

## High performance core switches for next generation 100G campus

New user demands and technology advances are increasingly putting pressure on campus networks requiring them to scale to support more devices and deliver more bandwidth. The rapid growth in wireless traffic, accelerated by the adoption of 802.11ac and 802.11ax Wi-Fi, is propelling the migration from 1GbE to Multi-gigabit at the access and, driving the need for faster networks at the aggregation and core. Workgroups and data center servers are migrating from 1GbE connectivity to 10GbE Copper or 25GbE Fiber with 100GbE uplinks to keep up with application demands.



### Benefits

#### Premium core/aggregation switching

- Network core layer can be distributed across the campus, deploying ports and switching capacity where they are needed.
- The performance, scalability, and availability of a high-end enterprise-class chassis.
- The deployment flexibility of fixed form factor switches

#### 40GbE and 100GbE for maximum performance

- Up to 32x 40/100 GbE ports per switch.
- Up to 8x 100 GbE stacking ports, 1.6 Tbps of stacking bandwidth per switch.
- Deliver the performance and scalability required by future generations of wireless access points, IoT and LTE devices.

#### Highly resilient core switching

- Redundant, hot-swappable power supplies and fans
- In-Service Software Upgrades (ISSU)
- Multi-Chassis Trunking (MCT) for core failover with load-balancing
- Hitless stack insertion and removal

#### Market-leading stacking scalability

- Up to 12 switches per stack
- Up to 10 km using standard optics or cables
- Up to 8x 40/100GbE standard QSFP28 stacking ports

#### Advanced L3 routing delivers design flexibility

- IPv4 and IPv6
- BGP, OSPF, VRRP, PIM, PBR, VRF

#### Data center leaf/spine deployment with 25 & 100 GbE

- Up to 48x 10/25GbE port per leaf switch for server connectivity
- Up to 48x 10GBASE-T copper ports per leaf switch for server connectivity
- Up to 32x 40/100 GbE ports per spine switch

#### Security and data privacy

- MACsec 128-bit and 256-bit data encryption ensures compliance and data confidentiality

Organizations are rapidly migrating applications from private data centers to the cloud requiring always-on, reliable, high-speed connections to the cloud and resulting in reduced data centers size for which most large chassis/routers are overkill and too complex and expensive to deploy.

Traditional enterprise networks were architected to utilize chassis systems to deliver reliable, high-speed, and scalable routing capabilities to the campus. With recent advances in network processors these capabilities can be packaged into a more flexible stackable switch design. This opens the door to new network architectures where the core can be distributed across the campus, deploying ports and switching capacity directly where they are needed.

The RUCKUS® ICX® 7850 Switch is designed to meet these new challenges. It delivers non-blocking line-rate performance on all ports concurrently, with a switching capacity up to 6.4 Tbps. It supports the next generation Ethernet speeds with 10/25 Gigabit Ethernet at the aggregation and 40/100 Gigabit Ethernet at the core to meet high volume of traffic driving from the edge into the core. It also supports a rich array of routing protocols and delivers a range of high-availability hardware and software features.

Like the rest of the ICX family, the ICX 7850 also offers a range of features designed to simplify network deployment and management such as advanced stacking, and zero touch provisioning.

## 10 GbE AND 25 GbE Aggregation/Core Switches



The RUCKUS® ICX® 7850 stackable aggregation switches come in 1/10 GbE and 1/10/25 GbE models. Both come standard with 8-ports of 40/100 GbE for stacking or uplinks. The 1/10 GbE model offers 48x 1/10 GbE ports with MACsec and LRM, the 1/10/25 GbE model offers 48x 1/10/25 GbE ports and 8x 40/100GbE ports for uplinks or stacking. The switches are targeted at demanding enterprise customers who need a high performance, highly reliable aggregation/core switch or as top of the rack switches in the data center.

## 40/100 GbE Aggregation/Core Switches



The ICX 7850-32Q aggregation/core switch comes standard with 32 40/100 GbE ports and up to 8 of these ports can be used for stacking. The QSFP28 ports are capable of native 40 GbE or 100 GbE Ethernet, or may be broken out to 4x10 Gbps or 4x25 Gbps links to give up to 128 10/25GbE ports for server aggregation in a Data Center, or switch aggregation in the campus.

