

# Cisco Access Point Configuration

2013.1.24



## CONSOL

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### [특징]

- 콘솔케이블 필요
- 명령기반으로 한번에!

### [준비물]

- 콘솔케이블
- USB to SERIAL 케이블
- 터미널 접속 소프트웨어

## IPSU Software

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### [특징]

- 콘솔케이블 필요 없음
- 한번에 잘 안된다!

### [준비물]

- IPSU 소프트웨어
- AP의 MAC 주소
- 인터넷공유기 (선택)

# IP CONFIGURATION

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**[SERIAL PORT]**  
**Baud Rate : 9600**  
**Date bits : 8**  
**Parity : none**  
**Stop bits : 1**  
**Flow control : X**

# CONSOL / CABLE LINK

```

ap>en                                     : 글로벌 설정모드 진입
Password:                                 : Cisco
ap#conf t                                 : 설정모드 진입
Enter configuration commands, one per line. End with CNTL/Z.
ap(config)#int bvi 1                       : AP관리 인터페이스 진입
ap(config-if)#ip add 10.0.0.100 255.255.255.0 : 관리 ip 주소 설정
ap(config-if)#exit
ap(config)#ip default-gateway 10.0.0.1    : 게이트웨이 설정
ap(config)#end                             : 설정 마침
ap#wr                                       : 설정 저장
Building configuration...
[OK]
ap#

```

**++노트++**

**+ Default ID : Cisco (대소문자 구분)**

**+ Default Password : Cisco (대소문자 구분)**

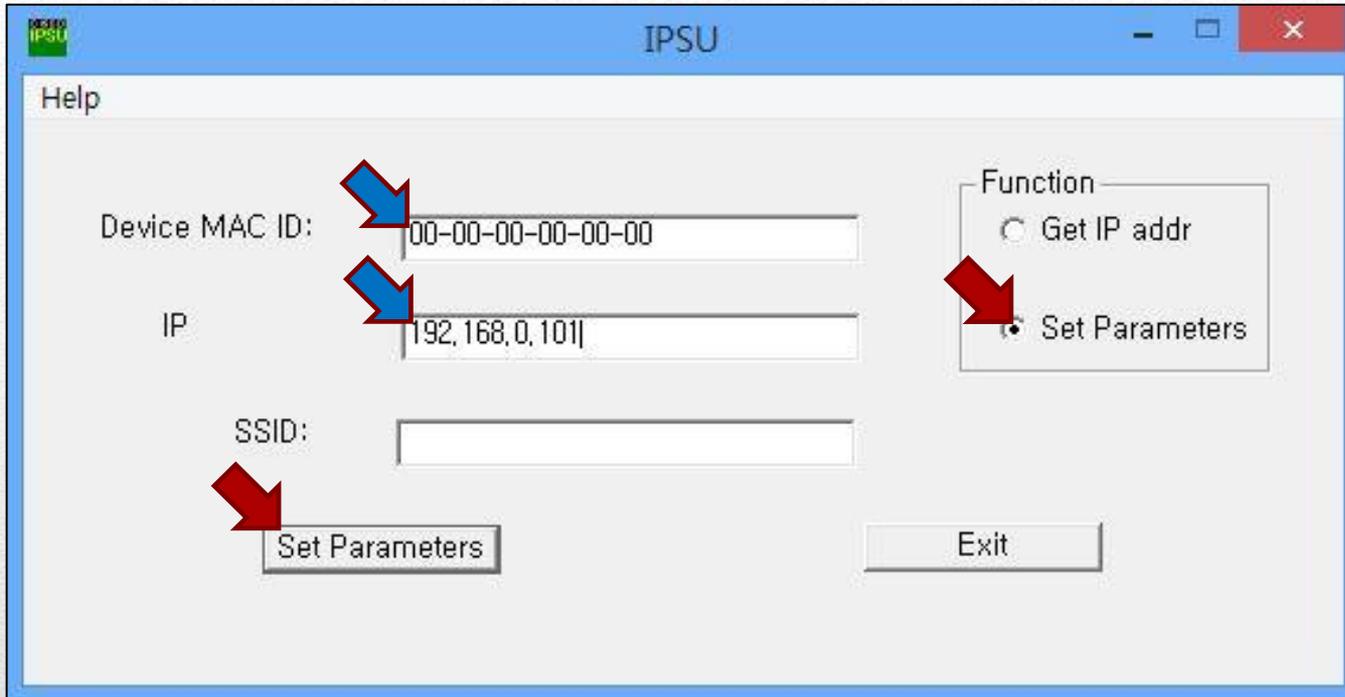
**+ Default Ip Address : DHCP Client**

# CONSOL / IP SETUP



[LAN PORT]  
STATIC IP  
192.168.0.100  
255.255.255.0  
192.168.0.1

# IPSU / STATIC IP / CABLE LINK

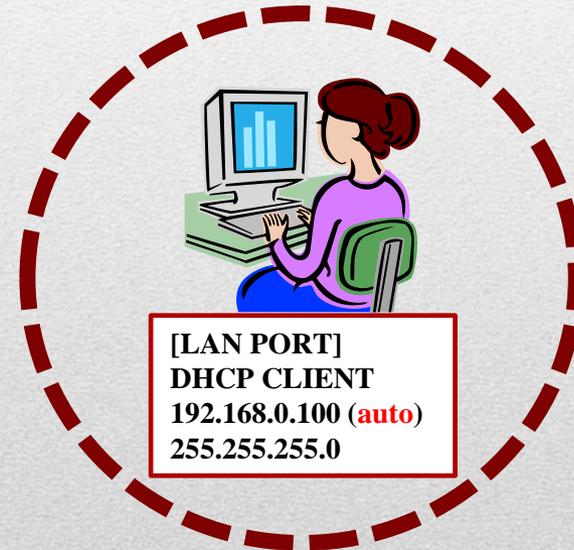
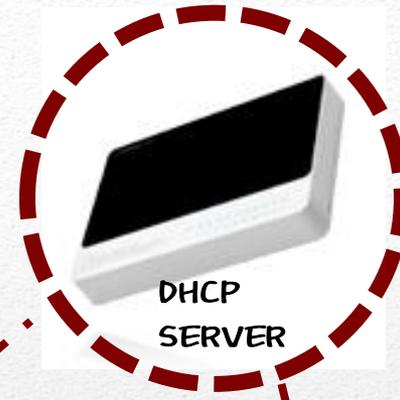


