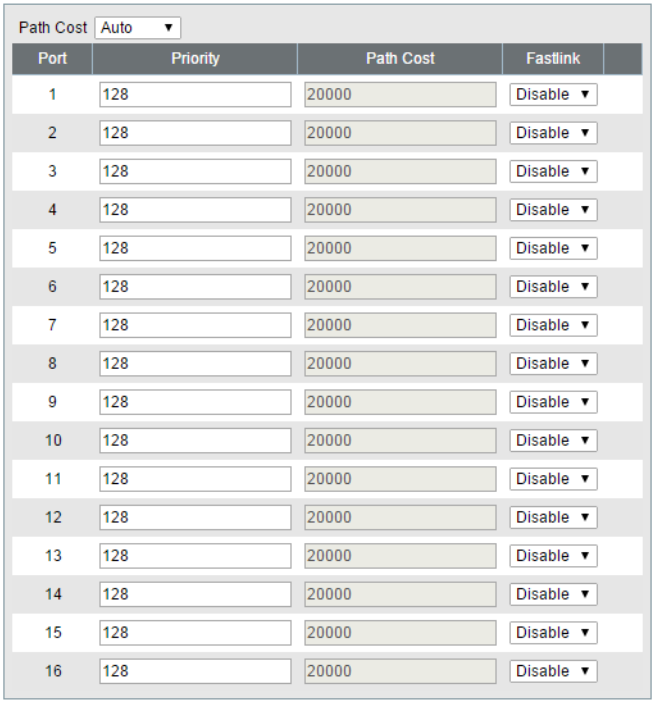
Port	Priority	Path Cost	Fastlink	Status	Role
1	128	0	Disabled	Forwarding	Disabled
2	128	0	Disabled	Forwarding	Disabled
3	128	0	Disabled	Forwarding	Disabled
4	128	0	Disabled	Forwarding	Disabled
5	128	0	Disabled	Forwarding	Disabled
6	128	0	Disabled	Forwarding	Disabled
7	128	0	Disabled	Forwarding	Disabled
8	128	0	Disabled	Forwarding	Disabled
9	128	0	Disabled	Forwarding	Disabled
10	128	0	Disabled	Forwarding	Disabled
11	128	0	Disabled	Forwarding	Disabled
12	128	0	Disabled	Forwarding	Disabled
13	128	0	Disabled	Forwarding	Disabled
14	128	0	Disabled	Forwarding	Disabled
15	128	0	Disabled	Forwarding	Disabled
16	128	0	Disabled	Forwarding	Disabled

MSTI/CIST (MSTP only)	When MSTP is enabled, this page shows the status of each MSTI ID or CIST. Select an MSTI ID or CIST to display the status.
Root Port	Displays the root port. If this switch is the root bridge, "0" is displayed.
Root Port Path	Displays the path cost to the root bridge. If this switch is the root bridge, "0" is displayed.
Regional Root Port Path (MSTP only)	Displays the path cost to the CIST root bridge in the MST region.
Hello Time	Displays the interval of BPDU transmission when this switch is the root bridge.
Max Age	Displays the maximum time that passes before trying to reconfigure when this switch doesn't receive BPDU.
Forward Delay	Displays the time spent in the status changes (listening-learning-forwarding) of the switch before forwarding packets.
Max Hop Count (STP/RSTP only)	Displays the maximum hop count of BPDU.

Root Bridge Priority (STP/RSTP only)	Select a root bridge priority of this switch.
Root MAC Address (MSTP only)	Displays the root bridge's MAC address.
CIST Root Bridge Priority (MSTP only)	Displays the CIST root bridge's bridge priority.
CIST Root MAC Address (MSTP only)	Displays the CIST root bridge's MAC address.
Regional Root Bridge Priority (MSTP only)	Displays the bridge priority of the root bridge in the MST region.
Regional Root MAC Address (MSTP only)	Displays the MAC address of the root bridge in the MST region.
Switch MAC Address	Displays this switch's MAC address.
Priority	Displays the port priority.
Path Cost	Displays the path cost.
Fastlink	Displays if fastlink is enabled or disabled.
Status	Displays the port status.
Role	Displays the port role.

Ports

Configure STP settings for each port. Path cost can be switched between "Auto" and "Manual".



Apply

Priority	Enter the port priority in hexadecimal format. This is used to decide the path to the root bridge.
Path Cost	If path cost is set to "Manual", you can edit the value. This is used to decide the path to the root bridge.

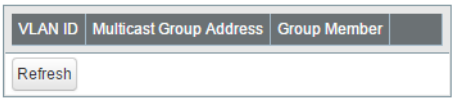
Fastlink	If enabled, the port will be in forwarding status immediately. It is recommended to enable fastlink to the port a PC is connected to. Disable it if the switch using STP is connected to the port. **Note:** Fastlink is disabled when the port trunking is configured.

IGMP

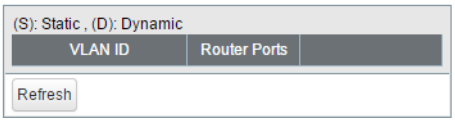
Status

Displays the IGMP status.

IGMP Status



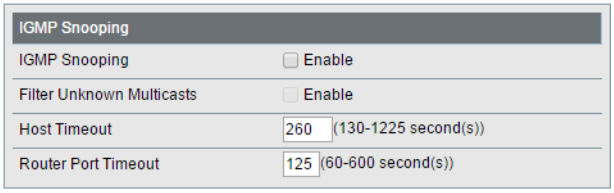
Router Port Status



IGMP Status	Displays the multicast address table.
Router Port Status	Displays the port connected to the multicast router (server).

IGMP Settings

Configure IGMP snooping. This product is compatible with IGMP snooping v1, v2, and v3.

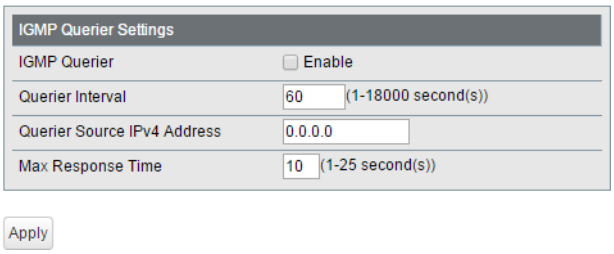




IGMP Snooping	Check to enable IGMP snooping. If enabled, you can prevent the flooding of multicast packets except for the port connected to the host which joins the multicast group. **Note:** The addresses in the range of 224.0.0.1-224.0.0.255 will be excepted from IGMP snooping.
Filter Unknown Multicasts	If checked, the packets of the multicast that is not learned will be discarded except for 224.0.0.1-224.0.0.255.
Host Timeout	Enter the host timeout period for receiving multicast.
Router Port Timeout	Enter the timeout length for the multicast router (server).

IGMP Querier

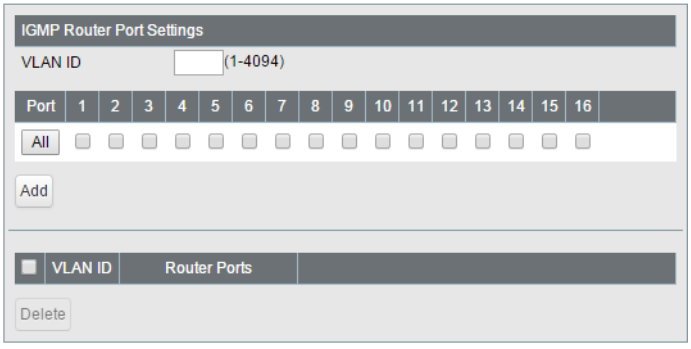
If IGMP querier is enabled, IGMP snooping can be enabled even if no multicast router is connected.



IGMP Querier	Check to enable IGMP querier. IGMP queries will be forwarded from each VLAN.
Querier Interval	Configure the transmit interval for the querier that confirms the existence of multicast group's member.
Querier Source IPv4 Address	Enter the source IPv4 address of the querier.
Max Response Time	Configure the time between transmitting the querier and response from the member. If the member responds to the querier by this time, the querier determines that the member is connected.

IGMP Router Port

Specify the port connected to the multicast router (server) for each VLAN.



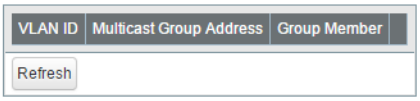
IGMP Router Port Settings	Enter the VLAN ID and specify the port connected to the multicast router (server), then click [Add].

MLD

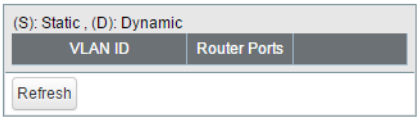
Status

Displays the MLD status.

MLD Status



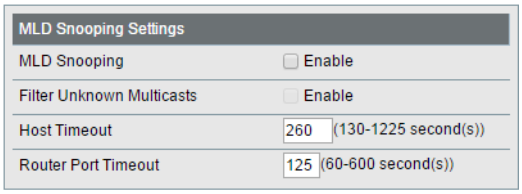
Router Port Status



MLD Status	Displays the multicast address table.
Router Port Status	Displays the port connected to the multicast router (server).