## 10GBASE-T Access/Aggregation Switch



The Ruckus® ICX® 7850-48C offers 48x 1/10G GbE copper ports (10GBASE-T) and 8x 40/100GbE ports for uplinks or stacking. The switch is targeted at enterprise customers who need a high performance, highly reliable copper aggregation switch or a top of the rack switches in the data center to connect servers with 10GbE copper Ethernet ports.

## RUCKUS ICX 7850

All RUCKUS ICX 7850 models offer, dual power supply slots, 5 or 6 fan tray slots in the back, one RJ-45 Ethernet port for out-of-band network management, one USB Type-C port for console management, one RJ-45 port for serial console management, and one USB Type A port for external file storage.



### RUCKUS ICX 7850-32Q

- 32x 40/100 GbE QSFP28 ports supporting native 40 GbE or 100 GbE, or breakout\* to 4x10 GbE or 4x25 GbE
- Up to 8 of the rightmost QSFP28 ports as stacking ports
- 2x hot-swappable load sharing power supplies and 6x hot-swappable fan assemblies with reversible airflow options (Power supplies and FAN airflows must be the same)



### RUCKUS ICX 7850-48FS

- 48x 1/10 GbE SFP+ ports with 128/256 bit MACsec and LRM support
- 8x 40/100 Gbps QSFP28 ports supporting native 40 GbE or 100 GbE, or breakout\* to 4x10 GbE or 4x25 GbE
- Up to 8 of the QSFP28 ports as stacking ports
- 2x hot-swappable load sharing power supplies and 5x hot-swappable fan assemblies with reversible airflow options (Power supplies and FAN airflows must be the same)



### RUCKUS ICX 7850-48F

- 48x 1/10/25 GbE SFP28 ports
- 8x 40/100 GbE QSFP28 ports supporting native 40 GbE or 100 GbE, or breakout\* to 4x10 GbE or 4x25 GbE
- Up to 8 of the QSFP28 ports as stacking ports
- 2x hot-swappable load sharing power supplies and 5x hot-swappable fan assemblies with reversible airflow options (Power supplies and FAN airflows must be the same)



### RUCKUS ICX 7850-48C

- 48x 1/10G GbE RJ45 ports
- 8x 40/100 Gbps QSFP28 ports supporting native 40 GbE or 100 GbE, or breakout\* to 4x10 GbE or 4x25 GbE
- Up to 8 of the QSFP28 ports as stacking ports
- 2x hot-swappable load sharing power supplies and 5x hot-swappable fan assemblies with reversible airflow options (Power supplies and FAN airflows must be the same)



### RUCKUS ICX 7850-32Q Rear View

- 2 power supply slots for RPS19-E or RPS19-I power supplies
- 6 fan tray slots for ICX-FAN-12-E or ICX-FAN12-I fans



### RUCKUS ICX 7850-48C, -48F and -48FS Rear View

- 2 power supply slots for RPS19-E or RPS19-I power supplies
- 5 fan tray slots for ICX-FAN12-E or ICX-FAN12-I

\* Breakout not supported with stacking.

# Enterprise-Class Features Across RUCKUS ICX Switches

The RUCKUS ICX switch family delivers the enterprise class features for flexibility, scalability and simplified management.

- RUCKUS Campus Fabric technology delivers unmatched flexibility, scalability and simplified management for campus network deployments. Incorporating all of the ICX 7000 switch families with up to 1800 ports in a single logical domain, Campus Fabric allows customers the benefits of a traditional chassis, with the flexibility of stackable switches at a dramatically reduced Total Cost of Ownership (TCO).
- Advanced stacking goes beyond traditional stacking with capabilities that take flexibility, ease of management and cost effectiveness to then next level, including:
  - Stacking on standard Ethernet ports
  - Long-distance stacking
  - No hardware module required for stacking
  - In Service Software Upgrade (ISSU) to minimize downtime
  - Superior scalability with the industry-leading number of switches per stack
  - Stacking at the access, aggregation and core layers
- Enterprise-Class Availability to improve resiliency and minimize downtime, including:
  - Hitless stack failover
  - Hot-insertion/removal of stack members
  - Redundant power supplies
  - In Service Software Upgrades for switch stacks
- RUCKUS offers a broad range of unified management solutions for organizations of all types and sizes:
  - RUCKUS Analytics is a cloud service for network analytics and assurance powered by AI/ML.
  - RUCKUS SmartZone™ network controllers deliver the scale, flexibility to support the most sophisticated deployment scenarios.
  - RUCKUS Cloud™ eliminates on-premises controllers and management software, moving network management to the cloud.
  - RUCKUS Unleashed™ is a simple-to-setup, easy-to-run management solution in a package designed for small businesses.
- On-boarding and security policies across ICX switches and wireless networks with Ruckus Cloudpath.
- OpenFlow 1.3 protocol support in hybrid mode allows user to deploy traditional Layer 2/3 forwarding with OpenFlow on the same port for Software Defined Network (SDN) enabled programmatic control of the network
- Open Standards based management, monitoring and authentication
  - sFlow-based network monitoring to help analyze traffic statistics and trends on every link and overcome unexpected network congestion
  - Open-standards management includes Command Line Interface (CLI), Secure Shell (SSHv2), Secure Copy (SCP), and SNMPv3
  - Support for Access Controller Access Control System (TACACS/TACACS+) and RADIUS authentication helps ensure secure operator access
  - LLDP and LLDP-MED protocol support for configuring, discovering, and managing network infrastructure such as QoS, security policies, VLAN assignments, PoE power levels, and service priorities

