



# Layer 2 Local Switching

---

**Last Updated: October 6, 2011**

The Layer 2 Local Switching feature allows you to switch Layer 2 data in two ways:

- Between two interfaces on the same router
- Between two circuits on the same interface port, which is called same-port switching

The following interface-to-interface switching combinations are supported by this feature:

- ATM to ATM
- ATM to Ethernet
- Ethernet/Ethernet VLAN to Ethernet/Ethernet VLAN

The following same-port switching features are supported:

- ATM Permanent Virtual Circuit (PVC) and Permanent Virtual Path (PVP)
- Ethernet VLAN
- [Finding Feature Information, page 1](#)
- [Prerequisites for Layer 2 Local Switching, page 2](#)
- [Restrictions for Layer 2 Local Switching, page 2](#)
- [Information About Layer 2 Local Switching, page 2](#)
- [How to Configure Layer 2 Local Switching, page 3](#)
- [Configuration Examples for Layer 2 Local Switching, page 12](#)
- [Additional References, page 15](#)
- [Feature Information for Layer 2 Local Switching, page 16](#)

## 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 Table at the end of this document.

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](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.



---

**Americas Headquarters:**  
**Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA**

## Prerequisites for Layer 2 Local Switching

You must enable Cisco Express Forwarding for the Cisco ASR 1000 Series Aggregation Services Router.

## Restrictions for Layer 2 Local Switching

For Ethernet/Ethernet VLAN circuits, the Cisco ASR 1000 Series Aggregation Services Router must have Ethernet Adapters.

## Information About Layer 2 Local Switching

- [Layer 2 Local Switching Overview, page 2](#)
- [NSF SSO - Local Switching Overview, page 2](#)
- [Layer 2 Local Switching Applications, page 2](#)

## Layer 2 Local Switching Overview

Local switching allows you to switch Layer 2 data between two interfaces (for example, Ethernet to Ethernet, Ethernet VLAN to Ethernet VLAN, or Ethernet to Ethernet VLAN) on the same router. The interfaces can be on the same line card or on two different cards. During these kinds of switching, the Layer 2 address is used, not the Layer 3 address.

Additionally, same-port local switching allows you to switch Layer 2 data between two circuits on the same interface.

## NSF SSO - Local Switching Overview

Nonstop forwarding (NSF) and stateful switchover (SSO) improve the availability of the network by providing redundant Route Processors and checkpointing of data to ensure minimal packet loss when the primary Route Processor goes down. NSF/SSO support is available for the following locally switched attachment circuits:

- Ethernet/Ethernet VLAN to Ethernet/Ethernet VLAN

## Layer 2 Local Switching Applications

Incumbent local exchange carriers (ILECs) that use an interexchange carrier (IXC) to carry traffic between two local exchange carriers can use the Layer 2 Local Switching feature. Telecom regulations require the ILECs to pay the IXCs to carry that traffic. At times, the ILECs cannot terminate customer connections that are in different local access and transport areas (LATAs). In other cases, customer connections terminate in the same LATA, which may also be on the same router.

For example, company A has more than 50 LATAs across the country and uses three routers for each LATA. Company A uses companies B and C to carry traffic between local exchange carriers. Local switching of Layer 2 frames on the same router might be required.

Similarly, if a router is using, for example, a channelized interface, it might need to switch incoming and outgoing traffic across two logical interfaces that reside on a single physical port. The same-port local switching feature addresses that implementation.

## How to Configure Layer 2 Local Switching

- [Configuring Ethernet VLAN Same-Port Switching, page 3](#)
- [Configuring Ethernet Port Mode to Ethernet VLAN Local Switching, page 4](#)
- [Configuring ATM-to-ATM PVC Local Switching and Same-Port Switching, page 6](#)
- [Configuring ATM-to-ATM PVP Local Switching, page 8](#)
- [Configuring ATM PVP Same-Port Switching, page 9](#)
- [Verifying Layer 2 Local Switching, page 10](#)

## Configuring Ethernet VLAN Same-Port Switching

Perform this task to configure Ethernet VLAN same-port switching.