MLD Settings

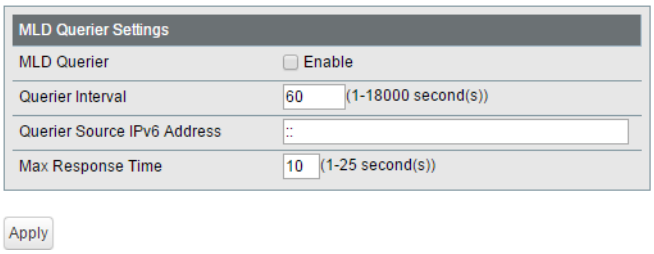
Configure MLD snooping.



MLD Snooping	Check to enable MLD snooping. If enabled, you can prevent the flooding of multicast packets except for the port connected to the host which joins the multicast group. **Note:** FF02::-FF02::FF and FF0X:: will be excepted from MLD snooping.
Filter Unknown Multicasts	If checked, the packets of the multicast that is not learned will be discarded except for FF02::-FF02::FF and FF0X::.
Host Timeout	Enter the host timeout period for receiving multicast.
Router Port Timeout	Enter the timeout length for the multicast router (server).

MLD Querier

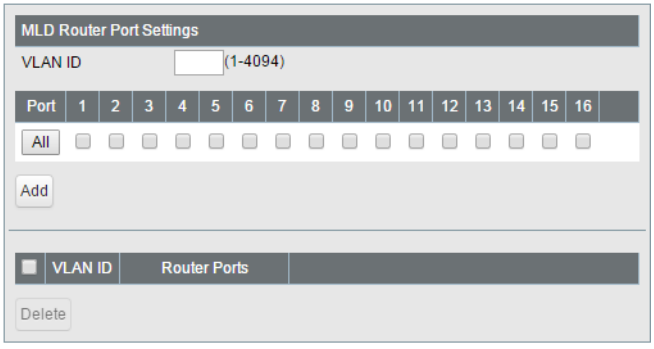
If MLD querier is enabled, MLD snooping can be enabled even if no multicast router is connected.



MLD Querier	Check to enable MLD querier. MLD queries will be forwarded from each VLAN.
Querier Interval	Configure the transmit interval for the querier that confirms the existence of multicast group's member.
Querier Source IPv6 Address	Enter the source IPv6 address of the querier.
Max Response Time	Configure the time between transmitting the querier and response from the member. If the member responds to the querier by this time, the querier determines that the member is connected.

MLD Router Port

Specify the port connected to the multicast router (server) for each VLAN.

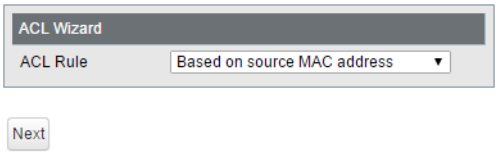


MLD Router Port Settings	Enter the VLAN ID and specify the port connected to the multicast router (server), then click [Add].

ACL

ACL Wizard

Configure ACLs with the wizard. Follow the directions on the screen.



Based on source MAC address	Configure to permit or deny the specified source MAC address.
Based on destination MAC address	Configure to permit or deny the specified destination MAC address.
Based on source IPv4 address	Configure to permit or deny the specified source IPv4 address.
Based on destination IPv4 address	Configure to permit or deny the specified destination IPv4 address.
Based on source IPv6 address	Configure to permit or deny the specified source IPv6 address.
Based on destination IPv6 address	Configure to permit or deny the specified destination IPv6 address.

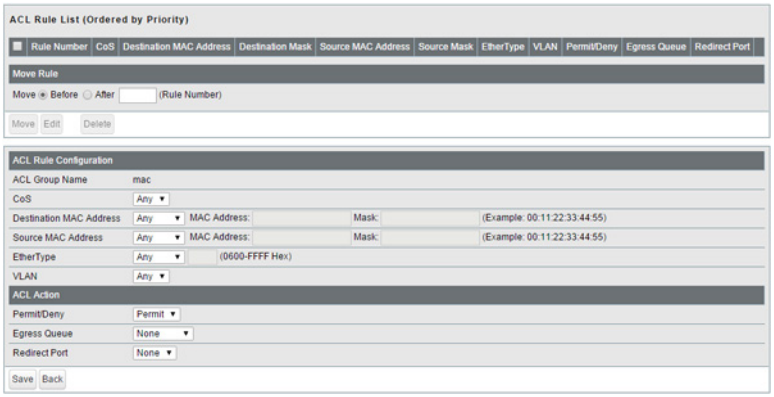
MAC ACL

Create MAC address-based ACLs.



Current Number of Groups	Displays the number of ACL groups.
Current Number of Active Rules	Displays the number of active rules for ACLs.
ACL Group Name	Displays the ACL group name. To create new ACLs, enter the group name and click [Apply]. Click [Show Detail] to add rules to the ACL group. To change the group name, select a group, enter the new name and click [Rename].
Number of Rules	Displays the number of rules of each ACL group.

The following screen is displayed when [Show Detail] is clicked. Up to 10 rules can be configured per group.



ACL Rule List	Displays the list of rules in the ACL group. Rules are listed in order of the priority.
Move Rule	Select a rule and enter the rule number that the selected rule moves to before (or after). Select [Before] or [After] and click [Move] to move the priority of the rule.
ACL Group Name	Displays the selected ACL group name.
CoS	Configure the filtering rule based on the frame's class of service value.
Destination MAC Address	Configure the filtering rule based on the frame's destination MAC address. For instructions on how to enter the address, refer to "About Address and Mask" section below.
Source MAC Address	Configure the filtering rule based on the frame's source MAC address. For instructions on how to enter the address, refer to "About Address and Mask" section below.
Ether Type	Configure the filtering rule based on the Ether Type of the frame.
VLAN	Configure the filtering rule based on the frame's VLAN ID.
Permit/Deny	Select whether the frames that satisfy the requirements can be forwarded to the other port or not. **Permit** Forwards the incoming frames to the other port. Any packets or frames out of the range of permitted MAC addresses will be dropped. **Deny** Drops the incoming frames.
Egress Queue	Apply the scheduling to the frames that satisfy the requirement and configure the priority. Select the priority from 0 (lowest) to 7 (highest). The scheduling is executed based on strict or WRR. It depends on the settings on the [Advanced] - [QoS] page. If QoS is disabled, it will be based on WRR.
Redirect Port	Forwards the frames that satisfy the requirements to the specified port. If enabled, the frames will not be forwarded to the primary destination port. If the rule is set to [Deny], the frames will be dropped and will not be forwarded to the primary destination port.

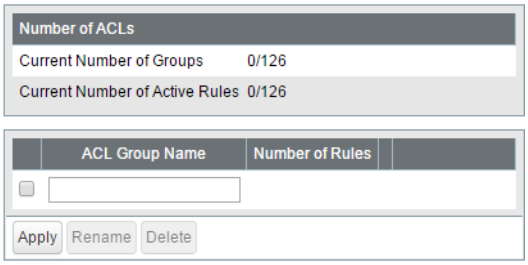
About Address and Mask

This product adopts "wildcard masks". To configure the source MAC address or destination MAC address, refer to the following example.

- To specify the range of "00:11:22:ab:cd:00" to "00:11:22:ab:cd:ff"
  Enter "00:11:22:ab:cd:00" in the address field and also enter "00:00:00:00:00:ff" in the mask field.
- To specify only "00:11:22:ab:cd:ef"
  Enter "00:11:22:ab:cd:ef" in the address field and also enter "00:00:00:00:00:00" in the mask field.

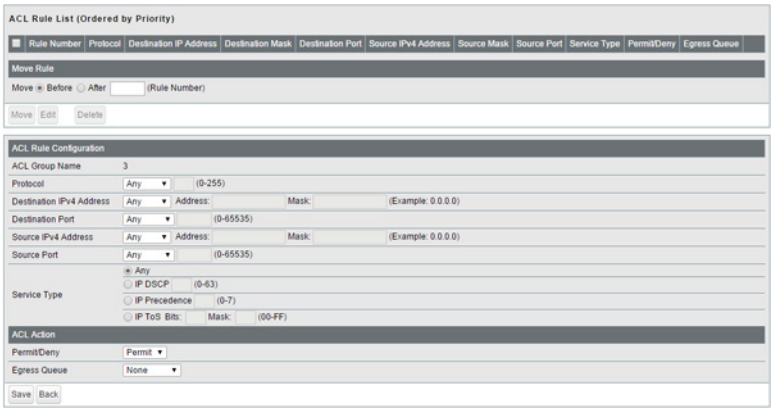
IPv4 ACL

Create IPv4 address-based ACLs.



Current Number of Groups	Displays the number of ACL groups.
Current Number of Active Rules	Displays the number of active rules for ACLs.
ACL Group Name	Displays the ACL group name. To create new ACLs, enter the group name and click [Apply]. Click [Show Detail] to add rules to the ACL group. To change the group name, select a group, enter the new name and click [Rename].
Number of Rules	Displays the number of rules of each ACL group.

The following screen is displayed when [Show Detail] is clicked. Up to 10 rules can be configured per group.