## RUCKUS ICX 7850 Switch Feature/Model Comparison

	40/100 GbE Switch	1/10 GbE Switch	1/10/25 GbE Switch	10GBASE-T Switch
	RUCKUS ICX 7850-32Q	RUCKUS ICX 7850-48FS	RUCKUS ICX 7850-48F	RUCKUS ICX 7850-48C
Feature	SPECIFICATIONS			
Switching capacity (data rate, full duplex, stacking enabled)	6.4 Tbps	2.56 Tbps	4.0 Tbps	2.56 Tbps
Forwarding capacity (data rate, full duplex, stacking enabled)	2.0 Bpps	1.9 Bpps	2.0 Bpps	1.9 Bpps
1/10 Gbps SFP+ downlinks		48		
1/10/25 Gbps SFP28 downlinks			48	
1/10 Gbps RJ45 10GBASE-T downlinks				48
40/100 Gbps QSFP28 ports	32	8	8	8
Max ports usable for stacking	8	8	8	8
Base IPv4/v6 Layer 3 routing (static routing, RIP)	Standard			
Advanced IPv4/v6 Layer 3 routing (OSPF, BGP, VRRP, PIM, PBR, VRF)	With license			
MACsec 128/256bit	N/A	With license	N/A	N/A
Aggregated stacking bandwidth	9.6 Tbps			
Stacking density (maximum switches in a stack)	12			
Maximum stacking distance (distance between stacked switches)	10 km			

Feature	POWER			
Power inlet	C14			
Input voltage/frequency	AC: 100 to 240 VAC @ 50 to 60 Hz, -48V to -60V DC			
Power supply rated maximum	2 x 650W			
Airflow	Front-to-back, or back-to-front (depending on power supplies and fans installed)			
Switch power utilization <sup>1</sup> (25°C) Typical Maximum	336.5 W 479.6 W	336.5 W 443.1 W	282.4 W 396.2 W	254.4 W 363.0 W
Switch heat dissipation <sup>1</sup> (25°C) Typical Maximum	1149 BTU/hour 1637 BTU/hour	1149 BTU/hour 1512 BTU/hour	963.7 BTU/hour 1352 BTU/hour	888.7 BTU/hour 1240 BTU/hour

Feature	ENVIRONMENT			
Weight <sup>1</sup>	9.1kg (20lb)	9.1kg (20lb)	8.8kg (19.4lb)	9.1 kg (20Lb)
Dimensions	43.7mm (1.72in) H 440mm (17.32in) W 444.5mm (17.5 in) D	43.7mm (1.72in) H 440mm (17.32in) W 444.5mm (17.5 in) D	43.7mm (1.72in) H 440mm (17.32in) W 444.5mm (17.5 in) D	43.7mm (1.72in) H 440mm (17.32in) W 444.5mm (17.5 in) D
Acoustics <sup>1</sup> (25°C, ISO 7779)	50.6 dBA	50.3 dBA	50.3 dBA	50.3 dBA
MTBF <sup>1</sup> (25°C)	490,449	307,563	479,191	222,514

<sup>1</sup> Switch includes two AC power supplies, 5 fans for 48F and 48FS, 6 fans for 32Q

