

# Ruckus FastIron Features and Standards Support Matrix, 08.0.80

Supporting FastIron Software Release 08.0.80

# Copyright, Trademark and Proprietary Rights Information

© 2018 ARRIS Enterprises LLC. All rights reserved.

No part of this content may be reproduced in any form or by any means or used to make any derivative work (such as translation, transformation, or adaptation) without written permission from ARRIS International plc and/or its affiliates ("ARRIS"). ARRIS reserves the right to revise or change this content from time to time without obligation on the part of ARRIS to provide notification of such revision or change.

## Export Restrictions

These products and associated technical data (in print or electronic form) may be subject to export control laws of the United States of America. It is your responsibility to determine the applicable regulations and to comply with them. The following notice is applicable for all products or technology subject to export control:

*These items are controlled by the U.S. Government and authorized for export only to the country of ultimate destination for use by the ultimate consignee or end-user(s) herein identified. They may not be resold, transferred, or otherwise disposed of, to any other country or to any person other than the authorized ultimate consignee or end-user(s), either in their original form or after being incorporated into other items, without first obtaining approval from the U.S. government or as otherwise authorized by U.S. law and regulations.*

## Disclaimer

THIS CONTENT AND ASSOCIATED PRODUCTS OR SERVICES ("MATERIALS"), ARE PROVIDED "AS IS" AND WITHOUT WARRANTIES OF ANY KIND, WHETHER EXPRESS OR IMPLIED. TO THE FULLEST EXTENT PERMISSIBLE PURSUANT TO APPLICABLE LAW, ARRIS DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, TITLE, NON-INFRINGEMENT, FREEDOM FROM COMPUTER VIRUS, AND WARRANTIES ARISING FROM COURSE OF DEALING OR COURSE OF PERFORMANCE. ARRIS does not represent or warrant that the functions described or contained in the Materials will be uninterrupted or error-free, that defects will be corrected, or are free of viruses or other harmful components. ARRIS does not make any warranties or representations regarding the use of the Materials in terms of their completeness, correctness, accuracy, adequacy, usefulness, timeliness, reliability or otherwise. As a condition of your use of the Materials, you warrant to ARRIS that you will not make use thereof for any purpose that is unlawful or prohibited by their associated terms of use.

## Limitation of Liability

IN NO EVENT SHALL ARRIS, ARRIS AFFILIATES, OR THEIR OFFICERS, DIRECTORS, EMPLOYEES, AGENTS, SUPPLIERS, LICENSORS AND THIRD PARTY PARTNERS, BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, PUNITIVE, INCIDENTAL, EXEMPLARY OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER, EVEN IF ARRIS HAS BEEN PREVIOUSLY ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, WHETHER IN AN ACTION UNDER CONTRACT, TORT, OR ANY OTHER THEORY ARISING FROM YOUR ACCESS TO, OR USE OF, THE MATERIALS. Because some jurisdictions do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of liability for consequential or incidental damages, some of the above limitations may not apply to you.

## Trademarks

ARRIS, the ARRIS logo, Ruckus, Ruckus Wireless, Ruckus Networks, Ruckus logo, the Big Dog design, BeamFlex, ChannelFly, Edgellron, FastIron, HyperEdge, ICX, IronPoint, OPENG, SmartCell, Unleashed, Xclaim, ZoneFlex are trademarks of ARRIS International plc and/or its affiliates. Wi-Fi Alliance, Wi-Fi, the Wi-Fi logo, the Wi-Fi CERTIFIED logo, Wi-Fi Protected Access (WPA), the Wi-Fi Protected Setup logo, and WMM are registered trademarks of Wi-Fi Alliance. Wi-Fi Protected Setup™, Wi-Fi Multimedia™, and WPA2™ are trademarks of Wi-Fi Alliance. All other trademarks are the property of their respective owners.

# Contents

---

|  |           |
|--|-----------|
| <b>Preface</b> .....                                   | <b>7</b>  |
| Document Conventions.....                              | 7         |
| Notes, Cautions, and Warnings.....                     | 7         |
| Command Syntax Conventions.....                        | 8         |
| Document Feedback.....                                 | 8         |
| Ruckus Product Documentation Resources.....            | 8         |
| Online Training Resources.....                         | 9         |
| Contacting Ruckus Customer Services and Support.....   | 9         |
| What Support Do I Need?.....                           | 9         |
| Open a Case.....                                       | 9         |
| Self-Service Resources.....                            | 9         |
| <b>Management</b> .....                                | <b>11</b> |
| Configuration Fundamentals.....                        | 11        |
| CDP - Cisco Discovery Protocol.....                    | 13        |
| FDP - Foundry Discovery Protocol.....                  | 13        |
| Licensing.....   | 13        |
| LLDP - Link Layer Discovery Protocol.....              | 13        |
| NTP - Network Time Protocol.....                       | 14        |
| PoE/PoE+ - Power over Ethernet.....                    | 14        |
| SNMP - Simple Network Management Protocol.....         | 15        |
| Software Upgrade.....                                  | 15        |
| <b>Monitoring</b> .....                                | <b>17</b> |
| Hardware Monitoring.....                               | 17        |
| OAM - Operations, Administration, and Maintenance..... | 17        |
| Port Mirroring.....                                    | 18        |
| RMON - Remote Networking Monitoring.....               | 18        |
| Syslog.....  | 18        |
| sFlow.....   | 19        |
| <b>IP Multicast</b> .....                              | <b>21</b> |
| IPv4 Multicast Routing.....                            | 21        |
| IPv6 Multicast Routing.....                            | 21        |
| IPv4 Multicast VLAN Traffic Reduction.....             | 22        |
| IPv6 Multicast VLAN Traffic Reduction.....             | 22        |
| MLD - Multicast Listener Discovery.....                | 22        |
| MSDP - Multicast Source Discovery Protocol.....        | 22        |
| PIM - Protocol-Independent Multicast.....              | 23        |
| PIM6 - IPv6 Protocol-Independent Multicast.....        | 23        |
| <b>Layer 2 Switching</b> .....                         | <b>25</b> |
| Campus Fabric.....                                     | 25        |
| LAG - Link Aggregation Group.....                      | 26        |
| MCT - Multi-Chassis Trunking.....                      | 26        |
| MRP - Metro Ring Protocol.....                         | 27        |
| Q-in-Q - 802.1q tunneling.....                         | 27        |
| RFN - Remote Fault Notification.....                   | 27        |

|   |           |
|---|-----------|
| RPF - Reverse Path Forwarding.....  | 27        |
| UDLD - Uni-Directional Link Detection.....                                  | 27        |
| VLAN - Virtual LAN.....   | 28        |
| VXLAN - Virtual Extensible LAN .....  | 28        |
| VRP - VLAN Registration Protocol (includes GVRP).....                       | 28        |
| VSRP - Virtual Switch Redundancy Protocol.....                              | 29        |
| Protected Ports.....  | 29        |
| xSTP - Spanning Tree Protocols.....   | 29        |
| <b>Layer 3 Routing/Network Layer.....</b>                                   | <b>31</b> |
| ARP - Address Resolution Protocol.....                                      | 31        |
| BGP4 - IPV4 Border Gateway Protocol .....                                   | 31        |
| BGP4+ - IPV6 Border Gateway Protocol.....                                   | 32        |
| DHCP - Dynamic Host Configuration Protocol.....                             | 33        |
| DNS - Domain Name System.....   | 33        |
| GRE - Generic Routing Encapsulation.....                                    | 34        |
| ICMP - Internet Control Message Protocol.....                               | 34        |
| IP Addressing.....  | 34        |
| IPv6 Addressing.....  | 34        |
| Multi-VRF.....  | 35        |
| OSPF - IPV4 Open Shortest Path First.....                                   | 36        |
| OSPFv3 - IPV6 Open Shortest Path First.....                                 | 36        |
| RIP - IPV4 Routing Information Protocol.....                                | 37        |
| RIPng - IPV6 Routing Information Protocol.....                              | 37        |
| VRRPv2 - Virtual Router Redundancy Protocol Version 2.....                  | 37        |
| VRRPv3 - Virtual Router Redundancy Protocol Version 3.....                  | 38        |
| <b>Security.....</b>  | <b>39</b> |
| Authentication, Authorization, and Accounting.....                          | 39        |
| ACLs - Access Control Lists.....  | 39        |
| DoS (Denial of Service) protection.....                                     | 40        |
| Flexible Authentication (802.1x Authentication and MAC Authentication)..... | 41        |
| HTTP/HTTPS.....   | 42        |
| IP Source Guard.....  | 42        |
| IPsec - IP security.....  | 42        |
| MACsec - Media Access Control Security.....                                 | 43        |
| PBR - Policy-Based Routing.....   | 43        |
| Port MAC Security.....  | 43        |
| RADIUS.....   | 44        |
| RA Guard - Router Advertisement Guard.....                                  | 44        |
| SSH - Secure Shell.....   | 44        |
| TACACS & TACACS+.....   | 45        |
| User Accounts and Passwords.....  | 45        |
| <b>SDN.....</b>   | <b>47</b> |
| OpenFlow.....   | 47        |
| <b>Stacking.....</b>  | <b>49</b> |
| Stack Failover/Switchover.....  | 49        |
| Stacking.....   | 49        |
| <b>Traffic Management.....</b>  | <b>51</b> |
| QoS - Quality of Service.....   | 51        |

|                                  |           |
|----------------------------------|-----------|
| Rate Limiting and Shaping.....   | 51        |
| <b>Standards compliance.....</b> | <b>53</b> |
| RFC Compliance.....              | 53        |
| IEEE Compliance.....             | 61        |



# Preface

- Document Conventions..... 7
- Command Syntax Conventions..... 8
- Document Feedback..... 8
- Ruckus Product Documentation Resources..... 8
- Online Training Resources..... 9
- Contacting Ruckus Customer Services and Support..... 9

## Document Conventions

The following tables list the text and notice conventions that are used throughout this guide.

**TABLE 1** Text conventions

| Convention     | Description   | Example  |
|----------------|---|--|
| monospace      | Identifies command syntax examples.   | <code>device(config)# interface ethernet 1/1/6</code>                    |
| <b>bold</b>    | User interface (UI) components such as screen or page names, keyboard keys, software buttons, and field names | On the <b>Start</b> menu, click <b>All Programs</b> .                    |
| <i>italics</i> | Publication titles  | Refer to the <i>Ruckus Small Cell Release Notes</i> for more information |

## Notes, Cautions, and Warnings

Notes, cautions, and warning statements may be used in this document. They are listed in the order of increasing severity of potential hazards.

### NOTE

A NOTE provides a tip, guidance, or advice, emphasizes important information, or provides a reference to related information.



### CAUTION

A CAUTION statement alerts you to situations that can be potentially hazardous to you or cause damage to hardware, firmware, software, or data.



### DANGER

A DANGER statement indicates conditions or situations that can be potentially lethal or extremely hazardous to you. Safety labels are also attached directly to products to warn of these conditions or situations.

# Command Syntax Conventions

Bold and italic text identify command syntax components. Delimiters and operators define groupings of parameters and their logical relationships.

| Convention                         | Description   |
|------------------------------------|---|
| <b>bold text</b>                   | Identifies command names, keywords, and command options.  |
| <i>italic text</i>                 | Identifies a variable.  |
| [ ]                                | Syntax components displayed within square brackets are optional.<br>Default responses to system prompts are enclosed in square brackets.                                |
| { <b>x</b>   <b>y</b>   <b>z</b> } | A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options.   |
| <b>x</b>   <b>y</b>                | A vertical bar separates mutually exclusive elements.   |
| < >                                | Nonprinting characters, for example, passwords, are enclosed in angle brackets.   |
| ...                                | Repeat the previous element, for example, <i>member[member...]</i> .  |
| \                                  | Indicates a “soft” line break in command examples. If a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash. |

## Document Feedback

Ruckus is interested in improving its documentation and welcomes your comments and suggestions.

You can email your comments to Ruckus at: [docs@ruckuswireless.com](mailto:docs@ruckuswireless.com)

When contacting us, please include the following information:

- Document title and release number
- Document part number (on the cover page)
- Page number (if appropriate)
- For example:
  - Ruckus Small Cell Alarms Guide SC Release 1.3
  - Part number: 800-71306-001
  - Page 88

## Ruckus Product Documentation Resources

Visit the Ruckus website to locate related documentation for your product and additional Ruckus resources.

Release Notes and other user documentation are available at <https://support.ruckuswireless.com/documents>. You can locate documentation by product or perform a text search. Access to Release Notes requires an active support contract and Ruckus Support Portal user account. Other technical documentation content is available without logging into the Ruckus Support Portal.

White papers, data sheets, and other product documentation are available at <https://www.ruckuswireless.com>.



## Online Training Resources

To access a variety of online Ruckus training modules, including free introductory courses to wireless networking essentials, site surveys, and Ruckus products, visit the Ruckus Training Portal at <https://training.ruckuswireless.com>.

## Contacting Ruckus Customer Services and Support

The Customer Services and Support (CSS) organization is available to provide assistance to customers with active warranties on their Ruckus Networks products, and customers and partners with active support contracts.