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface fastethernet** *slot / port . subinterface-number*
4. **encapsulation dot1q** *vlan-id*
5. **exit**
6. **interface fastethernet** *slot / port . subinterface-number*
7. **encapsulation dot1q** *vlan-id*
8. **exit**
9. **connect** *connection-name type number type number*

### DETAILED STEPS

Command or Action	Purpose
<b>Step 1</b> <b>enable</b>  <b>Example:</b> Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b> <b>configure terminal</b>  <b>Example:</b> Router# configure terminal	Enters global configuration mode.

Command or Action	Purpose
<p><b>Step 3</b> <code>interface fastethernet slot / port . subinterface-number</code></p> <p><b>Example:</b></p> <pre>Router(config)# interface fastethernet6/0.1</pre>	Specifies the first Fast Ethernet line card, subslot (if available), port, and subinterface, and enters subinterface configuration mode.
<p><b>Step 4</b> <code>encapsulation dot1q vlan-id</code></p> <p><b>Example:</b></p> <pre>Router(config-subif)# encapsulation dot1q 10</pre>	Enables the subinterface to accept 802.1Q VLAN packets and specifies the first VLAN.
<p><b>Step 5</b> <code>exit</code></p> <p><b>Example:</b></p> <pre>Router(config-subif)# exit</pre>	Exits subinterface configuration mode and returns to global configuration mode.
<p><b>Step 6</b> <code>interface fastethernet slot / port . subinterface-number</code></p> <p><b>Example:</b></p> <pre>Router(config)# interface fastethernet6/0.2</pre>	Specifies the second Fast Ethernet line card, subslot (if available), port, and subinterface, and enters subinterface configuration mode.
<p><b>Step 7</b> <code>encapsulation dot1q vlan-id</code></p> <p><b>Example:</b></p> <pre>Router(config-subif)# encapsulation dot1q 20</pre>	Enables the subinterface to accept 802.1Q VLAN packets and specifies the second VLAN.
<p><b>Step 8</b> <code>exit</code></p> <p><b>Example:</b></p> <pre>Router(config-subif)# exit</pre>	Exits subinterface configuration mode and returns to global configuration mode.
<p><b>Step 9</b> <code>connect connection-name type number type number</code></p> <p><b>Example:</b></p> <pre>Router(config)# connect conn fastethernet 6/0.1 fastethernet 6/0.2</pre>	Creates a local connection between the two subinterfaces (and hence their previously specified VLANs) on the same Fast Ethernet port.

## Configuring Ethernet Port Mode to Ethernet VLAN Local Switching

Perform this task to configure local switching for Ethernet (port mode) to Ethernet VLAN.

**SUMMARY STEPS**

1. **enable**
2. **configure terminal**
3. **interface fastethernet** *slot / subslot / port*
4. **interface fastethernet** *slot / port / subinterface-number*
5. **encapsulation dot1q** *vlan-id*
6. **exit**
7. **connect** *connection-name type number type number*

**DETAILED STEPS**

Command or Action	Purpose
<p><b>Step 1</b> <b>enable</b></p> <p><b>Example:</b></p> <pre>Router&gt; enable</pre>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<p><b>Step 2</b> <b>configure terminal</b></p> <p><b>Example:</b></p> <pre>Router# configure terminal</pre>	<p>Enters global configuration mode.</p>
<p><b>Step 3</b> <b>interface fastethernet</b> <i>slot / subslot / port</i></p> <p><b>Example:</b></p> <pre>Router(config)# interface fastethernet3/0/0</pre>	<p>Specifies a Fast Ethernet line card, subslot (if available), and port, and enters interface configuration mode.</p> <ul style="list-style-type: none"> <li>• This is the interface on one side of the PE router that passes Ethernet packets to and from the customer edge (CE) router.</li> </ul>
<p><b>Step 4</b> <b>interface fastethernet</b> <i>slot / port / subinterface-number</i></p> <p><b>Example:</b></p> <pre>Router(config-if)# interface fastethernet6/0/0.1</pre>	<p>Specifies a Fast Ethernet line card, subslot (if available), port, and subinterface, and enters subinterface configuration mode.</p> <ul style="list-style-type: none"> <li>• This is the interface on the other side of the PE router than passes Ethernet VLAN packets to and from the CE router.</li> </ul>
<p><b>Step 5</b> <b>encapsulation dot1q</b> <i>vlan-id</i></p> <p><b>Example:</b></p> <pre>Router(config-subif)# encapsulation dot1q 100</pre>	<p>Enables the interface to accept 802.1Q VLAN packets.</p>

