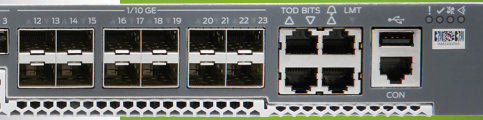


ACX710 UNIVERSAL METRO ROUTER



Product Overview

The ACX710 Universal Metro Router delivers operational flexibility, high 10GbE to 100GbE port density, timing, and synchronization in a hardened form factor designed for any metro environment. The ACX710 leverages Junos OS to address multiple service provider, enterprise, and utilities use cases, including cable distributed access architectures (DAA), residential fiber, and mobile backhaul.

Product Description

Juniper Networks® ACX710 Universal Metro Router is a response to the relentless increase in demand on metro architectures, where hardened access and aggregation platforms are required to extend operational flexibility from the service provider edge and across the metro. The ACX710 delivers the form factor, optimized performance, density, and resiliency needed for metro applications, including strict timing and synchronization requirements for mobile backhaul applications.

Powered by the Junos® operating system, Juniper Networks ACX Series Universal Metro Routers provide operators with a wide array of SDN-enabled and subscriber-aware IP transport solutions, facilitating the 5G-ready metro fabric architecture required to address current and future challenges and opportunities.

The integrated multiservice features and capabilities of the ACX710 reduce the complexity of metro operations, eliminating the need for unnecessary network layers and overlays and creating the opportunity to reduce CapEx and OpEx in operator networks. The ACX710 simplifies network design, while creating a foundation for more efficient operations and service agility, enabling operators to adopt a true universal and converged metro paradigm for the Cloud, 5G, and AI era.

The ACX710 Product Offering

The ACX710 Universal Metro Router is a hardened, fixed, and compact 1 U solution, purpose-built for efficient 4G and 5G service delivery and scale. Its high-performance, high-capacity, and hardened design makes it ideal for ubiquitous deployment in metro applications and telco cloud architectures. The ACX710 provides high 1GbE/10GbE and 100GbE port density, lowering footprint rental and power costs. The router supports VPN services over IP/MPLS networks, service provider SDN, service exposure using NETCONF/YANG, extensive quality of service (QoS), and precise synchronization and timing features, making it ideally suited for low latency service delivery. With 320 Gbps of switching capacity, the stackable ACX710 delivers the performance, capacity, and feature set required for LTE, LTE Advanced, and 5G radio access network (RAN) sites in a hardened and compact form factor. Table 1 provides an overview of the interfaces supported by the ACX710.

Table 1. Built-In Interface Options for ACX710

Model	1GbE/10GbE (SFP/SFP+)	100GbE (QSFP28)
ACX710	24	4*

* QSFP28 ports can be configured as 1x100GbE, 1x40GbE, 4x25GbE, or 4x10GbE

Architecture and Key Components

Powered by Junos OS, the ACX710 complements the Juniper Networks MX Series 5G Universal Routing Platforms through a flexible and scalable service provider and enterprise branch routing portfolio optimized for rapidly growing mobile, video, and cloud computing applications. The ACX Series extends Juniper's proven IP/MPLS leadership in the core and edge to the access and aggregation layers. Maintaining relative simplicity in the metro network, the ACX Series supports a rich suite of L2, L3, and IP/MPLS functionality, enabling large-scale seamless MPLS networks with simplified service provisioning and operations.

- **Universal Access/Aggregation:** The ACX710 supports both Ethernet bridging and MPLS. Growing demands for bandwidth are accompanied by network growth in terms of numbers of nodes. In some cases, users demand the ability to scale their networks to tens of thousands of nodes. A seamless MPLS architecture enables scale and service flexibility by decoupling physical topology from transport and service layers. This allows service providers to leverage their existing MPLS investments in the core and edge to extend operational benefits to the access and aggregation layers. It also ensures greater network service flexibility and higher scaling parameters for the metro area network (MAN), where metro Ethernet services can span multiple network segments and be seamlessly terminated at any point.
- **Junos OS:** A reliable, high-performance, modular network operating system, Junos OS is supported across all of Juniper's physical and virtual routing, switching, and security platforms. Junos OS improves network operations and increases service availability, performance, and security with features like low-latency multicast, comprehensive quality of service (QoS), in-service software updates, and Junos Continuity, which eliminates the risk and complexity of OS upgrades. Junos OS comes with embedded scripting tools and APIs, enabling the automation of many routine tasks and practical integration with any operator's back-end management tools. With secure programming interfaces, versatile scripting support, and integration with popular orchestration frameworks, Junos OS offers flexible options for DevOps-style management that can unlock value from the network.
- **Automation:** With Juniper, your networking solution extends well beyond the platform with customizable tools to monitor, analyze, and automate network operations and performance. The element management system (EMS) provides operators with GUI-based configuration,

