SERVIX

Proposta Comercial

Ao TJAM – Tribunal de Justiça do Estado do Amazonas

Pregão Eletrônico SRP nº 042/2019.

Abertura: 26/09/2019 às 09:30

Objeto: Registro de preços para eventual fornecimento de ativos de rede, incluindo switches, conversores ópticos e aplicativos de interconectividade, para atender ao Tribunal de Justiça do Amazonas, por um período de 12 (doze) meses, conforme especificações e condições definidas no Termo de Referência deste Edital.

A **Servix Informática Ltda.**, empresa privada inscrita sob o CNPJ/ MF nº. 01.134.191/0003-09, devidamente representada por seu Sócio Diretor Heitor Sakoda, apresenta a seguinte Proposta Comercial, de acordo com todas as especificações e condições estabelecidas no pregão eletrônico e anexos.

ITEM	DESCRIÇÃO	MARCA/ MODELO/ FABRICANTE	UN	QTDE.	VALOR UNITÁRIO (R$)	VALOR TOTAL (R$)
01	Switch de Acesso 24 Portas 10/100/1000 Mbps, uplink 1 Gbps, conforme especificações técnicas constantes no item 6.1 deste Termo de Referência	**Ruckus / ICX7150-24 / Ruckus**	**UN**	**100**	**6.695,00**	**669.500,00**
02	Switch de Acesso 48 Portas 10/100/1000 Mbps, uplink 1 Gbps, conforme especificações técnicas constantes no item 6.2 deste	**Ruckus / ICX7150-48 / Ruckus**	**UN**	**100**	**9.362,00**	**936.200,00**

	Termo de Referência					
03	Switch de Acesso 48 Portas 10/100/1000 Mbps, uplink 1 Gbps, PoE+, conforme especificações técnicas constantes no item 6.3 deste Termo de Referência	**Ruckus / ICX7150-48P + Licença de Empilhamento / Ruckus**	**UN**	**100**	**17.569,00**	**1.756.900,00**
04	Switch de Distribuição 48 Portas 10/100/1000 Mbps, 8 portas uplink 1 Gbps	**Ruckus / ICX7250-48 / Ruckus**	**UN**	**20**	**18.119,00**	**362.380,00**
05	Conversor Óptico - Transceiver – MiniGbic SFP 1GbE, para conexão aos equipamentos dos itens 1, 2 e 3	**Ruckus / E1MG-SX-OM / Ruckus**	**UN**	**200**	**1.688,00**	**337.600,00**
06	Conversor Óptico - Transceiver – MiniGbic SFP+ 10GbE, para conexão aos equipamentos dos itens 1, 2 e 3	**Ruckus / 10G-SFPP-SR-S / Ruckus**	**UN**	**40**	**2.071,00**	**82.840,00**
07	Licença de 2x10 Gbps, para gerenciamento dos equipamentos dos itens 1, 2 e 3	**Ruckus / Licença ICX7150 / Ruckus**	**UN**	**200**	**1.873,00**	**374.600,00**
08	Licença de empilhamento de 2x10 Gbps, para gerenciamento dos	**Ruckus / Licença ICX7150 / Ruckus**	**UN**	**200**	**2.037,00**	**407.400,00**

	equipamentos dos itens 1, 2 e 3					
09	Licença de 2x 10 Gbps, para gerenciamento dos equipamentos do item 4	**Ruckus / Licença ICX7250 / Ruckus**	**UN**	**20**	**3.772,00**	**75.440,00**
10	Licença de 6x 10 Gbps, para gerenciamento dos equipamentos do item 4	**Ruckus / Licença ICX7250 / Ruckus**	**UN**	**20**	**2.919,00**	**58.380,00**
Valor Total: R$ 5.061.240,00 (Cinco milhões, sessenta e um mil e duzentos e quarenta reais)						

1. **Condições Comerciais:**
   A) Validade da proposta comercial: 60 dias contados da data da sessão pública do pregão;
   B) Prazo de entrega: 45 (quarenta e cinco) dias corridos a partir do recebimento da Nota de Empenho;
   C) Prazo de garantia: 36 meses.

2. **Declarações**
   A) Declaramos para todos os efeitos legais e administrativos, sob as penas da lei, que nos preços acima estão inclusos todos os custos diretos e indiretos, inclusive de embalagens, transportes ou fretes, e ainda os resultantes da incidência de quaisquer tributos, contribuições ou obrigações decorrentes da legislação trabalhista, fiscal e previdenciária a que estiver sujeito.

   B) Declaramos para fins do disposto no Inciso V do Artigo 27 da Lei Federal nº 8.666/9, acrescido pela Lei nº. 9.854/99, em conformidade com o previsto no Inciso XXXIII, do Artigo 7º, da Constituição Federal de 1988, que não possuímos em nosso quadro de pessoal empregado (s) menor (es) de 18 (dezoito) anos em trabalho noturno, perigoso ou insalubre e de 16 (dezesseis) anos em qualquer trabalho, salvo na condição de aprendiz, a partir dos 14 (quatorze) anos.

SERVIX

3. **Dados da Empresa:**
   A. **Razão Social**: Servix Informática Ltda.
   B. **CNPJ MF**: 01.134.191.0003-09
   C. **Endereço**: Rua Santos Dumont, 57. Sala 202. CEP 45.653-380. Centro. Ilhéus – BA.
   D. **Home Page**: www.servix.com
   E. **E-mail**: juridico@servix.com

4. **Contato durante período de vigência para abertura de chamados**
   A) **Telefone fixo**: (11) 3525 3400
   B) **0800 24x7**: 0800-940-1420
   C) **Web-Site**: http://servix.com/suporte/

5. **Dados do Responsável pela Assinatura do Contrato**
   A. **Nome**: Heitor Sakoda
   B. **RG**: 6.557.220-8
   C. **CPF**: 014.107.698-44
   D. **Estado Civil**: Casado
   E. **Cargo**: Sócio-Diretor
   F. **E-mail**: heitor.sakoda@servix.com

6. **Dados Bancários**
   A) Banco: 341 (Itaú)
   B) Agência: 0383
   C) Conta Corrente: 14835-0
   D) Correntista: Servix Informática Ltda.

Ilhéus, 02 de outubro de 2019

Heitor Sakoda
Sócio-Diretor

Ruckus ICX 7250

Enterprise-Class Stackable Access Switch

DATA SHEET

BENEFITS

8 PORTS OF 10 GbE FOR STACKING OR UPLINK CONNECTIVITY

FLEXIBLE LICENSING UPGRADE

- Upgrade from 1 GbE to 10 GbE for uplink and stacking

MARKET-LEADING STACKING SCALABILITY

- Up to 12 switches per stack
- Up to 10 km using standard optics or cables

FULL-POWER POE+ BUDGET TO POWER ADVANCED EDGE DEVICES

- Wireless APs and video surveillance equipment
- Option for redundant power and incremental PoE budget

ADVANCED L3 ROUTING SIMPLIFIES NETWORK DESIGN AND RELIABILITY

- RIP, OSPF, VRRP, PIM, PBR

CAMPUS FABRIC REDUCES COST OF OPERATIONS, INCREASES FLEXIBILITY

- Delivers the benefits of a chassis with the flexibility of stackables
- Scales to over 1800 ports

3-YEAR TECH SUPPORT INCLUDED

ENERGY EFFICIENT DESIGN

- Supports IEEE 802.3az standard

ENTERPRISE-CLASS SWITCH WITH FUTURE-PROOF EXPANDABILITY

The Ruckus® ICX® 7250 switch combines enterprise-class features, manageability and the flexibility and "pay as you grow" scalability of a stackable solution. The switch delivers the performance required for enterprise Gigabit Ethernet (GbE) access deployment. It raises the bar with up to 8×10 GbE ports for uplinks or stacking and market-leading stacking density with up to 12 switches (576×1 GbE) per stack.

Ruckus ICX 7250 switches also offer an external power supply for failover resiliency, as well as increased PoE/PoE+ port availability.

The Ruckus ICX 7250 is easy to deploy, manage, and integrate into both new and existing networks. Organizations can buy only what they need today, and easily scale out as demand grows and new technologies emerge. Optimizing performance based on specific requirements is easy with flexible licensing upgrade which allows users to upgrade from 1 GbE to 10 GbE ports for uplink and stacking.

Deployed as a standalone switch, a stack, or a network fabric, organizations reap the benefits of a flexible platform and the assurance that their investments are protected.

PREMIUM PERFORMANCE

Designed for small to medium-size enterprises, branch offices, and distributed campuses, these scalable edge switches deliver enterprise-class functionality at an affordable price—without compromising performance and reliability. The Ruckus ICX 7250 delivers wire-speed, non-blocking performance across all ports to support latency-sensitive applications, such as real-time voice/video streaming and Virtual Desktop Infrastructure (VDI). The switch is available in 24- and 48-port 10/100/1000 Mbps models with 1 GbE uplink or 10 GbE dual-purpose uplink/stacking ports (see Figure 1)—with or without PoE and PoE+—to support wireless mobility, and IP communications without the need for additional power outlets or power injectors.

Figure 1: Up to 12 Ruckus ICX 7250 Switches can be stacked together using up to four full-duplex SFP+ 10 Gbps ports for a fully redundant backplane with 480 Gbps of aggregated stacking bandwidth.

RUCKUS ICX 7250 SWITCHES

Except as noted, all Ruckus ICX 7250 models offer eight uplink/stacking ports, a single integrated power supply and fan, one RJ-45 network management port, one mini USB serial management port, and one USB storage port on the front panel.

	**Ruckus ICX 7250-24** 24×10/100/1000 Mbps RJ-45 ports 8×1 GbE uplink/stacking ports; Upgradable to 10 GbE
	**Ruckus ICX 7250-24P** 24×10/100/1000 Mbps RJ-45 PoE+ ports 370 W PoE budget 8×1 GbE uplink/stacking ports; Upgradable to 10 GbE
	**Ruckus ICX 7250-48** 48×10/100/1000 Mbps RJ-45 ports 8×1 GbE uplink/stacking ports; Upgradable to 10 GbE
	**Ruckus ICX 7250-48P** 48×10/100/1000 Mbps RJ-45 PoE+ ports 740 W PoE budget 8×1 GbE uplink/stacking ports; Upgradable to 10 GbE

FULL POWER SUPPORT FOR CONNECTED EDGE DEVICES

The Ruckus ICX 7250 can deliver both power and data across network connections, supporting Power over Ethernet (PoE/PoE+) standards and providing a single-cable solution for edge devices, such as wireless access points, VoIP phones, video surveillance equipment, and VDI thin terminals. Carrying data and power through a single Ethernet wire reduces the number of power receptacles and power adapters while increasing reliability and wiring flexibility. The Ruckus ICX 7250-24P provides 370 watts and can deliver PoE power to all 24 ports, while the Ruckus ICX 7250-48P provides 740 watts and can deliver PoE+ power for up to 24 ports. Both switches can provide PoE and PoE+ (30 watts) power to all ports when an external power supply is used.

The optional Ruckus ICX-EPS 4000 is an external power supply source that delivers additional power for up to 16 Ruckus ICX 7250 switches (see Figures 2 and 3). It can be used for system power redundancy and an increased PoE/PoE+ power budget to enable additional ports.

Figure 2: Ruckus ICX-EPS 4000 for the Ruckus ICX 7250, shown with four AC power supplies.

Figure 3: Rear view of the Ruckus ICX-EPS 4000 connectivity.

ENERGY EFFICIENT DESIGN

The Ruckus ICX 7250 Switch supports the IEEE 802.3az standard for Energy Efficient Ethernet (EEE), reducing power consumption during periods of low utilization. Ports are placed into a low power mode when no data is being transmitted.

DATA CENTER TOP-OF-RACK SERVER CONNECTIVITY

The Ruckus ICX 7250 is designed to fit in server racks by consuming only one rack unit. In data center environments where most servers are 1 GbE-capable, the Ruckus ICX 7250 provides a cost-effective 1 GbE Top-of-Rack (ToR) switch by simply connecting 1 GbE Network Interface Cards (NICs) in the servers to switch's 1 GbE ports. This configuration uses 10 GbE links to connect to data center aggregation switches.

ENTERPRISE-CLASS FEATURES ACROSS ALL 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 1,800 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
- Unified wired and wireless network management with Ruckus SmartZone network controller:
  - Ruckus SmartZone centralizes management of the entire family of Ruckus switches and wireless Access Points with a single easy to deploy management platform
  - Discovers, monitor, and deploys configurations to groups of switches and wireless APs
- On-boarding and security policies across ICX switches and wireless networks.
- 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 7250 FEATURE/MODEL COMPARISON

	24 or 48 Ports (Non-PoE)		24 or 48 PoE+ Ports	
FEATURE	**Ruckus ICX 7250-24**	**Ruckus ICX 7250-48**	**Ruckus ICX 7250-24P**	**Ruckus ICX 7250-48P**
Switching capacity (data rate, full duplex)	208 Gbps	256 Gbps	208 Gbps	256 Gbps
Forwarding capacity (data rate, full duplex)	154 Mpps	190 Mpps	154 Mpps	190 Mpps
Fixed ports: 10/100/1000 Mbps RJ-45 (full duplex, only)	24	48	24	48
Fixed ports: 100/1000 Mbps SFP				
Fixed ports: 1/10 Gbps SFP+ (10 GbE SPF+ optional upgrade license)	8	8	8	8
PoE/PoE+ ports			24	48
Maximum PoE Class 3 ports (15.4 W per port with internal AC power supply only)			24	48
Maximum PoE+ ports (30 W per port, with internal AC power supply only)			12	24
Maximum PoE+ Class 4 ports (30 W per port with external power supply)			24	48
Base IPv4/IPv6 Layer 3 routing (static routing, RIP)	•	•	•	•
Advanced IPv4/IPv6 Layer 3 routing (OSPF, VRRP, PIM, PBR, VRF features)	With license	With license	With license	With license
Aggregated stacking bandwidth	480 Gbps	480 Gbps	480 Gbps	480 Gbps
Stacking density (maximum switches in a stack)	12	12	12	12
Stacking ports (maximum ports[1] usable for stacking)	Up to 4×10 GbE SFP+ per switch			
Maximum stacking distance (distance between stacked switches)	10 km	10 km	10 km	10 km
Campus Fabric	Fabric Port Extender (PE)			

[1] 10 Gbps SFP+ ports are required for stacking.