++ 노트 ++

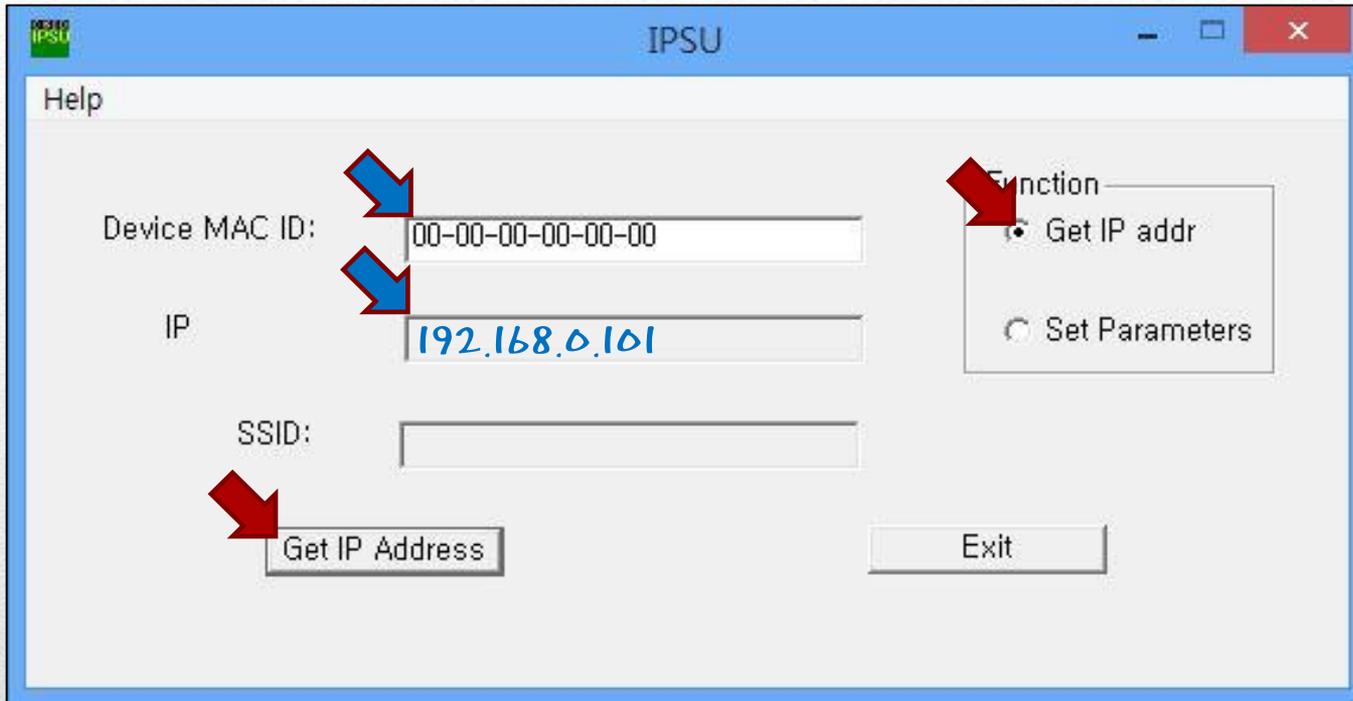
+ 별도의 완료 메시지 없음!

+ 설정할 AP ip주소로 Ping -t 보내면서 확인 하세요!

# IPSU / STATIC IP / IP SETUP



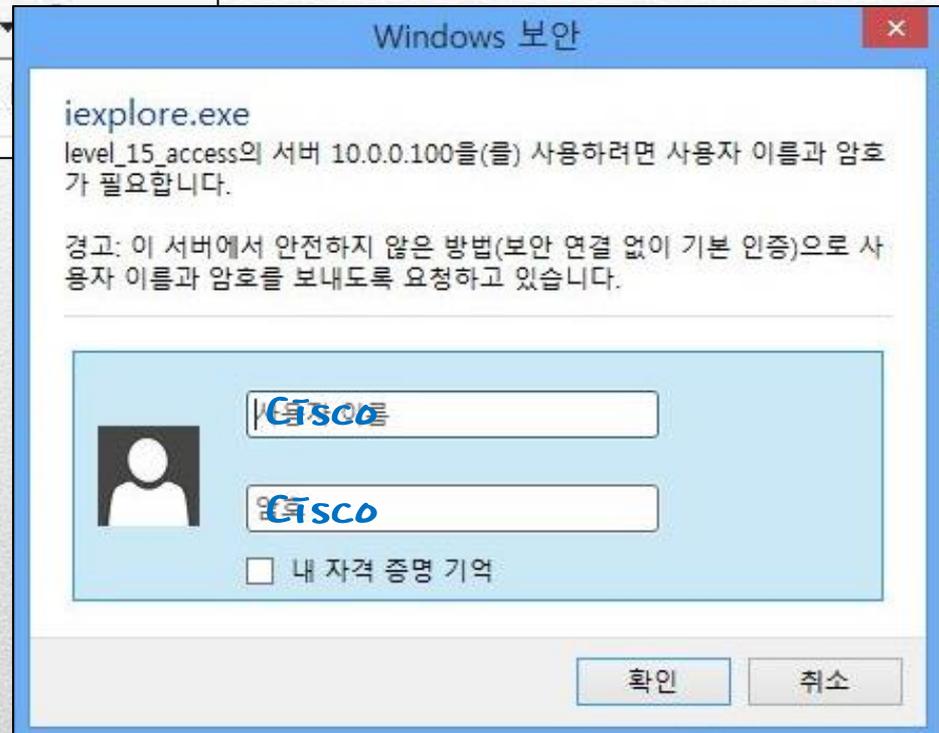
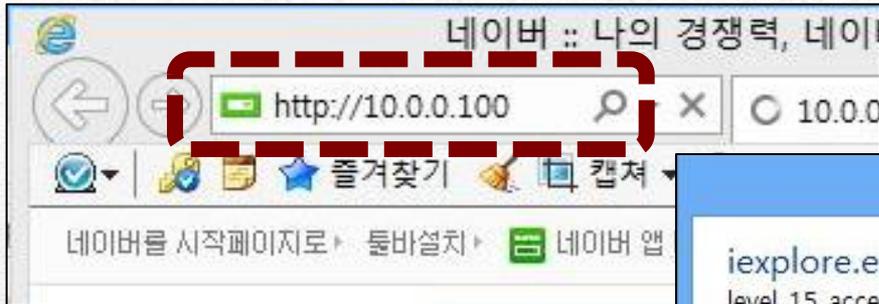
# IPSU / DHCP / CABLE LINK



