AP1100 환경 설정

APOS version 5.58

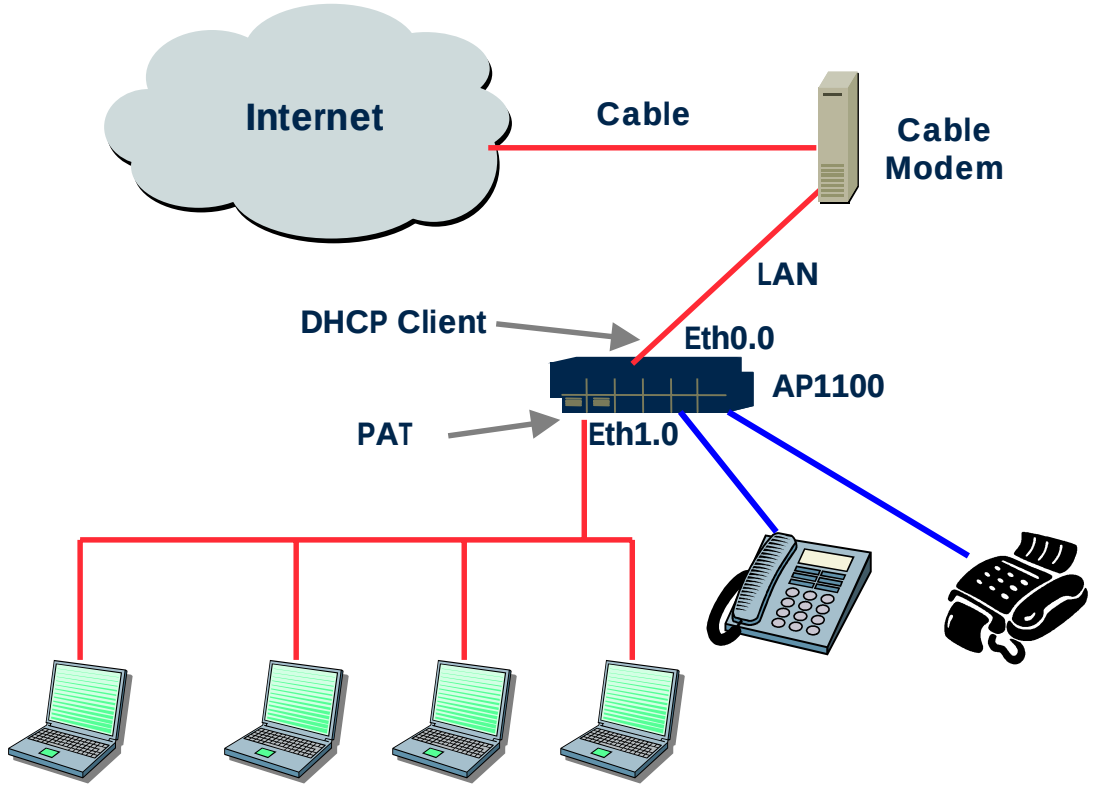
2002. 2. 15

AddPac Technology Co., Ltd.

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- VoIP & PSTN 망 연동 시나리오

Cable Modem 에서 AP1100 설정



Configuration

- Ethernet 0.0
  - DHCP Client – 필수 사항
  - QoS – 권장사항
- Ethernet 1.0
  - 사설 IP Address – 선택사항
  - PAT (IP 공유 기능) – 선택사항
- Static Router 설정 – 선택사항 (Default Router 설정 불필요)
- FXS/FXO E.164 Number 관련 설정 – 필수사항
- VoIP Interface 설정 - 필수 사항
- Gate-Keeper 관련 설정 (H.323 ID/IP address) - 필수사항

