Cisco ASR 1000 Series Aggregation Services Routers

PB447657

The Cisco® ASR 1000 Series Aggregation Services Routers are designed to optimize service provider edge and enterprise aggregation solutions. The innovative hardware and software design of these routers integrates powerful resiliency and intelligent services into a single router platform (Figure 1).

Figure 1. Cisco ASR 1000 Series Aggregation Services Routers

Hardware

The system is composed of a chassis, a route processor (RP), embedded services processors (ESPs), and SPA interface processors (SIPs). For interfaces it supports common Cisco shared port adapters (SPAs) that are shipping with other Cisco high-end routing platforms. Because of the modular design of the hardware, you can order many combinations to fit various price and performance requirements.

Four form-factor chassis are available: 2, 4, 6, and 13 rack units (RUs). All chassis come equipped with dual power supplies. Most hardware components are interchangeable among different chassis; the exceptions are the 2RU and 2RU-Fixed models, which have a fixed SIP and route processor in the chassis because of their compact form factor, and the SIP and route processor are not upgradable. Additionally, the 2RU-Fixed model has an integrated ESP with throughput of 2.5 Gbps. The modular route processors supported on the 4- and 6RU chassis ship with default 2-GB DRAM (ASR1000-RP1) or 8-GB DRAM (ASR1000-RP2), which you can upgrade to 4-GB DRAM (ASR1000-RP1) or 16-GB DRAM (ASR1000-RP2). The 2RU and 2RU-Fixed chasses do not support field-upgradable route-processor memory, but they do ship by default with 4-GB DRAM route-processor memory. The 2RU and 2RU-Fixed models also offer 4 built-in Gigabit Ethernet ports in the route processor by default. The 6- and 13RU chassis support a redundant physical configuration of dual route processors and dual ESPs. The SIPs can house 4 half-height or 2 double-height SPAs with no limitation of interface types. Table 1 outlines hardware component compatibility.

Table 1. Hardware Support Compatibility

Chassis Part Number	Route Processor	ESP	SIP
ASR1002-F	• Cisco ASR 1000 Series Route Processor 1 (RP1) integrated in the chassis with 4-GB DRAM (memory is neither factory- nor field-upgradable) • Four built-in Gigabit Ethernet ports with Small Form-Factor Pluggable (SFP) support • Integrated RP1 is not upgradable	• 2.5-Gbps Cisco ASR 1000 Series Embedded Services Processor (ESP) integrated in the chassis • Integrated ESP is not upgradable	• 10-Gbps Cisco ASR 1000 Series SIP (ASR1000-SIP10) integrated in the chassis and not upgradable
ASR1002	• Cisco ASR 1000 Series RP1 integrated in the chassis with 4-GB DRAM (memory is neither factory- nor field-upgradable) • Four built-in Gigabit Ethernet ports with SFP support • Integrated RP1 is not upgradable	• 5-, and 10-Gbps Cisco ASR 1000 Series ESPs (ASR1000-ESP5, ASR1000-ESP10, and ASR1000-ESP10-N))	• 10-Gbps Cisco ASR 1000 Series SIP (ASR1000-SIP10) integrated in the chassis and not upgradable
ASR1004	• Support for modular route processor with 2- or 4-GB DRAM (ASR1000-RP1) or with 8- or 16-GB DRAM (ASR1000-RP2) • One route processor per chassis • Upgradable	• 10-Gbps Cisco ASR 1000 Series ESP (ASR1000-ESP10) • 10-Gbps Cisco ASR 1000 Series ESP noncrypto (ASR1000-ESP10-N) • 20-Gbps Cisco ASR 1000 Series ESP (ASR1000-ESP20) • Support for single ESP per chassis • Upgradable	• 10-Gbps Cisco ASR 1000 Series SIP (ASR1000-SIP10) • Upgradable
ASR1006	• Support for modular route processor with 2- or 4-GB DRAM (ASR1000-RP1) or with 8- or 16-GB DRAM (ASR1000-RP2) • Support for single or dual route processor(s) per chassis • In case of dual route-processor support: The same route processor is required per Cisco ASR 1006: Either dual Cisco ASR 1000 RP1s or dual Cisco ASR 1000 RP2s • Upgradable	• 10-Gbps Cisco ASR 1000 Series ESPs • 10-Gbps Cisco ASR 1000 Series ESP noncrypto (ASR1000-ESP10-N) • 20-Gbps Cisco ASR 1000 Series ESP (ASR1000-ESP20) • 40-Gbps Cisco ASR 1000 Series ESP (ASR1000-ESP40) • Support for single or dual ESP(s) per chassis • For dual ESP processor support: The same ESP is required per Cisco ASR 1006—dual ESP10's, dual ESP20's or dual ESP40's • Upgradable	• 10-Gbps Cisco ASR 1000 Series SIP (ASR1000-SIP10) • 40-Gbps Cisco ASR 1000 Series SIP (ASR1000-SIP40) • Upgradable
ASR1013	• Support for modular route processor with 8- or 16-GB DRAM (ASR1000-RP2)	• 40-Gbps Cisco ASR1000 ESP (ASR1000-ESP40) • Support for single or dual ESP(s) per chassis • For dual ESP processor support: The same ESP is required per Cisco ASR. • Upgradable	• 10-Gbps Cisco ASR 1000 Series SIP (ASR1000-SIP10) • 40-Gbps Cisco ASR 1000 Series SIP (ASR1000-SIP40) • Upgradable