For product support information and details on contacting the Support Team, go directly to the Support Portal using <https://support.ruckuswireless.com>, or go to <https://www.ruckuswireless.com> and select **Support**.

### What Support Do I Need?

Technical issues are usually described in terms of priority (or severity). To determine if you need to call and open a case or access the self-service resources use the following criteria:

- Priority 1 (P1)—Critical. Network or service is down and business is impacted. No known workaround. Go to the **Open a Case** section.
- Priority 2 (P2)—High. Network or service is impacted, but not down. Business impact may be high. Workaround may be available. Go to the **Open a Case** section.
- Priority 3 (P3)—Medium. Network or service is moderately impacted, but most business remains functional. Go to the **Self-Service Resources** section.
- Priority 4 (P4)—Low. Request for information, product documentation, or product enhancements. Go to the **Self-Service Resources** section.

### Open a Case

When your entire network is down (P1), or severely impacted (P2), call the appropriate telephone number listed below to get help:

- Continental United States: 1-855-782-5871
- Canada: 1-855-782-5871
- Europe, Middle East, Africa, and Asia Pacific, toll-free numbers are available at <https://support.ruckuswireless.com/contact-us> and Live Chat is also available.

### Self-Service Resources

The Support Portal at <https://support.ruckuswireless.com/contact-us> offers a number of tools to help you to research and resolve problems with your Ruckus products, including:

- **Technical Documentation**—<https://support.ruckuswireless.com/documents>
- **Community Forums**—<https://forums.ruckuswireless.com/ruckuswireless/categories>
- **Knowledge Base Articles**—<https://support.ruckuswireless.com/answers>

## Preface

### Contacting Ruckus Customer Services and Support

- [Software Downloads and Release Notes](https://support.ruckuswireless.com/software)—<https://support.ruckuswireless.com/software>
- [Security Bulletins](https://support.ruckuswireless.com/security)—<https://support.ruckuswireless.com/security>

Using these resources will help you to resolve some issues, and will provide TAC with additional data from your troubleshooting analysis if you still require assistance through a support case or RMA. If you still require help, open and manage your case at [https://support.ruckuswireless.com/case\\_management](https://support.ruckuswireless.com/case_management)

# Management

- Configuration Fundamentals..... 11
- CDP - Cisco Discovery Protocol..... 13
- FDP - Foundry Discovery Protocol..... 13
- Licensing..... 13
- LLDP - Link Layer Discovery Protocol..... 13
- NTP - Network Time Protocol..... 14
- PoE/PoE+ - Power over Ethernet..... 14
- SNMP - Simple Network Management Protocol..... 15
- Software Upgrade..... 15

## Configuration Fundamentals

For considerations related to configuration fundamentals in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature   | ICX 7150            | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|---------------------|----------|----------|----------|----------|
| Terminal logging  | 8.0.70              | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   |
| Reset button to factory default settings                      | 8.0.70              | No       | No       | 8.0.70   | No       |
| 10G LRM adapter   | 8.0.61              | 8.0.61   | No       | NA       | 8.0.61   |
| System name, contact, and location                            | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Cancelling an outbound Telnet session                         | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Byte-based broadcast, multicast, and unknown-unicast limits   | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Packet-based broadcast, multicast, and unknown-unicast limits | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| CLI banners   | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Port name   | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| 10 Mbps port speed  | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | No       |
| 100 Mbps port speed   | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | No       |
| 1000 Mbps port speed  | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| 40 Gbps port speed  | No                  | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| 100 Gbps port speed   | No                  | No       | No       | 8.0.70   | No       |
| Auto-negotiation  | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Auto-negotiation maximum port speed advertisement             | 8.0.60 <sup>1</sup> | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Full-duplex mode  | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Auto MDI/MDIX detection                                       | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Port status (enable or disable)                               | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Support for 100BaseTX   | No                  | 8.0.30   | 8.0.20   | No       | No       |
| Support for 100BaseFX   | No                  | 8.0.30   | 8.0.20   | 8.0.70   | No       |

<sup>1</sup> Only for copper ports. Fiber ports are not supported.

## Management

### Configuration Fundamentals

| Feature  | ICX 7150            | ICX 7250            | ICX 7450            | ICX 7650            | ICX 7750            |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|
| Gbps fiber negotiate mode  | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| VoIP auto-configuration and CDP                                      | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| Broadcast, multicast, and unknown-unicast suppression port dampening | 8.0.60              | 8.0.30h             | 8.0.30h             | 8.0.70              | 8.0.30h             |
| Port flap dampening  | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| Shutdown prevention for loop-detect                                  | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.20              |
| Elapsed timestamp for port statistics reset                          | 8.0.60              | 8.0.30              | 8.0.30              | 8.0.70              | 8.0.30              |
| Traffic counters for outbound traffic                                | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| Egress queue counters  | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| Flash and boot code verification                                     | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| Flash image verification   | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| Changing flash timeout value   | 8.0.60              | 8.0.30              | 8.0.30              | 8.0.70              | 8.0.30              |
| Software reboot  | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| Show boot preference   | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| Loading and saving configuration files                               | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| System reload scheduling   | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| Management port  | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| Telnet   | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| TFTP   | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| Multi-port static MAC address  | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| Static MAC entries with option to set traffic priority               | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| MAC address learning   | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| MAC address filtering on source and destination MAC addresses        | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| MAC address move notification  | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| Ability to disable MAC learning                                      | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| Layer 2 jumbo frames   | 8.0.60              | 8.0.30              | 8.0.20              | 8.0.70              | 8.0.10              |
| Ethernet loopback  | 8.0.60              | 8.0.30 <sup>2</sup> | 8.0.30 <sup>2</sup> | 8.0.70              | 8.0.30 <sup>2</sup> |
| Macros (batch and execute)   | 8.0.60              | 8.0.40              | 8.0.40              | 8.0.70              | 8.0.40              |
| CLI history  | 8.0.60              | 8.0.40              | 8.0.40              | 8.0.70              | 8.0.40              |
| Fanless mode   | 8.0.60 <sup>3</sup> | No                  | No                  | No                  | No                  |
| Status button support  | 8.0.70              | No                  | No                  | No                  | No                  |
| IEEE 802.3bz   | No                  | No                  | No                  | 8.0.70 <sup>4</sup> | No                  |
| Ruckus SmartZone - centralized management of ICX 7xxx switches       | 8.0.80              | 8.0.80              | 8.0.80              | 8.0.80              | 8.0.80              |

<sup>2</sup> No support for flow-unaware mode.

<sup>3</sup> Supported only on the ICX 7150-24P and the ICX 7150-48P.

<sup>4</sup> Supported on the ICX 7650-48ZP only

## CDP - Cisco Discovery Protocol

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| Cisco Discovery Protocol (CDP) for IPv4 and IPv6 traffic | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |

## FDP - Foundry Discovery Protocol

| Feature  | ICX 7150 | ICX 7250            | ICX 7450            | ICX 7650 | ICX 7750            |
|--|----------|---------------------|---------------------|----------|---------------------|
| Foundry Discovery Protocol (FDP) for IPv4 and IPv6 traffic | 8.0.60   | 8.0.30 <sup>5</sup> | 8.0.20 <sup>5</sup> | 8.0.70   | 8.0.10 <sup>5</sup> |

## Licensing

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| Software-based licensing                              | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| License generation, License query, Deleting a license | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | No       |
| MACsec licensing                                      | No       | No       | 8.0.30   | 8.0.70   | No       |
| Non-node locked licensing                             | No       | 8.0.30   | 8.0.20   | 8.0.70   | No       |
| PoD license management                                | 8.0.60   | 8.0.30   | No       | No       | No       |
| Self-authenticated upgrade (SAU) licensing            | 8.0.60   | 8.0.80   | 8.0.80   | 8.0.70   | 8.0.80   |

## LLDP - Link Layer Discovery Protocol

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| LLDP  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| LLDP-MED  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Support for tagged LLDP packets                             | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv4 management address advertisement                       | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv6 management address advertisement                       | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| LLDP operating mode setting per port                        | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| LLDP processing on 802.1x blocked port                      | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Setting the maximum number of LLDP neighbors                | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| LLDP transmission intervals                                 | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Hold-time multiplier for transmit TTL                       | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Configuring the minimum time between port reinitializations | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Fast start repeat count for LLDP-MED                        | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

<sup>5</sup> In an 802.1BR (SPX) configuration, FDP is not supported on PE ports.

## Management

### NTP - Network Time Protocol

| Feature                                      | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| Location ID for LLDP-MED                     | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| LLDP-MED network policy                      | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| LLDP 802.3 Power-via-MDI                     | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.20   |
| LLDP statistics and configuration details    | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| LLDP port ID subtype configuration for E-911 | 8.0.60   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |

## NTP - Network Time Protocol

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| Network Time Protocol Version 4 (NTP)                                | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| System clock   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| NTP over Management VRF  | No       | 8.0.40a  | 8.0.40a  | 8.0.70   | 8.0.40a  |
| Global time zone support   | 8.0.60   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |
| Ability to set summer-time start and end dates for non-US time zones | 8.0.60   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |

## PoE/PoE+ - Power over Ethernet

| Feature  | ICX 7150            | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 <sup>6</sup> |
|--|---------------------|----------|----------|----------|-----------------------|
| Auto PoE firmware upgrade  | 8.0.70              | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70                |
| PoE enabled by default   | 8.0.70              | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70                |
| Power over HDBaseT (PoH)   | 8.0.61 <sup>7</sup> | No       | 8.0.20   | 8.0.70   | No                    |
| uPoE   | 8.0.61 <sup>7</sup> | No       | 8.0.20   | 8.0.70   | No                    |
| PoE+ (802.3at)   | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | No                    |
| PoE (802.3af)  | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | No                    |
| Detection of PoE power requirements advertised through CDP               | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | No                    |
| Maximum power level for a PoE power-consuming device for LLDP-MED or CDP | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | No                    |
| Power class for PoE power-consuming device                               | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | No                    |
| Power limit per port   | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | No                    |
| Maximum power budget per PoE interface module                            | 8.0.60              | 8.0.30   | No       | 8.0.70   | No                    |
| In-line power priority for a PoE port                                    | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | No                    |
| PoE firmware upgrade via CLI   | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | No                    |
| PoE firmware download over SCP   | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | No                    |
| PoE de-couple datalink support on LAGs                                   | 8.0.60              | 8.0.30   | 8.0.20   | 8.0.70   | No                    |
| PoE overdrive  | 8.0.61 <sup>7</sup> | No       | No       | 8.0.70   | No                    |

<sup>6</sup> In 08.0.50, when the ICX 7750 is a control bridge (CB) in a campus fabric configuration, it supports PoE to the control plane

<sup>7</sup> Supported on the ICX 7150 Z Series only

## SNMP - Simple Network Management Protocol

| Feature                                       | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| SNMP v1, v2, and v3                           | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Community strings                             | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| User-based security model for SNMPv3          | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| SNMP traps                                    | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| SNMPv3 traps                                  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| SNMP MAC notification trap support            | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Defining the UDP port for SNMPv3 traps        | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| SNMPv3 over IPv6                              | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| AES encryption for SNMPv3                     | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| SNMP trap receiver and trap source address    | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Mapping SYSLOG messages to SNMP notifications | 8.0.60   | 8.0.40   | 8.0.40   | 8.0.70   | 8.0.40   |

## Software Upgrade

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| System backup to USB                                 | 8.0.70   | No       | No       | No       | 8.0.70   |
| Boot from USB  | 8.0.70   | No       | No       | 8.0.70   | No       |
| Software upgrade via CLI                             | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Software upgrade via SNMP                            | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Stack image autocopy                                 | 8.0.61   | 8.0.50   | 8.0.40   | 8.0.70   | 8.0.40   |
| Manifest file download support for a stack           | 8.0.60   | 8.0.50   | 8.0.40   | 8.0.70   | 8.0.40   |
| In-Service Software Upgrade (ISSU) for stacking      | 8.0.61   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |
| In-Service Software Upgrade (ISSU) for Campus Fabric | 8.0.70   | 8.0.70   | 8.0.70   | No       | 8.0.70   |
| Unified Forwarding Image (UFI) support               | 8.0.80   | 8.0.80   | 8.0.80   | 8.0.80   | 8.0.80   |





# Monitoring

- Hardware Monitoring.....17
- OAM - Operations, Administration, and Maintenance.....17
- Port Mirroring..... 18
- RMON - Remote Networking Monitoring..... 18
- Syslog..... 18
- sFlow..... 19

## Hardware Monitoring

| Feature                     | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|-----------------------------|----------|----------|----------|----------|----------|
| Virtual cable testing (VCT) | 8.0.61   | 8.0.40   | 8.0.40   | 8.0.70   | 8.0.40   |
| Digital optical monitoring  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

## OAM - Operations, Administration, and Maintenance

For considerations related to configuration fundamentals in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature   | ICX 7150 | ICX 7250 | ICX 7450            | ICX 7650 | ICX 7750            |
|---|----------|----------|---------------------|----------|---------------------|
| Diagnostic error codes  | 8.0.60   | 8.0.30   | 8.0.20              | 8.0.70   | 8.0.10              |
| IPv4 and IPv6 ping  | 8.0.60   | 8.0.30   | 8.0.20              | 8.0.70   | 8.0.10              |
| IPv4 traceroute   | 8.0.60   | 8.0.30   | 8.0.20              | 8.0.70   | 8.0.10              |
| RAS Histogram   | 8.0.61   | 8.0.30   | 8.0.30              | 8.0.70   | 8.0.30              |
| Energy Efficient Ethernet (EEE)   | No       | 8.0.30   | 8.0.30              | 8.0.70   | No                  |
| External USB storage  | 8.0.60   | 8.0.30   | 8.0.30              | 8.0.70   | 8.0.30              |
| USB console   | 8.0.60   | No       | No                  | 8.0.70   | No                  |
| Serial console in RJ45 format   | 8.0.60   | No       | No                  | 8.0.70   | No                  |
| Serial console in Mini-USB format                                       | No       | 8.0.30   | 8.0.20              | 8.0.70   | 8.0.10              |
| Link Fault Signaling (LFS) for 10 Gbps                                  | 8.0.60   | 8.0.30   | 8.0.20              | 8.0.70   | 8.0.10              |
| Ethernet in the First Mile for OAM (IEEE 802.3ah standard) <sup>8</sup> | 8.0.60   | 8.0.30   | 8.0.30              | 8.0.70   | No                  |
| Ignore shutdown temperature (battle short mode)                         | 8.0.60   | No       | 8.0.50 <sup>9</sup> | 8.0.70   | 8.0.50 <sup>9</sup> |

<sup>8</sup> In an 802.1BR (SPX) configuration, Ethernet in the First Mile for OAM is supported on SPX CB ports but not on PE ports.

