

---

# JunosE™ Software for E Series™ Broadband Services Routers

## Managing Interchassis Redundancy

Release  
13.1.x



Published: 2012-07-02

Juniper Networks, Inc.  
1194 North Mathilda Avenue  
Sunnyvale, California 94089  
USA  
408-745-2000  
[www.juniper.net](http://www.juniper.net)

Juniper Networks, Junos, Steel-Belted Radius, NetScreen, and ScreenOS are registered trademarks of Juniper Networks, Inc. in the United States and other countries. The Juniper Networks Logo, the Junos logo, and JunosE are trademarks of Juniper Networks, Inc. All other trademarks, service marks, registered trademarks, or registered service marks are the property of their respective owners.

Juniper Networks assumes no responsibility for any inaccuracies in this document. Juniper Networks reserves the right to change, modify, transfer, or otherwise revise this publication without notice.

Products made or sold by Juniper Networks or components thereof might be covered by one or more of the following patents that are owned by or licensed to Juniper Networks: U.S. Patent Nos. 5,473,599, 5,905,725, 5,909,440, 6,192,051, 6,333,650, 6,359,479, 6,406,312, 6,429,706, 6,459,579, 6,493,347, 6,538,518, 6,538,899, 6,552,918, 6,567,902, 6,578,186, and 6,590,785.

*JunosE™ Software for E Series™ Broadband Services Routers Managing Interchassis Redundancy*  
Release 13.1.x  
Copyright © 2012, Juniper Networks, Inc.  
All rights reserved.

Revision History  
April 2012—FRS JunosE 13.1.x

The information in this document is current as of the date on the title page.

#### YEAR 2000 NOTICE

Juniper Networks hardware and software products are Year 2000 compliant. Junos OS has no known time-related limitations through the year 2038. However, the NTP application is known to have some difficulty in the year 2036.

#### END USER LICENSE AGREEMENT

The Juniper Networks product that is the subject of this technical documentation consists of (or is intended for use with) Juniper Networks software. Use of such software is subject to the terms and conditions of the End User License Agreement ("EULA") posted at <http://www.juniper.net/support/eula.html>. By downloading, installing or using such software, you agree to the terms and conditions of that EULA.

# Table of Contents

	About the Documentation . . . . .	ix
	E Series and JunosE Documentation and Release Notes . . . . .	ix
	Audience . . . . .	ix
	E Series and JunosE Text and Syntax Conventions . . . . .	ix
	Obtaining Documentation . . . . .	xi
	Documentation Feedback . . . . .	xi
	Requesting Technical Support . . . . .	xi
	Self-Help Online Tools and Resources . . . . .	xii
	Opening a Case with JTAC . . . . .	xii
<b>Part 1</b>	<b>Overview</b>	
<b>Chapter 1</b>	<b>How ICR Works . . . . .</b>	<b>3</b>
	ICR Overview . . . . .	3
	ICR Terms . . . . .	5
	ICR References . . . . .	6
	ICR Scaling Considerations . . . . .	6
	1:1 Subscriber Redundancy in a 4–Node ICR Cluster . . . . .	6
	Interaction with RADIUS for ICR . . . . .	7
	ICR Partition Accounting Overview . . . . .	8
<b>Chapter 2</b>	<b>Hardware Requirements . . . . .</b>	<b>11</b>
	ICR Platform Considerations . . . . .	11
	Interface Specifiers . . . . .	11
<b>Part 2</b>	<b>Configuration</b>	
<b>Chapter 3</b>	<b>Configuration Overview . . . . .</b>	<b>15</b>
	Configuring ICR Partitions . . . . .	15
<b>Chapter 4</b>	<b>Configuration Tasks for ICR . . . . .</b>	<b>17</b>
	Configuring the Interface on Which ICR Partitions Reside . . . . .	17
	Configuring VRRP Instances to Match ICR Requirements . . . . .	18
	Naming ICR Partitions . . . . .	18
	Grouping ICR Subscribers Based on S-VLAN IDs . . . . .	19
	Grouping ICR Subscribers Based on VLAN IDs . . . . .	21
	Using RADIUS to Manage Subscribers Logging In to ICR Partitions . . . . .	22
<b>Chapter 5</b>	<b>Examples . . . . .</b>	<b>23</b>
	Example: Configuring ICR Partitions That Group Subscribers by S-VLAN ID . . . . .	23

<b>Chapter 6</b>	<b>Configuration Commands</b> . . . . .	<b>27</b>
	ip vrrp . . . . .	28
	ip vrrp enable . . . . .	29
	ip vrrp icr-partition . . . . .	30
	ip vrrp icr-partition group . . . . .	31
	ip vrrp icr-partition svlan-list . . . . .	32
	ip vrrp icr-partition svlan-list explicit . . . . .	33
	ip vrrp icr-partition svlan-range . . . . .	34
	ip vrrp icr-partition vlan-list . . . . .	36
	ip vrrp icr-partition vlan-range . . . . .	37
	ip vrrp priority . . . . .	39
	ip vrrp timers-learn . . . . .	40
	ip vrrp virtual-address . . . . .	41
	radius icr-partition-accounting . . . . .	42
	radius include . . . . .	43
<b>Part 3</b>	<b>Administration</b>	
<b>Chapter 7</b>	<b>Monitoring ICR</b> . . . . .	<b>55</b>
	Monitoring the Configuration of ICR Partitions . . . . .	55
	Monitoring the Configuration of an ICR Partition Attached to an Interface . . . . .	57
	Monitoring the Status of ICR Partition Accounting . . . . .	58
<b>Chapter 8</b>	<b>Monitoring Commands</b> . . . . .	<b>59</b>
	show icr-partition . . . . .	60
	show icr-partitions . . . . .	61
	show radius icr-partition-accounting . . . . .	62
<b>Part 4</b>	<b>Index</b>	
	Index . . . . .	65

# List of Figures

Part 1	Overview	
Chapter 1	How ICR Works .....	3
	Figure 1: ICR Deployment .....	4
	Figure 2: Sample 1:1 Subscriber Redundancy in a 4–Node ICR Cluster .....	7



# List of Tables

	<b>About the Documentation</b> . . . . .	<b>ix</b>
	Table 1: Notice Icons . . . . .	x
	Table 2: Text and Syntax Conventions . . . . .	x
<b>Part 1</b>	<b>Overview</b>	
<b>Chapter 1</b>	<b>How ICR Works</b> . . . . .	<b>3</b>
	Table 3: ICR Terminology . . . . .	5
<b>Part 3</b>	<b>Administration</b>	
<b>Chapter 7</b>	<b>Monitoring ICR</b> . . . . .	<b>55</b>
	Table 4: show icr-partitions Output Fields . . . . .	56
	Table 5: show icr-partition Output Fields . . . . .	57





# About the Documentation

- E Series and JunosE Documentation and Release Notes on page ix
- Audience on page ix
- E Series and JunosE Text and Syntax Conventions on page ix
- Obtaining Documentation on page xi
- Documentation Feedback on page xi
- Requesting Technical Support on page xi

## E Series and JunosE Documentation and Release Notes

---

For a list of related JunosE documentation, see  
<http://www.juniper.net/techpubs/software/index.html>.

If the information in the latest release notes differs from the information in the documentation, follow the *JunosE Release Notes*.

To obtain the most current version of all Juniper Networks® technical documentation, see the product documentation page on the Juniper Networks website at  
<http://www.juniper.net/techpubs/>.

## Audience

---

This guide is intended for experienced system and network specialists working with Juniper Networks E Series Broadband Services Routers in an Internet access environment.

## E Series and JunosE Text and Syntax Conventions

---

Table 1 on page x defines notice icons used in this documentation.

Table 1: Notice Icons

Icon	Meaning	Description
	Informational note	Indicates important features or instructions.
	Caution	Indicates a situation that might result in loss of data or hardware damage.
	Warning	Alerts you to the risk of personal injury or death.
	Laser warning	Alerts you to the risk of personal injury from a laser.

Table 2 on page x defines text and syntax conventions that we use throughout the E Series and JunosE documentation.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
<b>Bold text like this</b>	Represents commands and keywords in text.	<ul style="list-style-type: none"> <li>Issue the <b>clock source</b> command.</li> <li>Specify the keyword <b>exp-msg</b>.</li> </ul>
<b>Bold text like this</b>	Represents text that the user must type.	<b>host1(config)#traffic class low-loss1</b>
Fixed-width text like this	Represents information as displayed on your terminal's screen.	<b>host1#show ip ospf 2</b>  Routing Process OSPF 2 with Router ID 5.5.0.250  Router is an Area Border Router (ABR)
<i>Italic text like this</i>	<ul style="list-style-type: none"> <li>Emphasizes words.</li> <li>Identifies variables.</li> <li>Identifies chapter, appendix, and book names.</li> </ul>	<ul style="list-style-type: none"> <li>There are two levels of access: <i>user</i> and <i>privileged</i>.</li> <li><i>clusterId</i>, <i>ipAddress</i>.</li> <li><i>Appendix A, System Specifications</i></li> </ul>
Plus sign (+) linking key names	Indicates that you must press two or more keys simultaneously.	Press Ctrl + b.
<b>Syntax Conventions in the Command Reference Guide</b>		
Plain text like this	Represents keywords.	terminal length
<i>Italic text like this</i>	Represents variables.	<i>mask</i> , <i>accessListName</i>

Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
(pipe symbol)	Represents a choice to select one keyword or variable to the left or to the right of this symbol. (The keyword or variable can be either optional or required.)	diagnostic   line
[ ] (brackets)	Represent optional keywords or variables.	[ internal   external ]
[ ]* (brackets and asterisk)	Represent optional keywords or variables that can be entered more than once.	[ level1   level2   l1 ]*
{ } (braces)	Represent required keywords or variables.	{ permit   deny } { in   out }  { clusterId   ipAddress }

## Obtaining Documentation

To obtain the most current version of all Juniper Networks technical documentation, see the Technical Documentation page on the Juniper Networks Web site at <http://www.juniper.net/>.

To download complete sets of technical documentation to create your own documentation CD-ROMs or DVD-ROMs, see the Portable Libraries page at

<http://www.juniper.net/techpubs/resources/index.html>

Copies of the Management Information Bases (MIBs) for a particular software release are available for download in the software image bundle from the Juniper Networks Web site at <http://www.juniper.net/>.

## Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation to better meet your needs. Send your comments to [techpubs-comments@juniper.net](mailto:techpubs-comments@juniper.net), or fill out the documentation feedback form at <https://www.juniper.net/cgi-bin/docbugreport/>. If you are using e-mail, be sure to include the following information with your comments:

- Document or topic name
- URL or page number
- Software release version

## Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNASC support contract,

or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at <http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf> .
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/> .
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

## Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: <http://www.juniper.net/customers/support/>
- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes: <http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <https://www.juniper.net/alerts/>
- Join and participate in the Juniper Networks Community Forum: <http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://tools.juniper.net/SerialNumberEntitlementSearch/>

## Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/> .
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see <http://www.juniper.net/support/requesting-support.html> .

