



Network SWITCH USER GUIDE

L2 Switch 범용



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Default GW / 포트 설정 / VLAN / POE / LLDP*

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*재기동 / 공장 초기화 / 설정 파일 다운로드 · 업로드
SNMP / Syslog / NTP / 접근통제 / CLI 명령어*

가. 머리말

본 사용자 설명서는 (주)엘림광통신 네트워크 스위치 제품에 공통 적용되는 범용 매뉴얼입니다.

본 사용자 설명서의 내용은 스위치 기종에 따라 약간 차이가 있을 수 있으며, 제품의 기능 변경, 설정 변경 등으로 인하여 사전 통지 없이 변경될 수 있습니다.

본 사용자 설명서는 장비 초기 설치와 운영을 고려해 주요 기능의 사용법을 설명합니다. 사용자 운영 특성에 맞는 기술지원이 필요한 경우 본사 CS팀의 기술지원을 받으시기 바랍니다.

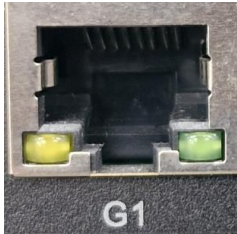
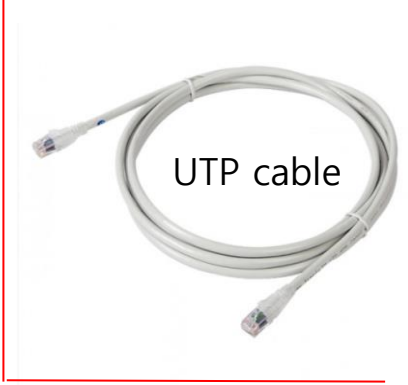
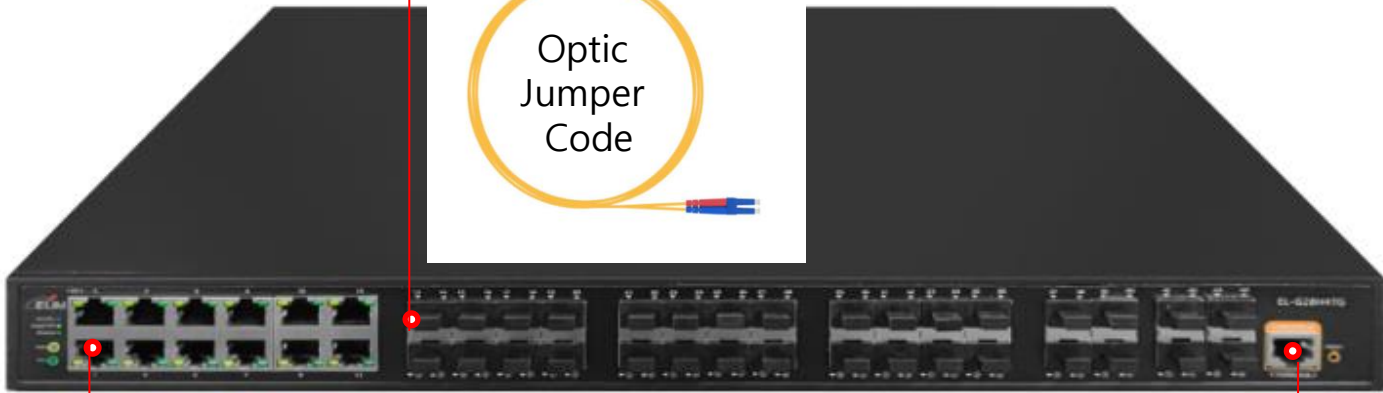
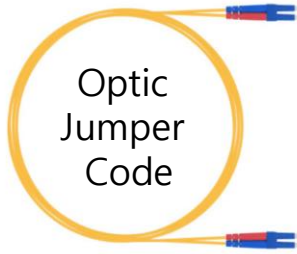
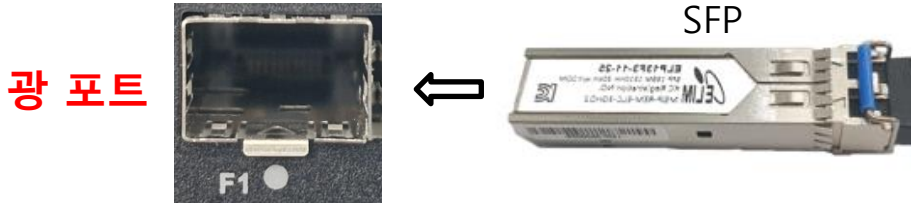
본 설명서의 내용은 당사의 사전 서면 동의 없이 어떠한 경우라도 일부 또는 전체를 도용하거나 배포할 수 없습니다.

(주)엘림광통신 네트워크 스위치 제품을 이용해 주셔서 감사합니다.



1. 소개

나. 포트 구성



UTP 포트



Console 포트

1. 소개



다. 광 포트 연결

* SFP : Small Form-factor Pluggable

Dual SFP



Bi-Directional SFP



TX 1310nm/RX 1550nm

TX 1550nm/RX 1310nm



1. 소개



라. 외관 구성

구분	외형	색상	설명
PWR		Green	- 점등 : 전원 On - 소등 : 전원 OFF
SYS		Green	- 점멸 : 시스템 정상 - 소등 : 시스템 오류
UTP 포트 (None POE)		Link	Yellow - 점등 : 링크 연결 - 소등 : 링크 미연결
		Speed (SPD)	Green / Yellow - Green 점등: 1G 속도 - Yellow 점등: 10/100M 속도 - 소등 : 링크 미연결
UTP 포트 (POE)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>포트</p> </div> <div style="text-align: center;"> <p>전면 패널</p> </div> </div>	Link	Yellow - 점등 : 링크 연결 - 소등 : 링크 미연결
		POE	Green - 점등 : POE 전원 공급 - 소등 : POE 미연결
광 포트		Green	- 점등 : 광 링크만 연결 - 점멸 : 데이터 송/수신 - 소등 : 광 링크 미연결
RESET		-	- 5초이상 누르면 공장 초기화 됨 - 설정값 백업 후 사용

2. 기본 설정

가. 콘솔 접속

콘솔 접속 프로그램(예 : Putty, Tera Term 등)을 이용해 시리얼 접속합니다.

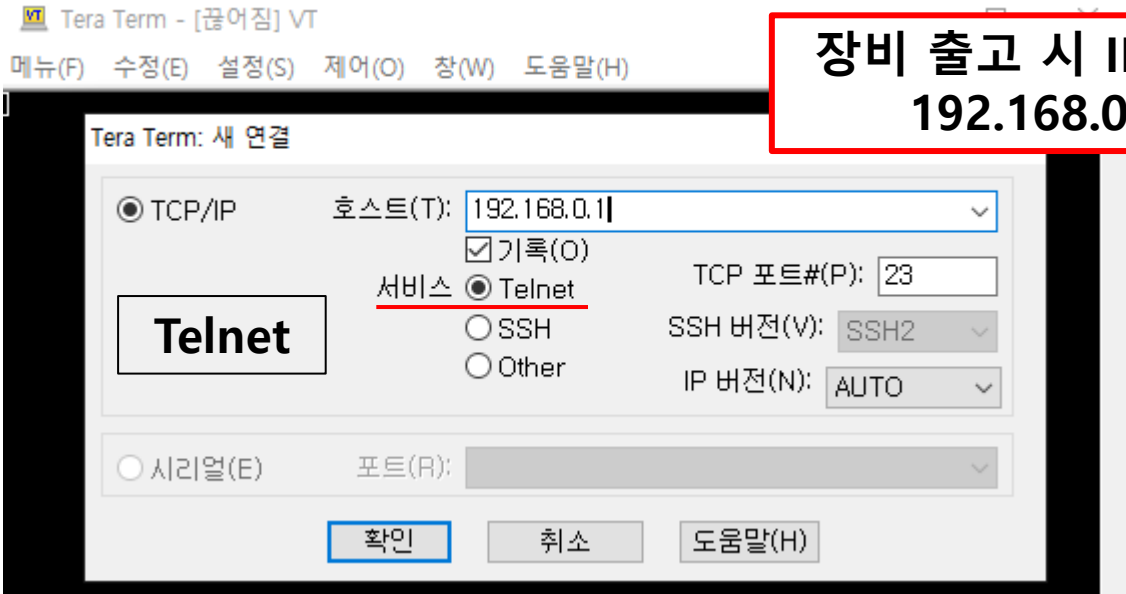


시리얼 포트 설정	초기 설정값
<ul style="list-style-type: none">- 속도 : 115200- 데이터 : 8bit- 패리티 : none- 스탑비트 : 1bit- 흐름제어 : none	<ul style="list-style-type: none">- Username : admin- Password : admin

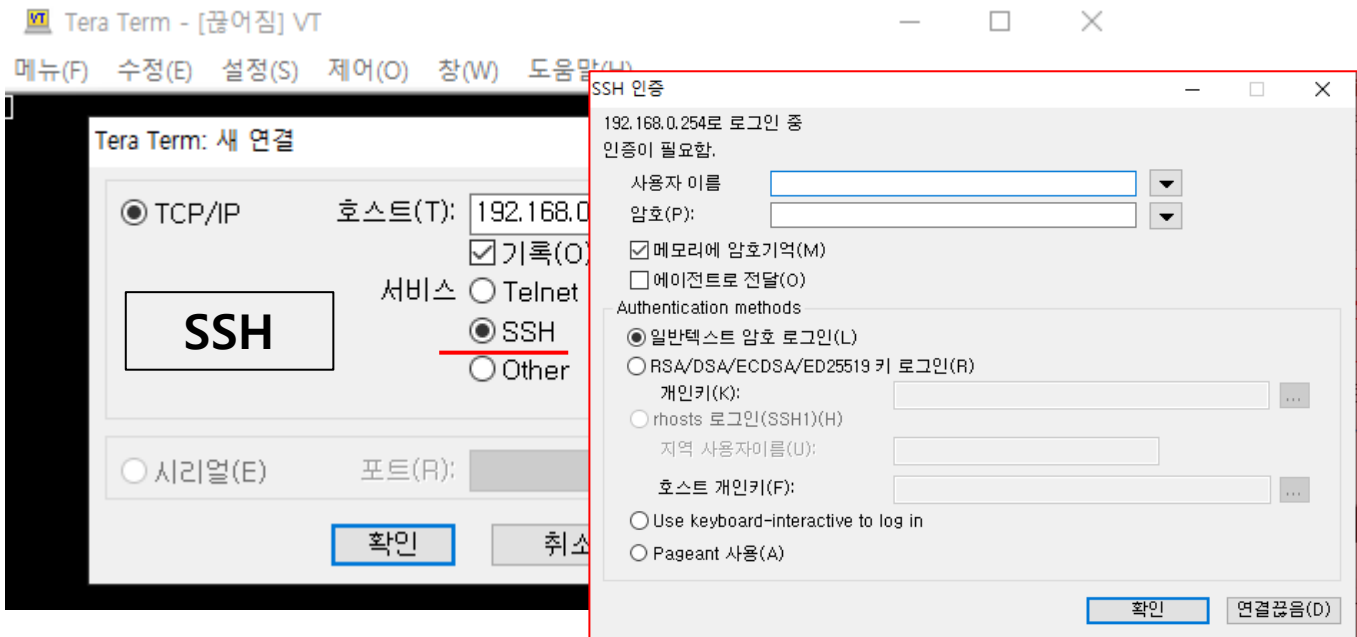
2. 기본 설정

나. Telnet / SSH 원격 접속

원격 접속 프로그램(예 : Putty, Tera Term 등)을 이용해 원격 접속합니다.



