Local Template-Based ATM PVC Provisioning

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The Local Template-Based ATM Provisioning feature enables ATM permanent virtual circuits (PVCs) to be provisioned automatically as needed from a local configuration. ATM PVC autoprovisioning can be configured on a PVC, an ATM PVC range, or a virtual cicuit (VC) class. If a VC class configured with ATM PVC autoprovisioning is assigned to an interface, all the PVCs on that interface will be autoprovisioned; this configuration is sometimes referred to as an *infinite range*.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the Feature Information for Local Template-Based ATM PVC Provisioning, page 13.

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

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Restrictions for Local Template-Based ATM PVC Provisioning

The number of PVCs that can be established on an interface that is configured as an infinite range is limited to the maximum number of VCs that the platform can support.

Information About Local Template-Based ATM PVC Provisioning

Autoprovisioned ATM PVCs are not created until there is activity on the virtual path identifier (VPI)/virtual channel identifier (VCI) pair. When the interface is disabled and reenabled using the **shutdown** and **no shutdown** commands, autoprovisioned PVCs that are part of a PVC range or infinite range are removed upon shutdown and are not reestablished until the first incoming packet triggers PVC creation. During router reload, autoprovisioned PVCs are created when there is activity on the connection.

The total number of VCs that can be configured on an ATM port adapter is limited by the capacity of port adapter. In cases of ATM link oversubscription, where a PVC range or infinite range is configured to provision more PVCs than the port adapter allows, the PVCs can be configured with a timeout so that they can be dynamically brought down as needed. When the timeout expires, the idle PVCs are removed, allowing the PVC range or infinite range of PVCs to share system resources.

ATM PVC local autoprovisioning supports the following applications: PPP over ATM, PPP over Ethernet, ATM routed bridge encapsulation, and routed RFC 1483.

The Local Template-Based ATM Provisioning feature enables ATM PVCs to be created automatically as needed from a local configuration, making the provisioning of large numbers of digital subscriber line (DSL) subscribers easier, faster, and less prone to error.

How to Configure Local Template-Based ATM PVC Provisioning

This section contains the following tasks:

- Configuring ATM PVC Local Autoprovisioning in a VC Class (required)
- Configuring ATM PVC Local Autoprovisioning on a PVC (required)
- Configuring ATM PVC Local Autoprovisioning on an ATM PVC Range (required)
- Configuring ATM PVC Local Autoprovisioning on PVC Within a Range (required)
- Verifying ATM PVC Autoprovisioning (required)
- Monitoring and Maintaining ATM PVC Local Autoprovisioning (optional)

Configuring ATM PVC Local Autoprovisioning in a VC Class

Perform this task to enable ATM PVC local autoprovisioning in a VC class. A VC class configured with ATM PVC autoprovisioning can be assigned to an ATM interface, an ATM PVC, an ATM PVC range, and an ATM PVC with a range.

Note If a VC class that is configured with ATM PVC autoprovisioning is assigned to an ATM interface, all PVCs on the interface will be autoprovisioned.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **vc-class atm** *vc-class-name*
4. **create on-demand**
5. **idle-timeout** *seconds* [*minimum-rate*]
6. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**vc-class atm** *vc-class-name* **Example:** `Router(config)# vc-class atm vctest`	Creates a VC class for an ATM PVC, SVC, or ATM interface and enters ATM VC class configuration mode.
Step 4	**create on-demand** **Example:** `Router(config-vc-class)# create on-demand`	Configures ATM PVC autoprovisioning, which enables a PVC or range of PVCs to be created automatically on demand.
Step 5	**idle-timeout** *seconds* [*minimum-rate*] **Example:** `Router(config-vc-class)# idle-timeout 10`	(Optional) Configures the idle timeout parameter for tearing down ATM SVC connections or autoprovisioned ATM PVC connections.
Step 6	**end** **Example:** `Router(config-vc-class)# end`	Returns to privliged EXEC mode.