Table 2 lists the available hardware components. For the list of the product numbers of the supported SPAs, including the Cisco WebEx™ node on the Cisco ASR 1000 Series, please check the Cisco ASR 1000 Series SPA Data Sheet.

Table 2. Cisco ASR 1000 Series Hardware Components

Product Number	Product Description
Cisco ASR 1000 Series Chassis	
ASR1002-F	Cisco ASR1002 System, Fixed ESP, Crypto, 4 built-in GE, 4GB DRAM
ASR1002	Cisco ASR1002 Chassis, 4 built-in GE, Dual P/S, 4GB DRAM
ASR1002=	Cisco ASR1002 Chassis, 4 built-in GE, Dual P/S, 4GB DRAM, spare
ASR1004	Cisco ASR1004 Chassis, Dual P/S
ASR1004=	Cisco ASR1004 Chassis, Dual P/S, spare
ASR1006	Cisco ASR1006 Chassis, Dual P/S

Product Number	Product Description
ASR1006=	Cisco ASR1006 Chassis, Dual P/S, spare
ASR1013	Cisco ASR1013 Chassis, Redundant P/S
ASR1013=	Cisco ASR1013 Chassis, Redundant P/S, spare
Cisco ASR 1000 Series Embedded Services Processor	
ASR1000-ESP5	ASR1000 Embedded Services Processor, 5G, Crypto, ASR1002 only
ASR1000-ESP5=	ASR1000 Embedded Services Processor, 5G, Crypto, ASR1002 only,spare
ASR1000-ESP10	Cisco ASR1000 Embedded Services Processor, 10G, Crypto
ASR1000-ESP10=	Cisco ASR1000 Embedded Services Processor, 10G, Crypto, Spare
ASR1000-ESP10-N	Cisco ASR1000 Embedded Services Processor, 10G, Non Crypto
ASR1000-ESP10-N=	Cisco ASR1000 Embedded Services Processor, 10G, Non Crypto, Spare
ASR1000-ESP20	Cisco ASR1000 Embedded Services Processor, 20G, Crypto
ASR1000-ESP20=	Cisco ASR1000 Embedded Services Processor, 20G, Crypto, Spare
ASR1000-ESP40	Cisco ASR1000 Embedded Services Processor, 40G
ASR1000-ESP40=	Cisco ASR1000 Embedded Services Processor, 40G Spare
Cisco ASR 1000 Series Route Processor	
ASR1000-RP1	Cisco ASR1000 Route Processor 1, 2GB DRAM
ASR1000-RP1=	Cisco ASR1000 Route Processor 1, 2GB DRAM, spare
ASR1000-RP2	Cisco ASR1000 Route Processor 2, 8GB DRAM
ASR1000-RP2=	Cisco ASR1000 Route Processor 2, 8GB DRAM, spare
Cisco ASR 1000 Series SPA Interface Processor	
ASR1000-SIP10	Cisco ASR1000 SPA Interface Processor 10
ASR1000-SIP10=	Cisco ASR1000 SPA Interface Processor 10, spare
ASR1000-SIP40	Cisco ASR1000 SPA Interface Processor 40
ASR1000-SIP40=	Cisco ASR1000 SPA Interface Processor 40, Spare
Cisco ASR 1000 Series USB Memory Options	
MEMUSB-1024FT	1GB USB Flash Token for Cisco ASR 1000 Series
MEMUSB-1024FT=	1GB USB Flash Token for Cisco ASR 1000 Series, spare