RUCKUS ICX 7250 FEATURE/MODEL COMPARISON

	24 or 48 Ports (Non-PoE)		24 or 48 PoE+ Ports	
	Ruckus ICX 7250-24	**Ruckus ICX 7250-48**	**Ruckus ICX 7250-24P**	**Ruckus ICX 7250-48P**
FEATURE	**POWER**			
Power inlet (AC)	C14			
Input voltage/frequency	AC: 100 to 240 VAC @ 50 to 60 Hz			
Maximum current draw (at 100 VAC, one power supply)	1.69 Amp	1.69 Amp	6.56 Amp	11 Amp
Power supply rated maximum (AC)	135 W	135 W	525 W	880 W
PoE power budget (AC) (internal AC power supply only)	N/A	N/A	370 W	740 W
Switch power consumption (25°C) **Idle** (no PoE load) **10% traffic**[2] (full PoE load) **100% traffic**[2] (full PoE load)	42.6 W 51.6 W 57.6 W	50.64 W 63.55 W 69.51 W	50 W 428.0 W 439.0 W	66 W 862.0 W 880.0 W
Airflow	Side-to-back	Side-to-back	Side-to-back	Side-to-back
Switch heat dissipation (25°C)[3] **Idle** (no PoE load) **10% traffic**[2] (full PoE load) **100% traffic**[2] (full PoE load)	145.3 BTU/hour 176.06 BTU/hour 196.5 BTU/hour	172.7 BTU/hour 216.8 BTU/hour 237.1 BTU/hour	170.6 BTU/hour 214.9 BTU/hour 249.08 BTU/hour	225.2 BTU/hour 286.6 BTU/hour 327.5 BTU/hour
FEATURE	**ENVIRONMENT**			
Weight (kg)	3.76	4.84	4.73	5.86
Dimensions	**48 port:** 440 mm (17.323 in.), W×370 mm (14.56 in.), D×43.7 mm (1.720 in.), H — 1U **24 port:** 440 mm (17.323 in.), W×280 mm (11.02 in.), D×43.7 mm (1.720 in.), H — 1U			
Acoustics (25°C)	41.9 dB	44.5 dB	44.7 dB	45.9 dB
MTBF (hours) (25°C)	676,362	665,319	429,209	411,187

[2] Traffic load on all ports connected with maximum possible PoE/PoE+ loads (if equipped).

[3] PoE power not included in switch heat dissipation figures since the heat is not dissipated at the switch.

RUCKUS ICX 7250 SPECIFICATIONS

FEATURES	SPECIFICATIONS
Connector options	• 10/100/1000 ports: RJ-45 • 1/10 GbE SFP+ ports • Out-of-band Ethernet management: 10/100/1000 Mbps RJ-45 • Console management: Mini-USB serial port (Mini-B plug) • File transfer: USB port (Standard-A plug) • For the latest information about supported optics, please visit www.ruckuswireless.com/optics.
DRAM **NVRAM (Flash)** **Packet buffer size**	• 2 GB • 2 GB • 24 port: 2 MB, 48 port: 4 MB
Maximum MAC addresses	• 16,384
Maximum VLANs **Maximum PVLANs**	• 4,096 • 32
Maximum STP (spanning trees)	• 254
Maximum VEs	• 255
Maximum routes (in hardware)	• 12,000 (IPv4) • 2,048 (IPv6) • 7000 (Next Hop Addresses)
Trunking	• Maximum ports per trunk: 16 • Maximum trunk groups: 128
Maximum jumbo frame size	• 9,216 bytes
Average latency	• 1.5 µs
QoS Priority Queues	• 8 per port
Multicast Groups	• 8,192 (Layer 2) • 8,192 (Layer 3)
VRF	• 16 instances

FEATURES	FEATURE SETS
Layer 2 switching	• 802.1s Multiple Spanning Tree • 802.1x Authentication • Auto MDI/MDIX • BPDU Guard, Root Guard • Dual-Mode VLANs • MAC-based VLANs, Dynamic MAC-based VLAN activation • Dynamic VLAN Assignment • Dynamic Voice VLAN Assignment • Fast Port Span • GVRP: GARP VLAN Registration Protocol • IGMP Snooping (v1/v2/v3) • IGMP Proxy for Static Groups • IGMP v2/v3 Fast Leave • IGMP Tracking • Inter-Packet Gap (IPG) adjustment • Link Fault Signaling (LFS) • MAC-Address Filtering • MAC Learning Disable • MLD Snooping (v1/v2) • Multi-device Authentication • Per-VLAN Spanning Tree (PVST/PVST+/PVRST) • Mirroring—Port-based, ACL-based, MAC Filter-based, and VLAN-based • PIM-SM v2 Snooping • Port Loop Detection • Private VLAN • Remote Fault Notification (RFN) • Single-instance Spanning Tree • Trunk Groups (static, LACP) • Uni-Directional Link Detection (UDLD) • Metro-Ring Protocol MRP (v1, v2) • Virtual Switch Redundancy Protocol (VSRP) • Topology Groups • Q-in-Q and selective Q-in-Q • VLAN Mapping

RUCKUS ICX 7250 SPECIFICATIONS

Base Layer 3 IP routing	• IPv4 and IPv6 static routes – RIP v1/v2, RIPng • ECMP • Port-based Access Control Lists • Layer 3/Layer 4 ACLs	• Host routes • Virtual interfaces • Routed interfaces • Route-only support • Routing between directly connected subnets
Premium Layer 3 IP routing	• IPv4 and IPv6 dynamic routes • OSPF v2, v3 • PIM-SM, PIM-SSM, PIM-DM, PIM passive (IPv4/IPv6 multicast routing functionality) • PBR	• Virtual Route Redundancy Protocol (VRRP) • VRRP-E (IPv4/IPv6) • VRRP v3 (IPv6) • IPv6 over IPv4 tunnels • VRF (IPv4 and IPv6)
Quality of Service (QoS)	• ACL Mapping and Marking of ToS/DSCP • ACL Mapping and Marking of 802.1p • ACL Mapping to Priority Queue • Classifying and Limiting Flows Based on TCP Flags • DiffServ Support • Honoring DSCP and 802.1p	• MAC Address Mapping to Priority Queue • Priority Queue Management using Weighted Round Robin (WRR), Strict Priority (SP), and a combination of WRR and SP • Priority Flow Control
Traffic management	• ACL-based inbound rate limiting and traffic policies • Broadcast, multicast, and unknown unicast rate limiting	• Inbound rate limiting per port • Outbound rate limiting per port and per queue
Security	• 802.1X Accounting • MAC Authentication • Flexible authentication • Web authentication • DHCP snooping • Dynamic ARP inspection • ND Inspection (Neighbor Discovery) • Bi-level Access Mode (Standard and EXEC Level) • EAP pass-through support • IEEE 802.1X username export in sFlow • Protection against Denial of Service (DoS) attacks	• Authentication, Authorization, and Accounting (AAA) • MAC Address Locking; MAC Port Security • Advanced Encryption Standard (AES) with SSHv2 • RADIUS/TACACS/TACACS+ • Secure Copy (SCP) • Secure Shell (SSHv2) • Protected Ports • Username/Password • Change of Authorization (CoA) RFC 5176 • RADSEC (RFC 6614) • Encrypted Syslog (RFC 5425)
SDN features	• Support for OpenFlow v1.0 and v1.3	• OpenFlow support with true hybrid port mode
IEEE standards compliance	• 802.1AB LLDP/LLDP-MED • 802.1D-2004 MAC Bridging • 802.1p Mapping to Priority Queue • 802.1s Multiple Spanning Tree • 802.1w Rapid Reconfiguration of Spanning Tree (RSTP) • 802.1x Port-based Network Access Control (PNAC) • 802.3 Carrier Sense Multiple Access/Collision Detection (CSMA/CD) • 802.3ab 1000Base-T • 802.3 10Base-T • 802.3ad Link Aggregation (Dynamic and Static)	• 802.1 AX-2008 Link Aggregation • 802.3ae 10 GbE • 802.3af Power over Ethernet • 802.3at Power over Ethernet Plus • 802.3u 100Base-TX • 802.3x Flow Control • 802.3z 1000Base-SX/LX • 802.3 MAU MIB (RFC 2239) • 802.3az-2010 – Energy Efficient Ethernet (EEE) • 802.1Q VLAN Tagging • 802.1BR Bridge Port Extension
RFC standards compliance	For a complete list of RFCs supported by the Ruckus ICX 7000 product family, please consult the “FastIron Features and Standards Support Matrix” document available from support.ruckuswireless.com.	
High availability	• Layer 3 VRRP protocol redundancy • Real-time state synchronization across the stack • Hitless failover from master to standby stack controller	• Hot insertion and removal of stacked units • Layer 2 VSRP switch redundancy • In-Service Software Update (ISSU)

RUCKUS ICX 7250 SPECIFICATIONS

FEATURES	NETWORK AND DEVICE MANAGEMENT
Management	• DHCP Auto Configuration • Configuration Logging • Digital Optical Monitoring • Display Log Messages on Multiple Terminals • Embedded Web Management (HTTP/HTTPS) • Embedded DHCP Server • Industry-standard Command Line Interface (CLI) • Ruckus SmartZone Network Controller (sold separately) • Key-based activation of optional software features • USB file management and storage • Macro for batch execution • Out-of-band Ethernet Management • ERSPAN support for remote traffic monitoring • RSPAN • TFTP • TELNET Client and Server • Bootp • SNMPv1/v2c • DHCP Server and DHCP Relay • SNMPv3 Intro to Framework • Architecture for Describing SNMP Framework • SNMP Message Processing and Dispatching • SNMPv3 Applications • SNMPv3 User-based Security Model • SNMP View-based Access Control Model SNMP • sFlow • NTP Network Time Protocol • Multiple Syslog Servers • SCP • Virtual Cable Tester (VCT) • For Management MIB, please consult the "FastIron MIB Reference" document available from support.ruckuswireless.com.
Ruckus Campus Fabric technology	• Ruckus ICX 7250 can operate in fabric Port Extender (PE) mode • Up to 36 PEs per fabric • PE Cascade depth up to 6 units • Zero-touch provisioning • High availability with ring topology

FEATURES	ENVIRONMENT
Temperature	Operating temperature: -5°C to 50°C/23°F to 122°F Storage temperature: −25°C to 70°C/−13°F to 158°F
Humidity	Operating relative humidity: 5% to 95% at 50°C, non-condensing Non-operating relative humidity: 0% to 95% at 70°C, non-condensing
Altitude	Operating altitude: 10,000 ft (3,000 m) maximum Storage altitude: 39,000 ft (12,000 m) maximum

FEATURES	COMPLIANCE/CERTIFICATION
Electromagnetic emissions	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 (supersedes: EN 50081-1)
Safety	CAN/CSA-C22.2 NO. 60950-1-07; UL 60950-1 Second Edition; IEC 60950-1 Second Edition; EN 60950-1:2006 Safety of Information Technology Equipment; EN 60825-1 Safety of Laser Products—Part 1: Equipment Classification, Requirements and User's Guide; EN 60825-2 Safety of Laser Products—Part 2: Safety of Optical Fibre Communication Systems
Immunity	EN 61000-6-1 Generic Immunity and Susceptibility (supersedes EN 50082-1); EN 55024 Immunity Characteristics (supersedes EN 61000-4-2 ESD); 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
Environmental regulatory compliance	RoHS-compliant (6 of 6); WEEE-compliant
Vibration	IEC 68-2-36, IEC 68-2-6
Shock and drop	IEC 68-2-27, IEC 68-2-32

RUCKUS ICX 7250 ORDERING INFORMATION

PART NUMBER	RUCKUS ICX 7250 SWITCHES WITH 1 GbE UPLINKS
ICX7250-24	Ruckus ICX 7250 Switch, 24×10/100/1000 ports, 8×1 GbE SFP upgradable to up to 8×10 GbE SFP+ uplink/stacking-ports with license, basic Layer 3 (static routing), side-to-back airflow
ICX7250-24P	Ruckus ICX 7250 Switch, 24×10/100/1000 PoE+ ports, 8×1 GbE SFP upgradable to up to 8×10 GbE SFP+ uplink/stacking-ports with license, 370 W PoE budget, basic Layer 3 (static routing), side-to-back airflow
ICX7250-48	Ruckus ICX 7250 Switch, 48×10/100/1000 ports, 8×1 GbE SFP upgradable to up to 8×10 GbE SFP+ uplink/stacking-ports with license, basic Layer 3 (static routing), side-to-back airflow
ICX7250-48P	Ruckus ICX 7250 Switch, 48×10/100/1000 PoE+ ports, 8×1 GbE SFP upgradable to up to 8×10 GbE SFP+ uplink/stacking-ports with license, 740 W PoE budget, basic Layer 3 (static routing), side-to-back airflow