Configuration Example (1 of 3)

```
!
version 5.58
!
nat-list 1 pat static-entry tcp 1720  local
nat-list 1 pat group-static-entry udp 22000 30000 local
nat-list 1 pat group-static-entry tcp 10000 22000 local
nat-list 1 pat static-entry tcp 23  local
nat-list 1 pat group-static-entry tcp 20 21 local
nat-list 1 pat group-static-entry udp 67 68 local
nat-list 1 pat static-entry icmp ping  local
!
interface ether0.0
 ip address dhcp
 qos-control 200 100
!
interface ether1.0
ip address 10.1.1.1 255.255.255.0
 ip nat-group 1 pat ether0.0

!
snmp name AP1100
!
```

PAT Configuration tag 1 설정

DHCP Client시 반드시 설정

Ether0.0를 DHCP Client로 설정

QoS 200kbps, 100pps (Cable Network 권고치)

Ether1.0에 사설 IP Address 할당

Ether1.0에 연결된 Host들이 Ether0.0의 공인 IP를 사용하여 외부와 통신할 수 있도록 PAT 기능을 설정

Configuration Example (2 of 3)

```
!
!
! VoIP configuration.
!
!
! Voice service voip configuration.
!
voice service voip
 fax protocol t38 redundancy 0
 fax rate 14400
 h323 call start fast
 security permit-FXO
 max-frame g7231 2
 max-frame g729 4

!
!
! Voice port configuration.
!
voice-port 0/0
!
voice-port 0/1
```

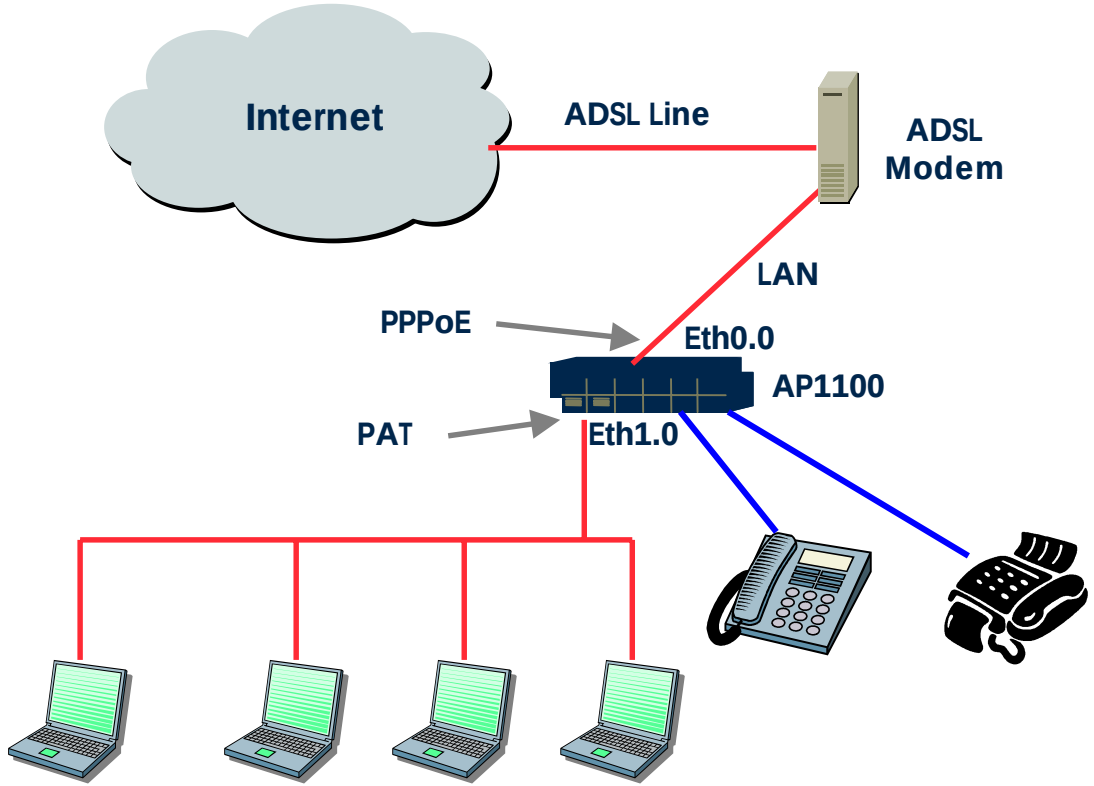
Cable Network 권고치

```
!
voice-port 0/2
!
voice-port 0/3
!
voice-port 1/0
!
voice-port 1/1
!
voice-port 1/2
!
voice-port 1/3
!
!
! Pots peer configuration.
!
dial-peer voice 0 pots
 destination-pattern 25553051
 port 1/0
!
```