management, and compliance features designed to simplify operations while providing visibility into device inventory and performance. Automation, however, requires actionable network insight. HealthBot combines the power of telemetry, programmability, advanced algorithms, and machine learning to correlate multiple data sources for highly automated diagnostics—critical to intent-based networking. HealthBot insights can trigger dashboards, user-defined workflows, or playbooks. When traffic needs to be redirected, HealthBot can engage with a Path Computation Element (PCE) controller to calculate new SLA-compliant paths through the network. Juniper Networks NorthStar Controller is the industry's leading WAN controller and PCE that closes the loop on your network automation, pushing new state information down into the network to optimize performance and quality of experience (QoE). Juniper's comprehensive portfolio of automation tools has been engineered to deliver the end-to-end network slicing required in today's agile and dynamic service delivery architectures.

Features and Benefits

The ACX710 delivers optimal levels of programmability, reliability, scalability, and security to both service provider and enterprise networks. The ACX Series portfolio improves customer satisfaction while lowering the total cost of operating, maintaining, and updating the network infrastructure.

- **Stringent Mobile Backhaul Requirements:** The ACX710 provides high 10GbE density with 100GbE support and 320 Gbps switching capacity in a compact and hardened 1 U form factor, lowering OpEx (including footprint rental costs).
- **Precision Timing and Synchronization:** Revenue generating services like VoLTE and LTE broadcast require precise synchronization. ACX710 synchronization is validated for LTE deployments.
- **Automation and Programmability:** The ACX710 provides application-aware traffic engineering with open and standardized interfaces, including the ability to tailor services for optimal agility.
- **Investment and Operational Value:** Engineered for value, the ACX710 is designed around merchant silicon, making it a compelling investment. Operational benefits include a Junos OS foundation, service flexibility, a hardened and compact form factor, and filterless design, eliminating the need for costly, recurring truck rolls to inspect air filters.

ACX710 Features

Throughput

- 320 Gbps

IP Routing MPLS

- IPv4
- IPv6
- BGP-4
- MP-BGP
- BGP MPLS fast reroute (FRR)
- BGP-LS
- IS-IS
- OSPF v2/v3
- Virtual Router Redundancy Protocol (VRRP) v2/v3
- Loop-free alternate/remote loop-free alternate (LFA/RLFA)
- TI-LFA for IS-IS
- RSVP-TE including FRR
- LDP
- T-LDP
- Segment routing
- PCEP
- BGP-LU
- Constrained Shortest Path First (CSPF)
- Policy-based forwarding
- Dynamic Host Configuration Protocol (DHCP) relay/server
- Ethernet VPN (EVPN)

Ethernet

- IEEE 802.1ad (Q-in-Q)
- IEEE 802.1Q Virtual LAN (VLAN)
- IEEE 802.3ad Link Aggregation Control Protocol
- Integrated routing and bridging (IRB)
- Broadcast storm protection
- Link Layer Discovery Protocol (LLDP)

Layer 2/Layer 3 Virtual Private Networking

- L3 MPLS VPNs
- 6VPE
- Inter-autonomous-system MPLS VPN (options A, B, C)
- VP WS for E-Line services
- VPLS for E-LAN services
- EVPN supported
- Metro Ethernet Forum Carrier Ethernet (MEF CE) 1.0/2.0 compliant