PART NUMBER	RUCKUS ICX 7250 SWITCHES WITH 2×10 GbE UPLINKS
ICX7250-24-2X10G	Ruckus ICX 7250 Switch, 24×10/100/1000 ports, 6×1 GbE SFP and 2×10 GbE SFP+ uplink/stacking-ports upgradable to up to 8×10 GbE SFP+ with license, basic Layer 3 (static routing), side-to-back airflow
ICX7250-24P-2X10G	Ruckus ICX 7250 Switch, 24×10/100/1000 PoE+ ports, 6×1 GbE SFP and 2×10 GbE SFP+ uplink/stacking-ports upgradable to up to 8×10 GbE SFP+ with license, 370 W PoE budget, basic Layer 3 (static routing), side-to-back airflow
ICX7250-48-2X10G	Ruckus ICX 7250 Switch, 48×10/100/1000 ports, 6×1 GbE SFP and 2×10 GbE SFP+ uplink/stacking-ports upgradable to up to 8×10 GbE SFP+ with license, basic Layer 3 (static routing), side-to-back airflow
ICX7250-48P-2X10G	Ruckus ICX 7250 Switch, 48×10/100/1000 PoE+ ports, 6×1 GbE SFP and 2×10 GbE SFP+ uplink/stacking-ports upgradable to up to 8×10 GbE SFP+ with license, 740 W PoE budget, basic Layer 3 (static routing), side-to-back airflow

PART NUMBER	RUCKUS ICX-EPS 4000 EXTERNAL POWER SUPPLY OPTIONS FOR THE RUCKUS ICX 7250 SWITCH The Ruckus ICX-EPS4000 supports up to four removable power supplies. Each power supply provides 920 W.
ICX-EPS4000-SHELF	1U External Power Supply shelf (EPS) can support up to four 920 W removable power supplies (purchased separately)
RPS17	EPS power supply, 920 W
ICX-EPS4000-CBL-01	Ruckus ICX-EPS4000 power cable 1:1
ICX-EPS4000-CBL-02	Ruckus ICX-EPS4000 power cable 1:2

PART NUMBER	UPGRADE LICENSES AND ACCESSORIES
ICX7250-PREM-LIC	License to upgrade any Ruckus ICX 7250 to Layer 3 Premium Features (OSPF, VRRP, PIM, PBR, VRF), non-node lock license
ICX7250-2X10G-LIC-POD	License to upgrade any Ruckus ICX 7250 from 8×1 GbE SFP to 6×1 GbE SFP and 2×10 GbE SFP+ uplink/stacking ports, node-lock license
ICX7250-8X10G-LIC-POD	License to upgrade any Ruckus ICX 7250 from 6×1 GbE SFP and 2×10 GbE SFP+ to 8×10 GbE SFP+ uplink/stacking ports, node-lock license. Only switches that already have 2×10 GbE ports can be upgraded to 8×10 GbE ports.
ICX7000-RMK	FRU, rack mount kit, two-post, Ruckus ICX 7250/7450/7750
XBR-R000295	FRU, rack mount kit, four-post, 24 in. to 32 in. depth rack

RUCKUS ICX 7250 ORDERING INFORMATION

OPTICS	
See Optics Datasheet at www.ruckuswireless.com/optics	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 Optics Datasheet at www.ruckuswireless.com/optics.

MANAGEMENT SOFTWARE	
See SmartZone Datasheet at www.ruckuswireless.com/smartzone	Ruckus SmartZone centralizes management of the entire family of Ruckus switches and wireless Access Points with a single easy to deploy management platform. It simplifies network set-up and management, enhances security, streamlines troubleshooting and eases upgrades. SmartZone Network Controllers are available in both appliance and virtual appliance form. For more information, go to www.ruckuswireless.com/smartzone.

ORDERING NOTES

Customers have two options when ordering a Ruckus ICX 7250 switch. They can order one of the five Ruckus ICX 7250 switch models with 1 GbE uplink/stacking ports, or order a switch preloaded with a PoD license for two 10 GbE uplink/stacking ports.

The Ruckus ICX 7250 (-24/-24P/-48/-48P) can be upgraded to 2×10 GbE uplink/stacking ports by purchasing a PoD license (ICX7250-2X10G-LIC-POD).

A Ruckus ICX 7250 switch with 2×10 GbE uplink/stacking ports can be upgraded to 8×10 GbE by purchasing an additional PoD license (ICX7250-8X10G-LIC-POD). Only switches that already have 2×10 GbE can be upgraded to 8×10 GbE.

All Ruckus ICX 7250 switches come with a power cord, two-post rack mounting brackets, and a USB serial console cable. Stacking cables and optics must be ordered separately.

WARRANTY

Ruckus ICX 7250 Switches are covered by the Ruckus Assurance Limited Lifetime Warranty. For details, visit www.ruckuswireless.com/warranty.

BEST-IN-CLASS SUPPORT

Ruckus ICX 7250 switches come with 3 years of free technical support from the Ruckus Technical Assistance Center (TAC). For continued access to the TAC past the initial 3 years, customers must purchase a Ruckus Technical Support contract.

LEGAL DISCLAIMER

Product features, functionality and specifications may change or be discontinued without notice. Nothing in this document shall be deemed to create a warranty of any kind, either express or implied, statutory or otherwise, including but not limited to, any implied warranties of merchantability, fitness for a particular purpose, non-infringement of third-party rights or availability with respect to any products and services.

Refer to www.ruckuswireless.com for the latest version of this document.

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Ruckus ICX 7150

Enterprise-Class Stackable Access Switch

DATA SHEET

BENEFITS

STACKABILITY SIMPLIFIES MANAGEMENT

- Class-leading stacking scalability with up to 12 switches per stack
- Long-distance stacking up to 10 km using standard optics or cables

10 GbE PORTS OPTIMIZE NETWORK PERFORMANCE

- Up to 8×10 GbE SFP+ ports for stacking or uplinks

DUAL POWER SUPPLIES FOR HIGH AVAILABILITY

- Dual load-sharing, hot-swappable power supplies available on the Z-Series switch

MULTIGIGABIT SUPPORT ENABLES NEXT GENERATION WIRELESS DEPLOYMENT

- Up to 16x 2.5 and 2x 2.5/5/10 GbE ports optimized for Wi-Fi 5 and 6 deployment

CLASS LEADING POE BUDGET TO POWER ADVANCED EDGE DEVICES

- PoE+/PoH/802.3bt budget (up to 1,480 watts)[1]
- Support advanced wireless APs and video surveillance equipment

SILENT OPERATION FOR DEPLOYMENT IN THE WORK ENVIRONMENT

- Fanless design or fanless mode enables silent non-disruptive deployment anywhere

ADVANCED L3 MAXIMIZES FLEXIBLITY

- OSPF, VRRP, PIM, PBR L3 features

CAMPUS FABRIC REDUCES COST OF OPERATIONS, INCREASES FLEXIBILITY

- Ruckus Campus Fabric delivers the benefits of a chassis with the flexibility of stackables
- Scales to over 1800 ports

[1] Up to 90W per port, IEEE 802.3bt standard pending ratification. Compatible with uPoE.

ENTRY-LEVEL ACCESS SWITCH SERIES DELIVERS UNPRECEDENTED PERFORMANCE AND FEATURES IN ITS CLASS

The Ruckus® ICX® 7150 series of stackable switches delivers the performance, flexibility, and scalability required for enterprise access deployment, raising the bar with non-blocking performance and up to 8x10 GbE ports for uplinks or stacking. It offers seamless interoperability with Ruckus wireless products to deliver unified wired and wireless network access. In addition, Ruckus Multigigabit Ethernet technology offers bandwidth speeds needed to optimize performance of the latest generation high performance wireless access points and edge devices, over standard Ethernet cables.

The Ruckus ICX 7150 series of switches are available in three formats:

RUCKUS ICX 7150 SWITCHES

The standard Ruckus ICX 7150 switches are available in 24-, and 48-port 10/100/1000 Mbps models with four 1/10 GbE dual-purpose uplink/stacking ports. These switches are available with or without PoE+ power. Silent operation is available for out-of-closet environments.

RUCKUS ICX 7150 Z-SERIES SWITCH

The Ruckus ICX 7150-48ZP 48-port switch adds higher performance, greater resiliency and increased PoE power. The switch offers Multigigabit technology (IEEE 802.3bz) to match the highest performing 802.11ac Wave 2 wireless access points available, with dual redundant, hot-swappable power supplies and fans, and up to 8x10 GbE uplink/stacking ports.

The switch offers 16 Multigigabit (100Mbps/1Gbps/2.5Gbps) ports, each with Power-over-HDBaseT (PoH) up to 90 watts and 802.3bt ready, plus 32 10/100/1000 Mbps ports with PoE+. With a maximum PoE budget of 1480 watts, this switch delivers the power, and performance, to drive PoE+ power to all 48 ports.

RUCKUS ICX 7150 COMPACT SWITCHES

The Ruckus ICX 7150 compact switches come in 8, 10 and 12 ports models and feature a fanless design to operate silently in out-of-closet environments such as offices, classrooms, and retail spaces. They offer PoE on all ports. The ICX 7150-C10ZP delivers up to 90W per port of PoE power and multigigabit Ethernet at 2.5/5/10 Gbps speeds. With 2x1/10 GbE uplink/stacking ports, the ICX 7150-C12P and C10ZP deliver high performance in a small package.

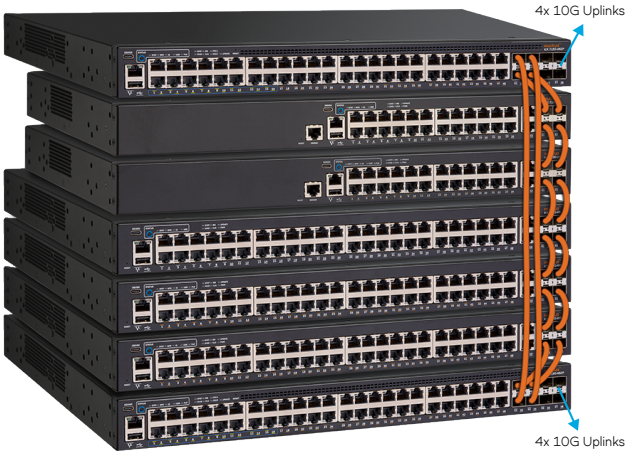

Figure 1: Up to 12 Ruckus ICX 7150 Switches can be stacked together using up to four SFP+ 10 Gbps ports per switch for a fully redundant backplane delivering 480 Gbps of aggregated stacking bandwidth.

STACKING ACROSS THE ICX 7150 SERIES

Ruckus stacking technology makes it possible to stack up to twelve Ruckus ICX 7150 switches into a single logical switch. This allows the Ruckus ICX 7150 to deliver a class-leading 480 Gbps of aggregated stacking bandwidth and offer simple and robust expandability for future growth. Stacking is supported across the ICX 7150 series and all ICX 7150 models including the ICX 7150 compact switches and the ICX 7150-48ZP can be mixed within the same stack. This stacked switch has only a single IP address that simplifies management and offers transparent forwarding across up to 600×1 GbE ports or up to 192×2.5 GbE ports, and up to 96×10 GbE ports. When new switches join the stack, they automatically inherit the stack's existing configuration file, enabling a plug-and-play network expansion.

Because the ICX 7150-48ZP switch has twice as many uplink ports, when it is added to a stack of other ICX 7150 switch models, the effective bandwidth of all the switches is doubled. By designing the stack this way, all four of the 10GbE ports on the ICX 7150 switches can be used for stacking (rather than having to split the four ports between stacking and uplinks), and leveraging four of the 10GbE ports on the ICX 7150-48ZP for stacking and the other four 10GbE ports can be used for uplinks.

ENTERPRISE-CLASS AVAILABILITY

The Ruckus ICX 7150 Switches help deliver continuous availability to optimize the user experience. Ruckus stacking technology provides high availability by performing real-time state synchronization across the stack and transferring switch management control from the master stack controller to the standby controller if the master stack controller experiences a failure. When hot-inserting or hot-removing a stack member to increase capacity or perform service upgrade, traffic flows will not experience interruption.

In addition to stack-level high availability, Ruckus ICX 7150 Switches also support stack level ISSU (In Service Software Upgrade), a unique capability that allows the user to perform software upgrades to a Ruckus ICX 7150 stack without service interruption. Taking high-availability and reliability even further, the Ruckus ICX 7150 Z-Series switch offers redundant hot swappable load sharing power supplies and up to 2 hot swappable fans.

SILENT OPERATION

The Ruckus ICX 7150 compact switches, along with the Ruckus ICX 7150-24 and the ICX 7150-48 switches, feature a fanless design that enables it to operate silently.

The Ruckus ICX 7150-24P and the ICX 7150-48P offer a "silent mode" configuration option, enabling these switches to operate with the fan disabled while providing a PoE budget of 150 watts. This Ruckus-exclusive feature enables users in hospitality, education, healthcare, and retail industries to deploy these switches outside of the wiring closet without disrupting the work environment.

MULTIGIGABIT ETHERNET SUPPORT

The Ruckus ICX® 7150-48ZP Switch raises the bar for entry-level switches even further with 16x IEEE 802.3bz compliant 2.5 GbE ports, up to 8×10 GbE uplink ports, dual redundant load sharing power supplies and class-leading stacking density with up to 12 switches per stack. The ICX 7150-C10ZP delivers multigigabit speeds in a compact form factor with support for 2.5/5 and 10 Gbps. Both switches stack with all other members of the ICX 7150 series allowing organizations to buy what they need now and easily scale as the need for Multigigabit support emerges. It is designed to work seamlessly with Ruckus wireless access points to deliver unified wired and wireless network access.