**장비 출고 시 IP 주소
192.168.0.1**



장비 출고 시 IP 주소	초기 설정값
- 192.168.0.1/24	- Username : admin - Password : admin

2. 기본 설정



다. WEB 접속

A타입

**장비 출고 시 IP 주소
192.168.0.1**

B타입

장비 출고 시 IP 주소	초기 설정값
- 192.168.0.1/24	- Username : admin - Password : admin

2. 기본 설정



라. WEB 접속 화면 구성



포트 상태



색상 마킹 : 링크 연결

▶ Information & Status
 ▶ Network Admin
 ▶ Port Configure
 ▶ PoE
 ▶ Advanced Configure
 ▶ Security Configure
 ▶ QoS Configure
 ▶ Diagnostics
 ▶ Maintenance

WEB 메뉴

System Information

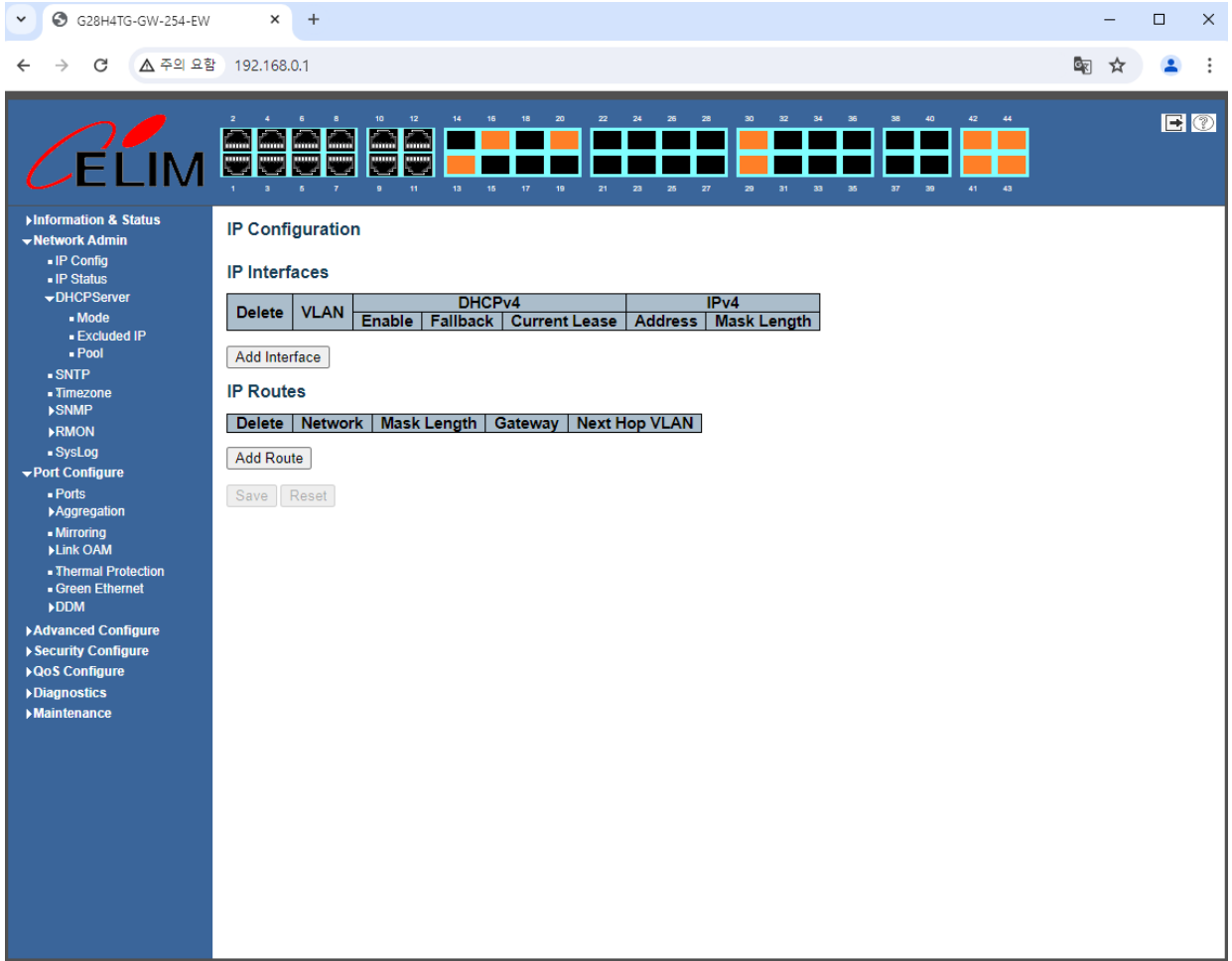
System Information	
Company Name	ELIM
Website and Contact	www.elimopt.co.kr
Hardware	
Model Name	EL-G8E2G-POE
MAC Address	B0-1C-91-0B-AB-60
Serial Number	
Time	
System Date	1970-01-01T03:58:36+00:00
System Uptime	0d 03:58:36
Firmware	
Firmware Version	V2.1
Firmware Date	2022-09-17T00:51:46-07:00
Application Status	
Telnet	Enabled
SSH	Enabled
SNMP	Enabled
HTTP	Enabled

메뉴별 화면

WEB 메뉴 구성	
▶ Information & Status	: 시스템 정보 및 상태
▶ Network Admin	: 네트워크 관리
▶ Port Configure	: 포트 설정
▶ PoE	: POE 설정
▶ Advanced Configure	: 고급 기능 설정
▶ Security Configure	: 보안 설정
▶ QoS Configure	: QoS 설정
▶ Diagnostics	: 진단
▶ Maintenance	: 장비 관리

2. 기본 설정

마. WEB 기본 설정법

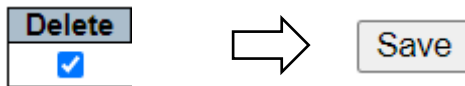


기본 설정 방법

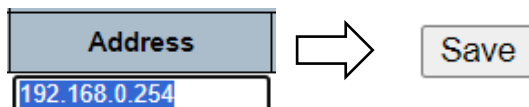
- **추가** : 해당 항목 ADD → Save



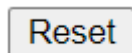
- **삭제** : 해당 항목 체크 → Save



- **변경** : 해당 항목 변경 → Save



- **초기화** : Reset



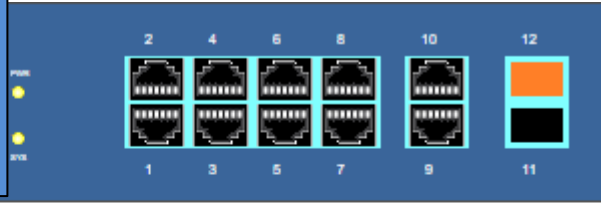
2. 기본 설정

바. 관리자 설정

WEB 메뉴

- ▷ Security Configure
 - Users

- ▶ Information & Status
- ▶ Network Admin
- ▶ Port Configure
- ▶ PoE
- ▶ Advanced Configure
- ▼ Security Configure
 - Users



Users Configuration

User Name	Privilege Level
admin	15

Add New User

설정 방법

Users Configuration

User Name	Privilege Level
admin	15

Add New User

Edit User 관리자 변경, 삭제

User Settings	
User Name	admin
Password
Password (again)
Privilege Level	15

Save Reset Cancel

Delete User

Add User 관리자 추가

User Settings	
User Name	
Password	
Password (again)	
Privilege Level	0

Save Reset Cancel

2. 기본 설정

사. IP 주소 변경 / Default Gateway 주소 설정

WEB 메뉴

▶ Network Admin

• IP Config

- ▶ Information & Status
- ▼ Network Admin
 - IP Config
 - IP Status
 - ▶ DHCP Server
 - SNMP
 - Timezone
 - ▶ SNMP
 - ▶ RMON
 - SysLog
- ▶ Port Configure
- ▶ PoE
- ▶ Advanced Configure
- ▶ Security Configure
- ▶ QoS Configure
- ▶ Diagnostics
- ▶ Maintenance

IP Configuration

Mode	Router
DNS Server 0	No DNS server
DNS Server 1	No DNS server
DNS Server 2	No DNS server
DNS Server 3	No DNS server
DNS Proxy	<input type="checkbox"/>

IP Interfaces

Delete	VLAN	DHCPv4			IPv4		IPv6	
		Enable	Fallback	Current Lease	Address	Mask Length	Address	Mask Length
<input type="checkbox"/>	1	<input type="checkbox"/>	0		192.168.0.1	24		

IP Routes

Delete	Network	Mask Length	Gateway	Next Hop VLAN
<input type="checkbox"/>	0.0.0.0	24	192.168.0.254	0

설정 방법

IP 주소 변경

IP Interfaces

Delete	VLAN	DHCPv4			IPv4		IPv6	
		Enable	Fallback	Current Lease	Address	Mask Length	Address	Mask Length
<input type="checkbox"/>	1	<input type="checkbox"/>	0		192.168.0.10	24		

IP Routes Default Gateway 주소 설정

Delete	Network	Mask Length	Gateway	Next Hop VLAN
<input type="button" value="Delete"/>	0.0.0.0	0	192.168.0.254	0

* IP 주소와 서브넷 마스크에 상관 없이 Gateway로 전송 설정

2. 기본 설정

아. 포트 속도 및 전송 방식 설정

WEB 메뉴

▷ **Port Configure**

• **Ports**

- Information & Status
- Network Admin
- Port Configure
 - Ports
 - Aggregation
 - Mirroring
 - Link OAM
 - Thermal Protection
 - Green Ethernet
 - DDM
- PoE
- Advanced Configure
- Security Configure
- QoS Configure
- Diagnostics
- Maintenance

