

Configuring a Cisco 6400 to Support MUX-PPP, SNAP, and Use an atm ilmi-pvc-discovery Subinterface

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[Introduction](#)

This document describes a sample configuration for a Cisco 6400 Universal Access Concentrator (UAC) that supports MUX-PPP and Subnetwork Access Protocol (SNAP) and uses an `atm ilmi-pvc-discovery` subinterface.

[Prerequisites](#)

[Requirements](#)

There are no specific requirements for this document.

[Components Used](#)

This document is not restricted to specific software and hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

[Conventions](#)

For more information on document conventions, refer to the [Cisco Technical Tips Conventions](#).

Configure

In this section, you are presented with the information to configure the features described in this document.

Note: To find additional information on the commands used in this document, use the [Command Lookup Tool](#) ([registered](#) customers only) .

Configuration

This document uses this configuration:

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

```

Verify

This section provides information you can use to confirm your configuration is working properly.

Certain **show** commands are supported by the [Output Interpreter Tool](#) ([registered](#) customers only), which allows you to view an analysis of **show** command output.

show atm pvc Command Output

```

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
0/0/0.1       7    1   34  PVC-D  SNAP  UBR 155000
!--- 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.

```

Troubleshoot

This section provides information you can use to troubleshoot your configuration.

Troubleshooting Commands

Certain **show** commands are supported by the [Output Interpreter Tool](#) ([registered](#) customers only), which allows you to view an analysis of **show** command output.

Note: Before issuing **debug** commands, refer to [Important Information on Debug Commands](#).

Debugging ATM Events

The following output shows the virtual path identifier/virtual channel identifier (VPI/VCI) that the node route processor (NRP) learns from the node switch processor (NSP).

```
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 BVI1, 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 BVI1,
  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#
```

PPP Debug Output for a Cisco 675 in IP Routing Mode

```
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 BVI1, 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 BVI1,
  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#

```

show Command Output

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

Line	User	Host(s)	Idle Location
* 0	con 0	idle	00:00:00
Vil		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-Template1
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#
```

Related Information

- **[DSL Technical Support](#)**
- **[Product Support](#)**
- **[Technical Support - Cisco Systems](#)**