COST EFFECTIVE FIBER SWITCHING SOLUTION

The Ruckus ICX 7150-24F fiber switch delivers 24 SFP 1GbE fiber ports for fiber-to-the room deployment scenarios when fiber ports are needed at the edge of the network. It offers 4x10GbE SFP+ for uplink or stacking with the rest of the ICX 7150 series.

With the ICX 7150-24F, Ruckus offers a complete set of fiber switching and routing solutions for every budget from high-end core and aggregation to entry-level access switching.

POWER NEXT-GENERATION EDGE DEVICES

All ICX 7150 series members offer PoE options. The compact 12 port switch delivers PoE+ on all ports with a 124W PoE budget. The 24- and 48-port ICX 7150 switches offer up to 740W of PoE+ power and the ICX 7150 Z-Series offers an industry leading 1480W PoE budget when equipped with 2 power supplies. In addition to supporting PoE and PoE+, the Ruckus ICX 7150 Z-Series also offers Power over HDBaseT (PoH) and is 802.3bt ready.[1] This new, high power standard delivers up to 90 watts per port through a standard Ethernet cable, simplifying the wiring of next-generation Ethernet-connected devices such as high-performance wireless APs, large HD displays, video surveillance equipment, and VDI thin terminals, enabling data and power to be carried by a single Ethernet wire. The PoE, PoE+ and PoH capabilities reduce the number of required power receptacles and power adapters while increasing reliability and wiring flexibility.

With a 1,480-watt power budget per switch (with two power supplies), the Ruckus ICX 7150 48ZP model can supply Class 4 PoE+ power (30 watts) to every port and PoH 802.3bt ready power (90 watts) on 16 dedicated Multigigabit ports.

[1] Up to 90W per port, IEEE 802.3bt support pending software update. Compatible with uPoE.

RUCKUS ICX 7150 PRODUCT SERIES

RUCKUS ICX 7150

These Ruckus ICX 7150 models offer a single integrated power supply, 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 port for external file storage.

	**Ruckus ICX 7150-24 Switch**	• 24× 10/100/1000 Mbps RJ-45 ports • 2× 10/100/1000 Mbps uplink RJ-45 ports • 4× 1/10 GbE uplink/stacking SFP/SFP+ ports
	**Ruckus ICX 7150-24P Switch**	• 24× 10/100/1000 Mbps RJ-45 PoE+ ports • 370 W PoE budget • 2× 10/100/1000 Mbps uplink RJ-45 ports • 4× 1/10 GbE uplink/stacking SFP/SFP+ ports
	**Ruckus ICX 7150-48 Switch**	• 48× 10/100/1000 Mbps RJ-45 ports • 2× 10/100/1000 Mbps uplink RJ-45 ports • 4× 1/10 GbE uplink/stacking SFP/SFP+ ports
	**Ruckus ICX 7150-48P Switch**	• 48× 10/100/1000 Mbps RJ-45 PoE+ ports • 370 W PoE budget • 2× 10/100/1000 Mbps uplink RJ-45 ports • 4× 1/10 GbE uplink/stacking SFP/SFP+ ports
	**Ruckus ICX 7150-48PF Switch**	• 48×10/100/1000 Mbps RJ-45 PoE+ ports • 740 W PoE budget • 2×10/100/1000 Mbps uplink RJ-45 ports • 4×1/10 GbE uplink/stacking SFP/SFP+ ports
	**Ruckus ICX 7150-24F Switch**	• 24x 100/1000 Mbps SFP ports • 2×10/100/1000 Mbps uplink RJ-45 ports • 4×1/10 GbE uplink/stacking SFP/SFP+ ports

RUCKUS ICX 7150 Z-SERIES

The Ruckus ICX 7150 Z-Series Switch offers redundant hot swappable load sharing power supplies, up to 2 hot swappable fans, 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 port for external file storage.

	**Ruckus ICX 7150-48ZP**	• 16x 100/1000 Mbps/2.5 Gbps RJ-45 PoH, 802.3bt ready ports[1] • 32× 10/100/1000 Mbps RJ-45 PoE+ ports • 1,480 W PoE budget (with two power supplies) • 8× 1/10 GbE uplink/stacking SFP/SFP+ ports

RUCKUS ICX 7150 COMPACT SWITCHES

The Ruckus ICX 7150 compact switches offer a single integrated power supply, one RJ-45 Ethernet port for out-of-band network management[2], one USB Type-C port for console management, one RJ-45 port for serial console management[2], and one USB port for external file storage[2].

	**Ruckus ICX 7150-C10ZP Compact Switch**	• 10x RJ-45 multigigabit ports, including 8× 2.5 GbE ports and 2x 2.5/5/10 GbE ports • 2× 1/10 GbE uplink/stacking SFP/SFP+ ports • 240W PoE budget. Delivers up to 90W per port on 4 PoH 802.3bt ready ports. Fanless
	**Ruckus ICX 7150-C12P Compact Switch**	• 12× 10/100/1000 Mbps POE+ RJ-45 ports • 124 W PoE budget. Fanless • 2× 10/100/1000 Mbps uplink RJ-45 ports • 2× 1/10 GbE uplink/stacking SFP/SFP+ ports
	**Ruckus ICX 7150-C08P Compact Switch**	• 8× 10/100/1000 Mbps POE+ RJ-45 ports • 2x 1GbE SFP uplink ports • 62W PoE power budget. Fanless

[1] Up to 90W per port, IEEE 802.3bt support pending software update. Compatible with uPoE.
[2] Not supported on the ICX 7150-C08P model.

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
- Unified wired and wireless network management with Ruckus SmartZone network controller:
  - Ruckus SmartZone centralizes management of the entire family of Ruckus switches and wireless Access Points with a single easy to deploy management platform
  - Discovers, monitor, and deploys configurations to groups of switches and wireless APs
- On-boarding and security policies across ICX switches and wireless networks
- 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

* The ICX 7150-C08P does not support stacking, campus fabric and OpenFlow.

RUCKUS ICX 7150 FEATURE/MODEL COMPARISON

	8, 10, 12 RJ-45 Ports compact Switches			24 or 48 RJ-45 Ports		24 SFP Ports	24 or 48 RJ45 PoE+ Ports			Z-Series
FEATURE	**Ruckus ICX 7150-C08P**	**Ruckus ICX 7150-C12P**	**Ruckus ICX 7150-C10ZP**	**Ruckus ICX 7150-24**	**Ruckus ICX 7150-48**	**Ruckus ICX 7150-24F**	**Ruckus ICX 7150-24P**	**Ruckus ICX 7150-48P**	**Ruckus ICX 7150-48PF**	**Ruckus ICX 7150-48ZP**
Switching capacity (data rate, full duplex)	20 Gbps	68 Gbps	120 Gbps	132 Gbps	180 Gbps	132 Gbps	132 Gbps	180 Gbps	180 Gbps	304 Gbps
Forwarding capacity (data rate, full duplex)	14.88 Mpps	51 Mpps	89 Mpps	98 Mpps	134 Mpps	98 Mpps	98 Mpps	134 Mpps	134 Mpps	226 Mpps
10/100/1000 Mbps RJ45 downlinks	8	12		24	48		24	48	48	32
100/1000 Mbps SFP downlinks						24				
100/1000 Mbps/2.5 Gbps RJ45 downlinks (full duplex only)			8							16
100/1000 Mbps/2.5/5/10 Gbps RJ45 downlinks (full duplex only)			2							
10/100/1000 Mbps RJ45 uplinks (full duplex only, no PoE)		2		2	2	2	2	2	2	
1/10 Gbps SFP/SFP+ uplinks	2 SFPs at 1 Gbps only	2	2	4	4	4	4	4	4	8
PoE/PoE+ ports	8	12	6				24	48	48	32
PoH / PoE / PoE+ 802.3bt ready ports[1]			4							16
Dual hot-swap power supplies										Yes
Maximum PoE Class 3 ports (15.4 W per port)	4	8	10				24	24	48	48
Maximum PoE+ Class 4 ports (30 W per port)	2	4	8				12	12	24	48 (2 PSU)
Energy Efficient Ethernet (802.3az)			Yes[3]	Yes	Yes		Yes	Yes	Yes	Yes[3]
Base IPv4/v6 Layer 3 routing (static routing, RIP)	No L3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Advanced IPv4/v6 Layer 3 routing (OSPF, VRRP, PIM, PBR features)	No L3	With license	With license	With license	With license	With license	With license	With license	With license	With license
Aggregated stacking bandwidth (data rate, full duplex)	No Stacking	240 Gbps	240 Gbps	480 Gbps	480 Gbps	480 Gbps	480 Gbps	480 Gbps	480 Gbps	480 Gbps
Stacking density (maximum switches in a stack)	No Stacking	12	12	12	12	12	12	12	12	12
Stacking ports (maximum ports[2] usable for stacking)	No Stacking	Up to 2×10 GbE SFP+		Up to 4×10 GbE SFP+						
Maximum stacking distance (distance between stacked switches)	No Stacking	10 km	10 km	10 km	10 km	10 km	10 km	10 km	10 km	10 km
Campus Fabric	No Fabric	Fabric Port Extender (PE)								

[1] Up to 90W per port, IEEE 802.3bt support pending software update. Compatible with uPoE.
[2] 10 Gbps SFP+ ports are required for stacking.
[3] Supported in a future software release.

RUCKUS ICX 7150 FEATURE/MODEL COMPARISON

	8, 10, 12 RJ-45 Ports compact Switches			24 or 48 RJ-45 Ports		24 SFP Ports	24 or 48 RJ45 PoE+ Ports			Z-Series
	Ruckus ICX 7150-C08P	Ruckus ICX 7150-C12P	Ruckus ICX 7150-C10ZP	Ruckus ICX 7150-24	Ruckus ICX 7150-48	Ruckus ICX 7150-24F	Ruckus ICX 7150-24P	Ruckus ICX 7150-48P	Ruckus ICX 7150-48PF	Ruckus ICX 7150-48ZP
FEATURE	**POWER**									
Power inlet (AC)	C14									
Input voltage/frequency	AC: 100 to 240 VAC @ 50 to 60 Hz									
Power supply rated maximum (AC)	150W	150 W	300W	36 W	65 W	100W	525 W	525 W	880 W	2x 920 W
PoE power budget (AC)	62W	124 W	240W				370 W	370 W	740 W	1480 W (2 PSU)
Switch power consumption[3] (25°C) Idle (no PoE load) 10% traffic[4] (full PoE load) 100% traffic[4] (full PoE load)	 13W 79 W 79 W	 20 W 157 W 157 W	 27 W 242 W 245 W	 14 W 24 W 24 W	 24 W 38 W 39 W	 17 W 40 W 46 W	 32 W 455 W 472 W	 47 W 476 W 491 W	 50 W 869 W 893 W	 89 W 917 W 932 W
Airflow	Fanless	Fanless	Fanless	Fanless	Fanless	Side-to-back	Side-to-back	Side-to-back	Side-to-back	Front-to-back
Switch heat dissipation (25°C)[3,5] Idle (no PoE load) 10% traffic[4] (full PoE load) 100% traffic[4] (full PoE load)	 45 BTU/hr 50 BTU/hr 51 BTU/hr	 69 BTU/hr 78 BTU/hr 79 BTU/hr	 93 BTU/hr 128 BTU/hr 129 BTU/hr	 47 BTU/hr 81 BTU/hr 82 BTU/hr	 83 BTU/hr 131 BTU/hr 132 BTU/hr	 58 BTU/hr 135 BTU/hr 158 BTU/hr	 108 BTU/hr 137 BTU/hr 188 BTU/hr	 160 BTU/hr 196 BTU/hr 252 BTU/hr	 170 BTU/hr 299 BTU/hr 381 BTU/hr	 304 BTU/hr 433 BTU/hr 523 BTU/hr
FEATURE	**ENVIRONMENT**									
Net Weight (Kg)	1.93	2.58	3.57	3.8	4.82	3.6	4.93	6.17	6.28	6.61
Dimensions (mm)	270 (W) 214 (D) 44 (H)	269 (W) 213 (D) 43.4 (H)	304 (W) 305 (D) 44 (H)	440 (W) 280 (D) 43.65 (H)	440 (W) 370 (D) 43.65 (H)	440 (W) 370 (D) 43.65 (H)	440 (W) 280 (D) 43.65 (H)	440 (W) 370 (D) 43.65 (H)	440 (W) 370 (D) 43.65 (H)	440 (w) 332(D) 44(H)
Acoustics (25°C, min fan speed)	Fanless	Fanless	Fanless	Fanless	Fanless	33 dBA	41.4 dBA	41.8 dBA	47.7 dBA	52 dBA
MTBF (25°C)	594,384 hours	562,889 hours	529,625 hours	871,931 hours	714,420 hours	541,966 hours	397,428 hours	335,853 hours	312,241 hours	104,626 hours
FEATURE	**MANAGEMENT PORTS**									
USB Type-C port (for console management)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RJ45 serial port (for serial console management)	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
USB Type-A port (for external file storage)	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RJ45 Ethernet port (for out of band network management)	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

[3] ICX 7150-48ZP Switch includes one AC power supply and one fan.

[4] Traffic load on all ports connected with maximum possible PoE/PoE+ loads (if equipped).