## PART 1

# Overview

- [How ICR Works on page 3](#)
- [Hardware Requirements on page 11](#)



## CHAPTER 1

# How ICR Works

- [ICR Overview on page 3](#)
- [ICR Terms on page 5](#)
- [ICR References on page 6](#)
- [ICR Scaling Considerations on page 6](#)
- [Interaction with RADIUS for ICR on page 7](#)

### ICR Overview

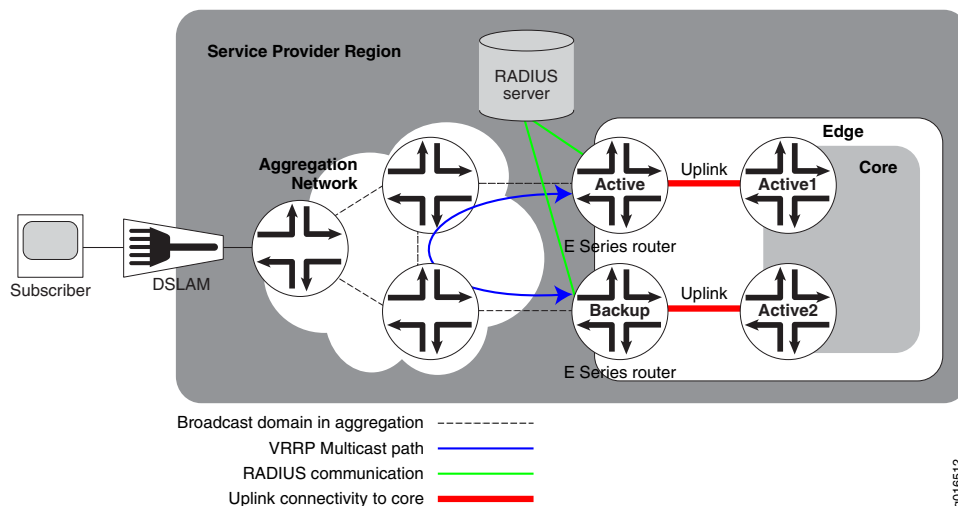
---

A broadband services router (BSR) aggregates many subscribers and services such as video on demand (VoD), voice over IP (VoIP), Internet Protocol television (IPTV), and the Internet, simultaneously. If the router fails because of hardware failures, subscriber downtime can result.

Interchassis redundancy (ICR) enables you to minimize subscriber downtime when the router or access interface on the edge router fails. ICR accomplishes this by re-creating subscriber sessions on the backup router that were originally terminated on the failed router. In this way, ICR enables you to completely recover from router failure. ICR uses Virtual Router Redundancy Protocol (VRRP) to detect failures. ICR also enables you to track the failure of uplink interfaces. ICR currently supports only PPPoE subscribers.

[Figure 1 on page 4](#) illustrates ICR deployment.

Figure 1: ICR Deployment



g016512

The subscriber broadcasts a PPPoE Active Discovery Initiation (PADI) packet to both the *master* and *backup* router. Only the *master* router processes the packet and creates the subscriber session. When the *master* router fails, VRRP switchover occurs and the *backup* router becomes the new *master* router. When receiving traffic for non-existent PPPoE sessions, the new *master* router sends early termination requests by sending PPPoE Active Discovery Termination (PADT) packets to the clients instead of waiting for the client to reconnect after the PPPoE session expires. The clients respond by sending requests to log in again. Then, the new *master* router creates new sessions for the PPPoE subscribers.

In lower-numbered releases, the new *master* router dropped the PPPoE packets because a session did not exist for the PPPoE subscribers and did not send PADT packets.

ICR achieves load balancing in case of failures on a per physical port basis by enabling you to create partitions. An *ICR partition* is a set of S-VLANs (and CVLANs) associated with a unique VRRP instance. There can be multiple partitions per physical port. A partition is the basic unit of redundancy. A partition cannot span multiple physical ports.

You can also create ICR clusters. An *ICR cluster* consists of a group of routers participating in ICR. You can use different E Series routers to configure a heterogeneous ICR cluster. For example, you can use an E120 or E320 router with an ES2 4G LM as a backup for subscribers on an ERX1440 router, or use an ERX1440 router with a GE-HDE LM as a backup for subscribers on an E120 or E320 router. However, you must keep in mind the hardware scaling limitations when you configure an ICR cluster containing both E320 routers and ERX routers.





**NOTE:** While deploying ICR, service providers must ensure that the aggregation layer between the E Series router and access node (DSLAM) provides a broadcast domain per VLAN or per S-VLAN between active and backup routers. In the case of a direct connect model the access node must provide the broadcast domain per VLAN or per S-VLAN between the active and backup routers or instead provide an Ethernet switch such as EX Series Ethernet Switch between the access node and E Series router.



**NOTE:** In JunosE Release 11.1.x through Release 11.2.x, when you configured an ICR partition on a static VLAN subinterface with a VLAN ID and traffic from a PPPoE subscriber arrived on a static VLAN subinterface with a VLAN ID not configured on the router, the forwarding controller sent PPPoE Active Discovery Termination (PADT) packets to the subscriber, even though the VLAN ID was not configured on the router.

Beginning with JunosE Release 11.3.x, when a PPPoE subscriber sends a PPPoE Active Discovery Initiation (PADI) packet on a static VLAN interface with a VLAN ID that is not present on the router and configured with an ICR partition, the router drops the PADI packet in the incoming Ethernet interface and does not send a PADT packet. For example, if you configure a VLAN subinterface with a VLAN ID of 100 and if the PADI packet from the client arrives with a VLAN ID of 200, the router does not generate a PADT packet and drops the PADI packet. For dynamic VLAN subinterfaces with an ICR partition configured, PADT packets are sent to subscribers whose requests arrive with a VLAN ID that is not configured on the router and sessions are terminated. This behavior of processing PADI packets for nonexistent VLAN IDs occurs because the dynamic VLAN subinterfaces might not have been configured on the newly active master router after a VRRP switchover.

- Related Documentation**
- [ICR Scaling Considerations on page 6](#)
  - [Configuring ICR Partitions on page 15](#)

## ICR Terms

[Table 3 on page 5](#) defines terms used in this discussion of ICR.

**Table 3: ICR Terminology**

Term	Description
ICR cluster	Group of E Series routers participating in interchassis redundancy (ICR) deployment.
ICR interface	Physical interface, for example, gigabitEthernet 3/1/3, on an E Series router on which ICR is enabled. The ICR interface is always tied to a unique router.

Table 3: ICR Terminology (*continued*)

Term	Description
ICR partition	A logical group of subscriber interfaces within a single ICR interface. For example, the ICR partition can be a group of S-VLANs configured on a single physical interface. You can create multiple partitions on each ICR interface and configure the number of partitions, as well as assign subscribers to the partition. An ICR partition can be configured as master or backup.
VRRP	Virtual Router Redundancy Protocol. Use VRRP to prevent loss of network connectivity by configuring backup routers. The backup routers maintain network connectivity when the master router fails. You can configure unique VRRP instances to manage each ICR partition.
VSA	Vendor-specific attributes. VSAs are defined by remote-access server vendors to customize how RADIUS works on their servers. VSAs can be used in combination with RADIUS-defined attributes.

## ICR References

For more information about ICR, see the following resources:

- RFC 2338—Virtual Router Redundancy Protocol (April 1998)
- RFC 2787—Definitions of Managed Objects for the Virtual Router (March 2000)
- RFC 2865—Remote Authentication Dial In User Service (RADIUS) (June 2000)
- RFC 2866—RADIUS Accounting (June 2000)

## ICR Scaling Considerations

When planning an ICR cluster you must ensure that you have provisioned adequate backup capacity in the event of a worst-case failure scenario such as a multiple hardware or multiple router failure.



**NOTE:** Remember to consider parameters such as link bandwidth, QoS, and line module scaling limitations when you plan the deployment of the ICR cluster.

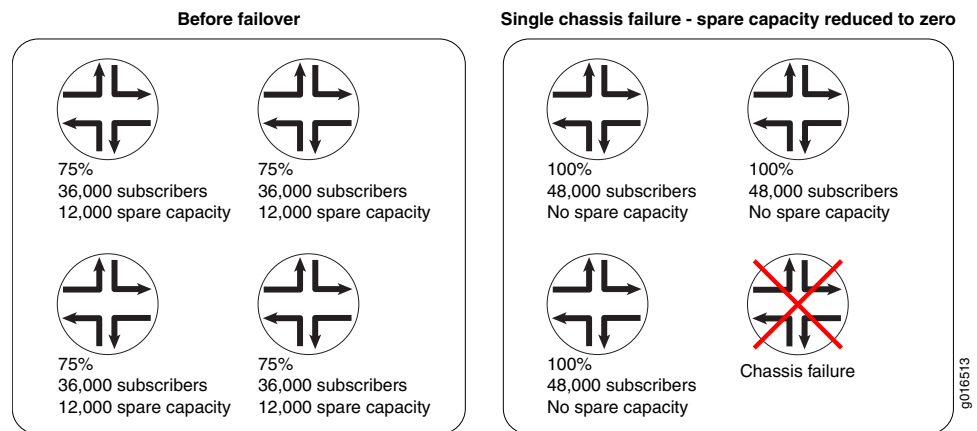
### 1:1 Subscriber Redundancy in a 4–Node ICR Cluster

Consider a 4–node ICR cluster that consists of four ERX1440 routers, as shown in [Figure 2 on page 7](#). Each of the four routers is capable of supporting 48,000 PPP/PPPoE subscribers. The degree of redundancy that you can achieve in this cluster is 1:1. For every subscriber, you have a backup destination within the cluster. If one router fails, subscriber load is equally distributed to the other three routers. Thus, no single router serves as a dedicated backup. Instead, each router can be loaded with around 75 percent of its

capacity while the remaining 25 percent is available to accommodate subscribers from the failing router. Failure of any one router causes all routers in the cluster to become fully loaded with no spare capacity to accommodate further failures. This is the minimum degree of redundancy in a 4-node ICR cluster.

Figure 2 on page 7 illustrates an example of a typical ICR configuration.

**Figure 2: Sample 1:1 Subscriber Redundancy in a 4-Node ICR Cluster**



**Related Documentation** • [Configuring ICR Partitions on page 15](#)

## Interaction with RADIUS for ICR

Authorization and authentication access messages identify subscribers before the RADIUS server grants or denies those subscribers access to the network or network services. When an application requests user authentication, the request must have certain authenticating attributes, such as a user's name, password, and the particular type of service the user is requesting. This information is sent in the authentication request via the RADIUS protocol to the RADIUS server. In response, the RADIUS server grants or denies the request.

JunosE Software supports certain RADIUS vendor-specific attributes (VSAs) that define specific authentication, authorization, and accounting elements in a user's profile. The profile is stored on the RADIUS server. RADIUS messages contain RADIUS attributes to communicate information between an E Series Broadband Services Router and the RADIUS server. For complete information on VSAs, see *Configuring RADIUS Attributes* in the *JunosE Broadband Access Configuration Guide*. JunosE Software Release 10.3.x and later supports the ICR-Partition-Id VSA [26-150]. You can use this VSA to collect information on the ICR partition configured on the VLAN or S-VLAN subinterface on which subscribers are logged in.

You can include an ICR-Partition-Id vendor-specific attribute (VSA) in the following RADIUS messages:

- Access-Request
- Acct-Start

- Acct-Stop
- Interim-Acct (if Acct-Stop messages are specified)
- Partition-Accounting-On
- Partition-Accounting-Off



**NOTE:** For more information about the ICR partition accounting messages, see the *Configuring RADIUS Attributes* chapter in the *JunosE Broadband Access Configuration Guide*.

Determining the ICR partition is useful for accounting and authentication of subscribers in RADIUS messages.

Use the ICR-Partition-Id VSA to determine the ICR partition on which subscribers are logged in. You can configure the same ICR-Partition-Id string for an active ICR partition and its corresponding backup partition.

To configure inclusion of ICR-Partition-Id in RADIUS Access-Request, Acct-Start, and Acct-Stop messages, you can use the ICR-Partition-Id attribute in the **radius include** command. When included in Acct-Stop messages, the attributes are also included in Interim-Acct messages.

In addition to including the ICR-Partition-Id VSA in RADIUS Access-Request, Acct-Start, Acct-Stop, and Interim-Acct messages, the router also sends the Partition-Accounting-On and Partition-Accounting-Off messages:

Both Partition-Accounting messages include the ICR-Partition-Id VSA. Also, both these messages are sent to the RADIUS accounting server configured on the virtual router where the ICR partition is configured or the virtual router on which the corresponding ICR interface is configured.

You can optionally configure duplicate or broadcast AAA accounting on a virtual router, which sends the accounting information to additional virtual router simultaneously, so that the Partition-Accounting-On and Partition-Accounting-Off messages can also be sent to the duplicate and broadcast virtual routers.

