

# MUX-PPP, SNAP 및 atm ilmi-pvc-discovery 하위 인터페이스를 지원하도록 Cisco 6400 구성

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## 소개

이 문서에서는 MUX-PPP 및 SNAP(Subnetwork Access Protocol)을 지원하고 atm ilmi-pvc-discovery 사용하는 Cisco 6400 UAC(Universal Access Concentrator)의 샘플 컨피그레이션에 대해 설명합니다.

## 사전 요구 사항

### 요구 사항

이 문서에 대한 특정 요건이 없습니다.

### 사용되는 구성 요소

이 문서는 특정 소프트웨어 및 하드웨어 버전으로 한정되지 않습니다.

이 문서의 정보는 특정 랩 환경의 디바이스를 토대로 작성되었습니다. 이 문서에 사용된 모든 디바이스는 초기화된(기본) 컨피그레이션으로 시작되었습니다. 현재 네트워크가 작동 중인 경우, 모든 명령어의 잠재적인 영향을 미리 숙지하시기 바랍니다.

### 표기 규칙

문서 규칙에 대한 자세한 내용은 [Cisco 기술 팁 표기 규칙](#)을 참조하십시오.

## 구성

이 섹션에서는 이 문서에 설명된 기능을 구성하는 정보를 제공합니다.

**참고:** 이 문서에 사용된 명령에 대한 추가 정보를 찾으려면 [명령 조회 도구](#)([등록된](#) 고객만 해당)를 사용합니다.

## 구성

이 문서에서는 다음 구성을 사용합니다.

### Cisco 6400 NRP1

```
!  
version 12.0  
no service pad  
service timestamps debug datetime msec  
service timestamps log datetime msec  
no service password-encryption  
!  
hostname Access-6400-NRP1  
!  
enable password <password>  
!  
username <username> password 0 <password>  
username <username1> password 0 <password1>  
username <username2> password 0 <password2>  
!  
!  
!  
!  
redundancy  
  main-cpu  
    auto-sync standard  
  no secondary console enable  
ip subnet-zero  
ip domain-name cisco.com  
ip name-server 171.68.10.70  
!  
!  
!  
bridge irb  
!  
!  
process-max-time 200  
!  
interface Loopback1  
  ip address 10.1.1.1 255.255.255.0  
  no ip directed-broadcast  
!  
interface ATM0/0/0  
  no ip address  
  no ip directed-broadcast  
  no atm ilmi-keepalive  
  atm ilmi-pvc-discovery subinterface  
  pvc 0/16 ilmi  
  !  
  !  
interface ATM0/0/0.1 multipoint
```

```

!--- For VPI starting with number 1 (example: 1/34). no
ip directed-broadcast class-int bridgel bridge-group 1 !
interface ATM0/0/0.4 multipoint !--- For VPI starting
with number 4 (example: 4/33). no ip directed-broadcast
class-int router ! interface Ethernet0/0/1 no ip address
no ip directed-broadcast ! interface Ethernet0/0/0 ip
address 171.68.186.117 255.255.255.240 no ip directed-
broadcast ! interface FastEthernet0/0/0 no ip address no
ip directed-broadcast shutdown ! interface Virtual-
Templatel ip unnumbered Loopback1 no ip directed-
broadcast peer default ip address pool mypool ppp
authentication chap ! interface BVI1 mac-address ip
address 10.10.33.1 255.255.255.0 no ip directed-
broadcast ! ip local pool mypool 10.1.1.2 10.1.1.200 ip
classless ip route 0.0.0.0 0.0.0.0 171.68.186.113 no ip
http server ! ! vc-class atm bridgel encapsulation
aal5snap ! vc-class atm router encapsulation aal5mux ppp
Virtual-Templatel tacacs-server host 171.68.201.249
tacacs-server last-resort succeed tacacs-server
optional-passwords tacacs-server extended ! bridge 1
protocol ieee bridge 1 route ip ! line con 0 transport
input none line aux 0 line vty 0 4 password xxxxxx login
local ! end

```

## 다음을 확인합니다.

이 섹션에서는 컨피그레이션이 제대로 작동하는지 확인하는 데 사용할 수 있는 정보를 제공합니다.

일부 **show** 명령은 [출력 인터프리터 툴](#) 에서 지원되는데(등록된 고객만), 이 툴을 사용하면 **show** 명령 출력의 분석 결과를 볼 수 있습니다.

