Cisco Integrated Services Routers

4000 Series Datasheet

CONTENT

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OVERVIEW

The Cisco 4000 Series Integrated Services Routers (ISR) revolutionize WAN communications in the enterprise branch. With new levels of built-in intelligent network capabilities and convergence, the routers specifically address the growing need for application-aware networking in distributed enterprise sites. These locations tend to have lean IT resources. But they often also have a growing need for direct communication with both private data centers and public clouds across diverse links, including Multiprotocol Label Switching (MPLS) VPNs and the Internet.

The Cisco 4000 Series contains six platforms: the 4451, 4431, 4351, 4331, 4321 and 4221 ISRs (Figure 1).
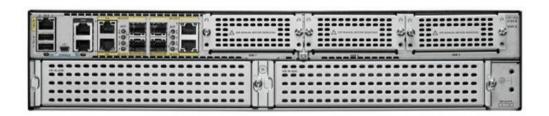
APPEARANCE

Figure 1. Cisco 4000 Series Integrated Services Routers

Table 1.   Cisco 4000 Series ISR General Feature Highlights

Business Requirement(s)	Feature/Solution
Performance ☆ **Throughput** ☆ **Service reliability**	☆ Concurrent software services at speeds up to 2 Gbps. Backplane architecture supports high-bandwidth module-to-module communication at speeds up to 10 Gbps. ☆ A distributed multicore architecture with the industry's first internal services plane. ☆ Remote installation of application-aware services, which run identically to their counterparts in dedicated appliances.
Lower WAN expenditures	☆ Embedded IWAN solution for creating lower-cost, business-class Internet connections.
Pay-as-you-grow ☆ **Performance upgrade model**	☆ Router capacity can be increased with a remote performance-on-demand license upgrade (no hardware upgrade) for exceptional savings.

☆ Investment protection ☆ CapEx budget management	
Superior and secure user application experiences	☆ ISR-AX Application Experience " software bundle with advanced routing and network monitoring services. ☆ Dynamic Multipoint VPN (DMVPN), zone-based firewalls, intrusion prevention (Snort and Umbrella Branch) and content management using Cisco Cloud Web Security and OpenDNS protecting data, providing authentication credentials, and enabling transmissions that are not backhauled through the data center. ☆ Secure boot feature performs hardware-based authentication of the bootloader software to prevent malicious or unintended software from booting on the system. ☆ Code signing verifies digital signatures of executables prior to loading to prevent execution of altered or corrupted code. ☆ Hardware authentication protects against hardware counterfeiting by using an on-board tamper-proof silicon, including field replaceable modules. If authentication fails, the module is not allowed to boot.
IT consolidation, space savings, and improved total cost of ownership (TCO)	☆ Single converged branch platform integrates routing, switching, virtual server, storage, security, unified communications, WAN optimization, and performance management tools.
Business continuity and increased resiliency	☆ 4400 Series models (4451 and 4431 ISRs) support dual integrated power supplies for backup. The entire 4000Series supports optional power supply capable of delivering additional PoE power to endpoints. Defined models provide for a DC power supply. ☆ Modular network interfaces with diverse connection options for load-balancing and network resiliency. ☆ Modular interfaces with online removal and insertion (OIR) for module upgrades without network disruption.

	☆ Cisco Unified Survivable Remote Site Telephony (SRST), which serves as a resiliency complement to Cisco Hosted Collaboration Solution (HCS), a Cisco cloud-based UC service.
	☆ Support for multiple, diverse access links: T1/E1, T3/E3, Serial, xDSL, Gigabit and Ten-Gigabit Ethernet.
Lower telephony costs with VoIP and rich media experiences	☆ High-performance analog/digital gateway, allowing VoIP over less expensive Session Initiation Protocol (SIP) trunks. ☆ Integrated IP PBX and Session Border Controller.
Easier manageability and support	☆ Single, universal software image for all features and performance-on-demand licensing flexibility. ☆ No additional services and support needed for compute and storage. ☆ Supported by Cisco and third-party management tools, with programmability and automation.