## ICR Partition Accounting Overview

To enable or disable sending of the ICR Partition-Accounting-On or Partition-Accounting-Off messages to the RADIUS servers, you can now use the **radius icr-partition-accounting** command.

The transition of the ICR partition states from master to backup and backup to master can occur because of chassis failure, an administrative switchover, or an interface or line module reset action. The following scenarios describe how ICR partition accounting messages are processed and subscriber logging is handled:

- In the event of a complete chassis failure, RADIUS cannot interact with the failing B-RAS application on the router. In such a scenario, when the new master partition

takes over, the Partition-Accounting-On message is sent from the new master. After the response for the Partition-Accounting-On message is received from the new master partition, subscribers are allowed to log in to the master. When you remove certain VLAN or S-VLAN IDs from an ICR partition, the corresponding subscribers in that partition are removed and forced to log out from the chassis. This action causes the Acct-Stop messages to be sent to RADIUS.

- If ICR partition accounting is enabled and an administrative switchover forces subscribers in a particular ICR partition to be logged out, the Partition-Accounting-Off message is sent from the failing B-RAS application on the router only after Acct-Stop responses are received for all the logged out subscribers.
- If ICR partition accounting is enabled, and the interface or the line module that is configured with the ICR partition fails, the Partition-Accounting-Off message is sent from the failing B-RAS application on the router after Acct-Stop responses are received for all the logged out subscribers in that partition.

**Related  
Documentation**

- [Using RADIUS to Manage Subscribers Logging In to ICR Partitions on page 22](#)
- [RADIUS Overview](#)
- [radius icr-partition-accounting on page 42](#)
- [radius include on page 43](#)
- [show radius icr-partition-accounting on page 62](#)



## CHAPTER 2

# Hardware Requirements

- [ICR Platform Considerations on page 11](#)

## ICR Platform Considerations

---

ICR is supported on all E Series routers.

For information about modules supported on E120 and E320 routers:

- See *E120 and E320 Module Guide, Table 1, Modules and IOAs* for detailed module specifications.
- See *E120 and E320 Module Guide, Appendix A, IOA Protocol Support* for information about the modules that support ICR.

For information about modules supported on ERX routers:

- See *ERX Module Guide, Table 1, ERX Module Combinations* for detailed module specifications.
- See *ERX Module Guide, Appendix A, Module Protocol Support* for information about the modules that support ICR.

## Interface Specifiers

The majority of the configuration task examples in this topic collection use the *slot/adapter/port* format to specify an interface. However, the interface specifier format that you use depends on the router that you are using.

For ERX7xx models, ERX14xx models, and ERX310 routers, use the *slot/port* format. For example, the following command specifies a Gigabit Ethernet interface on slot 0, port 1 of an ERX7xx model, ERX14xx model, or ERX310 router.

```
host1(config)#interface gigabitEthernet 0/1
```

For E120 and E320 routers, use the *slot/adapter/port* format, which includes an identifier for the bay in which the I/O adapter (IOA) resides. In the software, adapter 0 identifies the right IOA bay (E120 router) and the upper IOA bay (E320 router); adapter 1 identifies the left IOA bay (E120 router) and the lower IOA bay (E320 router). For example, the following command specifies a 10-Gigabit Ethernet interface on slot 5, adapter 0, port 0 of an E320 router.

host1(config)#interface tenGigabitEthernet 5/0/0

**Related** • [Interface Types and Specifiers](#)  
**Documentation**



## PART 2

# Configuration

- [Configuration Overview on page 15](#)
- [Configuration Tasks for ICR on page 17](#)
- [Examples on page 23](#)
- [Configuration Commands on page 27](#)



## CHAPTER 3

# Configuration Overview

- [Configuring ICR Partitions on page 15](#)

## Configuring ICR Partitions

---

You can use RADIUS servers to authenticate subscribers and collect statistics related to the users logging in to an ICR partition on a virtual router. When you configure an ICR partition, you configure the interface on which the ICR partition resides and create a unique VRRP instance to manage the partition.

To configure an ICR partition:

1. Configure the interface.

See [“Configuring the Interface on Which ICR Partitions Reside” on page 17](#).

2. Create a unique VRRP instance to manage the ICR partition.

See [“Configuring VRRP Instances to Match ICR Requirements” on page 18](#).

3. Create and assign a name to the ICR partition.

See [“Naming ICR Partitions” on page 18](#).

4. (Optional) Select the grouping criterion for the ICR partition.

See [“Grouping ICR Subscribers Based on S-VLAN IDs” on page 19](#) and [“Grouping ICR Subscribers Based on VLAN IDs” on page 21](#).



**NOTE:** Grouping subscribers based on S-VLAN IDs is the default grouping option for ICR partitions. If you do not explicitly specify the grouping option, subscribers are grouped based on S-VLAN IDs.

5. (Optional) Configure RADIUS.

See [“Using RADIUS to Manage Subscribers Logging In to ICR Partitions” on page 22](#).

### Related Documentation

- [ICR Overview on page 3](#)
- [Monitoring the Configuration of ICR Partitions on page 55](#)
- [Monitoring the Configuration of an ICR Partition Attached to an Interface on page 57](#)

- [Monitoring the Status of ICR Partition Accounting on page 58](#)

## CHAPTER 4

# Configuration Tasks for ICR

- [Configuring the Interface on Which ICR Partitions Reside on page 17](#)
- [Configuring VRRP Instances to Match ICR Requirements on page 18](#)
- [Naming ICR Partitions on page 18](#)
- [Grouping ICR Subscribers Based on S-VLAN IDs on page 19](#)
- [Grouping ICR Subscribers Based on VLAN IDs on page 21](#)
- [Using RADIUS to Manage Subscribers Logging In to ICR Partitions on page 22](#)

### Configuring the Interface on Which ICR Partitions Reside

---

You can create multiple ICR partitions on an interface. For information on the number of ICR partitions that you can create, see *JunosE Release Notes, Appendix A, System Maximums*.

To configure the interface on which the ICR partition resides:

1. Specify a FastEthernet, GigabitEthernet, or 10–GigabitEthernet interface.

```
host1(config)#interface gigabitEthernet 3/5/0
host1(config-if)#
```

2. Specify VLAN as the encapsulation method to create the VLAN major interface.

```
host1(config-if)#encapsulation vlan
```

3. Create a VLAN subinterface by adding a subinterface number to the interface identification number.

```
host1(config-if)#interface gigabitEthernet 3/5/0.10
```

4. Assign a VLAN ID for the subinterface. The router configures the subinterface whether or not the subinterface is part of the ICR partition. Use the **icr-control-interface** keyword to specify that an ICR partition can be configured on the subinterface.

```
host1(config-if)#vlan id 10 1 icr-control-interface
```

5. Assign an IP address to the VLAN subinterface.

```
host1(config-if)#ip address 3.5.1.1/24
```

#### Related Documentation

- [Configuring VRRP Instances to Match ICR Requirements on page 18](#)

- [Monitoring the Configuration of an ICR Partition Attached to an Interface on page 57](#)

## Configuring VRRP Instances to Match ICR Requirements

---

Each ICR partition is managed by a unique VRRP instance. You can specify an ICR partition as the *master* partition by assigning a higher priority. Use the **ip vrrp priority** command to assign priorities to the ICR partitions.

To configure the VRRP instance to match ICR requirements:

1. Create a VRRP instance by specifying the identification number, and associate an IP address with the identification number.

```
host1(config-if)#ip vrrp 1 virtual-address 3.5.1.10
```

2. Specify the priority of the router. Assign the higher priority to the master ICR partition and a lower priority to the backup ICR partition.

```
host1(config-if)#ip vrrp priority 200
```

3. (Optional) Enable the router to learn the VRRP advertisement interval. Use this only when you plan on upgrading your router by means of a unified in-service software upgrade (ISSU).

```
host1(config-if)#ip vrrp 1 timers-learn
```

4. Enable the VRRP instance.

```
host1(config-if)#ip vrrp 1 enable
```

5. (Optional) Configure additional VRRP instances by completing Steps 1 through 4, using unique numbering.

### Related Documentation

- [VRRP Overview](#)
- [ip vrrp on page 28](#)
- [ip vrrp enable on page 29](#)
- [ip vrrp priority on page 39](#)
- [ip vrrp timers-learn on page 40](#)
- [ip vrrp virtual-address on page 41](#)

## Naming ICR Partitions

---

After you have configured the interface on which the ICR partition resides and the unique VRRP instance that manages the ICR partition, you must create the ICR partition. You can use the keywords *master* or *backup* to identify the type of ICR partition created.

To create and name ICR partitions:

1. Create an ICR partition by specifying a unique name for the partition. For easy identification, you can include the keywords *master* or *Backup* in the name of the partition.

```
host1(config-if)#ip vrrp 1 icr-partition part1Master
```

2. (Optional) Create additional ICR partitions by repeating Step 1, using unique names or numbering.

```
host1(config-if)#ip vrrp 2 icr-partition part1Backup
```

```
host1(config-if)#ip vrrp 3 icr-partition ICRBackup
```

For information on the number of ICR partitions that you can create per line module or chassis, see *JunosE Release Notes, Appendix A, System Maximums*.

**Related  
Documentation**

- [ICR Overview on page 3](#)
- [Monitoring the Configuration of ICR Partitions on page 55](#)
- [ip vrrp icr-partition on page 30](#)

---

## Grouping ICR Subscribers Based on S-VLAN IDs

You can group ICR subscribers based on S-VLAN IDs. When you configure an S-VLAN list or S-VLAN range or an S-VLAN and VLAN subinterface pair, you can include any or all of the following keywords:

- Use the **control-interface** keyword to control the state of the corresponding subinterfaces (up/AdminDown) based on the state of the partition (master or backup). If the subinterfaces are part of the backup partition, the router changes the state of all the subinterfaces to AdminDown.
- Use the **use-default-mac** keyword to enable the subinterfaces to use the default MAC address instead of the VRRP MAC address. By default, subinterfaces use the virtual MAC address of the associated VRRP instance.
- Use the **advertise-mac** keyword to enable the subinterfaces to transmit gratuitous ARP (GARP) advertisements when the ICR partition moves from the backup state to the master state.



**NOTE:** If you attempt to bring up tunneled subscribers on ACI-based VLAN subinterfaces on LAC devices with subscriber groups that are based on S-VLAN IDs (using the `ip vrrp vrid icr-partition group svlan` command on S-VLAN subinterfaces), the VLAN subinterface does not come up and a log message to denote its down state is not generated. If you attempt to bring up tunneled subscribers on ACI-based VLAN subinterfaces on LAC devices with subscriber groups that are based on VLAN IDs (using the `ip vrrp vrid icr-partition group vlan` command on VLAN subinterfaces), the subscribers over tunnels are brought up. However, on the LAC device, the subscribers are logged in outside of the ICR partition.

This behavior is expected when attempts are made to log in tunneled subscribers over ACI-based VLAN subinterfaces configured with ICR partitions with VLAN-based grouping or S-VLAN based grouping.

To group ICR subscribers based on S-VLAN IDs:

1. Specify **svlan** as the grouping type.

```
host1(config-if)#ip vrrp 1 icr-partition group svlan
```

The default grouping option is S-VLAN. If you do not explicitly specify the grouping option, the subscribers are grouped based on S-VLAN.

2. Add S-VLAN subinterfaces to the ICR partition by doing either of the following:

- Specify the S-VLAN IDs individually by using the **svlan-list** keyword. In the following example, you add individual S-VLAN subinterfaces by specifying each S-VLAN ID.

```
host1(config-if)#ip vrrp 1 icr-partition svlan-list 100 102 105 108 114 125
control-interface advertise-mac
```

- Specify the starting ID and ending ID of the range of S-VLAN subinterfaces. In the following example, you specify the first and the last ID of the range because the IDs are in sequential order.

```
host1(config-if)#ip vrrp 1 icr-partition svlan-range 100 110 control-interface
advertise-mac
```

3. (Optional) Add an S-VLAN and VLAN subinterface pair to the ICR partition.

```
host1(config-if)#ip vrrp 1 icr-partition svlan-list-explicit 120 1 120 2 control-interface
advertise-mac
```



**NOTE:** To enable the new master router to send PPPoE Active Discovery Termination (PADT) packets to the clients and create new sessions for the PPPoE subscribers, you must create a dummy IP interface for each S-VLAN that is part of the ICR partition.