ACL Rule List	Displays the list of rules in the ACL group. Rules are listed in priority order.
Move Rule	Select a rule and enter the rule number that the selected rule moves to before (or after). Select [Before] or [After] and click [Move] to change the priority of the rule.
ACL Group Name	Displays the selected ACL group name.
Protocol	Configure the filtering rule based on the packet's protocol.
Destination IPv4 Address	Configure the filtering rule based on the frame's destination IPv4 address. For instructions on how to enter the address, refer to "About Address and Mask" section below.
Destination Port	Configure the filtering rule based on the frame's destination port.
Source IPv4 Address	Configure the filtering rule based on the frame's source IPv4 address. For instructions on how to enter the address, refer to "About Address and Mask" section below.
Source Port	Configure the filtering rule based on the frame's source port.
Service Type	Configure the filtering rule based on the frame's service type. If [IP DSCP] or [IP Precedence] is selected, only 1 value can be permitted or denied. If [IP ToS] is selected, you can specify the range of values which is permitted or denied. Refer to "About IP ToS Mask" section below for details.

Permit/Deny	Select if the frames that satisfy the requirement can be forwarded to the other port or not. **Permit** Forwards the incoming frames to the other port. Any packets or frames out of the range of permitted IP addresses will be dropped. **Deny** Drops the incoming frames.
Egress Queue	Apply the scheduling to the frames satisfy the requirement and configure the priority. Select the priority from 0 (lowest) to 7 (highest). The scheduling is executed based on strict or WRR. It depends on the settings on the [Advanced] - [QoS] page. If QoS is disabled, it will be based on WRR.

About Address and Mask

This product adopts "wildcard masks". To configure the source IP address or destination IP address, refer to the following example.

- To specify the range of "192.168.1.0" to "192.168.1.254"
  Enter "192.168.1.0" in the address field and also enter "0.0.0.255" in the mask field.
- To specify only "192.168.1.1"
  Enter "192.168.1.1" in the address field and also enter "0.0.0.0" in the mask field.

About IP ToS Mask

IP ToS mask also adopts "wildcard mask". If [IP ToS] is selected for [Service Type], you can specify the range of IP DSCP values or IP precedence values. To specify the range of values, refer to the following example.

To specify DSCP value 1-7,
Enter "0" in [Bits] field and also enter "1C" in [Mask] field.

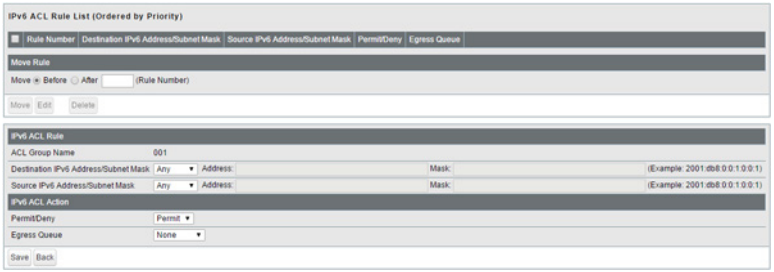
IPv6 ACL

Create IPv6 address-based ACLs.



Current Number of Groups	Displays the number of ACL groups.
Current Number of Active Rules	Displays the number of active rules for ACLs.
ACL Group Name	Displays the ACL group name. To create new ACLs, enter the group name and click [Apply]. Click [Show Detail] to add rules to the ACL group. To change the group name, select a group, enter the new name and click [Rename].
Number of Rules	Displays the number of rules of each ACL group.

The following screen is displayed when [Show Detail] is clicked. Up to 10 rules can be configured per group.



IPv6 ACL Rule List	Displays the list of rules in the ACL group. Rules are listed in priority order.
Move Rule	Select a rule and enter the rule number that the selected rule moves to before (or after). Select [Before] or [After] and click [Move] to move the priority of the rule.
ACL Group Name	Displays the selected ACL group name.
Destination IPv6 Address/ Subnet Mask	Configure the filtering rule based on the frame's destination IPv6 address. For instructions on how to enter the address, refer to "About Address and Mask" section below.
Source IPv6 Address/ Subnet Mask	Configure the filtering rule based on the frame's source IPv6 address. For instructions on how to enter the address, refer to "About Address and Mask" section below.
Permit/Deny	Select if the frames that satisfy the requirement can be forwarded to the other port or not. **Permit** Forwards the incoming frames to the other port. Any packets or frames out of the range of permitted IP addresses will be dropped. **Deny** Drops the incoming frames.
Egress Queue	Apply the scheduling to the frames satisfy the requirement and configure the priority. Select the priority from 0 (lowest) to 7 (highest). The scheduling is executed based on strict or WRR. It depends on the settings on the [Advanced] - [QoS] page. If QoS is disabled, it will be based on WRR.

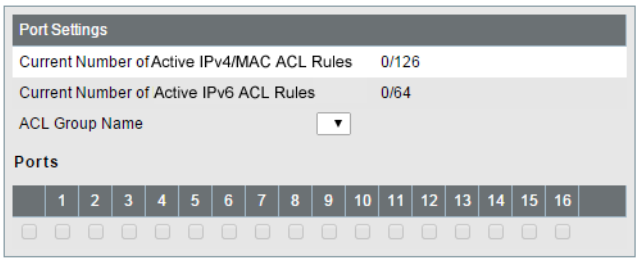
About Address and Mask

This product adopts "wildcard masks". To configure the source IPv6 address or destination IPv6 address, refer to the following example.

- To specify the range of "2001:db8::" to "2001:db8::ffff"
  Enter "2001:db8::" in the address field and also enter "::ffff" in the mask field.
- To specify only "2001:db8::"
  Enter "2001:db8::" in the address field and also enter "::" in the mask field.

Ports

Configure the ports to apply ACL groups. A total of up to 126 MAC ACL and IP ACL rules may be applied to the ports.

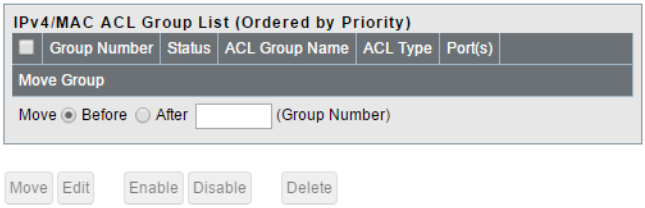


Current Number of Active IPv4/MAC ACL Rules	Displays the number of active rules for IPv4/MAC ACLs.
Current Number of Active IPv6 ACL Rules	Displays the number of active rules for IPv6 ACLs.
Port Settings	Select an ACL group name and ports, then click [Apply].
MAC (IPv4/IPv6) ACL Rule List	Displays the selected ACL group's rules.

Note: If the group has no rules, the ports that the group belongs to will permit and forward all packets and frames. If the group has any rules, the ports that the group belongs to will drop all packets and frames that don't belong to any rules.

IPv4/MAC Priority

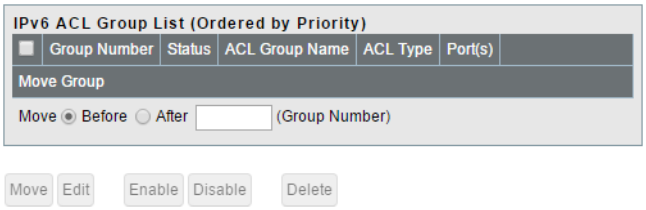
Configure IPv4 and MAC ACL group's priority. MAC ACL will be applied to both of the IPv4 and IPv6 packets. Filtering The destination and source ports for IPv4 ACL will not be applied to IPv6 packets.



IPv4/MAC ACL Group List	Displays the list of ACL groups. Groups are listed in order of the priority.
Move Group	Select a group and enter the group number that the selected group moves to before (or after). Select [Before] or [After] and click [Move] to move the priority of the group.

IPv6 Priority

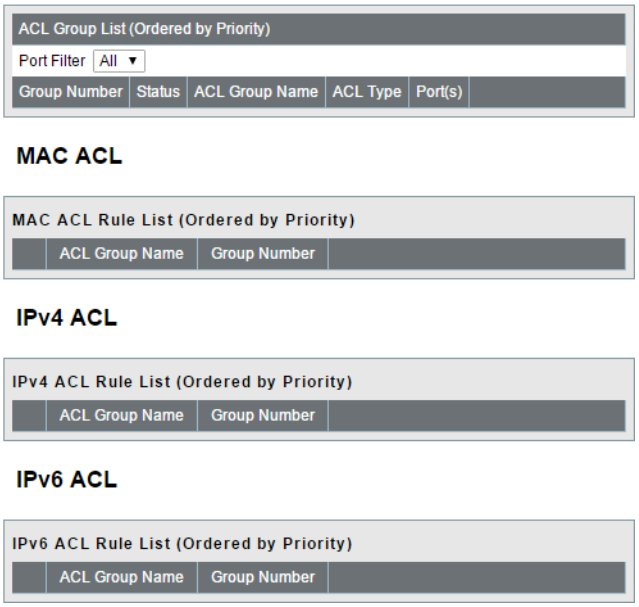
Configure IPv6 ACL group's priority. IPv6 ACL takes a priority than MAC and IPv4 ACL.



IPv6 ACL Group List	Displays the list of ACL groups. Groups are listed in order of the priority.
Move Group	Select a group and enter the group number that the selected group moves to before (or after). Select [Before] or [After] and click [Move] to move the priority of the group.

