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Layer 3 Interfaces

Note

- For complete syntax and usage information for the commands used in this chapter, see these publications:

  http://www.cisco.com/en/US/products/ps11846/prod_command_reference_list.html
- Cisco IOS Release 15.4SY supports only Ethernet interfaces. Cisco IOS Release 15.4SY does not support any WAN features or commands.

Tip

For additional information about Cisco Catalyst 6500 Series Switches (including configuration examples and troubleshooting information), see the documents listed on this page:

http://www.cisco.com/en/US/products/hw/switches/ps708/tsd_products_support_series_home.html

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Restrictions for Layer 3 Interfaces

When configuring Layer 3 interfaces, follow these guidelines and restrictions:

- We recommend that you configure no more than 2,000 Layer 3 VLAN interfaces.
- The **ip unnumbered** command is supported on Layer 3 VLAN interfaces.
- To support VLAN interfaces, create and configure VLANs and assign VLAN membership to Layer 2 LAN ports. For more information, see Chapter 26, “Virtual Local Area Networks (VLANs)” and Chapter 25, “VLAN Trunking Protocol (VTP).”
- Use bridge groups on VLAN interfaces, sometimes called fall-back bridging, to bridge nonrouted protocols. Bridge groups on VLAN interfaces are supported in software on the route processor (RP).
- Cisco IOS Release 15.4SY does not support the IEEE bridging protocol for bridge groups. Configure bridge groups to use the VLAN-bridge or the DEC spanning-tree protocol.
- The PFC supports these features on LAN port Layer 3 subinterfaces:
  - IPv4 unicast forwarding, including MPLS VPN
  - IPv4 multicast forwarding, including MPLS VPN
  - 6PE
  - EoMPLS

  - IPv4 unnumbered
  - Counters for subinterfaces in MIBS and with the **show vlans** command
  - iBGP and eBGP
  - OSPF
  - EIGRP
  - RIPv1/v2
  - RIPv2
  - ISIS
  - Static routing
  - Unidirectional link routing (UDLR)
  - IGMPv1, IGMPv2, IGMPv3
  - PIMv1, PIMv2
  - SSM IGMPv3lite and URD
  - IGMP join
  - IGMP static group
  - Multicast routing monitor (MRM)
  - Multicast source discovery protocol (MSDP)
  - SSM
  - IPv4 Ping
  - IPv6 Ping
- Always use the **native** keyword when the VLAN ID is the ID of the IEEE 802.1Q native VLAN. Do not configure encapsulation on the native VLAN of an IEEE 802.1Q trunk without the **native** keyword.
- The VLAN IDs used for Layer 2 VLANs and Layer 3 VLAN interfaces are separate from any VLAN IDs configured on Layer 3 subinterfaces. You can configure the same VLAN ID on a Layer 2 VLAN or Layer 3 VLAN interface and on a Layer 3 subinterface.
- You can configure subinterfaces with any normal range or extended range VLAN ID in VTP transparent mode. Because VLAN IDs 1 to 1005 are global in the VTP domain and can be defined on other network devices in the VTP domain, you can use only extended range VLANs with subinterfaces in VTP client or server mode. In VTP client or server mode, normal range VLANs are excluded from subinterfaces.

  Note If you configure normal range VLANs on subinterfaces, you cannot change the VTP mode from transparent.

- Ensure that the Logical Interface Database (LDB) Manager does not pre-allocate the entire range of 4096 LDB Logical Interfaces (LIFs) for ports with Layer 3 subinterfaces, failing which results in a system-wide LDB exhaustion.

How to Configure Subinterfaces on Layer 3 Interfaces

To configure a subinterface, perform this task:

	Command	Purpose
Step 1	`Router> enable`	Enters privileged EXEC mode.
Step 2	`Router# configure terminal`	Enters global configuration mode.
Step 3	`Router(config)# interface {{type slot/port.subinterface} | {port-channel port_channel_number.subinterface}}`	Selects an interface and enters subinterface configuration mode.
Step 4	`Router(config-subif)# encapsulation dot1q vlan_ID [native]`	Configures 802.1Q encapsulation for the subinterface.
Step 5	`Router(config-if)# exit`	Returns to global configuration mode.

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