



ATM Routed Bridge Encapsulation

The ATM Routed Bridge Encapsulation feature is used to route IP over bridged RFC 1483 Ethernet traffic from a stub-bridged LAN. By reducing the size of the nonsecured network, this feature reduces the security risk associated with normal bridging or IRB. With a single virtual circuit (VC) allocated to a subnet, which could be as small as a single IP address, IP addresses in the subnet can be used to limit the trust environment to the premises of a single customer.

Feature History for ATM Routed Bridge Encapsulation

Release	Modification
12.1(2)T	This feature was introduced in Cisco IOS Release 12.1(2)T on the Cisco 3600 series, Cisco 4500 series, Cisco 7200 series, and Cisco 7500 series routers
12.3(8)YG	This feature was integrated into Cisco IOS Release 12.3(8)YG on the Cisco SOHO 96, Cisco SOHO 97, Cisco 836, Cisco 837, Cisco 1700 series, and Cisco 1841 routers.

Finding Support Information for Platforms and Cisco IOS Software Images

Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at <http://www.cisco.com/go/fn>. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.

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Prerequisites for ATM Routed Bridge Encapsulation

None

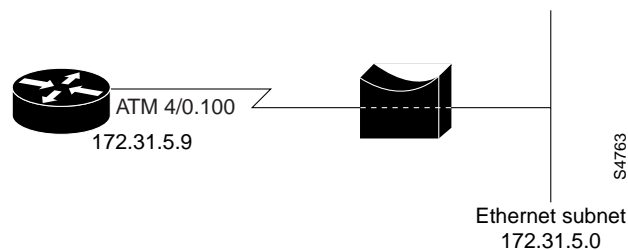
Restrictions for ATM Routed Bridge Encapsulation

This feature does not support Cisco Express Forwarding (CEF) and does not support MAC-layer access control lists. IP access lists, fast switching, and process switching are supported.

Information About ATM Routed Bridge Encapsulation

[Figure 1](#) shows an ATM subinterface on a head-end router, which is configured to function in ATM routed-bridge encapsulation mode. This configuration is useful when a remote bridged Ethernet network device needs connectivity to a routed network via a device bridging from an Ethernet LAN to an ATM network using RFC 1483 bridged encapsulation.

Figure 1 ATM Routed Bridge Encapsulation



Bridged IP packets received on an ATM interface configured in route-bridged mode are routed by virtue of the IP header. Such interfaces take advantage of the characteristics of a stub LAN topology commonly used for digital subscriber line (DSL) access and offer increased performance and flexibility over integrated routing and bridging.

Supported Platforms

- Cisco 3600 series
- Cisco 4500 series
- Cisco 7200 series
- Cisco 7500 series
- Cisco 836
- Cisco 837

- SOHO 96
- SOHO97
- Cisco 1700 series
- Cisco 1841
- Cisco 2801

How to Configure ATM Routed Bridge Encapsulation

See the following sections for configuration tasks for the ATM Routed Bridge Encapsulation feature. Each task in this list is identified as optional or required.

- [Configuring ATM Routed Bridge Encapsulation](#) (Required)
- [Verifying ATM Routed Bridge Encapsulation](#) (Optional)

Configuring ATM Routed Bridge Encapsulation

To configure ATM RBE, use the following commands beginning in global configuration mode.

SUMMARY STEPS

1. **interface atm**
2. **pvc VPI/VCI**
3. **exit**
4. **atm route-bridged ip**
5. **ip address ip-address mask [secondary]**
6. **^Z**

DETAILED STEPS

	Command	Purpose
Step 1	Router(config)# interface atm <i>slot/0.subinterface-number</i> point-to-point	Specifies an ATM point-to-point subinterface.
Step 2	Router(config-subif)# pvc VPI/VCI or Router(config-subif)# range [<i>range-name</i>] pvc <i>start-vpi/start-vci end-vpi/end-vci</i>	Configures a PVC to carry the routed bridge traffic. Configures a range of PVCs to carry the routed bridge traffic.
Step 3	Router(config-if-atm-vc)# exit or Router(config-if-atm-range)# exit	Exits to subinterface configuration mode.
Step 4	Router(config-subif)# atm route-bridged ip	Enables the ATM Routed Bridge Encapsulation feature for IP.

	Command	Purpose
Step 5	Router(config-subif)# ip address <i>ip-address mask</i> [secondary]	Provides an IP address on the same subnetwork as the remote network.
Step 6	Router(config-subif)# ^z	Exits to EXEC mode.

Only the specified network layer (IP) protocol will be routed. Any remaining protocols can be passed on to bridging or other protocols. In this manner, the ATM Routed Bridge Encapsulation feature can be used to route IP, whereas other protocols (such as IPX) are bridged normally.

Verifying ATM Routed Bridge Encapsulation

To confirm that the ATM Routed Bridge Encapsulation feature is enabled, use the **show arp** command and the **show ip cache verbose** command.

SUMMARY STEPS

1. **show arp**
2. **show ip cache verbose**

	Command	Purpose
Step 1	Router(config)# show arp	Confirms that the ATM routed bridge encapsulation feature is enabled.
Step 2	Router(config-subif)# show ip cache verbose	Lists the contents of the IP cache.