Port Configuration

Port	Description	Link	Speed		Adv Duplex		Adv speed			Flow Control			Maximum Frame Size	Excessive Collision Mode	Frame Length Check
			Current	Configured	Fdx	Hdx	10M	100M	1G	Enable	Curr Rx	Curr Tx			
*			<>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9600	<>	<input type="checkbox"/>
1		● Down	Auto	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	9600	Discard	<input type="checkbox"/>
2		● Down	Auto	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	9600	Discard	<input type="checkbox"/>
3		● Down	Auto	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	9600	Discard	<input type="checkbox"/>
4		● Down	Auto	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	9600	Discard	<input type="checkbox"/>
5		● Down	Auto	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	9600	Discard	<input type="checkbox"/>
6		● Down	Auto	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	9600	Discard	<input type="checkbox"/>
7		● Down	Auto	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	9600	Discard	<input type="checkbox"/>
8		● Down	Auto	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	9600	Discard	<input type="checkbox"/>
9		● Down	Auto	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	9600	Discard	<input type="checkbox"/>
10		● Down	Auto	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	9600	Discard	<input type="checkbox"/>
11		● Down	Auto	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	9600	Discard	<input type="checkbox"/>
12		● 1Gfdx Fiber	Auto	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	9600	Discard	<input type="checkbox"/>

Save Reset

포트 상태 확인

포트 상태 UP(100M 전이중)

포트 상태 DOWN

● 100fdx Auto

● Down Auto

- * Auto : 자동 협상 기능
- * 수동 설정은 필요시 사용

설정 방법

10/100/1000Base-T
UTP 포트

Auto

Disabled

Auto

10Mbps HDX

10Mbps FDX

100Mbps HDX

100Mbps FDX

1Gbps FDX

1000Base-X
SFP 포트

Auto

Disabled

Auto

100Mbps FDX

1Gbps FDX

10GBase-SR/LR
SFP+ 포트

10Gbps FDX

Disabled

Auto

100Mbps FDX

1Gbps FDX

2.5Gbps FDX

10Gbps FDX

2. 기본 설정

자. VLAN 설정

WEB 메뉴

- ▶ Advanced Configure
- VLANs

- ▶ Information & Status
- ▶ Network Admin
- ▶ Port Configure
- ▶ PoE
- ▼ Advanced Configure
 - MAC Table
 - ▶ PTP
 - VLANs
 - ▶ VLAN Translation
 - ▶ Voice VLAN
 - ▶ GVRP
 - ▶ Port Isolation
 - ▶ Loop Protection
 - ▶ Spanning Tree
 - ▶ IPMC Profile
 - MEP
 - ERPS
 - ▶ IGMP Snooping
 - ▶ IPv6 MLD Snooping
 - LLDP
 - ▶ Security Configure
 - ▶ QoS Configure
 - ▼ Diagnostics
 - Ping
 - Traceroute
 - Ping6

Global VLAN Configuration

Allowed Access VLANs	1
Ethertype for Custom S-ports	88A8

Port VLAN Configuration

Port	Mode	Port VLAN	Port Type	Ingress Filtering	Ingress Acceptance	Egress Tagging	Allowed VLANs	Forbidden VLANs
*	<>	1	<>	<input checked="" type="checkbox"/>	<>	<>	1	
1	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
2	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
3	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
4	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
5	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
6	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
7	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
8	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
9	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
10	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
11	Trunk	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1,3200	
12	Trunk	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1,3200	

Save Reset

포트 설정 방법

Global VLAN Configuration

Allowed Access VLANs	1,2
----------------------	-----

VLAN 추가 (ERPS에 Control VLAN은 불필요)

Port	Mode	Port VLAN
1	Access	1
2	Access	1
3	Trunk	1
4	Hybrid	1

Access / Trunk 포트 설정

Egress Tagging	Allowed VLANs
Untag Port VLAN	1-4095
Untag Port VLAN	1
Tag All	1

Trunk 포트의 전송 방식 설정

- Untag Port VLAN : tag가 붙지 않는 프레임 수신 시 Port VLAN으로 인식

Port VLAN	1
-----------	---

- Tag All : 무조건 tag 사용, tag가 붙지 않은 프레임 수신 시 제거

2. 기본 설정

차. POE 설정

* PoE : Power Over Ethernet

WEB 메뉴

▷ POE

• POE Setting



- ▶ Information & Status
- ▶ Network Admin
- ▶ Port Configure
- ▼ PoE
 - PoE Setting
 - PoE Scheduling
 - PoE Status
- ▶ Advanced Configure
- ▶ Security Configure
- ▶ QoS Configure
- ▶ Diagnostics
- ▶ Maintenance

Power Over Ethernet Configuration

Reserved Power determined by Auto Manual
 Power Management Mode Actual Consumption Reserved Power

PoE Power Supply Configuration

Primary Power Supply [W]

PoE Port Configuration

Port	PoE Mode	Priority	PD Alive Check	Maximum Power [W]	Description
*	<>	<>	<>	30	
1	PoE+	Low	OFF	30	
2	PoE+	Low	OFF	30	
3	PoE+	Low	OFF	30	
4	PoE+	Low	OFF	30	
5	PoE+	Low	OFF	30	
6	PoE+	Low	OFF	30	
7	PoE+	Low	OFF	30	
8	PoE+	Low	OFF	30	

설정 방법

Port	PoE Mode	Priority	PD Alive Check
1	PoE+	Low	OFF
2	Disabled	Low	OFF
3	PoE	High	ON
4	PoE+	Critical	OFF

PoE Mode

Disabled : PoE OFF
 PoE : 802.3af (15.4W)
 PoE+ : 802.3at (30W)
 PoE++ : 802.bt(60W)

Priority : 전력 공급 우선순위

Low : 우선순위 낮음
 High : 우선순위 높음
 Critical : 우선순위 최상위

PD Alive Check

ON : 링크 중단시
 자동 전원 재 부팅

2. 기본 설정

카. LLDP 활용

* LLDP : Link Layer Discovery Protocol

WEB 메뉴

- Information & Status
 - LLDP
 - Neighbors

LLDP Neighbor Information Auto-refresh Refresh

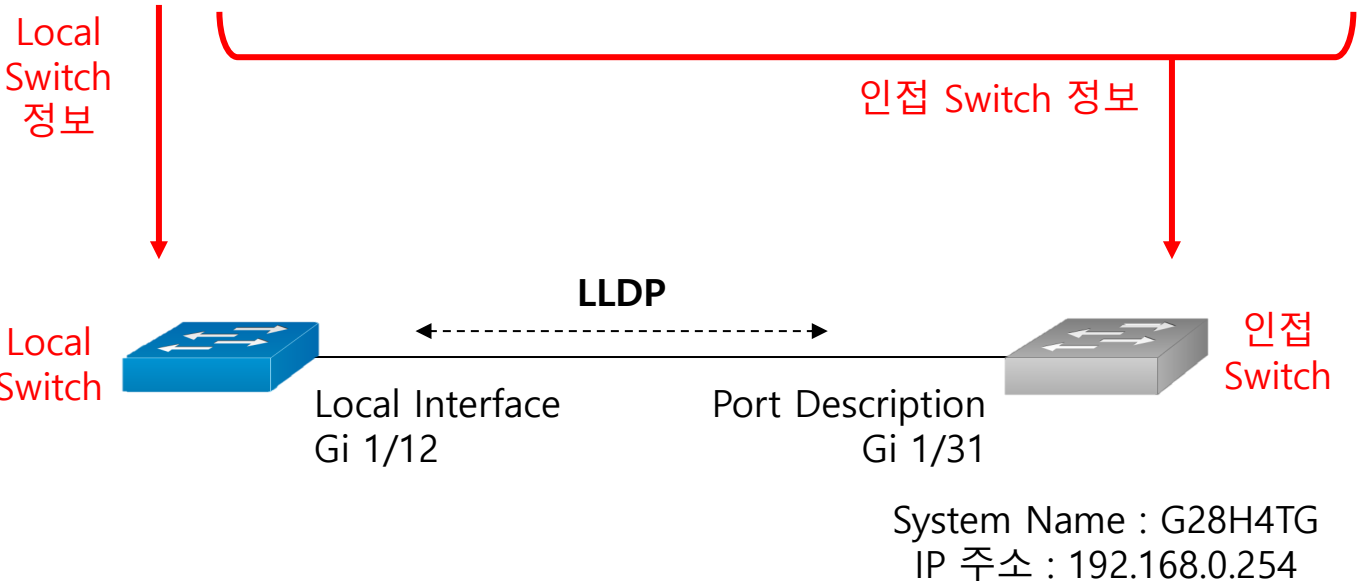
LLDP Remote Device Summary						
Local Interface	Chassis ID	Port ID	Port Description	System Name	System Capabilities	Management Address
GigabitEthernet 1/12	B0-1C-91-0B-9B-E0	31	GigabitEthernet 1/31	G28H4TG-GW-254-EW	Bridge(+)	192.168.0.254 (IPv4)

직접 연결된 인접 Switch의 정보 확인 가능

LLDP Neighbor Information

Auto-refresh Refresh

LLDP Remote Device Summary						
Local Interface	Chassis ID	Port ID	Port Description	System Name	System Capabilities	Management Address
GigabitEthernet 1/12	B0-1C-91-0B-9B-E0	31	GigabitEthernet 1/31	G28H4TG-GW-254-EW	Bridge(+)	192.168.0.254 (IPv4)



2. 기본 설정

타. SFP 장착 상태 확인

* DDM : Digital Diagnostics Monitoring

WEB 메뉴

▽ Port Configure

▷ DDM

• DDM Overview



▶ Information & Status

▶ Network Admin

▼ Port Configure

▪ Ports

▶ Aggregation

▪ Mirroring

▶ Link OAM

▪ Thermal Protection

▪ Green Ethernet

▼ DDM

▪ DDM Configuration

▪ DDM Overview

▪ DDM Detailed

DDMI Overview

Port	Vendor	Part Number	Serial Number	Revision	Data Code	Transceiver
<u>11</u>	-	-	-	-	-	-
<u>12</u>	ELIM	ELP3F5-11-25	EL2306196017	V04 ▲	2023-06-19	1000BASE_X

DDMI Overview

Port	Vendor	Part Number	Serial Number	Revision	Data Code	Transceiver
<u>11</u>	-	-	-	-	-	-
<u>12</u>	ELIM	ELP3F5-11-25	EL2306196017	V04 ▲	2023-06-19	1000BASE_X