[5] PoE power not included in switch heat dissipation figures since the heat is not dissipated at the switch.

RUCKUS ICX 7150 SPECIFICATIONS

FEATURES	SPECIFICATIONS
Connector options	• 10/100/1000 Mbps RJ-45 • 1 Gbps SFP ports • 1/10 Gbps SFP+ ports* • Out-of-band Ethernet management: 10/100/1000 Mbps RJ-45* • Console management: RJ45 serial port and USB Type-C port with serial communication device class support* • File transfer: USB port, standard-A plug* • For the latest information about supported optics, please visit www.ruckusnetworks.com/optics.
DRAM **NVRAM** (Flash) **Packet buffer size**	• 1 GB • 2 GB • 8/10/12/24 port: 2 MB, 48 port: 4 MB
Maximum MAC addresses	• 16,384
Maximum VLANs **Maximum PVLANs**	• 4,095 • 32
Maximum STP (spanning trees instances)	• 254
Maximum VEs	• 128
Maximum ARP entries	• 4,094
Maximum routes (in hardware)	• 1,000 (IPv4), 1,000 (IPv6) • Next hop address: 4,094
Trunking	• Maximum ports per trunk: 16 • Maximum trunk groups: 128
Maximum jumbo frame size	• 9,216 bytes
QoS priority queues	• 8 per port
Multicast groups	• 3,072 (Layer 2) • 2,048 (Layer 3)
Quality of Service (QoS)	• ACL Mapping and Marking of ToS/DSCP (CoS) • ACL Mapping and Marking of 802.1p • ACL Mapping to Priority Queue • Classifying and Limiting Flows Based on TCP Flags • DiffServ Support • Honoring DSCP and 802.1p (CoS) • MAC Address Mapping to Priority Queue • Priority Queue Management using Weighted Round Robin (WRR), Strict Priority (SP), and a combination of WRR and SP
Traffic management	• ACL-based inbound rate limiting and traffic policies • Broadcast, multicast, and unknown unicast rate limiting • Inbound rate limiting per port • Outbound rate limiting per port and per queue

* Not supported on the ICX 7150-C08P model

RUCKUS ICX 7150 SPECIFICATIONS

FEATURES	SPECIFICATIONS
Security	• 802.1X authentication • MAC authentication • Flexible authentication • Web authentication • DHCP snooping • Dynamic ARP inspection • Neighbor Discovery (ND) Inspection • Bi-level Access Mode (Standard and EXEC Level) • EAP pass-through support • IEEE 802.1X username export in sFlow • Protection against Denial of Service (DoS) attacks • Authentication, Authorization, and Accounting (AAA) • MAC Address Locking MAC Port Security • Advanced Encryption Standard (AES) with SSHv2 • RADIUS/TACACS/TACACS+ • Secure Copy (SCP) • Secure Shell (SSHv2) • Protected Ports • Local Username/Password • Change of Authorization (CoA) RFC 5176 • Trusted Platform Module • RADSEC (RFC 6614) • Encrypted Syslog (RFC 5425)
SDN features	• OpenFlow[1] v1.0 and v1.3 • OpenFlow with hybrid port mode • Operates with an OpenDayLight Controller
High availability	• Layer 3 VRRP/VRRP-E protocol redundancy • Real-time state synchronization across the stack • Hitless failover and switchover from master to standby stack controller • Hot insertion and removal of stacked units • Layer 2 VSRP switch redundancy • In Service Software Update (ISSU)

FEATURES	FEATURE SETS
Layer 2 feature set	• 802.1s Multiple Spanning Tree • 802.1x Authentication • Auto MDI/MDIX • BPDU Guard, Root Guard • Dual-Mode VLANs • MAC-based VLANs, Dynamic MAC-based VLAN activation • Dynamic VLAN Assignment • Dynamic Voice VLAN Assignment • Fast Port Span • GVRP: GARP VLAN Registration Protocol • IGMP Snooping (v1/v2/v3) • IGMP Proxy for Static Groups • IGMP v2/v3 Fast Leave • Inter-Packet Gap (IPG) adjustment • Link Fault Signaling (LFS) • MAC Address Filtering • MAC Learning Disable • MLD Snooping (v1/v2) • Multi-device Authentication • Per-VLAN Spanning Tree (PVST/PVST+/PRST) • Mirroring: Port-based, ACL-based, MAC Filter-based, and VLAN-based • PIM-SM v2 Snooping • Port Loop Detection • Private VLAN • Remote Fault Notification (RFN) • Single-instance Spanning Tree • Trunk Groups (static, LACP) • Uni-Directional Link Detection (UDLD) • Metro-Ring Protocol (MRP) (v1, v2) • Virtual Switch Redundancy Protocol (VSRP) • Q-in-Q and selective Q-in-Q • VLAN Mapping • Topology Groups
Base Layer 3 IP routing feature set[1]	• IPv4 and IPv6 static routes – RIP v1/v2, RIPng • ECMP • Port-based Access Control Lists • Layer 3/Layer 4 ACLs • Host routes • Virtual Interfaces • Routed Interfaces • Route-only Support • Routing Between Directly Connected Subnets
Premium Layer 3 IP routing feature set with software license[1]	• IPv4 and IPv6 dynamic routes • OSPF v2, v3 • PIM-SM, PIM-SSM, PIM-DM, PIM passive (IPv4, IPv6) • PBR • Virtual Route Redundancy Protocol VRRP (IPv4) • VRRP v3 (IPv6) • VRRP-E(IPv4/IPv6)

[1] Not supported on the ICX 7150-C08P model.

RUCKUS ICX 7150 SPECIFICATIONS

FEATURES	STANDARD COMPLIANCE
IEEE standards compliance	• 802.1AB LLDP/ LLDP-MED • 802.1D MAC Bridging • 802.1p Mapping to Priority Queue • 802.1s Multiple Spanning Tree (MST) • 802.1w Rapid Reconfiguration of Spanning Tree (RSTP) • 802.1x Port-based Network Access Control (PNAC) • 802.3 Carrier Sense Multiple Access/Collision Detection (CSMA/CD) • 802.3ab 1000BASE-T • 802.3 10Base-T • 802.3ad Link Aggregation (Dynamic and Static) • 802.1 AX-2008 Link Aggregation • 802.3ae 10 Gigabit Ethernet • 802.3af Power over Ethernet • 802.3at Power over Ethernet Plus • 802.3bz Multigigabit Ethernet • 802.3u 100Base-TX • 802.3x Flow Control • 802.3z 1000Base-SX/LX • 802.3 MAU MIB (RFC 2239) • 802.1Q VLAN Tagging • 802.1BR Bridge Port Extension • 802.3az Energy Efficient Ethernet
RFC standards compliance	For a complete list of RFCs supported by the ICX 7000 product family, please visit www.ruckusnetworks.com/support.

FEATURES	NETWORK AND DEVICE MANAGEMENT
Management	• DHCP Auto Configuration • Configuration Logging • Digital Optical Monitoring • Display Log Messages on Multiple Terminals • Embedded Web Management (HTTP/HTTPS) • Embedded DHCP Server • Industry-standard Command Line Interface (CLI) • Ruckus SmartZone Network Controller (sold separately) • CLI activation of optional software features • USB file management and storage • Macro for batch execution • Out-of-band Ethernet Management • RSPAN • TFTP • TELNET Client and Server • SSH / SSH V2 • Bootp • SNMPv1/v2c • DHCP Server and DHCP Relay • SNMPv3 Intro to Framework • Architecture for Describing SNMP Framework • SNMP Message Processing and Dispatching • SNMPv3 Applications • SNMPv3 User-based Security Model • SNMP View-based Access Control Model SNMP • sFlow • Network Time Protocol (NTP) • Multiple Syslog Servers • SCP • Virtual Cable Tester (VCT) • From management MIB, please see the ICX technical documentation at ruckusnetworks.com/support
Ruckus Campus Fabric technology[1]	• The Ruckus ICX 7150 can operate in fabric Port Extender (PE) mode • Up to 36 PEs per fabric (up to 1800 ports) • PE cascade depth up to 6 units

FEATURES	ENVIRONMENT
Temperature	Operating Temperatures: 0°C to 45°C (0°C to 40°C for ICX 7150-C08P and ICX7150-C10P) Storage Temperatures: -40°C to 70°C
Humidity	Operating relative humidity: 5% to 95% at 45°C, non-condensing Non-operating relative humidity: 0% to 95% at 70°C, non-condensing
Altitude	Operating altitude: 10,000 ft (3,000 m) maximum Storage altitude: 39,000 ft (12,000 m) maximum

[1] Not supported on the ICX 7150-C08P model.

RUCKUS ICX 7150 SPECIFICATIONS

FEATURES	COMPLIANCE/CERTIFICATION
Electromagnetic emissions	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 (supersedes: EN 50081-1)
Safety	CAN/CSA-C22.2 NO. 60950-1-07; UL 60950-1 Second Edition; IEC 60950-1 Second Edition; EN 60950-1:2006 Safety of Information Technology Equipment; EN 60825-1 Safety of Laser Products—Part 1: Equipment Classification, Requirements and User's Guide; EN 60825-2 Safety of Laser Products—Part 2: Safety of Optical Fibre Communication Systems
Immunity	EN 61000-6-1 Generic Immunity and Susceptibility (supersedes EN 50082-1); EN 55024 Immunity Characteristics (supersedes EN 61000-4-2 ESD); 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
Environmental regulatory compliance	RoHS-compliant (6 of 6); WEEE-compliant
Vibration	IEC 68-2-36, IEC 68-2-6
Shock and drop	IEC 68-2-27, IEC 68-2-32

RUCKUS ICX 7150 ORDERING INFORMATION

PART NUMBER	RUCKUS ICX 7150 SWITCHES WITH 1 GbE UPLINKS
ICX7150-C08P-2X1G	Ruckus ICX 7150 Compact Switch, 8x 10/100/1000 Mbps PoE+ ports, 2x 1G SFP uplink-ports, 62W PoE budget, L2 (switch image only, not L3 upgradable), stacking not supported.
ICX7150-C12P-2X1G	Ruckus ICX 7150 Compact Switch, 12×10/100/1000 Mbps PoE+ ports, 2×1 GbE RJ45 uplink-ports, 2×1 GbE SFP uplink-ports upgradable to 2×10 GbE SFP+ with license. 124 W PoE budget, basic Layer 3 (static routing and RIP).
ICX7150-24-4X1G	Ruckus ICX 7150 Switch, 24×10/100/1000 Mbps ports, 2×1 GbE RJ45 uplink-ports, 4×1 GbE SFP uplink-ports upgradable to up to 4×10 GbE SFP+ with license, basic Layer 3 (static routing and RIP).
ICX7150-24F-4X1G	Ruckus ICX 7150 Switch, 24x 1G SFP ports, 2x 1G RJ45 uplink-ports, 4x 1G SFP uplink-ports upgradable to up to 4x 10G SFP+ with license, basic Layer 3 (static routing and RIP).
ICX7150-24P-4X1G	Ruckus ICX 7150 Switch 24×10/100/1000 Mbps PoE+ ports, 2×1 GbE RJ45 uplink-ports, 4×1 GbE SFP uplink ports upgradable to up to 4×10 GbE SFP+ with license, 370 W PoE budget, basic Layer 3 (static routing and RIP).
ICX7150-48-4X1G	Ruckus ICX 7150 Switch, 48×10/100/1000 Mbps ports, 2×1 GbE RJ45 uplink-ports, 4×1 GbE SFP uplink-ports upgradable to up to 4×10 GbE SFP+ with license, basic Layer 3 (static routing and RIP).
ICX7150-48P-4X1G	Ruckus ICX 7150 Switch, 48×10/100/1000 Mbps PoE+ ports, 2×1 GbE RJ45 uplink-ports, 4×1 GbE SFP uplink ports upgradable to up to 4×10 GbE SFP+ with license, 370 W PoE budget, basic Layer 3 (static routing and RIP).
ICX7150-48PF-4X1G	Ruckus ICX 7150 Switch, 48×10/100/1000 Mbps PoE+ ports, 2×1 GbE RJ45 uplink-ports, 4×1 GbE SFP uplink ports upgradable to up to 4×10 GbE SFP+ with license, 740 W PoE budget, basic Layer 3 (static routing and RIP).