Command or Action	Purpose
<b>Step 6</b> <code>exit</code>  <b>Example:</b>  <pre>Router(config-subif)# exit</pre>	Exits subinterface configuration mode and returns to global configuration mode.
<b>Step 7</b> <code>connect connection-name type number type number</code>  <b>Example:</b>  <pre>Router(config)# connect eth-ethvlan-con fastethernet 3/0/0 fastethernet 6/0/0.1</pre>	Creates a local connection between the two interfaces.

## Configuring ATM-to-ATM PVC Local Switching and Same-Port Switching

You can configure local switching for both ATM AAL5 and ATM AAL0 encapsulation types.

Creating the ATM PVC is not required. If you do not create a PVC, one is created for you. For ATM-to-ATM local switching, the autoprovisioned PVC is given the default encapsulation type AAL0 cell relay.

Perform this task to configure ATM-to-ATM PVC local switching and same-port switching.

### SUMMARY STEPS

1. `enable`
2. `configure terminal`
3. `interface atm slot / port`
4. `pvc vpi / vci l2transport`
5. `encapsulation layer-type`
6. `exit`
7. `exit`
8. `connect connection-name interface pvc interface pvc`

### DETAILED STEPS

Command or Action	Purpose
<b>Step 1</b> <code>enable</code>  <b>Example:</b>  <pre>Router&gt; enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>

Command or Action	Purpose
<p><b>Step 2</b> <code>configure terminal</code></p> <p><b>Example:</b></p> <pre>Router# configure terminal</pre>	<p>Enters global configuration mode.</p>
<p><b>Step 3</b> <code>interface atm slot / port</code></p> <p><b>Example:</b></p> <pre>Router(config)# interface atm1/0</pre>	<p>Specifies an ATM line card, subslot (if available), and port, and enters interface configuration mode.</p>
<p><b>Step 4</b> <code>pvc vpi / vci l2transport</code></p> <p><b>Example:</b></p> <pre>Router(config-if)# pvc 1/200 l2transport</pre>	<p>Assigns a VPI and VCI and enters ATM PVC l2transport configuration mode.</p> <ul style="list-style-type: none"> <li>The <b>l2transport</b> keyword indicates that the PVC is a switched PVC instead of a terminated PVC.</li> </ul>
<p><b>Step 5</b> <code>encapsulation layer-type</code></p> <p><b>Example:</b></p> <pre>Router(cfg-if-atm-l2trans-pvc)# encapsulation aal5</pre>	<p>Specifies the encapsulation type for the ATM PVC. Both AAL0 and AAL5 are supported.</p> <ul style="list-style-type: none"> <li>Repeat Steps 3 through 5 for another ATM PVC on the same router.</li> </ul>
<p><b>Step 6</b> <code>exit</code></p> <p><b>Example:</b></p> <pre>Router(cfg-if-atm-l2trans-pvc)# exit</pre>	<p>Exits PVC l2transport configuration mode and returns to interface configuration mode.</p>
<p><b>Step 7</b> <code>exit</code></p> <p><b>Example:</b></p> <pre>Router(config-if)# exit</pre>	<p>Exits interface configuration mode and returns to global configuration mode.</p>
<p><b>Step 8</b> <code>connect connection-name interface pvc interface pvc</code></p> <p><b>Example:</b></p> <pre>Router(config)# connect atm-con atm1/0/0 0/100 atm2/0/0 0/100</pre>	<p>Creates a local connection between the two specified permanent virtual circuits.</p>

## Configuring ATM-to-ATM PVP Local Switching

Perform this task to configure ATM-to-ATM PVP local switching.