### show atm pvc 명령 출력

```

Access-6400-NRP1# show atm pvc
      VCD /                Peak Avg/Min Burst
Interface Name  VPI  VCI  Type  Encaps  SC  Kbps  Kbps  Cells  Sts
0/0/0          2    0   16  PVC    ILMI  UBR 155000          UP
0/0/0.1        7    1   34  PVC-D  SNAP  UBR 155000          UP
!--- Snap (bridge). !--- Subinterface 1 took VPI . 0/0/0.4 8 4 33 PVC-D MUX UBR 155000 UP !---
mux (ppp) !--- Subinterface 4 took VPI 4.

```

## 문제 해결

이 섹션에서는 컨피그레이션 문제를 해결하는 데 사용할 수 있는 정보를 제공합니다.

### 문제 해결 명령

일부 **show** 명령은 [출력 인터프리터 툴](#) 에서 지원되는데(등록된 고객만), 이 툴을 사용하면 **show** 명령 출력의 분석 결과를 볼 수 있습니다.

참고: debug 명령을 실행하기 전에 [디버그 명령에 대한 중요 정보를 참조하십시오.](#)

### ATM 이벤트 디버깅

다음 출력은 NRP(Node Route Processor)가 NSP(Node Switch Processor)에서 학습하는

## VPI/VCI(Virtual Path Identifier/Virtual Channel Identifier)를 보여줍니다.

```
Access-6400-NRP1# debug atm events
```

```
ATM events debugging is on
```

```
Shut/no Shut on main ATM0/0/0 interface
```

```
Access-6400-NRP1#
```

```
*Dec 16 15:51:43.667: ATM0/0/0 nrp_sarmgr_shutdown: state=0
*Dec 16 15:51:44.515: Resetting ATM0/0/0
*Dec 16 15:51:45.015: Resetting ATM0/0/0
*Dec 16 15:51:45.015: nrp_sarmgr_config(ATM0/0/0)
*Dec 16 15:51:45.015: nrp_sarmgr_enable(ATM0/0/0)
*Dec 16 15:51:45.215: nrp_sarmgr_enable(ATM0/0/0): restarting VCs: 0
*Dec 16 15:51:45.215: nrp_sarmgr_setup_vc(ATM0/0/0): vc:2 vpi:0 vci:16
*Dec 16 15:51:45.223: %SYS-5-CONFIG_I: Configured from console by console
*Dec 16 15:51:45.667: %LINK-3-UPDOWN: Interface ATM0/0/0, changed state to up
*Dec 16 15:51:46.667: %LINEPROTO-5-UPDOWN: Line protocol on Interface ATM0/0/0,
  changed state to up
*Dec 16 15:51:47.219: %LINK-3-UPDOWN: Interface BV11, changed state to up
*Dec 16 15:51:47.471: Reserved bw for 1/34 Available bw = 155000
*Dec 16 15:51:47.471: nrp_sarmgr_setup_vc(ATM0/0/0): vc:13 vpi:1 vci:34
*Dec 16 15:51:47.475: Reserved bw for 4/33 Available bw = 155000
*Dec 16 15:51:47.527: nrp_sarmgr_setup_vc(ATM0/0/0): vc:14 vpi:4 vci:33
*Dec 16 15:51:48.219: %LINEPROTO-5-UPDOWN: Line protocol on Interface BV11,
  changed state to up
*Dec 16 15:51:49.019: nrp_sarmgr_tearardown_vc(ATM0/0/0): vc:13 vpi:1 vci:34
*Dec 16 15:51:49.179: nrp_sarmgr_tearardown_vc(ATM0/0/0): vc:14 vpi:4 vci:33
*Dec 16 15:51:49.339: PPP-ATM(Virtual-Access1) deleting vaccess on VC 14
*Dec 16 15:51:49.351: %LANE-6-INFO: ATM0/0/0: ILMI prefix add event received
*Dec 16 15:51:49.659: Reserved bw for 1/34 Available bw = 155000
*Dec 16 15:51:49.659: nrp_sarmgr_setup_vc(ATM0/0/0): vc:15 vpi:1 vci:34
*Dec 16 15:51:49.659: Reserved bw for 4/33 Available bw = 155000
*Dec 16 15:51:49.715: nrp_sarmgr_setup_vc(ATM0/0/0): vc:16 vpi:4 vci:33
*Dec 16 15:51:55.419: %LINK-3-UPDOWN: Interface Virtual-Access1, changed state to up
```

```
Access-6400-NRP1#
```

