



ATM PVC F5 OAM Recovery Traps

The ATM PVC F5 OAM Recovery Traps feature introduces Simple Network Management Protocol (SNMP) traps that notify the administrator when a permanent virtual circuit (PVC) has recovered from F5 Operation, Administration, and Maintenance (OAM) end-to-end loopback failures, and F5 OAM alarm indication signal/remote defect indication (AIS/RDI) failures.

Finding Feature Information

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 ATM PVC F5 OAM Recovery Traps” section on page 9](#).

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

Contents

- [Prerequisites for ATM PVC F5 OAM Recovery Traps, page 2](#)
- [Restrictions for ATM PVC F5 OAM Recovery Traps, page 2](#)
- [Information About ATM PVC F5 OAM Recovery Traps, page 2](#)
- [How to Configure F5 OAM Recovery Traps for ATM PVCs, page 3](#)
- [Configuration Examples for ATM PVC F5 OAM Recovery Traps, page 5](#)
- [Additional References, page 7](#)
- [Feature Information for ATM PVC F5 OAM Recovery Traps, page 9](#)



Prerequisites for ATM PVC F5 OAM Recovery Traps

Extended ATM PVC up and down traps and ATM PVC traps for, OAM F5 AIS/RDI, and OAM F5 loopback failures and recoveries cannot be used at the same time as the legacy ATM PVC trap. The legacy ATM PVC trap must be disabled by using the **no snmp-server enable traps atm pvc** command before extended ATM PVC up and down traps and ATM PVC traps for OAM F5 CC, OAM F5 AIS/RDI, and OAM F5 loopback failures and recoveries can be configured.

OAM management must be enabled on the PVC before you can use any ATM PVC traps.

Restrictions for ATM PVC F5 OAM Recovery Traps

The F5 OAM recovery traps are supported for ATM PVCs only.

Information About ATM PVC F5 OAM Recovery Traps

- [F5 OAM Recovery Traps for ATM PVCs, page 2](#)
- [Benefits of F5 OAM Recovery Traps for ATM PVCs, page 3](#)

F5 OAM Recovery Traps for ATM PVCs

F5 OAM cells are used to detect connectivity failures and recoveries at the ATM layer. Before the introduction of this feature, Cisco IOS software provided support for SNMP traps (also called SNMP notifications) for F5 end-to-end loopback, and F5 AIS/RDI connectivity failures on a PVC. The ATM PVC F5 OAM Recovery Traps feature introduces SNMP traps that notify the network management system (NMS) when connectivity is restored to a PVC after the following types of failures:

- F5 OAM end-to-end loopback failures
- F5 OAM segment AIS/RDI failures
- F5 OAM end-to-end AIS/RDI failures

Information in the traps includes the number of PVCs that recovered and time stamps indicating when the first and last recoveries occurred during the notification interval.

To limit the amount of traffic that can be generated by the F5 OAM failure and recovery traps, only one trap of each type can be generated in each trap interval. Each trap can report on multiple PVCs, and successive PVCs that have the same failure or recovery are reported as a range.

In addition to the traps, MIB tables are maintained to provide information about the failures and recoveries on PVCs.

For a complete description of the extended ATM PVC Trap MIB, including the supported notifications and tables, see the MIB file called CISCO-ATM-PVCTRAP-EXTN-MIB.my, available through Cisco.com at the following URL:

<http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>

Benefits of F5 OAM Recovery Traps for ATM PVCs

Before the introduction of this feature, when F5 OAM failures were detected on PVCs, failure notifications were sent to the NMS, and the operational state of the PVC was kept up. There was no mechanism for notifying the NMS when connectivity was restored to the PVCs after F5 OAM failures. The F5 OAM Recovery Traps feature introduces traps that asynchronously notify the NMS when PVCs have recovered from F5 OAM failures.

How to Configure F5 OAM Recovery Traps for ATM PVCs

- [Configuring ATM OAM Support, page 3](#)
- [Enabling OAM F5 Failure and Recovery Traps for ATM PVCs, page 4](#)

Configuring ATM OAM Support

Perform this task to configure ATM OAM support on an ATM PVC.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface atm** *number*
4. **ip address** *ip-address mask*
5. **pvc** [*name*] *vpilvci*
6. **oam-pvc manage** [**keep-vc-up** [**end aisrdi failure** | **seg aisrdi failure**]]

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 <i>number</i> Example: Router(config)# interface atm 0	Specifies an interface for configuration and enters interface configuration mode.