++노트++

+ IP 항목에 AP가 할당받은 주소를 표시해 줍니다!

# IPSU / DHCP / IP GET



# BASE CONFIG / HTTP LOGIN

The screenshot shows a web-based configuration interface for a network device. On the left is a vertical menu with the following items: HOME, EXPRESS SET-UP, EXPRESS SECURITY, NETWORK MAP, ASSOCIATION, NETWORK INTERFACES, SECURITY, SERVICES, WIRELESS SERVICES, SYSTEM SOFTWARE, EVENT LOG, and LOGOUT. A red arrow points to the 'EXPRESS SET-UP' menu item.

The main content area is titled 'Express Set-Up' and contains the following configuration fields:

- Hostname: ap
- Host Name: ap 장치이름 (with a blue arrow pointing to the text box)
- MAC Address: f0f7.55c7.8258
- Configuration Server Protocol:  DHCP  Static IP (with a red arrow pointing to the 'Static IP' radio button)
- IP Address: 10.0.0.100 ip주소 (with a blue arrow pointing to the text box)
- IP Subnet Mask: 255.255.255.0 서브넷 (with a blue arrow pointing to the text box)
- Default Gateway: 0.0.0.0 게이트웨이 (with a blue arrow pointing to the text box)
- SNMP Community: defaultCommunity
- SNMP Mode:  Read-Only  Read-Write

At the bottom right, there are 'Apply' and 'Cancel' buttons. A red arrow points to the 'Apply' button.

# BASE CONFIG / IP & HOSTNAME

++ 노트 ++

- + SSID 관? : 무선랜 서비스 식별자 (무선 검색시 보이는 명칭!)
- + Broadcast SSID : 체크하면 단말에서 무선랜 검색 가능!
- + 일반 설정에서는 No VLAN 에 그냥 두세요!
- + VLAN 사용시 AP와 연결된 스위치 포트는 트렁크로 설정 합니다!

# BASE CONFIG / SSID & VLAN

The screenshot shows the configuration page for a Cisco Access Point. The left sidebar contains navigation options: HOME, EXPRESS SET-UP, EXPRESS SECURITY, NETWORK MAP, ASSOCIATION, NETWORK INTERFACES, IP Address, GigabitEthernet, Radio0-802.11N 2.4GHz, Radio1-802.11N 5GHz, SECURITY, SERVICES, and WIRELESS SERVICES. The main content area is titled 'RADIO0-802.11N 2.4GHz STATUS' and 'DETAILED STATUS'. Below this, the 'Network Interfaces: Radio0-802.11N 2.4GHz Settings' section is visible. The 'Operating Mode' is set to 'Mixed'. The 'Enable Radio' section has three radio buttons: 'Enable' (unselected), 'Disable' (selected), and 'Down' (unselected). The 'Current Status (Software/Hardware)' is 'Disabled' with a red downward arrow. The 'Role in Radio Network' section has four radio buttons: 'Access Point' (selected), 'Access Point (Fallback to Radio Shutdown)', 'Access Point (Fallback to Repeater)', and 'Repeater'. Red arrows point to the 'ASSOCIATION' menu item, the 'Radio0-802.11N 2.4GHz' menu item, the 'Enable Radio' section, and the 'Disable' radio button.

++ 노트 ++

+ 무선 2.4GHz : IEEE 802.11b/g/n : Max 150Mbps 를 활성화 시켜줍니다!

+ 시스코 AP는 2.4GHz 채널에서는 채널 본딩을 지원하지 않습니다!

## BASE CONFIG / RADIO-0 ENABLE

DefaultRadio Channel: Least Congested Frequency Channel 0 0 MHz

Least Congested Channel Search:  
(Use Only Selected Channels)

- Channel 1 - 2412 MHz
- Channel 2 - 2417 MHz
- Channel 3 - 2422 MHz
- Channel 4 - 2427 MHz
- Channel 5 - 2432 MHz
- Channel 6 - 2437 MHz
- Channel 7 - 2442 MHz
- Channel 8 - 2447 MHz
- Channel 9 - 2452 MHz
- Channel 10 - 2457 MHz
- Channel 11 - 2462 MHz
- Channel 12 - 2467 MHz
- Channel 13 - 2472 MHz

Channel Width: 20 MHz 20 MHz

Apply Cancel

++ 노트 ++

- + 12~13번 채널은 단말 호환성을 높이기 위해 제거 (CTRL + 마우스클릭!)
- + 2.4Ghz 에서는 Channel Width 변경이 불가능합니다!

# BASE CONFIG / RADIO-0 CHANNEL

HOME  
EXPRESS SET-UP  
EXPRESS SECURITY  
NETWORK MAP +  
ASSOCIATION +  
NETWORK INTERFACES  
IP Address  
GigabitEthernet  
Radio0-802.11N<sup>2.4GHz</sup>  
**Radio1-802.11N<sup>5GHz</sup>**  
SECURITY +  
SERVICES +

RADIO1-802.11N<sup>5GHz</sup> STATUS    DETAILED STATUS    **SETTINGS**

Hostname ap

**Network Interfaces: Radio1-802.11N<sup>5GHz</sup> Settings**

Operating Mode: Mixed

Enable Radio:  Enable  Disable

Current Status (Software/Hardware): Disabled ↓ Down ↓

Role in Radio Network:  Access Point  Access Point (Fallback to Radio Shudt

++ 노트 ++

+ 무선 5Ghz : IEEE 802.11a/n : Max 300Mbps 를 활성화 시켜줍니다!