# RUCKUS ICX 7850 Specifications

Feature	CAPABILITIES
<b>Connector options</b>	<ul style="list-style-type: none"> <li>• 1/10 Gbps SFP+ ports</li> <li>• 1/10 Gbps RJ45 ports</li> <li>• 1/10/25 Gbps SFP28 ports</li> <li>• 40/100 Gbps QSFP28 ports</li> <li>• Out-of-band Ethernet management: 10/100/1000 Mbps RJ-45</li> <li>• Console management: USB type C (Type C plug) and RJ45</li> <li>• File Transfer: USB port, standard-A plug</li> <li>• For the latest information about supported optics, please visit <a href="http://www.RUCKUSwireless.com/optics">www.RUCKUSwireless.com/optics</a>.</li> </ul>
<b>DRAM</b>	• 4 GB
<b>NVRAM (flash)</b>	• 32 GB
<b>Packet Buffer Size</b>	• 32 MB
<b>Maximum VLANs</b>	• 4095
<b>Maximum PVLANS</b>	• 256
<b>Maximum STP (spanning trees)</b>	• 254
<b>Maximum VEs</b>	• 512

FEATURES	
<b>Maximum MAC Addresses</b>	• 96K*
<b>Maximum routes (in hardware)</b>	<ul style="list-style-type: none"> <li>• 128K* (IPv4)</li> <li>• 7K* (IPv6)</li> <li>• 20K* (Next Hop Addresses)</li> </ul>
<b>Trunking</b>	<ul style="list-style-type: none"> <li>• Maximum ports per trunk: 16</li> <li>• Maximum trunk groups: 256</li> </ul>
<b>Maximum jumbo frame size</b>	• 9,216 bytes
<b>Average latency</b>	• 0.8 µs
<b>QoS priority queues</b>	• 10 for Unicast and Multicast traffic
<b>Multicast Groups</b>	<ul style="list-style-type: none"> <li>• 8,192 (Layer 2)</li> <li>• 8,192 (Layer 3)</li> </ul>
<b>VRF</b>	• 128 instances

\* Multiple profiles available.

Feature	CAPABILITIES
<b>Layer 2 switching</b>	<ul style="list-style-type: none"> <li>• 802.1s Multiple Spanning Tree</li> <li>• 802.1x Authentication</li> <li>• Auto MDI/MDIX</li> <li>• BPDU Guard, Root Guard</li> <li>• Dual-Mode VLANs</li> <li>• Dynamic Voice VLAN Assignment</li> <li>• Dynamic VLAN Assignment</li> <li>• Fast Port Span</li> <li>• GVRP: GARP VLAN Registration Protocol</li> <li>• IGMP Snooping (v1/v2/v3)</li> <li>• IGMP Proxy for Static Groups</li> <li>• IGMP v2/v3 Fast Leave</li> <li>• Inter-Packet Gap (IPG) adjustment</li> <li>• Link Fault Signaling (LFS)</li> <li>• MAC Address Filtering</li> <li>• MAC Learning Disable MLD Snooping (v1/v2)</li> <li>• Multi-device Authentication</li> <li>• Per-VLAN Spanning Tree (PVST/PVST+/PVRST)</li> <li>• Mirroring - Port-based, ACL-based, MAC Filter-based, and VLAN-based</li> <li>• PIM-SM v2 Snooping</li> <li>• Port Loop Detection</li> <li>• Private VLAN</li> <li>• Remote Fault Notification (RFN)</li> <li>• Single-instance Spanning Tree</li> <li>• Trunk Groups (static, LACP)</li> <li>• Uni-Directional Link Detection (UDLD)</li> <li>• Metro-Ring Protocol (MRP) (v1, v2)</li> <li>• Virtual Switch Redundancy Protocol (VSRP)</li> <li>• Topology Groups</li> <li>• Q-in-Q and selective Q-in-Q</li> <li>• VLAN Mapping</li> <li>• MCT (RUCKUS Multi-Chassis Trunking)</li> </ul>
<b>Base Layer 3 IP routing</b>	<ul style="list-style-type: none"> <li>• IPv4 and IPv6 static routes</li> <li>• RIP v1/v2, RIPng</li> <li>• ECMP</li> <li>• Port-based Access Control Lists</li> <li>• Layer 3/Layer 4 ACLs</li> <li>• Host routes</li> <li>• Virtual Interfaces</li> <li>• Routed Interfaces</li> <li>• Route-only Support</li> <li>• Routing Between Directly Connected Subnets</li> </ul>

