Chapter 8

Routing Instances Overview

You can create multiple instances of Border Gateway Protocol (BGP), Intermediate System-to-Intermediate System (IS-IS), Open Shortest Path First (OSPF), Protocol Independent Multicast (PIM), Routing Information Protocol (RIP), and static routes by including statements at the following hierarchy levels:

[edit routing-instances *routing-instance-name* protocols]

[edit logical-routers *logical-router-name* routing-instances *routing-instance-name* protocols]

A routing instance is a collection of routing tables, interfaces, and routing protocol parameters. The set of interfaces belongs to the routing tables, and the routing protocol parameters control the information in the routing tables.

You can configure six types of routing instances: forwarding, Layer 2 virtual private network (VPN), nonforwarding, VPN routing and forwarding (VRF), virtual router, and virtual private LAN service (VPLS).

Each routing instance has a unique name and a corresponding IP unicast table. For example, if you configure a routing instance with the name my-instance, its corresponding IP unicast table will be my-instance.inet.0. All routes for my-instance are installed into my-instance.inet.0.

NOTE: The default routing instance, master, refers to the main inet.0 routing table. The master routing instance is reserved and cannot be specified as a routing instance.

Configure global routing options and protocols for the master instance by including statements at the [edit protocols] and [edit routing-options] hierarchy levels. Routes are installed into the master routing instance inet.0 by default, unless a routing instance is specified.

Multiple instances of BGP, OSPF, and RIP are used for Layer 3 VPN implementation. The multiple instances of BGP, OSPF, and RIP keep routing information for different VPNs separate. The VRF instance advertises routes from the customer edge (CE) router to the provider edge (PE) router and advertises routes from the PE router to the CE router. Each VPN receives only routing information belonging to that VPN.

Forwarding instances are used to implement filter-based forwarding for Common Access Layer applications.

PIM instances are used to implement multicast over VPN applications.

Nonforwarding instances of IS-IS and OSPF can be used to separate a very large network into smaller administrative entities. Instead of configuring a large number of filters, nonforwarding instances can be used to filter routes, thereby instantiating policy. Nonforwarding instances can be used to reduce the amount of routing information advertised throughout all components of a network. Routing information associated with a particular instance can be announced where required, instead of being advertised to the whole network.

Layer 2 VPN instances are used for Layer 2 VPN implementation.

Virtual router instances are similar to a VPN routing and forwarding instance type, but used for non-VPN-related applications. There are no VRF import, VRF export, VRF target, or route distinguisher requirements for this instance type.

Use the VPLS routing instance type for point-to-multipoint LAN implementations between a set of sites in a VPN.