Status

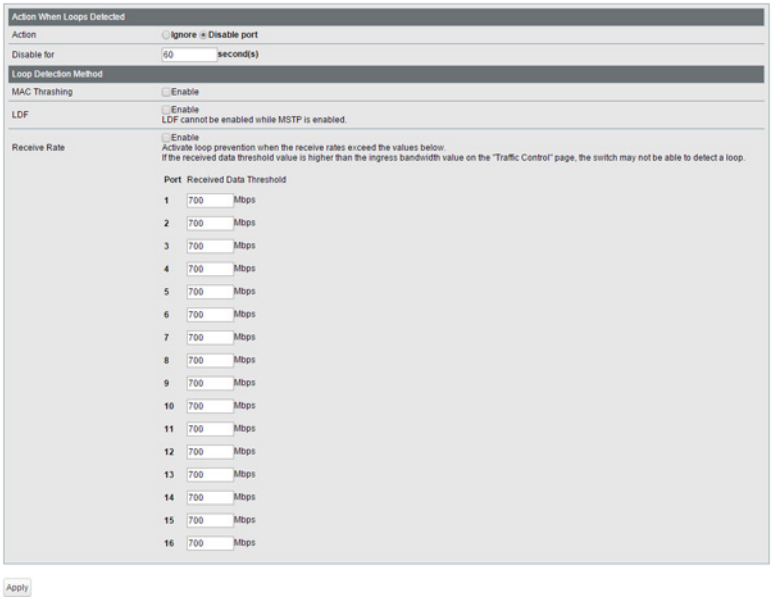
Displays the ACL status.



ACL Group List	Displays the list of ACL groups. Groups are listed in order of the priority. Select a port from [Port Filter] to display only the groups that the selected port belongs to.
MAC ACL Rule List	Displays the list of MAC ACL groups. Click [+] next to a group to show its rules. Rules are listed in order of the priority.
IPv4 ACL Rule List	Displays the list of IPv4 ACL groups. Click [+] next to a group to show its rules. Rules are listed in order of the priority.
IPv6 ACL Rule List	Displays the list of IPv6 ACL groups. Click [+] next to a group to show its rules. Rules are listed in order of the priority.

Loop Prevention

Configure loop prevention functionality.



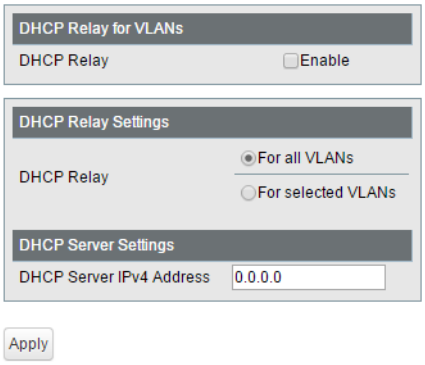
Action	Configure the switch's action when a loop is detected. **Ignore** When a loop is detected, the switch will do nothing for the port itself; the diag LED and loop-detected port's LED will blink for the time configured in [Disable for] section. If a loop is detected again, it will blink and continue until the loop is resolved. **Disable port** The switch will disable the loop-detected port for the time configured in [Disable for] section. At the same time, the diag LED and loop-detected port's LED will blink for the time configured in [Disable for] section. If a loop is detected again after the time configured in [Disable for] section is passed, the switch will disable the loop-detected port and continue until the loop is resolved.
Disable for	Configure the period to disable the loop-detected port when [Disable port] is selected as the action.
MAC Thrashing	Check to enable MAC thrashing loop detection method, which assumes that a loop occurs when the switch's MAC address learn limit exceeds the configured threshold in one second.
LDF	Check to enable LDF loop detection method. The switch will transmit the LDF packet once per second. If the transmitted LDF packet is received, this will assume that a loop is occurring. **Note:** LDF cannot be used when MSTP is enabled.
Receive Rate	Check to enable receive rate loop detection method. If the port's threshold exceeds the configured receive rate, this will assume that a loop is occurring.
Received Data Threshold	Configure the threshold to assume that a loop is occurring. (1-1000 Mbps) **Note:** If the received data threshold value is higher than the ingress bandwidth value on the "Traffic Control" page, the switch may not be able to detect a loop.

Note: The loop prevention functionality temporarily disables the port, but will not resolve the loop itself. On the other hand, the spanning tree functionality blocks the port when a loop is detected and switches the route automatically to prevent the network from going down. This switch has both functions; use the most appropriate one depending on your network environment.

	Loop Prevention	Spanning Tree
Action when the loop is detected	Temporarily disables the port. After the configured time passes, the port will be enabled again.	Blocks the port and switches the transmission route automatically.
How to resolve the loop	Resolve manually Data can be transmitted temporarily while the port is disabled. Data cannot be transmitted until the loop is resolved unless storm control is enabled.	Resolve automatically Communication will be interrupted while the route is being switched.
Recommended Environment	Small-scale network	• Large or medium-scale network with existing spanning tree • The environment that the loop must be prevented in

DHCP Relay

Displayed only when the switch is in L3 mode. Configure DHCP relay, that relays the DHCP messages in the other network to the specific VLAN.



DHCP Relay	Check to enable DHCP relay.
DHCP Relay Settings	If only one DHCP server is configured for all VLANs, select "For all VLANs". If DHCP servers are configured for each VLAN, select "For selected VLANs". If "For all VLAN" is selected, enter the DHCP server IP address. If "For selected VLANs" is selected, check "Enabled" of each VLAN that need to enable DHCP relay. Then, enter the DHCP server IP address for each VLAN.

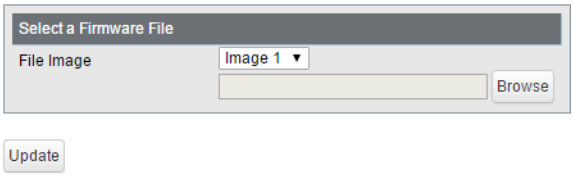
Update Firmware

Update firmware with the local firmware file.

Select a file image to update and click [Browse] to select the firmware image, then click [Update].

Notes:

- Do not turn off the switch or close the browser while updating.
- To finish the update, reboot the switch.
- If changing the firmware to version 1.0.3.32 or earlier, the Settings username and password may also be changed unintentionally. For more detailed information, refer to the "Restrictions" section in appendix A.



File Image	Select a file image to update.

Dual Image

The switch can save up to 2 firmware files and can be configured to choose one for booting.

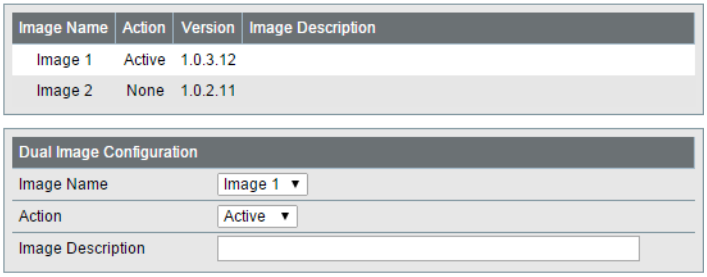


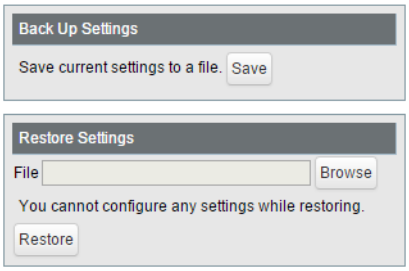
Image Name	Select an image to change the action.
Action	Select the action for the image selected on "Image Name". **Active** Reads the image when the switch boots. This setting will be applied after clicking [Apply] and rebooting the switch. **None** The image will not be used. This setting will be applied after clicking [Apply] and rebooting the switch. **Delete** Select [Delete] and click [Apply] to delete the image. The image will be deleted without having to reboot the switch.
Image Description	Enter the image's description. You may enter up to 50 alphanumeric characters. **Note:** The image description will never be initialized even if the switch is initialized.

Notes:

- Switching to the lower version image (older version firmware) may delete some settings.
- If switching the firmware to version 1.0.3.32 or earlier, the Settings username and password may be changed unintentionally. For more detailed information, refer to the "Restrictions" section in appendix A.

Back Up and Restore Settings

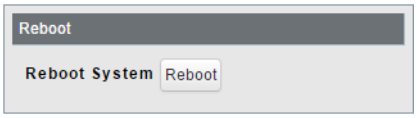
Save or restore the switch's settings.



Back Up Settings	Click [Save] to save current settings to a file.
Restore Settings	Click [Browse] to select a settings file and click [Restore] to start restoring. **Notes:** • To finish restoring, reboot the switch. • If restoring the switch's Settings from a Settings file while the switch is running firmware version 1.0.3.32 or earlier, the Settings username and password may be changed unintentionally. For more detailed information, refer to the "Restrictions" section in appendix A.

Reboot

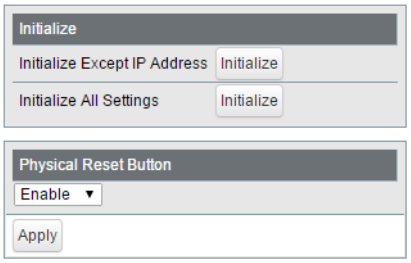
Reboot the switch.



Reboot	Click [Reboot] to reboot the switch.

Initialize

Restore the switch settings to the factory default.



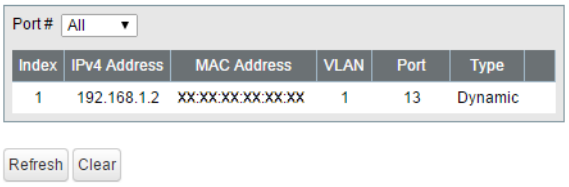
Initialize Except IP Address	Click [Initialize] to initialize all settings except the switch's IPv4/IPv6 address.
Initialize All Settings	Click [Initialize] to initialize all switch settings.
Physical Reset Button	Enable or disable the reset button on the switch.