<sup>9</sup> Also supported in 8.0.30j.

## Port Mirroring

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| Port mirroring and monitoring (mirroring of both inbound and outbound traffic on individual ports) | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| ACL-based mirroring <sup>10</sup>  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| MAC address filter-based mirroring <sup>10</sup>   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| VLAN-based mirroring <sup>10</sup>   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| ERSPAN <sup>10</sup>   | No       | 8.0.40   | 8.0.40   | 8.0.70   | 8.0.40   |
| RSPAN  | 8.0.80   | 8.0.80   | 8.0.80   | 8.0.80   | 8.0.80   |

## RMON - Remote Networking Monitoring

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| Remote monitoring (RMON 2)   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Specifying the maximum number of entries allowed in the RMON Control Table | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

## Syslog

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| Syslog messages (RFC 3164)                               | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Enhanced Syslog headers specific to RFC 5424             | 8.0.60   | 8.0.40   | 8.0.40   | 8.0.70   | 8.0.40   |
| Real-time display of Syslog messages                     | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Real-time display for Telnet or SSH sessions             | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Show log on all terminals                                | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Syslog time stamps                                       | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Multiple Syslog server logging                           | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Disabling logging of a message level                     | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Changing the number of entries the local buffer can hold | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Changing the log facility                                | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Displaying Interface names in Syslog messages            | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Displaying TCP and UDP port numbers in Syslog messages   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Retaining Syslog messages after a soft reboot            | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Clearing Syslog messages from the local buffer           | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Disabling Syslog messages and traps for CLI access       | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

<sup>10</sup> Not supported in an 802.1BR (SPX) configuration.

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| Broadcast, unknown unicast, and multicast (BUM) suppression Syslog and SNMP notification | 8.0.60   | 8.0.40a  | 8.0.40a  | 8.0.70   | 8.0.40a  |
| PKI authentication for Syslog  | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   |

## sFlow

| Feature                        | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--------------------------------|----------|----------|----------|----------|----------|
| sFlow version 2                | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| sFlow version 5 (default)      | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| sFlow support for IPv6 packets | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| sFlow source IP address        | 8.0.60   | 8.0.30   | 8.0.30   | 8.0.70   | 8.0.30   |



# IP Multicast

- IPv4 Multicast Routing..... 21
- IPv6 Multicast Routing..... 21
- IPv4 Multicast VLAN Traffic Reduction..... 22
- IPv6 Multicast VLAN Traffic Reduction..... 22
- MLD - Multicast Listener Discovery..... 22
- MSDP - Multicast Source Discovery Protocol..... 22
- PIM - Protocol-Independent Multicast..... 23
- PIM6 - IPv6 Protocol-Independent Multicast.....23

For considerations related to IP Multicast in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

## IPv4 Multicast Routing

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| Passive multicast route insertion (PMRI)                                      | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| IP Multicast Boundaries   | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| Concurrent support for multicast routing and snooping                         | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| Modifying the Prune Wait Timer  | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| Multi-VRF support   | No       | 8.0.50   | 8.0.20   | 8.0.70   | 8.0.10   |
| Hardware replication resource sharing   | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv4 ACLs for rendezvous points (RPs)   | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv4 Multicast Non-stop routing (NSR) support for PIM-SM, SSM, and Anycast RP | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv4 static mroute  | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv4 Multicast forwarding   | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| Disable replication sharing   | 8.0.61   | 8.0.40   | 8.0.40   | 8.0.70   | 8.0.40   |
| IGMP Proxy  | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| PIM neighbor filter   | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |

## IPv6 Multicast Routing

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| IPv6 multicast boundaries                             | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| Embedded RIPv6  | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| Multi-VRF support                                     | No       | 8.0.50   | 8.0.20   | 8.0.70   | 8.0.10   |
| Hardware replication resource sharing                 | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| Concurrent support for multicast routing and snooping | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| Static mroute   | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10a  |
| IPv6 multicast forwarding                             | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |

## IPv4 Multicast VLAN Traffic Reduction

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| IGMP (v1, v2, and v3)   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IGMP v1/v2/v3 snooping (global and local)   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IGMP fast leave for v2  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IGMP membership tracking and fast leave for v3  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| PIM-SM v2 snooping  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Static IGMP groups with support for proxy   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IGMP static group traffic filtering   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Disabling the flooding of unregistered IPv4 multicast frames in an IGMP-snooping-enabled VLAN | 8.0.60   | 8.0.30   | 8.0.30   | 8.0.70   | 8.0.30   |
| Layer 2 mode querier configurable source IP address for multicast snooping                    | 8.0.60   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |

## IPv6 Multicast VLAN Traffic Reduction

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| IPv6 multicast traffic reduction v1/v2 snooping per VLAN (global and local)                  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv6 multicast traffic reduction fast leave for v1   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv6 multicast traffic reduction tracking and fast leave for v2                              | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Static IPv6 multicast traffic reduction groups with support for proxy                        | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Disabling the flooding of unregistered IPv6 multicast frames in an MLD-snooping-enabled VLAN | No       | No       | No       | 8.0.70   | 8.0.30   |
| Layer 2 mode querier configurable source IP address for multicast snooping                   | 8.0.60   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |
| PIM6-SM snooping   | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

## MLD - Multicast Listener Discovery

| Feature                                       | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| MLD (v1 and v2)                               | 8.0.60   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| MLD membership tracking and fast leave for v2 | 8.0.60   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |

## MSDP - Multicast Source Discovery Protocol

| Feature                                    | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| Multicast Source Discovery Protocol (MSDP) | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| MSDP Mesh Groups                           | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |

| Feature         | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|-----------------|----------|----------|----------|----------|----------|
| MSDP Anycast RP | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |

## PIM - Protocol-Independent Multicast

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| PIM-SSM   | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| Multi-VRF support   | No       | 8.0.50   | 8.0.20   | 8.0.70   | 8.0.10   |
| PIM Dense   | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| PIM Sparse  | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| PIM Anycast RP  | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv4 Multicast Non-stop routing (NSR) support for PIM-SM, SSM, and Anycast RP | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv4 PIM convergence on MAC movement  | 8.0.61   | 8.0.40   | 8.0.30   | 8.0.70   | 8.0.30   |
| PIM Passive   | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |

## PIM6 - IPv6 Protocol-Independent Multicast

| Feature                              | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--------------------------------------|----------|----------|----------|----------|----------|
| IPv6 PIM-SSM                         | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv6 PIM Sparse                      | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv6 PIM Anycast RP                  | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| Multi-VRF support                    | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv6 PIM convergence on MAC movement | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |





# Layer 2 Switching

- Campus Fabric..... 25
- LAG - Link Aggregation Group.....26
- MCT - Multi-Chassis Trunking.....26
- MRP - Metro Ring Protocol..... 27
- Q-in-Q - 802.1q tunneling..... 27
- RFN - Remote Fault Notification..... 27
- RPF - Reverse Path Forwarding..... 27
- UDLD - Uni-Directional Link Detection.....27
- VLAN - Virtual LAN..... 28
- VXLAN - Virtual Extensible LAN ..... 28
- VRP - VLAN Registration Protocol (includes GVRP)..... 28
- VSRP - Virtual Switch Redundancy Protocol..... 29
- Protected Ports..... 29
- xSTP - Spanning Tree Protocols..... 29

For considerations related to Layer 2 switching in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

## Campus Fabric

Campus Fabric is also referred to as Switch Port Extender (SPX).

| Feature   | ICX 7150 | ICX 7250 | ICX 7450             | ICX 7650 | ICX 7750 |
|---|----------|----------|----------------------|----------|----------|
| 802.1BR control bridge                                  | No       | No       | No                   | 8.0.80   | 8.0.40   |
| 802.1BR port extender                                   | 8.0.70   | 8.0.50   | 8.0.40 <sup>11</sup> | No       | No       |
| ACL- and VLAN-based mirroring                           | No       | 8.0.50   | 8.0.50               | No       | 8.0.50   |
| ARP rate limiting                                       | No       | 8.0.50   | 8.0.50               | No       | 8.0.50   |
| DHCPv4 and DHCPv6 snooping                              | No       | 8.0.50   | 8.0.50               | No       | 8.0.50   |
| Dynamic ARP inspection                                  | No       | 8.0.50   | 8.0.50               | No       | 8.0.50   |
| Ingress port rate limiting and egress port rate shaping | No       | 8.0.50   | 8.0.50               | No       | 8.0.50   |
| IP Source Guard (IPSG)                                  | No       | 8.0.50   | 8.0.50               | No       | 8.0.50   |
| ND inspection   | No       | 8.0.50   | 8.0.50               | No       | 8.0.50   |
| Ring topology with load balancing across uplinks        | No       | 8.0.50   | 8.0.50               | No       | 8.0.50   |
| uRPF on PE ports  | No       | 8.0.50   | 8.0.50               | No       | No       |
| Zero touch SPX deployment                               | No       | 8.0.50   | 8.0.50               | No       | 8.0.50   |
| SPX ECID ping/trace                                     | No       | 8.0.61   | 8.0.61               | No       | 8.0.61   |
| Auto image upgrade for PE (major release version)       | 8.0.70   | 8.0.70   | 8.0.70               | No       | N/A      |
| Staggered upgrade for Campus Fabric                     | 8.0.70   | 8.0.70   | 8.0.70               | No       | 8.0.70   |
| 1G link between CB and PE                               | 8.0.80   | 8.0.80   | 8.0.80               | No       | 8.0.80   |

<sup>11</sup> Supported on ICX 7450-32ZP starting in 8.0.50.

| Feature                   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---------------------------|----------|----------|----------|----------|----------|
| Increase VLANs on PE port | 8.0.80   | 8.0.80   | 8.0.80   | No       | 8.0.80   |
| PE console authentication | 8.0.80   | 8.0.80   | 8.0.80   | No       | 8.0.80   |

## LAG - Link Aggregation Group

For considerations related to LAGs in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| LAG virtual interface                                   | 8.0.61   | 8.0.61   | 8.0.61   | 8.0.70   | 8.0.61   |
| Dynamic insertion and removal of ports                  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Dynamic lag name update                                 | 8.0.60   | 8.0.30   | 8.0.30   | 8.0.70   | 8.0.30   |
| Static LAG  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| LAG threshold for static LAG                            | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| 802.3ad Link Aggregation Control Protocol (dynamic LAG) | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Keepalive LAG   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| LAG symmetric load balancing                            | No       | 8.0.30b  | 8.0.30b  | 8.0.70   | 8.0.30b  |
| LAG hardware failover                                   | No       | No       | No       | 8.0.70   | 8.0.10   |
| Resilient hashing                                       | No       | No       | No       | 8.0.70   | 8.0.50   |

## MCT - Multi-Chassis Trunking

For considerations related to MCT in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750             |
|---|----------|----------|----------|----------|----------------------|
| MCT   | No       | No       | No       | No       | 8.0.10 <sup>12</sup> |
| Cluster client automatic configuration                  | No       | No       | No       | No       | 8.0.10 <sup>12</sup> |
| xSTP BPDU forwarding                                    | No       | No       | No       | No       | 8.0.10 <sup>12</sup> |
| IPv4/IPv6 Multicast traffic reduction features with MCT | No       | No       | No       | No       | 8.0.10 <sup>12</sup> |
| Layer 3 multicast routing over MCT (IPv4 only)          | No       | No       | No       | No       | 8.0.30 <sup>12</sup> |
| Layer 3 unicast routing over MCT (IPv4 only)            | No       | No       | No       | No       | 8.0.30 <sup>12</sup> |
| VRF over MCT  | No       | No       | No       | No       | 8.0.70               |

<sup>12</sup> Not supported on ICX 7750 in stacking mode.

