Instant Access (IA)

- Prerequisites for Instant Access, page 2-1
- Restrictions for Instant Access, page 2-2
- Information About Instant Access, page 2-6
- Default Settings for Instant Access, page 2-6
- How to Configure Instant Access, page 2-6

Note

- For complete syntax and usage information for the commands used in this chapter, see these publications:
- Cisco IOS Release 15.1SY supports only Ethernet interfaces. Cisco IOS Release 15.1SY does not support any WAN features or commands.

Prerequisites for Instant Access

- An IA parent—A VSS-mode Catalyst 6800 switch or a VSS-mode Catalyst 6500 switch equipped with a Supervisor Engine 2T and one or more WS-X6904-40G-2T switching modules, configured to support 10GE links.
- IA clients—Catalyst 6800ia access switches
  See this publication for more information:
- See this publication for more information about Instant Access:
• For image download during ISSU upgrade, remove `ip tftp source-interface` config on IA Parent, and add a static route to copy image through `mgmt intf`.

### Restrictions for Instant Access

• The IA parent must operate in VSS mode.

**Note**

- You can enable VSS mode on a single chassis to support IA clients.
- The VSS Quad-Sup SSO (VS4O) feature is supported with IA clients from Release 15.1(2)SY2.

• The IA parent-client connection is supported on links between WS-X6904-40G-2T switching module 10GE ports and Catalyst 6800ia access switch 10GE ports.
  - IA client 10-Gigabit Ethernet ports require no configuration.
  - UDLD, LLDP, and CDP are not supported on the A parent-client link.
  - Instant Access does not use STP on the IA parent-client connection.

• IA client maximum values:
  - IA client ports do not support these features:

<table>
<thead>
<tr>
<th>Value Description</th>
<th>Maximum Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum IA client ports</td>
<td>1008 ports across 21 Catalyst 6800ia access switches</td>
</tr>
<tr>
<td>Maximum IA client stacks</td>
<td>12 (defined by IA client FEX number 1–12 range.)</td>
</tr>
<tr>
<td>Maximum Catalyst 6800ia access switches per IA client stack</td>
<td>3</td>
</tr>
<tr>
<td>• An IA client stack acts as single switch unit.</td>
<td></td>
</tr>
<tr>
<td>• Instant access only supports connection with stacking cables to form a stack.</td>
<td></td>
</tr>
<tr>
<td>• With an IA client that has multiple Catalyst 6800ia access switches, the switches in the stack assign incrementing switch numbers to themselves (automatic stacking capability).</td>
<td></td>
</tr>
<tr>
<td>• If you add Catalyst 6800ia access switches to a configured IA client, the additional switches assign incrementing switch numbers to themselves.</td>
<td></td>
</tr>
<tr>
<td>• The IA client configuration does not persist if the access switch number changes.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum number of VLANs per IA client stack</th>
<th>You can set upto 1,000 VLANs, we recommend to set not more than 20 VLANs per FEX.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Number of Port Channels</td>
<td>512</td>
</tr>
</tbody>
</table>
- Configuring EtherChannels with combination of FEX Ports from different FEX-IDs or combination of FEX ports with IA parent switch linecard ports is not supported. However, FEX host port channel from the same FEX is supported.
- FEX host port EtherChannel load balancing is not supported.
- Port debounce timer
- UDLR tunnel ARP and IGMP proxy
- Uni-Directional Link Routing (UDLR)
- IEEE 802.1Q tunneling
- VLAN Mapping
- VLAN Translation
- IEEE 802.1Q custom ethertypes
- L2PT - Layer 2 protocol tunneling
- L2PT - Layer 2 protocol tunneling on trunk ports
- 802.1ad tunnelling
- Port security on 802.1Q tunnel ports
- Private VLANs (P VLAN)
- VACL capture
- Per-VLAN load balancing for Advanced QinQ service mapping
- Cisco TrustSec NDAC (Network Device Admission Control)
- Cisco TrustSec security association protocol (SAP) for MACSec encryption
- Cisco TrustSec confidentiality and integrity with MACsec (IEEE 802.1AE)
- Cisco TrustSec identity port mapping
- Network edge authentication topology (NEAT)
- AutoQoS
- MQC queuing policy support
- Priority queueing (PQ)
- QoS aggregated DSCP values for WRED
- QoS aggregated precedence values for WRED
- Class based weighted fair queuing (CBWFQ)
- Class-based shaping
- DiffServ-compliant dWRED
- Diffserv-compliant WRED
- Selective packet discard (SPD)
- Strict priority low latency queueing (LLQ)
- Weighted fair queueing (WFQ)
- Weighted RED (WRED)
- QoS policer rate increase to 256G
- Ethernet over MPLS (EoMPLS) - IEEE 802.1q Tag Stacking
Restrictions for Instant Access