Software

Cisco ASR 1000 Series Routers introduce the Cisco IOS® XE Software as their software architecture. Based on Cisco IOS Software, the Cisco IOS XE Operating System is designed to provide modular packaging, feature velocity, and powerful resiliency. Because of the extreme flexibility and robust performance of ESPs based on Cisco QuantumFlow Processor technology, network security, deep packet inspection, firewall, and many other advanced features are implemented in the Cisco IOS XE Operating System without the need of a service blade. One of the most innovative features is support for dual Cisco IOS Software consolidated packages in a single route processor for software redundancy in the 2- and 4RU chassis systems. Information about compatibility of supported dual software consolidated packages is available in the release notes. Note that with the redundant hardware route processor and ESP configuration in the 6- and 13RU models, Cisco IOS Software redundancy in a single route processor in a redundant 6RU system is not supported.

A Cisco IOS XE consolidated package is composed of different software subpackages that you can download from Cisco.com as one consolidated package. You can upgrade the whole package or each of the subpackages individually. Information about the compatibility of various subpackages is outlined in each release note.

Following are the seven subpackages:

- Route processor

  - RPBase: Route-processor operating system
  - RPControl: Control-plane processes that interface between Cisco IOS Software and the rest of the platform
  - RPIOS
  - RPAccess: Software required for router access; two versions are available: One that contains open Secure Shell (SSH) Protocol and Secure Sockets Layer (SSL) and one without (RPAccess-K9 and RPAccess, respectively)
- SIPBase: SIP operating system + Control processes
- SIPSPA: SPA drivers and field-programmable device (FPD) (SPA FPGA image)
- ESP
  - ESPBase: ESP operating system + Control processes + Cisco Packet Processor client, driver, and ucode

Table 3 lists the software subpackages that each consolidated package consists of, and Table 4 gives ordering information for the software consolidated package spares. Table 5 lists the Cisco WebEx node SPA software. Table 6 lists the Cisco IOS XE Software consolidated package spares.

Table 3. Software Subpackages for Each Cisco IOS XE Software Consolidated Package

Consolidated Package	Subpackages
Cisco ASR 1000 Series RP1 OR RP2 IP Base without Crypto	Consists of RPBase, RPControl, RPAccess, RPIOS-ipbase, ESPBase, SIPSPA, and SIPBase
Cisco ASR 1000 Series RP1 OR RP2 IP Base	Consists of RPBase, RPControl, RPAccess-K9, RPIOS- ipbasek9, ESPBase, SIPSPA, and SIPBase
Cisco ASR 1000 Series RP1 OR RP2 Advanced IP Services K9	Consists of RPBase, RPControl, RPAccess-K9, RPIOS-advipservicesk9, ESPBase, SIPSPA, and SIPBase
Cisco ASR 1000 Series RP1 OR RP2 Advanced IP Services without Crypto	Consists of RPBase, RPControl, RPAccess, RPIOS-advipservices, ESPBase, SIPSPA, and SIPBase
Cisco ASR 1000 Series RP1 OR RP2 Advanced Enterprise Services K9	Consists of RPBase, RPControl, RPAccess-K9, RPIOS-adventservicesk9, ESPBase, SIPSPA, and SIPBase
Cisco ASR 1000 Series RP1 OR RP2 Advanced Enterprise Services non crypto	Consists of RPBase, RPControl, RPAccess-nonK9, RPIOS-adventservices, ESPBase, SIPSPA, and SIPBase