Table 2.   Architectural Highlights

Architectural Features	Benefits/Description
Multicore processors	☆ High-performance multicore processors support high-speed WAN connections. The data plane uses an emulated Flow Processor (FP) that delivers application-specific integrated circuit (ASIC)-like performance that does not degrade as services are added.
Embedded IP Security (IPsec) VPN hardware acceleration	☆ Increases scalability. When combined with an optional Cisco IOS XE Software Security license, enables WAN link security and VPN services.
Integrated Gigabit Ethernet ports	☆ The Cisco 4000 Series provides up to four built-in 10/100/1000 Ethernet ports for WAN or LAN. ☆ Based on the platform, some of the 10/100/1000 Ethernet ports can support Small Form-Factor Pluggable (SFP)-based connectivity in addition to RJ-45 connections, enabling fiber or copper connectivity. ☆ Optionally, depending on the platform, up to 30W PoE+ can be enabled on two of the built-in front panel Gigabit Ethernet

	interfaces to provide power to external devices such as fourth-generation (4G) LTE routers. ☆ An additional dedicated Gigabit Ethernet port is provided for device management.
USB-based console access	☆ A mini type B USB console port1 supports management connectivity when traditional serial ports are not available. ☆ Traditional console and auxiliary ports are also available.
Optional integrated power supply for distribution of PoE	☆ An optional upgrade to the internal power supply provides inline power (802.3af-compliant PoE or 802.3at-compliant PoE+) to optional integrated switch modules. ☆ Redundant PoE conversion modules provide an additional layer of fault tolerance.
Optional integrated redundant power supply (RPS)	☆ For the 4400 Series, power redundancy is available by installing an optional integrated RPS for decreasing network downtime and protecting the network from power failures. ☆ Optional PoE boost mode increases total PoE capacity to up to 1000W.
Cisco Enhanced Services Module (SM-X)	☆ Each service-module slot offers high data-throughput capability of up to 10 Gbps toward the system and up to 1 Gbps to other module slots. ☆ Support for both single- and double-wide service modules provides flexibility in deployment options. ☆ An SM-X slot can be converted into a Network Interface Module (NIM) slot using an optional carrier card. ☆ Service modules support online insertion and removal (OIR), avoiding network disruption when installing new or replacement modules.1
Cisco Network Interface Modules (NIMs)	☆ Up to three integrated NIM slots on the Cisco 4000 Series allow for flexible configurations. ☆ Each NIM slot offers options of up to two 2-Gbps connections, one toward the route processor and one for direct module-to-module communication. The 4221 ISR has only one 1-Gbps connection to the route processor. ☆ NIMs support OIR. ☆ Special NIMs add support for solid-state drives (SSDs) and hard disk drives (HDDs).1

Cisco Integrated Services Card (ISC) slot on motherboard	☆ Integrated Services Card natively supports the new Cisco High-Density Packet Voice Digital Signal Processor Modules (PVDM4s), providing greater-density rich-media voice. ☆ Each Integrated Services Card slot connects to the system architecture through an up to 2-Gbps link. ☆ Future modules can be hosted on the Integrated Services Card slot, improving system functions.
Flash memory support	☆ A single flash memory slot is available to support high-speed storage densities, upgradable to up to 32 GB. The 4221 ISR ships with a fixed 8 GB flash. ☆ Two USB type A 2.0 ports provide capabilities for convenient storage.1
DRAM	☆ For the 4400 Series ISRs, the default control-plane memory is 4 GB, upgradable to 16 GB to provide additional scalability for control-plane features. The default data-plane memory is 2 GB. ☆ For the 4300 Series ISRs, the default memory is 4 GB, upgradable to 16 GB (only 8 GB for the 4321) to provide additional scalability. ☆ The 4200 Series comes with 4 GB fixed DRAM.

Table 3.   Network Management Solutions

Operational Phase	Application	Description
Device staging and configuration	WebUI	☆ A GUI-based device-management tool for Cisco IOS and Cisco IOS XE Software-based access routers. This tool simplifies routing, firewall, VPN, unified communications, and WAN and LAN configuration through easy-to-use wizards.
Network-wide deployment, configuration, monitoring, and troubleshooting	Cisco Prime®Infrastructure	☆ Offers comprehensive lifecycle management of wired and wireless access, campus, and branch-office networks, rich visibility into end-user connectivity, and application performance assurance.