- H-VPLS N-PE redundancy for QinQ access
- Connectivity fault management (CFM)
- Ethernet connectivity fault management (E-CFM)
- Ethernet local management interface (LMI) at provider edge (PE)
- Ethernet operations, administration, and Maintenance (OAM)
- Ethernet-OAM 3.0: CFM over BD, Untagged
- IEEE 802.1ag - D8.1 standard Compliant CFM, Y.1731 multicast LBM / AIS / RDI / LCK, IP SLA for Ethernet
- IEEE 802.1ag Compliant CFM (D8.1)

- To use an IA client port as a SPAN destination, add the IA client port VLAN to the SPAN allowed VLAN list with the `switchport trunk allowed vlan` command.
- When FEX IA parent-client link portchannel is configured as SPAN source in Tx direction or both directions, the SPAN destination should not be on the same FEX. This is applicable for both stacked and standalone FEX.
- To enable formation of ISIS adjacencies on IA client ports, configure an explicit connectionless network service (CLNS) MTU size on the IA client and peer ports. This example shows how to configure the default MTU size on an IA client port:

```
Router# configure terminal
Router(config)# interface interface Gig118/1/0/1
Router(config-if)# ip router isis
Router(config-if)# clns mtu 1497
```
- IA client port QoS:
  - Configure ingress QoS on the IA parent port-channel interface.
  - The egress QoS configuration on IA client ports is not configurable.
  - Port architecture (Rx/Tx): 1p3q3t

<table>
<thead>
<tr>
<th>Queue Type</th>
<th>CoS</th>
<th>DSCP</th>
<th>Tail-drop</th>
<th>WRED-drop</th>
</tr>
</thead>
<tbody>
<tr>
<td>1p3q3t strict-priority egress queue (queue 1)</td>
<td>Not supported</td>
<td>32, 33, 40–47</td>
<td>100% (nonconfigurable)</td>
<td>Not supported</td>
</tr>
<tr>
<td>1p3q3t standard egress queue 2 (high priority)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Threshold 1</td>
<td>CoS</td>
<td>DSCP</td>
<td>Tail-drop</td>
<td>WRED-drop</td>
</tr>
<tr>
<td></td>
<td>Not supported</td>
<td>16–23, 26–31, 34–39</td>
<td>Disabled; 100%</td>
<td>Not supported</td>
</tr>
<tr>
<td>Thresholds 2</td>
<td>CoS</td>
<td>DSCP</td>
<td>Tail-drop</td>
<td>WRED-drop</td>
</tr>
<tr>
<td></td>
<td>Not supported</td>
<td>24</td>
<td>Disabled; 100%</td>
<td>Not supported</td>
</tr>
<tr>
<td>Thresholds 3</td>
<td>CoS</td>
<td>DSCP</td>
<td>Tail-drop</td>
<td>WRED-drop</td>
</tr>
<tr>
<td></td>
<td>Not supported</td>
<td>48-63</td>
<td>Disabled; 100%</td>
<td>Not supported</td>
</tr>
<tr>
<td>1p3q3t standard egress queue 3 (medium priority)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Threshold 1</td>
<td>CoS</td>
<td>DSCP</td>
<td>Tail-drop</td>
<td>WRED-drop</td>
</tr>
<tr>
<td></td>
<td>Not supported</td>
<td>25</td>
<td>Disabled; 70%</td>
<td>Not supported</td>
</tr>
<tr>
<td>Threshold 2</td>
<td>CoS</td>
<td>DSCP</td>
<td>Tail-drop</td>
<td>WRED-drop</td>
</tr>
<tr>
<td></td>
<td>Not supported</td>
<td>None</td>
<td>Disabled; 100%</td>
<td>Not supported</td>
</tr>
<tr>
<td>Thresholds 3</td>
<td>CoS</td>
<td>DSCP</td>
<td>Tail-drop</td>
<td>WRED-drop</td>
</tr>
<tr>
<td></td>
<td>Not supported</td>
<td>0–7</td>
<td>Disabled; 100%</td>
<td>Not supported</td>
</tr>
</tbody>
</table>
Information About Instant Access

The Instant Access (IA) feature supports multiple Catalyst 6800ia access switches that function as clients of the IA parent switch. The IA parent and client switches form a single extended switch with a single management domain, managed by the IA parent.