	Command or Action	Purpose
Step 4	ip address <i>ip-address mask</i> Example: Router(config-if)# ip address 10.0.0.3 255.255.255.0	Sets a primary or secondary IP address for an interface.
Step 5	pvc [<i>name</i>] <i>vpi/vci</i> Example: Router(config-if)# pvc 0/40	Creates an ATM PVC and enters ATM virtual circuit configuration mode.
Step 6	oam-pvc manage [keep-vc-up [end aisrdi failure seg aisrdi failure]] Example: Router(config-if-atm-vc)# oam-pvc manage	Configures ATM OAM management.

Enabling OAM F5 Failure and Recovery Traps for ATM PVCs

Perform this task to enable the MIB and SNMP notifications that support ATM OAM F5 CC management.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **snmp-server enable traps atm pvc extension {up | down | oam failure [aisrdi | loopback]}**

DETAILED STEPS

	Command	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	snmp-server enable traps atm pvc extension { up down oam failure [aisrdi loopback] Example: Router(config)# snmp-server enable traps atm pvc extension oam failure aisrdi	Enables ATM OAM F5 AIS/RDI failure and recovery traps and ATM OAM F5 end-to-end loopback failure and recovery traps.

Troubleshooting Tips

Use the **show running-config** command to verify the configuration of ATM OAM management.

Use the **show atm pvc** command to verify that ATM OAM management is enabled and to display the state of the PVC.

Use the **debug snmp packet** command to display which SNMP traps are being generated.

Configuration Examples for ATM PVC F5 OAM Recovery Traps

- [Enabling OAM PVC Management: Example, page 5](#)
- [ATM PVC Extended Up and Down Notifications: Example, page 5](#)
- [ATM OAM Failure Looback Notification: Example, page 6](#)

Enabling OAM PVC Management: Example

The following example shows how to enable ATM PVC OAM management.

```
Router(config)# interface ATM0/3/0.100 point-to-point
Router(config-subif)# pvc pvc100 0/100
Router(config-if-atm-vc)# oam-pvc manage
Router(config-if-atm-vc)# end
```



Note

Enhanced Interior Gateway Routing Protocol (EIGRP) must be configured on the router if you want the notification packets to be sent to the NMS.

ATM PVC Extended Up and Down Notifications: Example

Enabling ATM PVC extended up and down notifications: Example

The following example shows how to enable ATM PVC extended up and down notifications:

```
snmp-server community public RW
snmp-server host 172.16.61.90 public
snmp-server enable traps atm pvc extension up
snmp-server enable traps atm pvc extension down
snmp-server host 10.0.0.115 vrf Mgmt-intf version 2c public udp-port 2030
```

ATM PVC Down Notification: Example

The following sample output shows an ATM PVC in the DOWN state:

```
Router# show atm vc
```

```
Codes: DN - DOWN, IN - INACTIVE
```

Interface	VCD / Name	VPI	VCI	Type	Encaps	SC	Peak Kbps	Av/Min Kbps	Burst Cells	St
0/3/0.100	pvc100	0	100	PVC	SNAP	UBR	149760			DN

The following example shows the corresponding output for the ATM PVC extended down notification:

```
Received SNMPv2c Trap:
```

```

Community: public
From: 10.0.0.54
sysUpTimeInstance = 1918435
snmpTrapOID.0 = catmIntfPvcDownTrap
ifIndex.52 = 52
atmIntfPvcFailures.15 = 4
atmIntfCurrentlyFailingPVcls.15 = 1
ifDescr.52 = ATM0/3/0.100
catmPVclCurFailTime.52.0.100 = 1915435
catmPVclPrevRecoverTime.52.0.100 = 259552
catmPVclFailureReason.52.0.100 = catmLoopbackOAMFailure(1)

```

ATM PVC Up Notification: Example

The following sample output shows an ATM PVC in the UP state:

```
Router# show atm vc
```

```
Codes: DN - DOWN, IN - INACTIVE
```

Interface	VCD / Name	VPI	VCI Type	Encaps	SC	Peak Kbps	Av/Min Kbps	Burst Cells	St
0/3/0.100	pvc100	0	100 PVC	SNAP	UBR	149760			UP

The following example shows the corresponding output for the ATM PVC extended up notification:

```

Received SNMPv2c Trap:
Community: public
From: 9.0.0.54
sysUpTimeInstance = 1933376
snmpTrapOID.0 = catmIntfPvcUp2Trap
ifIndex.52 = 52
catmIntfCurrentlyDownToUpPVcls.15 = 1
ifDescr.52 = ATM0/3/0.100
catmPVclCurRecoverTime.52.0.100 = 1930676
catmPVclPrevFailTime.52.0.100 = 1915435
catmPVclRecoveryReason.52.0.100 = catmLoopbackOAMRecover(1)

```

ATM OAM Failure Loopback Notification: Example

Enabling ATM OAM Failure Loopback Notification: Example

The following example shows how to enable ATM PVC OAM failure loopback notifications and extended up and down notifications:

```

snmp-server community public RW
snmp-server enable traps atm pvc extension up
snmp-server enable traps atm pvc extension down
snmp-server enable traps atm pvc extension oam failure loopback
snmp-server host 10.0.0.115 vrf Mgmt-intf version 2c public udp-port 2030

```



Note

If you configure the `snmp-server enable traps atm pvc extension oam failure` command, you may not see up or down traps when an OAM failure trap is generated. Additionally, the PVC will stay in the UP state.

