

# Chapter 9

## Summary of Routing Instances Configuration Statements

This chapter provides a reference for each of the routing instance configuration statements. The statements are organized alphabetically.

### description

<b>Syntax</b>	description <i>text</i> ;
<b>Hierarchy Level</b>	[edit routing-instances <i>routing-instance-name</i> ]
<b>Description</b>	Provide a textual description of the routing instance. Any descriptive text you include is displayed in the output of the show route instance detail command. The text has no effect on the operation of the router.
<b>Options</b>	<i>text</i> —Text to describe the routing instance. If the text includes spaces, enclose the entire text in quotation marks (" ").
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

### forwarding-options

**See** *JUNOS Internet Software Configuration Guide: Policy Framework*.

## instance-type

<b>Syntax</b>	instance-type (forwarding   l2vpn   no-forwarding   virtual-router   vrf);
<b>Hierarchy Level</b>	[edit routing-instances <i>routing-instance-name</i> ]
<b>Description</b>	Define the type of routing instance.
<b>Options</b>	<p>forwarding—Provide support for filter-based forwarding, where interfaces are not associated with instances. All interfaces belong to the default instance. Other instances are used for populating RPD learned routes. See “Configure Filter-Based Forwarding” on page 157.</p> <p>l2vpn—Provide support for Layer 2 VPNs. For more detailed information about configuring VPNs, see the <i>JUNOS Internet Software Configuration Guide: VPNs</i>.</p> <p>no-forwarding—This is the default routing instance. Do not create a corresponding forwarding instance.</p> <p>virtual-router—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.</p> <p>vpls—Virtual private local-area network (LAN) service. Use this routing instance type for point-to-multipoint LAN implementations between a set of sites in a VPN. For more information about configuring VPLS, see the <i>JUNOS Internet Software Configuration Guide: VPNs</i>.</p> <p>vrf—VPN routing and forwarding instance. Provides support for Layer 3 VPNs, where interface routes for each instance go into the corresponding forwarding table only. For more information about configuring VPNs, see the <i>JUNOS Internet Software Configuration Guide: VPNs</i>.</p>
<b>Default</b>	no-forwarding
<b>Usage Guidelines</b>	See “Configure an Instance” on page 152 and the <i>JUNOS Internet Software Configuration Guide: VPNs</i> .
<b>Required Privilege Level</b>	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

## interface

<b>Syntax</b>	interface <i>interface-name</i> ;
<b>Hierarchy Level</b>	[edit routing-instances <i>routing-instance-name</i> ]
<b>Description</b>	Identify the logical, private interface between the provider edge (PE) router and the customer edge (CE) router on the PE side.
<b>Options</b>	<i>interface-name</i> —Name of the interface.
<b>Usage Guidelines</b>	See “Configure an Instance” on page 152.
<b>Required Privilege Level</b>	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

## protocols

```

Syntax protocols {
    bgp {
        bgp-configuration;
    }
    isis {
        isis-configuration;
    }
    ldp {
        ldp-configuration;
    }
    ospf {
        domain-id domain-id;
        domain-vpn-tag number;
        route-type-community (iana | vendor);
        ospf-configuration;
    }
    ospf3 {
        domain-id domain-id;
        domain-vpn-tag number;
        route-type-community (iana | vendor);
        ospf3-configuration;
    }
    pim {
        pim-configuration;
    }
    rip {
        rip-configuration;
    }
}

```

**Hierarchy Level** [edit routing-instances *routing-instance-name*]

**Description** Specify the protocol for a routing instance. You can configure multiple instances of the following supported protocols: BGP, IS-IS, LDP, OSPF, OSPFv3, PIM, or RIP.

**Options** **bgp**—Specify the Border Gateway Protocol for a routing instance. For a description of the BGP configuration statements, see “BGP Configuration Guidelines” on page 373.

**isis**—Specify the Intermediate System-to-Intermediate System protocol for a routing instance. For a description of the IS-IS configuration statements, see “IS-IS Configuration Guidelines” on page 185.

**ldp**—Specify the Label Distribution Protocol for a routing instance. For more information about configuring LDP, see the *JUNOS Internet Software Configuration Guide: MPLS Applications*.

**ospf**—Specify the Open Shortest Path First protocol for a routing instance. For a description of the OSPF configuration statements, see “OSPF Configuration Guidelines” on page 241.

ospf3—Specify the Open Shortest Path First Version 3 protocol for a routing instance. For a description of the OSPFv3 configuration statements, see “OSPF Configuration Guidelines” on page 241.



**Note**

OSPFv3 supports the no-forwarding and vrf routing instance types only.

pim—Specify the Protocol Independent Multicast protocol for a routing instance. For more information about configuring PIM, see the *JUNOS Internet Software Configuration Guide: Multicast*.

rip—Specify the Routing Information Protocol for a routing instance. For a description of the RIP configuration statements, see “RIP Configuration Guidelines” on page 291.