## BASE CONFIG / RADIO-1 ENABLE

DefaultRadio Channel: Dynamic Frequency Selection (DFS) Channel 0 0 MHz

Dynamic Frequency Selection Bands:
 

- Band 1 - 5.150 to 5.250 GHz
- Band 2 - 5.250 to 5.350 GHz
- Band 3 - 5.470 to 5.725 GHz
- Band 4 - 5.725 to 5.825 GHz

Channel Width: 20 MHz 20 MHz

Apply Cancel

++ 노트 ++

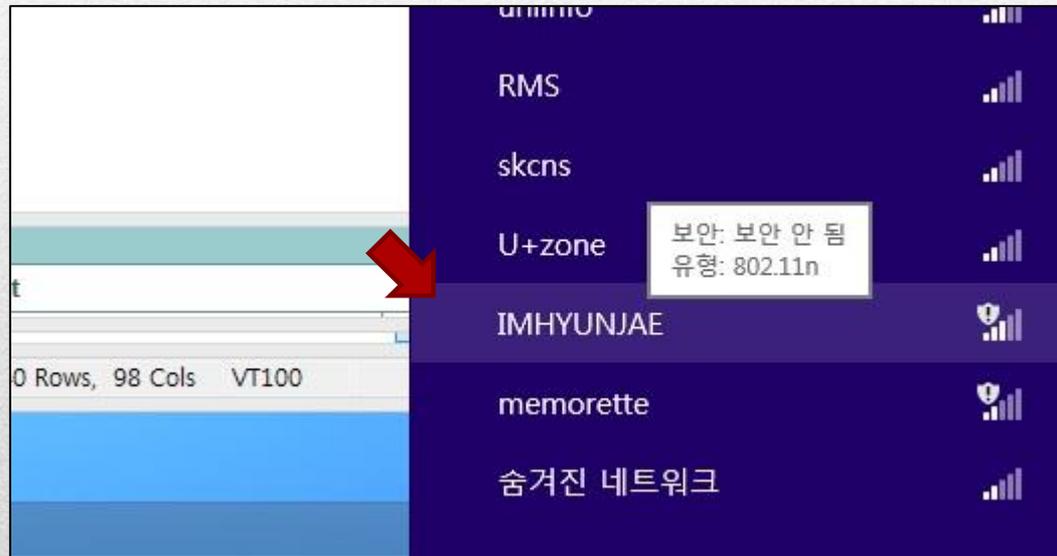
+ 5Ghz 채널은 DFS라는 채널 묶음 형태로!

+ Band 2~3번은 단말 호환성을 높이기 위해 제거 (CTRL + 마우스클릭!)

+ Channel Width 40Mhz 변경! (무선 연결 최고 300Mbps)

# BASE CONFIG / RADIO-1 CHANNEL

- + 여기까지 하셨다면 ...
- + 무선랜 접속이 가능합니다^^



## BASE CONFIG END & WLAN ON

EXPRESS SECURITY  
 NETWORK MAP +  
 ASSOCIATION +  
 NETWORK INTERFACES +  
 SECURITY  
 Admin Access  
 Encryption Manager  
 SSID Manager  
 Server Manager  
 AP Authentication  
 Intrusion Detection  
 Local RADIUS Server  
 Advanced Security  
 SERVICES +  
 WIRELESS SERVICES +  
 SYSTEM SOFTWARE +  
 EVENT LOG +  
 LOGOUT

**Security: Admin Access**

Administrator Authenticated by:

- Default Authentication (Global Password)
- Local User List Only (Individual Passwords)
- Authentication Server Only
- Authentication Server if not found in Local List
- Local List if no response from Authentication Server

Authentication Cache:

Enable Authentication Server Caching

**Default Authentication (Global Password)**

Default Authentication Password: .....

Confirm Authentication Password: .....

Apply Cancel

++ 노트 ++

+ 관리자 패스워드 설정!

+ Global Password 는 콘솔의 enable password 와 같습니다!

# ADMIN CONFIG / ENABLE PASSWORD

**Security: Admin Access**

Administrator Authenticated by:

- Default Authentication (Global Password)
- Local User List Only (Individual Passwords)
- Authentication Server Only
- Authentication Server if not found in Local List
- Local List if no response from Authentication Server

**Local User List (Individual Passwords)**

User List:

- < NEW >
- Cisco

Username: Cisco

Password: [Masked]  Use Password

Confirm Password: [Empty]

Capability Settings:  Read-Only  Read-Write

Buttons: Apply, Cancel

++ 노트 ++

+ 원격 관리자 (Telnet & Http) 패스워드 설정!

+ 권한 ro/rw 설정 으로 모니터유저&관리자 따로 만들어 사용하세요!

# ADMIN CONFIG / REMOTE USER

## WEP

---

- 고정 키 방식
- 인증 없음
- 보안성 낮음
- IEEE 801.11a/b 규격대응
- 호환성 높음(PDA 등!)
- 11n 규격에 사용시 최대 연결 속도 54Mbps 로 제한됨

## MAC FILTER

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- WEP 와 함께구성 보안향상
- 단말 등록이 번거로움
- 등록된 단말 이외의 네트워크 진입 차단
- 잘 응용하면 모바일단말 차단도 가능

# SECURITY / WEP & MAC FILTER

---

EXPRESS SECURITY  
 NETWORK MAP +  
 ASSOCIATION +  
 NETWORK INTERFACES +  
 SECURITY  
 Admin Access  
**Encryption Manager**  
 SSID Manager  
 Server Manager  
 AP Authentication  
 Intrusion Detection  
 Local RADIUS Server  
 Advanced Security  
 SERVICES +  
 WIRELESS SERVICES +  
 SYSTEM SOFTWARE +  
 EVENT LOG +  
 LOGOUT