		☆ Provides wired lifecycle functions such as inventory, configuration, and image management; automated deployment; compliance reporting; integrated best practices; and reporting.
Staging, deployment, and changes to configuration and image files	Cisco Configuration Engine	☆ A secure network management product that provides zero-touch image and configuration distribution through centralized, template-based management.
Context-aware security configuration and monitoring	Cisco Prime Security Manager	☆ Management tool for configuring and managing context-aware security. The application supports both single- and multi-device manager form factors. ☆ Provides the ability to write and enforce the granular context-aware security policies.
Cisco Wide Area Application Service (WAAS) management	Cisco WAAS Central Manager	☆ The management tool for the WAAS1, (WAN optimization and application acceleration) integrated service. It provides a centralized mechanism for configuring WAAS features, reporting, and monitoring.

Cisco IOS XE Software Embedded Management Capabilities	
Feature	**Description**
Cisco IOS Embedded Event Manager (EEM)	☆ A distributed and customized approach to event detection and recovery. ☆ Offers the ability to monitor events and take informational, corrective, or any desired EEM action when the monitored events occur or when a threshold is reached.

Cisco IOS XE IP Service-Level Agreements (IP SLAs)	☆ Helps assure the performance of new business-critical IP applications as well as IP services that use data and voice in an IP network.
SNMP, Remote Monitoring (RMON), syslog, NetFlow, IP Flow Information Export (IPFix)	☆ Network monitoring and accounting tools.

PRODUCT SPECIFICATIONS OF CISCO 4000 INTEGRATED SERVICES ROUTER

Technical Specifications	Cisco 4451	Cisco 4431	Cisco 4351	Cisco 4331	Cisco 4321	Cisco 4221
Aggregate Throughput	1 Gbps to 2 Gbps	500 Mbps to 1 Gbps	200 Mbps to 400 Mbps	100 Mbps to 300 Mbps	50 Mbps to 100 Mbps	35 Mbps to 75 Mbps
Total onboard WAN or LAN 10/100/1000 ports	4	4	3	3	2	2
RJ-45-based ports	4	4	3	2	2	2
SFP-based ports	4	4	3	2	1	1
Enhanced service-module slots	2	0	2	1	0	0
Doublewide service-module slots	1 (assumes no	0	1 (assumes no singlewid	0	0	0

	single wide SM-X modules installed)		e SM-X modules installed)			
NIM slots	3	3	3	2	2	2
OIR (all I/O modules)	Yes	Yes	Yes	Yes	Yes	No
Onboard ISC slot	1	1	1	1	1	No
Default memory double-data-rate 3 (DDR3) error-correction-code (ECC) DRAM (Combined control/services/data planes)	NA	NA	4 GB	4 GB	4 GB	4 GB
Maximum memory DDR3 ECC DRAM (Combined control/services/data planes)	NA	NA	16 GB	16 GB	8 GB	4 GB
Default memory DDR3 ECC DRAM (data plane)	2 GB	2 GB	NA	NA	NA	NA

Maximum memory DDR3 ECC DRAM (data plane)	2 GB	2 GB	NA	NA	NA	NA
Default memory DDR3 ECC DRAM (control/services plane)	4 GB	4 GB	NA	NA	NA	NA
Maximum memory DDR3 ECC DRAM (control/services plane)	16 GB	16 GB	NA	NA	NA	NA
Default flash memory	8 GB	8 GB	4 GB	4 GB	4 GB	8 GB
Maximum flash memory	32 GB	32 GB	16 GB	16 GB	8 GB	8 GB
External USB 2.0 slots (type A)	2	2	2	1	1	1
USB console port -type B mini (up to 115.2 kbps)	1	1	1	1	1	0
Serial console port - RJ45 (up to	1	1	1	1	1	1 (combo CON/AUX port)

115.2 kbps)						
Serial auxiliary port - RJ45 (up to 115.2 kbps)	1	1	1	1	1	1 (combo CON/AUX port)
Power-supply options	Internal: AC, DC (road map) and PoE	Internal: AC, DC, and PoE	Internal: AC, DC (roadmap) and PoE	Internal: AC and PoE	External: AC and PoE	External AC only
Redundant power supply	Internal: AC, DC (road map) and PoE	Internal: AC, DC, and PoE	N/A	N/A	N/A	NA
Power Specifications						
AC input voltage	100 to 240 VAC autoranging	100 to 240 VAC autoranging	100 to 240 VAC autoranging	100 to 240 VAC autoranging	100 to 240 VAC autoranging	100 to 240 VAC autoranging
AC input frequency	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz
AC input current range, AC power supply (maximum)	7.1 to 3.0A	3 to 1.3A	7.1 to 3.0A	3 to 1.3A	1.5 to 0.6A	1.5 to 0.6A