## IP 라우팅 모드에서 Cisco 675에 대한 PPP 디버그 출력

```
Success rate is 0 percent (0/5)
```

```
Access-6400-NRP1#
```

```
*Dec 16 15:38:03.439: Vi1 LCP: I CONFREQ [Open] id 42 len 14
*Dec 16 15:38:03.439: Vi1 LCP: MagicNumber 0xA60C0000 (0x0506A60C0000)
*Dec 16 15:38:03.439: Vi1 LCP: MRU 2048 (0x01040800)
*Dec 16 15:38:03.439: Vi1 IPCP: State is Closed
*Dec 16 15:38:03.439: Vi1 PPP: Phase is ESTABLISHING
*Dec 16 15:38:03.439: Vi1 LCP: O CONFREQ [Open] id 132 len 15
*Dec 16 15:38:03.439: Vi1 LCP: AuthProto CHAP (0x0305C22305)
*Dec 16 15:38:03.439: Vi1 LCP: MagicNumber 0x30995E50 (0x050630995E50)
*Dec 16 15:38:03.439: Vi1 LCP: O CONFACK [Open] id 42 len 14
*Dec 16 15:38:03.439: Vi1 LCP: MagicNumber 0xA60C0000 (0x0506A60C0000)
*Dec 16 15:38:03.439: Vi1 LCP: MRU 2048 (0x01040800)
*Dec 16 15:38:03.443: Vi1 IPCP: Remove route to 10.1.1.2
*Dec 16 15:38:03.443: Vi1 LCP: I CONFACK [ACKsent] id 132 len 15
*Dec 16 15:38:03.443: Vi1 LCP: AuthProto CHAP (0x0305C22305)
*Dec 16 15:38:03.443: Vi1 LCP: MagicNumber 0x30995E50 (0x050630995E50)
*Dec 16 15:38:03.447: Vi1 LCP: State is Open
*Dec 16 15:38:03.447: Vi1 PPP: Phase is AUTHENTICATING, by this end
*Dec 16 15:38:03.447: Vi1 CHAP: O CHALLENGE id 4 len 37 from "Access-6400-NRP1"
*Dec 16 15:38:03.451: Vi1 CHAP: I RESPONSE id 4 len 26 from "cisco"
*Dec 16 15:38:03.451: Vi1 CHAP: O SUCCESS id 4 len 4
*Dec 16 15:38:03.451: Vi1 PPP: Phase is UP
```

```

*Dec 16 15:38:03.451: Vi1 IPCP: O CONFREQ [Closed] id 5 len 16
*Dec 16 15:38:03.451: Vi1 IPCP: Address 10.1.1.1 (0x03060A010101)
*Dec 16 15:38:03.451: Vi1 IPCP: Type20 (0x900600000000)
*Dec 16 15:38:03.455: Vi1 IPCP: I CONFREQ [REQsent] id 43 len 10
*Dec 16 15:38:03.455: Vi1 IPCP: Address 10.1.1.2 (0x03060A010102)
*Dec 16 15:38:03.455: Vi1 IPCP: O CONFACK [REQsent] id 43 len 10
*Dec 16 15:38:03.455: Vi1 IPCP: Address 10.1.1.2 (0x03060A010102)
*Dec 16 15:38:03.455: Vi1 IPCP: I CONFREJ [ACKsent] id 5 len 10
*Dec 16 15:38:03.455: Vi1 IPCP: Type20 (0x900600000000)
*Dec 16 15:38:03.455: Vi1 IPCP: O CONFREQ [ACKsent] id 6 len 10
*Dec 16 15:38:03.455: Vi1 IPCP: Address 10.1.1.1 (0x03060A010101)
*Dec 16 15:38:03.463: Vi1 IPCP: I CONFACK [ACKsent] id 6 len 10
*Dec 16 15:38:03.463: Vi1 IPCP: Address 10.1.1.1 (0x03060A010101)
*Dec 16 15:38:03.463: Vi1 IPCP: State is Open
*Dec 16 15:38:03.463: Vi1 IPCP: Install route to 10.1.1.2