## RUCKUS ICX 7850 Specifications (continued)

<b>Premium Layer 3 IP routing (with software license)</b>	<ul style="list-style-type: none"> <li>• IPv4 and IPv6 dynamic routes</li> <li>• OSPF v2, OSPF v3 (IPv6)</li> <li>• PIM-SM, PIM-SSM, PIM-DM, PIM passive (IPv4/IPv6 multicast routing functionality)</li> <li>• PBR</li> <li>• Virtual Route Redundancy Protocol VRRP v3 (IPv6)</li> </ul>	<ul style="list-style-type: none"> <li>• VRRP-E (IPv4, IPv6) BGP4, BGP4+ (IPv6)</li> <li>• GRE</li> <li>• IPv6 over IPv4 tunnels</li> <li>• VRF-lite (IPv4 and IPv6)</li> <li>• MSDP</li> </ul>
<b>Quality of Service (QoS)</b>	<ul style="list-style-type: none"> <li>• ACL Mapping and Marking of ToS/DSCP (CoS)</li> <li>• ACL Mapping and Marking of 802.1p</li> <li>• ACL Mapping to Priority Queue</li> <li>• Classifying and Limiting Flows Based on TCP Flags</li> <li>• DiffServ Support</li> <li>• Honoring DSCP and 802.1p (CoS)MAC Address Mapping to Priority Queue</li> </ul>	<ul style="list-style-type: none"> <li>• Priority Queue Management using Weighted Round Robin (WRR), Strict Priority (SP), and a combination of WRR and SP</li> </ul>
<b>Traffic management</b>	<ul style="list-style-type: none"> <li>• ACL-based inbound rate limiting and traffic policies</li> <li>• Broadcast, multicast, and unknown unicast rate limiting</li> </ul>	<ul style="list-style-type: none"> <li>• Inbound rate limiting per port</li> <li>• Outbound rate limiting per port and per queue</li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>• MACsec (with license)</li> <li>• 802.1X authentication</li> <li>• MAC authentication</li> <li>• Flexible authentication</li> <li>• Web authentication</li> <li>• DHCP snooping</li> <li>• Dynamic ARP inspection</li> <li>• Neighbor Discovery (ND) Inspection</li> <li>• Tri-level Access Mode (EXEC, Privileged EXEC and Global Configuration)</li> <li>• EAP pass-through support</li> <li>• IEEE 802.1X username export in sFlow</li> </ul>	<ul style="list-style-type: none"> <li>• Protection against Denial of Service (DoS) attacks</li> <li>• Authentication, Authorization, and Accounting (AAA)</li> <li>• MAC Address Locking MAC Port Security</li> <li>• Advanced Encryption Standard (AES) with SSHv2</li> <li>• RADIUS/TACACS/TACACS+</li> <li>• Secure Copy (SCP)</li> <li>• Secure Shell (SSHv2)</li> <li>• Local Username/Password</li> <li>• Change of Authorization (CoA) RFC 5176</li> <li>• Trusted Platform Module</li> <li>• Protected ports</li> </ul>
<b>IEEE standards compliance</b>	<ul style="list-style-type: none"> <li>• 802.1AB LLDP</li> <li>• 802.1D MAC Bridging</li> <li>• 802.1p Mapping to Priority Queue</li> <li>• 802.1s Multiple Spanning Tree (MST)</li> <li>• 802.1w Rapid Reconfiguration of Spanning Tree</li> <li>• 802.1x Port-based Network Access Control (PNAC)</li> <li>• 802.3 Carrier Sense Multiple Access/Collision Detection (CSMA/CD)</li> <li>• 802.3x Full duplex and Flow Control</li> </ul>	<ul style="list-style-type: none"> <li>• 802.3z 1000Base-SX/LX</li> <li>• 802.3 MAU MIB (RFC 2239)</li> <li>• 802.3ba 40 and 100 Gbps Ethernet</li> <li>• 802.1AE-MACsec (with license)</li> <li>• 802.1Q VLAN Tagging</li> <li>• 802.1BR Bridge Port Extension</li> <li>• 802.3ab 1000BASE-T</li> <li>• 802.1 AX-2008 Link Aggregation</li> <li>• 802.3ae 10 Gigabit Ethernet</li> </ul>
<b>IETF RFC standards compliance</b>	<ul style="list-style-type: none"> <li>• For a complete list of RFCs supported by the RUCKUS FastIron® software platform, please consult the “FastIron Features and Standards Support Matrix” document available from <a href="http://support.ruckuswireless.com">support.ruckuswireless.com</a>.</li> </ul>	
<b>High availability</b>	<ul style="list-style-type: none"> <li>• Redundant hot-swappable power supplies</li> <li>• Hot-swappable fan trays</li> <li>• Layer 3 VRRP/VRRP-E protocol redundancy</li> <li>• Real-time state synchronization across the stack</li> <li>• Hitless failover and switchover from master to standby stack controller</li> </ul>	<ul style="list-style-type: none"> <li>• Hot insertion and removal of stacked units</li> <li>• Layer 2 VSRP switch redundancy</li> <li>• In Service Software Update (ISSU)</li> <li>• Multi Chassis Trunking (MCT)</li> </ul>
<b>Management</b>	<ul style="list-style-type: none"> <li>• DHCP Auto Configuration</li> <li>• Configuration Logging</li> <li>• Digital Optical Monitoring</li> <li>• Display Log Messages on Multiple Terminals</li> <li>• Embedded Web Management (HTTP/HTTPS)</li> <li>• Embedded DHCP Server</li> <li>• Industry-standard Command Line Interface (CLI)</li> <li>• RUCKUS SmartZone, RUCKUS Cloud, RUCKUS UnleashedEasy activation of optional software features</li> <li>• USB file management and storage</li> <li>• Boot from USB storage</li> <li>• Macro for batch execution</li> <li>• Out-of-band Ethernet Management</li> <li>• ERSPAN support for remote traffic monitoring</li> <li>• RSPAN</li> <li>• TFTP</li> <li>• TELNET Client and Server</li> <li>• Bootp</li> </ul>	<ul style="list-style-type: none"> <li>• SNMPv1/v2c</li> <li>• DHCP Server and DHCP Relay</li> <li>• SNMPv3 Intro to Framework</li> <li>• Architecture for Describing SNMP Framework</li> <li>• SNMP Message Processing and Dispatching</li> <li>• SNMPv3 Applications</li> <li>• SNMPv3 User-based Security Model</li> <li>• SNMP View-based Access Control Model SNMP</li> <li>• sFlow</li> <li>• Network Time Protocol (NTP)</li> <li>• Multiple Syslog Servers</li> <li>• SCP</li> <li>• EOAM (EFM-OAM)</li> <li>• Virtual Cable Tester (VCT)</li> <li>• For Management MIB, please consult the “FastIron MIB Reference” document available from <a href="http://support.ruckuswireless.com">support.ruckuswireless.com</a>.</li> </ul>