**Usage Guidelines** See “Configure Multiple Instances of BGP” on page 143, “Configure Multiple Instances of IS-IS” on page 144, “Configure Multiple Instances of LDP” on page 147, “Configure Multiple Instances of OSPF” on page 148, “Configure Multiple Instances of PIM” on page 151, and “Configure Multiple Instances of RIP” on page 152.

**Required Privilege Level** routing—To view this statement in the configuration.  
routing-control—To add this statement to the configuration.

## route-distinguisher

**Syntax** route-distinguisher (*as-number:number* | *ip-address:number*);

**Hierarchy Level** [edit routing-instances *routing-instance-name*]

**Description** An identifier attached to a route, enabling you to distinguish which VPN the route belongs. Each routing instance must have a unique route distinguisher associated with it. The route distinguisher is used to place bounds around a VPN so that the same IP address prefixes can be used in different VPNs without having them overlap. If the instance type is vrf, the route-distinguisher statement is required.

**Options** *as-number:number*—assigned AS number (a 2-byte value) and *number* is any 4-byte value. The AS number can be from 1 through 65,535.

*ip-address:number*— IP address in your assigned prefix range (a 4-byte value) and *number* is any 2-byte value. The IP address can be from 0 through 4,294,967,295 ( $2^{32} - 1$ ).

**Usage Guidelines** See “Configure a Route Distinguisher” on page 156.

**Required Privilege Level** routing—To view this statement in the configuration.  
routing-control—To add this statement to the configuration.

## routing-instances

<b>Syntax</b>	routing-instances <i>routing-instance-name</i> { ... }
<b>Hierarchy Level</b>	[edit]
<b>Description</b>	Configure an additional routing entity for a router. You can create multiple instances of BGP, IS-IS, OSPF, OSPFv3, and RIP for a router.
<b>Default</b>	Routing instances are disabled for the router.
<b>Options</b>	<i>routing-instance-name</i> —Name of the routing instance, a maximum of 31 characters. The remaining statements are explained separately in other chapters.
<b>Usage Guidelines</b>	See “Routing Instances Configuration Guidelines” on page 133 and the <i>JUNOS Internet Software Configuration Guide: Policy Framework</i> .
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## routing-options

**See** routing-options on page 122

## vrf-export

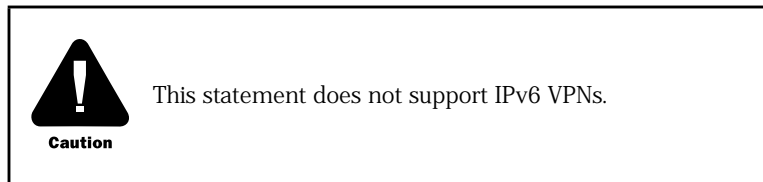
<b>Syntax</b>	vrf-export [ <i>policy-names</i> ];
<b>Hierarchy Level</b>	[edit routing-instances <i>routing-instance-name</i> ]
<b>Description</b>	Define which routes will be exported from a local instance table— <i>instance-name.inet.0</i> —to a remote PE router. Specify one or more policy names.
<b>Default</b>	If the instance-type is vrf, vrf-export is a required statement. The default action is to reject.
<b>Options</b>	<i>policy-names</i> —Specify one or more policy names.
<b>Usage Guidelines</b>	See “Configure Secondary VRF Import and Export Policy” on page 159.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## vrf-import

<b>Syntax</b>	vrf-import [ <i>policy-names</i> ];
<b>Hierarchy Level</b>	[edit routing-instances <i>routing-instance-name</i> ]
<b>Description</b>	How routes are imported into the local PE router's VRF table— <i>instance-name.inet.0</i> —from the remote PE router.
<b>Options</b>	<i>policy-names</i> —Specify one or more policy names.
<b>Default</b>	If the instance-type is vrf, vrf-import is a required statement. The default action is to accept.
<b>Usage Guidelines</b>	See “Configure Secondary VRF Import and Export Policy” on page 159.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## vrf-table-label

<b>Syntax</b>	vrf-table-label;
<b>Hierarchy Level</b>	[edit routing-instances <i>routing-instance-name</i> ]
<b>Description</b>	Enable mapping of the inner label of a packet to a specific VRF, thereby allowing the examination of the encapsulated IP header. All routes in the VRF configured with this option advertised with the label allocated per VRF.



<b>Usage Guidelines</b>	See “Configure a VRF Table Label” on page 164.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## vrf-target

<b>Syntax</b>	vrf-target { <i>community</i> ; import <i>community</i> ; export <i>community</i> ;
<b>Hierarchy Level</b>	[edit routing-instances <i>routing-instance-name</i> ]
<b>Description</b>	Configure a single policy for import and a single policy for export to replace the per-VRF policies for every community.
<b>Options</b>	<i>community</i> —Community name.  import—Specifies the allowed communities to accept from neighbors.  export—Specifies the allowed communities to send to neighbors.
<b>Usage Guidelines</b>	See “Configure a VRF Target” on page 164.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

*vrf-target*