Configuring ATM PVC Local Autoprovisioning on a PVC

Perform this task to enable ATM PVC local autoprovisioning on a PVC. ATM PVC local autoprovisioning can also be configured on a PVC by assigning a VC class that has been configured with ATM PVC local autoprovisioning to the PVC.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface atm** *slot*/*port*
4. **atm autovc retry** *interval*
5. **pvc** [*name*] *vpi*/*vci*
6. **create on-demand**
7. **idle-timeout** *seconds* [*minimum-rate*]
8. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**interface atm** *slot*/*port* **Example:** `Router(config)# interface atm 2/0`	Configures an ATM interface and enters interface configuration moed.
Step 4	**atm autovc retry** *interval* **Example:** `Router(config-if)# atm autovc retry 32`	(Optional) Configures the interval at which the router will repeat the attempt to create autoprovisioned PVCs after a failure of the initial creation attempt.
Step 5	**pvc** [*name*] *vpi*/*vci* **Example:** `Router(config-if)# pvc vctest 32/3`	Creates an ATM PVC and enters ATM virtual circuit configuration mode.
Step 6	**create on-demand** **Example:** `Router(config-if-atm-vc)# create on-demand`	Configures ATM PVC autoprovisioning, which enables a PVC or range of PVCs to be created automatically on demand.

	Command or Action	Purpose
Step 7	**idle-timeout** *seconds* [*minimum-rate*] **Example:** `Router(config-if-atm-vc)# idle-timeout 12`	(Optional) Configures the idle timeout parameter for tearing down ATM SVC connections or autoprovisioned ATM PVC connections.
Step 8	**end** **Example:** `Router(config-if-atm-vc)# end`	Returns to privileged EXEC mode.

Configuring ATM PVC Local Autoprovisioning on an ATM PVC Range

Perform this task to enable ATM PVC autoprovisioning on an ATM PVC range. ATM PVC local autoprovisioning can also be configured on a range by assigning a VC class that has been configured with ATM PVC local autoprovisioning to the range.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface atm** *slot/port*
4. **atm autovc retry** *interval*
5. **range** [*range-name*] **pvc** *start-vpi/start-vci end-vpi/end-vci*
6. **create on-demand**
7. **idle-timeout** *seconds* [*minimum-rate*]
8. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**interface atm** *slot/port* **Example:** `Router(config)# interface atm 2/0`	Configures an ATM interface and enters interface configuration mode.

	Command or Action	Purpose
Step 4	**atm autovc retry** *interval* **Example:** `Router(config-if)# atm autovc retry 12`	(Optional) Configures the interval at which the router will repeat the attempt to create autoprovisioned PVCs after a failure of the initial creation attempt.
Step 5	**range** [*range-name*] **pvc** *start-vpi*/*start-vci end-vpi*/*end-vci* **Example:** `Router(config-if)# range pvc pvctest 2/3 4/6`	Defines a range of ATM PVCs and enters ATM PVC range configuration mode.
Step 6	**create on-demand** **Example:** `Router(config-if-atm-range)# create on-demand`	Configures ATM PVC autoprovisioning, which enables a PVC or range of PVCs to be created automatically on demand.
Step 7	**idle-timeout** *seconds* [*minimum-rate*] **Example:** `Router(config-if-atm-range)# idle-timeout 12`	(Optional) Configures the idle timeout parameter for tearing down ATM SVC connections or autoprovisioned ATM PVC connections.
Step 8	**end** **Example:** `Router(config-if-atm-range)# end`	Returns to privileged EXEC mode.

Configuring ATM PVC Local Autoprovisioning on PVC Within a Range

Perform this task to enable ATM PVC autoprovisioning on a PVC within an ATM PVC range. ATM PVC local autoprovisioning can also be configured on a PVC within a range by assigning a VC class that has been configured with ATM PVC local autoprovisioning to the PVC.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface atm** *slot*/*port*
4. **atm autovc retry** *interval*
5. **range** [**range-name**] **pvc** *start-vpi*/*start-vci end-vpi*/*end-vci*
6. **pvc-in-range** [*pvc-name*] [[*vpi*/]*vci*]
7. **create on-demand**
8. **idle-timeout** *seconds* [*minimum-rate*]