Security: Encryption Manager - Radio0-802.11N<sup>2.4GHz</sup>

Encryption Modes

None

WEP Encryption Mandatory

Cisco Compliant TKIP Features:  Enable Message Integrity Check (MIC)  
 Enable Per Packet Keying (PPK)

Cipher WEP 128 bit

Encryption Keys

Encryption Key	Encryption Key (Hexadecimal)	Key Size
Encryption Key 1: <input checked="" type="radio"/>	<input type="text"/>	128 bit
Encryption Key 2: <input type="radio"/>	<input type="text"/>	128 bit
Encryption Key 3: <input type="radio"/>	<input type="text"/>	128 bit
Encryption Key 4: <input type="radio"/>	<input type="text"/>	128 bit

Apply-Radio0 Apply-All Cancel

+ Key 1 번에 설정합니다!

+ Encryption Key 는 Hex 코드 형태로 입력 (변환툴 필요!)

+ Key Size (40bit) 는 Hex 11 / ASCII 5 문자를 키값으로 사용!

+ Key Size (128bit) 는 Hex 26 / ASCII 13 문자를 키값으로 사용!

# SECURITY / WEP 40 & 128

Services: Filters - MAC Address Filters

Create/Edit Filter Index: <NEW>

Filter Index: 700 (700-799)

Add MAC Address: 8853.2E9B.6716 Mask: 0000.0000.0000 Action: Forward Add

(HHHH.HHHH.HHHH) (HHHH.HHHH.HHHH)

Default Action: Block All

Filters Classes:

단말 리스트!  
단말 리스트 외 모두 차단!

Delete Class

Apply Delete Cancel

++ 노트 ++

+ 단말 등록 및 Default Action 의 허용/차단을

+ 반대로 설정하면 등록된 단말만 차단 그외 단말은 모두 허용!

# SECURITY / MAC FILTER - 1/2

APPLY FILTERS    MAC ADDRESS FILTERS    IP FILTERS    ETHERTYPE FILTERS

Hostname ap ap uptime is 4 hours, 32 m

Services: Filters - Apply Filters

	Radio 802.11N 2.4GHz	Radio 802.11N 5GHz	GigabitEthernet0	
Incoming	MAC 700	MAC 700	MAC	< NONE >
	EtherType < NONE >	EtherType < NONE >	EtherType	< NONE >
	< NONE >	< NONE >	IP	< NONE >
Outgoing	MAC 700	MAC 700	MAC	< NONE >
	EtherType < NONE >	EtherType < NONE >	EtherType	< NONE >
	IP < NONE >	IP < NONE >	IP	< NONE >

Apply    Cancel

++ 노트 ++

+ 단말을 등록한 ACL 700번을 무선 인터페이스 인&아웃 구간에 모두 적용!

# SECURITY / MAC FILTER - 2/2

## WPA2-PSK

---

- 동적 키 할당 방식
- 공유 키 인증
- AES 방식 암호화
- 보안성 높음
- IEEE 802.11n 규격대응
- 호환성 높음
- 일부 구형단말 연결불가  
(접속툴 업데이트 필요)

## WPA2-LEAP

---

- CISCO 전용
- 사용자 ID/PW 인증
- AP당 50유저 지원
- CCX 미인증 단말 연결불가  
(CISCO 접속툴 설치)
- 호환성 낮음

# SECURITY / WPA2PSK & WPA2-LEAP

---

Security: Encryption Manager - Radio0-802.11N<sup>2.4GHz</sup>

Encryption Modes

None

WEP Encryption

Cisco Compliant TKIP Features:  Enable Message Integrity Check (MIC)  
 Enable Per Packet Keying (PPK)

Cipher

Encryption Keys

Transmit Key	Encryption Key (Hexadecimal)	Key Size
Encryption Key 1:	Key 2 / 128bit	128 bit
Encryption Key 2:		128 bit

Apply-Radio0 Apply-All Cancel

++ 노트 ++

+ WPA v1 은 TKIP, v2 는 AES 방식의 암호화 방식을 사용합니다!

+ 공유기 인증후 암호키가 변환되기에 여기에선 암호키를 공란으로!

# SECURITY / WPA2PSK -1/2

EXPRESS SET-UP  
EXPRESS SECURITY  
NETWORK MAP +  
ASSOCIATION +  
NETWORK INTERFACES +  
**SECURITY**  
Admin Access  
Encryption Manager  
**SSID Manager**  
Server Manager  
AP Authentication  
Intrusion Detection  
Local RADIUS Server

Security: Global SSID Manager

SSID Properties

Current SSID List

< NEW >  
IMHYUNJAE

Client Authenticated Key Management

Key Management: Mandatory  CCKM  Enable WPA WPAv2

WPA Pre-shared Key: ..... ASCII  Hexadecimal

Apply Cancel

++ 노트 ++

+ Pre-shared Key (공유키) : ASCII 8~63 문자 이내로 넣어주세요!

# SECURITY / WPA2PSK -2/2

Security: Encryption Manager - Radio0-802.11N<sup>2.4GHz</sup>

**Encryption Modes**

None

WEP Encryption

Cisco Compliant TKIP Features:  Enable Message Integrity Check (MIC)  
 Enable Per Packet Keying (PPK)

Cipher

**Encryption Keys**

Transmit Key	Encryption Key (Hexadecimal)	Key Size
Encryption Key 1:	Key 2 / 128bit	128 bit
Encryption Key 2:		128 bit

Apply-Radio0 | Apply-All | Cancel

++ 노트 ++

+ 인증 과 암호화는 별개 입니다!

+ LEAP 인증 후 WPA2 로 암호화 하기 위해 WPA2 방식으로 먼저 설정!