RUCKUS ICX 7150 ORDERING INFORMATION

PART NUMBER	RUCKUS ICX 7150 SWITCHES WITH 2×10 GbE UPLINKS
ICX7150-C12P-2X10GR	Ruckus ICX 7150 Compact Switch, 12×10/100/1000 Mbps PoE+ ports, 2×1 GbE RJ45, 2×10 GbE SFP+ stacking/uplink-ports, 124 W PoE budget, Layer 3 features (OSPF, VRRP, PIM, PBR).
ICX7150-C10ZP-2X10GR	Ruckus ICX 7150 Compact Switch, 2x 100/1000/2.5/5/10G PoH ports, 2x 100/1000/2.5G PoH ports, 6x 100/1000/2.5G PoE+ ports, 2x 10G SFP+ stacking/uplink-ports, 240W PoE budget, L3 features (OSPF, VRRP, PIM, PBR).
ICX7150-24 -2X10G	Ruckus ICX 7150 Switch, 24×10/100/1000 Mbps ports, 2×1 GbE RJ45 uplink-ports, 2×1 GbE SFP and 2×10 GbE SFP+ stacking/uplink-ports upgradable to 4×10 GbE SFP+ with license, basic Layer 3 (static routing and RIP).
ICX7150-24F-2X10G	Ruckus ICX 7150 Switch, 24x 1G SFP ports, 2x 1G RJ45 uplink-ports, 2x 1G SFP and 2x 10G SFP+ stacking/uplink-ports upgradable to 4x 10G SFP+ with license, basic L3 (static routing and RIP).
ICX7150-24P-2X10G	Ruckus ICX 7150 Switch, 24×10/100/1000 Mbps PoE+ ports, 2×1 GbE RJ45 uplink-ports, 2×1 GbE SFP and 2×10 GbE SFP+ stacking/uplink-ports upgradable to 4×10 GbE SFP+ with license, 370 W PoE budget, basic Layer 3 (static routing and RIP).
ICX7150-48-2X10G	Ruckus ICX 7150 Switch, 48×10/100/1000 Mbps ports, 2×1 GbE RJ45 uplink-ports, 2×1 GbE SFP and 2×10 GbE SFP+ stacking/uplink-ports upgradable to 4×10 GbE SFP+ with license, basic Layer 3 (static routing and RIP).
ICX7150-48P-2X10G	Ruckus ICX 7150 Switch, 48×10/100/1000 Mbps PoE+ ports, 2×1 GbE RJ45 uplink-ports, 2×1 GbE SFP and 2×10 GbE SFP+ stacking/uplink-ports upgradable to 4×10 GbE SFP+ with license, 370 W PoE budget, basic Layer 3 (static routing and RIP).
ICX7150-48PF-2X10G	Ruckus ICX 7150 Switch, 48×10/100/1000 Mbps PoE+ ports, 2×1 GbE RJ45 uplink-ports, 2×1 GbE SFP and 2×10 GbE SFP+ stacking/uplink-ports upgradable to 4×10 GbE SFP+ with license, 740 W PoE budget, basic Layer 3 (static routing and RIP).
ICX7150-48ZP-E2X10G	Ruckus ICX 7150 Z-Series Switch, 16×100/1000 Mbps/2.5 Gbps PoH ports, 32x10/100/1000 PoE+ ports, 6x1 GbE SFP uplink ports and 2×10 GbE SFP+ stacking/uplink-ports upgradable to up to 8x10 GbE SFP+ with license, 1x 920 W AC power supply, 1 fan, 740 W PoE budget, base L3 (static routing and RIP)

PART NUMBER	RUCKUS ICX 7150 SWITCHES WITH UP 4 OR 8×10 GbE UPLINKS AND LAYER 3 FEATURES
ICX7150-24-4X10GR	Ruckus ICX 7150 Switch, 24×10/100/1000 Mbps ports, 2×1 GbE RJ45 uplink-ports, 4×10 GbE SFP+ stacking/uplink-ports, Layer 3 features (OSPF, VRRP, PIM, PBR).
ICX7150-24F-4X10GR	Ruckus ICX 7150 Switch, 24x 1G SFP ports, 2x 1G RJ45 uplink-ports and 4x 10G SFP+ stacking/uplink-ports, L3 features (OSPF, VRRP, PIM, PBR).
ICX7150-24P-4X10GR	Ruckus ICX 7150 Switch, 24×10/100/1000 Mbps PoE+ ports, 2×1 GbE RJ45 uplink-ports, 4×10 GbE SFP+ stacking/uplink-ports, 370 W PoE budget, Layer 3 features (OSPF, VRRP, PIM, PBR).
ICX7150-48-4X10GR	Ruckus ICX 7150 Switch, 48×10/100/1000 Mbps ports, 2×1 GbE RJ45 uplink-ports, 4×10 GbE SFP+ stacking/uplink-ports, Layer 3 features (OSPF, VRRP, PIM, PBR).
ICX7150-48P-4X10GR	Ruckus ICX 7150 Switch, 48×10/100/1000 Mbps PoE+ ports, 2×1 GbE RJ45 uplink-ports, 4×10 GbE SFP+ stacking/uplink-ports, 370 W PoE budget, Layer 3 features (OSPF, VRRP, PIM, PBR).
ICX7150-48PF-4X10GR	Ruckus ICX 7150 Switch, 48×10/100/1000 Mbps PoE+ ports, 2×1 GbE RJ45 uplink-ports, 4×10 GbE SFP+ stacking/uplink-ports, 740 W PoE budget, Layer 3 features (OSPF, VRRP, PIM, PBR).
ICX7150-48ZP-E8X10GR	Ruckus ICX 7150 Z-Series switch, 16×100/1000 Mbps/2.5 Gbps PoH ports, 32x10/100/1000 PoE+ ports, 8×10 GbE SFP+ stacking/uplink-ports (max 4 for stacking), 1x920 W AC power supply, 1 fan, 740 W PoE budget, L3 features (OSPF, VRRP, PIM, PBR).

RUCKUS ICX 7150 ORDERING INFORMATION

PART NUMBER	RUCKUS ICX 7150 SWITCHES WITH THREE-YEAR REMOTE SUPPORT Please note that three-year remote support can be ordered separately to cover any Ruckus ICX 7150 model.
ICX7150-C08P-2X1G-RMT3	Ruckus ICX 7150 Compact Switch, 8x 10/100/1000 PoE+ ports, 2x 1G SFP uplink-ports, 62W PoE budget, L2 (switch image only not L3 upgradable), stacking not supported, three-year remote support.
ICX7150-C12P-2X10GR-RMT3	Ruckus ICX 7150 Compact Switch, 12×10/100/1000 Mbps PoE+ ports, 2×1 GbE RJ45 uplink-ports, 2×10 GbE SFP+ stacking/uplink-ports, 124 W PoE budget, Layer 3 features (OSPF, VRRP, PIM, PBR), three-year remote support.
ICX7150-C10ZP-2X10GR-RMT3	Ruckus ICX 7150 Compact Switch, 2x 100/1000/2.5/5/10G PoH ports, 2x 100/1000/2.5G PoH ports, 6x 100/1000/2.5G PoE+ ports, 2x 10G SFP+ stacking/uplink-ports, 240W PoE budget, L3 features (OSPF, VRRP, PIM, PBR), three-year remote support.
ICX7150-24-4X10GR-RMT3	Ruckus ICX 7150 Switch, 24×10/100/1000 Mbps ports, 2×1 GbE RJ45 uplink-ports, 4×10 GbE SFP+ stacking/ uplink-ports, Layer 3 features (OSPF, VRRP, PIM, PBR), three-year remote support.
ICX7150-24F-4X10GR-RMT3	Ruckus ICX 7150 Switch, 24x 1G SFP ports, 2x 1G RJ45 uplink-ports and 4x 10G SFP+ stacking/uplink-ports, L3 features (OSPF, VRRP, PIM, PBR), three-year remote support.
ICX7150-24P-4X10GR-RMT3	Ruckus ICX 7150 Switch, 24×10/100/1000 Mbps PoE+ ports, 2×1G RJ45 uplink-ports, 4×10 GbE SFP+ stacking/ uplink-ports, 370 W PoE budget, Layer 3 features (OSPF, VRRP, PIM, PBR), three-year remote support.
ICX7150-48-4X10GR-RMT3	Ruckus ICX 7150 Switch, 48×10/100/1000 Mbps ports, 2×1 GbE RJ45 uplink-ports, 4×10 GbE SFP+ stacking/ uplink-ports, Layer 3 features (OSPF, VRRP, PIM, PBR), three-year remote support.
ICX7150-48P-4X10GR-RMT3	Ruckus ICX 7150 Switch, 48×10/100/1000 Mbps PoE+ ports, 2×1 GbE RJ45 uplink-ports, 4×10 GbE SFP+ stacking/ uplink-ports, 370 W PoE budget, Layer 3 features (OSPF, VRRP, PIM, PBR), three-year remote support.
ICX7150-48PF-4X10GR-RMT3	Ruckus ICX 7150 Switch, 48×10/100/1000 Mbps PoE+ ports, 2×1 GbE RJ45 uplink-ports, 4×10 GbE SFP+ stacking/ uplink-ports, 740 W PoE budget, Layer 3 features (OSPF, VRRP, PIM, PBR), three-year remote support.
ICX7150-48ZP-E8X10GR-RMT3	Ruckus ICX 7150 Z-Series switch, 16×100/1000 Mbps/2.5 Gbps PoH ports, 32x10/100/1000 PoE+ ports, 8×10 GbE SFP+ stacking/uplink-ports (max 4 for stacking), 1x 920 W AC power supply, 1 fan, 740 W PoE budget, L3 features (OSPF, VRRP, PIM, PBR). Three-year remote support

PART NUMBER	TAA-COMPLIANT RUCKUS ICX 7150 SWITCHES The Ruckus ICX 7150 models with the SKUs below meet the requirements of the Trade Agreements Act (TAA).
ICX7150-C12P-2X10GR-A	Ruckus ICX 7150 Compact Switch, 12×10/100/1000 Mbps PoE+ ports, 2×1 GbE RJ45 uplink-ports, 2×10 GbE SFP+ stacking/uplink-ports, 124 W PoE budget, Layer 3 features (OSPF, VRRP, PIM, PBR), TAA-compliant.
ICX7150-C10ZP-2X10GR-A	Ruckus ICX 7150 Compact Switch, 2x 100/1000/2.5/5/10G PoH ports, 2x 100/1000/2.5G PoH ports, 6x 100/1000/2.5G PoE+ ports, 2x 10G SFP+ stacking/uplink-ports, 240W PoE budget, L3 features (OSPF, VRRP, PIM, PBR), TAA compliant.
ICX7150-24-4X10GR-A	Ruckus ICX 7150 Switch, 24×10/100/1000 Mbps ports, 2×1 GbE RJ45 uplink-ports, 4×10 GbE SFP+ stacking/ uplink-ports, Layer 3 features (OSPF, VRRP, PIM, PBR), TAA-compliant.
ICX7150-24F-4X10GR-A	Ruckus ICX 7150 Switch, 24x 1G SFP ports, 2x 1G RJ45 uplink-ports and 4x 10G SFP+ stacking/uplink-ports, Layer 3 features (OSPF, VRRP, PIM, PBR), TAA compliant.
ICX7150-24P-4X10GR-A	Ruckus ICX 7150 Switch, 24×10/100/1000 Mbps PoE+ ports, 2×1 GbE RJ45 uplink-ports, 4×10 GbE SFP+ stacking/ uplink-ports, 370 W PoE budget, Layer 3 features (OSPF, VRRP, PIM, PBR), TAA-compliant.
ICX7150-48-4X10GR-A	Ruckus ICX 7150 Switch, 48×10/100/1000 Mbps ports, 2×1 GbE RJ45 uplink-ports, 4×10 GbE SFP+ stacking/ uplink-ports, Layer 3 features (OSPF, VRRP, PIM, PBR), TAA-compliant.
ICX7150-48P-4X10GR-A	Ruckus ICX 7150 Switch, 48×10/100/1000 Mbps PoE+ ports, 2×1 GbE RJ45 uplink-ports, 4×10 GbE SFP+ stacking/ uplink-ports, 370 W PoE budget, Layer 3 features (OSPF, VRRP, PIM, PBR), TAA-compliant.
ICX7150-48PF-4X10GR-A	Ruckus ICX 7150 Switch, 48×10/100/1000 Mbps PoE+ ports, 2×1 GbE RJ45 uplink-ports, 4×10 GbE SFP+ stacking/ uplink-ports, 740 W PoE budget, Layer 3 features (OSPF, VRRP, PIM, PBR), TAA-compliant.
ICX7150-48ZP-E8X10GR2-A	Ruckus ICX 7150 Z-Series switch, 16×100/1000 Mbps/2.5 Gbps PoH ports, 32x10/100/1000 PoE+ ports, 8×10 GbE SFP+ stacking/uplink-ports (max 4 for stacking), 2x920 W AC power supply, 2 fans, 1480 W PoE budget, L3 features (OSPF, VRRP, PIM, PBR). TAA compliant.

RUCKUS ICX 7150 ORDERING INFORMATION

PART NUMBER	UPGRADE LICENSES All Ruckus ICX 7150 switch models with 1 GbE SFP uplink ports can be upgraded to 10 GbE SFP+ ports with a license.
BR-ICX-7150C-21U210R-P-01	License to upgrade the Ruckus ICX 7150 12 ports compact switches from 2×1 GbE SFP to 2×10 GbE SFP+ stacking/uplink-ports. Also includes Layer 3 features (OSPF, VRRP, PIM, PBR).
BR-ICX-7150-41U210-P-01	License to upgrade any Ruckus ICX 7150 24/48 ports except the Z-Series from 4×1 GbE SFP to 2×1 GbE SFP and 2×10 GbE SFP+ stacking/uplink-ports.
BR-ICX-7150-41U410R-P-01	License to upgrade any Ruckus ICX 7150 24/48 ports except the Z-Series from 4×1 GbE SFP to 4×10 GbE SFP+ stacking/uplink-ports. Also includes Layer 3 features (OSPF, VRRP, PIM, PBR).
BR-ICX-7150-210U410R-P-01	License to upgrade any Ruckus ICX 7150 24/48 ports except the Z-Series from 2×1 GbE SFP and 2×10 GbE SFP+ to 4×10 GbE SFP+ stacking/uplink-ports. Also includes Layer 3 features (OSPF, VRRP, PIM, PBR).
BR-ICX-7150Z210U810R-P-01	License to upgrade ICX 7150 Z-Series model from 6x1 GbE SFP and 2x10 GbE SFP+ to 8x10 GbE SFP+ stacking/uplink-ports (max 4 for stacking). Also includes L3 features (OSPF, VRRP, PIM, PBR).