OAM Loopback Failure Notification: Example

The following sample output shows an ATM PVC that has failed. Note that the output indicates the PVC is still in the UP state.

```
Router# show atm vc
```

```
Codes: DN - DOWN, IN - INACTIVE
```

Interface	VCD / Name	VPI	VCI	Type	Encaps	SC	Peak Kbps	Av/Min Kbps	Burst Cells	St
0/3/0.100	pvc100	0	100	PVC	SNAP	UBR	149760			UP

The following example shows the corresponding output for the OAM loopback failure notification:

```
Received SNMPv2c Trap:
Community: public
From: 9.0.0.54
sysUpTimeInstance = 1964155
snmpTrapOID.0 = catmIntfPvcOAMFailureTrap
ifIndex.52 = 52
catmIntfOAMFailedPVcls.15 = 65
catmIntfCurrentOAMFailingPVcls.15 = 1
ifDescr.52 = ATM0/3/0.100
catmPVclStatusTransition.52.0.100 = 1
catmPVclStatusChangeStart.52.0.100 = 1961155
catmPVclStatusChangeEnd.52.0.100 = 1961155
```

OAM Loopback Recovery Notification: Example

The following sample output shows an ATM PVC in the UP state:

```
Router# show atm vc
```

```
Codes: DN - DOWN, IN - INACTIVE
```

Interface	VCD / Name	VPI	VCI	Type	Encaps	SC	Peak Kbps	Av/Min Kbps	Burst Cells	St
0/3/0.100	pvc100	0	100	PVC	SNAP	UBR	149760			UP

The following example shows the corresponding output for the OAM loopback recovery notification:

```
Received SNMPv2c Trap:
Community: public
From: 9.0.0.54
sysUpTimeInstance = 1986456
snmpTrapOID.0 = catmIntfPvcOAMRecoverTrap
ifIndex.52 = 52
catmIntfOAMRcovedPVcls.15 = 10
catmIntfCurrentOAMRcovingPVcls.15 = 1
ifDescr.52 = ATM0/3/0.100
catmPVclStatusUpTransition.52.0.100 = 1
catmPVclStatusUpStart.52.0.100 = 1983456
catmPVclStatusUpEnd.52.0.100 = 1983456
```

Additional References

Related Documents

Related Topic	Document Title
OAM and ATM PVC trap support commands	Cisco IOS Asynchronous Transfer Mode Command Reference

Standards

Standards	Title
No new or modified standards are supported by this feature.	—

MIBs

MIBs	MIBs Link
<ul style="list-style-type: none"> CISCO-ATM-PVCTRAP-EXTN-MIB.my. 	<p>To locate and download MIBs for selected platforms, Cisco IOS XE software releases, and feature sets, use Cisco MIB Locator found at the following URL:</p> <p>http://www.cisco.com/go/mibs</p>

RFCs

RFCs	Title
No new or modified RFCs are supported by this features.	—

Technical Assistance

Description	Link
<p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>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.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p>	<p>http://www.cisco.com/techsupport</p>

Feature Information for ATM PVC F5 OAM Recovery Traps

Table 1 lists the release history for this feature.

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which Cisco IOS XE 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 XE software release that introduced support for a given feature in a given Cisco IOS XE software release train. Unless noted otherwise, subsequent releases of that Cisco IOS XE software release train also support that feature.

Table 1 Feature Information for ATM PVC F5 OAM Recovery Traps

Feature Name	Releases	Feature Information
ATM PVC F5 OAM Recovery Traps	Cisco IOS XE Release 2.3	The ATM PVC F5 OAM Recovery Traps feature introduces SNMP traps that notify the administrator when a PVC has recovered from F5 OAM end-to-end loopback failures and F5 OAM AIS/RDI failures. The following command was introduced: snmp-server enable traps atm pvc extension.

Cisco and the Cisco Logo are trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and other countries. A listing of Cisco's trademarks can be found at www.cisco.com/go/trademarks. Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1005R)

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

© 2009 Cisco Systems, Inc. All rights reserved.