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**interface atm** *slot/port* **Example:** `Router(config)# interface atm 2/0`	Configures an ATM interface and enters interface configuration mode.
Step 4	**atm autovc retry** *interval* **Example:** `Router(config-if)# atm autovc retry 23`	(Optional) Configures the interval at which the router will repeat the attempt to create autoprovisioned PVCs after a failure of the initial creation attempt.
Step 5	**range** [range-name] **pvc** *start-vpi/start-vci end-vpi/end-vci* **Example:** `Router(config-if)# range range1 pvc 2/4 5/6`	Defines a range of ATM PVCs and enters ATM PVC range configuration mode.
Step 6	**pvc-in-range** [*pvc-name*] [[*vpi/*]*vci*] **Example:** `Router(config-if-atm-range)# pvc-in-range pvc1`	Defines an individual PVC within a PVC range and enables PVC-in-range configuration mode.
Step 7	**create on-demand** **Example:** `Router(config-if-atm-range-pvc)# create on-demand`	Configures ATM PVC autoprovisioning, which enables a PVC or range of PVCs to be created automatically on demand.
Step 8	**idle-timeout** *seconds* [*minimum-rate*] **Example:** `Router(config-if-atm-range-pvc)# idle-timeout 10`	(Optional) Configures the idle timeout parameter for tearing down ATM SVC connections or autoprovisioned ATM PVC connections.
Step 9	**end** **Example:** `Router(config-if-atm-range-pvc)# end`	Returns to privileged EXEC mode.

Verifying ATM PVC Autoprovisioning

Perform this task to verify if ATM PVC local autoprovisioning is configured and working correctly.

Step 1 Enter the **show running-config** command to verify that the configuration is correct.

Step 2 Enter the **show atm pvc** command. PVCs that have been autoprovisioned will have the value "PVC-A" ("A" stands for automatic) in the Type field.

```
Router# show atm pvc

            VCD /                                       Peak  Avg/Min Burst
Interface   Name       VPI   VCI  Type   Encaps   SC   Kbps   Kbps   Cells  Sts
5/0.1       117        0     50   PVC-A   SNAP    UBR  149760                UP
5/0.1       118        0     51   PVC-A   SNAP    UBR  149760                UP
5/0.1       119        0     52   PVC-A   SNAP    UBR  149760                UP
```

Step 3 Enter the **show atm pvc** command with the *vpi*/*vci* arguments to see if ATM PVC local autoprovisioning is configured on a specific PVC. If ATM PVC local autoprovisioning is configured, the text "VC Auto Creation Enabled: local" will appear in the output.

```
Router# show atm pvc 0/51

ATM5/0.1: VCD: 118, VPI: 0, VCI: 51
UBR, PeakRate: 149760
AAL5-LLC/SNAP, etype:0x0, Flags: 0x20000C20, VCmode: 0x0
OAM frequency: 0 second(s), OAM retry frequency: 1 second(s), OAM retry frequency: 1
second(s)
OAM up retry count: 3, OAM down retry count: 5
OAM Loopback status: OAM Disabled
OAM VC state: Not Managed
ILMI VC state: Not Managed
InARP frequency: 15 minutes(s)
Transmit priority 4
InPkts: 0, OutPkts: 0, InBytes: 0, OutBytes: 0
InPRoc: 0, OutPRoc: 0, Broadcasts: 0
InFast: 0, OutFast: 0, InAS: 0, OutAS: 0
InPktDrops: 0, OutPktDrops: 0
CrcErrors: 0, SarTimeOuts: 0, OverSizedSDUs: 0, LengthViolation: 0, CPIErrors: 0
Out CLP=1 Pkts: 0
OAM cells received: 0
F5 InEndloop: 0, F5 InSegloop: 0, F5 InAIS: 0, F5 InRDI: 0
F4 InEndloop: 0, F4 InSegloop: 0, F4 InAIS: 0, F4 InRDI: 0
OAM cells sent: 0
F5 OutEndloop: 0, F5 OutSegloop: 0, F5 OutRDI: 0
F4 OutEndloop: 0, F4 OutSegloop: 0, F4 OutRDI: 0
OAM cell drops: 0
Status: UP
PPP: Virtual-Access3 from Virtual-Template1
VC Auto Creation Enabled: local
```

Monitoring and Maintaining ATM PVC Local Autoprovisioning

To monitor and maintain ATM PVC autoprovisioning, use one or more of the following commands in privileged EXEC mode:

Command or Action	Purpose
`Router# debug atm autovc {event | error | all}`	Displays information about autoprovisioned ATM PVC events and errors.
`Router# show atm pvc`	Displays all ATM PVCs and traffic information.
`Router# show atm vc`	Displays all ATM PVCs and SVCs and traffic information.