Configuration Examples

This section provides the following configuration examples:

- [ATM Routed Bridge Encapsulation Example](#)
- [ATM Routed Bridge Encapsulation on an Unnumbered Interface Example](#)
- [Concurrent Bridging and ATM Routed Bridge Encapsulation Example](#)
- [show Command Examples](#)

ATM Routed Bridge Encapsulation Example

The following example shows a typical ATM routed bridge encapsulation configuration:

```
interface atm 4/0.100 point-to-point
  ip address 172.16.5.9 255.255.255.0
  atm route-bridged ip
  pvc 0/32
```

ATM Routed Bridge Encapsulation on an Unnumbered Interface Example

The following example uses a static route to point to an unnumbered interface:

```
interface loopback 0
 ip address 172.16.5.1 255.255.255.0
!
interface atm 4/0.100 point-to-point
 ip unnumbered loopback 0
 atm route-bridged ip
 pvc 0/32

!
ip route 172.16.5.2 255.255.255.255 atm 4/0.100
```

Concurrent Bridging and ATM Routed Bridge Encapsulation Example

The following example shows concurrent use of ATM routed bridge encapsulation with normal bridging. IP datagrams are route-bridged and other protocols (such as IPX or AppleTalk) are bridged.

```
bridge 1 protocol ieee

interface atm 4/0.100 point-to-point
 ip address 172.16.5.9 255.255.255.0
 atm route-bridged ip
 pvc 0/32
 bridge-group 1
```

show Command Examples

The following examples show the output of the **show arp** and **show ip cache verbose** commands.

```
pp4-72k1# show arp
```

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	10.1.0.51	6	0001.c9f2.a81d	ARPA	Ethernet3/1
Internet	10.1.0.49	-	0060.0939.bb55	ARPA	Ethernet3/1
Internet	10.0.75.1	30	0010.0ba6.2020	ARPA	Ethernet3/0
Internet	10.8.101.35	6	00e0.1e8d.3f90	ARPA	ATM1/0.4
Internet	10.8.100.50	5	0007.144f.5d20	ARPA	ATM1/0.2
Internet	10.0.75.49	-	0060.0939.bb54	ARPA	Ethernet3/0
Internet	10.1.0.125	30	00b0.c2e9.bc55	ARPA	Ethernet3/1

```
pp4-72k1# show ip cache verbose
```

```
IP routing cache 3 entries, 572 bytes
 9 adds, 6 invalidates, 0 refcounts
Minimum invalidation interval 2 seconds, maximum interval 5 seconds,
  quiet interval 3 seconds, threshold 0 requests
Invalidation rate 0 in last second, 0 in last 3 seconds
Last full cache invalidation occurred 00:30:34 ago
```

Prefix/Length	Age	Interface	Next Hop
10.1.0.51/32-24	00:30:10	Ethernet3/1	10.1.0.51
	14	0001C9F2A81D00600939BB550800	
10.8.100.50/32-24	00:00:04	ATM1/0.2	10.8.100.50

```

28 00010000AAAA030080C2000700000007144F5D2000600939
    BB1C0800
10.8.101.35/32-24 00:06:09 ATM1/0.4 10.8.101.35
28 00020000AAAA030080C20007000000E01E8D3F9000600939
    BB1C0800

```

pp4-72k1#

Additional References

Standards

None

MIBs

No new or modified MIBs are supported by this feature. To obtain lists of MIBs supported by platform and Cisco IOS release and to download MIB modules, go to the Cisco MIB website on Cisco Connection Online (CCO) at <http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>.

RFCs

RFCs	Title
1483	<i>Multiprotocol Encapsulation over ATM Adaptation Layer 5</i> , July 1993

Technical Assistance

Description	Link
Technical Assistance Center (TAC) home page, containing 30,000 pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.	http://www.cisco.com/public/support/tac/home.shtml

Command Reference

This section documents the **atm route-bridged** command. All other commands used with this feature are documented in the Cisco IOS Release 12.1 command references.

atm route-bridged

To configure an interface to use the ATM Routed Bridge Encapsulation feature, use the **atm route-bridged** command in interface configuration mode.

atm route-bridged *protocol*

Syntax Description	<i>protocol</i>	Protocol for which the route-bridge feature is enabled.
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Defaults	No default behavior or values
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Command Modes	Interface configuration
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Command History	Release	Modification
	12.0(5)DC	This command was introduced.
	12.1(2)T	This command was integrated into Cisco IOS Release 12.1(2)T.

Examples The following example configures the ATM Routed Bridge Encapsulation feature on an interface:

```
interface atm 4/0.100 point-to-point
ip address 172.16.5.9 255.255.255.0
atm route-bridged ip
pvc 0/32
```

Glossary

bridge group—A group of interfaces bridged together to emulate a multiport bridge.

Bridge Group Virtual Interface—See BVI.

BVI—Bridge Group Virtual Interface. The logical Layer 3-only interface associated with a bridge group when IRB is configured.

integrated routing and bridging—See IRB.

IRB—integrated routing and bridging. The process of routing among a number of bridge groups.

routed bridge encapsulation—The process by which a stub-bridged segment is terminated on a point-to-point routed interface. Specifically, the router is routing on an IEEE 802.3 or Ethernet header carried over a point-to-point protocol such as PPP, RFC 1483 ATM, or RFC 1490 Frame Relay.