



# Cisco ASR 1000 Series Aggregation Services Routers

Transform and Extend the Enterprise WAN Edge

## Cisco ASR 1000 Series Routers: Transform and Extend the Enterprise WAN Edge

Cisco® creates a new paradigm for the WAN edge with the Cisco ASR 1000 Series Aggregation Services Routers, which offer business-critical resiliency with intelligent services flexibility to allow enterprise businesses to accelerate their growth potential.

### What Is the Cisco ASR 1000 Series Router?



The Cisco ASR 1000 Series Router is the industry's first aggregation services router and the first system within the Cisco portfolio to use the Cisco QuantumFlow Processor, a processor built for edge-based service delivery. You can deploy the Cisco ASR 1000 Series Routers at the enterprise to provide secure WAN aggregation services; integrated threat-defense services at the WAN or Internet edge; or managed customer-premises-equipment (CPE) services; or deliver complex residential quadruple-play (data, voice, video, and mobile) or business services from the provider edge.

### Cisco QuantumFlow Processor: The Next-Generation Network Processor from Cisco

Meeting the requirements of the aggregation service edge required an entirely new category of network processors. Cisco has developed an innovative router engine called the Cisco QuantumFlow Processor, which is the industry's first fully integrated and programmable flow processor. Powered by the Cisco QuantumFlow Processor, which combines massive parallel processing, customized QoS, advanced memory management, and integrated services programmability, the Cisco ASR 1000 Series facilitates fast services deployment and increased feature velocity, resulting in reduced qualification and deployment time and operational-expenses (OpEx) savings.

### What Problems Does It Help Solve?

Enterprises around the globe are faced with several new WAN infrastructure challenges:

- **WAN edge infrastructure performance:** Enterprises need to deliver higher-performance, higher-bandwidth services over their converged WANs, along with capacity headroom to operate efficiently.
- **Highly available WAN infrastructure:** Enterprises need to provide anytime, everywhere access to applications and services over the WAN. This provision requires a more highly available, resilient, and adaptive infrastructure than they have today.
- **WAN security for data protection and compliance:** Businesses need to satisfy industry regulations regarding data privacy, and adhere to regulations such as the Sarbanes-Oxley Act (SOX), Payment Card Industry (PCI), Health Insurance Portability and Accountability Act (HIPAA), etc.
- **Service delivery with application intelligence:** Enterprises need to meet demanding internal service-level agreements (SLAs), with improved service delivery and application performance over the WAN.

### Cisco ASR 1000 Series Positioning

The Cisco ASR 1000 Series provides scalable, secure multiservice aggregation at the headquarters, and high-end branch-office and managed CPE services in remote offices.

By meeting or exceeding these requirements, the Cisco ASR 1000 Series Routers are helping to define the new enterprise WAN.



### Benefits of Cisco ASR 1000 Series Routers

Enterprises deploying the Cisco ASR 1000 Series Routers can realize the following benefits:

**Very high performance at the WAN edge to support new and faster WAN services:**

- **Increase WAN bandwidth performance and capacity** by more than twentyfold compared with Cisco 7200 Series Routers
- **Facilitate new WAN initiatives** such as segmentation of enterprise networks for workgroups, data center consolidation, and converged data, voice, and video applications.
- **Offer easy upgrade path:** Cisco ASR 1000 Series Router price/performance positioned between Cisco 7200 Series at the low end of the portfolio and the Cisco 7600 Series and Cisco Catalyst® 6500 Series at the high end

**Unparalleled WAN availability for consistent and reliable service delivery across the WAN:**

- Highly available carrier-class design with redundant hardware and software, providing consistent, reliable, and “always-on” services:
- Resilient hardware platform architecture with control-plane and data-plane separation for powerful system availability
- Complete hardware redundancy for forwarding and route processors with millisecond failover and zero packet loss (Note: forwarding engine failover results in minimal packet loss)
- Industry's first redundant software (Cisco IOS® XE Software) on non-redundant hardware (2RU and the 4RU chassis)
- Modular Cisco IOS XE Software that provides restartability, fault containment, and In Service Software Upgrade (ISSU)



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## High-performance embedded WAN edge security for attack prevention and compliance:

- Ability to instantly turn on embedded security services without affecting WAN routing performance
- Integrated “all-in-one” router approach that simplifies operation and reduces costs and time to qualify, deploy, and maintain the WAN infrastructure:
- Provides secure services aggregation for private WAN and remote sites
- Offers embedded secure Internet access, session border controller, firewall, and VPN termination
- Built-in high-performance security services that provide integrated security services with routing available, reducing the need for standalone devices:
  - **Secure connectivity services:** Provides secure and scalable network connectivity, incorporating multiple types of traffic; examples include various VPN services such as Dynamic Multipoint VPN (DMVPN), Enhanced Easy VPN, and up to 2-Gbps IPsec VPN services
  - **Integrated threat control:** Prevents and responds to network attacks and threats using network services; examples include firewall and Network Address Translation (NAT) services with up to 20-Gbps throughput, NetFlow services, and Multigigabit deep packet inspection through Network Based Application Recognition (NBAR) and Flexible Packet Matching (FPM) to provide a rapid first line of defense against network threats and notable worms and viruses

## Improved WAN service levels and operational excellence:

- Reduced and optimized total WAN operating costs through effective bandwidth usage, and overlaid network and device consolidation, power efficiencies, and service integration
- Improved bandwidth usage with WAN optimization features such as Web Cache Communication Protocol Version 2 (WCCPv2), and traffic management and instrumentation (scalable full NetFlow Version 9)
- Innovative hardware and software architecture to readily adapt to new business requirements
- Sophisticated Cisco ASR 1000 Series Router system software and hardware design to address oversubscription and provide scalable and flexible QoS for predictable application performance

## Cisco ASR 1000 Series Components

A common hardware and software architecture and common components are used across the Cisco ASR 1000 Series Routers. Key components include:

- **Chassis:** Available in 2RU (Cisco ASR 1002 Router), 4RU (Cisco ASR 1004 Router), and 6RU (Cisco ASR 1006 Router) form factors with redundant AC or DC power supplies.
- **Route Processor (RP):** The RP runs the router control plane including processing of network control packets, computation of routes, and connection setup. Redundant RP module option available for the 6RU chassis.

- **Embedded Services Processor (ESP):** The ESP includes the Cisco QuantumFlow Processor chip set and provides forwarding, services, and traffic management (QoS) capabilities. Redundant ESP module option available for the 6RU chassis.
- **SPA Interface Processor (SIP):** This is housing for the Shared Port Adapters (SPAs) in the system, each can take up to 4 Half-Height SPAs.

For more information about the Cisco ASR 1000 Series Routers, please visit <http://www.cisco.com/go/asr1000>.

## Why Cisco?

With the Cisco ASR 1000 Series Router, Cisco provides powerful WAN services aggregation products, architectures, guidance, and support to help you transform your network as the platform to aid business excellence. Building on the success of existing Cisco WAN leadership platforms, including the Cisco 7200 Series Routers, Cisco 7600 Series Routers, and Cisco Catalyst 6500 Series Switches, this innovation can help you achieve business success by providing services on your WAN securely, scalably, and reliably while minimizing the total cost of ownership.