## MRP - Metro Ring Protocol

For considerations related to MRP in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature                                   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| Metro Ring Protocol 1 (MRP 1)             | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Metro Ring Protocol 2 (MRP 2)             | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Extended MRP ring IDs from 1 through 1023 | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

## Q-in-Q - 802.1q tunneling

For considerations related to Q-in-Q in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature                  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--------------------------|----------|----------|----------|----------|----------|
| 802.1ad (Q-in-Q) tagging | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Q-in-Q BPDU tunneling    | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   |
| Selective Q-in-Q         | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   |

## RFN - Remote Fault Notification

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| Remote Fault Notification (RFN) for 1 Gbps fiber | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

## RPF - Reverse Path Forwarding

| Feature | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---------|----------|----------|----------|----------|----------|
| uRPF    | No       | 8.0.40   | 8.0.40   | 8.0.70   | 8.0.30   |

## UDLD - Uni-Directional Link Detection

For considerations related to UDLD in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| Unidirectional Link Detection (UDLD) (Link keepalive) | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| UDLD on tagged ports                                  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

## VLAN - Virtual LAN

For considerations related to VLANs in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| VLAN   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Port-based VLANs   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| VLAN groups  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Private VLANs (PVLANS)                                     | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.20   |
| PVLANS with dual mode support                              | 8.0.60   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |
| PVLAN with LAG   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   |
| Super Aggregated VLANs                                     | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Topology groups  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| VLAN membership for out-of-band (OOB) management interface | 8.0.60   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |
| Wrapper for adding/removing selective VLANs                | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   |
| Simultaneous tagged and untagged VLAN on a port            | 8.0.80   | 8.0.80   | 8.0.80   | 8.0.80   | 8.0.80   |
| VLAN mapping   | 8.0.80   | 8.0.80   | 8.0.80   | 8.0.80   | 8.0.80   |

## VXLAN - Virtual Extensible LAN

| Feature               | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|-----------------------|----------|----------|----------|----------|----------|
| VXLAN support         | N/A      | N/A      | N/A      | No       | 8.0.70   |
| ACL support for VXLAN | N/A      | N/A      | N/A      | No       | 8.0.70   |

## VRP - VLAN Registration Protocol (includes GVRP)

For considerations related to GVRP in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| GVRP  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Configurable GVRP base VLAN ID                            | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Leave all timer   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Ability to disable VLAN advertising                       | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Ability to disable VLAN learning                          | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| GVRP timers   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Conversion of a GVRP VLAN to a statically configured VLAN | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

## VSRP - Virtual Switch Redundancy Protocol

For considerations related to VSRP in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature                                   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| Virtual Switch Redundancy Protocol (VSRP) | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| VSRP-Aware security features              | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| VSRP and MRP signaling                    | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| VSRP Fast Start                           | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| VSRP timer scaling                        | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

## Protected Ports

| Feature         | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|-----------------|----------|----------|----------|----------|----------|
| Protected Ports | 8.0.61   | 8.0.61   | 8.0.61   | 8.0.70   | 8.0.61   |

## xSTP - Spanning Tree Protocols

For considerations related to xSTP in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| 802.1s Multiple Spanning Tree                              | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| 802.1s Multiple Spanning Tree enhancement (MSTP+)          | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.20   |
| 802.1W Rapid Spanning Tree Protocol (RSTP)                 | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| 802.1D Spanning Tree                                       | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Fast Port Span, Fast Uplink Span, and Single-instance Span | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| PVST/PVST+ compatibility                                   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| PVRST+ compatibility                                       | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| PVST+ Protect  | 8.0.61   | 8.0.61   | 8.0.61   | 8.0.70   | 8.0.61   |
| Spanning Tree Protocol (STP) protection                    | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Root Guard   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Root Guard for MSTP  | 8.0.61   | 8.0.61   | 8.0.61   | 8.0.70   | 8.0.61   |
| BPDU Guard   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Error disable recovery                                     | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Port loop detection <sup>13</sup>                          | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Spanning Tree path cost method changes                     | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   |

<sup>13</sup> In an 802.1br (SPX) configuration, strict mode loop detection is not supported on explicitly tagged PE ports, but it is supported on untagged and dual-mode PE ports.



# Layer 3 Routing/Network Layer

- ARP - Address Resolution Protocol..... 31
- BGP4 - IPV4 Border Gateway Protocol ..... 31
- BGP4+ - IPv6 Border Gateway Protocol..... 32
- DHCP - Dynamic Host Configuration Protocol..... 33
- DNS - Domain Name System..... 33
- GRE - Generic Routing Encapsulation..... 34
- ICMP - Internet Control Message Protocol..... 34
- IP Addressing..... 34
- IPv6 Addressing..... 34
- Multi-VRF..... 35
- OSPF - IPv4 Open Shortest Path First..... 36
- OSPFv3 - IPv6 Open Shortest Path First..... 36
- RIP - IPv4 Routing Information Protocol..... 37
- RIPng - IPv6 Routing Information Protocol..... 37
- VRRPv2 - Virtual Router Redundancy Protocol Version 2..... 37
- VRRPv3 - Virtual Router Redundancy Protocol Version 3..... 38

For considerations related to Layer 3 Routing in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

## ARP - Address Resolution Protocol

For considerations related to ARP in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature                                    | ICX 7150 | ICX 7250             | ICX 7450             | ICX 7650 | ICX 7750             |
|--|----------|----------------------|----------------------|----------|----------------------|
| Static ARP entries                         | 8.0.60   | 8.0.30               | 8.0.20               | 8.0.70   | 8.0.10               |
| Configurable ARP priority                  | 8.0.60   | 8.0.30               | 8.0.20               | 8.0.70   | 8.0.10               |
| ARP Packet Validation                      | 8.0.60   | 8.0.30               | 8.0.20               | 8.0.70   | 8.0.10a              |
| Reverse Address Resolution Protocol (RARP) | 8.0.60   | 8.0.30               | 8.0.20               | 8.0.70   | 8.0.10               |
| Proxy ARP                                  | 8.0.60   | 8.0.30               | 8.0.20               | 8.0.70   | 8.0.10               |
| Local proxy ARP                            | 8.0.60   | 8.0.30               | 8.0.20               | 8.0.70   | 8.0.10               |
| Learning Gratuitous ARP                    | 8.0.60   | 8.0.30               | 8.0.20               | 8.0.70   | 8.0.10               |
| Dynamic ARP inspection                     | 8.0.60   | 8.0.30 <sup>14</sup> | 8.0.20 <sup>14</sup> | 8.0.70   | 8.0.10 <sup>14</sup> |

## BGP4 - IPV4 Border Gateway Protocol

For considerations related to BGP4 in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

<sup>14</sup> Not supported in an 802.1br (SPX) configuration.

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| BGP4   | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| BGP4 Graceful Restart  | No       | No       | 8.0.20   | 8.0.70   | 8.0.20   |
| BGP4 Graceful Restart helper mode  | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Redistributing IBGP routes   | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Client-to-Client Route Reflection  | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Route Flap Dampening   | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Originating the Default Route  | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Multipath Load Sharing   | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Using the IP Default Route as a Valid Next Hop for a BGP4 Route            | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Next-Hop Recursion   | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Next-Hop Update Timer  | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Generalized TTL Security Mechanism Support                                 | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Enhanced per-neighbor debug statements and per-neighbor BGP4 debug filters | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| BGP4 Peer Notification during a Management Module Switchover               | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Encryption code for passwords, authentication keys, and community strings  | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| BGP4 MD5 Authentication  | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Route redistribution to other protocols                                    | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| BGP4 Peer Group  | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| BGP4 Route Reflectors  | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| BGP4 Neighbor Local-AS   | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| BGP4 Local-AS for VRF  | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| BGP4 Processing Optimization for Administratively Down Peers               | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| BGP4 Outbound Policy Processing Optimization                               | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Requiring the First AS to be the Neighbor's AS                             | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Four-byte AS Numbers (AS4)   | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| BGP4 AS4 Confederation Error Checking                                      | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Static BGP4 Networks   | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |

## BGP4+ - IPv6 Border Gateway Protocol

For considerations related to BGP4+ in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| BGP4+   | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Configuring BGP4+ Neighbors Using Global or Link-Local IPv6 Addresses | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Importing Routes into BGP4+   | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Advertising the Default BGP4+ Route                                   | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |



| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| Using the IP default route as a valid next-hop for a BGP4+ route | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Enabling next-hop recursion                                      | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| BGP4+ Graceful Restart   | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |

## DHCP - Dynamic Host Configuration Protocol

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| BootP/DHCP relay  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Specifying which IP address will be included in a DHCP/BootP reply packet | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| DHCP address acquisition  | 8.0.60   | 8.0.30   | 8.0.30   | 8.0.70   | 8.0.30   |
| DHCP Server   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| DHCP Auto-Configuration   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| DHCP assist   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IP helper   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| DHCPv6 relay agent  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| DHCPv6 prefix delegation notification                                     | 8.0.60   | 8.0.40   | 8.0.30   | 8.0.70   | 8.0.30   |
| DHCP snooping   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| DHCPv6 snooping   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| DHCP relay agent information (DHCP Option 82) RFC 3046                    | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| DHCPv6 link-layer option  | 8.0.60   | 8.0.40   | 8.0.40   | 8.0.70   | 8.0.40   |
| ASCII support for DHCP option 82  | 8.0.60   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |
| DHCP Static MAC address to IP address mapping                             | 8.0.61   | 8.0.61   | 8.0.61   | 8.0.70   | 8.0.61   |
| DHCP Option 43  | 8.0.61   | 8.0.61   | 8.0.61   | 8.0.70   | 8.0.61   |
| DHCP Option 60  | 8.0.61   | 8.0.61   | 8.0.61   | 8.0.70   | 8.0.61   |
| DHCP Generic Options  | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   |
| DHCP Snooping - enable Option 82 at the global level                      | 8.0.80   | 8.0.80   | 8.0.80   | 8.0.80   | 8.0.80   |
| DHCP snooping, ARP Inspection and IPSG scale improvements                 | 8.0.80   | 8.0.80   | 8.0.80   | 8.0.80   | 8.0.80   |
| Discovery of SmartZone based on DHCP Option 43                            | 8.0.80   | 8.0.80   | 8.0.80   | 8.0.80   | 8.0.80   |
| VLAN range command for DHCP snooping, DAI, and IPSG                       | 8.0.80   | 8.0.80   | 8.0.80   | 8.0.80   | 8.0.80   |

## DNS - Domain Name System

| Feature                           | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|-----------------------------------|----------|----------|----------|----------|----------|
| Domain Name Server (DNS) resolver | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

## GRE - Generic Routing Encapsulation

For considerations related to GRE in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature                            | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|------------------------------------|----------|----------|----------|----------|----------|
| IPv4 point-to-point GRE IP tunnels | No       | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| GRE tunnel counters (CLI and SNMP) | No       | 8.0.40   | 8.0.40   | 8.0.70   | 8.0.40   |

## ICMP - Internet Control Message Protocol

| Feature                               | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---------------------------------------|----------|----------|----------|----------|----------|
| IPv4/IPv6 ICMP                        | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| ICMP redirect messages                | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| ICMP Router Discovery Protocol (IRDP) | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

## IP Addressing

For considerations related to IP addressing in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| Bandwidth for IP interfaces   | 8.0.61   | 8.0.30   | 8.0.30   | 8.0.70   | 8.0.30   |
| Equal Cost Multi-Path (ECMP) load sharing   | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Single source address for the following packet types: Telnet, TFTP, Syslog, NTP, TACACS, TACACS+, RADIUS, SSH, SNMP | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Virtual Interfaces  | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| 31-bit subnet mask on point-to-point networks   | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IP follow   | 8.0.61   | 8.0.30   | 8.0.30   | 8.0.70   | 8.0.30   |
| Jumbo frames: Up to 10,000 bytes  | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IP MTU (individual port setting)  | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Path MTU discovery  | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Static route for IPv4   | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Unicast reverse path forwarding (uRPF)  | No       | 8.0.40   | 8.0.40   | 8.0.70   | 8.0.30   |
| User-configurable MAC address per IP interface  | 8.0.61   | 8.0.40   | 8.0.40   | 8.0.70   | 8.0.40   |
| Change IP address using replace keyword   | 8.0.61   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |

## IPv6 Addressing

For considerations related to IPv6 addressing in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| Global IPv6 address                               | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Link-local IPv6 address                           | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv4 and IPv6 host stacks                         | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv6 neighbor discovery                           | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv6 Neighbor Discovery Inspection                | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.20   |
| IPv6 router advertisement (RA) and solicitation   | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv6 router advertisement (RA) preference support | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv6 over IPv4 tunnels                            | No       | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| ECMP load sharing                                 | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv6 Layer 3 forwarding                           | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv6 redistribution                               | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv6 MTU  | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Static route for IPv6                             | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Static neighbor entries                           | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Hop limit for IPv6 packets                        | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Clear IPv6 global information                     | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Route-only support                                | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv6 prefix delegation                            | 8.0.61   | 8.0.40   | 8.0.40   | 8.0.70   | 8.0.40   |
| IPv6 default gateway support                      | 8.0.61   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |

## Multi-VRF

For considerations related to Multi-VRF in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| Multi-VRF IPv4 forwarding                                | No       | 8.0.50   | 8.0.20   | 8.0.70   | 8.0.10   |
| Multi-VRF IPv6 forwarding                                | No       | 8.0.50   | 8.0.20   | 8.0.70   | 8.0.10   |
| Multi-VRF for IPv4 and IPv6 unicast- static routing      | No       | 8.0.50   | 8.0.20   | 8.0.70   | 8.0.10   |
| Multi-VRF for IPv4 Unicast-RIP                           | No       | 8.0.50   | 8.0.20   | 8.0.70   | 8.0.10   |
| Multi-VRF for IPv4 and IPv6 Unicast - OSPF               | No       | 8.0.50   | 8.0.20   | 8.0.70   | 8.0.10   |
| Multi-VRF for IPv4 Unicast-BGP4                          | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Multi-VRF for BGP4+                                      | No       | No       | 8.0.30   | 8.0.70   | 8.0.30   |
| Multi-VRF VRRP and VRRP-E for IPv4 and IPv6              | No       | 8.0.50   | 8.0.20   | 8.0.70   | 8.0.10   |
| Multi-VRF MSDP for IPv4                                  | No       | No       | 8.0.20   | 8.0.70   | 8.0.10   |
| Multi-VRF Multicast over GRE for IPv4                    | No       | 8.0.50   | 8.0.20   | 8.0.70   | 8.0.10   |
| DAI support for Multi-VRF                                | No       | 8.0.50   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPSG support for Multi-VRF                               | No       | 8.0.50   | 8.0.20   | 8.0.70   | 8.0.10   |
| DHCP snooping support for Multi-VRF                      | No       | 8.0.50   | 8.0.20   | 8.0.70   | 8.0.10   |
| sFlow on Multi-VRF                                       | No       | 8.0.50   | 8.0.20   | 8.0.70   | 8.0.10   |
| Management VRF support                                   | No       | 8.0.50   | 8.0.20   | 8.0.70   | 8.0.10   |
| VRF membership in out-of-band (OOB) management interface | No       | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |

## OSPF - IPv4 Open Shortest Path First

For considerations related to OSPF in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| OSPF v2  | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Graceful restart <sup>15</sup>   | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Graceful restart helper-mode   | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Block outbound LSA flooding  | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| OSPF route redistribution filters  | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Filter OSPF routes into IP Route table                                   | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| OSPF group LSA pacing  | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| OSPF traps   | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Encryption code for passwords, authentication keys and community strings | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| VRF-lite for CE routers  | No       | 8.0.50   | 8.0.20   | 8.0.70   | 8.0.10   |
| OSPF NSR <sup>15</sup>   | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| OSPF distribution lists  | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Passive mode for OSPF  | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| MD5 authentication for OSPF  | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Keychain for OSPF  | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   |
| OSPF cryptographic authentication using HMAC-SHA algorithms              | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   |

## OSPFv3 - IPv6 Open Shortest Path First

For considerations related to OSPFv3 in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature                            | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|------------------------------------|----------|----------|----------|----------|----------|
| OSPFv3                             | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| Route redistribution into OSPFv3   | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| OSPFv3 route filtering             | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| Shortest Path First (SPF) Timers   | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| OSPFv3 LSA Pacing                  | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| Modify exit overflow intervals     | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| Modify External LSA Database Limit | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| OSPFv3 Event Logging               | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPsec for OSPFv3                   | No       | No       | 8.0.70   | No       | No       |

<sup>15</sup> In a stack configuration only.

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| Encryption code for passwords, authentication keys and community strings | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| OSPFv3 Graceful Restart Helper   | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| OSPFv3 NSR <sup>16</sup>   | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| OSPFv3 authentication trailer  | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   |

## RIP - IPv4 Routing Information Protocol

For considerations related to RIP in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature                                      | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| RIP V1 and V2 <sup>17</sup>                  | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Redistribution from other protocols into RIP | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| RIP default route learning                   | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| RIP route filters                            | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

## RIPng - IPv6 Routing Information Protocol

For considerations related to RIPng in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature                         | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---------------------------------|----------|----------|----------|----------|----------|
| RIPng                           | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| RIPng Timers                    | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| Route redistribution into RIPng | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |

## VRRPv2 - Virtual Router Redundancy Protocol Version 2

For considerations related to VRRPv2 in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature                                   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| Virtual Router Redundancy Protocol (VRRP) | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| VRRP timer scaling                        | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| VRRP Extended (VRRP-E)                    | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

<sup>16</sup> Supported only in a stacking configuration.

<sup>17</sup> RIP is included with the PREM license.

| Feature                                       | ICX 7150 | ICX 7250             | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------------------|----------|----------|----------|
| VRRP-E slow start timer                       | 8.0.61   | 8.0.30               | 8.0.20   | 8.0.70   | 8.0.10   |
| VRRP-E timer scale                            | 8.0.61   | 8.0.30               | 8.0.20   | 8.0.70   | 8.0.10   |
| VRRP-E Extension for Shortest Path Forwarding | 8.0.61   | 8.0.50               | 8.0.50   | 8.0.70   | 8.0.10   |
| VRRP and VRRP-E statistics enhancement        | 8.0.61   | 8.0.30 <sup>18</sup> | 8.0.20   | 8.0.70   | 8.0.10   |
| VRRP-E hitless upgrade                        | 8.0.61   | 8.0.50               | 8.0.50   | 8.0.70   | 8.0.50   |

## VRRPv3 - Virtual Router Redundancy Protocol Version 3

For considerations related to VRRPv3 in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| IPv6 VRRP-E   | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv6 VRRP v3  | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| VRRPv3 Enhancement: v2-checksum support             | 8.0.61   | 8.0.40   | 8.0.20   | 8.0.70   | 8.0.10   |
| VRRPv3 Enhancement: IPv6 Link-Local Auto-generation | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

---

<sup>18</sup> VRRP only.

# Security

- Authentication, Authorization, and Accounting.....39
- ACLs - Access Control Lists..... 39
- DoS (Denial of Service) protection.....40
- Flexible Authentication (802.1x Authentication and MAC Authentication)..... 41
- HTTP/HTTPS..... 42
- IP Source Guard..... 42
- IPsec - IP security..... 42
- MACsec - Media Access Control Security..... 43
- PBR - Policy-Based Routing..... 43
- Port MAC Security..... 43
- RADIUS..... 44
- RA Guard - Router Advertisement Guard..... 44
- SSH - Secure Shell..... 44
- TACACS & TACACS+..... 45
- User Accounts and Passwords..... 45

For considerations related to security in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

## Authentication, Authorization, and Accounting

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| Authentication, Authorization, and Accounting     | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Specifying the authentication-failure action      | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Configurable password for MAC authentication      | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| AAA support for console commands                  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Restricting remote access to management functions | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Disabling TFTP access                             | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Using ACLs to restrict remote access              | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| AAA authentication-method lists                   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Packet filtering on TCP flags                     | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| MAC accounting                                    | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10a  |

## ACLs - Access Control Lists

For considerations related to ACLs in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature                            | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|------------------------------------|----------|----------|----------|----------|----------|
| IPv4/IPv6 ACLs                     | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv6 access list (management ACLs) | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPv6 ACL comment text              | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

## Security

### DoS (Denial of Service) protection

| Feature   | ICX 7150         | ICX 7250         | ICX 7450         | ICX 7650 | ICX 7750 |
|---|------------------|------------------|------------------|----------|----------|
| IPv6 ACL logging of denied packets for ingress traffic                    | 8.0.60           | 8.0.30           | 8.0.20           | 8.0.70   | 8.0.10   |
| IPv4/IPv6 ACL logging for Permit traffic                                  | 8.0.60           | 8.0.50           | 8.0.50           | 8.0.70   | 8.0.50   |
| ACL accounting  | 8.0.60           | 8.0.30           | 8.0.20           | 8.0.70   | 8.0.10a  |
| Standard named and numbered ACLs  | 8.0.60           | 8.0.30           | 8.0.20           | 8.0.70   | 8.0.10   |
| Extended named and numbered ACLs  | 8.0.60           | 8.0.30           | 8.0.20           | 8.0.70   | 8.0.10   |
| User input preservation for ACL TCP/UDP port numbers                      | 8.0.60           | 8.0.30           | 8.0.20           | 8.0.70   | 8.0.10   |
| ACL comment text  | 8.0.60           | 8.0.30           | 8.0.20           | 8.0.70   | 8.0.10   |
| ACL logging of denied packets for ingress traffic                         | 8.0.60           | 8.0.30           | 8.0.20           | 8.0.70   | 8.0.10   |
| ACL logging with traffic rate limiting (to prevent CPU overload)          | 8.0.60           | 8.0.30           | 8.0.20           | 8.0.70   | 8.0.10   |
| Strict control of ACL filtering of fragmented packets                     | 8.0.60           | 8.0.30           | 8.0.20           | 8.0.70   | 8.0.10   |
| ACL support for switched traffic in the router image                      | 8.0.61           | 8.0.30           | 8.0.20           | 8.0.70   | 8.0.10   |
| ACL filtering based on VLAN membership or VE port membership              | 8.0.61           | 8.0.30           | 8.0.20           | 8.0.70   | 8.0.10   |
| ACLs to filter ARP packets  | 8.0.60           | 8.0.30           | 8.0.20           | 8.0.70   | 8.0.10   |
| Filtering on IP precedence and ToS value                                  | 8.0.60           | 8.0.30           | 8.0.20           | 8.0.70   | 8.0.10   |
| MAC address filtering (filtering on source and destination MAC addresses) | 8.0.60           | 8.0.30           | 8.0.20           | 8.0.70   | 8.0.10   |
| QoS options for IP ACLs <sup>19</sup>                                     | 8.0.60           | 8.0.30           | 8.0.20           | 8.0.70   | 8.0.10   |
| Priority mapping using ACLs (Inbound traffic)                             | 8.0.60           | 8.0.30           | 8.0.20           | 8.0.70   | 8.0.10   |
| Priority mapping using ACLs (Outbound traffic)                            | No <sup>20</sup> | No <sup>20</sup> | No <sup>20</sup> | 8.0.70   | 8.0.10   |
| Hardware usage statistics   | 8.0.60           | 8.0.30           | 8.0.20           | 8.0.70   | 8.0.10   |
| No TTL decrement  | 8.0.61           | No               | 8.0.30           | 8.0.70   | 8.0.30   |
| Sequence numbering in ACLs  | 8.0.60           | 8.0.50           | 8.0.50           | 8.0.70   | 8.0.50   |
| Accounting for outbound ACLs  | 8.0.70           | 8.0.70           | 8.0.70           | 8.0.70   | 8.0.70   |

## DoS (Denial of Service) protection

| Feature                               | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---------------------------------------|----------|----------|----------|----------|----------|
| Smurf attack (ICMP attack) protection | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| TCP SYN attack protection             | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

<sup>19</sup> DSCP QoS mapping is not supported for outgoing traffic.

<sup>20</sup> Internal priority marking is not supported for outgoing traffic.