	<50 A	60 A peak and less than 5 Arms per half cycle	60 A peak and less than 12 Arms per half cycle	60 A peak and less than 5 Arms per half cycle	90 A peak and less than 3 Arms per half cycle	90 A peak and less than 3 Arms per half cycle
AC input surge current						
Typical power (no modules) (watts)	158	65	48	42	36	24
Maximum power with AC power supply (watts)	450 (no PoE)	250 (no PoE)	430	250	125	90
Maximum power with PoE power supply (platform only) (watts)	1000 with PoE redundant 1450 with PoE boost no redundancy	500 with PoE redundant 1000 with PoE boost no redundancy	990	530	260	NA (no PoE support)
Maximum endpoint PoE power available from PoE power supply (watts)	500 W with optional redundancy	250 W with optional redundancy	500	250	120	NA (no PoE support)
Maximum endpoint PoE power capacity with PoE	950 W no redundancy	500 W no redundancy	N/A	N/A	N/A	NA (no PoE support)

boost (watts)						
Sizes and Weights						
Dimensions (H x W x D)	3.5 x 17.25 x 18.5 in (88.9 x 438.15 x 469.9 mm)	1.73 x 17.25 x 19.97 in (43.9 x 438.15 x 507.2 mm)	3.5 x 17.25 x 18.5 in (88.9 x 438.15 x 469.9 mm)	1.75 x 17.25 x 17.25 in (44.45 x 438.15 x 438.15 mm)	1.75 x 14.55 x 11.60 in (44.55 x 369.57 x 294.64 mm)	1.72 x 12.7 x 10 in (43.7 x 322.6 x 254 mm)
External Power Supply Dimensions (H x W x D)	N/A	N/A	N/A	N/A	2.95 x 1.18 x 6.10 in (75 x 30 x 155 mm)	37 x 73 x 152 mm (Phihong mfg PN: AA90U-120A-R) 36.5 x 67 x 155 mm (Delta mfg PN: ADP90GR BA)
Shipping Box Dimensions (H x W x D)	9.75 x 22.25 x 26 in (24.76 x 56.51 x 66.04 mm)	7.88 x 22.25 x 28.75 in (200.2 x 565.1 x 730.25 mm)	9.75 x 22.25 x 26 in (24.76 x 56.51 x 66.04 mm)	7.125 x 22.75 x 22.5 in (180.98 x 577.85 x 571.5 mm)	7.0 x 21.5 x 16.125 in (177.8 x 546.1 x 409.6 mm)	4.13 x 18.25 x 12.94 in (104.9 x 463.6 x 328.7 mm)
Rack height	2 rack units (2RU)	1 rack units (1RU)	2 rack units (2RU)	1 rack unit (1RU)	1 rack unit (1RU)	1 rack unit (1RU)
Rack-mount	Included	Included	Included	Included	Included	Optional

19in. (48.3 cm) EIA						
Rack-mount 23in. (58.4 cm) EIA	Optional	Optional	Optional	Optional	N/A	NA
Wall-mount	No	Yes	No	Yes	Mounting holes under chassis	Yes
Weight with 1, 450-WAC power supply (no modules)	28.8 lb (13.1 kg)	N/A	28.8 lb (13.1 kg)	N/A	N/A	NA
Weight with 1 1,000-WAC power supply+ 1 PoE power module (no other modules)	30.6 lb (13.9 kg)	N/A	29.0 lb (13.2 kg)	N/A	N/A	NA
Weight with AC PS (no modules)	N/A	18.5 lb (8.4 kg)	N/A	13.5 lb (6.2 kg)	7.7 lb (3.5 kg) + 1.2 lb (0.66 kg) external PS	7.1 lb (3.22 kg)
Weight with AC PS with POE (no modules)	N/A	18.6 lb (8.4 kg)	N/A	14.1 lb (6.4 kg)	N/A	NA
Typical weight (fully loaded	42.7 lb (19.4 kg)	22.4 lb (10.2 kg)	37.7 lb (17.1 kg)	16.1 lb (7.3 kg)	9.14 lb (4.2 kg) + 1.2 lb (0.66 kg)	8.11 lb (3.68 kg)

