Cisco ASR 9000v Series Aggregation Service Routers

Product Overview

The Cisco® ASR 9000 System brings increased power and simplicity to the edge, and the ASR 9000v sets the industry benchmark as a virtualized compact carrier-class converged access and aggregation platform. Leveraging Cisco's "network virtualization" or nV technology, the Cisco ASR 9000 System offers exceptional pay as you grow scale, carrier-class reliability, and simplified service provisioning.

The Cisco ASR 9000v is a compact and operationally simple, yet highly scalable and flexible platform optimized for delivering advanced Carrier Ethernet services such as Ethernet Private Lines, VPN, multicast and many other capabilities for Business, Residential, Mobile Backhaul, Data Center, and Video Services. Its unique Cisco nV technology is designed to scale, simplify and enhance service-delivery networks.

The Cisco ASR 9000v Series function as remote line cards for ASR 9000 or ASR 9900 Series, which taken as a whole, form a distributed modular ASR System. This architecture enables physical topologies with the flexibility and benefits of both collocated and remote deployments.

Figure 1. Cisco ASR 9000V Series

Highlights of the ASR 9000v include:

- Acts as a satellite in a distributed architecture with the flexibility to deliver multiple services, purpose-built to reduce CAPEX and OPEX costs:
  - Increases service interface density per chassis by a factor of up 10x
  - Deployment flexibility as satellites can be collocated with the main chassis or located in a remote location up to 80km away from the host ASR 9000 or 9900 System
  - Simplified operations: One single point of management and policy enforcement using upstream ASR 9000 and ASR 9900 System
  - Significantly reduced space and power needs with industry leading port density
- The Cisco ASR 9000v supports unprecedented port density in 1 RU space with 44 SFP based subscriber ports (10/100/1000 Mbps) and 4 SFP+ based 10GE network uplink ports.
- License based pay-as-you-grow model for Ethernet ports allowing customers to optimize current capex, while having capacity to grow in the future without a fork lift upgrade.
- ITEMP temperature rating enables deployments in a wide variety of outside plant applications.

- Hardware supported with timing outputs for BITS and TOD/PPS standards-based line-interface functions for delivering transport-class network timing, enables support of network-synchronized services and applications such as mobile backhaul and time-division multiplexing (TDM) migration.

Table 1. Features and Benefits

Feature	Benefit
44 SFP Based Ports (100/1000 Mbps) + 4 SFP+ based 10 GE ports	Satellite panel provides 100/1000 SFP based ports
100/1000 Mbps SFP Types	SFP interfaces provide mix/match interface types. For a complete list of supported interfaces, please see the Cisco ASR pluggable configuration guide.
10GE SFP+ Types	SFP+ interfaces provide mix/match interface types. For a complete list of supported interfaces, please see the Cisco ASR pluggable configuration guide.
Layer 2 Transport	Carrier Ethernet, MPLS-Transport Profile (TP) and IP/MPLS
Layer 2 and Layer 2+ services	Ethernet – EPL, EVPL, ELAN, EVPLAN MPLS-TP – P2P Circuits (VPWS), Multipoint (VPLS), Ring VPLS (Optimized for Video Broadcast applications) IP/MPLS – VPWS
MAC Addresses	128K MAC addresses
Point to Point Ethernet Virtual Circuit (EVC)	4K
Point to Multi-Point Ethernet Virtual Circuit (EVC)	4K with 8K members
Multicast Groups	2K
Policers	8K Policers 2-rate 3-color (2R3C)
Egress queues	64K Queues (3-level H-QoS)
High Availability	
High Availability features	Stateful Switchover (SSO) In Service Software Upgrade (ISSU) MPLS-TP 1:1 path protection Link Aggregation (LAG) Resilient Ethernet Protocol (REP)
Multicast	
Multicast features	IGMP snooping Multicast VLAN registration (MVR)
BITS out	Sync-E or IEEE 1588V2
TOD/PPS	IEEE 1588V2