The IA parent uses the Satellite Discovery Protocol (SDP) and the Satellite Registration Protocol (SRP) to automatically discover IA clients when they connect and monitor the IA client-parent link. The IA parent upgrades the IA client software image if it is not the same as the parent.

The IA parent features are applied to IA client traffic. The IA clients do not perform any local packet forwarding. All traffic originating from IA client ports are sent to the IA parent, which makes all the switching and forwarding decisions.

These online diagnostic tests support Instant Access clients:

- TestFexModeLoopback, page 1-4
- TestFexFabricLinkStatus, page 1-39

Default Settings for Instant Access

None.

How to Configure Instant Access

- Configure Instant Access Staggered Initialization Mode, page 2-7
- Enable IA Client Preprovisioning, page 2-7
- Configure Instant Access Port-Channel Interfaces, page 2-8
- Configure Instant Access Channel Groups, page 2-8
- Identify Connected IA Client Stack Modules, page 2-9
Configure Instant Access Staggered Initialization Mode

Instant Access staggered initialization mode avoids any excessively high CPU utilization that might occur if multiple IA clients attempt to initialize simultaneously. To configure Instant Access staggered initialization mode, perform this task:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>Router(config)# fex stagger delay_value</code></td>
<td>Configures Instant Access staggered initialization mode. The <code>delay_value</code> can be 0 through 500.</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>The recommended <code>delay_value</code> is 120.</td>
</tr>
</tbody>
</table>

This example shows how to configure Instant Access staggered mode:

```
Router# configure terminal
Router(config)# fex stagger 120
```

Enable IA Client Preprovisioning

To allow IA client port configuration before the IA client is connected, perform this task:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>`Router# module provision create fex fex_number type {C6800IA-48FPD</td>
<td>C6800IA-48TD</td>
</tr>
</tbody>
</table>
Configure Instant Access Port-Channel Interfaces

To create a port channel interface to support IA clients, perform this task:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong> Router(config)# interface port-channel group_number</td>
<td>Creates the port channel interface. There can be up to a maximum of 512 port-channel interfaces (12 port-channel interfaces can be used to support IA clients).</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong> If desired, you can configure the group_number to match the IA client FEX number.</td>
</tr>
<tr>
<td><strong>Step 2</strong> Router(config-if)# switchport</td>
<td>Configures the port channel interface for Layer 2 switching.</td>
</tr>
<tr>
<td><strong>Step 3</strong> Router(config-if)# switchport mode fex-fabric</td>
<td>Configures the port channel interface to support IA clients.</td>
</tr>
<tr>
<td><strong>Step 4</strong> Router(config-if)# fex associate fex_number</td>
<td>Configures the IA client FEX number.</td>
</tr>
<tr>
<td></td>
<td>- The valid value range is 101–199.</td>
</tr>
<tr>
<td></td>
<td>- Maximum of 12 IA client FEX numbers.</td>
</tr>
</tbody>
</table>

This example shows how to create port channel interface 1 and configure it to support IA FEX number 118:

Router# configure terminal
Router(config)# interface port-channel 118
Router(config-if)# switchport
Router(config-if)# switchport mode fex-fabric
Router(config-if)# fex associate 118

Configure Instant Access Channel Groups

To configure channel groups to support IA clients, perform this task for the 10 Gigabit Ethernet LAN ports that connect to IA clients:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong> Router(config)# interface range first_10ge_port, last_10ge_port</td>
<td>Selects the ports to configure.</td>
</tr>
<tr>
<td><strong>Step 2</strong> Router(config-if)# switchport</td>
<td>Configures the port channel interface for Layer 2 switching.</td>
</tr>
<tr>
<td><strong>Step 3</strong> Router(config-if)# switchport mode fex-fabric</td>
<td>Configures the port channel interface to support IA clients.</td>
</tr>
<tr>
<td><strong>Step 4</strong> Router(config-if)# channel-group group_number mode on</td>
<td>Configures the LAN port in an IA Client port channel and configures the mode as on.</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong> More links can be added to the channel group at any time.</td>
</tr>
</tbody>
</table>
This example shows how to configure 10 Gigabit Ethernet ports 1/2/5 and 2/2/5 into port channel 118 with mode on:

```
Router# configure terminal
Router(config)# interface range tengigabitethernet 1/2/5, 2/2/5
Router(config-if)# switchport
Router(config-if)# switchport mode fex-fabric
Router(config-if)# channel-group 118 mode on
Router(config-if)# end
```