## Flexible Authentication (802.1x Authentication and MAC Authentication)

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| 802.1x Authentication  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| EAP pass-through support   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| 802.1x accounting  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| 802.1x with dynamic ACL assignment   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| 802.1x with dynamic VLAN assignment  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| RADIUS timeout action  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| 802.1x and MAC authentication on the same port   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| 802.1x and sFlow: 802.1x user name export support for encrypted and non-encrypted EAP types  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Flexible Authentication (FlexAuth)   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.20   |
| Support for Flexible authentication together with Dynamic ARP inspection (IPv4 and IPv6) with dynamic ACLs   | 8.0.60   | 8.0.40a  | 8.0.40a  | 8.0.70   | 8.0.40a  |
| Support for Flexible authentication together with DHCPv4 and DHCPv6 snooping with dynamic ACLs   | 8.0.60   | 8.0.40a  | 8.0.40a  | 8.0.70   | 8.0.40a  |
| Flexible authentication enhancements: <ul style="list-style-type: none"> <li>• Critical Voice VLAN</li> <li>• Reauthentication with dead RADIUS server</li> <li>• Multiple IPv6 addresses with dynamic ACLs</li> <li>• Additional RADIUS attributes (including idle timeout, accounting terminate cause)</li> <li>• Colon-separated MAC address format for MAC authentication</li> </ul> | 8.0.61   | 8.0.61   | 8.0.61   | 8.0.70   | 8.0.61   |
| Support for 802.1x authentication together with IP Source guard protection   | 8.0.60   | 8.0.40a  | 8.0.40a  | 8.0.70   | 8.0.40a  |
| Support for MAC Authentication together with IP Source guard protection  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Support for MAC Authentication together with Dynamic VLAN assignment   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Support for MAC Authentication together with Dynamic ACLs  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Support for MAC Authentication together with 802.1x  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Support for 802.1x together with Denial of Service (DoS) attack protection   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Periodic reauthentication for MAC Authentication   | 8.0.60   | 8.0.40a  | 8.0.40a  | 8.0.70   | 8.0.40a  |
| Periodic reauthentication for 802.1x   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Automatic removal of Dynamic VLAN for MAC authenticated ports  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Authenticating multiple MAC addresses on an interface  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Specifying the format of the MAC addresses sent to the RADIUS server   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| SNMP Traps for MAC authentication  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| MAC address filter override of 802.1x  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Aging time for blocked MAC Addresses   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| Interim RADIUS accounting updates for 802.1x authentication and MAC authentication | 8.0.60   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |
| Accounting for 802.1x and MAC authentication                                       | 8.0.60   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |
| Outbound dynamic IPv4 ACLs and IPv6 ACLs   | 8.0.60   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |
| Support for Ruckus CloudPath policy server   | 8.0.60   | 8.0.60   | 8.0.60   | 8.0.70   | 8.0.60   |
| Aruba ClearPass support  | 8.0.50   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |
| Ruckus Cloudpath support   | 8.0.60   | 8.0.60   | 8.0.60   | 8.0.70   | 8.0.60   |
| Cisco ISE support  | 8.0.60   | 8.0.60   | 8.0.60   | 8.0.70   | 8.0.60   |

## HTTP/HTTPS

| Feature  | ICX 7150 | ICX 7250 | ICX 7450             | ICX 7650 | ICX 7750 |
|--|----------|----------|----------------------|----------|----------|
| Enabling and disabling Web Authentication        | 8.0.60   | 8.0.30   | 8.0.20               | 8.0.70   | 8.0.10   |
| Configuring the Web Authentication mode          | 8.0.60   | 8.0.30   | 8.0.20               | 8.0.70   | 8.0.10   |
| Web Authentication options                       | 8.0.60   | 8.0.30   | 8.0.20               | 8.0.70   | 8.0.10   |
| External Captive Portal with Aruba ClearPass     | 8.0.60   | 8.0.40   | 8.0.40               | 8.0.70   | 8.0.40   |
| External Captive Portal with Cloudpath           | 8.0.60   | 8.0.60   | 8.0.60               | 8.0.70   | 8.0.60   |
| External Captive Portal with Cisco ISE           | 8.0.61   | 8.0.61   | 8.0.61               | 8.0.70   | 8.0.61   |
| Configurable URL for External Web Authentication | 8.0.60   | 8.0.50   | 8.0.50 <sup>21</sup> | 8.0.70   | 8.0.50   |
| Dynamic ACLs in WebAuth                          | 8.0.60   | 8.0.40   | 8.0.40               | 8.0.70   | 8.0.40   |
| SSL security                                     | 8.0.60   | 8.0.30   | 8.0.20               | 8.0.70   | 8.0.10   |
| SSL security for the Web Management Interface    | 8.0.60   | 8.0.30   | 8.0.20               | 8.0.70   | 8.0.20   |

## IP Source Guard

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| IP source guard                                | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| IPSG support in an 802.1br (SPX) configuration | 8.0.70   | 8.0.50   | 8.0.50   | No       | 8.0.50   |
| IPSG at VLAN level                             | 8.0.61   | 8.0.61   | 8.0.61   | 8.0.70   | 8.0.61   |

## IPsec - IP security

| Feature                      | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|------------------------------|----------|----------|----------|----------|----------|
| IPsec service module support | No       | No       | 8.0.50   | No       | No       |
| IPv6 support for IPsec       | No       | No       | 8.0.70   | No       | No       |

<sup>21</sup> Also supported in 8.0.30j.

| Feature                       | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|-------------------------------|----------|----------|----------|----------|----------|
| NAT Traversal for IPsec       | No       | No       | 8.0.70   | No       | No       |
| Backup IPsec module for HA    | No       | No       | 8.0.70   | No       | No       |
| BGP over IPsec                | No       | No       | 8.0.70   | No       | No       |
| Support for 100 IPsec tunnels | No       | No       | 8.0.70   | No       | No       |
| PKI Support for IKE           | No       | No       | 8.0.70   | No       | No       |

## MACsec - Media Access Control Security

| Feature                                | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650             | ICX 7750 |
|--|----------|----------|----------|----------------------|----------|
| Media Access Control Security (MACsec) | No       | No       | 8.0.30   | 8.0.70 <sup>22</sup> | No       |

## PBR - Policy-Based Routing

| Feature                             | ICX 7150 | ICX 7250              | ICX 7450             | ICX 7650 | ICX 7750             |
|-------------------------------------|----------|-----------------------|----------------------|----------|----------------------|
| Policy-based routing (PBR) for IPv4 | 8.0.61   | 8.0.40a <sup>23</sup> | 8.0.20 <sup>23</sup> | 8.0.70   | 8.0.10 <sup>23</sup> |
| PBR on VRF-enabled interface        | No       | 8.0.50                | 8.0.50               | 8.0.70   | 8.0.50               |
| IPv6 PBR support                    | 8.0.70   | 8.0.70                | 8.0.70               | 8.0.70   | 8.0.70               |

## Port MAC Security

For considerations related to Port MAC Security in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| MAC port security  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Setting the maximum number of secure MAC addresses on an interface | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Setting the port security age timer                                | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Specifying secure MAC addresses                                    | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Autosaving secure MAC addresses to the startup-config file         | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Specifying the action taken when a security violation occurs       | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Port security statistics   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Clearing port security statistics                                  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| No port shutdown for "restrict" option                             | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   |

<sup>22</sup> Beta quality

<sup>23</sup> Not supported in an 802.1BR (SPX) configuration.

## RADIUS

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| RADIUS  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| RADIUS Change of Authorization (CoA)  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.20   |
| CoA extended options: Vendor-specific Foundry-COA-Command attribute for RADIUS server <sup>24</sup> | 8.0.60   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |
| RADIUS over TLS   | 8.0.60   | 8.0.40   | 8.0.40   | 8.0.70   | 8.0.40   |
| LLDP and CDP parameters for IP phones using RADIUS attributes                                       | 8.0.60   | 8.0.40   | 8.0.40   | 8.0.70   | 8.0.40   |
| RADIUS dead server detection  | 8.0.60   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |
| Classification of RADIUS servers  | 8.0.60   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |
| PKI authentication for RADIUS   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   |

## RA Guard - Router Advertisement Guard

| Feature       | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---------------|----------|----------|----------|----------|----------|
| IPv6 RA Guard | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

## SSH - Secure Shell

| Feature                                | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| SCP                                    | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| SSH                                    | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Secure Shell (SSH) version 2           | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| AES encryption for SSHv2               | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Optional parameters for SSHv2          | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Using secure copy (SCP) with SSHv2     | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Filtering SSHv2 access using ACLs      | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Terminating an active SSHv2 connection | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| SSH client                             | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Boot image download over SCP           | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| SCP client support                     | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.20   |
| supportSave for SCP                    | 8.0.61   | 8.0.61   | 8.0.61   | 8.0.70   | 8.0.61   |
| SSH rekey                              | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   |
| DH-Group-14 key exchange method        | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   |

<sup>24</sup> Also supported in 8.0.30j.

## TACACS & TACACS+

| Feature                                       | ICX 7150 | ICX 7250             | ICX 7450             | ICX 7650 | ICX 7750             |
|---|----------|----------------------|----------------------|----------|----------------------|
| TACACS & TACACS+                              | 8.0.60   | 8.0.30               | 8.0.20               | 8.0.70   | 8.0.10               |
| Two-factor authentication with TACACS+ server | 8.0.60   | 8.0.50 <sup>25</sup> | 8.0.50 <sup>25</sup> | 8.0.70   | 8.0.50 <sup>25</sup> |

## User Accounts and Passwords

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| Local user accounts                               | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Local user passwords                              | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Automatic re-enabling of locked-out user accounts | 8.0.60   | 8.0.40   | 8.0.40   | 8.0.70   | 8.0.40   |
| Local user accounts with encrypted passwords      | 8.0.60   | 8.0.40   | 8.0.40   | 8.0.70   | 8.0.40   |

---

<sup>25</sup> Also supported in 8.0.30j.



# SDN

- OpenFlow..... 47

## OpenFlow

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| OpenFlow 1.0 <sup>26</sup>                               | 8.0.61   | 8.0.40   | 8.0.30   | 8.0.70   | 8.0.30   |
| OpenFlow 1.3 <sup>26</sup>                               | 8.0.61   | 8.0.40   | 8.0.30   | 8.0.70   | 8.0.30   |
| OpenFlow enabled on per-port basis (Hybrid switch mode)  | 8.0.61   | 8.0.40   | 8.0.30   | 8.0.70   | 8.0.30   |
| OpenFlow Layer 3 Hybrid Port Mode                        | 8.0.61   | 8.0.40   | 8.0.30   | 8.0.70   | 8.0.30   |
| OpenFlow Layer 2 Hybrid Port Mode                        | 8.0.61   | 8.0.50   | 8.0.50   | 8.0.70   | 8.0.50   |
| OpenFlow Layer 2/3 Hybrid Port Mode                      | 8.0.61   | 8.0.40   | 8.0.30   | 8.0.70   | 8.0.30   |
| OpenFlow Layer 2 and Layer 3 match fields simultaneously | 8.0.61   | 8.0.40   | 8.0.30   | 8.0.70   | 8.0.30   |
| Layer 2 OpenFlow match rules                             | 8.0.61   | 8.0.40   | 8.0.30   | 8.0.70   | 8.0.30   |
| Layer 3 OpenFlow match rules                             | 8.0.61   | 8.0.40   | 8.0.30   | 8.0.70   | 8.0.30   |
| Support for passive mode on the device                   | 8.0.61   | 8.0.40   | 8.0.30   | 8.0.70   | 8.0.30   |
| OpenFlow actions   | 8.0.61   | 8.0.40   | 8.0.30   | 8.0.70   | 8.0.30   |
| OpenFlow Flood action                                    | 8.0.61   | 8.0.40a  | 8.0.40a  | 8.0.70   | 8.0.40a  |
| Multiple controller support                              | 8.0.61   | 8.0.40   | 8.0.30   | 8.0.70   | 8.0.30   |
| Group table support                                      | 8.0.61   | 8.0.40   | 8.0.30   | 8.0.70   | 8.0.30   |
| Meter table support                                      | 8.0.61   | 8.0.40   | 8.0.30   | 8.0.70   | 8.0.30   |
| OpenFlow for ICX 7xxx stack                              | 8.0.61   | 8.0.40   | 8.0.40   | 8.0.70   | 8.0.40   |

<sup>26</sup> Not supported in an 802.1BR (SPX) configuration.





# Stacking

- Stack Failover/Switchover.....49
- Stacking.....49

## Stack Failover/Switchover

| Feature            | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--------------------|----------|----------|----------|----------|----------|
| Hitless failover   | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.20   |
| Hitless switchover | 8.0.61   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.20   |

## Stacking

| Feature  | ICX 7150 | ICX 7250 | ICX 7450             | ICX 7650             | ICX 7750 |
|--|----------|----------|----------------------|----------------------|----------|
| Building stacking: Secure-setup, Automatic configuration, Manual configuration | 8.0.61   | 8.0.30   | 8.0.20               | 8.0.70               | 8.0.20   |
| Persistent MAC address   | 8.0.61   | 8.0.30   | 8.0.20               | 8.0.70               | 8.0.20   |
| Stacking software upgrade  | 8.0.61   | 8.0.30   | 8.0.20               | 8.0.70               | 8.0.20   |
| Trunking of stacked ports  | 8.0.61   | 8.0.30   | 8.0.30 <sup>27</sup> | 8.0.70 <sup>28</sup> | 8.0.20   |
| Auto Image Copy for stack units  | 8.0.61   | 8.0.30   | 8.0.20               | 8.0.70               | 8.0.20   |
| User-configurable buffer profiles  | 8.0.61   | 8.0.30   | 8.0.20               | 8.0.70               | 8.0.10   |
| Long-distance stacking on 10G ports  | 8.0.61   | 8.0.30   | 8.0.30               | 8.0.70               | No       |
| Long-distance stacking on 40G ports  | No       | No       | No                   | 8.0.70               | 8.0.30   |
| 100G stacking  | No       | No       | No                   | 8.0.70               | No       |

<sup>27</sup> Supported on 10G ports only.

<sup>28</sup> Supported on 40G links only.