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface atm slot / port**
4. **atm pvp vpi l2transport**
5. **exit**
6. **exit**
7. **connect connection-name interface pvp interface pvp**

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b>  Example: Router> enable	Enables privileged EXEC mode.  • Enter your password if prompted.
Step 2	<b>configure terminal</b>  Example: Router# configure terminal	Enters global configuration mode.
Step 3	<b>interface atm slot / port</b>  Example: Router(config)# interface atm1/0	Specifies an ATM line card, subslot (if available), and port, and enters interface configuration mode.
Step 4	<b>atm pvp vpi l2transport</b>  Example: Router(config-if)# atm pvp 100 l2transport	Identifies the virtual path and enters PVP l2transport configuration mode. The <b>l2transport</b> keyword indicates that the PVP is a switched PVP instead of a terminated PVP.  • Repeat Steps 3 and 4 for another ATM permanent virtual path on the same router.
Step 5	<b>exit</b>  Example: Router(config-if-atm-l2trans-pvp)# exit	Exits PVP l2transport configuration mode and returns to interface configuration mode.



Command or Action	Purpose
<p><b>Step 6</b> <code>exit</code></p> <p><b>Example:</b></p> <pre>Router(config-if)# exit</pre>	<p>Exits interface configuration mode and returns to global configuration mode.</p>
<p><b>Step 7</b> <code>connect connection-name interface pvp interface pvp</code></p> <p><b>Example:</b></p> <pre>Router(config)# connect atm-con</pre> <p><b>Example:</b></p> <pre>atm1/0 100 atm2/0 200</pre>	<p>In global configuration mode, creates a local connection between the two specified permanent virtual paths.</p>

## Configuring ATM PVP Same-Port Switching

Perform this task to configure ATM PVP switching on an ATM interface.

### SUMMARY STEPS

1. `enable`
2. `configure terminal`
3. `interface atm slot / subslot / port`
4. `atm pvp vpi l2transport`
5. `exit`
6. `exit`
7. `connect connection-name interface pvp interface pvp`

### DETAILED STEPS

Command or Action	Purpose
<p><b>Step 1</b> <code>enable</code></p> <p><b>Example:</b></p> <pre>Router&gt; enable</pre>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>

Command or Action	Purpose
<b>Step 2</b> <code>configure terminal</code>  <b>Example:</b> <pre>Router# configure terminal</pre>	Enters global configuration mode.
<b>Step 3</b> <code>interface atm slot / subslot / port</code>  <b>Example:</b> <pre>Router(config)# interface atm1/0/0</pre>	Specifies an ATM line card, subslot (if available), and port, and enters interface configuration mode.
<b>Step 4</b> <code>atm pvp vpi l2transport</code>  <b>Example:</b> <pre>Router(config-if)# atm pvp 100 l2transport</pre>	Specifies one VPI and enters PVP l2transport configuration mode. Repeat this step for the other ATM permanent virtual path on this same port. <ul style="list-style-type: none"> <li>The <b>l2transport</b> keyword indicates that the indicated PVP is a switched PVP instead of a terminated PVP.</li> </ul>
<b>Step 5</b> <code>exit</code>  <b>Example:</b> <pre>Router(config-if-atm-l2trans-pvp)# exit</pre>	Exits PVP l2transport configuration mode and returns to interface configuration mode.
<b>Step 6</b> <code>exit</code>  <b>Example:</b> <pre>Router(config-if)# exit</pre>	Exits interface configuration mode and returns to global configuration mode.
<b>Step 7</b> <code>connect connection-name interface pvp interface pvp</code>  <b>Example:</b> <pre>Router(config)# connect atm-con atm1/0/0 100 atm1/0/0 200</pre>	In global configuration mode, creates the local connection between the two specified permanent virtual paths.

## Verifying Layer 2 Local Switching

- [Verifying Layer 2 Local Switching Configuration, page 11](#)
- [Verifying the NSF SSO Local Switching Configuration, page 11](#)
- [Troubleshooting Tips, page 12](#)

## Verifying Layer 2 Local Switching Configuration

To verify configuration of the Layer 2 local switching feature, use the **show connection** command on the provider edge (PE) router.