4. (Optional) Configure additional S-VLAN subinterfaces by completing Steps 2 and 3 using unique numbering.



- Related Documentation**
- [Grouping ICR Subscribers Based on VLAN IDs on page 21](#)
  - [Monitoring the Configuration of an ICR Partition Attached to an Interface on page 57](#)
  - [ip vrrp icr-partition group on page 31](#)
  - [ip vrrp icr-partition svlan-list on page 32](#)
  - [ip vrrp icr-partition svlan-list explicit on page 33](#)
  - [ip vrrp icr-partition svlan-range on page 34](#)

## Grouping ICR Subscribers Based on VLAN IDs

You can configure ICR subscribers based on VLAN IDs. When you configure a VLAN list or VLAN range, you can include any or all of the following keywords:

- Use the **control-interface** keyword to control the state of the corresponding subinterfaces (up/AdminDown) based on the state of the partition (master or backup). If the subinterfaces are part of the backup partition, the router changes the state of all the subinterfaces to AdminDown.
- Use the **use-default-mac** keyword to enable the subinterfaces to use the default MAC address instead of the VRRP MAC address. By default, subinterfaces use the virtual MAC address of the associated VRRP instance.
- Use the **advertise-mac** keyword to enable the subinterfaces to transmit gratuitous ARP (GARP) advertisements when the ICR partition moves from the backup state to the master state.

To group ICR subscribers based on VLAN IDs:

1. Specify VLAN as the grouping type.

```
host1(config-if)#ip vrrp 1 icr-partition group vlan
```

The default grouping option is S-VLAN. If you do not explicitly specify the grouping option, the subscribers are grouped based on S-VLAN.

2. Add VLAN subinterfaces to the ICR partition by doing either of the following:

- Specify the VLAN IDs individually by using the **vlan-list** keyword to add a group of random VLAN IDs. In the following example, you add VLAN subinterfaces by specifying each VLAN ID individually because the IDs are in random order.

```
host1(config-if)#ip vrrp 1 icr-partition vlan-list 10 21 62 control-interface  
advertise-mac
```

- Specify the starting ID and ending ID of the range of VLAN subinterfaces. In the following example, you specify the first and the last ID of the range because the IDs are in sequential order.

```
host1(config-if)#ip vrrp 1 icr-partition vlan-range 10 40 control-interface  
advertise-mac
```

3. (Optional) Configure additional VLAN subinterfaces by completing Step 2 using unique numbering.

- Related Documentation**
- [Grouping ICR Subscribers Based on S-VLAN IDs on page 19](#)
  - [Monitoring the Configuration of an ICR Partition Attached to an Interface on page 57](#)
  - [ip vrrp icr-partition group on page 31](#)
  - [ip vrrp icr-partition vlan-list on page 36](#)
  - [ip vrrp icr-partition vlan-range on page 37](#)

---

## Using RADIUS to Manage Subscribers Logging In to ICR Partitions

---

To configure RADIUS to manage subscribers logging in to ICR partitions on the router, perform the following tasks:

- Configure inclusion of the ICR-Partition-ID VSA in RADIUS messages.

**host1(config)#radius-include icr-partition-id acct-start enable**

Issuing this command includes the ICR-Partition-ID VSA in Acct-Start messages. To include the ICR-Partition-ID VSA in other accounting and access messages, see the *Configuring RADIUS Attributes* chapter in the *JunosE Broadband Access Configuration Guide*.

- Enable or disable sending of the ICR Partition-Accounting-On or Partition-Accounting-Off messages to the RADIUS servers.

**host1(config)#radius icr-partition-accounting enable**

For more information on enabling or disabling sending of partition accounting messages to RADIUS servers configured on a virtual router, see the *Configuring RADIUS Attributes* chapter in the *JunosE Broadband Access Configuration Guide*.

- Related Documentation**
- [Interaction with RADIUS for ICR on page 7](#)
  - [Configuring ICR Partitions on page 15](#)
  - [radius include on page 43](#)
  - [radius icr-partition-accounting on page 42](#)
  - [show radius icr-partition-accounting on page 62](#)

# Examples

- [Example: Configuring ICR Partitions That Group Subscribers by S-VLAN ID on page 23](#)

## Example: Configuring ICR Partitions That Group Subscribers by S-VLAN ID

---

The following example show how to configure a *master* ICR partition on an ERX1440 router. In this example, you first configure the interface on which the ICR partition resides. You can then create a new VRRP instance to manage the ICR partition. The value you assign to the **priority** keyword determines the state of the ICR partition.

1. Configure the interface on which the ICR partition resides.

```
host1 (config)#interface gigabitEthernet 3/5
host1 (config-if)#encapsulation vlan
host1 (config-if)#interface gigabitEthernet 3/5.10
host1 (config-if)#svlan id 10 1 icr-control-interface
host1 (config-if)#ip address 3.5.1.1/24
```

2. Configure the VRRP instance based on the ICR partition requirements.

```
host1 (config-if)#ip vrrp 1 virtual-address 3.5.1.10
host1 (config-if)#ip vrrp 1 priority 200
host1 (config-if)#ip vrrp 1 timers-learn
host1 (config-if)#ip vrrp 1 enable
```

3. Create and identify the ICR partition.

```
host1 (config-if)#ip vrrp 1 icr-partition part1Master
```

4. Group subscribers based on S-VLAN IDs.

```
host1 (config-if)#ip vrrp 1 icr-partition group svlan
host1 (config-if)#ip vrrp 1 icr-partition svlan-range 100 110 control-interface
host1 (config-if)#ip vrrp 1 icr-partition svlan-range 111 119 advertise-mac
host1 (config-if)#ip vrrp 1 icr-partition svlan-list-explicit 120 1 120 2 advertise-mac
control-interface
host1 (config-if)#exit
```



**NOTE:** To enable the new master router to send PPPoE Active Discovery Termination (PADT) packets to the clients and create new sessions for the PPPoE subscribers, you must create a dummy IP interface for each S-VLAN that is part of the ICR partition.

The following example shows how to configure a *backup* ICR partition on an E320 router. Configure the interface on which the ICR partition resides and then create a new VRRP instance that manages the backup ICR partition. The value you assign to the **priority** keyword determines the state of the ICR partition. In the case of a backup ICR partition, specify a value lower than the priority of the master ICR partition.

1. Configure the interface on which the ICR partition resides.

```
host2 (config)#interface gigabitEthernet 11/1/0
host2 (config-if)#encapsulation vlan
host2 (config-if)#interface gigabitEthernet 11/1/0.10
host2 (config-if)#svlan id 10 1 icr-control-interface
host2 (config-if)#ip address 3.5.1.2/24
```

2. Configure the VRRP instance based on the ICR partition requirements.

```
host2 (config-if)#ip vrrp 1 virtual-address 3.5.1.10
host2 (config-if)#ip vrrp 1 priority 100
host2 (config-if)#ip vrrp 1 timers-learn
host2 (config-if)#ip vrrp 1 enable
```

3. Create and identify the ICR partition.

```
host2 (config-if)#ip vrrp 1 icr-partition part1Backup
```

4. Group subscribers based on S-VLAN IDs.

```
host2 (config-if)#ip vrrp 1 icr-partition group svlan
host2 (config-if)#ip vrrp 1 icr-partition svlan-range 100 110 control-interface
host2 (config-if)#ip vrrp 1 icr-partition svlan-range 111 119 advertise-mac
host2 (config-if)#ip vrrp 1 icr-partition svlan-list-explicit 120 1 120 2 advertise-mac
control-interface
host2 (config-if)#exit
```



**NOTE:** To enable the new master router to send PPPoE Active Discovery Termination (PADT) packets to the clients and create new sessions for the PPPoE subscribers, you must create a dummy IP interface for each S-VLAN that is part of the ICR partition.

Grouping subscribers based on S-VLAN IDs is the default grouping method for ICR partitions. You can also explicitly choose S-VLAN as the grouping option as shown in this example. To add a group of random S-VLAN IDs, use the **svlan-list** command.

To group subscribers by VLAN IDs, use the **vlan** keyword instead of the **svlan** keyword. To add a group of random VLAN IDs, use the **vlan-list** command.



**NOTE:** While grouping subscribers based on VLAN IDs, you can use corresponding VLAN grouping commands. However, the **svlan-list-explicit** command does not have any corresponding VLAN command.

Related Documentation

- [ICR Overview on page 3](#)

- [ICR Scaling Considerations on page 6](#)



## CHAPTER 6

# Configuration Commands

## ip vrrp

---

**Syntax** [ no ] ip vrrp *vrid*

**Release Information** Command introduced before JunosE Release 7.1.0.

**Description** Creates a VRRP instance ID. The **no** version removes a VRID. The default is disabled.

**Options** • *vrid*—VRID identifier; a number in the range 1–255

**Mode** Interface Configuration



## ip vrrp enable

---

**Syntax** [ no ] ip vrrp *vrid* [ enable ]

**Release Information** Command introduced before JunosE Release 7.1.0.

**Description** Enables a VRID. The **no** version disables a VRID. The default is disabled.

**Options** • *vrid*—VRID identifier; a number in the range 1–255

**Mode** Interface Configuration

## ip vrrp icr-partition

---

**Syntax** [ no ] ip vrrp *vrid* icr-partition *partitionId*

**Release Information** Command introduced in JunosE Release 10.3.0.

**Description** Creates an ICR partition that corresponds to the VRRP instance. The state of the ICR partition depends on the state of the VRRP instance. If the VRRP instance is disabled, the ICR partition is in the dormant state. If the VRRP instance is enabled, the ICR partition follows the state of the VRRP instance. The **no** version deletes the partition from the router.

- Options**
- *vrid*—VRID identifier; a number in the range 1–255
  - *partitionId*—Name that identifies the ICR partition; a string of up to 128 alphanumeric characters



**NOTE:** Use the ICR-Partition-Id VSA to determine the ICR partition on which subscribers are logged in. You can configure the same ICR-Partition-Id string for an active ICR partition and its corresponding backup partition. For more information on ICR-Partition-ID VSA, see [“Interaction with RADIUS for ICR” on page 7](#).

**Mode** Interface Configuration, Subinterface Configuration

- Related Documentation**
- [Naming ICR Partitions on page 18](#)
  - [Configuring ICR Partitions on page 15](#)

---

## ip vrrp icr-partition group

---

<b>Syntax</b>	<code>ip vrrp <i>vrid</i> icr-partition group <i>partitionGroupingType</i></code>
<b>Release Information</b>	Command introduced in JunosE Release 10.3.0.
<b>Description</b>	Configures the ICR partition to use either S-VLAN-based grouping or VLAN-based grouping for subscribers. If you specify VLAN as the grouping type or partition type, the ICR partition consists of single-tagged VLAN-based subinterfaces. By default, the ICR partition uses S-VLAN-based grouping. There is no <b>no</b> version.
<b>Options</b>	<ul style="list-style-type: none"><li>• <i>vrid</i>—VRID identifier; a number in the range 1–255</li><li>• <i>partitionGroupingType</i>—One of the following partition types:<ul style="list-style-type: none"><li>• <i>svlan</i>—Configures the ICR partition to use double-tagged S-VLAN based subinterfaces.</li><li>• <i>vlan</i>—Configures the ICR partition to use single-tagged VLAN based subinterfaces.</li></ul></li></ul>
<b>Mode</b>	Interface Configuration, Subinterface Configuration
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Grouping ICR Subscribers Based on S-VLAN IDs on page 19</a></li><li>• <a href="#">Grouping ICR Subscribers Based on VLAN IDs on page 21</a></li><li>• <a href="#">Configuring ICR Partitions on page 15</a></li></ul>

## ip vrrp icr-partition svlan-list

**Syntax** `ip vrrp vrid icr-partition svlan-list [ svlanIdValue ] *`  
`[ use-default-mac ] [ control-interface ] [ advertise-mac ]`  
`no ip vrrp vrid icr-partition svlan-list [ svlanIdValue ] *`

**Release Information** Command introduced in JunosE Release 10.3.0.

**Description** Adds an S-VLAN to the ICR partition. You can assign only unique S-VLANs to the partition. If you attempt to assign a previously assigned S-VLAN to the ICR partition, the router displays an error message. You can assign S-VLANs only if you have selected S-VLAN based grouping by using the **ip vrrp icr-partition group** command. The **no** version deletes the S-VLAN from the ICR partition.