# SECURITY / WPA2-LEAP - 1/5

STATISTICS GENERAL SET-UP EAP-FAST SET-UP

Hostname ap ap uptime is 5 hours, 25 minutes

**Security: Local RADIUS Server - General Set-Up**

**Local Radius Server Authentication Settings**

Enable Authentication Protocols:

- EAP FAST
- LEAP
- MAC

※체크 지워주세요※

Apply Cancel

**Network Access Servers (AAA Clients)**

**Current Network Access Servers**

< NEW >

Delete

Network Access Server:  (IP Address)

Shared Secret:

AP의 IP 주소를 사용합니다  
임의 Key 값 입력

Apply Cancel

# SECURITY / WPA2-LEAP - 2/5

STATISTICS GENERAL SET-UP EAP-FAST SET-UP

Hostname ap ap uptime is 5 hours, 25 minutes

**Security: Local RADIUS Server - General Set-Up**

**Local Radius Server Authentication Settings**

Enable Authentication Protocols:  EAP FAST  
 LEAP  
 MAC

**Individual Users**

**Current Users**

< NEW >  
 user1  
 사용자 등록 확인

Delete

Username: user2

Password: \*\*\*\*\*  Text  NT Hash

Confirm Password: \*\*\*\*\*

Group Name: < NONE > v

MAC Authentication Only

Apply Cancel

++ 노트 ++

+ LEAP 는 무선 접속시 사용자별 id/pw 를 통해 인증 합니다!

+ 사용자 id/pw 를 생성해주세요!

# SECURITY / WPA2-LEAP - 3/5

++ 노트 ++

- + 앞에서 인증서버를 만들었다면
- + 이제 AP에 인증서버를 등록합니다!

# SECURITY / WPA2-LEAP - 4/5

**NETWORK INTERFACES** + **Current SSID List**

**SECURITY** < NEW >  
IMHYUNJAE

Admin Access  
Encryption Manager  
**SSID Manager**  
Server Manager

**Client Authentication Settings**

**Methods Accepted:**

- Open Authentication: < NO ADDITION >
- Shared Authentication: < NO ADDITION >
- Network EAP: < NO ADDITION >

**Server Priorities:**

**EAP Authentication Servers**

- Use Defaults [Define Defaults](#)
- Customize
- Priority 1: < NONE >
- Priority 2: < NONE >
- Priority 3: < NONE >

**MAC Authentication Servers**

- Use Defaults [Define Defaults](#)
- Customize
- Priority 1: < NONE >
- Priority 2: < NONE >
- Priority 3: < NONE >

**Client Authenticated Key Management**

**Key Management:** Mandatory  CCKM  Enable WPA WPAv2

**WPA Pre-shared Key:** 공란으로 두세요!  
Key는 사용자비정!  ASCII  Hexadecimal

Apply Cancel

# SECURITY / WPA2-LEAP - 5/5

- + 여기까지 하셨다면 ...
- + 무선랜을 안심하고 쓰셔도 됩니다^^



# SECURITY CONFIG END

## ROOT

---

- 메인 브리지 장치
- 최대 7대의 서브 브리지 연결 가능
- AP 로 설정시와 동일하나 무선 인터페이스 설정시 운영 모드 ROOT BRIDGE 로 설정
- 채널 고정
- 안테나 지정

## NON-ROOT

---

- 메인 브리지에 연결되는 서브 브리지
- 루트 브리지와 SSID, 암호화 형식 동일하게 설정
- SSID Manager 에서 "Infrastructure SSID" 지정
- 무선 인터페이스 설정시 운영 모드 NON-ROOT BRIDGE 로 설정
- 채널 자동
- 안테나 지정

# BRIDGE CONFIG / INFORMATION

---

HOME  
EXPRESS SET-UP  
EXPRESS SECURITY  
NETWORK MAP +  
ASSOCIATION +  
NETWORK INTERFACES  
IP Address  
GigabitEthernet  
**Radio0-802.11N<sup>2.4GHz</sup>**  
Radio1-802.11N<sup>5GHz</sup>  
SECURITY +  
SERVICES +  
WIRELESS SERVICES +  
SYSTEM SOFTWARE +  
EVENT LOG +  
LOGOUT

RADIO0-802.11N<sup>2.4GHz</sup> STATUS DETAILED STATUS SETTINGS CA

Hostname ap

**Network Interfaces: Radio0-802.11N<sup>2.4GHz</sup> Settings**

Operating Mode: Mixed

Enable Radio:  Enable  Disable

Current Status (Software/Hardware): Enabled  Up 

Role in Radio Network:

- Access Point
- Access Point (Fallback to Radio Shutdown)
- Access Point (Fallback to Repeater)
- Repeater
- Root Bridge
- Non-Root Bridge
- Root Bridge with Wireless Clients
- Non-Root Bridge with Wireless Clients



# BRIDGE CONFIG / ROOT RADIO-0

HOME  
EXPRESS SET-UP  
EXPRESS SECURITY  
NETWORK MAP +  
ASSOCIATION +  
NETWORK INTERFACES  
IP Address  
GigabitEthernet  
**Radio0-802.11N<sup>2.4GHz</sup>**  
Radio1-802.11N<sup>5GHz</sup>  
SECURITY +  
SERVICES +  
WIRELESS SERVICES +  
SYSTEM SOFTWARE +  
EVENT LOG +  
LOGOUT

RADIO0-802.11N<sup>2.4GHz</sup> STATUS DETAILED STATUS SETTINGS

Hostname ap

**Network Interfaces: Radio0-802.11N<sup>2.4GHz</sup> Settings**

Operating Mode: Mixed

Enable Radio:  Enable  Disable

Current Status (Software/Hardware): Enabled ↑ Up ↑

Role in Radio Network:  Access Point

DefaultRadio Channel: Channel 6 - 2437 MHz Channel 6 2437 MHz

Least Congested Channel Search: (Use Only Selected Channels)  
Channel 1 - 2412 MHz  
Channel 2 - 2417 MHz  
Channel 3 - 2422 MHz  
Channel 4 - 2427 MHz

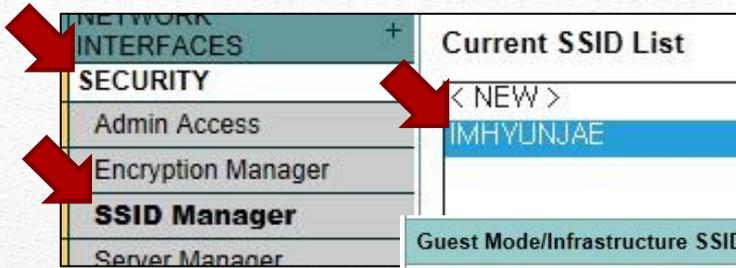
Country Code:  Indoor  Outdoor

Receive Antenna:  Diversity  Left (B)  Center(C)  Right (A)

Transmit Antenna:  Diversity  Left (B)  Right (A)

+ BRIDGE 구성은 보통 옥외안테나 하나만 장착하기 때문에 TX/RX 를 안테나 하나로!