with modules)					external PS	
Packaging Weight	6.4 lb (2.9 kg)	5.9 lb (2.7 kg)	6.4 lb (2.9 kg)	4.6 lb (2.1 kg)	2.2 lb (1 kg)	1.28 lb (0.58 kg)
Airflow	I/O side to bezel side	I/O side to bezel side	I/O side to bezel side	I/O side to bezel side	Right I/O side to Left I/O side	I/O side to bezel side
MTBF (Hours)	480770	512970	566310	587250	593270	593270
Environmental Specifications						
Operating Conditions						
Temperature	32º to 104ºF (0º to 40ºC)	32º to 104ºF (0º to 40ºC)	32º to 104ºF (0º to 40ºC)	32º to 104ºF (0º to 40ºC)	32º to 104ºF (0º to 40ºC)	32º to 104ºF (0º to 40ºC)
Altitude (China)	0 – 6,560 ft. (0 – 2,000 m)	0 – 6,560 ft. (0 – 2,000 m)	0 – 6,560 ft. (0 – 2,000 m)	0 – 6,560 ft. (0 – 2,000 m)	0 – 6,560 ft. (0 – 2,000 m)	0 – 6,560 ft. (0 – 2,000 m)
Altitude (Rest of the world)	0 – 10,000 ft. (0 – 3,050 m)	0 – 10,000 ft. (0 – 3,050 m)	0 – 10,000 ft. (0 – 3,050 m)	0 – 10,000 ft. (0 – 3,050 m)	0 – 10,000 ft. (0 – 3,050 m)	0 – 10,000 ft. (0 – 3,050 m)
Relative humidity	5% to 85%	5% to 85%	5% to 85%	5% to 85%	5% to 85%	5% to 85%
Short-term humidity	5% to 90%, not to exceed 0.024 kg water /kg of	5% to 90%, not to exceed 0.024 kg water/kg of dry air	5% to 90%, not to exceed 0.024 kg water/kg of dry air	5% to 90%, not to exceed 0.024 kg water/kg of dry air	5% to 90%, not to exceed 0.024 kg water/kg of dry air	5% to 90%, not to exceed 0.024 kg water/kg of dry air

	dry air					
Acoustics: Sound pressure (Typical/maximum)	50.6/73.1 dBA	54.3/79.1 dBA	50.6/73.1 dBA	52.8/74.8 dBA	24.2/51.9 dBA	28.5/53 dBA
Acoustics: Sound power (Typical/maximum)	58.2/78.8 dBA	57.2/80.8 dBA	58.2/78.8 dBA	61.2/81.6 dBA	31.9/59.9 dBA	41/68 dBA
Nonoperating Conditions						
Temperature	-40º to 158ºF (-40º to 70ºC)	-40º to 158ºF (-40º to 70ºC)	-40º to 158ºF (-40º to 70ºC)	-40º to 158ºF (-40º to 70ºC)	-40º to 158ºF (-40º to 70ºC)	-40º to 158ºF (-40º to 70ºC)
Relative humidity	5% to 95%	5% to 95%	5% to 95%	5% to 95%	5% to 95%	5% to 95%
Altitude	15,584 ft (4750m)	15,584 ft (4750m)	15,584 ft (4750m)	15,584 ft (4750m)	15,584 ft (4750m)	15,584 ft (4750m)
Regulatory and Compliance						
Safety	UL 60950-1 CAN/CSA C22.2 No. 60950-1 EN 60950-1 AS/NZS	UL 60950-1 CAN/CSA C22.2 No. 60950-1 EN 60950-1 AS/NZS 60950-1	UL 60950-1 CAN/CSA C22.2 No. 60950-1 EN 60950-1 AS/NZS 60950-1 IEC 60950-1 GB-4943	UL 60950-1 CAN/CSA C22.2 No. 60950-1 EN 60950-1 AS/NZS 60950-1 IEC 60950-1 GB-4943	UL 60950-1 CAN/CSA C22.2 No. 60950-1 EN 60950-1 AS/NZS 60950-1 IEC 60950-1 GB-4943	UL 60950-1 CAN/CSA C22.2 No. 60950-1 EN 60950-1 AS/NZS 60950-1 IEC 60950-1 GB-4943