**NOTE:** You can use the listed optional parameters only when you add a S-VLAN to the ICR partition. You cannot modify an existing subinterface using these parameters. You can specify the optional parameters in any order.

- Options**
- **vrid**—VRID identifier; a number in the range 1–255
  - **svlanIdValue**—S-VLAN identifier; a number in the range 0–4095
  - **use-default-mac**—Configures the S-VLAN to use the default MAC address. By default, the router assigns the VRRP media access control (MAC) address to all subinterfaces of the ICR partition.
  - **control-interface**—Controls traffic on a subinterface that is part of a backup partition. When you use this option, the router changes the state of the corresponding subinterface to Admindown. When the subinterface is in Admindown state, the router blocks all traffic to the interface. However, the router does not block advertisements as long as VRRP is running on a separate subinterface. The router changes the state of the subinterface from Admindown to Up when the state of the partition changes from backup to master.
  - **advertise-mac**—Enables the subinterface to transmit GARP advertisements when the partition moves from backup state to master state. By default, GARP advertisements are blocked on a subinterface.

**Mode** Interface Configuration, Subinterface Configuration

- Related Documentation**
- [Grouping ICR Subscribers Based on S-VLAN IDs on page 19](#)
  - [Configuring ICR Partitions on page 15](#)

## ip vrrp icr-partition svlan-list explicit

**Syntax** `ip vrrp vrid icr-partition svlan-list-explicit [ svlanIdValue vlanIdValue ] *`  
`[ use-default-mac ] [ control-interface ] [ advertise-mac ]`  
`no ip vrrp vrid icr-partition svlan-list-explicit [ svlanIdValue vlanIdValue ] *`

**Release Information** Command introduced in JunosE Release 10.3.0.

**Description** Adds an S-VLAN range and VLAN range to the ICR partition. You can assign only unique S-VLAN range and VLAN range to the partition. If you attempt to assign a previously assigned S-VLAN range and VLAN range to the ICR partition, the router displays an error message. You can assign S-VLAN range and VLAN range only if you have selected S-VLAN based grouping by using the **ip vrrp icr-partition group** command. The **no** version deletes the S-VLAN range and VLAN range from the ICR partition.



**NOTE:** You can use the listed optional parameters only when you add a S-VLAN, VLAN pair to the ICR partition. You cannot modify an existing subinterface using these parameters. You can specify the optional parameters in any order.

- Options**
- **vrid**—VRID identifier; a number in the range 1–255
  - **svlanIdValue**—S-VLAN identifier; a number in the range 0–4095
  - **vlanIdValue**—VLAN identifier; a number in the range 0–4095
  - **use-default-mac**—Configures the S-VLAN range and VLAN range to use the default MAC address. By default, the router assigns the VRRP media access control (MAC) address to all subinterfaces of the ICR partition.
  - **control-interface**—Controls traffic on a subinterface that is part of a backup partition. When you use this option, the router changes the state of the corresponding subinterface to Admindown. When the subinterface is in Admindown state, the router blocks all traffic to the interface. However, the router does not block advertisements as long as VRRP is running on a separate subinterface. The router changes the state of the subinterface from Admindown to Up when the state of the partition changes from backup to master.
  - **advertise-mac**—Enables the subinterface to transmit GARP advertisements when the partition moves from backup state to master state. By default, GARP advertisements are blocked on a subinterface.

**Mode** Interface Configuration, Subinterface Configuration

**Related Documentation**

- [Grouping ICR Subscribers Based on S-VLAN IDs on page 19](#)
- [Configuring ICR Partitions on page 15](#)

## ip vrrp icr-partition svlan-range

**Syntax** `ip vrrp vrid icr-partition svlan-range [ svlanIdStart svlanIdEnd ]  
[ use-default-mac ] [ control-interface ] [ advertise-mac ]`

`no ip vrrp vrid icr-partition svlan-range [ svlanIdStart svlanIdEnd ]`

**Release Information** Command introduced in JunosE Release 10.3.0.

**Description** Adds a range of S-VLANs to the ICR partition. You can only assign unique S-VLANs to the partition. If you attempt to assign a previously assigned S-VLAN range to the ICR partition, the router displays an error message. You can assign S-VLANs only if you have selected S-VLAN based grouping by using the **ip vrrp icr-partition group** command. The **no** version deletes the S-VLAN range from the ICR partition.



**NOTE:** You can use the listed optional parameters only when you add a S-VLAN or a range of S-VLANs to the ICR partition. You cannot modify an existing subinterface using these parameters. You can specify the optional parameters in any order.

- Options**
- **vrid**—VRID identifier; a number in the range 1–255
  - **svlanIdStart**—Starting S-VLAN ID of the S-VLAN subrange you are configuring; a number in the range 0–4095
  - **svlanIdEnd**—Ending S-VLAN ID of the S-VLAN subrange you are configuring; a number in the range 0–4095
  - **use-default-mac**—Configures the S-VLAN range to use the default MAC address. By default, the router assigns the VRRP MAC address to all subinterfaces of the ICR partition.
  - **control-interface**—Controls traffic on a range of subinterfaces that are part of a backup partition. When you use this option, the router changes the state of the corresponding range of subinterfaces to Admindown. When the subinterfaces are in Admindown state, the router blocks all traffic to the interfaces. However, the router does not block advertisements as long as VRRP is running on a separate subinterface. The router changes the state of the range of subinterfaces from Admindown to Up when the state of the partition changes from backup to master.
  - **advertise-mac**—Enables subinterfaces to transmit GARP advertisements when the partition moves from backup state to master state. By default, GARP advertisements are blocked on subinterfaces.

**Mode** Interface Configuration, Subinterface Configuration

**Related Documentation**

- [Grouping ICR Subscribers Based on S-VLAN IDs on page 19](#)

- [Configuring ICR Partitions on page 15](#)

## ip vrrp icr-partition vlan-list

**Syntax** `ip vrrp vrid icr-partition vlan-list [ vlanIdValue ] *`  
`[ use-default-mac ] [ control-interface ] [ advertise-mac ]`  
`no ip vrrp vrid icr-partition vlan-list [ vlanIdValue ] *`

**Release Information** Command introduced in JunosE Release 10.3.0.

**Description** Adds a VLAN to the ICR partition. You can assign only unique VLANs to the partition. If you attempt to assign a previously assigned VLAN to the ICR partition, the router displays an error message. You can assign VLANs only if you have selected VLAN based grouping by using the **ip vrrp icr-partition group** command. The **no** version deletes the VLAN from the ICR partition.



**NOTE:** You can use the listed optional parameters only when you add a VLAN to the ICR partition. You cannot modify an existing subinterface using these parameters. You can specify the optional parameters in any order.

- Options**
- **vrid**—VRID identifier; a number in the range 1–255
  - **vlanIdValue**—VLAN identifier; a number in the range 0–4095
  - **use-default-mac**—Configures the VLAN to use the default MAC address. By default, the router assigns the VRRP media access control (MAC) address to all subinterfaces of the ICR partition.
  - **control-interface**—Controls traffic on a subinterface that is part of a backup partition. When you use this option, the router changes the state of the corresponding subinterface to Admindown. When the subinterface is in Admindown state, the router blocks all traffic to the interface. However, the router does not block advertisements as long as VRRP is running on a separate subinterface. The router changes the state of the subinterface from Admindown to Up when the state of the partition changes from backup to master.
  - **advertise-mac**—Enables the subinterface to transmit GARP advertisements when the partition moves from backup state to master state. By default, GARP advertisements are blocked on subinterfaces.

**Mode** Interface Configuration, Subinterface Configuration

- Related Documentation**
- [Grouping ICR Subscribers Based on VLAN IDs on page 21](#)
  - [Configuring ICR Partitions on page 15](#)



## ip vrrp icr-partition vlan-range

**Syntax** `ip vrrp vrid icr-partition vlan-range [ vlanIdStart vlanIdEnd ]`  
`[ use-default-mac ] [ control-interface ] [ advertise-mac ]`  
`no ip vrrp vrid icr-partition vlan-range [ vlanIdStart vlanIdEnd ]`

**Release Information** Command introduced in JunosE Release 10.3.0.

**Description** Adds a range of VLANs to the ICR partition. You can assign only unique VLANs to the partition. If you attempt to assign a previously assigned VLAN range to the ICR partition, the router displays an error message. You can assign VLANs only if you have selected VLAN based grouping by using the **ip vrrp icr-partition group** command. The **no** version deletes the VLAN range from the ICR partition.



**NOTE:** You can use the listed optional parameters only when you add a VLAN or a range of VLANs to the ICR partition. You cannot modify an existing subinterface using these parameters. You can specify the optional parameters in any order.

- Options**
- **vrid**—VRID identifier; a number in the range 1–255
  - **vlanIdStart**—Starting VLAN ID of the VLAN subrange you are configuring; a number in the range 0–4095
  - **vlanIdEnd**—Ending VLAN ID of the VLAN subrange you are configuring; a number in the range 0–4095
  - **use-default-mac**—Configures the VLAN range to use the default MAC address. By default, the router assigns the VRRP MAC address to all subinterfaces of the ICR partition.
  - **control-interface**—Controls traffic on a range of subinterfaces that are part of a backup partition. When you use this option, the router changes the state of the corresponding range of subinterfaces to Admindown. When the subinterfaces are in Admindown state, the router blocks all traffic to the interfaces. However, the router does not block advertisements as long as VRRP is running on a separate subinterface. The router changes the state of the range of subinterfaces from Admindown to Up when the state of the partition changes from backup partition to master.
  - **advertise-mac**—Enables subinterfaces to transmit GARP advertisements when the partition moves from backup state to master state. By default, GARP advertisements are blocked on subinterfaces.

**Mode** Interface Configuration, Subinterface Configuration

**Related Documentation**

- [Grouping ICR Subscribers Based on VLAN IDs on page 21](#)

- [Configuring ICR Partitions on page 15](#)

## ip vrrp priority

**Syntax**    `ip vrrp vrid priority priorityValue`  
               `no ip vrrp vrid priority`

**Release Information**    Command introduced before JunosE Release 7.1.0.

**Description**    Configures the priority of VRRP routers. The **no** version restores the default value, 100.



**NOTE:** If you configure VRRP on a virtual router and associate the IP address with the VRRP instance ID (VRID) so that the virtual address becomes the interface address of the router, the priority of the router automatically changes to 255 making it the master router. This change of priority occurs in JunosE Software Releases 11.0.0 and higher-numbered releases and later to enable full compliance with RFC-Virtual Router Redundancy Protocol (VRRP) (April 2004).

Also, you cannot configure the priority of the VRRP router as 255 by using the `ip vrrp priority` command, unless you configured the router to automatically learn associated addresses by using the `auto` keyword with the `ip vrrp virtual-address` command. In addition, if you change the virtual address of the VRRP router, which is operating as the IP address owner, to an IP address that is no longer the IP address owner, the priority changes automatically to the default value of 100.