This example shows how to verify the IA configuration when the IA client is connected:

```
Router# show fex 118 detail
FEX: 118 Description: FEX0118 state: online
FEX version: version_string
Extender Model: C6800IA-48TD, Extender Serial: serial_number
FCP ready: yes
Image Version Check: enforced
Fabric Portchannel Ports: 2
Fabric port for control traffic: Te1/2/5
Fabric interface state:
Po20 - Interface Up.
Te1/2/5 - Interface Up. state: bound
Te2/2/5 - Interface Up. state: bound
```

### Identify Connected IA Client Stack Modules

- Identify IA Client Stack Modules by Serial Number, page 2-9
- Identify IA Client Modules by Beacon LED, page 2-9

### Identify IA Client Stack Modules by Serial Number

This example shows how to identify IA client stack modules by serial number:

```
Router# show interface fex
<table>
<thead>
<tr>
<th>FEX</th>
<th>Fabric Port</th>
<th>FEX</th>
<th>Model</th>
<th>Serial</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>Te1/2/5</td>
<td>bound</td>
<td>Te1/0/1</td>
<td>C6800IA-48FPD</td>
</tr>
<tr>
<td>101</td>
<td>Te1/2/13</td>
<td>bound</td>
<td>Te2/0/1</td>
<td>C6800IA-48FPD</td>
</tr>
<tr>
<td>101</td>
<td>Te2/2/5</td>
<td>bound</td>
<td>Te1/0/2</td>
<td>C6800IA-48FPD</td>
</tr>
<tr>
<td>101</td>
<td>Te2/2/13</td>
<td>bound</td>
<td>Te2/0/2</td>
<td>C6800IA-48FPD</td>
</tr>
<tr>
<td>102</td>
<td>Te1/2/6</td>
<td>bound</td>
<td>Te1/0/2</td>
<td>C6800IA-48TD</td>
</tr>
<tr>
<td>102</td>
<td>Te2/2/17</td>
<td>bound</td>
<td>Te2/0/2</td>
<td>C6800IA-48TD</td>
</tr>
</tbody>
</table>
```

### Identify IA Client Modules by Beacon LED

```
Router(config)# hw-module fex <> slot <> led beacon
```

This example shows how to activate the beacon LED on IA client 118, module1:

```
Router(config)# hw-module fex 118 module 1 led beacon
```
Configure IA Clients

The configuration for IA clients can be entered on the IA parent before or after the IA clients are connected. IA client 10-Gigabit Ethernet ports require no configuration. IA client Gigabit Ethernet ports use this format:

```
gigabitethernet/fex_number/access_switch_number/0/port_number
```

- `fex_number`—The IA client FEX number:
  - Maximum of 12 IA FEX numbers.
  - The valid value range is 101–199.
- `access_switch_number`—The access switch number:
  - The valid values are 1, 2, or 3.
  - Multiple-switch stacks assign incrementing switch numbers to themselves.
  - See the “Identify Connected IA Client Stack Modules” section on page 2-9.
- The third interface parameter is always zero.
- The `port_number` valid value range is 1–48.

**Note**

- IA client configuration does not persist if the access switch number changes.
- The interface-range configuration mode supports IA clients ports (see “How to Configure a Range of Interfaces” section on page 10-2)

Display or Clear SDP and SRP Traffic

To display the counters that record the SDP packet traffic on IA client 118, enter the following command:

```
Router# show fex 118 protocol | incl SDP
130 SDP pkts sent
129 SDP pkts received
130 SDP pkts sent
129 SDP pkts received
```

**Note**

The command displays a sent and received value for each link in the IA channel group.

To clear the protocol counters, enter the `clear fex fex_number {sdp | srp}` command.

Configure Optional Parameters for an IA Client

- Enter the IA Client Configuration Mode, page 2-11
- Configure a Description, page 2-11
- Configure the Custom Location Type Feature, page 2-11
Enter the IA Client Configuration Mode

To enter the IA client configuration mode, perform this task:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
</table>
| Router(config)# `fex fex_number`  
Router(config-fex)# | Enters IA client configuration mode.  
Note  Sets the IA client description to FEX0/fex_number. |

Configure a Description

To configure a description for the IA client or for each module in the IA client stack, perform this task:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Router(config-fex)# <code>[module module_number] description description_string</code></td>
<td>Configures a description for the IA FEX number or for a module in the IA client stack.</td>
</tr>
</tbody>
</table>

Configure the Custom Location Type Feature

You can configure the custom location type feature for the IA client in IA client configuration mode. See these publications for information about the `location` command:


Note  The `location` commands support the optional `fex-location` keyword for IA clients.