



Configuring ATM Network Interfaces

This chapter describes how to explicitly configure ATM network interface types. Explicitly configuring interfaces is the alternative to Integrated Local Management Interface (ILMI) autoconfiguration, which senses the peer interface type and appropriately configures the interface on the ATM switch router.



Note

This chapter provides advanced configuration instructions for the Catalyst 8540 MSR, Catalyst 8510 MSR, and LightStream 1010 ATM switch routers. For a discussion and examples of ATM network interface types, refer to the *Guide to ATM Technology*. For complete descriptions of the commands mentioned in this chapter, refer to the *ATM Switch Router Command Reference* publication.

The network configuration tasks described in this chapter are used to explicitly change your ATM switch router operation from the defaults, which are suitable for most networks. The following sections are included:

- Disabling Autoconfiguration on page 5-1
- Configuring UNI Interfaces on page 5-3
- Configuring NNI Interfaces on page 5-4
- Configuring IISP Interfaces on page 5-7

Disabling Autoconfiguration

Autoconfiguration determines an interface type when the interface initially comes up. To change the configuration of the interface type (such as UNI, NNI, or IISP), side, or version, you must first disable autoconfiguration.



Note

When you change the interface type, side, or version, ATM signalling and ILMI are restarted on the interface. When ATM signalling is restarted, all switched virtual connections (SVCs) across the interface are cleared; permanent virtual connections are not affected.

To disable autoconfiguration on an interface, perform the following steps, beginning in global configuration mode:

	Command	Purpose
Step 1	Switch(config)# interface atm <i>card/subcard/port[.vpt#]</i> Switch(config-if)#	Selects the interface to be configured.
Step 2	Switch(config-if)# no atm auto-configuration	Disables autoconfiguration on the interface.

Example

The following example shows how to disable autoconfiguration on interface ATM 1/0/0:

```
Switch(config)# interface atm 1/0/0
Switch(config-if)# no atm auto-configuration
Switch(config-if)#
%ATM-6-ILMINOAUTOCFG: ILMI(ATM1/0/0): Auto-configuration is disabled, current interface
parameters will be used at next interface restart.
```

Displaying the Autoconfiguration

To confirm that autoconfiguration is disabled for the interface, use the following EXEC command:

Command	Purpose
show atm interface atm <i>card/subcard/port</i>	Shows the ATM interface configuration.

Example

The following example shows the autoconfiguration status of ATM interface 1/0/0 as disabled:

```
Switch# show atm interface atm 1/0/0

Interface:      ATM1/0/0      Port-type:      oc3suni
IF Status:     UP              Admin Status:   up
→ Auto-config: disabled    AutoCfgState:   not applicable
IF-Side:       Network        IF-type:        NNI
Uni-type:      not applicable  Uni-version:    not applicable
Max-VPI-bits: 8              Max-VCI-bits:  14
Max-VP:        255          Max-VC:         16383
ConfMaxSvpcVpi: 255        CurrMaxSvpcVpi: 255
ConfMaxSvccVpi: 255        CurrMaxSvccVpi: 255
ConfMinSvccVci: 35         CurrMinSvccVci: 35
Svc Upc Intent: pass       Signalling:     Enabled
ATM Address for Soft VC: 47.0091.8100.0000.00e0.4fac.b401.4000.0c80.8000.00
Configured virtual links:
  PVCLs SoftVCLs  SVCLs  TVCLs  PVPLs SoftVPLs  SVPLs Total-Cfgd Inst-Conns
    4         0      0      0      1      0      0      5      3
Logical ports(VP-tunnels): 0
Input cells:      263250      Output cells:    269783
5 minute input rate:      0 bits/sec,      0 cells/sec
5 minute output rate:    0 bits/sec,      0 cells/sec
Input AAL5 pkts: 171880, Output AAL5 pkts: 175134, AAL5 crc errors: 0
```

Configuring UNI Interfaces

The User-Network Interface (UNI) specification defines communications between ATM end stations (such as workstations and routers) and ATM switches in private ATM networks.