Configuration Examples for Local Template-Based ATM PVC Provisioning

This section provides the following configuration examples:

- ATM PVC Local Autoprovisioning on an ATM Interface Example
- ATM PVC Local Autoprovisioning on a PVC Example
- ATM PVC Local Autoprovisioning on an ATM PVC Range Example
- ATM PVC Local Autoprovisioning on a PVC Within a Range Example

ATM PVC Local Autoprovisioning on an ATM Interface Example

In the following example, local autoprovisioning is enabled on all PVCs on ATM interface 5/0.

```
vc-class atm auto-pppoe
 vbr-nrt 1000 100
 protocol pppoe
 create on-demand
 idle-timeout 300 10
!
interface atm 5/0
 class-int auto-pppoe
 atm autovc retry 10
```

ATM PVC Local Autoprovisioning on a PVC Example

The following example shows the configuration of local autoprovisioning on a PVC:

```
interface atm 5/0
 pvc 1/300
  create on-demand
  idle-timeout 300 10
```

ATM PVC Local Autoprovisioning on an ATM PVC Range Example

The following example shows the configuration of local autoprovisioning on an ATM PVC range called "auto":

```
interface atm 5/0
 range auto pvc 0/100 1/200
  create on-demand
```

ATM PVC Local Autoprovisioning on a PVC Within a Range Example

The following example shows the configuration of local autoprovisioning on a PVC within a PVC range:

```
interface atm 5/0
 range auto pvc 0/100 1/200
  pvc-in-range 0/101
   create on-demand
```

Additional References

The following sections provide references related to the Local Template-based ATM PVC Provisioning feature.

Related Documents

Related Topic	Document Title
ATM PVC configuration	Cisco IOS Wide-Area Networking Configuration Guide
WAN commands: complete command syntax, defaults, command mode, command history, usage guidelines, and examples.	*Cisco IOS Wide-Area Networking Command Reference*
ATM commands: complete command syntax, defaults, command mode, command history, usage guidelines, and examples.	*Cisco IOS Asynchronous Transfer Mode Command Reference*
Cisco IOS commands	*Cisco IOS Master Commands List, All Releases*

Standards

Standard	Title
None	—

MIBs

MIB	MIBs Link
None	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
None	—

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/cisco/web/support/index.html

Feature Information for Local Template-Based ATM PVC Provisioning

Table 1 lists the features in this module and provides links to specific configuration information. Only features that were introduced or modified in Cisco IOS Release 12.2(15)B, Cisco IOS Releases 12.2(28)SB, Cisco IOS Release 12.2(33)SRE or Cisco IOS Release 15.0(1)M, or a later release appear in the table.

Not all commands may be available in your Cisco IOS software release. For release information about a specific command, see the command reference documentation.

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which Cisco IOS and Catalyst OS software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn. An account on Cisco.com is not required.

Note Table 1 lists only the Cisco IOS software release that introduced support for a given feature in a given Cisco IOS software release train. Unless noted otherwise, subsequent releases of that Cisco IOS software release train also support that feature.

Table 1 Feature Information for Local Template-Based ATM PVC Provisioning

Feature Name	Releases	Feature Information
Local Template-Based ATM PVC Provisioning	12.2(15)B 15.0(1)M 12.2(28)SB 12.2(33)SRE	The Local Template-Based ATM Provisioning feature enables ATM permanent virtual circuits (PVCs) to be provisioned automatically as needed from a local configuration. This feature was introduced in Cisco IOS Release 12.2(15)B and integrated into Cisco IOS Release 12.2(28)SB, Cisco IOS Release 15.0(1)M and Cisco IOS Release 2.2(33)SRE. The following commands were introduced or modified: **atm autovc retry**, **create on-demand**, **debug atm autovc**, **idle-timeout**