Table 4. Cisco IOS XE Software Consolidated Package

Product Number	Product Description
Cisco ASR 1000 Series Consolidated Packages	
SASR1R1-IPB	Cisco ASR 1000 Series RP1 IP Base without Crypto
SASR1R1-IPBK9	Cisco ASR 1000 Series RP1 IP Base
SASR1R1-AISK9	Cisco ASR 1000 Series RP1 Advanced IP Services
SASR1R1-AIS	Cisco ASR 1000 Series RP1 Advanced IP Services without Crypto
SASR1R1-AESK9	Cisco ASR 1000 Series RP1 Advanced Enterprise Services
SASR1R1-AES	Cisco ASR 1000 Series RP1 Advanced Enterprise Services Non-Crypto
SASR1R2-IPB	Cisco ASR 1000 Series RP2 IP Base without Crypto
SASR1R2-IPBK9	Cisco ASR 1000 Series RP2 IP Base
SASR1R2-AISK9	Cisco ASR 1000 Series RP2 Advanced IP Services
SASR1R2-AIS	Cisco ASR 1000 Series RP2 Advanced IP Services without Crypto
SASR1R2-AESK9	Cisco ASR 1000 Series RP2 Advanced Enterprise Services
SASR1R2-AES	Cisco ASR 1000 Series RP2 Advanced Enterprise Services Non-Crypto

Table 5. Cisco WebEx Node SPA Software

Product Number	Product Description
SASR1R1-WMAK9	Cisco ASR 1000 Series RP1 WebEx node

SASR1R2-WMAK9	Cisco ASR 1000 Series RP2 WebEx node

Table 6. Cisco IOS XE Software Consolidated Package Spares

Product Number	Product Description
ASR1000-SW-SPARECD	Cisco ASR 1000 Series Software Spare CD
CDASR1000R1-IPB=	Cisco ASR 1000 RP1 IP Base without Crypto, spare
CDASR1000R1-IPBK9=	Cisco ASR 1000 RP1 IP Base, spare
CDASR1000R1-AISK9=	Cisco ASR 1000 RP1 Advanced IP Services with Crypto, spare
CDASR1000R1-AIS=	Cisco ASR 1000 RP1 Advanced IP Services without Crypto, spare
CDASR1000R1-AESK9=	Cisco ASR 1000 RP1 Advanced Enterprise Services with Crypto, spare
CDASR1000R1-AES=	Cisco ASR 1000 RP1 Advanced Enterprise Services without Crypto, spare
CDASR1000R2-IPB=	Cisco ASR 1000 RP2 IP Base without crypto, spare
CDASR1000R2-IPBK9=	Cisco ASR 1000 RP2 IP Base, spare
CDASR1000R2-AISK9=	Cisco ASR 1000 RP2 Advanced IP Services with Crypto, spare
CDASR1000R2-AIS=	Cisco ASR 1000 RP2 Advanced IP Services without Crypto, spare
CDASR1000R2-AESK9=	Cisco ASR 1000 RP2 Advanced Enterprise Services with Crypto, spare
CDASR1000R2-AES=	Cisco ASR 1000 RP2 Advanced Enterprise Services without Crypto, spare

Software License

If you are planning to deploy advanced features, you should purchase a license along with a consolidated package. Currently, the following features are licensed separately: IP Security (IPsec) encryption, firewall, Flexible Packet Inspection (including Network Based Application Recognition [NBAR] and Flexible Packet Matching), Broadband Aggregation, and Cisco Unified Border Element (SP Edition) (also known as session border control [SBC]).