### SUMMARY STEPS

1. **show connection** [**all** | *element* | **id id** | **name name** | **port port**]

### DETAILED STEPS

---

**show connection** [**all** | *element* | **id id** | **name name** | **port port**]

The **show connection** command displays the local connection between a Gigabit Ethernet interface and another local Gigabit Ethernet interface:

#### Example:

```
Router# show connection name ethconn1
Connection: 1 - ethconn1
Current State: UP
Segment 1: GigabitEthernet0/0/0.1 up
Segment 2: GigabitEthernet0/0/0.2 up
```

---

## Verifying the NSF SSO Local Switching Configuration

Layer 2 local switching provides NSF/SSO support for Local Switching of the following attachment circuits on the same router:

- Ethernet/Ethernet VLAN to Ethernet/Ethernet VLAN

For information about configuring NSF/SSO on the Route Processors, see the "Stateful Switchover" module in the *Cisco IOS XE High Availability Configuration Guide*. Perform this task to verify that the NSF/SSO: Layer 2 Local Switching feature is working correctly.

### SUMMARY STEPS

1. **ping**
2. **redundancy force-switchover**
3. **show connection all**
4. **ping**

### DETAILED STEPS

- 
- Step 1**     **ping**  
Issue the **ping** command or initiate traffic between the two CE routers.
- Step 2**     **redundancy force-switchover**

Force the switchover from the active RP to the standby RP by using the **redundancy force-switchover** command. This manual procedure allows for a "graceful" or controlled shutdown of the active RP and switchover to the standby RP. This graceful shutdown allows critical cleanup to occur.

### Step 3 **show connection all**

Issue the **show connection all** command to ensure that the Layer 2 local switching connection on the dual RP is operating:

#### Example:

```
Router# show connection all
D   Name                Segment 1                Segment 2                State
-----
1   conn                 Gi0/0/0.1                Gi0/0/0.2                UP
```

### Step 4 **ping**

Issue the **ping** command from the CE router to verify that the contiguous packet outage was minimal during the switchover.

## Troubleshooting Tips

You can troubleshoot Layer 2 local switching using the following commands on the PE router:

- **debug conn**
- **show connection**

## Configuration Examples for Layer 2 Local Switching

- [Example Ethernet VLAN Same-Port Switching, page 12](#)
- [Example NSF SSO Ethernet Port Mode to Ethernet VLAN Local Switching, page 13](#)
- [Example ATM-to-ATM Local Switching, page 15](#)
- [Example ATM PVC Same-Port Switching, page 15](#)
- [Example ATM PVP Same-Port Switching, page 15](#)

## Example Ethernet VLAN Same-Port Switching

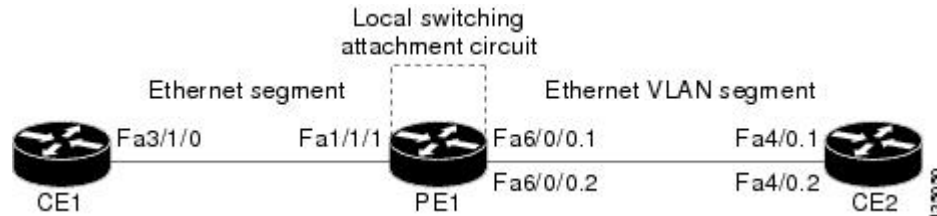
The following example shows same-port switching between two VLANs on one Ethernet interface:

```
interface fastethernet 0/0.1
 encapsulation dot1q 1
interface fastethernet 0/0.2
 encapsulation dot1q 2
connect conn FastEthernet 0/0.1 FastEthernet 0/0.2
```

## Example NSF SSO Ethernet Port Mode to Ethernet VLAN Local Switching

The following configuration uses the network topology shown in the figure below.