ARP Table

Displayed only when the switch is in L3 mode. ARP table can record up to 510 devices.

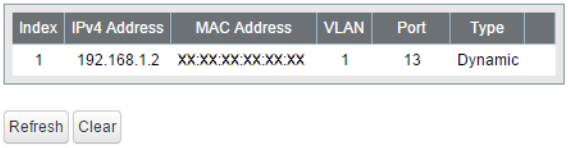
Port Order

Displays the IP addresses and the MAC addresses of the connected devices with the port order. Select a port from the dropdown menu to display the devices that is connected to the selected port.



IP Address Order

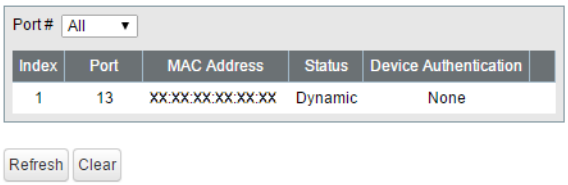
Displays the IP addresses and the MAC addresses of the connected devices with the IP address order.



MAC Address Table

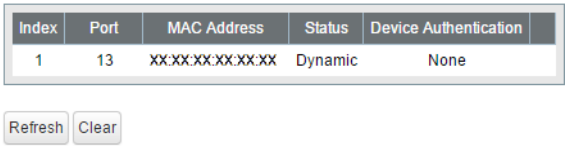
Port Order

Displays the MAC address table with the port order. Select a port from the dropdown menu to display the MAC addresses that are connected to the selected port.



MAC Order

Displays the MAC address table with the MAC address order.

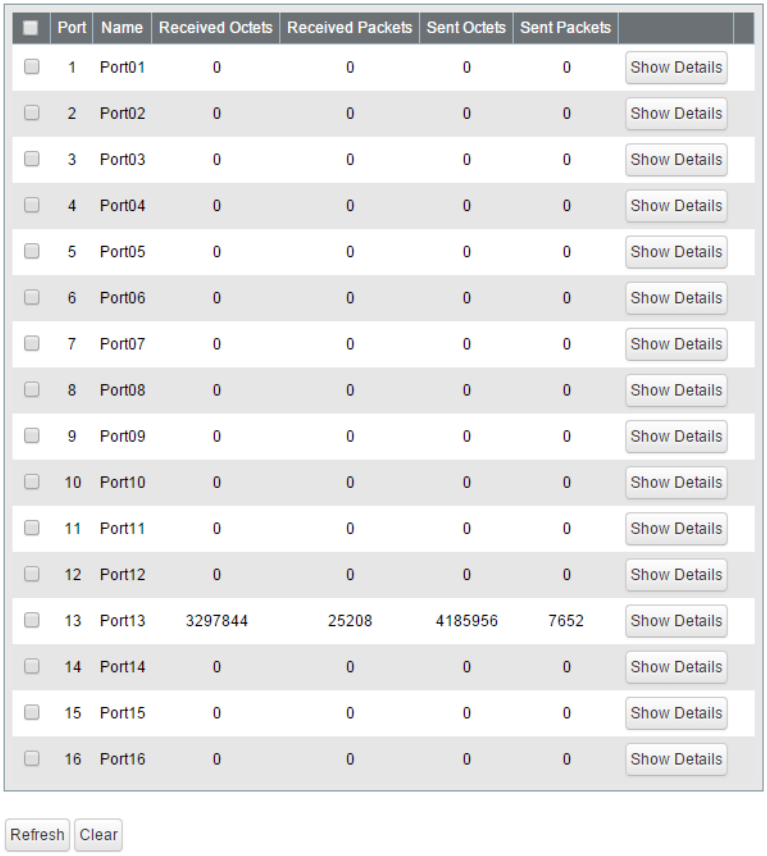


Note: "Authenticated" is displayed on "Device Authentication" section only when the PC is authenticated using 802.1X MAC or MAC authentication method.

Statistics

Displays the switch's statistics.

Note: Each maximum value is 4,294,967,295. If this is reached or exceeded, the value will reset to 0. Rebooting the switch will also reset the value to 0.



Port	Name	Received Octets	Received Packets	Sent Octets	Sent Packets	
1	Port01	0	0	0	0	Show Details
2	Port02	0	0	0	0	Show Details
3	Port03	0	0	0	0	Show Details
4	Port04	0	0	0	0	Show Details
5	Port05	0	0	0	0	Show Details
6	Port06	0	0	0	0	Show Details
7	Port07	0	0	0	0	Show Details
8	Port08	0	0	0	0	Show Details
9	Port09	0	0	0	0	Show Details
10	Port10	0	0	0	0	Show Details
11	Port11	0	0	0	0	Show Details
12	Port12	0	0	0	0	Show Details
13	Port13	3297844	25208	4185956	7652	Show Details
14	Port14	0	0	0	0	Show Details
15	Port15	0	0	0	0	Show Details
16	Port16	0	0	0	0	Show Details

Refresh Clear

Name	Displays the port name.
Received Octets	Displays the number of total received octets.
Received Packets	Displays the number of total received packets.
Sent Octets	Displays the number of total sent octets.
Sent Packets	Displays the number of total sent packets.
Show Details	Click to display the detailed information.
Port Statistics	Displays the number of total received/sent packets of the selected port.
EAP Statistics	Displays the number of total received/sent EAP packets of the selected port.

The following items appear when [Show Detail] is clicked.

Received Octets	Displays the number of total received octets.
Received Unicast Packets	Displays the number of received unicast packets.
Received Multicast Packets	Displays the number of received multicast packets.
Received Broadcast Packets	Displays the number of received broadcast packets.
Discarded Received Packets	Displays the number of packets that the switch received but did not forwarded to any port.
Received Packet Error	Displays the number of packets that was discarded because of FCS error.
Sent Octets	Displays the number of total sent octets.

Sent Unicast Packets	Displays the number of sent unicast packets.
Sent Multicast Packets	Displays the number of sent multicast packets.
Sent Broadcast Packets	Displays the number of sent broadcast packets.
Discarded Sent Packets	Displays the number of packets that could not be sent.
Sent Packet Error	Displays the number of packets that was discarded because of FCS error.
Total Frames Rx	Displays the number of total received EAP packets.
Total Frames Tx	Displays the number of total sent EAP packets.
Start Frames Rx	Displays the number of received EAPOL start packets.
Logoff Frames Rx	Displays the number of received EAPOL logoff packets.
Request/ID Frames Tx	Displays the number of EAP packets that include "Code:Request(1) Type:Identity(1)".
Request Frames Tx	Displays the number of EAP packets that do not include "Code:Request(1) Type:Identity(1)".
Response/ID Frames Rx	Displays the number of EAP packets that include "Code:Response(2) Type:Identity(1)".
Response Frames Rx	Displays the number of EAP packets that do not include "Code:Response(2) Type:Identity(1)".
Invalid Frames Rx	Displays the number of EAP packets whose types are invalid.
Length Error Frames Rx	Displays the number of EAP packets whose packet lengths are invalid.
Last Frame Version	Displays the version of the latest received EAP packet.
Last Frame Source	Displays the source MAC address of the latest received EAP packet.

Notes:

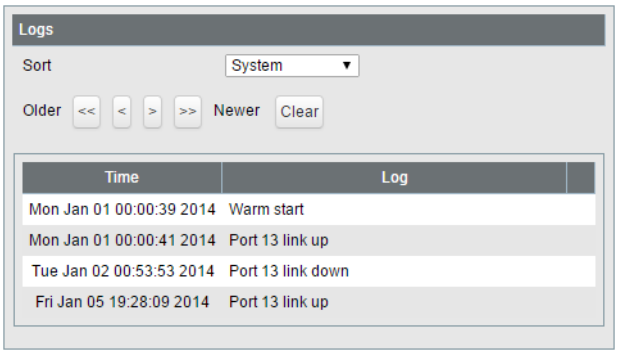
- When the switch is in L2 mode, packets that are designated to the switch (such as ping or http communication for displaying Settings) will be displayed as "received unicast packets" and "discarded received packets".
- When the switch is in L3 mode, packets that are designated to the switch are displayed as "received unicast packets".
- The target packets of this page are MAC frames, IPv4 packets, and IPv6 packets.

Logs

Displays the switch's log information.

Notes:

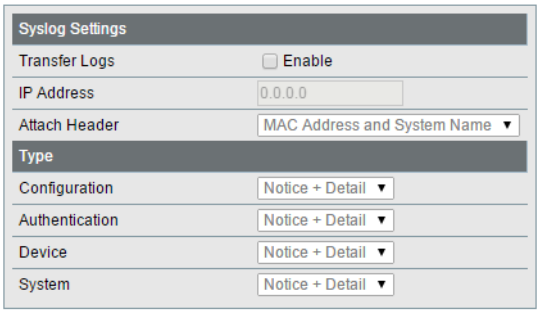
- Up to 512 logs can be recorded to this switch in total. If exceeded, logs will be deleted in order of oldest.
- When the switch is turned off, all logs will be deleted.



Sort	Select a type of log to display.

Syslog Settings

Configure syslog to transfer logs.