Configuration Example (3 of 3)

```
dial-peer voice 1 pots
 destination-pattern 25553052
 port 1/1
!
dial-peer voice 2 pots
 destination-pattern 25553053
 port 1/2
!
dial-peer voice 3 pots
 destination-pattern 25553054
 port 1/3
!
!
!
! Voip peer configuration.
!
dial-peer voice 1000 voip
 destination-pattern ...T
 session target ras
 dtmf-relay h245-alphanumeric
!
!
!
!
!
!
! Gateway configuration.
!
gateway
 h323-id addpactest
 gkip 211.192.1.1
 register
!
!
! Clear down tone
!
!
voip-interface ether0.0
!
```

ADSL Modem (PPPoE)에서 AP1100 설정



Configuration

- Ethernet 0.0
  - PPPoE (PPP over Ethernet) Encapsulation – 필수 사항
  - QoS – 선택사항
- Ethernet 1.0
  - 사설 IP Address – 선택사항
  - PAT (IP 공유 기능) – 선택사항
- Default Router 설정 – 필수 사항
- FXS/FXO E.164 Number 관련 설정 – 필수사항
- VoIP Interface 설정 - 필수 사항
- Gate-Keeper 관련 설정 (H.323 ID/IP address) - 필수사항

Configuration Example (1 of 4)

```
!
version 5.58
!
!
nat-list 1 pat static-entry tcp 1720  local
nat-list 1 pat group-static-entry udp 22000 30000 local
nat-list 1 pat group-static-entry tcp 10000 22000 local
nat-list 1 pat static-entry tcp 23  local
nat-list 1 pat group-static-entry tcp 20 21 local
nat-list 1 pat static-entry icmp ping  local
!
interface ether0.0
 no ip address
 encapsulation pppoe
 ppp authentication pap callin
 ppp pap sent-username addpac password addpac
!
interface ether1.0
 ip address 10.1.1.1 255.255.255.0
 ip nat-group 1 pat ether1.0
!
```

PAT Configuration tag 1 설정

Telnet (TCP, 23)를 AP1100으로 Mapping

ICMP Echo-Request (ping) 를 AP1100으로 Mapping

PPP 인증 방식은 PAP를 사용하도록 설정

PPP PAP의 User-id 및 Password 설정
User-id : addpac Password : addpac

Ether1.0에 연결된 Host들이 Ether0.0의 공인 IP를 사용하여 외부와 통신할 수 있도록 PAT 기능을 설정

Configuration Example (2 of 4)

```
!
snmp name AP1100
!
route 0.0.0.0 0.0.0.0 ether0.0
!
utilization cpu
utilization ethernet 1
!
user add aaa aaa admin
user add bbb bbb high
user add ccc ccc normal
user add ddd ddd low
!
!
!
!
! VoIP configuration.
!
!
```

Ether0.0를 Default Router로 설정

모든 User 정보는 "root" 계정에서만 설정/확인 가능함

```
! Voice service voip configuration.
!
voice service voip
 fax protocol t38 redundancy 0
 fax rate 14400
 h323 call start fast
 security permit-FXO
!
!
! Voice port configuration.
!
voice-port 0/0
!
voice-port 0/1
!
```

Configuration Example (3 of 4)