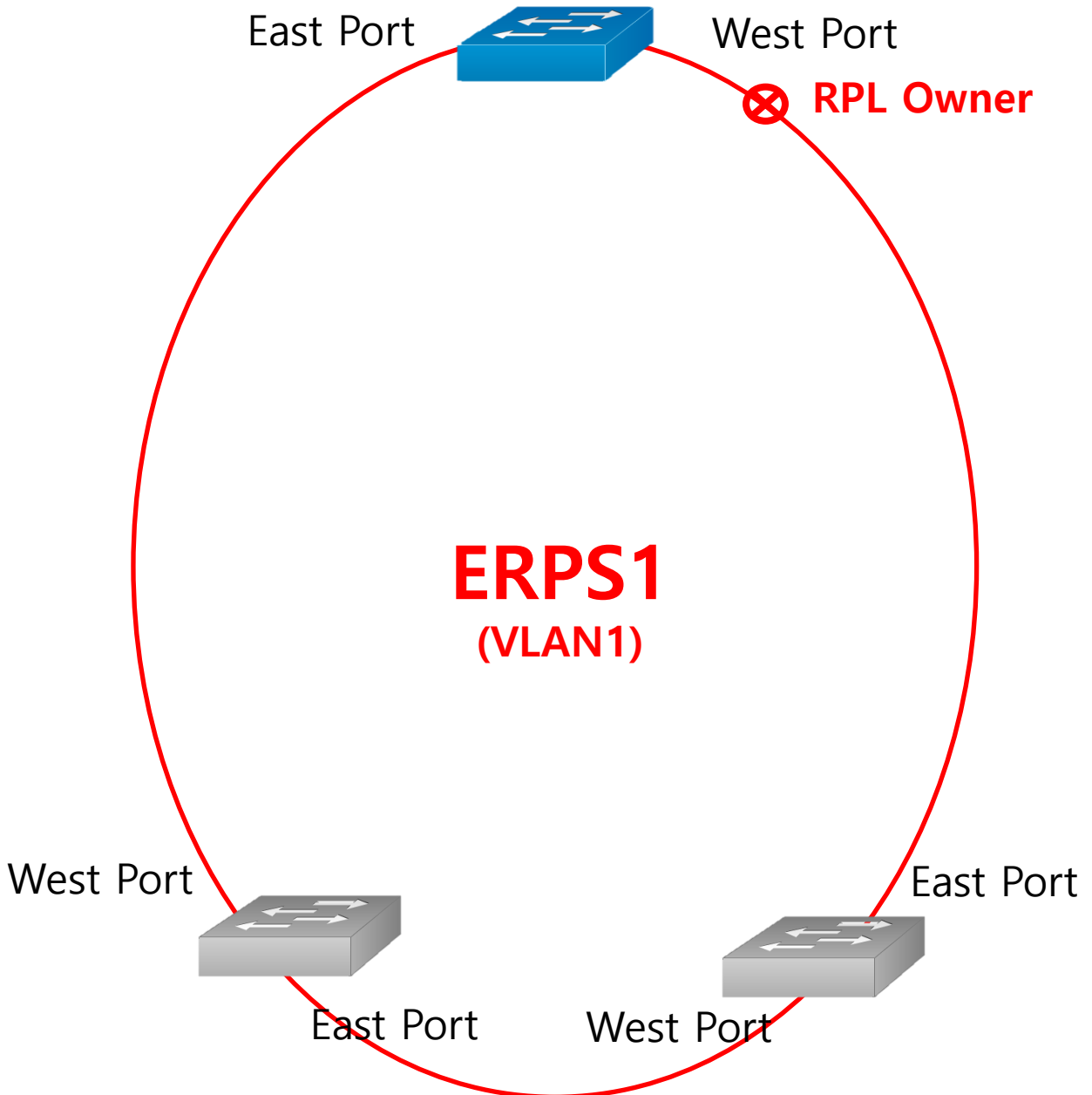
SFP 정보



3. ERPS 구성

가. ERPS 구성도(예시)

* ERPS : Ethernet Ring Protection Switching



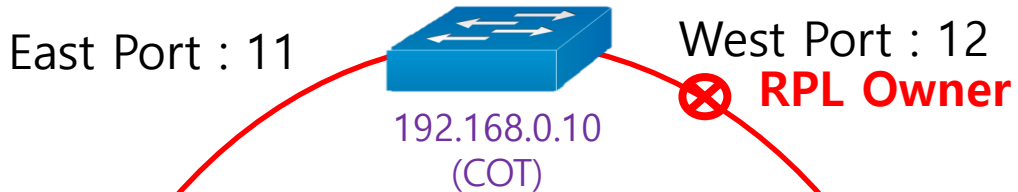
참고사항

- * RPL Owner : 링 차단, COT 스위치 1개만 설정
- * 각 스위치 East Port와 West Port를 순서에 맞춰 연결
East와 East, West와 West 연결 시 동작 안함
- * 장애 복구 : 50ms 이내

3. ERPS 구성

나. ERPS 설정값(예시)

- 1. 포트 STP 설정 : Disable(OFF)
- 2. 포트 VLAN 설정 : Trunk(데이터 : 1, 제어 : 1112)



3. MEP 설정

Instance/Residence Port : 11
VID : 1112

3. MEP 설정

Instance/Residence Port : 12
VID : 1112

4. ERPS 설정

Ring ID : 1, Ring Type : Major
East Port : 11, West Port : 12 Control VLAN 1112
RPL Owner : West Port

ERPS1 (VLAN1)

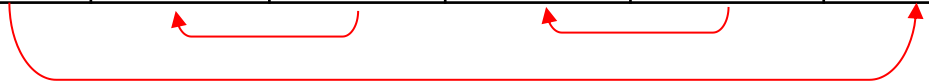


3. ERPS 구성



다. ERPS 설정 테이블(예시)

구분		RT1		COT		RT2	
스위치 기종							
IP 주소		192.168.0.11		192.168.0.10		192.168.0.12	
Default Gateway							
포트	방향	East	West	East	West	East	West
	포트 번호	11	12	11	12	11	12
STP	포트 설정	Disable	Disable	Disable	Disable	Disable	Disable
VLAN	포트 설정	TRUNK 1, 1112	TRUNK 1, 1112	TRUNK 1, 1112	TRUNK 1, 1112	TRUNK 1, 1112	TRUNK 1, 1112
MEP	Instance/ Residence	11	12	11	12	11	12
	VID	1112	1112	1112	1112	1112	1112
	Level	0	0	0	0	0	0
	Last Octet	1	1	1	1	1	1
ERPS	Ring ID	1	1	1	1	1	1
	Ring Type	Major	Major	Major	Major	Major	Major
	적용 Port	Port0 : 11	Port1 : 12	Port0 : 11	Port1 : 12	Port0 : 11	Port1 : 12
	Control VLAN	1112	1112	1112	1112	1112	1112
	RPL Owner				○ : 포트차단		



참고사항

- * ERPS 포트는 반드시 STP Disable(OFF) 필요
- * ERPS 포트는 VLAN Trunk 설정 필요. Data VLAN + Control VLAN
- * VID : Control VLAN ID는 2 ~ 4,095 범위에서 임의로 설정 가능
COT 스위치의 포트 번호 조합으로 구성 시 식별용이
- * MEP Level : ERPS를 구성하는 모든 장비에 동일하게 설정 필요
- * Last Octet : Ring ID와 동일하게 설정함

라. ERPS 포트 Spanning Tree 설정

WEB 메뉴

- ▽ Advanced Configure
- ▷ Spanning Tree
 - CIST Ports

- ▶ Information & Status
- ▶ Network Admin
- ▶ Port Configure
- ▶ PoE
- ▶ Advanced Configure
 - MAC Table
 - ▶ PTP
 - VLANs
 - ▶ VLAN Translation
 - ▶ Voice VLAN
 - ▶ GVRP
 - ▶ Port Isolation
 - Loop Protection
 - ▶ Spanning Tree
 - Bridge Settings
 - MSTI Mapping
 - MSTI Priorities
 - CIST Ports
 - MSTI Ports
 - ▶ IPMC Profile
 - MEP
 - ERPS
 - ▶ IGMP Snooping
 - ▶ IPv6 MLD Snooping
 - LLDP
- ▶ Security Configure
- ▶ QoS Configure
- ▶ Diagnostics
- ▶ Maintenance

STP CIST Port Configuration

CIST Aggregated Port Configuration

Port	STP Enabled	Path Cost	Priority	Admin Edge	Auto Edge	Restricted Role	TCN	BPDU Guard	Point-to-point
-	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Forced True

CIST Normal Port Configuration

Port	STP Enabled	Path Cost	Priority	Admin Edge	Auto Edge	Restricted Role	TCN	BPDU Guard	Point-to-point
*	<input checked="" type="checkbox"/>	<>	<>	<>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<>
1	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
2	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
3	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
4	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
5	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
6	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
7	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
8	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
9	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
10	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
11	<input type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
12	<input type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto

Save Reset

설정 방법

Port	STP Enabled
11	<input type="checkbox"/>
12	<input type="checkbox"/>

ERPS 구성에 사용되는 포트는 반드시 STP Enable 체크 해제(disable) 후 저장(Save)

3. ERPS 구성



마. ERPS 포트 VLAN 설정

WEB 메뉴

▶ Advanced Configure

- VLANs

- ▶ Information & Status
- ▶ Network Admin
- ▶ Port Configure
- ▶ PoE
- ▼ Advanced Configure
 - MAC Table
 - ▶ PTP
 - VLANs
 - ▶ VLAN Translation
 - ▶ Voice VLAN
 - ▶ GVRP
 - ▶ Port Isolation
 - Loop Protection
 - ▶ Spanning Tree
 - ▶ IPMC Profile
 - MEP
 - ERPS
 - ▶ IGMP Snooping
 - ▶ IPv6 MLD Snooping
 - LLDP
 - ▶ Security Configure
 - ▶ QoS Configure
 - ▶ Diagnostics
 - ▶ Maintenance

Global VLAN Configuration

Allowed Access VLANs	1
Ethertype for Custom S-ports	88A8

Port VLAN Configuration

Port	Mode	Port VLAN	Port Type	Ingress Filtering	Ingress Acceptance	Egress Tagging	Allowed VLANs	Forbidden VLANs
*	<>	1	<>	<input checked="" type="checkbox"/>	<>	<>	1	
1	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
2	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
3	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
4	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
5	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
6	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
7	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
8	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
9	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
10	Access	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1	
11	Trunk	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1,1112	
12	Trunk	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1,1112	

설정 방법

Port VLAN Configuration

Port	Mode	Port VLAN	Port Type	Ingress Filtering	Ingress Acceptance	Egress Tagging	Allowed VLANs
11	Trunk	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1,1112
12	Trunk	1	C-Port	<input checked="" type="checkbox"/>	Tagged and Untagged	Untag Port VLAN	1,1112

ERPS 구성에 사용되는 포트는 반드시 TRUNK 설정

Port VLAN : 1
Egress Tagging : Untag Port VLAN
Allowed VLANs : 1, 1112

* 단일 ERPS Ring 구성 시 Allowed VLAN을 1-4,095로 설정 가능

3. ERPS 구성



바. ERPS용 MEP 설정

* MEP : Maintenance Entity Point

WEB 메뉴

- ▶ Advanced Configure
 - MEP



- ▶ Information & Status
- ▶ Network Admin
- ▶ Port Configure
- ▶ PoE
- ▼ Advanced Configure
 - MAC Table
 - ▶ PTP
 - VLANs
 - ▶ VLAN Translation
 - ▶ Voice VLAN
 - ▶ GVRP
 - ▶ Port Isolation
 - Loop Protection
 - ▶ Spanning Tree
 - ▶ IPMC Profile
 - MEP
 - ERPS