Multicast Protocols

- IPv4/IPv6 multicast
- Protocol-Independent Multicast (PIM)-Sparse Mode (SM)/Source-Specific Multicast (SSM)
- Internet Group Management Protocol (IGMP) v1/v2/v3
- Multicast Listener Discovery (MLDv2)

Timing and Synchronization

- Precision Time Protocol (PTP)
- Network Time Protocol (NTP)
- SyncE with Ethernet Synchronization Message Channel (ESMC)
- Stratum 3E Clock

Operation and Maintenance

- IEEE 802.1ag Connectivity Fault Management
- ITU-T Y.1731 (DM, SLM)
- RFC 2544 Reflector
- MPLS Ping/Traceroute
- BFD IPv4 & IPv6
- Two-Way Active Measurement Protocol (TWAMP)

Security

- Secure boot
- Access control list
- RADIUS
- TACACS+
- Lightweight Directory Access Protocol (LDAP)
- Transport Layer Security (TLS)
- SSH v1/v2
- MD5 support for routing protocols
- Reverse-path forwarding

Quality of Service

- Strict queuing
- Weighted fair queuing
- Priority-weighted fair queuing
- Deep packet buffers
- Random early detection (RED)/weighted RED
- Ingress policing
- Per port egress shaping
- 802.1p
- MPLS EXP bits
- Differentiated services

Network Management

- CLI
- SNMP v2/v3
- Network Configuration Protocol (NETCONF)
- YANG Models
- Syslog
- Zero-touch provisioning (ZTP)



ACX710 Universal Metro Router

Specifications

Dimensions (W x H x D)

- 17.433 x 1.717 x 12.401 in (44.28 x 4.36 x 31.5cm)
- 1 U

System Weight

- 17.6 lb (8 kg)

Airflow

- Filterless design, front to back with field-replaceable fan tray

Power (DC only)

- -48 VDC, dual feed

Power Consumption

- Typical 150 Watts, max 225 Watts

Operating Temperature

- -40° to 149° F (-40° to 65° C)

Humidity

- 5-95% RH non-condensing

Interfaces

- 4xQSFP28 ports—each can be configured as 4x10GbE or 4x25GbE (using breakout cables), and 1x40GbE or 1x100GbE
- 1x10/100BASE-T Ethernet for out-of-band management
- 1xRJ-45 console port 1xRJ-45 alarm port for 3 input and 1 output alarm contacts
- 1x USB 2.0 port

Synchronization Interfaces

- 1x RJ-45 port 1PPS+TOD (ITU-T G.703 Amd1)
- 1x RJ-48C port for 2.048 MHz, E1/T1 (BITS) input/output

Approvals

Safety

- LVD Directive 2014/35/EU
- IEC/EN 60950-1

EMC

- EMC Directive 2014/30/EU
- EN 300386
- EN 55032
- EN 55024
- EN 50121-1
- EN 50121-4
- EN 61000-6-1
- EN 61000-6-2
- EN 61000-6-3
- EN 61000-6-4
- EN 300132-2

ENV

- RoHS Directive 2011/645/EU
- WEEE Directive 2012/19/EU
- EN 300 019-1-3 (Class 3.3)—not temperature-controlled locations
- EN 300 019-2-1
- EN 300 019-2-2
- EN 300 019-2-3
- EN 300 753
- ECE-C1.1

NEBS

- GR-1089-CORE
- GR-63-CORE
- SR-3580 (NEBS Level 3)
- GR-3108-CORE (Class 1) – Controlled Protected Environments
- GR-3108-CORE (Class 2) – Protected Equipment in Outside Environments

Juniper Networks Services and Support

Juniper Networks is the leader in performance-enabling services that are designed to accelerate, extend, and optimize your high-performance network. Our services allow you to maximize operational efficiency while reducing costs and minimizing risk, achieving a faster time to value for your network. Juniper Networks ensures operational excellence by optimizing the network to maintain required levels of performance, reliability, and availability. For more details, please visit www.juniper.net/us/en/products-services.