```

## show 명령 출력

```
Access-6400-NRP1# show user
```

Line	User	Host(s)	Idle	Location
* 0	con 0	idle	00:00:00	
Vi1		Virtual PPP (ATM)	00:06:45	
Interface	User	Mode	Idle	Peer Address

```
Access-6400-NRP1# show interface atm 0/0/0 accounting
```

```
ATM0/0/0
Protocol      Pkts In   Chars In  Pkts Out   Chars Out
Trans. Bridge      0         0          3         222
Spanning Tree      0         0        1384       65048
PPP over ATM      358       6646       605       11657
```

```
Access-6400-NRP1# show interface atm 0/0/0
```

```

ATM0/0/0 is up, line protocol is up
Hardware is ATM-SAR
MTU 4470 bytes, sub MTU 4470, BW 156250 Kbit, DLY 80 usec,
  reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ATM, loopback not supported
Keepalive not supported
Encapsulation(s): AAL5, PVC mode
2047 maximum active VCs, 3 current VCCs
VC idle disconnect time: 300 seconds
Last input 00:09:37, output 00:00:00, output hang never
Last clearing of "show interface" counters never
Queueing strategy: fifo
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
  1307 packets input, 57832 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  2876 packets output, 123055 bytes, 0 underruns
  0 output errors, 0 collisions, 3 interface resets
  0 output buffer failures, 0 output buffers swapped out

```

```
Access-6400-NRP1#
```

```
Access-6400-NRP1#
```

```
Access-6400-NRP1#
```

```
Access-6400-NRP1# show interface atm 0/0/0.1
```

```

ATM0/0/0.1 is up, line protocol is up
Hardware is ATM-SAR

```

```
MTU 4470 bytes, BW 156250 Kbit, DLY 80 usec,  
  reliability 255/255, txload 1/255, rxload 1/255  
Encapsulation ATM  
0 packets input, 0 bytes  
1392 packets output, 59937 bytes  
0 OAM cells input, 0 OAM cells output
```

```
Access-6400-NRP1# show interface atm 0/0/0.4
```

```
ATM0/0/0.4 is up, line protocol is up  
Hardware is ATM-SAR  
MTU 4470 bytes, BW 156250 Kbit, DLY 80 usec,  
  reliability 255/255, txload 1/255, rxload 1/255  
Encapsulation ATM  
705 packets input, 11705 bytes  
615 packets output, 9415 bytes  
0 OAM cells input, 0 OAM cells output
```

```
Access-6400-NRP1# show atm vc 15
```

```
ATM0/0/0.1: VCD: 15, VPI: 1, VCI: 34  
UBR, PeakRate: 155000  
AAL5-LLC/SNAP, etype:0x0, Flags: 0xC20, VCmode: 0x0  
OAM frequency: 0 second(s)  
InARP frequency: 15 minutes(s)  
InPkts: 0, OutPkts: 321, InBytes: 0, OutBytes: 13803  
InProc: 0, OutProc: 321, Broadcasts: 0  
InFast: 0, OutFast: 0, InAS: 0, OutAS: 0  
OAM cells received: 0  
OAM cells sent: 0  
Status: UP  
Access-6400-NRP1#
```

```
Access-6400-NRP1# show atm vc 16
```

```
ATM0/0/0.4: VCD: 16, VPI: 4, VCI: 33  
UBR, PeakRate: 155000  
AAL5-MUX, etype:0x9, Flags: 0xC23, VCmode: 0x0  
OAM frequency: 0 second(s)  
InARP DISABLED  
InPkts: 6, OutPkts: 143, InBytes: 48, OutBytes: 2420  
InProc: 3, OutProc: 143  
InFast: 0, OutFast: 0, InAS: 3, OutAS: 0  
OAM cells received: 0  
OAM cells sent: 0  
Status: UP  
PPP: Virtual-Access1 from Virtual-Templat1  
Access-6400-NRP1#
```

```
Access-6400-NRP1# show interface virtual-access 1
```

```
Virtual-Access1 is up, line protocol is down  
Hardware is Virtual Access interface  
Interface is unnumbered. Using address of Loopback1 (10.1.1.1)  
MTU 1500 bytes, BW 100000 Kbit, DLY 100000 usec,  
  reliability 255/255, txload 1/255, rxload 1/255  
Encapsulation PPP, loopback not set  
Keepalive set (10 sec)  
DTR is pulsed for 5 seconds on reset  
LCP REQsent  
Closed: IPCP  
Bound to ATM0/0/0.4 VCD: 16, VPI: 4, VCI: 33  
Cloned from virtual-template: 1  
Last input 00:12:07, output never, output hang never
```

```
Last clearing of "show interface" counters 00:12:18
Queueing strategy: fifo > Output queue 0/40, 0 drops; input queue 0/75, 0 drops
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
 3 packets input, 18 bytes, 0 no buffer
Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
158 packets output, 2675 bytes, 0 underruns
 0 output errors, 0 collisions, 0 interface resets
 0 output buffer failures, 0 output buffers swapped out
 0 carrier transitions
Access-6400-NRP1#
```

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