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EMC	47 CFR, Part 15 ICES-003 Class A EN55022 Class A CISPR22 Class A AS/NZS 3548 Class A VCCI V-3 CNS 13438 EN 300-386 EN 61000 (Immunity) EN 55024, CISPR	47 CFR, Part 15 ICES-003 Class A EN55022 Class A CISPR22 Class A AS/NZS 3548 Class A VCCI V-3 CNS 13438 EN 300-386 EN 61000 (Immunity) EN 55024, CISPR 24 EN50082-1 KN22, KN24	47 CFR, Part 15 ICES-003 Class A EN55022 Class A CISPR22 Class A AS/NZS 3548 Class A VCCI V-3 CNS 13438 EN 300-386 EN 61000 (Immunity) EN 55024, CISPR 24 EN50082-1 KN22, KN24	47 CFR, Part 15 ICES-003 Class A EN55022 Class A CISPR22 Class A AS/NZS 3548 Class A VCCI V-3 CNS 13438 EN 300-386 EN 61000 (Immunity) EN 55024, CISPR 24 EN50082-1 KN22, KN24	ICES-003 Class A EN55022 Class A CISPR22 Class A AS/NZS 3548 Class A VCCI V-3 CNS 13438 EN 300-386 EN 61000 (Immunity) EN 55024, CISPR 24 EN50082-1 KN22, KN24	ICES-003 Class A EN55022 Class A CISPR22 Class A AS/NZS 3548 Class A VCCI V-3 CNS 13438 EN 300-386 EN 61000 (Immunity) EN 55024, CISPR 24 EN50082-1 KN22, KN24

	24 EN 50082-1 SD/EMI KN22, KN24					
Telecom	T1 IC CS-03:2004 TIA-968-B:2009 HKTA 2028: 2010 HKTA 2017: 2010 HKTA 2015: 2006 G.703 :2001 ID0002:2007 IS6100:2004 DSPR Gray Book: 2000 DSPR Technical Condi	TIA-968-B CS-03 ANSI T1.101 ITU-T G.823, G.824 IEEE 802.3 RTTE Directive Homologation requirements vary by country and interface type.	TIA-968-B CS-03 ANSI T1.101 ITU-T G.823, G.824 IEEE 802.3 RTTE Directive Homologation requirements vary by country and interface type.	TIA-968-B CS-03 ANSI T1.101 ITU-T G.823, G.824 IEEE 802.3 RTTE Directive Homologation requirements vary by country and interface type.	TIA-968-B CS-03 ANSI T1.101 ITU-T G.823, G.824 IEEE 802.3 RTTE Directive Homologation requirements vary by country and interface type.	TIA-968-B CS-03 ANSI T1.101 ITU-T G.823, G.824 IEEE 802.3 RTTE Directive Homologation requirements vary by country and interface type.

	tion: 2004 E1 AS/A CIF S016: 2001 AS/A CIF S038: 2001 G.703 :2001 TBR 4:199 5 TBR 12:19 93 TBR 13:19 96 RRA 2009- 38 (RRL 2005- 96) IDA TS DLCN :2011 IDA TS ISDN PRA:2 005 IS610 0: 2004				

	PTC 220:2008 Ethernet IEEE 802.3 ANSA X3.263					

Cisco IOS XE Software						
Protocols	IPv4, IPv6, static routes, Routing Information Protocol Versions 1 and 2 (RIP and RIPv2), Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP), Border Gateway Protocol (BGP), BGP Router Reflector, Intermediate System-to-Intermediate System (IS-IS), Multicast Internet Group Management Protocol Version 3 (IGMPv3), Protocol Independent Multicast sparse mode (PIM SM), PIM Source-Specific Multicast (SSM), Resource Reservation Protocol (RSVP), Cisco Discovery Protocol, Encapsulated Remote Switched Port Analyzer (ERSPAN), Cisco IOS IP Service-Level Agreements (IPSLA), Call Home, Cisco IOS Embedded Event Manager (EEM), Internet Key Exchange (IKE), access control lists (ACL), Ethernet Virtual Connections (EVC), Dynamic Host Configuration Protocol (DHCP), Frame Relay (FR), DNS, Locator ID Separation Protocol (LISP), Overlay Transport Virtualization (OTV),[5] Hot Standby Router Protocol (HSRP), RADIUS, authentication, authorization, and accounting (AAA), Application Visibility and Control (AVC), Distance Vector Multicast Routing Protocol (DVMRP), IPv4-to-IPv6 Multicast, MPLS, Layer 2 and Layer 3 VPN, IPsec, Layer 2 Tunneling Protocol Version 3 (L2TPv3), Bidirectional Forwarding Detection (BFD), IEEE 802.1ag, and IEEE 802.3ah					
Encapsulations	Generic routing encapsulation (GRE), Ethernet, 802.1q VLAN, Point-to-Point Protocol (PPP), Multilink Point-to-Point Protocol (MLPPP), Frame Relay, Multilink Frame Relay (MLFR) (FR.15 and FR.16), High-Level Data Link Control (HDLC), Serial (RS-232, RS-449, X.21, V.35, and EIA-530), and PPP over Ethernet (PPPoE)					
Traffic management	QoS, Class-Based Weighted Fair Queuing (CBWFQ), Weighted Random Early Detection (WRED), Hierarchical QoS, Policy-Based Routing (PBR), Performance Routing (PfR), and Network-Based Application Recognition (NBAR)					