- Options**
- *vrid*—VRID identifier; a number in the range 1–255
  - *priorityValue*—Priority value of the VRRP router; a number in the range 1–255; default value is 100

**Mode**    Interface Configuration

## ip vrrp timers-learn

---

**Syntax** [ no ] ip vrrp *vrid* timers-learn

**Release Information** Command introduced in JunosE Release 10.3.0.

**Description** Configures the VRRP instance to learn the VRRP advertisement interval from the master VRRP instance. This feature is useful only when you have configured different advertisement intervals for the master VRRP instance and the backup VRRP instance. This feature enables the unified ISSU operation to proceed successfully. The **no** version disables the learning timer for the VRRP instance. If you have configured different advertisement intervals for the VRRP master and VRRP backup instances, the VRRP session breaks, and both instances behave like the master instance, and the router displays an error message.

**Options** • *vrid*—VRID identifier; a number in the range 1–255

**Mode** Interface Configuration, Subinterface Configuration

## ip vrrp virtual-address

---

**Syntax**    `ip vrrp vrid virtual-address { auto | ipAddress ipAddress [ ipAddress ipAddress ]* }`  
`no ip vrrp vrid virtual-address [ ipAddress ipAddress ]*`

**Release Information**    Command introduced before JunosE Release 7.1.0.

**Description**    Associates an IP address with a VRID. The **no** version removes a list of IP addresses associated with a VRID. The **no** version clears the auto flag, if auto addresses are being used. There is no default.

- Options**
- *vrid*—VRID identifier; a number in the range 1–255
  - *auto*—Automatically learns or configures associated addresses depending on the priority.
  - *ipAddress*—IP address
  - \*—Indicates that one or more parameters can be repeated multiple times in a list in the command line

**Mode**    Interface Configuration

## radius icr-partition-accounting

---

**Syntax**    radius icr-partition-accounting { enable | disable }  
              no radius icr-partition-accounting

**Release Information**    Command introduced in JunosE Release 10.3.0.

**Description**    Enables or disables sending of the ICR Partition-Accounting-On or Partition-Accounting-Off messages to the RADIUS servers. Both Partition-Accounting messages include the ICR-Partition-Id VSA and are sent to the RADIUS accounting server configured on the virtual router where the ICR partition is configured or the virtual router on which the ICR control interface is set up. The **no** version restores the default value, disable.

**Options**

- enable—Configures the RADIUS client to enable the use of Partition-Accounting-On and Partition-Accounting-Off messages. When this option is used, these messages are sent to the accounting server configured on the virtual router.
- disable— Configures the RADIUS client to disable the use of Partition-Accounting-On and Partition-Accounting-Off messages; this is the default setting. When this option is used, the Partition-Accounting messages are not sent to the accounting server configured on the virtual router.

**Mode**    Global Configuration

## radius include

**Syntax** `radius include attributeName`  
`{ access-request | acct-on | acct-off | acct-start | acct-stop } { enable | disable }`

`no radius include attributeName`  
`{ access-request | acct-on | acct-off | acct-start | acct-stop }`

**Release Information** Command introduced before JunosE Release 7.1.0.  
**l2c-access-loop-parameters** attribute added in JunosE Release 7.2.0.  
**l2cd** attributes added in JunosE Release 9.0.0.  
**framed-interface-id** and **framed-ipv6-prefix** attributes, and **acct-stop** support for **framed-ip-addr** attribute added in JunosE Release 9.0.0.  
**downstream-calculated-qos-rate** and **upstream-calculated-qos-rate** attributes added in JunosE Release 9.1.0.  
**ipv6-accounting**, **delegated-ipv6-prefix**, **framed-ipv6-pool**, **framed-ipv6-route**, **ipv6-local-interface**, **ipv6-nd-ra-prefix**, **ipv6-primary-dns**, **ipv6-secondary-dns**, and **ipv6-virtual-router** attributes added in JunosE Release 10.2.0.  
**icr-partition-id** attribute added in JunosE Release 10.3.0.  
**framed-route** attribute added in JunosE Release 11.3.0.  
**ipv6-egress-policy-name** and **ipv6-ingress-policy-name** attributes added in JunosE Release 13.0.0.  
**dhcp-option82-circuitid** and **dhcp-option82-remoteid** attributes added in JunosE Release 13.1.0.  
**qos-profile-name**, **ds-lite-tunnel-name**, and **pcp-server-name** attributes added in JunosE Release 13.2.0.

**Description** Configures the inclusion of RADIUS attributes in RADIUS messages. Not all attributes are available in all message types. The listed attributes are included by default except where noted. The **no** version restores the default.

**Options** • *attributeName*—One of the following RADIUS attributes; not all attributes are available in all message types.

Attributes available for Access-Request, Acct-Start, and Acct-Stop messages:

- **acct-multi-session-id**—Includes RADIUS attribute 50, Acct-Multi-Session-Id
- **acct-tunnel-connection**—Includes RADIUS attribute 68, Acct-Tunnel-Connection
- **ascend-num-in-multilink**—Includes RADIUS attribute 188, Ascend-Num-In-Multilink
- **called-station-id**—Includes RADIUS attribute 30, Called-Station-Id
- **calling-station-id**—Includes RADIUS attribute 31, Calling-Station-Id
- **connect-info**—Includes RADIUS attribute 77, Connect-Info
- **dhcp-options**—Includes RADIUS attribute 26-55, DHCP-Options
- **dhcp-option82**—Includes RADIUS attribute 26-159, DHCP-Option 82

- dhcp-option82-circuitid—Includes RADIUS attribute 26-1, DHCP-Option 82
- dhcp-option82-remoteid—Includes RADIUS attribute 26-2, DHCP-Option 82
- dhcp-gi-address—Includes RADIUS attribute 26-57, DHCP-GI-Address
- dhcp-mac-address—Includes RADIUS attribute 26-56, DHCP-MAC Address
- downstream-calculated-qos-rate—Excluded by default; includes RADIUS attribute 26-141, Downstream-Calculated-Qos-Rate
- framed-interface-id—Excluded by default; includes RADIUS attribute 96, Framed-Interface-Id, if an IPv6 interface ID is assigned to the subscriber
- framed-ip-addr—Includes RADIUS attribute 8, Framed-IP-Address, if an IP address is assigned to the subscriber
- framed-ipv6-prefix—Excluded by default; includes RADIUS attribute 97, Framed-Ipv6-Prefix, if at least one IPv6 prefix is assigned to the subscriber
- icr-partition-id—Excluded by default; includes RADIUS attribute 26-150, ICR-Partition-Id, which is a user-configured value of up to 128 characters
- interface-description—Excluded by default; includes RADIUS attribute 26-63, Interface-Desc; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- l2c-downstream-data—Excluded by default; includes RADIUS attribute 26-92, L2C-Down-Stream-Data
- l2c-upstream-data—Excluded by default; includes RADIUS attribute 26-93, L2C-Up-Stream-Data
- l2cd-acc-loop-cir-id—Excluded by default; includes RADIUS attribute 26-110, Acc-Loop-Cir-Id; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- l2cd-acc-aggr-cir-id-bib—Excluded by default; includes RADIUS attribute 26-111, Acc-Aggr-Cir-Id-Bin; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- l2cd-acc-aggr-cir-id-asc—Excluded by default; includes RADIUS attribute 26-112, Acc-Aggr-Cir-Id-Asc; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- l2cd-act-data-rate-up—Excluded by default; includes RADIUS attribute 26-113, Act-Data-Rate-Up; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- l2cd-act-data-rate-dn—Excluded by default; includes RADIUS attribute 26-114, Act-Data-Rate-Dn; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages



- `l2cd-min-data-rate-up`—Excluded by default; includes RADIUS attribute 26-115, Min-Data-Rate-Up; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- `l2cd-min-data-rate-dn`—Excluded by default; includes RADIUS attribute 26-116, Min-Data-Rate-Dn; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- `l2cd-att-data-rate-up`—Excluded by default; includes RADIUS attribute 26-117, Att-Data-Rate-Up; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- `l2cd-att-data-rate-dn`—Excluded by default; includes RADIUS attribute 26-118, Att-Data-Rate-Dn; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- `l2cd-max-data-rate-up`—Excluded by default; includes RADIUS attribute 26-119, Max-Data-Rate-Up; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- `l2cd-max-data-rate-dn`—Excluded by default; includes RADIUS attribute 26-120, Max-Data-Rate-Dn; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- `l2cd-min-lp-data-rate-up`—Excluded by default; includes RADIUS attribute 26-121, Min-LP-Data-Rate-Up; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- `l2cd-min-lp-data-rate-dn`—Excluded by default; includes RADIUS attribute 26-122, Min-LP-Data-Rate-Dn; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- `l2cd-max-interlv-delay-up`—Excluded by default; includes RADIUS attribute 26-123, Max-Interlv-Delay-Up; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- `l2cd-act-interlv-delay-up`—Excluded by default; includes RADIUS attribute 26-124, Act-Interlv-Delay-Up; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- `l2cd-max-interlv-delay-dn`—Excluded by default; includes RADIUS attribute 26-125, Max-Interlv-Delay-Dn; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- `l2cd-act-interlv-delay-dn`—Excluded by default; includes RADIUS attribute 26-126, Act-Interlv-Delay-Dn; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- `l2cd-dsl-line-state`—Excluded by default; includes RADIUS attribute 26-127, DSL-Line-State; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages

- l2cd-dsl-type—Excluded by default; includes RADIUS attribute 26-128, DSL-Type; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- mlppp-bundle-name—Excluded by default; includes RADIUS attribute 26-62, MLPPP-Bundle-Name; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- nas-port—Includes RADIUS attribute 5, NAS-Port
- nas-port-id—Includes RADIUS attribute 87, NAS-Port-Id



**NOTE:** For subscribers connected over the link aggregation group (LAG) interface in DHCP standalone authenticate mode, RADIUS uses the LAG interface ID for the Nas-Port-Id attribute.

- nas-port-type—Includes RADIUS attribute 61, NAS-Port-Type



**NOTE:** For subscribers connected over the LAG interface in DHCP standalone authenticate mode, RADIUS calculates the value of the Nas-Port-Type attribute.

- pppoe-description—Includes RADIUS attribute 26-24, Pppoe-Description
- profile-service-description—Includes RADIUS attribute 26-53, Service-Description
- tunnel-client-auth-id—Includes RADIUS attribute 90, Tunnel-Client-Auth-Id
- tunnel-client-endpoint—Includes RADIUS attribute 66, Tunnel-Client-Endpoint
- tunnel-interface-id—Excluded by default; includes RADIUS attribute 26-44, Tunnel-Interface-ID
- tunnel-medium-type—Includes RADIUS attribute 65, Tunnel-Medium-Type
- tunnel-server-attributes—Excluded by default; includes all supported tunnel server attributes; that is, the attributes of the tunnel client when PPP is terminated at the LNS on the router
- tunnel-server-auth-id—Includes RADIUS attribute 91, Tunnel-Server-Auth-Id
- tunnel-server-endpoint—Includes RADIUS attribute 67, Tunnel-Server-Endpoint
- tunnel-type—Includes RADIUS attribute 64, Tunnel-Type
- upstream-calculated-qos-rate—Excluded by default; includes RADIUS attribute 26-142, Upstream-Calculated-Qos-Rate

Attributes available for Access-Request messages only:

- access-loop-parameters—Excluded by default; includes RADIUS attribute 26-81, L2c-Information

Attributes available for Acct-Start and Acct-Stop messages only:

- acct-link-count—Includes RADIUS attribute 51, Acct-Link-Count
- class—Includes RADIUS attribute 25, Class
- ds-lite-tunnel-name —Excluded by default; includes RADIUS attribute 144, DS-Lite-Tunnel-Name; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- egress-policy-name—Includes RADIUS attribute 26-11, Egress-Policy-Name
- framed-compression—Includes RADIUS attribute 13, Framed-Compression
- framed-ip-netmask—Includes RADIUS attribute 9, Framed-IP-Netmask
- framed-route—Excluded by default; includes RADIUS attribute 22, Framed-Route
- ingress-policy-name—Includes RADIUS attribute 26-10, Ingress-Policy-Name
- tunnel-assignment-id—Includes RADIUS attribute 82, Tunnel-Assignment-Id
- tunnel-preference—Includes RADIUS attribute 83, Tunnel-Preference
- ipv6-ingress-policy-name—Includes RADIUS attribute 26-106, Ipv6-Ingress-Policy-Name; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- ipv6-egress-policy-name—Includes RADIUS attribute 26-107, Ipv6-Egress-Policy-Name; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- pcp-server-name—Excluded by default; includes RADIUS attribute 26-165, PCP-Server-Name; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages
- qos-profile-name—Excluded by default; includes RADIUS attribute 26-26, QoS-Profile-Name; attribute automatically included in Interim-Acct messages when included in Acct-Stop messages



---

**NOTE:**

- The QoS profile names configured through the SRC software and CLI are not included in the RADIUS accounting messages. Only the profile name received from the RADIUS server in the Access-Accept messages is included in the RADIUS accounting messages.
  - The QoS profile name configured locally is not sent in the authentication Access-Request messages.
  - The QoS profile name returned by the RADIUS server is sent in the subsequent RADIUS accounting messages even after the QoS profile name configured through RADIUS is overridden with the QoS profile name configured through the CLI; this is a limitation.
- 

Attributes available for Acct-Stop messages only:

- **delegated-ipv6-prefix**—Excluded by default; includes RADIUS attribute 123, Delegated-Ipv6-Prefix
  - The attribute value received from the RADIUS server in the Access-Accept message is used in the accounting messages
  - When prefix delegation occurs, an immediate-update (if enabled) message, which contains the delegated prefix information, is sent to the RADIUS server
  - When the prefix to be delegated to clients is obtained from the IPv6 local address server and not the RADIUS server and the **aaa dhcpv6-delegated-prefix delegated-ipv6-prefix** command is configured, the delegated prefix is sent to the RADIUS server in this attribute in the immediate accounting, Acct-Stop, or Interim-Acct messages
  - When the prefix to be delegated to clients is allocated from the IPv6 local address server and the **aaa dhcpv6-delegated-prefix delegated-ipv6-prefix** command is not configured, the delegated prefix is sent to the RADIUS server in the Framed-Ipv6-Prefix attribute in the immediate accounting, Acct-Stop, or Interim-Acct messages
  - For static interfaces, although the prefix configured using the CLI command is used for DHCPv6 Prefix Delegation instead of the value returned by the RADIUS server, the immediate accounting, Acct-Stop, or Interim-Acct messages contain the prefix returned from the RADIUS server
  - If this attribute is not returned from the RADIUS server, the immediate accounting, Acct-Stop, or Interim-Acct messages do not report this attribute
- **framed-ipv6-pool**—Excluded by default; includes RADIUS attribute 100, Framed-IPv6-Pool; the attribute value received from the RADIUS server in the Access-Accept message is used in the accounting messages; if this attribute is configured in the AAA domain map using the CLI and is not returned from RADIUS

server, the Acct-Start, Acct-Stop, or Interim-Acct messages report the value configured in the domain map

- **framed-ipv6-route**—Excluded by default; includes RADIUS attribute 99, Framed-IPv6-Route; the attribute value received from the RADIUS server in the Access-Accept message is used in the accounting messages; when this attribute is not returned from the RADIUS server in the Access-Accept message, the immediate accounting, Acct-Stop, or Interim-Acct messages do not report this attribute
- **input-gigapkts**—Includes RADIUS attribute 26-35, Acct-Input-Gigapackets
- **input-gigawords**—Includes RADIUS attribute 52, Acct-Input-Gigawords
- **ipv6-accounting**—Excluded by default; automatically included in Interim-Acct messages when included in Acct-Stop messages; includes the following RADIUS attributes:
  - IPv6-Acct-Input-Octets [26-151]
  - IPv6-Acct-Output-Octets [26-152]
  - IPv6-Acct-Input-Packets [26-153]
  - IPv6-Acct-Output-Packets [26-154]
  - IPv6-Acct-Input-Gigawords [26-155]
  - IPv6-Acct-Output-Gigawords [26-156]
- **ipv6-local-interface**—Excluded by default; includes RADIUS attribute 26-46, Ipv6-Local-Interface; the attribute value received from the RADIUS server in the Access-Accept message is used in the accounting messages; if IPv6 local interface is configured in the AAA domain map and is not returned from the RADIUS server, the Acct-Start, Acct-Stop, or Interim-Acct messages report the value configured in the domain map
- **ipv6-nd-ra-prefix**—Excluded by default; includes RADIUS attribute 26-129, Ipv6-NdRa-Prefix; the attribute value received from the RADIUS server in the Access-Accept message is included in the accounting messages; for dynamic interfaces, if the Ipv6-NdRa-Prefix attribute is configured in the profile and is not returned from RADIUS server, this attribute is not included in the Acct-Start, Acct-Stop, and Interim-Acct messages



**NOTE:** When you attempt to configure the Ipv6-NdRa-Prefix attribute using the dynamic configuration manager (DCM) profile, the prefix is not successfully configured and the subscriber does not come up. In this scenario, the RADIUS server rejects the authentication request from the subscriber and records an error message stating that address allocation failed. However, if you attempt to configure the Ipv6-NdRa-Prefix attribute using the RADIUS profile, the prefix is correctly configured and the subscriber comes up successfully. This behavior is expected when the DCM profile is used to configure the Ipv6-NdRa-Prefix attribute.

This scenario occurs when router advertisements are enabled in the DCM profile and the RADIUS server returns only the Framed-Interface-Id attribute. Because the AAA server requires one of the following attributes to authenticate IPv6 subscribers, and none of these attributes are returned from the RADIUS server, the logging in of subscribers fails:

- Ipv6-NdRa-Prefix (VSA 26-129)
  - Framed-IPv6-Prefix (RADIUS IETF attribute 97)
  - Framed-IPv6-Route (RADIUS IETF attribute 99)
  - Framed-IPv6-Pool (RADIUS IETF attribute 100)
  - Delegated-IPv6-Prefix (RADIUS IETF attribute 123)
- 
- ipv6-primary-dns—Excluded by default; includes RADIUS attribute 26-47, Ipv6-Primary-DNS; the attribute value received from the RADIUS server in the Access-Accept message is used in the accounting messages; if the IPv6 primary DNS server is configured in the AAA domain map and is not returned from the RADIUS server, the Acct-Start, Acct-Stop, or Interim-Acct messages report the value configured in the AAA domain map
  - ipv6-secondary-dns—Excluded by default; includes RADIUS attribute 26-48, Ipv6-Secondary-DNS; the attribute value received from the RADIUS server in the Access-Accept message is used in the accounting messages; if the IPv6 secondary DNS server is configured in the AAA domain map and is not returned from the RADIUS server, the Acct-Start, Acct-Stop, or Interim-Acct messages report the value configured in the AAA domain map
  - ipv6-virtual-router—Excluded by default; includes RADIUS attribute 26-45, Ipv6-Virtual-Router
    - The attribute value received from the RADIUS server in the Access-Accept message is used in the accounting messages
    - If the IPv6 virtual router is configured in the AAA domain map and is not returned from the RADIUS server, the Acct-Start, Acct-Stop, or Interim-Acct messages report the value configured in the domain map

- If IPv6 virtual router is not configured in the AAA domain map and is not returned from the RADIUS server, it is not included in the Acct-Start message because the value is not yet known
- If the IPv6 virtual router context is configured from the profile, it is reported in the immediate-update message for DHCPv6 prefix delegation
- If you configure the default virtual router as the authentication virtual router for the domain map using the **ipv6-router-name** command in Domain Map Configuration Mode and the IPv6-Virtual-Router RADIUS VSA attribute [26-45] is returned from the RADIUS server in the Access-Accept message, the IPv6 virtual router context returned from the RADIUS server overrides the IPv6 virtual router context configured in the AAA domain map. If you configure a nondefault virtual router as the authentication virtual router for the AAA domain map and the IPv6-Virtual-Router RADIUS VSA attribute [26-45] is returned from the RADIUS server in the Access-Accept message, the IPv6 virtual router context in the AAA domain map takes precedence over the IPv6 virtual router context returned from the RADIUS server.
- l2tp-ppp-disconnect-cause—Includes RADIUS attribute 26-51, Disconnect-Cause
- output-gigapkts—Includes RADIUS attribute 26-36, Acct-Output-Gigapackets
- output-gigawords—Includes RADIUS attribute 53, Acct-Output-Gigawords

Attributes available for Access-Request, Acct-Start, Acct-Stop, Acct-On, and Acct-Off messages:

- nas-identifier—Includes RADIUS attribute 32, NAS-Identifier

Attributes available for Access-Request, Acct-On, and Acct-Off messages:

- acct-session-id—Includes RADIUS attribute 44, Acct-Session-Id; can be optionally included in the change-of-authorization (CoA) message from the RADIUS server or in the user login request if the packet mirroring operation is required; the Acct-Session-Id VSA is used:
  - In the RADIUS-initiated CoA message to start the mirroring session when the user is already logged in
  - As a trigger in user-initiated mirroring to identify the user whose traffic is to be mirrored

Attributes available for Acct-Start, Acct-Stop, Acct-On, and Acct-Off messages:

- event-timestamp—Includes RADIUS attribute 55, Event-Timestamp

Attributes available for Acct-On and Acct-Off messages only:

- acct-authentic—Includes RADIUS attribute 45, Acct-Authentic
- acct-delay-time—Includes RADIUS attribute 41, Acct-Delay-Time

Attributes available for Acct-Off messages only:

- `acct-terminate-cause`—Includes RADIUS attribute 49, Acct-Terminate-Cause
- `access-request`—Specifies RADIUS Access-Request messages
- `acct-on`—Specifies RADIUS Acct-On messages
- `acct-off`—Specifies RADIUS Acct-Off messages
- `acct-start`—Specifies RADIUS Acct-Start messages
- `acct-stop`—Specifies RADIUS Acct-Stop messages
- `enable`—Enables attribute inclusion
- `disable`—Disables attribute inclusion; the attribute is excluded

**Mode**    Global Configuration



## PART 3

# Administration

- [Monitoring ICR on page 55](#)
- [Monitoring Commands on page 59](#)



## CHAPTER 7

# Monitoring ICR

- [Monitoring the Configuration of ICR Partitions on page 55](#)
- [Monitoring the Configuration of an ICR Partition Attached to an Interface on page 57](#)
- [Monitoring the Status of ICR Partition Accounting on page 58](#)

### Monitoring the Configuration of ICR Partitions

---

**Purpose** Display information about ICR partitions and their status.

**Action** To display information about all ICR partitions:

```
host1#show icr-partitions
```

Interface-Location	Vrrp-Id	State	Partition-ID
3/5/0.2	20	*Backup	part20A
3/5/0.1	10	Master	part10A
2/1/0.1	1	Backup	part1Backup
2/5/0.2	2	Backup	part2Backup
3/1/0.1	4	Dormant	part4

```
Total ICR Partitions: 5
```

To display information based on the state of a specific ICR partition:

```
host1#show icr-partitions Master
```

Interface-Location	Vrrp-Id	State	Partition-ID
3/5/0.1	10	Master	part10A

```
Total ICR Partitions in Master state: 1
```

To display a summary of the ICR partitions configured:

```
host1#show icr-partitions summary
```

```
Dormant ICR Partitions: 1
Backup ICR Partitions: 3
Master ICR Partitions: 1
Total ICR Partitions: 5
```

You can also display information about configured ICR partitions using a filter as an alternative to specifying the **state** keyword. For instance, to display information about the backup and dormant ICR partitions only, you can use the **exclude Master** keywords, as shown in the following example:

```

host1#show icr-partitions | exclude Master
Interface-Location Vrrp-Id   State      Partition-ID
-----
3/5/0.2           20      *Backup    part20A
2/1/0.1           1       Backup     part1Backup
2/5/0.2           2       Backup     part2Backup
3/1/0.1           4       Dormant     part4
-----
Total ICR Partitions: 5

```

**Meaning** [Table 4 on page 56](#) lists the **show icr-partitions** command output fields.

**Table 4: show icr-partitions Output Fields**

Field Name	Field Description
Interface-Location	Interface Identifier or location identifier of the ICR partition.
Vrrp-Id	VRRP identifier of the VRRP instance associated with the ICR partition.
State	<p>State of the ICR partition:</p> <ul style="list-style-type: none"> <li>• Master—ICR partition that accepts subscriber login requests.</li> <li>• Backup—ICR partition that does not accept subscriber login requests.</li> <li>• Dormant—When the IP address or virtual router is forcibly deleted, or if the lower interface is not available, the ICR partition moves to the Dormant state. The dormant ICR partition does not accept subscriber login requests.</li> </ul> <p><b>NOTE:</b> The state of the ICR partition depends on the associated VRRP instance. When the state of the VRRP instance changes, the state of the ICR partition also changes. A '*' associated with an ICR partition indicates that the partition is in transition.</p>
Partition-ID	Identifier for the ICR partition.
Dormant ICR Partitions	Number of dormant ICR partitions on the router.
Backup ICR Partitions	Number of backup ICR partitions configured on the router.
Master ICR Partitions	Number of master ICR partitions configured on the router.
Total ICR Partitions	Total number of ICR partitions configured on the router.