Ordering Information

Product Number	Description
Hardware	
ACX710DC	ACX710; 24 SFP+/SFP ports, 4 QSFP28 ports; 1 U; 315mm depth; -40C to 65C; DC power supply; L2 and IGP/IP functions (without MPLS and IP-VPNs) for management only
Software	
S-ACX-100G-A-5	ACX software, 5-year subscription Advanced license; per 100G capacity, supports IP/MPLS, Timing, CoS, EOAM, Telemetry, RFC2544 with up to 32 L3VPN and 8 NG-MVPN
S-ACX-100G-P-5	ACX software, 5-year subscription Premium license; per 100G capacity, Includes Advanced software subscription license with full platform scale
S-ACX-100G-A-3	ACX software, 3-year subscription Advanced license; per 100G capacity, supports IP/MPLS, Timing, CoS, EOAM, Telemetry, RFC2544 with up to 32 L3VPN and 8 NG-MVPN
S-ACX-100G-P-3	ACX software, 3-year subscription Premium license; per 100G capacity, Includes Advanced software subscription license with full platform scale
S-ACX-100G-A-1	ACX software, 1-year subscription Advanced license; per 100G capacity, supports IP/MPLS, Timing, CoS, EOAM, Telemetry, RFC2544 with up to 32 L3VPN and 8 NG-MVPN (renewal only)
S-ACX-100G-P-1	ACX software, 1-year subscription Premium license; per 100G capacity, Includes Advanced software subscription license with full platform scale (renewal only)
S-ACX-100G-A1-P	ACX software, perpetual Advanced license; per 100G capacity, supports IP/MPLS, Timing, CoS, EOAM, Telemetry, RFC2544 with up to 32 L3VPN and 8 NG-MVPN
S-ACX-100G-P1-P	ACX software, perpetual Premium license; per 100G capacity, Includes Advanced software subscription license with full platform scale
S-ACX-400G-A-5	ACX software, 5-year subscription Advanced license; per 400G capacity, supports IP/MPLS, Timing, CoS, EOAM, Telemetry, RFC2544 with up to 32 L3VPN and 8 NG-MVPN
S-ACX-400G-P-5	ACX software, 5-year subscription Premium license; per 400G capacity, Includes Advanced software subscription license with full platform scale

Product Number	Description
S-ACX-400G-A-3	ACX software, 3-year subscription Advanced license; per 400G capacity, supports IP/MPLS, Timing, CoS, EOAM, Telemetry, RFC2544 with up to 32 L3VPN and 8 NG-MVPN
S-ACX-400G-P-3	ACX software, 3-year subscription Premium license; per 400G capacity, Includes Advanced software subscription license with full platform scale
S-ACX-400G-A-1	ACX software, 1-year subscription Advanced license; per 400G capacity, supports IP/MPLS, Timing, CoS, EOAM, Telemetry, RFC2544 with up to 32 L3VPN and 8 NG-MVPN (renewal only)
S-ACX-400G-P-1	ACX software, 1-year subscription Premium license; per 400G capacity, Includes Advanced software subscription license with full platform scale (renewal only)
S-ACX-400G-A1-P	ACX software, perpetual Advanced license; per 400G capacity, supports IP/MPLS, Timing, CoS, EOAM, Telemetry, RFC2544 with up to 32 L3VPN and 8 NG-MVPN
S-ACX-400G-P1-P	ACX software, perpetual Premium license; per 400G capacity, Includes Advanced software subscription license with full platform scale

About Juniper Networks

Juniper Networks brings simplicity to networking with products, solutions and services that connect the world. Through engineering innovation, we remove the constraints and complexities of networking in the cloud era to solve the toughest challenges our customers and partners face daily. At Juniper Networks, we believe that the network is a resource for sharing knowledge and human advancement that changes the world. We are committed to imagining groundbreaking ways to deliver automated, scalable and secure networks to move at the speed of business.

Corporate and Sales Headquarters

Juniper Networks, Inc.
1133 Innovation Way
Sunnyvale, CA 94089 USA
Phone: 888.JUNIPER (888.586.4737)
or +1.408.745.2000
www.juniper.net

APAC and EMEA Headquarters

Juniper Networks International B.V.
Boeing Avenue 240
1119 PZ Schiphol-Rijk
Amsterdam, The Netherlands
Phone: +31.0.207.125.700

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