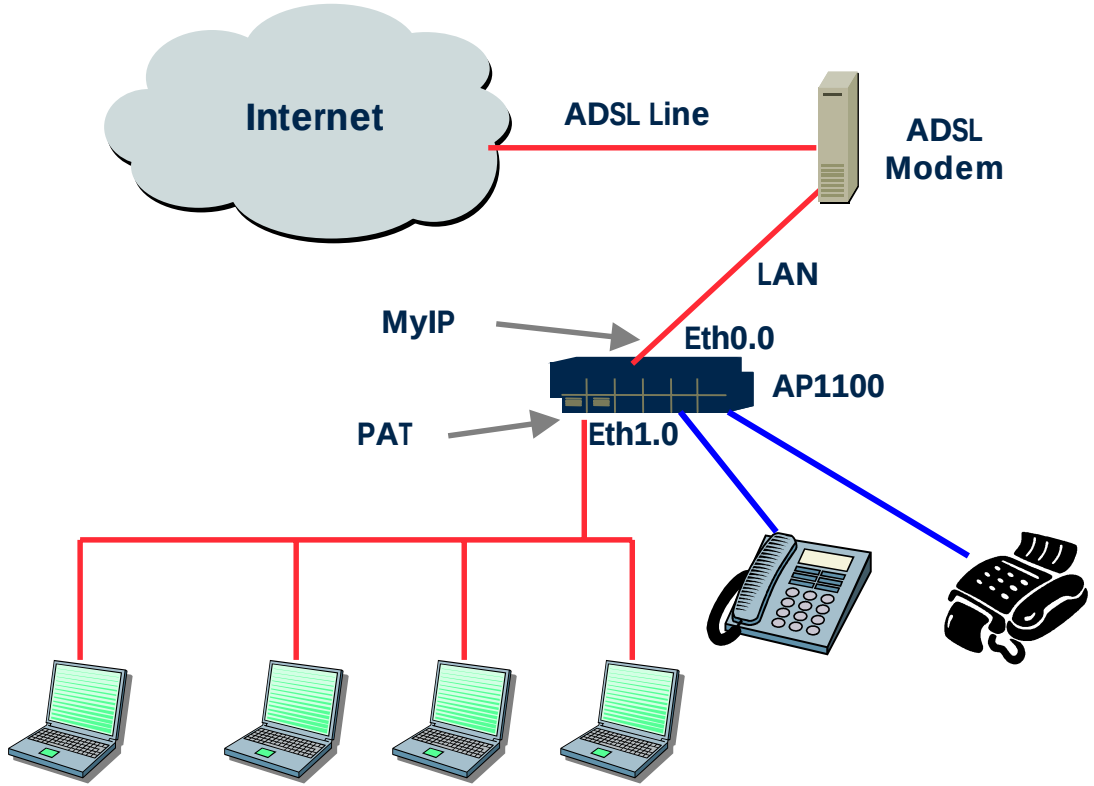
```
voice-port 0/2
!
voice-port 0/3
!
voice-port 1/0
!
voice-port 1/1
!
voice-port 1/2
!
voice-port 1/3
!
!
!
! Pots peer configuration.
!
dial-peer voice 0 pots
 destination-pattern 25553051
 port 1/0
!
dial-peer voice 1 pots
 destination-pattern 25553052
 port 1/1
 preference 1
!
dial-peer voice 2 pots
 destination-pattern 25553053
 port 1/2
 preference 2
!
dial-peer voice 3 pots
 destination-pattern 25553054
 port 1/3
 preference 3
!
!
! Voip peer configuration.
```

Configuration Example (4 of 4)

```
!
dial-peer voice 1000 voip
 destination-pattern ...T
 session target ras
 dtmf-relay h245-alphanumeric
!
!
!
!
!
!
! Gateway configuration.
!
gateway
 h323-id addpactest
 gkip 211.192.1.1
 no discovery
 register
```

```
!
!
! Clear down tone
!
!
voip-interface ether0.0
!
```