Table 7 gives ordering information for Cisco ASR 1000 Series software licenses.

Table 7. Ordering Information for Cisco ASR 1000 Series Software Licenses

Product Number	Product Description
Cisco ASR 1000 Licenses-Security	
FLASR1-IPSEC-RTU	Encryption Right-To-Use Feature Lic for ASR1000 Series
FLASR1-FW-RTU	Firewall Right-To-Use Feature Lic for ASR1000 Series
FLASR1-FWNAT-RED	Firewall/NAT Stateful Inter-Chassis Redundancy License
FLASR1-FPI-RTU	Flex. Pack. Insp. Right-To-Use Feat Lic for ASR1000 Series
FLASR1-IOSRED-RTU	SW Redundancy Right-To-Use Feat Lic for ASR1000 Series
Cisco ASR 1000 Licenses-Broadband	
FLASR1-BB-RTU	Broadband Right-To-Use Feature Lic for ASR1000 Series
FLASR1-BB-4K	Broadband 4K Sessions Feature Lic for ASR1000 Series
FLASR1-BB-16K	Broadband 16K Sessions Feature Licfor ASR1000 Series
FLASR1-BB-32K	Broadband 32K Sessions Feature Lic for ASR1000 Series
Cisco ASR 1000 Licenses-Cisco Unified Border Element (SP Edition)	
FLASR1-CUBES-250P	CUBE(SP) 250 Calls Perpetual Lic for ASR 1000 Series
FLASR1-CUBES-2KP	CUBE(SP) 2K Calls Perpetual Lic for ASR 1000 Series
FLASR1-CUBES-4KP	CUBE(SP) 4K Calls Perpetual Lic for ASR 1000 Series
FLASR1-CUBES-16KP	CUBE(SP) 16KCalls Perpetual Lic for ASR 1000 Series
FLASR1-CUBES-32KP	CUBE(SP) 32K Calls Perpetual Lic for ASR 1000 Series
FLASR1-CUBES-TPEX	CUBE(SP) Perpetual Lic for ASR 1000 Series in B2BTP Exchange

For detailed and up-to-date information regarding the Cisco ASR 1000 Series software release strategy, software order guide, and software license plan, please refer to: http://www.cisco.com/go/asr1000.

Upgrade Paths

Cisco ASR 1000 Series Routers are included in the standard Cisco Technology Migration Program (TMP).

Refer to http://www.cisco.com/go/TMP and contact your local Cisco account representative for program details.

Ordering Information

To place an order, visit the Cisco Ordering Home Page at http://www.cisco.com/en/US/ordering/index.shtml and refer to Tables 2 through 7.

To download software, visit the Cisco Software Center at http://www.cisco.com/public/sw-center/index.shtml; click “Router Software” and go to Cisco ASR 1000 Series Aggregation Services Routers.

Cisco Services for the Enterprise WAN Edge

Cisco and our partners help make your enterprise WAN edge deployment a success with a broad portfolio of services based on proven methodologies. We can help you establish a secure, resilient WAN architecture and successfully integrate Cisco Unified Communications, Cisco TelePresence™, security, and mobility technologies with bandwidth to support video, collaboration, branch-office solutions, and growth in alignment with your business goals. Planning and design services align technology with business goals and can increase the accuracy, speed, and efficiency of deployment. Technical services help maintain operational health, strengthen software application functions, solve performance problems, and lower expenses. Optimization services are designed to continually improve performance and help your team succeed with new technologies. For more information, visit http://www.cisco.com/go/services.

For More Information

For more information about the Cisco ASR 1000 Series, visit http://www.cisco.com/go/asr1000 or contact your local Cisco account representative.

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