Maintenance Entity Point

Delete	Instance	Residence Port	Tagged VID	This MAC	Alarm
<input type="checkbox"/>	11	11		B0-1C-91-0B-AB-6B	<input checked="" type="checkbox"/>
<input type="checkbox"/>	12	12		B0-1C-91-0B-AB-6C	<input checked="" type="checkbox"/>

Add New MEP Save Reset

설정 방법

Delete	Instance	Residence Port	Tagged VID
Delete	11	11	1112

Add New MEP Save Reset

MEP 설정

Instance/Residence Port : 11
VID : 1112

Delete	Instance	Residence Port	Tagged VID
Delete	12	12	1112

Add New MEP Save Reset

MEP 설정

Instance/Residence Port : 12
VID : 1112

* VID(Control VLAN ID)는 2 ~ 4,095 범위에서 임의로 설정 가능
COT 스위치의 포트 번호 조합으로 구성 시 식별용이

3. ERPS 구성



사. ERPS용 MEP 상세 설정

Maintenance Entity Point

Delete	Instance	Residence Port	Tagged VID	This MAC	Alarm
<input type="checkbox"/>	11	11		B0-1C-91-0B-AB-6B	●
<input type="checkbox"/>	12	12		B0-1C-91-0B-AB-6C	●

Add New MEP Save Reset

MEP Configuration 2930 Refresh

Instance Data

Instance	Domain	Mode	Direction	Residence Port	Flow Instance	Tagged VID	EPS Instance	This MAC
12	Port	Map	Down	12		3200	2	B0-1C-91-0B-AB-6C

Instance Configuration

Level	Format	Domain Name	MEG id	MEP id	Tagged VID	Syslog	cLevel	cMEG	cMEP	cAIS	cLCK	cLoop	cConfig	cSSF	aBLK	aTSD	aTSF
0	ITU ICC		ITUCC0000E30000	1	3200	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Peer MEP Configuration

Delete	Peer MEP ID	Unicast Peer MAC	cLOC	cRDI	cPeriod	cPriority	cDEG
No Peer MEP Added							

Functional Configuration

Continuity Check				APS Protocol				
Enable	Priority	Frame rate	TLV	Enable	Priority	Cast	Type	Last Octet
<input type="checkbox"/>	0	1 f/sec	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0	Multi	R-APS	1

TLV Configuration

Organization Specific TLV (Global)					
OUI First	OUI Second	OUI Third	Sub-Type	Value	
0	0	12	1	2	

TLV Status

Peer MEP ID	CC Organization Specific TLV				CC Port Status	CC Interface Status
	OUI First	OUI Second	OUI Third	Sub-type	Value	Last RX
No Peer MEP Added						

Link State Tracking

Enable

Save Reset

설정 방법

Instance Configuration

Level	Format	Domain Name
0	ITU ICC	

MEP Level : 0

Functional Configuration

Continuity Check				APS Protocol				
Enable	Priority	Frame rate	TLV	Enable	Priority	Cast	Type	Last Octet
<input type="checkbox"/>	0	1 f/sec	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0	Multi	R-APS	1

Last Octet : 1
Ring ID와 동일하게 설정

아. ERPS 설정

WEB 메뉴

- ▶ Advanced Configure
- ERPS



- ▶ Information & Status
- ▶ Network Admin
- ▶ Port Configure
- ▶ PoE
- ▶ Advanced Configure
 - MAC Table
 - ▶ PTP
 - VLANs
 - ▶ VLAN Translation
 - ▶ Voice VLAN
 - ▶ GVRP
 - ▶ Port Isolation
 - Loop Protection
 - ▶ Spanning Tree
 - ▶ IPMC Profile
 - MEP
 - ERPS
 - ▶ IGMP Snooping
 - ▶ IPv6 MLD Snooping
 - LLDP
- ▶ Security Configure
- ▶ QoS Configure
- ▶ Diagnostics
- ▶ Maintenance

Ethernet Rapid Ring Protection Switching

Delete	Ring ID	East Port	West Port	Ring Type	Control Vlan	MEP Level	Interconnected Node	Major RRing ID	Alarm
<input type="checkbox"/>	1	11	12	Major	1112	0	No	1	●

설정 방법

ERPS 설정

Ring ID : 1, Ring Type : Major
 East Port : 11, West Port : 12 Control VLAN 1112

Ethernet Rapid Ring Protection Switching

Delete	Ring ID	East Port	West Port	Ring Type	Control Vlan	MEP Level	Interconnected Node
Delete	<input type="text" value="1"/>	<input type="text" value="11"/>	<input type="text" value="12"/>	Major ▾	<input type="text" value="1112"/>	<input type="text" value="0"/>	<input type="checkbox"/>

3. ERPS 구성



자. ERPS RPL Owner 설정

* RPL : Ring Protection Link

Ethernet Rapid Ring Protection Switching

Delete	Ring ID	East Port	West Port	Ring Type	Control Vlan	MEP Level	Interconnected Node	Major RRing ID	Alarm
<input type="checkbox"/>	1	11	12	Major	1112	0	No	1	●

Rapid Ring Configuration 1

Instance Data

Ring ID	East Port	West Port	East Port SF MEP	West Port SF MEP	East Port APS MEP	West Port APS MEP	Ring Type
1	11	12	11	12	11	12	Major Ring

Instance Configuration

Configured |
 WTR(Wait to Restore) Time: 1min |
 Revertive |
 VLAN config

RPL Configuration

RPL Role	RPL Port	Clear
RPL_Owner	West Port	<input type="checkbox"/>

Instance State

Protection State	East Port	West Port	Transmit APS	East Port Receive APS	West Port Receive APS	WTR Remaining	RPL Un-blocked	No APS Received	East Port Block Status	West Port Block Status	FOP Alarm
Idle	OK	OK	NR RB DNF BPR1	NR RB DNF BPR1 B0-1C-91-0B-9B-FD	NR RB DNF BPR1 B0-1C-91-0B-9B-FD	0	●	●	Unblocked	Blocked	●

설정 방법

RPL Configuration

RPL Role	RPL Port	Clear
RPL_Owner	West Port	<input type="checkbox"/>
None	None	
RPL_Owner	East Port	
RPL_Neighbour	West Port	

RPL Owner : West Port
(링 차단, COT 스위치 1개만 설정)

3. ERPS 구성



차. ERPS 동작상태 확인

Ethernet Rapid Ring Protection Switching

Delete	Ring ID	East Port	West Port	Ring Type	Control Vlan	MEP Level
<input type="checkbox"/>	1	29	30	Major	2930	0

Add New Ring Group Save Reset

Rapid Ring Configuration 1

Instance Data

Ring ID	East Port	West Port	East Port SF MEP	West Port SF MEP	East Port APS MEP	West Port APS MEP	Ring Type
1	29	30	29	30	29	30	Major Ring

Instance Configuration

Configured WTR(Wait to Restore) Time: 1min Revertive: VLAN config:

RPL Configuration

RPL Role	RPL Port	Clear
RPL_Owner	West Port	<input type="checkbox"/>

Instance State

Protection State	East Port	West Port	Transmit APS	East Port Receive APS	West Port Receive APS	WTR Remaining	RPL Un-blocked	No APS Received	East Port Block Status	West Port Block Status	FOP Alarm
Idle	OK	OK	NR RB DNF BPR1	NR RB DNF BPR1 B0-1C-91-0B-9B-FD	NR RB DNF BPR1 B0-1C-91-0B-9B-FD	0	●	●	Unblocked	Blocked	●

Save Reset

동작상태 확인 방법

Instance State

Protection State	East Port	West Port	Transmit APS	East Port Receive APS	West Port Receive APS	WTR Remaining	RPL Un-blocked	No APS Received	East Port Block Status	West Port Block Status	FOP Alarm
Idle	OK	OK	NR RB DNF BPR1	NR RB DNF BPR1 B0-1C-91-0B-9B-FD	NR RB DNF BPR1 B0-1C-91-0B-9B-FD	0	●	●	Unblocked	Blocked	●