To configure a UNI interface, perform the following steps, beginning in global configuration mode:

	Command	Purpose
Step 1	Switch(config)# interface atm <i>card/subcard/port[.vpt#]</i> Switch(config-if)#	Selects the interface to be configured.
Step 2	Switch(config-if)# no atm auto-configuration	Disables autoconfiguration on the interface.
Step 3	Switch(config-if)# atm uni [side {network user}] [type {private public}] [version {3.0 3.1 4.0}]	Configures the ATM UNI interface.

Example

The following example shows how to disable autoconfiguration on ATM interface 0/1/0 and configure the interface as the user side of a private UNI running version 4.0:

```
Switch(HB-1)(config)# interface atm 0/1/0
Switch(HB-1)(config-if)# no atm auto-configuration
Switch(HB-1)(config-if)#
%ATM-6-ILMINOAUTOCFG: ILMI(ATM0/1/0): Auto-configuration is disabled, current interface
parameters will be used at next interface restart.
Switch(HB-1)(config-if)# atm uni side user type private version 4.0
Switch(HB-1)(config-if)#
%ATM-5-ATMSOFTSTART: Restarting ATM signalling and ILMI on ATM0/1/0.
```

Displaying the UNI Interface Configuration

To show the UNI configuration for an ATM interface, use the following EXEC command:

Command	Purpose
show atm interface atm <i>card/subcard/port[.vpt#]</i>	Shows the ATM interface configuration.

Example

The following example shows the ATM interface 0/1/0 UNI configuration:

```
Switch(HB-1)# show atm interface atm 0/1/0

Interface:      ATM0/1/0      Port-type:      oc3suni
IF Status:     UP              Admin Status:   up
Auto-config:   disabled       AutoCfgState:  not applicable
IF-Side:       Network        IF-type:        UNI
→ Uni-type:    private       Uni-version:    V4.0
<information deleted)
```

Configuring NNI Interfaces

The Network-Network Interface (NNI) specification defines communications between two ATM switches in a private ATM network.

You must configure NNI connections to allow for route discovery and topology analysis between the ATM switch routers. To configure the NNI interface, perform the following steps, beginning in global configuration mode:

	Command	Purpose
Step 1	Switch(config)# interface atm <i>card/subcard/port[.vpt#]</i> Switch(config-if)#	Selects the interface to be configured.
Step 2	Switch(config-if)# no atm auto-configuration	Disables autoconfiguration on the interface.
Step 3	Switch(config-if)# atm nni	Configures the ATM NNI interface.

Example

The following example shows how to configure ATM interface 3/0/0 as an NNI interface:

```
Switch(HB-1)(config)# interface atm 3/0/0
Switch(HB-1)(config-if)# no atm auto-configuration
Switch(HB-1)(config-if)#
%ATM-6-ILMINOAUTOCFG: ILMI(ATM3/0/0): Auto-configuration is disabled, current interface
parameters will be used at next interface restart.
Switch(HB-1)(config-if)# atm nni
Switch(HB-1)(config-if)#
%ATM-5-ATMSOFTSTART: Restarting ATM signalling and ILMI on ATM3/0/0.
```

Displaying the NNI Interface Configuration

To show the NNI configuration for an ATM interface, use the following EXEC command:

Command	Purpose
show atm interface atm <i>card/subcard/port[.vpt#]</i>	Shows the ATM interface configuration.

Example

The following example shows the configuration of the NNI interface ATM 3/0/0 on the ATM switch router-1 (HB-1) located in the headquarters building:

```
Switch(HB-1)# show atm interface atm 3/0/0

Interface:      ATM3/0/0      Port-type:      oc3suni
IF Status:      UP              Admin Status:   up
Auto-config:    disabled        AutoCfgState:   not applicable
→ IF-Side:      Network         IF-type:        NNI
Uni-type:       not applicable  Uni-version:    not applicable

<information deleted>
```

Configuring a 12-Bit VPI NNI Interface (Catalyst 8540 MSR)

The Catalyst 8540 MSR ATM switch router can accommodate up to six interfaces per module for maxvpi-bits greater than the standard 8-bit configuration. If you try to configure more than the maximum number of allowed interfaces with 12-bit virtual path identifiers (VPIs), follow these precautions:

- When you must remove an interface (for example, hot-swapping a port adapter) that is configured for a maxvpi-bit, the number of interfaces (with maxvpi-bit value greater than 8) on the module is decremented. This allows you to then configure other interfaces on the same module for maxvpi-bits greater than eight bits.
- If a port adapter with interfaces configured with a maxvpi-bits value of eight is reinserted into a module location that previously held a port adapter with maxvpi-bits greater than eight bits, the VCs with VPIs greater than 255 remain in “No HW RESOURCES” state. An interface can be reconfigured to maxvpi-bits greater than eight, by changing the value to less than or equal to eight bits on a different interface. The VCs can be restored from “No HW RESOURCES” state by toggling the interface state using the **shutdown** and **no shutdown** commands.

When you need a 12-bit VPI range greater than 255, change the maximum VPI bits configuration. Perform the following steps, beginning in global configuration mode:

	Command	Purpose
Step 1	Switch(config)# interface atm card/subcard/port Switch(config-if)#	Selects the interface to be configured.
Step 2	Switch(config-if)# no atm auto-configuration	Disables autoconfiguration on the interface.
Step 3	Switch(config-if)# atm nni	Configures the ATM NNI interface.
Step 4	Switch(config-if)# atm maxvpi-bits max-vpi-bits	Modifies the maximum VPI bits configuration.



Note 12-bit VPI support is only available on ATM NNI interfaces.

Example

The following example shows that if you are unable to configure a port with a maximum 12-bit VPI value greater than 8, you receive a message prompting you to reconfigure the port:

```
Switch(config)# interface atm 0/0/0
Switch(config-if)# no atm auto-configuration
Switch(config-if)# atm nni
Switch(config-if)# atm maxvpi-bits 12
```

This port can not be configured for vpi bits greater than 8, unless one of the following ports is reconfigured for 8 bits vpi

```
interface a11/0/0
interface a11/0/1
interface a11/0/2
interface a11/0/3
interface a12/0/0
interface a12/0/1
```

Displaying the 12-Bit VPI NNI Interface Configuration (Catalyst 8540 MSR)

To display the 12-bit VPI NNI interface configuration, use the following EXEC commands:

Command	Purpose
show switch module interface atm <i>card/subcard/port</i>	Displays the maxvpi-bits for the specified ATM interface.
show atm interface atm <i>card/subcard/port</i>	Shows the ATM interface configuration.

Examples

The following example shows the maxvpi-bits for interface ATM 0/0/0:

```
Switch# show switch module interface atm 0/0/0
Module ID  Interface  Maxvpi-bits  State
-----
0          ATM0/0/0   8            UP
          ATM0/0/4   8            DOWN
          ATM0/0/1   8            DOWN
          ATM0/0/5   8            DOWN
          ATM0/0/2   8            UP
          ATM0/0/6   8            DOWN
          ATM0/0/3   8            UP
          ATM0/0/7   8            DOWN
=====
```

The following example shows how to display the configuration information for interface ATM 0/0/0:

```
Switch# show atm interface atm 0/0/0

Interface:      ATM0/0/0          Port-type:      oc3suni
IF Status:     DOWN              Admin Status:   down
Auto-config:   enabled           AutoCfgState:  waiting for response from peer
IF-Side:       Network         IF-type:        UNI
Uni-type:      Private        Uni-version:    V3.0
→ Max-VPI-bits: 8              Max-VCI-bits:  14
Max-VP:        255          Max-VC:         16383
ConfMaxSvpcVpi: 100        CurrMaxSvpcVpi: 100
ConfMaxSvccVpi: 100        CurrMaxSvccVpi: 100
ConfMinSvccVci: 60         CurrMinSvccVci: 60
Svc Upc Intent: pass       Signalling:     Enabled
ATM Address for Soft VC: 47.0091.8100.0000.0040.0b0a.2a81.4000.0c80.0000.00
Configured virtual links:
  PVCLs SoftVCLs  SVCLs  TVCLs  PVPLs  SoftVPLs  SVPLs  Total-Cfgd  Inst-Conns
    3         0         0       0       0       0         0         3           0
Logical ports(VP-tunnels): 0
Input cells: 0              Output cells: 0
5 minute input rate:      0 bits/sec,      0 cells/sec
5 minute output rate:     0 bits/sec,      0 cells/sec
Input AAL5 pkts: 0, Output AAL5 pkts: 0, AAL5 crc errors: 0
```