**Related Documentation**

- [Configuring the Interface on Which ICR Partitions Reside on page 17](#)

- [show icr-partitions on page 61](#)

## Monitoring the Configuration of an ICR Partition Attached to an Interface

**Purpose** Display information about the ICR partition configured on an interface.

**Action** `host1#show icr-partition fastEthernet 3/5/0.11`  
 ICR Partition ID: part1A  
 ICR Partition State: Master  
 ICR Partition Grouping Criterion: SVLAN

SVLAN	VLAN	control-interface	vrrp-mac	advertise-mac
100	Any	enabled	disabled	enabled
101	Any	enabled	disabled	disabled
102	Any	enabled	disabled	disabled
103	Any	enabled	disabled	disabled
104	Any	enabled	disabled	disabled
105	Any	enabled	disabled	disabled
106	Any	enabled	disabled	disabled
107	Any	enabled	disabled	disabled
108	Any	enabled	disabled	disabled
109	Any	enabled	disabled	disabled

ICR Partition has 10 group members.

**Meaning** [Table 5 on page 57](#) lists the `show icr-partition` command output fields.

**Table 5: show icr-partition Output Fields**

Field Name	Field Description
ICR Partition ID	Identifier for the ICR partition.
ICR Partition State	State of the ICR partition: <ul style="list-style-type: none"> <li>• Master—ICR partition that accepts subscriber login requests.</li> <li>• Backup—ICR partition that does not accept subscriber login requests.</li> <li>• Dormant—When the IP address or virtual router is forcibly deleted, or if the lower interface is not available, the ICR partition moves to the Dormant state. The dormant ICR partition does not accept subscriber login requests.</li> </ul> <p><b>NOTE:</b> The state of the ICR partition depends on the associated VRRP instance.</p>
ICR Partition Grouping Criterion	Grouping option for the subscribers. Possible options: S-VLAN and VLAN. The default grouping option is S-VLAN.
SVLAN	S-VLAN identifier for the interface.

Table 5: show icr-partition Output Fields (*continued*)

Field Name	Field Description
VLAN	VLAN identifier for the interface. <b>Any</b> indicates that the VLAN ID is a wildcard and you can specify any configured VLAN ID with the associated S-VLAN ID.
control-interface	Controls the state of the corresponding subinterfaces (up/AdminDown) based on the state of the partition (master or backup). If the subinterfaces are part of the backup partition, the router changes the state of all the subinterfaces to AdminDown. You can also block all traffic on the backup partition. However, the router does not block VRRP advertisements as long as VRRP is running on a separate interface. Possible states: enabled or disabled. If the status is enabled, the router changes the state of the subinterface based on the state of the partition. If the status is disabled, the router does not control the state of the corresponding subinterface.
vrrp-mac	Configures the interface to use the default MAC address instead of the VRRP MAC address. Possible states: enabled or disabled. If the status is enabled, the interface uses the VRRP MAC address; otherwise, the interface uses the default MAC address.
advertise-mac	Enables the interface to transmit GARP advertisements when the partition moves from backup state to master state. Possible states: enabled or disabled. If the status is enabled, the interface transmits GARP advertisements; otherwise, the interface does not transmit GARP advertisements.

- Related Documentation**
- [Configuring the Interface on Which ICR Partitions Reside on page 17](#)
  - [show icr-partition on page 60](#)

## Monitoring the Status of ICR Partition Accounting

**Purpose** Display the status of ICR partition accounting.

**Action** To display the status of ICR partition accounting:

```
host1#show radius icr-partition-accounting
enabled
```

**Meaning** ICR partition accounting status is either enabled or disabled.

- Related Documentation**
- [show radius icr-partition-accounting on page 62](#)

## CHAPTER 8

# Monitoring Commands

## show icr-partition

---

<b>Syntax</b>	show icr-partition [ <i>interfaceType interfaceSpecifier</i> [ <i>vrld</i> ] ] [ <i>filter</i> ]
<b>Release Information</b>	Command introduced in JunosE Release 10.3.0.
<b>Description</b>	Displays ICR partition information for the VRID configured on the specified interface.
<b>Options</b>	<ul style="list-style-type: none"><li>• <i>interfaceType</i>—One of the following interface types listed in Interface Types and Specifiers<ul style="list-style-type: none"><li>• fastEthernet</li><li>• gigabitEthernet</li><li>• tenGigabitEthernet</li></ul></li><li>• <i>interfaceSpecifier</i>—Particular interface; format varies according to interface type; see Interface Types and Specifiers</li><li>• <i>vrld</i>—Virtual router ID identifier; a number in the range 1– 255</li><li>• <i>filter</i>—See Filtering show Commands</li></ul>
<b>Mode</b>	Privileged Exec
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Monitoring the Configuration of an ICR Partition Attached to an Interface on page 57</a></li><li>• <a href="#">Monitoring the Status of ICR Partition Accounting on page 58</a></li><li>• <a href="#">Monitoring the Configuration of ICR Partitions on page 55</a></li></ul>



## show icr-partitions

---

<b>Syntax</b>	show icr-partitions [ backup   dormant   master   summary ] [ <i>filter</i> ]
<b>Release Information</b>	Command introduced in JunosE Release 10.3.0.
<b>Description</b>	Displays a list of all configured ICR partitions in different states, and a summary of all configured ICR partitions on the router. Includes information about the state of the partition, the partition identifier, the virtual router identifier, and the interface identifier.
<b>Options</b>	<ul style="list-style-type: none"><li>• backup—Displays the total number of backup ICR partitions configured on the router</li><li>• dormant—Displays the total number of dormant ICR partitions configured on the router</li><li>• master—Displays the total number of master ICR partitions configured on the router</li><li>• summary—Displays a summary of all ICR partitions configured on the router</li><li>• <i>filter</i>—See Filtering show Commands</li></ul>
<b>Mode</b>	Privileged Exec
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Monitoring the Configuration of ICR Partitions on page 55</a></li><li>• <a href="#">Monitoring the Configuration of an ICR Partition Attached to an Interface on page 57</a></li><li>• <a href="#">Monitoring the Status of ICR Partition Accounting on page 58</a></li></ul>

## show radius icr-partition-accounting

---

**Syntax** show radius icr-partition-accounting [ *filter* ]

**Release Information** Command introduced in JunosE Release 10.3.0.

**Description** Displays whether ICR partition accounting is enabled on the virtual router

**Options** • *filter*—See Filtering show Commands

**Mode** Privileged Exec

## PART 4

# Index

- [Index on page 65](#)



# Index

## A

Access-Request messages	
ICR Partition ID VSA.....	8
Acct-Start messages	
ICR Partition ID VSA.....	8
Acct-Stop messages	
ICR Partition ID VSA.....	8

## B

B-RAS commands	
radius icr-partition-accounting.....	42
radius include.....	43
show radius icr-partition-accounting.....	62

## C

conventions	
notice icons.....	ix
text and syntax.....	x
customer support.....	xi
contacting JTAC.....	xi

## D

documentation set	
comments on.....	xi

## I

icr cluster.....	5
ICR commands	
interface .....	17
ip vrrp icr-partition.....	30
ip vrrp icr-partition group.....	31
ip vrrp icr-partition svlan-list.....	32
ip vrrp icr-partition vlan-list.....	36
ip vrrp icr-partition vlan-range.....	37
show icr partition.....	60
show icr partitions.....	61
icr interface.....	5
ICR Options	
icr-control-interface.....	17
priority command.....	18
timers-learn command.....	18

ICR Partition	
configuring .....	15, 17, 18, 19, 21
configuring, naming.....	18
radius.....	22
ICR partition accounting	
and dependence on Acct-Stop messages.....	8
configuring.....	7
disabling and enabling messages	
sent to the RADIUS server.....	7
overview.....	7
processing in different scenarios	
administrative switchover.....	8
complete chassis failure.....	8
line module or interface failure.....	8
transition of ICR partition states.....	8
viewing the status, enabled or disabled.....	58
ICR Partition commands	
naming .....	19
ICR partition ID VSA	
including in access and accounting	
messages.....	8
ICR Partition ID VSA	
transmitting to the virtual router	
where ICR control interface is	
configured.....	8
where ICR partition is configured.....	8
ICR Partition Options	
advertise-mac.....	20, 21
control-interface .....	20, 21
group option.....	20, 21
use-default-mac .....	20, 21
ICR Partitions	
configuration example	
backup ICR partition, S-VLAN based	
grouping.....	24
master ICR partition, S-VLAN based	
grouping.....	23
ICR RADIUS commands	
inclusion of icr-partition-id.....	22
radius icr-partition-accounting.....	22
icr-partition.....	6
Interchassis Redundancy	
heterogeneous icr clusters.....	4
icr clusters.....	4
icr partition.....	4
Interim-Acct messages	
ICR Partition ID VSA.....	8

IP commands		
ip vrrp.....	28	ip vrrp icr-partition.....30
ip vrrp enable.....	29	ip vrrp icr-partition group.....31
ip vrrp icr-partition.....	30	ip vrrp icr-partition svlan-list.....32
ip vrrp icr-partition group.....	31	ip vrrp icr-partition vlan-list.....36
ip vrrp icr-partition svlan-list.....	32	ip vrrp icr-partition vlan-range.....37
ip vrrp icr-partition svlan-list explicit.....	33	ip vrrp priority.....39
ip vrrp icr-partition svlan-range.....	34	ip vrrp timers-learn.....40
ip vrrp icr-partition vlan-list.....	36	ip vrrp virtual-address.....41
ip vrrp icr-partition vlan-range.....	37	show icr partition.....60
ip vrrp priority.....	39	show icr partitions.....61
ip vrrp timers-learn.....	40	VRRP ICR commands
ip vrrp virtual-address.....	41	ip vrrp icr-partition svlan-list explicit.....33
		ip vrrp icr-partition svlan-range.....34
<b>M</b>		
manuals		
comments on.....	xi	
<b>N</b>		
notice icons.....	ix	
<b>R</b>		
RADIUS.....	6	
RADIUS commands		
radius icr-partition-accounting.....	42	
radius include.....	43	
show radius icr-partition-accounting.....	62	
<b>S</b>		
show icr commands		
show icr-partition.....	57	
show icr-partitions.....	55	
state.....	55	
summary.....	55	
show radius commands		
show radius icr-partition-accounting.....	58	
support, technical See technical support		
<b>T</b>		
technical support		
contacting JTAC.....	xi	
text and syntax conventions.....	x	
<b>V</b>		
VRRP.....	6	
VRRP commands		
icr.....	18	
ip vrrp.....	28	
ip vrrp enable.....	29	