

ATM PVC Range

In a digital subscriber line (DSL) environment, many applications require the configuration of a large number of ATM permanent virtual circuits (PVCs). The ATM PVC RangeSubinterface Grouping feature enables you to group a number of PVCs together into a PVC *range* in order to configure them all at once.

- Restrictions for ATM PVC Range, on page 1
- Information About Restrictions for ATM PVC Range, on page 1
- How to Configure ATM PVC Range, on page 2
- Configuration Examples for ATM PVC Range, on page 4
- Additional References, on page 5
- Feature Information for ATM PVC Range, on page 5

Restrictions for ATM PVC Range

You cannot explicitly configure the individual point-to-point subinterfaces created by the PVC range on a point-to-point subinterface. All of the point-to-point subinterfaces in the range share the same configuration as the subinterface on which the PVC range is configured.

Information About Restrictions for ATM PVC Range

For applications that use multipoint subinterfaces, such as PPP over Ethernet and PPP over ATM, the PVC range is on a single multipoint subinterface.

A PVC range is defined by two VPI-VCI pairs. The two virtual path identifiers (VPIs) define a VPI range, and the two virtual channel identifiers (VCIs) define a VCI range. The number of PVCs in the PVC range equals the number of VPIs in the VPI range multiplied by the number of VCIs in the VCI range.

Once the PVC range is defined, you can configure the range by using the existing interface-ATM-VC configuration commands that are also supported in PVC range configuration mode. The **shutdown** PVC range command can be used to deactivate the range without deleting the configuration.

The ATM PVC Range feature also introduces the **pvc-in-range** command, which allows you to explicitly configure an individual PVC within the defined range of PVCs on a multipoint subinterface. The **shutdown** PVC-in-range command allows you to deactivate an individual PVC within a range.

Note You cannot explicitly configure the individual point-to-point subinterfaces created by the PVC range on a point-to-point subinterface. All of the point-to-point subinterfaces in the range share the same configuration as the subinterface on which the PVC range is configured.

Benefits of ATM PVC Range

Saving Time

Configuring a range of PVCs is faster than configuring each PVC individually.

Saving NVRAM

A range of PVCs takes up less NVRAM on network service routers than a large number of individually configured PVCs.

Speeding Boot-Up

The parser can parse one configuration command instead of many, thus speeding bootup time.

How to Configure ATM PVC Range

Configuring an ATM PVC Range

Note For point-to-point subinterfaces, subinterface numbering begins with the subinterface on which the PVC range is configured and increases sequentially through the range.

To configure an ATM PVC range, use the following commands beginning in global configuration mode

SUMMARY STEPS

1. Router(config)# **interface atm** *slot/port.subinterface-number* {**point-to-point** | **multipoint**}
2. Router(config-subif)# **range** [*range-name*] **pvc** *start-vpi*/*start-vci end-vpi*/*end-vci*
3. Router(config-if-atm-range)# **exit**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	Router(config)# **interface atm** *slot/port.subinterface-number* {**point-to-point** | **multipoint**}	Configures an ATM subinterface and enters subinterface configuration mode.

	Command or Action	Purpose
Step 2	Router(config-subif)# **range** [*range-name*] **pvc** *start-vpi*/*start-vci end-vpi*/*end-vci*	Defines a range of PVCs and enables PVC range configuration mode. The number of PVCs in a range can be calculated using the following formula: • number of PVCs = (*end-vpi* - *start-vpi* + 1) x (*end-vci* - *start-vci* +1). • The *start-vpi* argument may be omitted if it is zero. The *end_vpi*argument may be omitted, but if it is omitted, it is assigned the value of *start-vpi*. The *end-vpi* and *end-vci* arguments are always greater than or equal to *start-vpi* and *start-vci*, respectively.
Step 3	Router(config-if-atm-range)# **exit**	Exits PVC range configuration mode.

Deactivating a PVC Range

To deactivate a PVC range, use the following command in PVC range configuration mode:

Command	Purpose
`Router(config-if-atm-range)#` **`shutdown`**	Deactivates a PVC range.

Configuring an Individual PVC Within a PVC Range

To configure an individual PVC within a PVC range on a multipoint subinterface, use the following commands beginning in global configuration mode:

SUMMARY STEPS

1. Router(config)# **interface atm** *slot*/*port.subinterface-number* **multipoint**
2. Router(config-subif)# **range** [*range-name*] **pvc** *start-vpi*/*start-vci end-vpi*/*end-vci*
3. Router(config-if-atm-range)# **pvc-in-range** [*pvc-name*] [*vpi*/*vci*]
4. Router(cfg-if-atm-range-pvc)# **exit**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	Router(config)# **interface atm** *slot*/*port.subinterface-number* **multipoint**	Configures an ATM interface.

	Command or Action	Purpose
Step 2	Router(config-subif)# **range** [*range-name*] **pvc** *start-vpi*/*start-vci end-vpi*/*end-vci*	Defines a range of PVCs and enables PVC range configuration mode.
Step 3	Router(config-if-atm-range)# **pvc-in-range** [*pvc-name*] [*vpi*/*vci*]	Defines an individual PVC within a PVC range, and enables PVC-in-range configuration mode.
Step 4	Router(cfg-if-atm-range-pvc)# **exit**	Exits PVC-in-range configuration mode.

Deactivating an Individual PVC Within a PVC Range

To deactivate an individual PVC within a range, use the following command in PVC-in-range configuration mode:

Command	Purpose
`Router(cfg-if-atm-range-pvc)# shutdown`	Deactivates an individual PVC within a range.

Verifying an ATM PVC Range

To verify ATM PVC range configuration, use the following EXEC command:

Command	Purpose
`Router# show atm pvc [vpi/vci | name | interface atm interface-number]`	Displays ATM PVCs and traffic information.

Configuration Examples for ATM PVC Range

ATM PVC Range on a Multipoint Subinterface Example

In the following example, a PVC range called "range-pppoa-1" is created with a total of 500 PVCs in the range. PVC parameters are configured for the range, including the assignment of a VC class called "classA."

```
Router(config)# interface atm 6/0.110 multipoint
Router(config-subif)# range range-pppoa-1 pvc 100 4/199
Router(config-if-atm-range)# class-range classA
Router(config-if-atm-range)# ubr 1000
Router(config-if-atm-range)# encapsulation aal5snap
Router(config-if-atm-range)# protocol ppp virtual-template 2
```

Individual PVC Within a PVC Range Configuration Example

In the following example, "pvc1" within the PVC range called "range1" is deactivated.

```
Router(config)# interface atm 6/0.110 multipoint
Router(config-subif)# range range1 pvc 100 4/199
Router(config-if-atm-range)# class-range classA
Router(config-if-atm-range)# pvc-in-range pvc1 3/104
Router(cfg-if-atm-range-pvc)# shutdown
```

Additional References

Related Documents

Related Topic	Document Title
Configuring ATM	"Configuring ATM" chapter in the *Cisco IOS Asynchronous Transfer Mode Configuration Guide*

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/techsupport

Feature Information for ATM PVC Range

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 1: Feature Information for ATM PVC Range and RBE Subinterface Grouping

Feature Name	Releases	Feature Information
ATM PVC Range	12.1(5)T 12.2(28)SB XE 2.5.0	The ATM PVC Range Subinterface Grouping feature enables you to group a number of PVCs together into a PVC range in order to configure them all at once. In 12.1(5)T, this feature was introduced on the Cisco 7200. The following commands were introduced or modified: **class-range, oam-range, pvc-in-range, range pvc, shutdown(PVC-in-range), shutdown(pvc-range)**.