ADSL Modem (MyIP)에서 AP1100 설정



Configuration

- Ethernet 0.0
  - IP Address 할당 – 필수 사항
  - QoS – 선택사항
- Ethernet 1.0
  - 사설 IP Address – 선택사항
  - PAT (IP 공유 기능) – 선택사항
- Default Router 설정 – 필수 사항
- FXS/FXO E.164 Number 관련 설정 – 필수사항
- VoIP Interface 설정 - 필수 사항
- Gate-Keeper 관련 설정 (H.323 ID/IP address) - 필수사항

Configuration Example

```
!
version 5.58
!
nat-list 1 pat static-entry tcp 1720  local
nat-list 1 pat group-static-entry udp 22000 30000 local
nat-list 1 pat group-static-entry tcp 10000 22000 local
nat-list 1 pat static-entry tcp 23  local
nat-list 1 pat group-static-entry tcp 20 21 local
nat-list 1 pat static-entry icmp ping  local
!
interface ether0.0
 ip address 168.126.1.1 255.255.255.0
!
!
interface ether1.0
ip address 10.1.1.1 255.255.255.0
 ip nat-group 1 pat ether0.0
!
!
snmp name AP1100
!
route 0.0.0.0 0.0.0.0 168.126.1.254
!
```

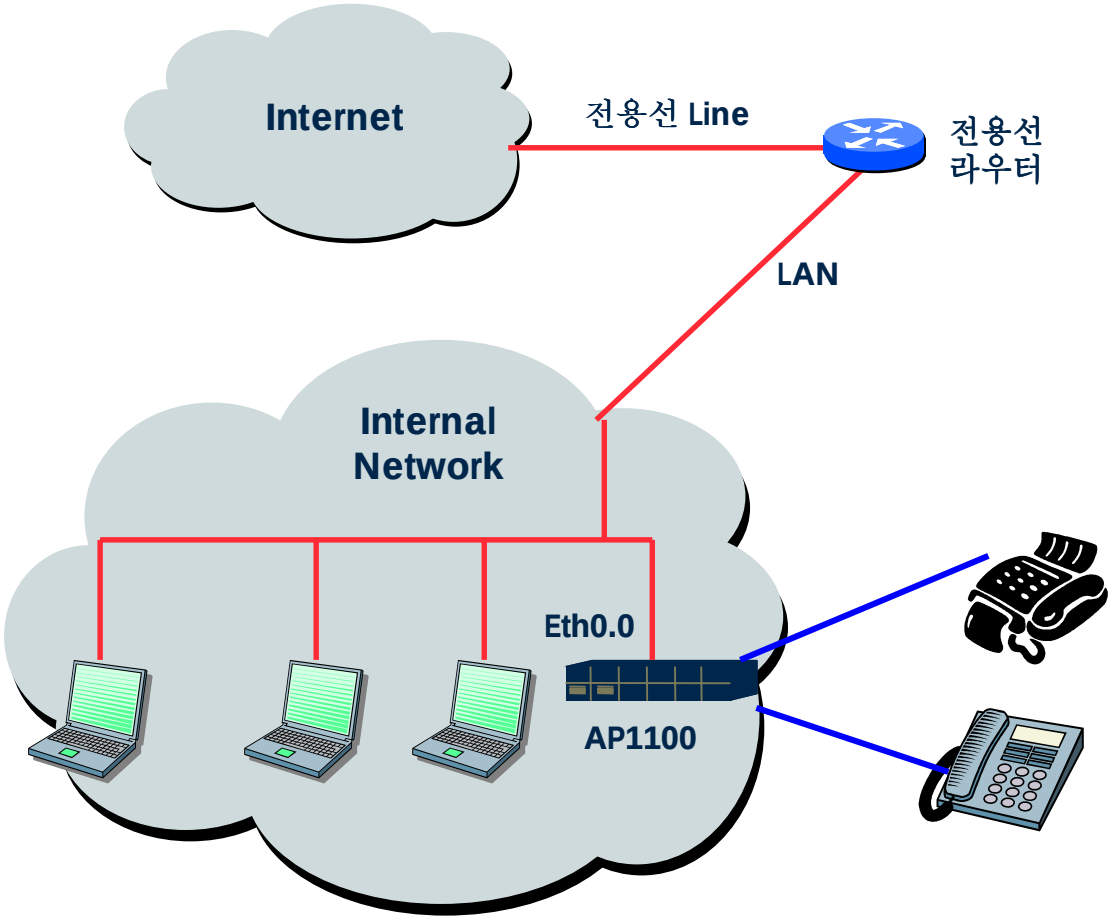
Assigned VoIP TCP/UDP ports
- minimized assign = no
- Q.931 signalling port (TCP listen) = 1720
- H.245 control port (TCP src) = 10000 - 13999
- Q.931 signalling port (TCP src) = 14000 - 17999
- H.245 control port (TCP listen) = 18000 - 21999
- RAS port (UDP src) = 22000 - 22999
- RTP/RTCP port (UDP listen) = 23000 - 29999