Protection State
Idle

East Port Block Status	West Port Block Status
Unblocked	Blocked

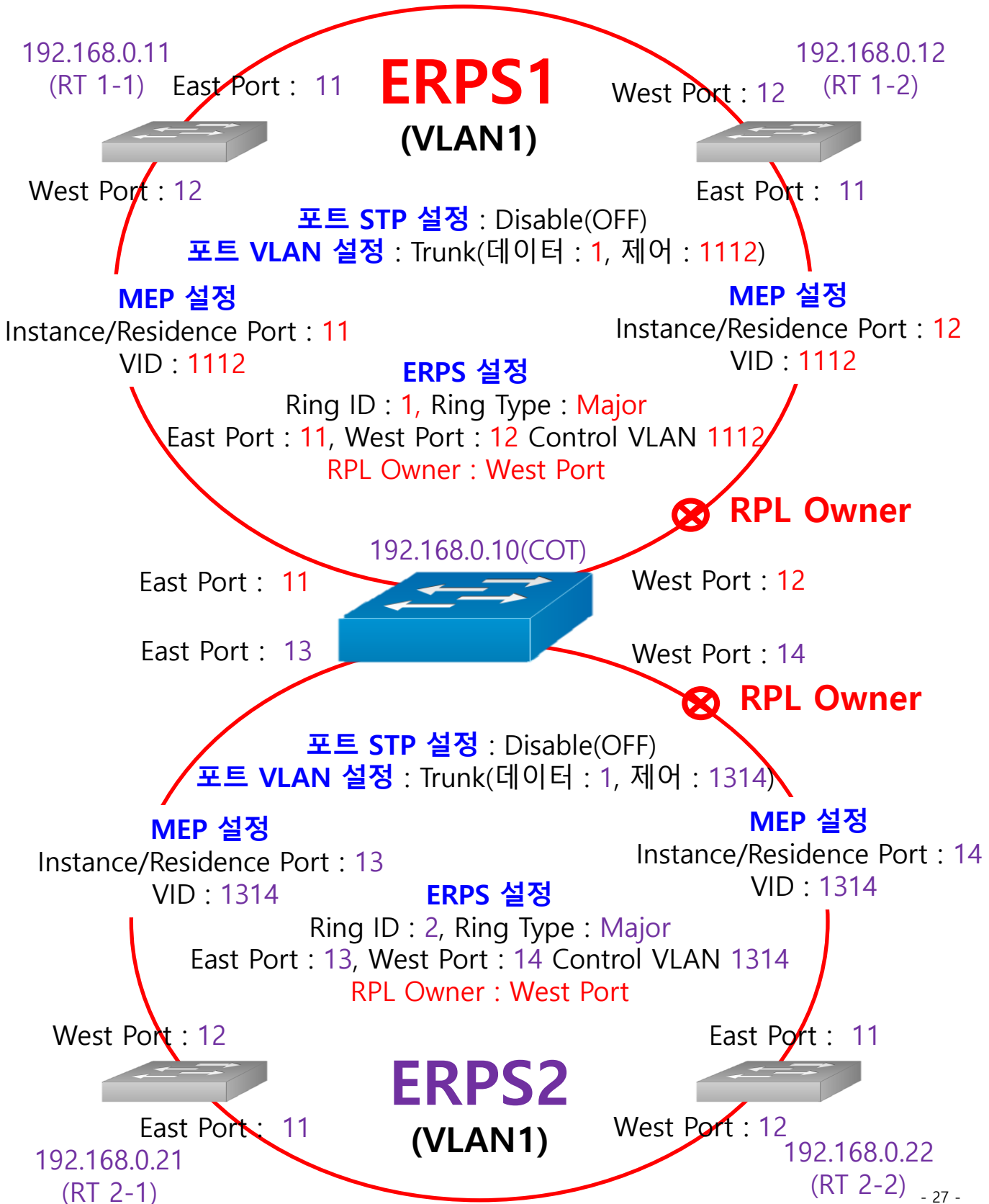
Protection State

- IDLE : 정상
- Protected : 절체 상태
- Pending : 처리 중 or Ring 구성 오류

Owner 포트는 평상시 Block(차단)됨

3. ERPS 구성

카. ERPS Dual Ring 설정값(예시)



3. ERPS 구성



타. ERPS Dual Ring 설정 테이블(예시)

구 분		RT 1-1		COT		RT 1-2	
스위치 기종							
IP 주소		192.168.0.11		192.168.0.10		192.168.0.12	
Default Gateway							
포트	방향	East	West	East	West	East	West
	포트 번호	11	12	11	12	11	12
STP	포트 설정	Disable	Disable	Disable	Disable	Disable	Disable
VLAN	포트 설정	TRUNK 1, 1112	TRUNK 1, 1112	TRUNK 1, 1112	TRUNK 1, 1112	TRUNK 1, 1112	TRUNK 1, 1112
MEP	Instance/Residence	11	12	11	12	11	12
	VID	1112	1112	1112	1112	1112	1112
	Level	0	0	0	0	0	0
	Last Octet	1	1	1	1	1	1
ERPS1 (Ring1)	Ring ID	1	1	1	1	1	1
	Ring Type	Major	Major	Major	Major	Major	Major
	적용 Port	Port0 : 11	Port1 : 12	Port0 : 11	Port1 : 12	Port0 : 11	Port1 : 12
	Control VLAN	1112	1112	1112	1112	1112	1112
	RPL Owner				○ : 포트차단		

구 분		RT 2-1		COT		RT 2-2	
스위치 기종							
IP 주소		192.168.0.21		192.168.0.10		192.168.0.22	
Default Gateway							
포트	방향	East	West	East	West	East	West
	포트 번호	11	12	13	14	11	12
STP	포트 설정	Disable	Disable	Disable	Disable	Disable	Disable
VLAN	포트 설정	TRUNK 1, 1314	TRUNK 1, 1314	TRUNK 1, 1314	TRUNK 1, 1314	TRUNK 1, 1314	TRUNK 1, 1314
MEP	Instance/Residence	11	12	13	14	11	12
	VID	1314	1314	1314	1314	1314	1314
	Level	0	0	0	0	0	0
	Last Octet	1	1	1	1	1	1
ERPS2 (Ring2)	Ring ID	2	2	2	2	2	2
	Ring Type	Major	Major	Major	Major	Major	Major
	적용 Port	Port0 : 11	Port1 : 12	Port0 : 13	Port1 : 14	Port0 : 11	Port1 : 12
	Control VLAN	1314	1314	1314	1314	1314	1314
	RPL Owner				○ : 포트차단		

4. RSTP 구성

가. RSTP 구성도(예시)

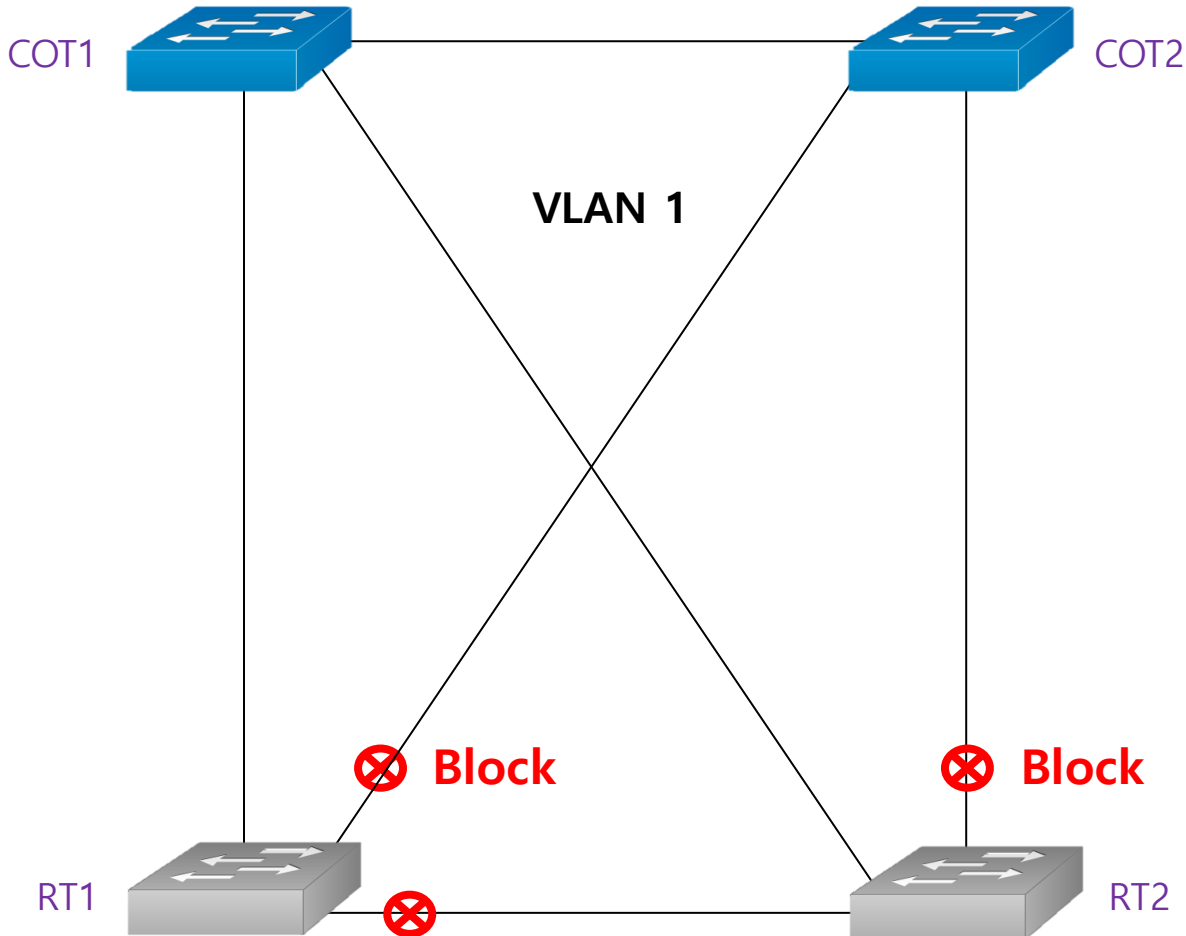
* RSTP : Rapid Spanning Tree Protocol

RSTP Priority 설정

Root : 4,096

RSTP Priority 설정 :

Secondary : 8,192



Path Cost 설정 :

300,000

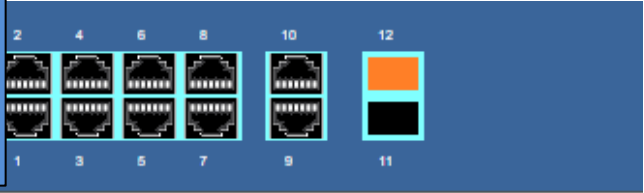
참고사항

- * STP 종류 : STP(전환시간 50초 이내), RSTP(전환시간 5초 이내)
MSTP(복수 VLAN을 묶어서 동작)
- * STP 우선순위 : 4,096단위로 지정, Default 32,768
낮을 수록 우선순위 높음, 우선순위 미설정 시 MAC 주소가
가장 낮은 스위치가 Root로 동작함
- * Path Cost : 특정 포트 지정 차단 시 사용, 차단 포트에 30만
이상의 수치로 지정(기본값 - 100M : 20만, 1G : 2만)

나. RSTP Priority 설정

WEB 메뉴

- ▽ Advanced Configure
 - ▷ Spanning Tree
 - Bridge Settings



- ▶ Information & Status
- ▶ Network Admin
- ▶ Port Configure
- ▶ PoE
- ▼ Advanced Configure
 - MAC Table
 - ▶ PTP
 - VLANs
 - ▶ VLAN Translation
 - ▶ Voice VLAN
 - ▶ GVRP
 - ▶ Port Isolation
 - Loop Protection
 - ▼ Spanning Tree
 - Bridge Settings
 - MSTI Mapping
 - MSTI Priorities
 - CIST Ports
 - MSTI Ports
 - ▶ IPMC Profile
 - MEP

STP Bridge Configuration

Basic Settings

Protocol Version	RSTP ▼
Bridge Priority	4096 ▼
Hello Time	2
Forward Delay	15
Max Age	20
Maximum Hop Count	20
Transmit Hold Count	6

Advanced Settings

Edge Port BPDU Filtering	<input type="checkbox"/>
Edge Port BPDU Guard	<input type="checkbox"/>
Port Error Recovery	<input type="checkbox"/>
Port Error Recovery Timeout	<input type="text"/>

Save Reset

설정 방법

Protocol Version	RSTP ▼
Bridge Priority	4096 ▼
Hello Time	0
Forward Delay	4096
Max Age	8192
Maximum Hop Count	12288
Transmit Hold Count	16384
	20480
	24576