## RUCKUS ICX 7850 Specifications (continued)

Feature	ENVIRONMENT
<b>Temperature</b>	<ul style="list-style-type: none"> <li>Operating temperature: 0°C to 45°C/32°F to 113°F at sea level</li> <li>Storage temperature: -40°C to 70°C/-40°F to 158°F</li> </ul>
<b>Humidity</b>	<ul style="list-style-type: none"> <li>Operating relative humidity: 10% to 90% at 50°C, non-condensing</li> <li>Non-operating relative humidity: 10% to 90% at 70°C, non-condensing</li> </ul>
<b>Altitude</b>	<ul style="list-style-type: none"> <li>Operating altitude: 10,000 ft. (3,000 m) maximum</li> <li>Storage altitude: 39,000 ft. (12,000 m) maximum</li> </ul>

Feature	COMPLIANCE/CERTIFICATION
<b>Electromagnetic emissions</b>	<ul style="list-style-type: none"> <li>FCC Class A (Part 15); EN 55022/CISPR-22 Class A; VCCI Class A; ICES-003 Electromagnetic Emission; AS/NZS 55022; EN 61000-3-2 Power Line Harmonics; EN 61000-3-3 Voltage Fluctuation and Flicker EN 61000-6-3 Emission Standard</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>CAN/CSA-C22.2 NO. 60950-1-07; UL 60950-1; IEC60950-1; EN 60950-1:2006 Safety of Information Technology Equipment; EN 60825-1 Safety of Laser Products</li> </ul>
<b>Immunity</b>	<ul style="list-style-type: none"> <li>EN 61000-6-1 Generic Immunity and Susceptibility; EN 55024 Immunity Characteristics; EN 61000-4-3 Radiated, Radio Frequency, Electromagnetic Field; EN 61000-4-4 Electrical Fast Transient; EN 61000-4-5 Surge; EN 61000-4-6 Conducted Disturbances Induced by Radio-Frequency Fields; EN 61000-4-8 Power Frequency Magnetic Field; EN 61000-4-11 Voltage Dips and Sags</li> </ul>
<b>Environmental regulatory compliance</b>	<ul style="list-style-type: none"> <li>RoHS-compliant (6 of 6); WEEE-compliant</li> </ul>
<b>Vibration</b>	<ul style="list-style-type: none"> <li>IEC 68-2-36, IEC 68-2-6</li> </ul>
<b>Shock and drop</b>	<ul style="list-style-type: none"> <li>IEC 68-2-27, IEC 68-2-32</li> </ul>