PART NUMBER	FRUS AND ACCESSORIES
RPS20-E	Ruckus ICX 7150-48ZP 920 W AC hot-swap PoE power supply, front to back airflow (up to 2 per switch). Only applicable to the Z-Series
ICX-FAN11	Ruckus ICX 7150-48ZP hot-swap fan tray (up to 2 per switch). Only applicable to the Z-Series
ICX6400-C12-MGNT	Magnet Mount Kit for Ruckus ICX 7150/6450/6430 12 Port Compact Switches
CC-RJ45-DB9	Console cable RJ45-RJ45 with RJ-45-DB9 Adapter (for RJ-45 console port on ICX 7150)
CC-USBC-USBA	USB 2.0 Cable, Type-C to Type-A, 1 meter (for USB Type-C console port on ICX 7150)
ICX7000-C12-RMK	ICX7150-C12P & ICX7150-C08P Compact Switch Rack Mount Kit
ICX7000-C10ZP-RMK	ICX7150-C10ZP Compact Switch Rack Mount Kit
ICX7000-C12-WMK	ICX7150-C12P & ICX7150-C08P & ICX7150-C10ZP Compact Switch Wall Mount & Under Desk Mount Kit
XBR-R000295	Universal Rack Mount Kit, 4 post FRU
ICX7000-RMK	Rack Mount Kit, 2-post FRU for ICX 7000 series 24/48 port models
RMK-LRM-ADP	Rack Mount Kit for LRM adapters. This 1RU shelf can accommodate up to 8 LRM adapters.

OPTICS	
See Optics Datasheet at www.ruckusnetworks.com/optics	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 Optics Datasheet at www.ruckusnetworks.com/optics.

MANAGEMENT SOFTWARE	
See SmartZone Datasheet at www.ruckusnetworks.com/smartzone	Ruckus SmartZone centralizes management of the entire family of Ruckus switches and wireless Access Points with a single easy to deploy management platform. It simplifies network set-up and management, enhances security, streamlines troubleshooting and eases upgrades. SmartZone Network Controllers are available in both appliance and virtual appliance form. For more information, go to www.ruckusnetworks.com/smartzone.

ORDERING NOTES

All Ruckus ICX 7150 switches come with an accessory kit that includes a rubber foot kit, power cord clip, rack mount kit (for 24/48 ports model), RJ-45 console cable and US AC power cord. Stacking cables, USB console cables, compact switch rack mount kit, and optics need to be ordered separately.

All Ruckus ICX 7150 switch models with 1 GbE SFP uplink ports can be upgraded to 10 GbE SFP+ ports with a license except for the ICX 7150-C08P.

Standard Ruckus ICX 7150 1 RU Switch models can be ordered configured with either 4×1 GbE SFP, 2×1 GbE SFP, and 2×10 GbE SFP+, or 4×10 GbE SFP+ uplinks.

The Ruckus ICX7150-C12P compact switch can be ordered configured with either 2×1 GbE SFP or 2×10 GbE SFP+ uplinks.

The Ruckus ICX7150-48ZP switch can be ordered configured with 2×10 GbE SFP+ uplinks and 6×1 GbE SFP, or 8×10 GbE SFP+ uplinks.

Upgrade licenses are available to upgrade standard Ruckus ICX 7150 1 RU switches to either 2×1 GbE SFP and 2×10 GbE SFP+ or to 4×10 GbE SFP+, the Ruckus ICX 7150 compact switch to 2×10 GbE SFP+, and the Ruckus ICX7150-48ZP switch to 8×10 GbE SFP+.

Ruckus ICX 7150 Switches with 4×10 GbE SFP+ and 8×10 GbE SFP+ (2×10 GbE SFP+ for the compact switch) include a license to enable Layer 3 features (OSPF, VRRP, PIM, PBR).

Special SKUs have been created to enable customers to order specific Ruckus ICX 7150 models with three-year remote support included. Please note that additional years of remote support can always be ordered separately to cover any Ruckus ICX 7150 model. Contact Ruckus or channel partner representative for details about Ruckus support options and support part numbers.

For your convenience, a fully loaded ICX 7150-48ZP model with dual power supplies and 8×10 GbE ports bundle has been created.It comes with factory installed power supplies, fans and 8×10 GbE port licenses.

WARRANTY

Ruckus ICX 7150 Switches are covered by the Ruckus Assurance Limited Lifetime Warranty. For details, visit www.ruckusnetworks.com/warranty.

BEST-IN-CLASS SUPPORT

Ruckus ICX 7150 switches are supported by next-business-day advance replacement where available, as well as software defect repairs and maintenance updates. 90 days remote support is included with the product purchase. Many on-site and remote support options are available and can be purchased bundled with the product or separately.

LEGAL DISCLAIMER

Product features, functionality and specifications may change or be discontinued without notice. Nothing in this document shall be deemed to create a warranty of any kind, either express or implied, statutory or otherwise, including but not limited to, any implied warranties of merchantability, fitness for a particular purpose, non-infringement of third-party rights or availability with respect to any products and services.

Refer to www.ruckusnetworks.com for the latest version of this document.

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Ruckus Ethernet Optics

High Quality Transceivers for Ruckus Switches

DATASHEET

BENEFITS

GUARANTEED COMPATIBILITY AND COMPLIANCE

- We guarantee compatibility with Ruckus switches and full compliance with industry standards. That's something you don't get from generic transceivers.
- Standards-based—802.3z, 802.3ah, 802.3u, 802.3ae, 802.3ak, and 802.3ba—and compliant as required
- Compliant with Restrictions on Hazardous Substances (RoHS), meeting RoHS 6 EU standards

FACTORY TESTED

- Every batch of Ruckus transceivers is factory tested, so you're assured that they function properly and reliably.

EASY TO DEPLOY AND UPGRADE

- Hot-swappable flexibility in the field for greater ease and lower total cost of ownership

LIFETIME SUPPORT

- Buy Brocade branded transceiver, and we'll support it for the life of the product. Single support source for switches and optics!

HIGHLY RELIABLE, RUCKUS-QUALIFIED OPTICS

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.

Extensive performance and reliability testing reflects an ongoing commitment to quality. Ruckus tests transceivers using the industry's most advanced tools and instruments to help ensure that they provide the right mix of functionality and performance when used in conjunction with Ruckus products. The speed, capacity, reliability, and low cost of ownership that Ruckus is known for is also provided in all optical components.

By using Ruckus-qualified components, organizations can be assured that their quality, warranty and service requirements will be met and that their Ruckus products will continually provide the uptime, performance, and reliability required by today's leading enterprise service providers.

RUCKUS GLOBAL SERVICES

Ruckus Global Services has the expertise to help organizations build scalable, efficient cloud infrastructures. Leveraging 20 years of expertise in storage, networking, and virtualization, Ruckus Global Services delivers world-class professional services, technical support, network monitoring services, and education, enabling organizations to maximize their Ruckus investments, accelerate new technology deployments, and optimize the performance of networking infrastructures.

MAXIMIZING INVESTMENTS

To help optimize technology investments, Ruckus and its partners offer complete solutions that include professional services, technical support, and education. For more information, contact a Ruckus sales partner or visit www.ruckuswireless.com.

ETHERNET OPTICS FAMILY FEATURES

The Ruckus Ethernet optics family includes several offerings designed to meet the performance and scalability requirements of service provider and enterprise environments.

100 MBE OPTICS	
• 100 Megabit Ethernet (MbE) transceivers support link lengths from 2 km to 40 km • Both SMF and MMF fiber types	• RoHS 5 and 6 compliant • Enterprise switching and routing
1 GBE OPTICS	
• 1 GbE transceivers support link lengths from 300 m to 100 km • Both SMF and MMF fiber types • Coarse Wavelength Division Multiplexing (CWDM) support for distances of 80 km to 100 km	• RoHS 5 and 6 compliant • For core routers and security applications
10 GBE OPTICS	
• 10 GbE transceivers support link lengths of 26 m to 80 km • Protocol-independent • Less than one-third the power and size of MSA optic • Hot-swappable • Digital Optical Monitoring (DOM) support	• RoHS 5 and 6 compliant • Application delivery and acceleration • High-Performance Computing (HPC) interconnects • Service provider traffic management
40 GBE QSFP+ OPTICS	
• 40 GbE transceivers support link lengths up to 100 m • Hot-pluggable • Industry-standard QSFP+	• Digital Optical Monitoring (DOM) support • High-density 40 GbE connectivity options for data center, enterprise, and service provider applications
100 GBE QSFP+ OPTICS	
• 100 GbE transceivers support link lengths up to 40 km • Hot-pluggable • Industry-standard QSFP+	• Digital Optical Monitoring (DOM) support • Carrier, service provider, and cloud services • Enterprise campus core routing • RoHS 6 compliant

Specifications subject to change 10/09/2017

PRODUCT SUPPORT FOR FAST ETHERNET

	ICX 7000 Series		ICX 6000 Series		
FAST ETHERNET OPTICS	ICX 7450	ICX 7650	ICX 6430	ICX 6450	ICX 6610
E1MG-100FX-OM	●	●	●	●	●[1]
E1MG-100FX-A	●	●			
E1MG-100FX-IR-OM	●	●			●[1]
E1MG-100FX-LR-OM	●	●			●[1]

[1] Available only with Ruckus ICX 6610-24F.

PRODUCT SUPPORT FOR 1 GIGABIT ETHERNET

	ICX 7000 Series					ICX 6000 Series		
1 GBE FIBER OPTICS	ICX 7150	ICX 7250	ICX 7450	ICX 7650	ICX 7750	ICX 6430	ICX 6450	ICX 6610
E1MG-SX-OM	●	●	●	●	●	⊙[1]	●	●
E1MG-SX-A	●	●	●	●	●	⊙[1]	●	●
E1MG-LX-OM	●	●	●	●	●	●	●	●
E1MG-LX-A	●	●	●	●	●			
E1MG-LHA-OM						●	●	●
E1MG-LHA-OM-T	●	●	●	●	●			
E1MG-BXD	●	●	●	●	●	●	●	●
E1MG-BXU	●	●	●	●	●	●	●	●
E1MG-TX	●	●	●	●	●	⊙[1]	●	●
E1MG-TX-A	●	●	●	●	●	⊙[1]	●	●
1G-SFP-TWX-0x01	●	●	●	●		⊙[1]	●	

⊙ Optics supported for both stacking and regular data links.
[1] Stacking is not supported on the Ruckus ICX 6430 12-port compact switch.

Specifications subject to change 10/09/2017

PRODUCT SUPPORT FOR 10 GIGABIT ETHERNET

	ICX 7000 Series					ICX 6000 Series	
10 GBE FIBER OPTICS	ICX 7150	ICX 7250	ICX 7450	ICX 7650	ICX 7750	ICX 6450	ICX 6610
10G-SFPP-USR	⊙	⊙	⊙	●	●	⊙[1]	●
10G-SFPP-USR-SA	⊙	⊙	⊙	●	●		
10G-SFPP-SR	⊙	⊙	⊙	●	●	⊙[1]	●
10G-SFPP-SR-SA	⊙	⊙	⊙	●	●		
10G-SFPP-SR-S	⊙	⊙	⊙	●	●		
10G-SFPP-LR	⊙	⊙	⊙	●	●	●	●
10G-SFPP-LR-SA	⊙	⊙	⊙	●	●		
10G-SFPP-LR-S	⊙	⊙	⊙	●	●		
10G-SFPP-ER	●	●	●	●	●	●	●
10G-SFPP-ZR	●	●	●	●	●		
10G-SFPP-LRM			●	●		⊙[1]	●
10G-SFPP-LRM-X-ADP	●	●			●		
10G-SFPP-BXD-S	⊙	⊙	⊙	●	●		
10G-SFPP-BXU-S	⊙	⊙	⊙	●	●		
10G-SFPP-TWX-XXXX	⊙	⊙	⊙	●	●	●	⊙
10G-SFPP-TWX-P-XXXX	⊙	⊙	⊙	●	●		
10GE-SFPP-AOC-XXXX		●	●	●	●		

⊙ Optics supported for both stacking and regular data links.

[1] Stacking is not supported on the Ruckus ICX 6450 12-port compact switch.

Specifications subject to change 10/09/2017

PRODUCT SUPPORT FOR 40 GIGABIT ETHERNET

	ICX 7000 Series			ICX 6000 Series
40 GBE FIBER OPTICS	ICX 7450	ICX 7650	ICX 7750	ICX 6610
40G-QSFP-SR4	⊙	⊙	⊙	
40G-QSFP-SR4-INT		●	●	
40G-QSFP-ESR4	●	●	●	
40G-QSFP-LR4	⊙	⊙	⊙	
40G-QSFP-LR4-INT		●	●	
40G-QSFP-LM4	●	⊙	⊙	
40G-QSFP-ER4	●	⊙	⊙	
40G-QSFP-SR-BIDI	●	⊙	⊙	
40G-QSFP-4SFP-C-XXXX		●	●	
40G-QSFP-QSFP-C-XXXX	⊙	⊙	⊙	
40G-QSFP-C-XXXXX	⊙	⊙	⊙	○
40G-QSFP-QSFP-AOC-XXXX	●	⊙	⊙	

⊙ Optics supported for both stacking and regular data links.
○ 40 GbE ports on the Ruckus ICX 6610 are supported for stacking only.