Cryptogra phic algorithms	Encryption: DES, 3DES, AES-128 or AES-256 (in CBC and GCM modes); Authentication: RSA (748/1024/2048 bit), ECDSA (256/384 bit); Integrity: MD5, SHA, SHA-256, SHA-384, SHA-512

CISCO ISR 4000 BASIC ORDERING INFORMATION

Product Name	Product Description
ISR4451-X/K9	4451 ISR with 4 onboard GE, 3 NIM slots, 1 ISC slot, 2 SM slots, 8 GB flash memory default, 2 GB DRAM default (data plane), 4 GB DRAM default (control plane)
ISR4431/K9	4431 ISR with 4 onboard GE, 3 NIM slots, 1 ISC slot, 8 GB flash memory default, 2 GB DRAM default (data plane), 4 GB DRAM default (control plane)
ISR4351/K9	4351 ISR with 3 onboard GE, 3 NIM slots, 1 ISC slot, 2 SM slots, 4 GB flash memory default, 4 GB DRAM default
ISR4331/K9	4331 ISR with 3 onboard GE, 2 NIM slots, 1 ISC slot, 1 SM slot, 4 GB flash memory default, 4 GB DRAM default
ISR4321/K9	4321 ISR with 2 onboard GE, 2 NIM slots, 1 ISC slot, 4 GB flash memory default, 4 GB DRAM default
ISR4221/K9	4221 ISR with 2 onboard GE, 2 NIM slots, 1 ISC slot, 8 GB flash memory default, 4 GB DRAM default
ISR4321-AX/K9	50Mbps-100Mbps system throughtput, 2 WAN/LAN ports, 1 SFP port, multi-Core CPU,2 NIM, Security, Voice, WAAS, Intelligent WAN, OnePK, AVC
ISR4451-X-SEC/K9	Cisco ISR 4451 Sec bundle w/SEC license
ISR4451-X-VSEC/K9	Cisco ISR 4451 VSEC Bundle, PVDM4-64 w/ UC, SEC Lic, CUBE- 25
ISR4221-SEC/K9	35Mbps-75Mbps system throughtput, 2 WAN/LAN ports, 1 SFP port, multi-Core CPU,2 NIM, SEC Bundle with SEC lic
ISR4321-SEC/K9	50Mbps-100Mbps system throughtput, 2 WAN/LAN ports, 1 SFP port, multi-Core CPU,2 NIM, Security, Voice, WAAS, Intelligent WAN, OnePK, AVC
ISR4331-AX/K9	100Mbps-300Mbps system throughtput, 2 WAN/LAN ports, 2 SFP ports, multi-Core CPU,1 service module slots, Security, MPLS, OTV, WAAS, Intelligrnt WAN, OnePK, AVC