# Traffic Management

- QoS - Quality of Service..... 51
- Rate Limiting and Shaping.....51

For considerations related to traffic management in an 802.1BR (SPX) configuration, refer to the *Ruckus FastIron Campus Fabric Configuration Guide*

## QoS - Quality of Service

| Feature  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|--|----------|----------|----------|----------|----------|
| Scheduling and queuing: Strict Priority (SP), Weighted Round Robin (WRR), Combined SP and WRR, 8 priority queues | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| 802.1p classification and marking  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| DiffServ support   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| DSCP-based QoS (IPv4 and IPv6)   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| DSCP and PCP global remarking  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| QoS mappings (DSCP to CoS and vice versa)  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| User-configurable scheduler profiles   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Ingress buffer management  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Per-port PFC   | No       | 8.0.40   | 8.0.40   | 8.0.70   | 8.0.20   |
| Port Flow Control: Responds to flow control packets, but does not generate them                                  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Symmetric flow control: Can transmit and receive 802.3x PAUSE frames   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Auto-negotiation and advertisement of flow control   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| QoS priority   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Dynamic buffer allocation for QoS priorities (egress)  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Egress queue counters  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Separate QoS queuing for unicast and multicast   | No       | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

## Rate Limiting and Shaping

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| Inbound rate limiting (port-based rate limiting on inbound ports) <sup>29</sup> | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Outbound port and queue-based rate shaping <sup>29</sup>                        | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10b  |
| ACL-based rate limiting   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

<sup>29</sup> Not supported in an 802.1br (SPX) configuration.

## Traffic Management

### Rate Limiting and Shaping

| Feature   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---|----------|----------|----------|----------|----------|
| Byte-based broadcast, multicast, and unknown-unicast limits   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| Packet-based broadcast, multicast, and unknown-unicast limits | 8.0.60   | No       | No       | 8.0.70   | 8.0.10   |
| Traffic policies <sup>29</sup>                                | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| ACL-based fixed rate limiting                                 | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| ACL-based adaptive rate limiting                              | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| ACL statistics  | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |
| CPU rate limiting   | 8.0.60   | 8.0.30   | 8.0.20   | 8.0.70   | 8.0.10   |

<sup>29</sup> Not supported in an 802.1br (SPX) configuration.

# Standards compliance

- RFC Compliance..... 53
- IEEE Compliance..... 61

## RFC Compliance

The following table lists the RFCs that are supported on the Ruckus ICX platforms. Footnotes indicate exceptions.

| RFC Number          | RFC Name   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|---------------------|--|----------|----------|----------|----------|----------|
| RFC 768             | User Datagram Protocol   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 783             | Trivial File Transfer Protocol (TFTP)  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 791             | Internet Protocol  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 792             | Internet Control Message Protocol  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 793             | Transmission Control Protocol  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 826             | Ethernet Address Resolution Protocol   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 854             | Telnet Protocol Specification  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 855             | Telnet Option Specifications   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 894             | IP over Ethernet Frames  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 896             | Congestion Control in IP/TCP Internetworks                                   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 903             | A Reverse Address Resolution Protocol  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 906             | Bootstrap Loading using TFTP   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 919             | Broadcast Internet Datagrams   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 920             | Domain Requirements  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 922             | Broadcast Internet Datagrams in the Presence of Subnets                      | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 925             | Multi-LAN Address Resolution   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 950             | Internet Standard Subnetting Procedure                                       | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 951             | Bootstrap Protocol   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1027            | Using ARP to Implement Transparent Subnet Gateways                           | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1042            | IP Datagrams over IEEE 802 Networks (for Ethernet)                           | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1057 (ANSI-TIA) | LLDP-MED   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1058            | Route Information Protocol (RIP) Version 1                                   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1112            | Host Extensions for IP Multicasting  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1122 & RFC 1123 | Requirements for Internet Hosts - Communication Layers                       | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1155            | Structure and Identification of Management Information (SMI)                 | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1156            | Management Information Base for Network Management of TCP/IP-based Internets | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1157            | Simple Network Management Protocol (SNMP) Version 1                          | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |

Standards compliance  
RFC Compliance

| RFC Number | RFC Name  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|------------|---|----------|----------|----------|----------|----------|
| RFC 1191   | Path MTU Discovery  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1212   | Concise MIB Definitions   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1213   | Management Information Base for Network Management of TCP/IP-based Internets: MIB-II                    | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1215   | SNMP Generic Traps  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1269   | Definitions of Managed Objects for the Border Gateway Protocol (Version 3)                              | 8.0.61   | N/A      | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1256   | ICMP Router Discovery Messages  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1305   | Network Time Protocol (Version 3) <sup>30</sup>   | 8.0.60   | N/A      | N/A      | 08.0.70  | N/A      |
| RFC 1321   | The MD5 Message-Digest Algorithm  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1340   | Assigned Numbers  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1350   | The TFTP Protocol (Revision 2)  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1354   | IP Forwarding Table MIB   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1398   | Definitions of Managed Objects for the Ethernet-like Interface Types                                    | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1403   | BGP OSPF Interaction  | N/A      | N/A      | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1492   | An Access Control Protocol, Sometimes Called TACACS   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1493   | Definition of Managed Objects for Bridges <sup>31</sup>   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1516   | Definitions of Managed Objects for IEEE 802.3 Repeater Devices  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1519   | Classless Inter-Domain Routing (CIDR): an Address Assignment and Aggregation Strategy                   | No       | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1541   | Dynamic Host Configuration Protocol (DHCP)  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1542   | Clarifications and Extensions for the Bootstrap Protocol  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1573   | SNMP MIB II   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1583   | Open Shortest Path First (OSPF)   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1591   | Domain Name Structure and Delegation (Client)   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1587   | The OSPF Not-So-Stubby Areas (NSSAs) Option   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1643   | Definitions of Managed Objects for the Ethernet-like Interface Types                                    | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1657   | Definitions of Managed Objects for the Fourth Version of the Border Gateway Protocol (BGP4) using SMIv2 | N/A      | N/A      | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1723   | RIP Version 2 Carrying Additional Information   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1724   | RIP Version 2 MIB Extension   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1745   | BGP4/IDRP for IP-OSPF Interaction   | N/A      | N/A      | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1757   | Remote Network Monitoring (RMON) Management Information Base <sup>32</sup>                              | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1765   | OSPF Database Overflow  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1771   | Border Gateway Protocol 4 (BGP4)  | N/A      | N/A      | 8.0.20   | 08.0.70  | 8.0.10   |

<sup>30</sup> All platforms are compliant with RFC 5905 NTPv4, which obsoletes RFC 1305 and RFC 4330.

<sup>31</sup> Excludes filtering of objects.

<sup>32</sup> Groups 1, 2, 3, and 9.

| RFC Number | RFC Name   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|------------|--|----------|----------|----------|----------|----------|
| RFC 1772   | Application of BGP in the Internet (BGP4)  | N/A      | N/A      | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1812   | Requirements for IP Version 4 Routers  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1850   | OSPF Version 2 MIB   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1886   | DNS Extensions to Support IPv6   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1887   | An Architecture for IPv6 Unicast Address Allocation                                  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1901   | Introduction to Community-based SNMPv2   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1905   | Protocol Operations for Version 2 of the Simple Network Management Protocol (SNMPv2) | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1906   | Transport Mappings for Version 2 of the Simple Network Management Protocol (SNMPv2)  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1918   | Address Allocation for Private Internets (Private Address Space)                     | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1965   | Autonomous System Confederations for BGP4  | N/A      | N/A      | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1966   | BGP Route Reflection   | N/A      | N/A      | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1981   | Path MTU Discovery for IPv6  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 1997   | BGP Communities Attribute  | N/A      | N/A      | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2011   | SNMPv2 Management Information Base for the Internet Protocol using SMIv2             | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2012   | SNMPv2 Management Information Base for the Transmission Control Protocol using SMIv2 | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2013   | SNMPv2 Management Information Base for the User Datagram Protocol using SMIv2        | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2021   | Remote Network Monitoring Management Information Base Version 2                      | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2068   | Hypertext Transfer Protocol (HTTP)   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2080   | RIPng for IPv6   | 8.0.61   | 8.0.40   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2096   | IP Forwarding Table MIB (Obsoleted by RFC 4292)                                      | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2131   | Dynamic Host Configuration Protocol  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2132   | DHCP Options and BOOTP Vendor Extensions   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2138   | Remote Authentication Dial In User Server (RADIUS) (Obsoleted by RFC 2865)           | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2139   | RADIUS Accounting (Obsoleted by RFC 2866)  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2154   | OSPF with Digital Signatures   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2178   | Open Shortest Path First (OSPF) Version 2 (Obsoleted by RFC 2328)                    | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2233   | The Interfaces Group MIB using SMIv2   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2236   | Internet Group Management Protocol (IGMP) Version 2                                  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2239   | Managed Objects for IEEE 802.3 Medium Attachment Units (MAUs) using SMIv2            | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2283   | Multiprotocol Extensions for BGP-4   | N/A      | N/A      | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2328   | OSPF Version 2 <sup>33</sup>   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |

<sup>33</sup> AS External LSA reduction is supported.

Standards compliance  
RFC Compliance

| RFC Number | RFC Name   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|------------|--|----------|----------|----------|----------|----------|
| RFC 2330   | Framework for IP Performance Metrics (Port Interface Rates)                                | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2338   | Virtual Router Redundancy Protocol (VRRP)  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2362   | Protocol Independent Multicast-Sparse Mode (PIM-SM): Protocol Specification                | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2370   | The OSPF Opaque LSA Option   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2373   | IPv6 Addressing Architecture   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2374   | IPv6 Aggregatable Global Unicast Address Format (Obsoleted by RFC 3587)                    | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2375   | IPv6 Multicast Address Assignments   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2385   | Protection of BGP Sessions via the TCP MD5 Signature Option <sup>34</sup>                  | N/A      | N/A      | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2404   | HMAC-SHA 1-96  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2439   | BGP Route Flap Dampening   | N/A      | N/A      | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2453   | RIP Version 2  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2460   | Internet Protocol, Version 6 (IPv6) Specification  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2461   | Neighbor Discovery for IP Version 6 (IPv6)   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2462   | IPv6 Stateless Address Auto-configuration (Obsoleted by RFC 4862)                          | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2463   | ICMPv6   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2464   | Transmission of IPv6 Packets over Ethernet Networks  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2473   | Generic Packet Tunneling in IPv6   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2474   | Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers    | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2475   | An Architecture for Differentiated Services  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2526   | Reserved IPv6 Subnet Anycast Addresses   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2545   | BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing                               | N/A      | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2560   | X.509 Internet Public Key Infrastructure Online Certificate Status Protocol - OCSP (PKI)   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2570   | Introduction to Version 3 of the Internet-standard Network Management Framework            | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2571   | An Architecture for Describing SNMP Management Frameworks                                  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2572   | Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)       | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2573   | SNMP Applications  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2574   | User-based Security (USM) for Version 3 of the Simple Network Management Protocol (SNMPv3) | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2575   | View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |

<sup>34</sup> For BGP 4.



| RFC Number | RFC Name  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|------------|---|----------|----------|----------|----------|----------|
| RFC 2576   | Coexistence between Version 1, Version 2, and Version 3 of the Internet-standard Network Management Framework | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2578   | Structure of Management Information Version 2 (SMIPv2)  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2579   | Textual Conventions for SMIPv2  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2580   | Conformance Statements for SMIPv2   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2597   | Assured Forwarding PHB Group  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2665   | Definitions of Managed Objects for the Ethernet-like Interface Types  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2674   | Bridge MIB Extensions   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2698   | A Two Rate, Three Color Marker  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2710   | Multicast Listener Discovery (MLD) for IPv6   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2740   | OSPF for IPv6   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2784   | Generic Routing Encapsulation   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2787   | Definitions of Managed Objects for the Virtual Router Redundancy Protocol                                     | 8.0.61   | 8.0.30f  | 8.0.30f  | 08.0.70  | 8.0.30f  |
| RFC 2796   | BGP Route Reflection  | N/A      | No       | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2818   | HTTP over TLS   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2819   | Remote Network Monitoring Management Information Base   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2842   | Capabilities Advertisement with BGP-4   | N/A      | No       | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2865   | Remote Authentication Dial In User Service (RADIUS) [June 2000]   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2866   | RADIUS Accounting [June 2000]   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2868   | RADIUS Attributes for Tunnel Protocol Support [June 2000]   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2869   | RADIUS Extensions [June 2000]   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2918   | Route Refresh Capability for BGP-4  | N/A      | No       | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2932   | IPv4 Multicast Routing MIB  | 8.0.61   | 8.0.40   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2933   | Internet Group Management Protocol MIB  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 2934   | Protocol Independent Multicast MIB for IPv4   | 8.0.61   | 8.0.40   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3101   | The OSPF Not-So-Stubby Area (NSSA) Option   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3137   | OSPF Stub Router Advertisement  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3162   | RADIUS and IPv6   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3164   | The BSD Syslog Protocol (This RFC is obsoleted by RFC 5424)   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3176   | InMon Corporation's sFlow: A Method for Monitoring Traffic in Switched and Routed Networks                    | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3246   | An Expedited Forwarding PHB (Per-Hop Behavior) [2]  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3315   | Dynamic Host Configuration Protocol for IPv6 (DHCPv6)   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3376   | Internet Group Management Protocol, Version 3   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3392   | Capabilities Advertisement with BGP-4   | N/A      | No       | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3410   | Introduction and Applicability Statements for Internet Standard Management Framework                          | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |

Standards compliance  
RFC Compliance

| RFC Number | RFC Name  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|------------|---|----------|----------|----------|----------|----------|
| RFC 3411   | An Architecture for Describing Simple Network Management Protocol (SNMP) Management Frameworks                                    | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3412   | Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3413   | Simple Network Management Protocol (SNMP) Applications  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3414   | User-based Security Model (USM) for Version 3 of the Simple Network Management Protocol (SNMPv3)                                  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3415   | View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3416   | Version 2 of the Protocol Operations for SNMP   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3417   | Transport Mappings for the Simple Network Management Protocol (SNMPv3)  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3418   | Management Information Base (MIB) for SNMP [December 2002]  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3442   | The Classless Static Route Option for DHCPv4 Version 4  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3446   | Anycast Rendezvous Point (RP) Mechanism using Protocol Independent Multicast (PIM) and Multicast Source Discovery Protocol (MSDP) | 8.0.61   | 8.0.40   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3484   | Default Address Selection for IPv6  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3513   | IPv6 Addressing Architecture  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3579   | RADIUS (Remote Authentication Dial In User Service) Support For Extensible Authentication Protocol (EAP)                          | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3587   | An IPv6 Aggregatable Global Unicast Address Format  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3596   | DNS Extensions to Support IPv6  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3618   | Multicast Source Discovery Protocol (MSDP)  | 8.0.61   | No       | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3623   | Graceful OSPF Restart   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3704   | Ingress Filtering for Multihomed Networks (Reverse Path Forwarding)   | 8.0.61   | No       | No       | 08.0.70  | 8.0.30   |
| RFC 3748   | Extensible Authentication Protocol (EAP)  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3768   | Virtual Router Redundancy Protocol (VRRP) Version 3 for IPv4 and IPv6   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3810   | Multicast Listener Discovery Version 2 (MLDv2) for IPv6   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3879   | Deprecating Site Local Addresses (IPv6)   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3942   | Reclassifying Dynamic Host Configuration Protocol v4 Options <sup>35</sup>  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3973   | Protocol Independent Multicast - Dense Mode (PIM-DM)  | 8.0.61   | 8.0.40   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 3986   | Uniform Resource Identifier (URI): Generic Syntax (with IPv6)   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4007   | IPv6 Scoped Address Architecture  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |

<sup>35</sup> Partial Support. Options 66, 67, 82, and 150 are supported.

| RFC Number | RFC Name  | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|------------|---|----------|----------|----------|----------|----------|
| RFC 4022   | Management Information Base for the Transmission Control Protocol (TCP)   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4113   | Management Information Base for the User Datagram Protocol (UDP)  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4133   | Entity MIB (Version 3)  | 8.0.60   | 8.0.50   | 8.0.50   | 08.0.70  | 8.0.50   |
| RFC 4193   | Unique Local IPv6 Unicast Addresses   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4188   | Definitions of Managed Objects for Bridges [September 2005]   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4213   | Basic Transition Mechanisms for IPv6 Hosts and Routers  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4222   | Prioritized Treatment of Specific OSPF Version 2 Packets and Congestion Avoidance   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4250   | The Secure Shell (SSH) Protocol Assigned Numbers  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4251   | The Secure Shell (SSH) Protocol Architecture  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4252   | The Secure Shell (SSH) Authentication Protocol  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4253   | The Secure Shell (SSH) Transport Layer Protocol   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4254   | The Secure Shell (SSH) Connection Protocol  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4271   | A Border Gateway Protocol 4 (BGP-4) [January 2006]  | N/A      | N/A      | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4291   | IP Version 6 Addressing Architecture [February 2006]  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4292   | IP Forwarding Table MIB [April 2006]  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4293   | Management Information Base for the Internet Protocol (IP) [April 2006]   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4330   | Simple Network Time Protocol (SNTP) Version 4 <sup>36</sup>   | N/A      | N/A      | N/A      | 08.0.70  | N/A      |
| RFC 4419   | Diffie-Hellman Group Exchange for the Secure Shell (SSH) Transport Layer Protocol [March 2006]  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4432   | RSA Key Exchange for the Secure Shell (SSH) Transport Layer Protocol [March 2006]   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4443   | Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) [March 2006]  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4459   | MTU and Fragmentation Issues with In-the-Network Tunneling  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4541   | IGMP and MLD Snooping Switches Considerations   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4552   | Authentication/Confidentiality for OSPFv3   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4601   | Protocol Independent Multicast - Sparse Mode (PIM-SM) [August 2006]   | 8.0.61   | 8.0.40   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4604   | Using Internet Group Management Protocol Version 3 (IGMPv3) and Multicast Listener Discovery Protocol Version 2 (MLDv2) for Source-Specific Multicast | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4607   | Source-Specific Multicast for IP  | 8.0.61   | 8.0.40   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4610   | Anycast-RP using PIM  | 8.0.61   | 8.0.40   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4632   | Classless Inter-domain Routing (CIDR): The Internet Address Assignment and Aggregation Plan   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |

<sup>36</sup> All platforms are compliant with RFC 5905 NTPv4, which obsoletes RFC 1305 and RFC 4330.

Standards compliance  
RFC Compliance

| RFC Number | RFC Name   | ICX 7150 | ICX 7250 | ICX 7450 | ICX 7650 | ICX 7750 |
|------------|--|----------|----------|----------|----------|----------|
| RFC 4724   | Graceful Restart Mechanism for BGP   | N/A      | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4760   | Multiprotocol Extensions for BGP-4 <sup>37</sup>   | N/A      | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4807   | IPsec Security Policy Database Configuration MIB   | N/A      | N/A      | 08.0.70  | N/A      | N/A      |
| RFC 4836   | MAU-MIB module support   | 8.0.60   | 8.0.40   | 8.0.40   | 08.0.70  | 8.0.40   |
| RFC 4861   | Neighbor Discovery for IP Version 6 (IPv6)   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4862   | IPv6 Stateless Address Auto-configuration  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 4893   | BGP Support for Four-octet AS Number Space   | N/A      | N/A      | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 5059   | Bootstrap Router (BSR) Mechanism for Protocol Independent Multicast (PIM)  | 8.0.61   | 8.0.40   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 5095   | Deprecation of Type 0 Routing Headers in IPv6  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 5136   | Defining Network Capacity (Port Interface Rates)   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 5176   | Dynamic Authorization Extensions to Remote Authentication Dial In User Service (RADIUS)                                      | 8.0.60   | 8.0.50   | 8.0.50   | 08.0.70  | 8.0.50   |
| RFC 5280   | Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile (PKI Certification)       | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 5340   | OSPF for IPv6 [July 2008]  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 5424   | Layered architecture for SYSLOG  | 8.0.60   | 8.0.40   | 8.0.40   | 08.0.70  | 8.0.40   |
| RFC 5494   | IANA Allocation Guidelines for the Address Resolution Protocol (ARP) <sup>38</sup>   | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 5590   | Transport Subsystem for the Simple Network Management Protocol (SNMP) <sup>39</sup>  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 5676   | Managed Objects for mapping SYSLOG messages to SNMP notifications  | 8.0.60   | 8.0.40   | 8.0.40   | 08.0.70  | 8.0.40   |
| RFC 5709   | OSPFv2 HMAC-SHA Cryptographic Authentication   | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 5798   | Virtual Router Redundancy Protocol (VRRP) Version 3 for IPv4 and IPv6  | 8.0.61   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 5905   | Network Time Protocol Version 4 <sup>40</sup>  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 6085   | Address Mapping of IPv6 Multicast Packets on Ethernet  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 6506   | Supporting Authentication Trailer for OSPFv3   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   |
| RFC 6613   | RADIUS over TCP  | 8.0.60   | 8.0.40   | 8.0.40   | 08.0.70  | 8.0.40   |
| RFC 6614   | Transport Layer Security (TLS) Encryption for RADIUS   | 8.0.60   | 8.0.40   | 8.0.40   | 08.0.70  | 8.0.40   |
| RFC 6668   | SHA-2 Data Integrity Verification for the Secure Shell (SSH) Transport Layer Protocol  | 8.0.60   | 8.0.30   | 8.0.20   | 08.0.70  | 8.0.10   |
| RFC 6939   | Client Link-Layer Address Option in DHCPv6   | 8.0.60   | 8.0.40   | 8.0.40   | 08.0.70  | 8.0.40   |
| RFC 7166   | Supporting Authentication Trailer for OSPFv3   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   | 8.0.70   |
| RFC 7348   | Virtual eXtensible Local Area Network (VXLAN): A Framework for Overlaying Virtualized Layer 2 Networks over Layer 3 Networks | No       | No       | No       | No       | 8.0.70   |

<sup>37</sup> Partial support.

<sup>38</sup> Partial support

<sup>39</sup> All platforms follow the USM model. Transport security model with TLS is not supported for SNMP.

<sup>40</sup> All platforms are compliant with RFC 5905 NTPv4, which obsoletes RFC 1305 and RFC 4330.

# IEEE Compliance

The following table lists the IEEE standards that are supported on the Ruckus ICX platforms. Footnotes indicate exceptions.

| IEEE Number        | IEEE Standard Description  | ICX 7150             | ICX 7250 | ICX 7450             | ICX 7750             |
|--------------------|--|----------------------|----------|----------------------|----------------------|
| IEEE 802.1AB       | Station and Media Access Control Connectivity Discovery (Link Layer Discovery Protocol, LLDP)    | 8.0.60               | 8.0.30   | 8.0.20               | 8.0.10               |
| IEEE 802.1AE       | Media Access Control (MAC) Security  | No                   | No       | No                   | No                   |
| IEEE 802.1BR       | Bridge Port Extension  | No                   | No       | 8.0.40               | 8.0.40               |
| IEEE 802.1D-1998   | Spanning Tree Protocol (STP)   | 8.0.60               | 8.0.30   | 8.0.20               | 8.0.10               |
| IEEE 802.1S-2002   | Multiple Spanning Tree (MST)   | 8.0.60               | 8.0.30   | 8.0.20               | 8.0.10               |
| IEEE 802.1W-2001   | Rapid Reconfiguration of Spanning Tree   | 8.0.60               | 8.0.30   | 8.0.20               | 8.0.10               |
| IEEE 802.1X        | Port-based Network Access Control (PNAC) <sup>41</sup>   | 8.0.60               | 8.0.30   | 8.0.20               | 8.0.10               |
| IEEE 802.1 AX-2008 | Link Aggregation   | 8.0.60               | 8.0.30   | 8.0.20               | 8.0.10               |
| IEEE 802.3         | Carrier Sense Multiple Access/Collision Detection (CSMA/CD)                                      | 8.0.60               | 8.0.30   | 8.0.20               | 8.0.10               |
| IEEE 802.3ab       | 1000BASE-T   | 8.0.60               | 8.0.30   | 8.0.20               | 8.0.10               |
| IEEE 802.3ae       | 1BASE5   | 8.0.60               | 8.0.30   | 8.0.20               | 8.0.10               |
| IEEE 802.3af       | Power over Ethernet (15.4 W)   | 8.0.60               | 8.0.30   | 8.0.20               | No                   |
| IEEE 802.3at       | Power over Ethernet enhancements (25.5 W); PoE+  | 8.0.60               | 8.0.30   | 8.0.20               | No                   |
| IEEE 802.3az       | Energy Efficient Ethernet  | No                   | 8.0.30   | 8.0.30               | No                   |
| IEEE 802.3bz       | 2.5GBASE-T   | 8.0.61 <sup>42</sup> | No       | 8.0.61 <sup>43</sup> | No                   |
| IEEE 802.3i        | 10BASE-T   | 8.0.60               | 8.0.30   | 8.0.20               | 8.0.10               |
| IEEE 802.3q        | Guidelines for the Development of Managed Objects  | 8.0.60               | 8.0.30   | 8.0.20               | 8.0.10               |
| IEEE 802.3u        | 100BASE-TX, 100BASE-T4, 100BASE-FX Fast Ethernet at 100 Mbit/s (12.5 MB/s) with auto-negotiation | 8.0.60               | 8.0.30   | 8.0.20               | 8.0.10               |
| IEEE 802.3x        | Full duplex and flow control   | 8.0.60               | 8.0.30   | 8.0.20               | 8.0.10               |
| IEEE 802.3z        | 1000BASE-X Gbit/s Ethernet over Fiber-Optic at 1 Gbps (125 MB/s)                                 | 8.0.60               | 8.0.30   | 8.0.20               | 8.0.10               |
| IEEE 802.3ba       | 40 Gbit/s and 100 Gbps Ethernet  | No                   | No       | 8.0.20 <sup>44</sup> | 8.0.10 <sup>44</sup> |

<sup>41</sup> Partial support.

<sup>42</sup> ICX 7150 Z-Series only

<sup>43</sup> ICX 7450 Z-Series only

<sup>44</sup> Supported on 40G ports only.



© 2018 ARRIS Enterprises LLC. All rights reserved.  
Ruckus Wireless, Inc., a wholly owned subsidiary of ARRIS International plc.  
350 West Java Dr., Sunnyvale, CA 94089 USA  
[www.ruckuswireless.com](http://www.ruckuswireless.com)