PRODUCT SUPPORT FOR 100 GIGABIT ETHERNET

	ICX 7000 Series			ICX 6000 Series
100 GBE FIBER OPTICS	ICX 7450	ICX 7650	ICX 7750	ICX 6610
E100G-QSFP28-SR4		⊙		
E100G-QSFP28-LR4L-2KM		⊙		
E100G-QSFP28-LR4-10KM		⊙		
E100G-QSFP28-CWDM4-2KM		●		
E100G-QSFP-QSFP-P-XXXX		⊙		

⊙ Optics supported for both stacking and regular data links.

Specifications subject to change 10/09/2017

KEY STANDARDS AND FEATURES

	IEEE Standards	Domestic Safety Standards	International Safety Standards	Wavelength (nm)	Fiber Type	Maximum Cable Distance	Digital Optical Monitoring
PART NUMBER	FAST ETHERNET						
E1MG-100FX-OM E1MG-100FX-A	802.3u	FDA 21CFR 1040.10 Class 1, CSA 60950-1-03/ UL 60950-1	EN 60825-1, EN 60950-1	1,310	MMF	2 km	Yes
E1MG-100FX-IR-OM	802.3			1,310	SMF	15 km	Yes
E1MG-100FX-LR-OM	802.3			1,310	SMF	40 km	Yes
PART NUMBER	1 GBE FIBER						
E1MG-SX-OM/ E1MG-SX-OM-T E1MG-SX-A	802.3z	FDA 21CFR 1040.10 Class 1, CSA 60950-1-03/ UL 60950-1	EN 60825-1, EN 60950-1	850	MMF	220 m to 550 m	Yes
E1MG-LX-OM/ E1MG-LX-OM-T E1MG-LX-A	802.3z			1,310	MMF/SMF	550 m to 10 km	Yes
E1MG-LHA-OM/ E1MG-LHA-OM-T	802.3z			1,550	SMF	70 km	Yes
E1MG-BXD	802.3ah			TX: 1,490 RX: 1,310		10 km	No
E1MG-BXU	802.3ah			TX: 1,310 RX: 1,490		10 km	No
E1MG-CWDM80-XXXX	802.3z			1,470 to 1,610		80 km	No
PART NUMBER	1000BASE-T COPPER						
E1MG-TX, XBR-000190	802.3z	CSA 60950-1-03/UL	EN 60950-1	N/A	Cat5	100 m	N/A
1G-SFP-TWX-0x01	802.3z	Direct-attached SFP copper cables				1 m, 5 m	No

Specifications subject to change 10/09/2017

KEY STANDARDS AND FEATURES

	IEEE Standards	Domestic Safety Standards	International Safety Standards	Wavelength (nm)	Fiber Type	Maximum Cable Distance	Digital Optical Monitoring
PART NUMBER	**10 GBE FIBER**						
10G-SFPP-USR	N/A	FDA 21CFR 1040.10 Class 1, CSA 60950-1-03/ UL 60950-1	EN 60825-1, EN 60950-1	850	MMF	100 m	Yes
10G-SFPP-SR	802.3ae			850	MMF	26 m to 300 m	
10G-SFPP-LR	802.3ae			1,310	SMF	10 km	
10G-SFPP-ER	802.3ae			1,550	SMF	40 km	
10G-SFPP-ZR	802.3ae			1,550	SMF	80 km	
10G-SFPP-ZRD-T	802.3-2005 Clause 52 standard			102 C-band tunable wavelengths from 1,528 to 1,568 (50 GHz apart)	SMF	80 km	
10G-SFPP-LRM	802.3ae			1,310	MMF	220 m	
PART NUMBER	**10GBASE CABLE**						
10G-SFPP-TWX-XXXX	802.3ae	Direct-attached SFP+ Twinax active copper cables				1 m, 3 m, 5 m	No
10G-SFPP-AOC-XXXX	N/A	Direct-attached SFP+ active optical cables				7 m, 10 m	Yes
10G-SFPP-TWX-P-XXXX	802.3ae	Direct-attached SFP+ Twinax passive copper cables				1 m, 3 m, 5 m	No
PART NUMBER	**40 GBE FIBER**						
40G-QSFP-SR4	802.3ba	FDA 21CFR 1040.10 Class 1, CSA 60950-1-03/UL 60950-1	EN 60825-1, EN 60950-1	850	OM3 MMF OM4 MMF	100 m 150 m	Yes
40G-QSFP-SR4-INT (compatible with 10GBASE-SR)	802.3ba				OM3 MMF OM4 MMF	100 m 150 m	Yes
40G-QSFP-LR4	802.3ba			1,264.5 to 1,337.5	SMF	10 km	Yes
PART NUMBER	**40 GBE COPPER**						
40G-QSFP-4SFP-C-XXXX	N/A	Direct-attached QSFP+ to 4 SFP+ copper cables				1 m, 3 m, 5 m	No
40G-QSFP-QSFP-C-XXXX	N/A	Direct-attached QSFP+ to QSFP+ copper cables				1 m, 3 m, 5 m	No

Specifications subject to change 10/09/2017

KEY STANDARDS AND FEATURES

	IEEE Standards	Domestic Safety Standards	International Safety Standards	Wavelength (nm)	Fiber Type	Maximum Cable Distance	Digital Optical Monitoring
PART NUMBER	100 GBE QSFP28 FIBER						
100G-QSFP28-SR4	802.3bm	North America: UL/CSA 60950, CDRH Class 1 European Union: EN 60950, EB 60825 Class 1		850	MMF	100 m	
100G-QSFP28-LR4	802.3bm			1295, 1300, 1305, 1310	SMF	10 km	
100G-QSFP28-LR4-LP	802.3ba				SMF	10 km	
100G-QSFP28-LR4L	802.3ba			1295, 1300, 1305, 1310	SMF	2 km	
100G-QSFP28-CWDM4	802.3am			1310	SMF	2 km	

PART NUMBER	100 GBE QSFP FIBER					
100G-QSFP-ESR4	802.3bm	North America: UL/CSA 60950, CDRH Class 1 European Union: EN 60950, EB 60825 Class 1	850	MMF	300 m	Yes
100G-QSFP-QSFP-AOC-1001	802.3bm		N/A	MMF	10 m	Yes
100G-QSFP-QSFP-P-XXXX	N/A	Direct-attached QSFP + to QSFP + copper cables			1 m, 3 m, 5 m	N/A
100G-QSFP-4SFP-P-XXXX	N/A	Direct-attached QSFP + to 4SFP + copper cables			1 m, 3 m	N/A

Specifications subject to change 10/09/2017

RUCKUS ETHERNET OPTICS ORDERING INFORMATION

PART NUMBER	100 MBE SFP TRANSCEIVERS
E1MG-100FX-OM	100BASE-FX SFP optic MMF, LC connector, optical monitoring-capable.
E1MG-100FX-IR-OM	100BASEFX-IR SFP optic for SMF with LC connector, optical monitoring-capable. For distances up to 15 km.
E1MG-100FX-A	100BASE-FX SFP optic MMF, LC connector, optical monitoring-capable, TAA-compliant.
E1MG-100FX-LR-OM	100BASEFX-LR SFP optic for SMF with LC connector, optical monitoring capable. For distances up to 40 km.

PART NUMBER	1 GBE SFP
E1MG-BXD	1000BASE-BXD SFP optic, SMF, 1,490 nm, LC connector. This optic can be connected only to an E1MG-BXU at the far end.
E1MG-BXU	1000BASE-BXU SFP optic, SMF, 1,310 nm, LC connector. This optic can be connected only to an E1MG-BXD at the far end.
E1MG-CWDM80-XXXX	CWDM SFP optic, 80 km, 1,470 to 1,610 (total of eight wavelengths supplied by eight optics, each 20 nm apart in wavelength), LC connector.
E1MG-LHA-OM	1000BASE-LHA SFP optic, SMF, LC connector, optical monitoring-capable. For distances up to 70 km.
E1MG-LHA-OM-T	1000BASE-LHA SFP optic, MMF, LC connector, optical monitoring-capable (70 km), industrial temperature.
E1MG-LX-OM	1000BASE-LX SFP optic, SMF, LC connector, optical monitoring-capable. For distances up to 10 km.
E1MG-LX-A	1000BASE-LX SFP optic, SMF, LC connector, optical monitoring-capable. For distances up to 10 km, TAA-compliant.
E1MG-LX-OM-T	1000BASE-LX SFP optic, SMF, LC connector, optical monitoring-capable, industrial temperature.
E1MG-SX-OM	1000BASE-SX SFP optic, MMF, LC connector, optical monitoring-capable.
E1MG-SX-OM-T	1000BASE-SX SFP optic, MMF, LC connector, optical monitoring-capable, industrial temperature.
E1MG-SX-A	1000BASE-SX SFP optic, MMF, LC connector, optical monitoring-capable, TAA compliant.
E1MG-TX	1000BASE-T SFP copper, RJ-45 connector.
1G-SFP-C-0x01	1 GbE direct-attached SFP copper cable, 1 m or 5 m (where x=1 for 1 m; x=5 for 5 m).

PART NUMBER	10 GBE SFP+
10G-SFPP-USR	10 GbE Ultra-Short Reach (USR), SFP+ optic (LC), target range 100 m over MMF.
10G-SFPP-USR-SA	10 GbE Ultra-Short Reach (USR), SFP+ optic (LC), target range 100 m over MMF, standard temperature, TAA-compliant.
10G-SFPP-SR	10GBASE-SR, SFP+ optic (LC), for up to 300 m over MMF.
10G-SFPP-SR-SA	10GBASE-SR, SFP+ optic (LC), for up to 300 m over MMF, standard temperature, TAA-compliant.
10G-SFPP-SR-S	10GBASE-SR, SFP+ optic (LC), for up to 300 m over MMF, standard temperature.
10G-SFPP-LR	10GBASE-LR, SFP+ optic (LC), for up to 10 km over SMF.
10G-SFPP-LR-SA	10GBASE-LR, SFP+ optic (LC), for up to 10 km over SMF, standard temperature, TAA-compliant.
10G-SFPP-LR-S	10GBASE-LR, SFP+ optic (LC), for up to 10 km over SMF, standard temperature.
10G-SFPP-ER	10GBASE-ER, SFP+ optic (LC), for up to 40 km over SMF.
10G-SFPP-ZR	10GBASE-ZR, SFP+ optic (LC), for up to 80 km over SMF.
10G-SFPP-ZRD-T	10 GbE tunable DWDM SFP+ optic (LC), for up to 80 km over SMF.

Ruckus Ethernet Optics

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RUCKUS ETHERNET OPTICS ORDERING INFORMATION

10G-SFPP-LRM	10GBASE-LRM, SFP+ optic (LC), 220 m over OM1/OM2/OM3 MMF.
10G-SFPP-LRM-1-ADP	10GBASE-LRM SFP+ optic (LC), for up to 220 m over MMF, 1-pack. Includes one LRM adapter device.
10G-SFPP-LRM-2-ADP	10GBASE-LRM SFP+ optic (LC), for up to 220 m over MMF, 2-pack. Includes one LRM adapter device.
10G-SFPP-BXD-S	10G-BXD SFP+ optic, SMF, 1,490 nm, LC connector. This optic can be connected only to a 10G-BXU SFP+ at the far end.
10G-SFPP- BXU-S	10G-BXU SFP+ optic, SMF, 1,310 nm, LC connector. This optic can be connected only to a 10G-BXD SFP+ at the far end.
10G-SFPP-TWX-XXXX	10 GbE SFP+ direct-attached active copper cable, 1 m, 3 m, or 5 m.
10G-SFPP-TWX-P-XXXX	10 GbE SFP+ direct-attached passive copper cable, 1 m, 3 m, or 5 m.
10G-SFPP-AOC-XXXX	10 GbE SFP+ direct-attached active optical cable, 7 m or 10 m.

PART NUMBER	40 GBE QSFP+
40G-QSFP-SR4	40GBASE-SR4 QSFP+ optic (MTP 1×8 or 1×12), 100 m over MMF OM3. 150 m over MMF OM4 (not compliant with 10GBASE-SR4 modules per IEEE 802.ae standard).
40G-QSFP-ESR4	40GBASE-ESR4 QSFP+ optic (MTP 1×8 or 1×12), 300 m over MMF, (10GBASE-SR compatible, breakout).
40G-QSFP-SR4-INT	40GBASE-SR4 QSFP+ optic (MTP 1×8 or 1×12), 100 m over MMF (10GBASE-SR compatible, breakout-capable).
40G-QSFP-LR4	40GBASE-LR4 QSFP+ optic (LC), for up to 10 km over SMF.
40G-QSFP-SR-BIDI	40GE SR QSFP+ optic (LC), bidirectional, 100 m over OM3 MMF.
40G-QSFP-4SFP-C-XXXX	4×10 GbE direct-attached QSFP+ to four SFP+ copper breakout cable, 1 m, 3 m, or 5 m.
40G-QSFP-QSFP-C-XXXX	4×10 GbE direct-attached QSFP+ to QSFP+ copper breakout cable, 1 m, 3 m, or 5 m.

PART NUMBER	100 GBE QSFP28
E100G-QSFP28-SR4	100 GbE QSFP28 SR4 transceiver 100 m over MMF.
E100G-QSFP28-LR4L-2KM	100 GbE QSFP28 LR4 lite transceiver 2 km over SMF.
E100G-QSFP28-LR4-10KM	100 GbE QSFP28 LR4 transceiver 10 km over SMF.
E100G-QSFP28-CWDM4-2KM	100GBASE CWDM4 QSFP transceiver LC 2 km over SM.
40G-QSFP-SR-BIDI	100 GbE QSFP28 direct-attached passive copper cable , 1 m, 3 m, or 5 m.

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