Transfer Logs	Check to enable syslog server.
IP Address	Enter the syslog server's IP address.
Attach Header	Select an item to attach to the header of the transmitted data.
Type	Select a type of log to transfer.

Network Diagnostics

Execute a communication test to the specified IP address.



Ping	Enter the IPv4/IPv6 address or FQDN and click [Apply] to execute a ping test to the destination.
Traceroute	Enter the IPv4 address or FQDN and click [Apply] to execute a traceroute test to the destination.

To enter the FQDN, configure DNS server settings on [Basic] - [VLAN] - [VLAN Settings] page in advance.

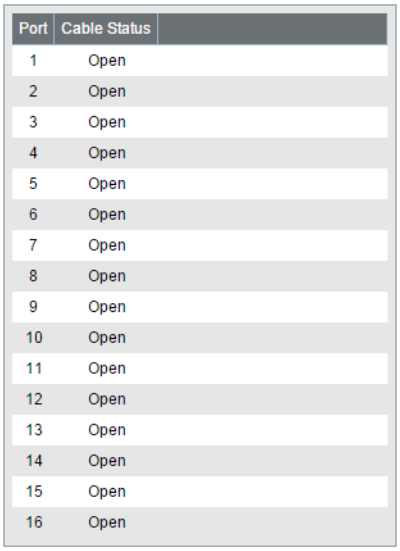
Cable Diagnostics

Click [Test] to check whether there are any issues with the Ethernet cable connected to each port.

To check the cable status correctly, configure the following to this switch and the destination device in advance;

- Autonegotiation: enabled
- IEEE 802.3az (EEE): disabled
- Auto power down (APD): disabled

Note: If the destination device is not a BS-GS series switch, the result may not appear correctly.



Port	Cable Status
1	Open
2	Open
3	Open
4	Open
5	Open
6	Open
7	Open
8	Open
9	Open
10	Open
11	Open
12	Open
13	Open
14	Open
15	Open
16	Open

Test

Cable Status	Displays the status of each Ethernet cable. **Open** Ethernet cable is not connected. **OK** Ethernet cable is connected without any issues. **Short** Ethernet cable may be shorting out. **Unknown** Cannot check the cable status.

Chapter 3 Troubleshooting

LED Is Not Lit, Abnormal Lighting or Blinking

The power LED is not lit.	• Confirm that the AC adapter or power cable is connected to the inlet.
The diag LED is blinking red.	• If it blinks once per a second, a loop is detected. Check the cabling. • If your switch has fans and its diag LED is blinking fast, a fan error may be occurring. Disconnect the power cable and reconnect it. If the LED keeps blinking, contact our technical support.
The link/act LED is not lit.	• Confirm that the Ethernet cable is connected to both the switch and the device. • Confirm that the switch and the connected device are both powered on. • Confirm that the Ethernet cable type and length is compatible with the switch.
Cannot initialize with the reset button on the switch	• Confirm whether the physical reset button is enabled in Settings. • If the physical reset button is disabled and you forgot the password of Settings, contact our technical support.

Cannot Access Settings

- Make sure that your PC is connected to the switch.
- Access Settings with the switch's IP address (192.168.1.254 by default).
- Confirm that the username ("admin" by default) and the password ("password" by default) are correct. If you forgot the username or password, initialize the switch.
- If a proxy server is configured for the web browser, disable the proxy server or add the switch's IP address to the proxy server's exception list.
- Confirm that your PC is connected to the port which belongs to the management VLAN.

Forgot the Password

- The password is "password" by default. If you changed the password, press the reset button to initialize.
- If the physical reset button is disabled and you forgot the password of Settings, contact our technical support.

Appendix A Specifications

Product Specifications

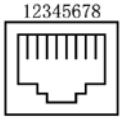
Refer to the quick setup guide to check the hardware specifications.

Note: Only use the cables and accessories that are included in the package. Don't use other accessories or cables unless specifically instructed to in the documentation.

Port Specifications

Ethernet port specifications

RJ-45 with 8 pins



100BASE-TX/10BASE-T		
Pin Number	Signal Name	Signal Function
1	RD+/TD+	Receive data (+)/Transmit data(+)
2	RD-/TD-	Receive data (-)/Transmit data(-)
3	TD+/RD+	Transmit data (+)/Receive data(+)
4	(Not Use)	Not used
5	(Not Use)	Not used
6	TD-/RD-	Transmit data (-)/Receive data (+)
7	(Not Use)	Not used
8	(Not Use)	Not used
1000BASE-T		
Pin Number	Signal Name	Signal Function
1	BI_DA+/BI_DB+	Transmit and receive data A (+)/Transmit and receive data B (+)
2	BI_DA-/BI_DB-	Transmit and receive data A (-)/Transmit and receive data B (-)
3	BI_DB+/BI_DA+	Transmit and receive data B (+)/Transmit and receive data A (+)
4	BI_DC+/BI_DD+	Transmit and receive data C (+)/Transmit and receive data D (+)
5	BI_DC-/BI_DD-	Transmit and receive data C (-)/Transmit and receive data D (-)
6	BI_DB-/BI_DA-	Transmit and receive data B (-)/Transmit and receive data A (-)
7	BI_DD+/BI_DC+	Transmit and receive data D (+)/Transmit and receive data C (+)
8	BI_DD-/BI_DC-	Transmit and receive data D (-)/Transmit and receive data C (-)

PoE Port Specification (Only for PoE-compatible devices) (Alternative A)

Pin Number	Power
1	Negative Vpse
2	Negative Vpse
3	Positive Vpse
4	-
5	-
6	Positive Vpse
7	-
8	-

Factory Default Settings

System		**Switch Name**	BS + the switch's MAC address
		Location	Not defined
		Contact	Not defined
VLAN	**VLAN Settings**	**VLAN Mode**	VLAN
		VLAN ID	1
		VLAN Name	None
		Management VLAN	Enabled
		Connection Method	Static IP Address
		IPv4 Address	192.168.1.254
		Subnet Mask	255.255.255.0
		Default Gateway	0.0.0.0
		Method of Acquiring DNS Server Address	Manual
		Primary DNS Server	0.0.0.0
		Secondary DNS Server	0.0.0.0
		IPv6	Disabled
		Ports	Untagged
	VLAN Ports	**PVID**	1
		Acceptable Frame Type	Admit All
		Ingress Filter	Enabled
		Protected Port	Disabled
Routing	**L2/L3 Settings**	**Mode**	L2 mode
	Static Routing (L3 mode only)	**Default Gateway**	0.0.0.0
SNMP Settings	**SNMP Community Table**	**Community Name**	"public" for only #1
		Get	Enabled for only #1
		Set	Disabled
		Trap	Disabled
	SNMP Host Table	**Host Authentication**	Disabled

SNMP Settings	**SNMP Trap**	**Authentication Trap**	Disabled
		Link Up/Down	Disabled
		STP	Disabled
		Loop Detection	Disabled
		Trunk	Disabled
	SNMPv3 User	**Username**	admin
		Access Control	Read only
		Authentication Method	None
		Authentication Key	None
		Encryption	None
		Encryption Key	None
LLDP	**LLDP Properties**	**TLV Advertised Interval**	30 seconds
		Hold Multiplier	4
		Reinitializing Delay	2 seconds
		Transmit Delay	2 seconds
		Fast Start Duration	3 times
	LLDP Port	**Status**	Tx and Rx
		Notification	Disabled
		Port Description TLV	Disabled
		System Name TLV	Disabled
		System Description TLV	Disabled
		System Capabilities TLV	Disabled
		Management Address TLV	Disabled
	LLDP-MED Port	**Status**	Disabled
		Notification	Disabled
		Capabilities TLV	Disabled
		Network Policy TLV	Disabled
		Extend Power TLV	Disabled
		Software Revision TLV	Disabled
MAC Addresses	**Static MAC Filtering**	**Static MAC Filtering**	Disabled
	Dynamic MAC Filtering	**Dynamic MAC Filtering**	Disabled
		Number	None
	MAC Address Aging	**Aging Time**	300 seconds
Port Settings	**Speed/Mode Settings**	**Name**	Port + port number
		Admin	Enabled
		Mode	Autonegotiation
		Flow Control	Disabled
		IEEE 802.3az	Enabled
		APD	Enabled
		Jumbo Frame	Enabled

System Security	**Administration Account**	**Username**	admin
		Password	password
	Access Management	**SNMP**	Enabled
		HTTPS	Disabled
		Web Session Timeout	5 minutes
		Maximum Web Session Number	5
		Port	443
System Security	**Access Management**	**HTTPS Session Timeout**	5 minutes
		Maximum HTTPS Session Number	2
Date & Time		**SNTP**	Disabled
		Time	2014/01/01 00:00:00
		Server IP/FQDN	ntp.jst.mfeed.ad.jp
		Update Interval	24 hours
		Time Zone	(GMT-06:00) Central Time (US & Canada)
PoE (PoE-compatible product only)	**PoE Profiles**	**Profile Name**	Profile 1-4
		PoE	Enabled
		Priority	Low
		High Power	802.3at
		Turn Off LEDs?	No
	Power Profiles	**Schedule**	Manual
		Manual Profile Setting	Profile1
		View	Weekly
QoS	**QoS Settings**	**QoS**	Disabled
		Schedule Method	WRR
		Priority Type	CoS
	QoS Mapping	**Port Priority**	0
		CoS Mapping	2, 0, 1, 3, 5, 6, 7 in order of CoS value
	VoIP Auto Priority	**VoIP Auto Priority**	Enabled
		CoS	7
Security	**Auto DoS Attack Prevention**	**LAND Attack**	Disabled
		Minimum TCP Header Size	Disabled
		TCP/UDP L4 Port	Disabled
		ICMP	Disabled
		TCP Flag	Disabled
		Fragment	Disabled
	DHCP Snooping	**DHCP Snooping**	Disabled
		DHCP Option 82	Disabled
		Rate Limit	None
		Status	Trusted