Ether0.0에 할당된 IP Address/Network Mask 설정

Ether1.0에 사설 IP Address 할당 및 PAT 기능 설정

Ether0.0에 할당된 Default Router 설정

전용선 라우터에서 AP1100 설정 (기본환경)

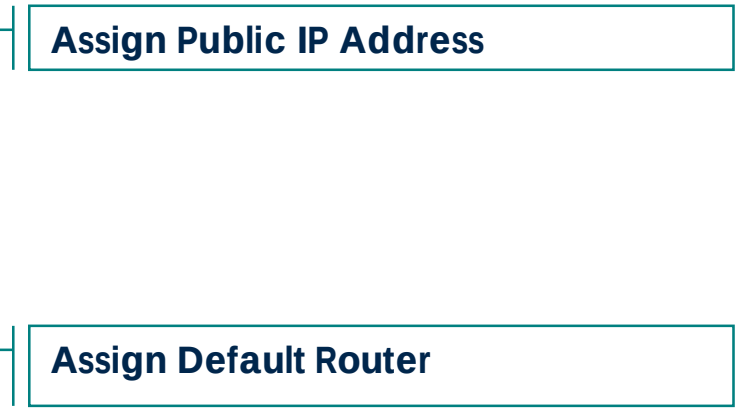


Configuration

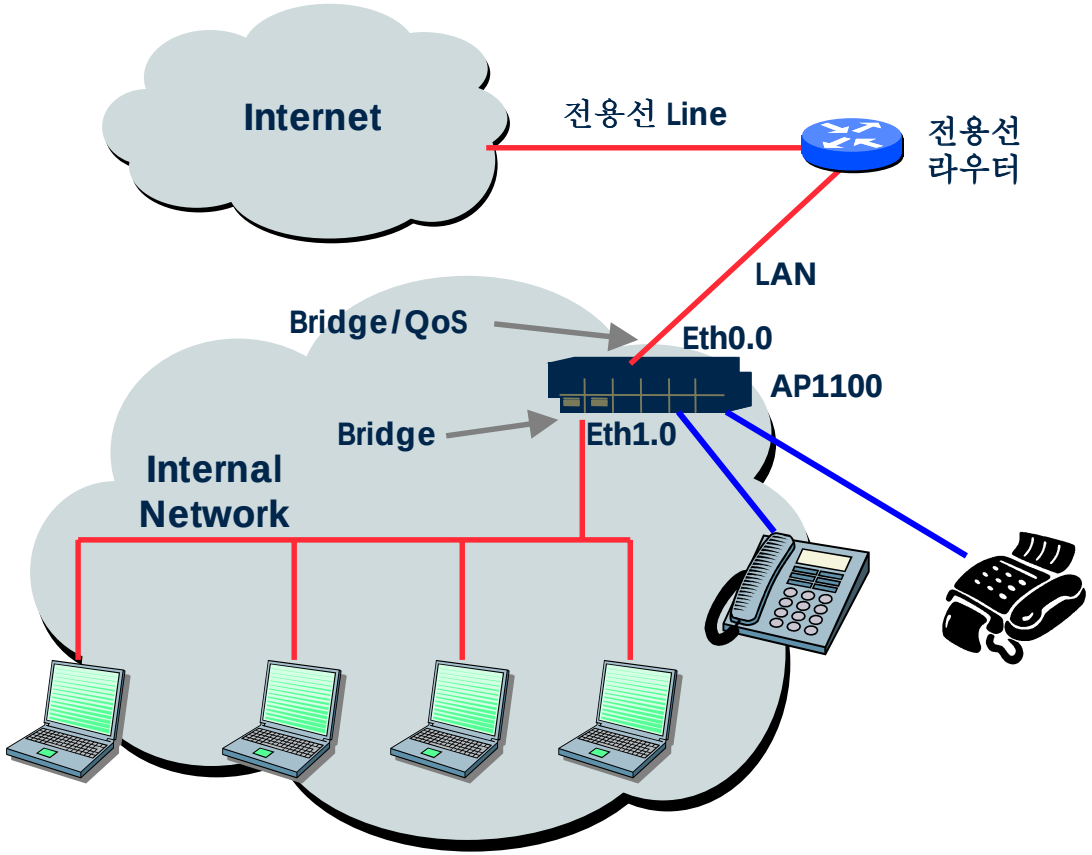
- Ethernet 0.0
  - IP Address 할당 – 필수 사항
- Ethernet 1.0
  - No IP Address 할당 – 필수 사항
- Default Router 설정 – 필수 사항
- FXS/FXO E.164 Number 관련 설정 – 필수사항
- VoIP Interface 설정 - 필수 사항
- Gate-Keeper 관련 설정 (H.323 ID/IP Address) - 필수사항