- Default : 32,768
- 4,096단위로 지정
- Root : 4,096 설정
- Secondary : 8,192 설정

* 우선순위 미설정 시 MAC 주소가 가장 낮은 스위치가 Root로 동작함

다. RSTP Path Cost 설정

WEB 메뉴

- ▽ Advanced Configure
 - ▷ Spanning Tree
 - CIST Ports



- ▶ Information & Status
- ▶ Network Admin
- ▶ Port Configure
- ▶ PoE
- ▼ Advanced Configure
 - MAC Table
 - ▶ PTP
 - VLANs
 - ▶ VLAN Translation
 - ▶ Voice VLAN
 - ▶ GVRP
 - ▶ Port Isolation
 - Loop Protection
 - ▼ Spanning Tree
 - Bridge Settings
 - MSTI Mapping
 - MSTI Priorities
 - CIST Ports
 - MSTI Ports
 - ▶ IPMC Profile
 - MEP
 - ERPS
 - ▶ IGMP Snooping
 - ▶ IPv6 MLD Snooping
 - LLDP
- ▶ Security Configure
- ▶ QoS Configure
- ▶ Diagnostics
- ▶ Maintenance

STP CIST Port Configuration

CIST Aggregated Port Configuration

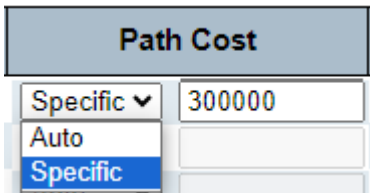
Port	STP Enabled	Path Cost	Priority	Admin Edge	Auto Edge	Restricted Role	TCN	BPDU Guard	Point-to-point
-	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Forced True

CIST Normal Port Configuration

Port	STP Enabled	Path Cost	Priority	Admin Edge	Auto Edge	Restricted Role	TCN	BPDU Guard	Point-to-point
*	<input checked="" type="checkbox"/>	<>	<>	<>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<>
1	<input checked="" type="checkbox"/>	Specific 300000	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
2	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
3	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
4	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
5	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
6	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
7	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
8	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
9	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
10	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
11	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
12	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto

[Save] [Reset]

설정 방법



**Path cost를 Specific으로 전환해
300,000 입력 후 저장**

- * Path Cost : 특정 포트 지정 차단 시 사용
차단 포트에 30만 이상의 수치로 지정
- * 기본값 : 100Mbps - 200,000, 1Gbps - 20,000

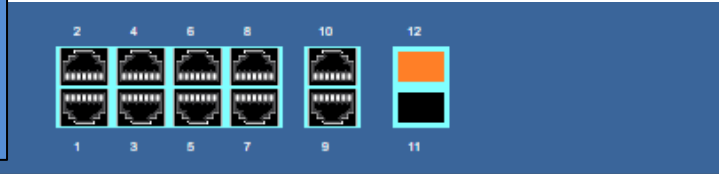
가. 재기동 및 공장 초기화

WEB 메뉴

▶ Maintenance

• Restart Device

- ▶ Information & Status
- ▶ Network Admin
- ▶ Port Configure
- ▶ PoE
- ▶ Advanced Configure
- ▶ Security Configure
- ▶ QoS Configure
- ▶ Diagnostics
- ▼ Maintenance
 - Restart Device
 - Factory Defaults
 - Firmware Upgrade
 - Firmware Select
 - ▶ Configuration



Restart Device

Are you sure you want to perform a Restart?

장비 재기동
(WEB 접속은 끊김)

WEB 메뉴

▶ Maintenance

• Factory Defaults

- ▶ Information & Status
- ▶ Network Admin
- ▶ Port Configure
- ▶ PoE
- ▶ Advanced Configure
- ▶ Security Configure
- ▶ QoS Configure
- ▶ Diagnostics
- ▼ Maintenance
 - Restart Device
 - Factory Defaults
 - Firmware Upgrade
 - Firmware Select
 - ▶ Configuration



Factory Defaults

Are you sure you want to reset the configuration to Factory Defaults?

장비 공장 초기화(전면 reset 버튼과 기능 동일)

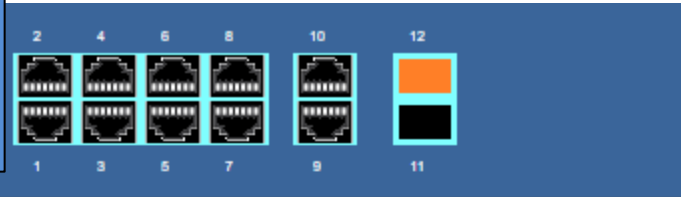
* 주의 : 설정값이 모두 초기화되기 때문에
설정값 백업 후 사용할 것!

5. 시스템 관리

나. 설정 파일 다운로드

WEB 메뉴

- ▼ Maintenance
 - ▶ Configuration
 - Download



- ▶ Information & Status
- ▶ Network Admin
- ▶ Port Configure
- ▶ PoE
- ▶ Advanced Configure
- ▶ Security Configure
- ▶ QoS Configure
- ▶ Diagnostics
- ▼ Maintenance
 - Restart Device
 - Factory Defaults
 - Firmware Upgrade
 - Firmware Select
 - ▼ Configuration
 - Download
 - Upload
 - Activate
 - Delete

Download Configuration

Select configuration file to save.

Please note: running-config may take a while to prepare for download.

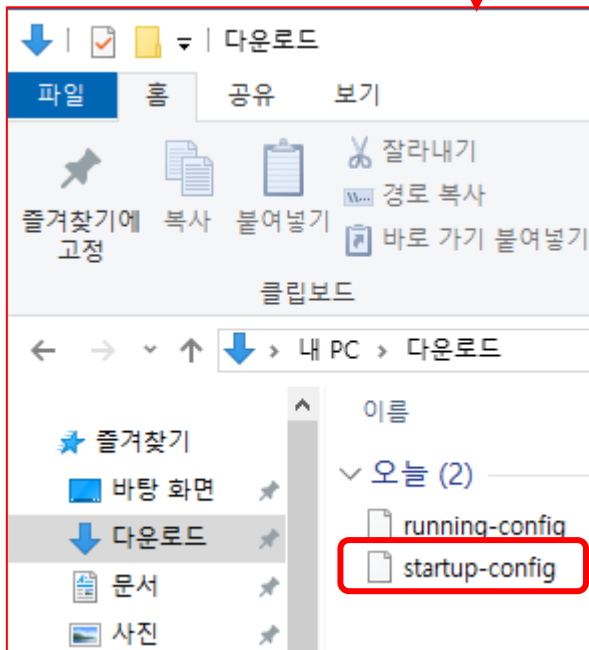
File Name
<input type="radio"/> running-config
<input type="radio"/> default-config
<input checked="" type="radio"/> startup-config
<input type="radio"/> 1218.cfg

→ running-config : 동작중인 설정값

→ startup-config : 저장되어있는 설정값

Download Configuration

*** 설정 파일을 다운로드하여 관리 PC에 스위치별로 보관할 경우 장애 시 백업 가능함**



```
running-config - Windows 메모장
파일(F) 편집(E) 서식(O) 보기(V) 도움말(H)
hostname EL-G8E2G-POE-210
username admin privilege 15 password encrypted YWRtaW4=
!
vlan 1
!
!
!
ip routing
ip route 192.168.200.0 255.255.255.0 192.168.0.254
aggregation mode smac dmac ip port
spanning-tree mst name 82-26-03-11-11-F1 revision 0
poe management mode class-consumption
poe supply 150
snmp-server company ELIM
snmp-server contact www.elimopt.co.kr
```

5. 시스템 관리



다. 설정 파일 업로드

WEB 메뉴

- ▼ Maintenance
 - ▶ Configuration
 - Upload



- ▶ Information & Status
- ▶ Network Admin
- ▶ Port Configure
- ▶ PoE
- ▶ Advanced Configure
- ▶ Security Configure
- ▶ QoS Configure
- ▶ Diagnostics
- ▼ Maintenance
 - Restart Device
 - Factory Defaults
 - Firmware Upgrade
 - Firmware Select
 - ▼ Configuration
 - Download
 - Upload
 - Activate
 - Delete

Upload Configuration

File To Upload

파일 선택 선택된 파일 없음 → 파일 선택 running-config

Destination File

File Name	Parameters
<input checked="" type="radio"/> running-config	<input checked="" type="radio"/> Replace <input type="radio"/> Merge
<input type="radio"/> startup-config	
<input type="radio"/> 1218.cfg	
<input type="radio"/> Create new file	

Upload Configuration

설정 방법

Destination File

File Name	Parameters
<input checked="" type="radio"/> running-config	<input checked="" type="radio"/> Replace <input type="radio"/> Merge
<input type="radio"/> startup-config	
<input type="radio"/> 1218.cfg	
<input type="radio"/> Create new file	

Upload Configuration

- **running-config** : 장비 동작에 즉시 반영, 업로드 후 설정 저장 필요
 - Replace : 기존 설정값 교체
 - Merge : 기존 설정값과 병합
- **startup-config** : 장비 재기동시 반영, 업로드 후 재기동 필요

5. 시스템 관리



라. SNMP Version / Community Name 설정

* SNMP(Simple Network Management Protocol)

WEB 메뉴

- Network Admin
 - SNMP
 - System



- Information & Status
- Network Admin
 - IP Config
 - IP Status
 - DHCP Server
 - SNT
 - Timezone
 - SNMP
 - System
 - Trap
 - Communities

SNMP System Configuration

Mode	Enabled
Version	SNMP v2c
Read Community	public
Write Community	private
Engine ID	800007e5017f000001

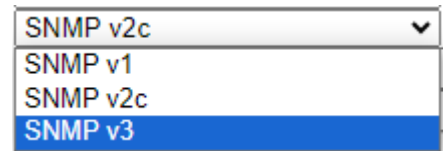
Save Reset

설정 방법

SNMP System Configuration

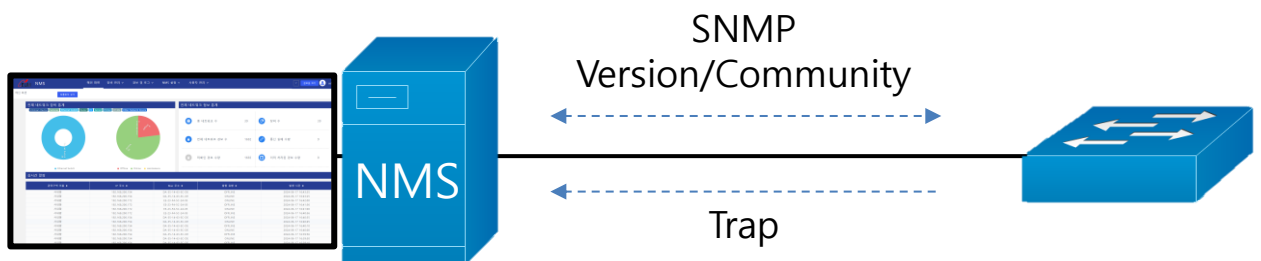
Mode	Enabled
Version	SNMP v2c
Read Community	akjde2@#ids
Write Community	akjde2@#ids
Engine ID	800007e5017f000001