## RUCKUS ICX 7850 Ordering Information

Part Number	SWITCH BUNDLES
<b>ICX7850-32Q-E2</b>	RUCKUS ICX 7850 with 32x 40/100GbE QSFP28 ports, 2 AC power supplies and 6 fans included, front to back airflow. Requires ICX7850-PREM-LIC to use advanced L3 features. Optical transceivers sold separately.
<b>ICX7850-48F-E2</b>	RUCKUS ICX 7850 with 48x 1/10/25GbE SFP28 and 8x 40/100 QSFP28 ports, 2 AC power supplies and 5 fans included, front to back airflow. Requires ICX7850-PREM-LIC to use advanced L3 features. Optical transceivers sold separately.
<b>ICX7850-48FS-E2</b>	RUCKUS ICX 7850 with 48x 1/10GbE SFP+ and 8x 40/100 QSFP28 ports, 2 AC power supplies and 5 fans included, front to back airflow, MACsec. Requires ICX7850-PREM-LIC to use advanced Layer 3 features and ICX-MACSEC-LIC to use MACsec. Optical transceivers sold separately.
<b>ICX7850-48C-E2</b>	RUCKUS ICX 7850 with 48x 100/1000Mbps/10Gbps RJ45 and 8x 40/100 QSFP28 ports, 2 AC power supplies and 5 fans included, front to back airflow. Requires ICX7850-PREM-LIC to use advanced L3 features. Optical transceivers sold separately.

Part Number	SWITCH BUNDLES WITH 3 YEARS REMOTE SUPPORT
<b>ICX7850-48FS-E2-RMT3</b>	RUCKUS ICX 7850 with 48x 1/10GbE SFP+ and 8x 40/100 QSFP28 ports, 2 AC power supplies and 5 fans included, front to back airflow, MACsec. 3 years 24x7 remote support included. Requires ICX7850-PREM-LIC to use advanced L3 features and ICX-MACSEC-LIC to use MACsec. Optical transceivers sold separately.

Part Number	BARE SWITCHES
<b>ICX7850-32Q</b>	RUCKUS ICX 7850 with 32x 40/100GbE QSFP28 ports, power supplies and fans sold separately (up to 2 power supplies and 6 fans per switch). Requires ICX7850-PREM-LIC to use advanced Layer 3 features. Optical transceivers sold separately.
<b>ICX7850-48F</b>	RUCKUS ICX 7850 with 48x 1/10/25GbE SFP28 and 8x 40/100 QSFP28 ports, power supplies and fans sold separately (up to 2 power supplies and 5 fans per switch). Requires ICX7850-PREM-LIC to use advanced L3 features. Optical transceivers sold separately.
<b>ICX7850-48FS</b>	RUCKUS ICX 7850 with 48x 1/10GbE SFP+ and 8x 40/100 QSFP28 ports, power supplies and fans sold separately (up to 2 power supplies and 5 fans per switch), MACsec. Requires ICX7850-PREM-LIC to use advanced Layer 3 features and ICX-MACSEC-LIC to use MACsec. Optical transceivers sold separately.
<b>ICX7850-48C</b>	RUCKUS ICX 7850 with 48x 100/1000Mbps/10Gbps RJ45 and 8x 40/100 QSFP28 ports, power supplies and fans sold separately (up to 2 power supplies and 5 fans per switch). Requires ICX7850-PREM-LIC to use advanced L3 features. Optical transceivers sold separately.