Configuration Example

```
!
version 5.58
!
!
interface ether0.0
ip address 168.126.1.1 255.255.255.0
!
interface ether0.0
 no ip address
!
snmp name AP1100
!
route 0.0.0.0 0.0.0.0 168.126.1.254
!
!
```



전용선 라우터에서 AP1100 설정 (QoS 지원)



Configuration

- Ethernet 0.0
  - IP Address 할당 – 필수 사항
  - Bridge 기능 설정 - 필수 사항
  - QoS – 선택사항
- Ethernet 1.0
  - No IP Address 할당 – 필수 사항
  - Bridge 기능 설정 - 필수 사항
- No IP Routing 설정 – 필수 사항
- No Bridge Spanning Tree - 선택사항
- FXS/FXO E.164 Number 관련 설정 – 필수사항
- VoIP Interface 설정 - 필수 사항
- Gate-Keeper 관련 설정 (H.323 ID/IP address) - 필수사항

Configuration Example

```
!
version 5.58
!
no ip routing
!
no bridge spanning-tree
!
interface ether0.0
ip address 168.126.1.1 255.255.255.0
qos-control 256 200
 bridge
!
interface ether1.0
 no ip address
bridge
!
snmp name AP1100
!
route 0.0.0.0 0.0.0.0 168.126.1.254
!
```