Authentication	**RADIUS**	**Authentication**	Primary authentication server: Enabled Secondary authentication server: Disabled
		Authentication Server IP	1.1.1.1
		Authentication Server Port	1812
		Shared Secret	None
		Reset Timer	3600 seconds
		Advanced	Accounting: Disabled Termination-Action: Disabled Dynamic VLAN Assignment: Disabled
Authentication	**Port Authentication**	**802.1X Port**	Disabled
		802.1X MAC	Disabled
		By MAC	Disabled
		EAP Passthrough	Disabled
		Guest VLAN	Disabled
		VLAN ID	0
		Guest VLAN Period	60 seconds
Port Trunking		**Trunk Mode**	LACP
		Trunk Key	None
		Trunk Name	None
		System Priority	32768
		Member	None
Traffic Control		**Broadcast**	Unlimited
		Multicast	Unlimited
		DLF	Unlimited
		Ingress Bandwidth	1000 Mbps
		Egress Bandwidth	1000 Mbps
Mirroring		**Enable**	Mirror1: Disabled Mirror 2: Disabled
		Source Port	Mirror1: 2 Mirror 2: 4
		Destination Port	Mirror1: 1 Mirror 2: 3

Spanning Tree Protocol	**STP Settings**	**STP Version**	Disabled
		Hello Time	2 seconds
		Max Age	20 seconds
		Forward Delay	15 seconds
		Max Hop Count (MSTP only)	20
		Bridge Priority	32768
		BPDU Forwarding (Only when STP is disabled)	Disabled
		MST Configuration Name (MSTP only)	Automatically generated from the switch's MAC address
		MST Revision Level (MSTP only)	0
	Ports	**Path Cost**	Auto
		Priority	128
		Path Cost	20000
		Fastlink	Disabled
IGMP	**IGMP Settings**	**IGMP Snooping**	Disabled
		Filter Unknown Multicast	Disabled
		Host Timeout	260 seconds
		Router Port Timeout	125 seconds
	IGMP Querier Settings	**IGMP Querier**	Disabled
		Querier Interval	60 seconds
		Querier Source IPv4 Address	0.0.0.0
		Max Response Time	10 seconds
MLD	**MLD Settings**	**MLD Snooping**	Disabled
		Filter Unknown Multicast	Disabled
		Host Timeout	260 seconds
		Router Port Timeout	125 seconds
	MLD Querier Settings	**MLD Querier**	Disabled
		Querier Interval	60 seconds
		Querier Source IPv6 Address	::
		Max Response Time	10 seconds
Loop Prevention		**Action**	Disable port
		Disable for	60 seconds
		MAC Thrashing	Disabled
		LDF	Disabled
		Receive Rate	Disabled
		Received Data Threshold	700 Mbps
Initialize		**Physical Reset Button**	Enable
DHCP Relay		**DHCP Relay for VLANs**	Disabled
		DHCP Relay Settings	For all VLANs
		DHCP Server IP Address	0.0.0.0

Syslog Settings	**Transfer Logs**	Disabled
	IP Address	0.0.0.0
	Attach Header	MAC Address and System Name
	Configuration	Notice + Detail
	Authentication	Notice + Detail
	Device	Notice + Detail
	System	Notice + Detail

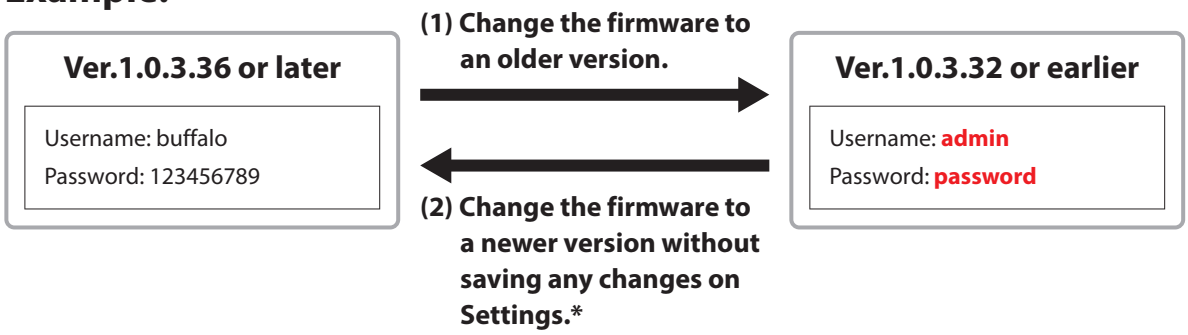
Restrictions

Updating Firmware

(1) If changing the firmware to version 1.0.3.32 or earlier when the current firmware version is version 1.0.3.36 or later and the current Settings password is longer than 8 characters, the Settings username and password will revert to the default (the username will be "admin", and the password will be "password").

(2) If you do not save any changes on Settings after changing the firmware version to an earlier one, the username and password will revert to the original if you upgrade the firmware to version 1.0.3.36 or later.

Example:



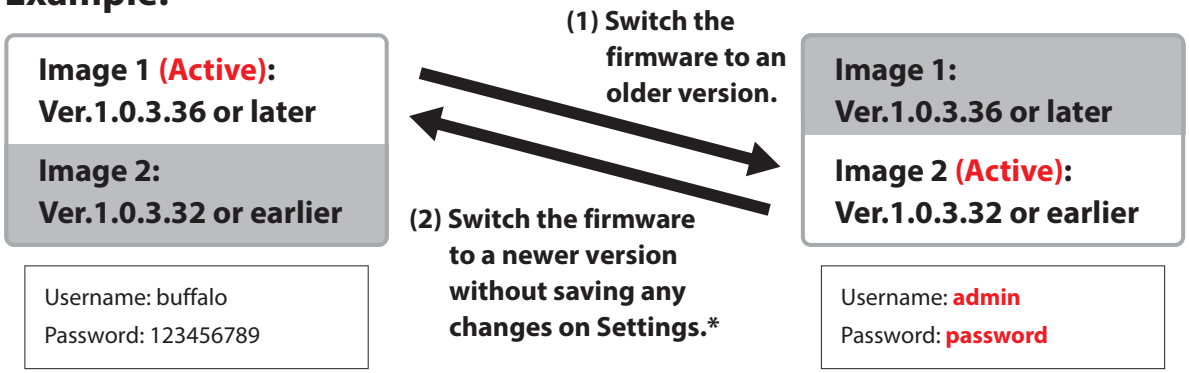
* If you click [Apply] on any Settings page after (1), the usename and the password that had been set while running firmware version 1.0.3.32 or earlier will remain the same after upgrading the firmware to version 1.0.3.36 or later.

Dual Imaging

(1) If switching the firmware to version 1.0.3.32 or earlier when the current firmware version is version 1.0.3.36 or later and the current Settings password is longer than 8 characters, the Settings username and password will revert to the default (the username will be "admin", and the password will be "password").

(2) If you do not save any changes on Settings after changing the firmware version to an earlier one, the username and password will revert to the original if you switch to firmware version 1.0.3.36 or later.

Example:

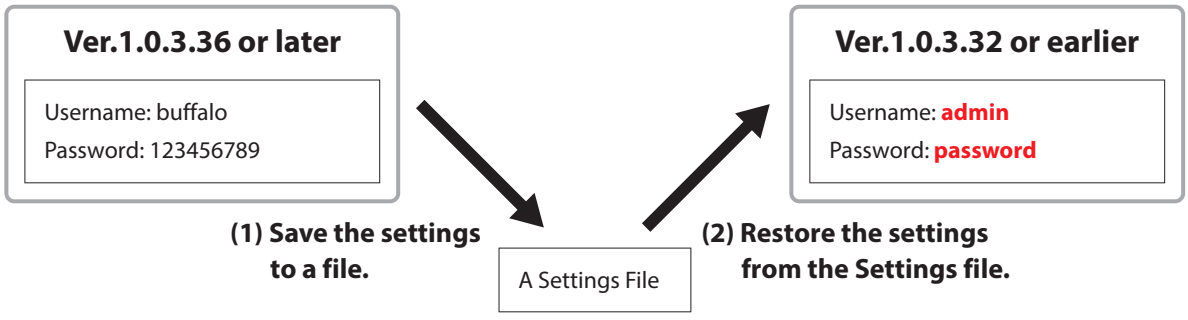


* If you click [Apply] on any Settings page after (1), the usename and the password that had been set while running firmware version 1.0.3.32 or earlier will remain the same after switching the firmware to version 1.0.3.36 or later.

Backing Up and Restoring Settings

If you set the Settings password to be 8 characters or longer and save the settings to a file while running firmware version 1.0.3.36 or later, the Settings username and password will not be restored from that file if the unit is running firmware version 1.0.3.32 or earlier. In that case, the username and the password will revert to the default. The username will be "admin", and the password will be "password".