ISR4431-SEC/K9	500Mbps-1Gbps system throughtput, 4 WAN/LAN ports, 4 SFP ports, multi-Core CPU, Dual-power, Security, Voice, WAAS, Intelligrnt WAN, OnePK, AVC, separate control data and services CPUs
ISR4351-V/K9	200Mbps-400Mbps system throughtput, 2 WAN/LAN ports, 3 SFP ports, multi-Core CPU,2 service module slots, Security, Voice, WAAS, Intelligrnt WAN, OnePK, AVC
ISR4331-V/K9	100Mbps-300Mbps system throughtput, 2 WAN/LAN ports, 2 SFP ports, multi-Core CPU,1 service module slots, Security, Voice, WAAS, Intelligrnt WAN, OnePK, AVC
ISR4351-SEC/K9	200Mbps-400Mbps system throughtput, 2 WAN/LAN ports, 3 SFP ports, multi-Core CPU,2 service module slots, Security, VPN, WAAS, Intelligrnt WAN, OnePK, AVC
ISR4451-X-AX/K9	1Gbps-2Gbps system throughtput, 4 WAN/LAN ports, 4 SFP ports, multi-Core CPU, Dual-power, Security, Voice, WAAS, Intelligrnt WAN, OnePK, AVC, separate control data and services CPUs
ISR4331-SEC/K9	100Mbps-300Mbps system throughtput, 2 WAN/LAN ports, 2 SFP ports, multi-Core CPU,1 service module slots, Security, Voice, WAAS, Intelligrnt WAN, OnePK, AVC
ISR4431-V/K9	500Mbps-1Gbps system throughtput, 4 WAN/LAN ports, 4 SFP ports, multi-Core CPU, Dual-power, Security, Voice, WAAS, Intelligrnt WAN, OnePK, AVC, separate control data and services CPUs
ISR4321-V/K9	50Mbps-100Mbps system throughtput, 2 WAN/LAN ports, 1 SFP port, multi-Core CPU,2 NIM, Voice Bundle, WAAS, Intelligent WAN, OnePK, AVC
ISR4431-AX/K9	500Mbps-1Gbps system throughtput, 4 WAN/LAN ports, 4 SFP ports, multi-Core CPU, Dual-power, Security, Voice, WAAS, Intelligrnt WAN, OnePK, AVC, separate control data and services CPUs

ISR4221-AX/K9	Cisco ISR 4221 AX Bundle w/APP, SEC lic
ISR4321-VSEC/K9	Cisco ISR 4321 Bundle w/UC & SEC License. CUBE-10
ISR4331-VSEC/K9	Cisco ISR 4331 Bundle with UC & Sec Lic. PVDM4-32. CUBE-10
ISR4351-VSEC/K9	Cisco ISR 4351 Bundle with UC & Sec Lic. PVDM4-64. CUBE-25
ISR4351-AX/K9	Cisco ISR 4351 AX Bundle w/ APP.SEC lic
ISR4351-AXV/K9	Cisco ISR 4351 AXV Bundle.PVDM4-64 w/APP.SEC.UC lic.CUBE-25
ISR4431-VSEC/K9	Cisco ISR 4431 Bundle with UC & Sec Lic. PVDM4-64. CUBE-25
ISR4431-AXV/K9	Cisco ISR 4431 AXV Bundle.PVDM4-64 w/APP.SEC.UC lic.CUBE-25
ISR4451-X-V/K9	Cisco ISR 4451 UC Bundle. PVDM4-64. UC Lic.CUBE25
ISR4451-X-AXV/K9	Cisco ISR 4451 AXV Bundle.PVDM4-64 w/APP.SEC.UC lic.CUBE-25
C1-CISCO4321/K9	Cisco ONE ISR 4321 (2GE.2NIM.4G FLASH.4G DRAM.IPB)
C1-CISCO4331/K9	Cisco ONE ISR 4331 (3GE.2NIM.1SM.4G FLASH.4G DRAM.IPB)
C1-CISCO4351/K9	Cisco ONE ISR 4351 (3GE.3NIM.2SM.4G FLASH.4G DRAM.IPB)
C1-CISCO4431/K9	Cisco ONE ISR 4431 (4GE.3NIM.8G FLASH.4G DRAM.IPB)
ISR4321-AXV/K9	Cisco ISR 4321 AXV Bundle, with CUBE-10, IPBase, APP, SEC and UC licenses.
ISR4331-AXV/K9	Cisco ISR 4331 AXV Bundle with PVDM4-32, CUBE-10, IPBase, APP, SEC and UC licenses.
C1-CISCO4221/K9	Cisco One -Cisco ISR 4221 (2GE, 2NIM, 8G FLASH, 4G DRAM, IPB)
C1-CISCO4451/K9	Cisco ONE - ISR 4451

SOURCES

https://www.cisco.com/c/en/us/products/collateral/routers/4000-series-integrated-services-routers-isr/datasheet-c78-732542.html