## BR. CONFIG / R-0 CHA-6 & ANT-A



Guest Mode/Infrastructure SSID Settings

Radio0-802.11N<sup>2.4GHz</sup>:

Set Beacon Mode:  Single BSSID    Set Single Guest Mode SSID: IMHYUNJAE ▾

Multiple BSSID

Set Infrastructure SSID: IMHYUNJAE ▾  Force Infrastructure Devices to associate only to this SSID

Radio1-802.11N<sup>5GHz</sup>:

Set Beacon Mode:  Single BSSID    Set Single Guest Mode SSID: IMHYUNJAE ▾

Multiple BSSID

Set Infrastructure SSID: IMHYUNJAE ▾  Force Infrastructure Devices to associate only to this SSID

Apply    Cancel

++ 노트 ++

+ 여기서 infrastructure SSID 설정을 변경해 주셔야 라디오 non-root 설정가능!

# BRIDGE CONFIG / NON-ROOT SSID SET

HOME  
EXPRESS SET-UP  
EXPRESS SECURITY  
NETWORK MAP +  
ASSOCIATION +  
NETWORK INTERFACES  
IP Address  
GigabitEthernet  
**Radio0-802.11N<sup>2.4GHz</sup>**  
Radio1-802.11N<sup>5GHz</sup>  
SECURITY +  
SERVICES +  
WIRELESS SERVICES +  
SYSTEM SOFTWARE +  
EVENT LOG +  
LOGOUT

RADIO0-802.11N<sup>2.4GHz</sup> STATUS DETAILED STATUS SETTINGS CARRIER

Hostname ap

Network Interfaces: Radio0-802.11N<sup>2.4GHz</sup> Settings

Operating Mode: Mixed

Enable Radio:  Enable  Disable

Current Status (Software/Hardware): Disabled ↓ Down ↓

Role in Radio Network:

- Access Point
- Access Point (Fallback to Radio Shutdown)
- Access Point (Fallback to Repeater)
- Repeater
- Root Bridge
- Non-Root Bridge
- Root Bridge with Wireless Clients
- Non-Root Bridge with Wireless Clients

- + enable 로 설정하셔도 라디오 인터페이스는 바로 up 안됩니다!
- + ROOT-BRIDGE 로부터 신호가 잡혀야 인터페이스가 살아납니다!

# BRIDGE CONFIG / NON-ROOT RADIO-0

HOME  
EXPRESS SET-UP  
EXPRESS SECURITY  
NETWORK MAP +  
ASSOCIATION +  
NETWORK INTERFACES  
IP Address  
GigabitEthernet  
Radio0-802.11N<sup>2.4GHz</sup>  
Radio1-802.11N<sup>5GHz</sup>  
SECURITY +  
SERVICES +  
WIRELESS SERVICES +  
SYSTEM SOFTWARE +  
EVENT LOG +  
LOGOUT

RADIO0-802.11N<sup>2.4GHz</sup> STATUS DETAILED STATUS SETTINGS

Hostname ap

Network Interfaces: Radio0-802.11N<sup>2.4GHz</sup> Settings

Operating Mode: Mixed

Enable Radio:  Enable  Disable

Current Status (Software/Hardware): Enabled ↑ Up ↑

Role in Radio Network:  Access Point

DefaultRadio Channel: Channel 6 - 2437 MHz Channel 6 2437 MHz  
1~13 자동 채널

Least Congested Channel Search: (Use Only Selected Channels)  
Channel 1 - 2412 MHz  
Channel 2 - 2417 MHz  
Channel 3 - 2422 MHz  
Channel 4 - 2427 MHz

Non-Root Bridge

Country Code:  Indoor  Outdoor

Receive Antenna:  Diversity  Left (B)  Center(C)  Right (A)

Transmit Antenna:  Diversity  Left (B)  Right (A)

+ ROOT-BRIDGE 로부터 신호를 찾아야 하기 때문에 보통 채널은 자동 입니다!

# BR. CONFIG / R-O CHA-AUTO & ANT-A

- + 여기까지 하셨다면 ...
- + 옆건물과 연결^^



## BRIDGE CONFIG END

ap(config)#ip dhcp excluded-address 10.0.0.1 10.0.0.10	: 제외주소 설정
ap(config)#ip dhcp pool 10.0.0-net	: DHCP 서버 이름
ap(dhcp-config)#network 10.0.0.0 255.255.255.0	: 네트워크 지정
ap(dhcp-config)#default-router 10.0.0.1	: 기본 게이트웨이 지정
ap(dhcp-config)#domain-name 168.126.63.1	: 주 DNS 서버 지정
ap(dhcp-config)#domain-name 168.126.63.2	: 보조 DNS 서버 지정
ap(dhcp-config)#lease 0 7 0	: IP 임대 기간 설정
ap(dhcp-config)#end	: 설정 마침
ap#write	: 저장