Example:



Technical Support

North America

https://www.buffalotech.com/support

Europe

http://www.buffalo-technology.com/contact/

Appendix B Regulatory Compliance Information

For Customers in Europe

Environmental Information

- The equipment that you have purchased has required the extraction and use of natural resources for its production.
- The equipment may contain hazardous substances that could impact health and the environment.
- In order to avoid the dissemination of those substances in our environment and to diminish the pressure on the natural resources, we encourage you to use the appropriate take-back systems.
- The take-back systems will reuse or recycle most of the materials of end life equipment in a sound way.
- The crossed-out wheeled bin symbol invites you to use those systems.
- If you need more information on the collection, reuse and recycling systems, please contact your local or regional waste administration.

CE

CE

Dansk

Dette er et Klasse A-produkt. I et hjemmemiljø kan dette produkt skabe radiointerferens, hvormed det kan være nødvendigt for brugeren at tage passende forholdsregler.
Dette produkt kan forårsage interferens hvis det bruges i beboelsesområder. En sådan anvendelse skal undgås, medmindre brugeren tager specielle foranstaltninger for at reducere elektromagnetiske emissioner for at forhindre interferens med modtagelse af radio- og tv-udsendelser.
Der må kun bruges de kabler og det tilbehør der er inkluderet i pakken. Der må ikke bruges andet tilbehør eller kabler, medmindre det er udtrykkeligt beskrevet i dokumentationen.

Deutsch

Dies ist ein Produkt der Klasse A. In einer häuslichen Umgebung kann dieses Produkt Funkstörungen verursachen. Um diese zu beheben, müssen ggf. entsprechende Maßnahmen ergriffen werden.
Bei einer Nutzung in Wohngebieten können bei diesem Produkt Störungen auftreten. Eine solche Nutzung soll vermieden werden, außer der Nutzer ergreift bestimmte Maßnahmen, um elektromagnetische Strahlung zu reduzieren und Störungen der Radio- und Fernsehübertragung zu vermeiden.
Verwenden Sie ausschließlich die Kabel und Zubehörteile, die im Lieferumfang enthalten sind. Andere Zubehörteile oder Kabel dürfen nur dann verwendet werden, wenn dies in der Dokumentation ausdrücklich vorgeschrieben ist.

English

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.
This product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts.
Only use the cables and accessories that are included in the package. Don't use other accessories or cables unless specifically instructed to in the documentation.

Español

Este es un producto de Clase A. En una situación domestica, este producto puede producir interferencias de radio, en ese caso el usuario deberá tomar las medidas adecuadas.
Este producto puede causar interferencias al utilizarlo en áreas residenciales. Debe evitarse utilizarlo así, salvo si el usuario adopta medidas especiales para reducir las emisiones electromagnéticas e impedir que se produzcan interferencias con la recepción de emisiones de radio y televisión.
Utilice únicamente los cables y accesorios incluidos en el paquete. No utilice otros accesorios ni cables a menos que así se indique en la documentación.

Français

Cet appareil est un produit de Classe A. Dans un environnement domestique, ce produit est susceptible de provoquer des interférences radio, auquel cas l'utilisateur peut être mis en demeure de prendre des mesures appropriées.
Utilisé dans un environnement domestique, cet appareil génère des interférences. Ce type d'utilisation est donc à éviter si l'utilisateur n'a pas pris de mesures spécifiques visant à réduire les émissions électromagnétiques pour éviter les interférences avec la réception de programmes de radio et de télévision.
Utilisez uniquement les câbles et accessoires inclus dans ce package. N'utilisez aucun autre accessoire ou câble sauf instruction spécifique de la documentation.

Italiano

Questo è un prodotto di Classe A. In ambienti domestici il prodotto può causare radiointerferenza, nel qual caso potrebbe rendersi necessaria l'adozione di opportune misure.
Questo prodotto può causare interferenze se usato in zone residenziali. Evitare l'uso in queste zone a meno che l'utente non intraprenda azioni specifiche per ridurre le emissioni elettromagnetiche e impedire le interferenze alla ricezione di trasmissioni radio-televisive.
Utilizzare esclusivamente i cavi e gli accessori inclusi nell'imballaggio. Non utilizzare altri accessori o cavi a meno che non sia specificamente indicato nella documentazione.

Nederlands

Dit is een Klasse A product. Dit product kan in een huishoudelijke omgeving radiostoring veroorzaken in welk geval de gebruiker adequate maatregelen dient te nemen.
Dit product kan storing veroorzaken wanneer gebruikt in woongebieden. Dergelijk gebruik dient te worden vermeden tenzij de gebruiker speciale maatregelen treft om de elektro-magnetische uitstraling te beperken zodat storing van de ontvangst van radio- en televisieuitzendingen wordt voorkomen.
Gebruik alleen de kabels en toebehoren die zich in de verpakking bevinden. Gebruik geen ander toebehoren of kabels tenzij dit uitdrukkelijk in de handleiding wordt aangegeven.

Norsk

Dette er et produkt i klasse A. I et hjemmemiljø kan dette produktet forårsake radiointerferens, noe som gjør at brukeren i så fall må foreta passende tiltak.
Dette produktet kan forårsake interferens dersom det brukes i boligområder. Slik bruk må unngås med mindre brukeren tar spesielle tiltak for å redusere elektromagnetisk stråling for å unngå interferens med mottak av radio- og TV-sendinger.
Bruk kun kabler og tilbehør som er inkludert i pakken. Ikke bruk annet tilbehør eller kabler med mindre spesielt instruert til å gjøre det i dokumentasjonen.

Português

Este é um produto de Classe A. Num ambiente doméstico, este produto pode provocar interferências de rádio, pelo que o utilizador poderá ter de tomar medidas adequadas.
Este produto poderá causar interferências se utilizado em áreas residenciais. A utilização deverá ser evitada, salvo se o utilizador tomar medidas especiais para reduzir as emissões electromagnéticas e assim prevenir interferências na recepção de rádio e televisão.
Utilizar apenas cabos e acessórios incluídos na embalagem. Não utilizar outros acessórios ou cabos, salvo se especificamente indicado na documentação.

Suomi

Tämä on luokan A tuote. Tämä tuote voi aiheuttaa radiohäiriöitä kotikäytössä, jolloin käyttäjän on ehkä ryhdyttävä tarvittaviin toimenpiteisiin.
Tämä tuote saattaa aiheuttaa häirintää, jos sitä käytetään asuinalueella. Sellaista käyttöä on vältettävä, ellei ryhdytä erityistoimenpiteisiin sähkömagneettisen säteilyn vähentämiseksi häiriöiden estämiseksi radio- ja televisiolähetyksissä.
Käytä ainoastaan pakkauksen mukana toimitettuja kaapeleita ja varusteita. Älä käytä muita varusteita tai kaapeleita ellei näin ole erityisesti ohjeistettu asiakirjoissa.

Svensk

Detta är en Klass A-produkt. I en hushållsmiljö kan denna produkt orsaka radiostörningar, och användaren kan i så fall begäras att vidta lämpliga åtgärder.
Den här produkten kan oraka störningar om den används i bostadsområden. Sådan användning måste undvikas om inte användaren vidtar speciella åtgärder för att minska elektromagnetiska sändningar för att förhindra störningar i mottagningen av radio- och tv-sändningar.
Använd bara kablar och tillbehör som ingår i förpackningen. Använd inte andra tillbehör eller kablar om du inte får uttryckliga instruktioner om det i dokumentationen.

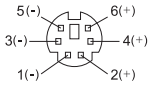
Türk

Bu, A Sınıfı bir üründür. Evde kullanım sırasında bu ürün radyo girisimine yol açabilir ve bu durumda kullanıcının gerekli önlemleri alması gerekebilir.
Bu ürün yerleşim bölgelerinde kullanılırsa parazite neden olabilir. Kullanıcı radyo ve televizyon yayınlarında paraziti önlemek üzere elektromanyetik salınımları azaltacak özel önlemler almadıkça bu şekilde kullanımdan kaçınılmalıdır.
Yalnızca pakette bulunan kablo ve aksesuarları kullanın. Belgelerde özellikle belirtilmedikçe başka aksesuar ve kablolar kullanmayın.

AC Adapter

BS-GS2008	Asian Power Devices Inc. WA-24Q12R-Z079
BS-GS2008P	Delta Electronics, Inc. DPS-150AB-13A

Label Information

	Direct current (For BS-GS2008,BS-GS2008P)
	Polarity of DC connector (For BS-GS2008)
	Polarity of DC connector (For BS-GS2008P)
	The chassis of the switch may become quite hot. Before you touch the switch, disconnect the AC adapter or AC cable from the switch and wait for a short while.
	Indicates a hazardous situation, which could result in minor or moderate injury if not careful.
	Alternating current (For BS-GS2008,BS-GS2008P)

For BS-GS2016, BS-GS2024, BS-GS2048, BS-GS2016P, BS-GS2024P

LVD

The socket-outlet shall be installed near the equipment and shall be easily accessible.

English

The device can only be used in a fixed location such as a telecommunication centre, a dedicated computer room. When you install the device, ensure that the protective earthing connection of the socket-outlet is verified by a skilled person.

Norsk

Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et kabel-TV nett, kan forårsake brannfare.
For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel- TV nettet.

Svensk

Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrusningen och kabel-TV nätet.