Product Specifications

Table 2. Product Specifications

Description	Specification
Software Support	Integrated Robust Command Line Interface (CLI)
Flexible Ethernet services	• Ethernet Virtual Connections (EVCs): Ethernet services are supported using individual EVCs to carry traffic belonging to a specific service type or end user through the network. EVC-based services can be used in conjunction with MPLS-based L2VPNs and native Ethernet switching deployments. • Flexible VLAN classification: VLAN classification into Ethernet flow points (EFPs) includes single-tagged VLANs, double-tagged VLANs (QinQ and 802.1ad), contiguous VLAN ranges, and noncontiguous VLAN lists. • IEEE Bridging: The line cards support native bridging based on IEEE 802.1Q, IEEE 802.1ad, and QinQ VLAN encapsulation mechanisms. • Resilient Ethernet protocol (REP): The REP provides a resilient, fast-convergence mechanism for aggregating and connecting to Ethernet-based access rings.
L2VPN services	• MPLS-TP Circuit with Ethernet over MPLS-TP (EoMPLS-TP): EoMPLS-TP transports Ethernet frames across an MPLS-TP LSPs using pseudowires. Individual EFPs or traffic from an entire port can be transported over an MPLS-TP network using pseudowires to an egress interface or sub-interface. • Virtual Private LAN Services (VPLS): These services are included in a class of VPN that supports the connection of multiple sites in a single bridged domain over a MPLS-TP network. VPLS presents an Ethernet interface to customers, simplifying the LAN and WAN boundary for service providers and customers, and enabling rapid and flexible service provisioning, because the service bandwidth is not tied to the physical interface. All services in a VPLS appear to be on the same LAN, regardless of location. • Pseudowire redundancy: Pseudowire redundancy supports the definition of a backup pseudowire to protect a primary pseudowire in case of failure. • Multi-segment pseudowire stitching: Multi-segment pseudowire stitching is a method for interworking two pseudowires together to form a cross-connect relationship.
L3 VPN Services	
High Availability	802.3ad Link Aggregation Bundles: The line cards support a bundle of multiple links to provide added resiliency and the ability to load balance traffic over multiple member links.
Multicast	• IGMP v2 and v3 snooping: This Layer 2 mechanism efficiently tracks multicast membership on an L2VPN network. Individual IGMP joins are snooped at the VLAN level or pseudowire level. In residential broadband deployments, this scenario enables the network to send only channels that are being watched to downstream users. • Multicast VLAN Registration (MVR): MVR optimizes the control plane (IGMP) load between the router and switch. MVR feature enables switch to aggregate different JOINs received on different VLANs (from the receivers) into one JOIN (on a single VLAN, which could be the same as or different from the VLANs of the receiving ports) towards the router. The switch then distributes (replicate) the received content into the relevant ports.
Manageability	High Availability • Cisco IOS XR high-availability feature set, MPLS TE-FRR, BFD, 802.3ad Link Aggregation Bundles, NSF, Multi-Chassis Link Aggregation (MC-LAG) and NSR Manageability • Cisco IOS XR manageability feature set, Cisco ANA, MIB, XML, and Simple Network Management Protocol (SNMP) OAM • Ethernet OAM (IEEE 802.3ah and IEEE 802.1ag) • MPLS OAM (label switched path [LSP] ping, LSP traceroute, and Virtual Circuit Connectivity Verification [VCCV])
Security	Cisco IOS XR Software: Cisco IOS XR Software provides comprehensive network security features, including access control lists (ACLs); control-plane protection; routing authentications; authentication, authorization, and accounting (AAA) and TACACS+; Secure Shell (SSH) Protocol; SNMPv3; and leading Routing Policy Language (RPL) support. Layer 2 ACLs: You can use this security feature to filter packets under an EVC based on MAC addresses. Layer 3 ACLs: This feature provides ACL matching by IPv4 packet attributes. Security: Many critical security features are supported: 802.1ad Layer 2 Control Protocol (L2CP) and bridge-protocol-data-unit (BPDU) filtering MAC limiting per EFP or bridge domain Unicast, multicast, and broadcast storm-control blocking on any interface or port Unknown Unicast Flood Blocking (UUFB) Dynamic Host Configuration Protocol (DHCP) snooping Unicast Reverse Path Forwarding (URPF) Control-plane security Dynamic ARP Inspection (DAI) IP Source Guard (IPSG)

Description	Specification	
Physical dimensions (H x W x D); Weight	AC: DC ANSI: DC ETSI:	1.560 in. x 17.417 in. x 9.095 in.; 4.06 Kg 1.560 in. x 17.417 in. x 9.095 in.; 4.22 Kg 1.560 in. x 17.417 in. x 9.095 in.; 4.22 Kg
Power	Max Power 210 Watts Nominal Power 159Watts	
Network Equipment Building Standards (NEBS)	GR-1089 Issue 5, GR-63 Issue 3	
Operating temperature (nominal)	–40℃ to +65℃	
Operating humidity (nominal) (relative humidity)	5–85% non condensing, operation is guaranteed up to 95% non condensing	
Storage temperature	–40℃ to +70℃	
Storage (relative humidity)	93% non condensing	
Operating altitude	4000 meters / 13,123.36 feet	

Warranty Information

Find warranty information on Cisco.com at the Product Warranties page.

Ordering Information

To place an order, visit the Cisco Ordering Home Page. To download software, visit the Cisco Software Center.

Cisco Services

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For More Information

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