**Figure 1** NSF/SSO: Layer 2 Local Switching: Ethernet to Ethernet VLAN



The following example shows the configuration of the CE interfaces to connect to the PE1 router:

CE1	CE2
ip routing	ip routing
!	!
interface fa3/1/0	interface fa4/0
description: connection to PE fa1/1/1	no shutdown
no shutdown	!
ip address 10.1.1.1 255.255.255.0	interface fa4/0.1
	description: connection to PE1 fa6/0/0.1
	encapsulation dot1Q 10
	ip address 10.1.1.2 255.255.255.0
	!
	interface fa4/0.2
	description - connection to PE1 fa6/0/0.2
	encapsulation dot1Q 20
	ip address 172.16.1.2 255.255.255.0

The following example shows the configuration of the PE1 router with NSF/SSO and the PE interfaces to the CE routers:

```
PE1

redundancy

  no keepalive-enable

mode sso

!

!

ip routing

ip cef distributed

!

interface fa1/1/1

  description - connection to CE1 fa3/1/0

  no shutdown

  no ip address

!

!

interface fa6/0/0

  no shutdown

  no ip address

!

interface fa6/0/0.1

  description - connection to CE2 fa4/0.1

  encapsulation dot1Q 10

  no ip address

!

interface fa6/0/0.2

  description - connection to CE2 fa4/0.2

  encapsulation dot1Q 20

  no ip address
```

## Example ATM-to-ATM Local Switching

The following example shows local switching on ATM interfaces configured for AAL5:

```
interface atm1/0/0
  pvc 0/100 l2transport
  encapsulation aal5
interface atm2/0/0
  pvc 0/100 l2transport
  encapsulation aal5
connect aal5-conn atm1/0/0 0/100 atm2/0/0 0/100
```

## Example ATM PVC Same-Port Switching

The following example shows same-port switching between two PVCs on one ATM interface:

```
interface atm1/0/0
  pvc 0/100 l2transport
  encapsulation aal5
  pvc 0/200 l2transport
  encapsulation aal5
connect conn atm1/0/0 0/100 atm1/0/0 0/200
```

## Example ATM PVP Same-Port Switching

The following example shows same-port switching between two PVPs on one ATM interface:

```
interface atm1/0/0
  atm pvp 100 l2transport
  atm pvp 200 l2transport
connect conn atm1/0/0 100 atm1/0/0 200
```

## Additional References

### Related Documents

Related Topic	Document Title
Cisco IOS commands	<a href="#">Cisco IOS Master Command List, All Releases</a>
WAN Commands	<i>Cisco IOS Wide-Area Networking Command Reference</i>
Stateful switchover configuration information	"Stateful Switchover " module in the <i>Cisco IOS XE High Availability Configuration Guide</i>

### Standards

Standard	Title
draft-ietf-l2tpext-l2tp-base-03.txt	<i>Layer Two Tunneling Protocol (Version 3) 'L2TPv3'</i>

Standard	Title
draft-martini-l2circuit-trans-mpls-09.txt	<i>Transport of Layer 2 Frames Over MPLS</i>
draft-martini-l2circuit-encap-mpls-04.txt	<i>Encapsulation Methods for Transport of Layer 2 Frames Over IP and MPLS Networks</i>
draft-ietf-ppvpn-l2vpn-00.txt	<i>An Architecture for L2VPNs</i>

**MIBs**

MIB	MIBs Link
None	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:  <a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a>

**RFCs**

RFC	Title
None	--

**Technical Assistance**

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	<a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a>

## Feature Information for Layer 2 Local Switching

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](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.



**Table 1**      **Feature Information for Layer 2 Local Switching**

Feature Name	Releases	Feature Information
Layer 2 Local Switching	Cisco IOS XE Release 2.5	<p>The Layer 2 Local Switching feature allows you to switch Layer 2 data between two interfaces on the same router, and in some cases to switch Layer 2 data between two circuits on the same interface port.</p> <p>In Cisco IOS XE Release 2.5, this feature was introduced on the Cisco ASR 1000 Series Aggregation Services Routers.</p> <p>The following commands were introduced or modified: <b>connect</b> (L2VPN local switching), <b>show connection</b>.</p>
Layer 2 Local Switching - ATM to ATM	Cisco IOS XE Release 3.3S	<p>In Cisco IOS XE Release 3.3S, this feature was introduced on the Cisco ASR 1000 Series Aggregation Services Routers.</p> <p>The following commands were introduced or modified: <b>connect</b> (L2VPN local switching), <b>show connection</b>.</p>

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](http://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.

© 2011 Cisco Systems, Inc. All rights reserved.