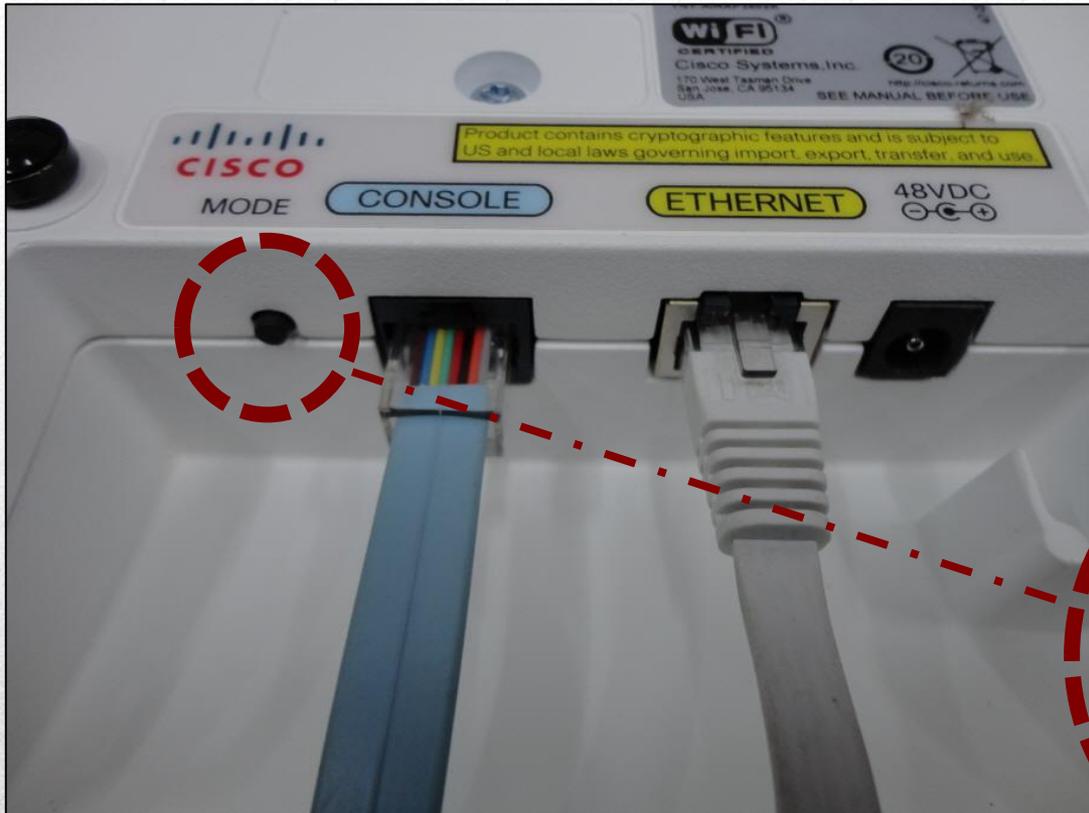
++ 노트 ++

+ bvi 인터페이스의 ip 주소와 동일 네트워크로 설정 해야 합니다!

+ **주의** 이 설정은 AP가 연결된 스위치 및 무선 양쪽으로 ip를 자동 할당합니다!

+ **주의** 액세스포인트 에서 DHCP 서버 설정은 권장 하지 않습니다!

# IOS DHCP SERVER ENABLE



MODE 버튼을  
누른 상태로 전원  
연결 4~5초 후  
버튼 해제!

++ 노트 ++

+ 다음 페이지 IOS 복구 및 AP-LAP 변환 작업에도 MODE 버튼이 사용됩니다!

# FACTORY DEFAULT

```
PCIE1: link is up.
PCIE1: VC0 is active
64bit PCIE devices
PCIEx: initialization done
flashfs[0]: 185 files, 13 directories
flashfs[0]: 0 orphaned files, 0 orphaned directories
flashfs[0]: Total bytes: 31739904
flashfs[0]: Bytes used: 15634944
flashfs[0]: Bytes available: 16104960
flashfs[0]: flashfs fsck took 10 seconds.
Reading cookie from system serial eeprom...Done
Base Ethernet MAC address: f0:f7:55:c7:82:58
Ethernet speed is 1000 Mb - FULL duplex
button is pressed, wait for button to be released...
button pressed for 32 seconds
process_config_recovery: set IP address and config to default 10.0.0.1
process_config_recovery: Image recovery
Image_recovery: Download default IOS tar Image ftp://255.255.255.255/ap3g1-k9w7-tar.default
examining Image...
```

++ 프로세스 ++

+ 전원 OFF > MODE 버튼을 누른상태로 , 전원 ON > 40초 이후 MODE 버튼해제!

++ 노트 ++

+ 위 붉은색두줄 확인 하시면 AP가 복구를 위해 자신의 ip를 10.0.0.1 로 설정하고 TFTP 에서

+ 특정 파일을 불러드리 려고 합니다. 여기서 파일명 잘 메모 하셨다가 PC에 ip주소를 10.0.0.2~254 중 하나로 설정

+ 하시고 TFTP 서버 실행 후 복구할 IOS를 TFTP 루트 폴더에 복사 이름 변경, 복구 프로세스 다시!

+ 복구할 IOS를 LWAPP OS로 넣으시면 AP-LAP 변환도 가능합니다!

# IOS RECOVERY

```

AP0012,4340,3d4a#lclear lwapp private-config      : 기존 설정 초기화
AP0012,4340,3d4a#lwapp ap ip address 10.0.0.100 255.255.255.0 : ip 주소 설정
AP0012,4340,3d4a#lwapp ap ip default-gateway 10.0.0.1 : 게이트웨이 설정
AP0012,4340,3d4a#lwapp ap controller ip address 10.0.0.254 : 컨트롤러 ip 설정
AP0012,4340,3d4a#lwapp ap hostname 1F_API         : 장치 이름 설정
1F_API#show lwapp ip config                        : 설정 확인

IP Address          10.0.0.100
IP netmask          255.255.255.0
Default Gateway     10.0.0.254
Primary Controller  10.0.0.10

```

++ 노트 ++

- + 시스코 컨트롤러용 AP는 LWAPP 와 CAPWAP 방식 두가지가 있습니다!
- + CAPWAP 제품은 위 명령중 LWAPP -> CAPWAP 로만 바꿔서 설정하시면 됩니다!
- + 컨트롤러에 연결되면 이후 설정은 컨트롤러에서 전부 하실수 있어요!

# LWAPP & CAPWAP AP CONFIG



**감사합니다**