Configuring IISP Interfaces

The Interim Interswitch Signalling Protocol (IISP) defines a static routing protocol for use between ATM switches. IISP provides support for switched virtual connections (SVCs) on switches that do not support the Private Network-Network Interface (PNNI) protocol. For further information, refer to Chapter 10, “Configuring ATM Routing and PNNI.”

To configure an IISP interface, perform the following tasks, beginning in global configuration mode:

	Command	Purpose
Step 1	Switch(config)# interface atm <i>card/subcard/port[.vpt#]</i> Switch(config-if)#	Selects the interface to be configured.
Step 2	Switch(config-if)# no atm auto-configuration	Disables autoconfiguration on the interface.
Step 3	Switch(config-if)# atm iisp [<i>side {network user}</i>] [<i>version {3.0 3.1 4.0}</i>]	Configures the ATM IISP interface.
Step 4	Switch(config-if)# exit Switch(config)#	Exits interface configuration mode.
Step 5	Switch(config)# atm route <i>addr-prefix</i> atm <i>card/subcard/port[.subinterface#]</i>	Configures the ATM route address prefix.

Example

The following example shows how to configure ATM interface 3/0/0 on the ATM switch router (SB-1) as user side IISP and specifies an ATM route address prefix:

```
Switch(SB-1)(config)# interface atm 3/0/0
Switch(SB-1)(config-if)# no atm auto-configuration
Switch(SB-1)(config-if)#
%ATM-6-ILMINOAUTOCFG: ILMI(ATM3/0/0): Auto-configuration is disabled, current interface
parameters will be used at next interface restart.
Switch(SB-1)(config-if)# atm iisp side user
Switch(SB-1)(config-if)#
%ATM-5-ATMSOFTSTART: Restarting ATM signalling and ILMI on ATM3/0/0.
Switch(SB-1)(config-if)# exit
Switch(SB-1)(config)# atm route 47.0091.8100.0000.0000.0ca7.ce01 atm 3/0/0
```

Displaying the IISP Configuration

To show the interface IISP configuration, use the following EXEC command:

Command	Purpose
show atm interface atm card/subcard/port[.vpt#]	Shows the interface configuration.

Example

The following example shows the configuration of ATM interface 3/0/0 on the ATM switch router (SB-1):

```
Switch(SB-1)# show atm interface atm 3/0/0

Interface:      ATM3/0/0      Port-type:      oc3suni
IF Status:     UP                    Admin Status:   up
Auto-config:   disabled          AutoCfgState:  not applicable
→ IF-Side:     User              IF-type:        IISP
Uni-type:      not applicable  Uni-version:    V3.0
Max-VPI-bits:  8                Max-VCI-bits:  14
Max-VP:        255          Max-VC:         16383
ConfMaxSvpcVpi: 255        CurrMaxSvpcVpi: 255
ConfMaxSvccVpi: 255        CurrMaxSvccVpi: 255
ConfMinSvccVci: 35        CurrMinSvccVci: 35
Svc Upc Intent: pass      Signalling:     Enabled
ATM Address for Soft VC: 47.0091.8100.0000.00e0.4fac.b401.4000.0c80.8000.00
Configured virtual links:
  PVCLs SoftVCLs  SVCLs  TVCLs  PVPLs SoftVPLs  SVPLs Total-Cfgd Inst-Conns
    3         0      0      0      0         0         0         3         2
Logical ports(VP-tunnels): 0
Input cells:      264089      Output cells:    273253
5 minute input rate:      0 bits/sec,      0 cells/sec
5 minute output rate:     0 bits/sec,      0 cells/sec
Input AAL5 pkts: 172421, Output AAL5 pkts: 176993, AAL5 crc errors: 0
```