Disable ip routing

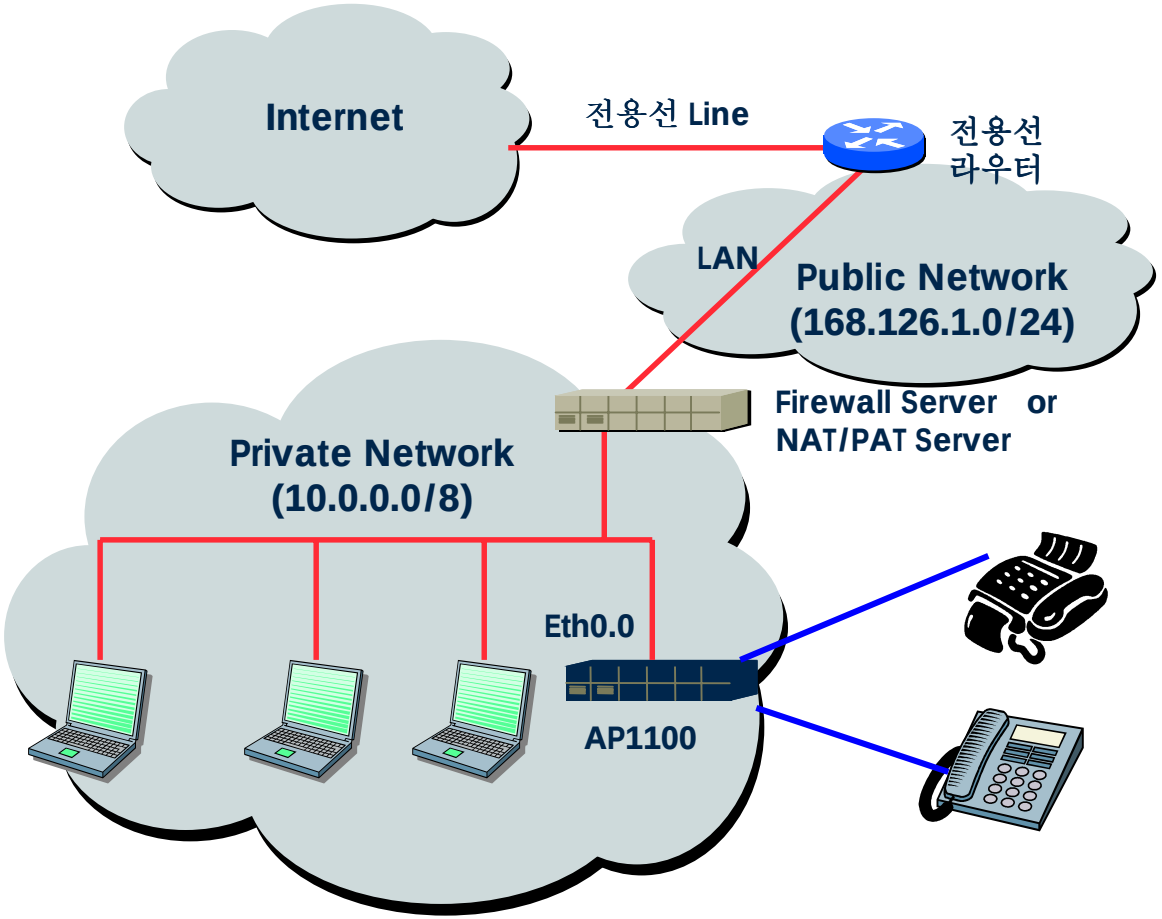
Disable bridge spanning tree

Assign Public IP Address
Enable bridge mode
QoS Enable : 256kbps/200pps

No Assign IP Address
Enable bridge mode

Assign Default Router

방화벽(Firewall) 환경에서 AP1100 설정



Configuration

- Ethernet 0.0
  - IP Address 할당 – 필수 사항
- Ethernet 1.0
  - No IP Address 할당 – 필수 사항
- Default Router 설정 – 필수 사항
- FXS/FXO E.164 Number 관련 설정 – 필수사항
- VoIP Interface 설정 - 필수 사항
- Gate-Keeper 관련 설정 (H.323 ID/Public IP Address) - 필수사항

Configuration Example

```
!
version 5.58
!
!
interface ether0.0
 ip address 10.1.1.100 255.0.0.0
!
interface ether1.0
no ip address
!
snmp name AP1100
!
route 0.0.0.0 0.0.0.0 10.1.1.254
!
utilization cpu
utilization ethernet 1
```

Assign Private IP address

Firewall(NAT/PAT) Server를 Default Router로 설정

```
!
!
!
!
! Gateway configuration.
!
gateway
 h323-id addpactest
 gkip 211.192.1.1
 no discovery
 public-ip 168.126.1.100
 register
!
!
! Clear down tone
!
!
voip-interface ether0.0
```

NAT server 하단에 설정 될 때 반드시 필요… 168.126.1.100은 ap1100에 static으로 mapping 된 공인 IP임

VoIP & PSTN 망 연동 시나리오