Part Number	POWER SUPPLIES AND FANS
<b>RPS19-E</b>	650W AC power supply, front to back airflow, for the RUCKUS ICX 7850 (up to 2 per switch)
<b>RPS19-I</b>	650W AC power supply, back to front airflow, for the RUCKUS ICX 7850 (up to 2 per switch)
<b>RPS19DC-E</b>	650W DC power supply, front to back airflow, for the RUCKUS ICX 7850 (up to 2 per switch)ICX 7850 650W AC PSU, exhaust airflow, front to back airflow
<b>RPS19DC-I</b>	650W DC power supply, back to front airflow, for the RUCKUS ICX 7850 (up to 2 per switch)ICX 7850 650W AC PSU, intake airflow, back to front airflow
<b>ICX-FAN12-E</b>	Fan assembly, front to back airflow, for the RUCKUS ICX 7850 (up to 5 or 6 per switch depending on switch model)ICX 7850 exhaust airflow fan, front to back airflow
<b>ICX-FAN12-I</b>	Fan assembly, back to front airflow, for the RUCKUS ICX 7850 (up to 5 or 6 per switch depending on switch model)ICX 7850 intake airflow fan, back to front airflow

Part Number	FEATURE LICENSE AND ACCESSORIES
<b>ICX7850-PREM-LIC</b>	ICX 7850 advanced L3 License adds support for OSPF, BGP VRRP, PIM, PBR, VRF
<b>ICX-MACSEC-LIC</b>	ICX MACsec license adds support for 128/256 bit MACsec encryption to ICX 7850

OPTICS	
<b>See Optics Datasheet at <a href="http://www.ruckuswireless.com/optics">www.ruckuswireless.com/optics</a></b>	RUCKUS offers a unique set of high-performance, reliable, and cost-effective optical transceivers to help enterprises and service providers meet the challenges of diverse network topologies. To ensure maximum quality, RUCKUS selects and tests the most reliable, highest-performing optical transceivers on the market, and then warrants their availability, capacity, and performance in RUCKUS® product.” for a the specific list of optics supported by each ICX product see the <a href="http://www.ruckuswireless.com/optics">Optics Datasheet</a> at <a href="http://www.ruckuswireless.com/optics">www.ruckuswireless.com/optics</a> .

MANAGEMENT SOFTWARE	
<b><a href="#">RUCKUS SmartZone</a></b>	SmartZone network controllers simplify network setup and management, enhance security, minimize troubleshooting and ease upgrades for networks built on RUCKUS switches and access points. Whether you’re building complex multi-geo networks or delivering multi-tier managed networking services, SmartZone network controllers deliver the scale, flexibility and openness to support the most sophisticated deployment scenarios.
<b><a href="#">RUCKUS Cloud</a></b>	RUCKUS Cloud takes the complexity of deploying and managing a distributed network out. It enables faster response to organizational needs while also reducing IT overhead. RUCKUS Cloud eliminates the need to deploy on-premises controllers and management software, moving network management to the cloud. Your multi-site network can be centrally managed through a single pane of glass web-based UI and full-featured mobile app.
<b><a href="#">RUCKUS Unleashed</a></b>	Unleashed is a simple-to-setup, easy-to-run management solution in a package designed and priced for small businesses. With built-in controller functionality, there’s no need to invest in a separate appliance for Wi-Fi control or in network management software. You can manage your entire network from your phone or web browser including all your APs and switches together.

## Ordering Notes

Customers have two options when ordering a RUCKUS ICX 7850 Switch. They can select one of the pre-built units from the “Switch Bundles” section, or they can build their own custom unit by selecting a “Bare Switch” and adding their choice of power supplies, fans, and port modules.

Pre-built units ordered from the “Switch Bundles” section include a USA power cord, tool-less rack mount kit, and a DB9-RJ45 serial console cable. Units ordered from the “Bare Switches” section include tool-less rack mount kit and a DB9-RJ45 serial console cable.

AC power supplies ordered separately do not include a power cord, power cord must be ordered separately. Stacking and data cables must be ordered separately.

## Warranty

RUCKUS ICX 7850 Switches are covered by the RUCKUS Assurance Limited Lifetime Warranty. For details, visit [www.ruckuswireless.com/warranty](http://www.ruckuswireless.com/warranty).

## Best-in-Class Support

RUCKUS ICX 7850 switches come with 90 days of free technical support from the RUCKUS Technical Assistance Center (TAC). For continued access to the TAC past the initial 90 days, customers must purchase a RUCKUS Technical Support contract. For details, visit [support.ruckuswireless.com/programs](http://support.ruckuswireless.com/programs).

## Legal Disclaimer

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