Save Reset



SNMP Version 설정

**Read/Write Community Name 변경
NMS도 동일한 값으로 변경 필요**



마. SNMP v3 사용자 설정

WEB 메뉴

- Network Admin
 - SNMP
 - Users

Information & Status
 Network Admin
 IP Config
 IP Status
 DHCP Server
 SNMP
 Timezone
 System
 Trap
 Communities
 Users
 Groups
 Views
 Access
 RMON
 SysLog

SNMPv3 User Configuration

Delete	Engine ID	User Name	Security Level	Authentication Protocol	Authentication Password	Privacy Protocol	Privacy Password
<input type="checkbox"/>	800007e5017f000001	default_user	NoAuth, NoPriv	None	None	None	None

Add New Entry Save Reset

설정 방법

SNMPv3 User Configuration

Delete	Engine ID	User Name	Security Level	Authentication Protocol	Authentication Password	Privacy Protocol	Privacy Password
Delete	800007e5017f000001	v3user	Auth, Priv	MD5	*****	DES	*****

Add New Entry Save Reset

- Engine ID : default_user의 Engine ID와 동일하게 설정
- User Name : v3user (사용자명 입력)
- Authentication Password : aabbcc@1(인증용 비밀번호 입력)
- Security Level : Auth, Priv (인증과 암호화 모두 사용)
- Authentication Protocol : MD5 (인증용 HASH 설정)
- Privacy Protocol : DES (암호 알고리즘 설정)
- Privacy Password : aabbcc@1 (암호용 비밀번호 입력)

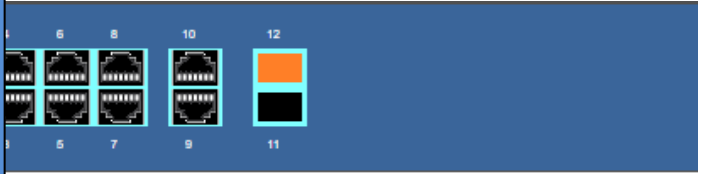
5. 시스템 관리



바. SNMP Trap 설정

WEB 메뉴

- Network Admin
 - SNMP
 - Trap



- Information & Status
- Network Admin
 - IP Config
 - IP Status
 - DHCP Server
 - SNTP
 - Timezone
 - SNMP
 - System
 - Trap
 - Communities
 - Users
 - Groups

Trap Configuration

Global Settings

Mode: Disabled

Trap Destination Configurations

Delete	Name	Enable	Version	Destination Address	Destination Port
Add New Entry					

Save Reset

설정 방법

SNMP Trap Configuration

Trap Config Name	TRAP
Trap Mode	Disabled
Trap Version	SNMP v2c
Trap Community	Public
Trap Destination Address	192.168.0.100
Trap Destination Port	162
Trap Inform Mode	Disabled
Trap Inform Timeout (seconds)	3
Trap Inform Retry Times	5
Trap Probe Security Engine ID	Enabled
Trap Security Engine ID	
Trap Security Name	None

SNMP Trap Event

System	<input checked="" type="checkbox"/> * <input checked="" type="checkbox"/> Warm Start <input checked="" type="checkbox"/> Cold Start
Interface	Link up <input type="radio"/> none <input type="radio"/> specific <input checked="" type="radio"/> all switches <input checked="" type="checkbox"/> * Link down <input type="radio"/> none <input type="radio"/> specific <input checked="" type="radio"/> all switches LLDP <input type="radio"/> none <input type="radio"/> specific <input checked="" type="radio"/> all switches
Authentication	<input type="checkbox"/> * <input type="checkbox"/> SNMP Authentication Fail
Switch	<input type="checkbox"/> * <input type="checkbox"/> STP <input type="checkbox"/> RMON

Save Reset

Trap 기능 사용

Global Settings

Mode: Enabled

Trap Destination: Enabled

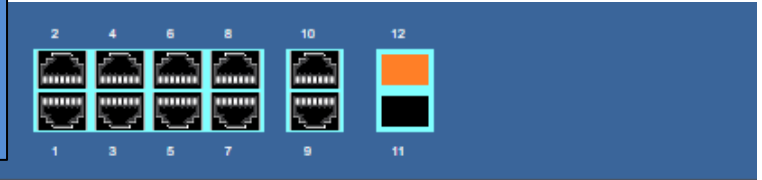
NMS 서버 주소 설정
(Trap 수신 및 경보 시현)

Trap 항목 설정
- 장비 재기동
(Warm Start, Cold start)
- Link Down 등

사. Syslog

WEB 메뉴

- ▶ Network Admin
 - SysLog



Information & Status

- Network Admin
 - IP Config
 - IP Status
 - DHCP Server
 - SNTP
 - Timezone
 - SNMP
 - RMON
 - SysLog

System Log Configuration

Server Mode	Disabled
Server Address	
Syslog Level	Informational

Save Reset

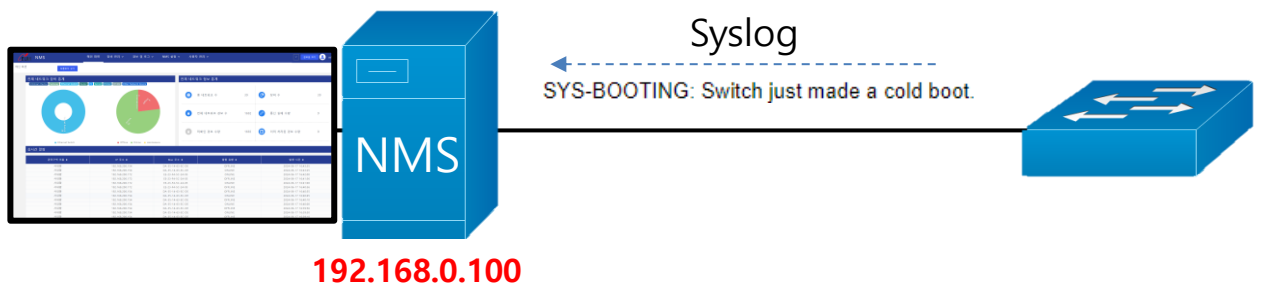
설정 방법

Server Mode	Enabled
Server Address	Disabled
Syslog Level	Enabled

Syslog 전송 설정

Server Mode	Enabled
Server Address	192.168.0.100
Syslog Level	Informational

NMS 서버 주소 설정
(Syslog 수신 및 저장, 경보 시현)



5. 시스템 관리



아. NTP 설정

* SNTP : Simple Network Time Protocol
NTP와 기능 동일, 핵심 기능만 단순화

WEB 메뉴

- ▶ Network Admin
 - SNTP



- ▶ Information & Status
- ▼ Network Admin
 - IP Config
 - IP Status
 - ▶ DHCP Server
 - SNTP
 - Timezone
 - ▶ SNMP
 - ▶ RMON
 - SysLog
- ▶ Port Configure
- ▶ PoE
- ▶ Advanced Configure
- ▶ Security Configure
- ▶ QoS Configure
- ▶ Diagnostics
- ▶ Maintenance

SNTP Configuration

Mode	Disabled
Server Address	

Save Reset

설정 방법

SNTP Configuration

Mode	Enabled
Server Address	192.168.0.100

NTP 서버 IP 주소 설정

Save Reset

CLI 명령어

```
# configure terminal  
(config)# sntp server ip-address 192.168.0.100  
(config)# exit
```

자. 접근 통제

WEB 메뉴

▷ Security Configure

- Access Management

- Information & Status
- Network Admin
- Port Configure
- PoE
- Advanced Configure
- Security Configure
 - Users
 - Privilege Levels
 - SSH
 - HTTPS
 - Port Security Limit
 - Access Management
 - 802.1X

Access Management Configuration

Mode: Enabled ▾

Delete	VLAN ID	Start IP Address	End IP Address	HTTP/HTTPS	SNMP	TELNET/SSH
Delete	1	192.168.0.10	192.168.0.10	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Delete	1	192.168.0.100	192.168.0.100	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Add New Entry

Save Reset

설정 방법

Access Management Configuration

Mode: Enabled ▾
Disabled
Enabled

접근 통제 기능 사용

- 지정된 IP 주소만 시스템 접근 허용
- WEB 접속, SNMP, TELNET/SSH 접속 지정

관리 단말 IP 주소

VLAN ID	Start IP Address	End IP Address	HTTP/HTTPS	SNMP	TELNET/SSH
1	192.168.0.10	192.168.0.10	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	192.168.0.100	192.168.0.100	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

NMS IP 주소

Telnet/SSH만 허용(WEB 접속 차단)

SNMP만 허용

5. 시스템 관리



차. CLI 명령어_아래 기능은 CLI로만 설정 가능, WEB 설정 안됨

Hostname 변경

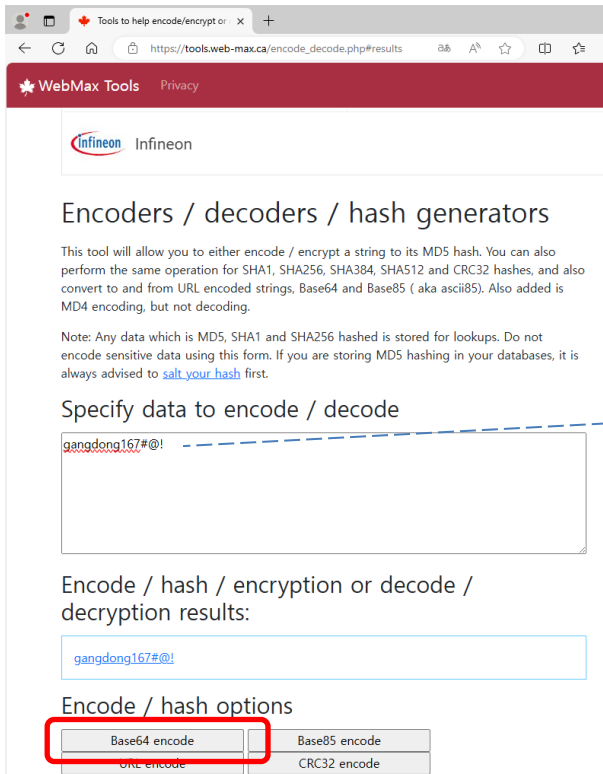
```
# configure terminal
(config)# hostname SWITCH
SWITCH(config)# exit
```

* 특수 문자와 언더바 '_'는 입력 안됨!

비밀번호 암호화

```
# configure terminal
(config)# username admin privilege 15 password encrypted c3dpdGNol0AxDQo=
(config)# exit
```

* 자동 암호화는 안됨. 암호화된 결과값 직접 입력



Base64
Encode
결과값

switch#@1

https://tools.web-max.ca/encode_decode.php#results

설정값 수동 저장

```
# copy running-config startup-config
Building configuration...
% Saving 1454 bytes to flash:startup-config
#
```

고객이 필요한 시스템을 연구 개발하고
최고의 만족을 위해 노력합니다.



*NETWORK를
선도하는 기업!*