

Cisco ISR4451-X/K9

ISR 4400 SERIES HIGH-PERFORMANCE ENTERPRISE ROUTER

Cisco IOS XE
2RU Dual Architecture

The **Cisco ISR4451-X/K9** is a flagship 2RU modular router designed for large enterprise branches, campus edges, and data center WAN perimeters. Featuring multi-core control and data plane separation, 1 Gbps default aggregate throughput (upgradable to 2 Gbps via licensing), 4 onboard Gigabit WAN/LAN ports, 3 NIM slots, 2 SM-X slots, and redundant power capabilities, it delivers uninterrupted WAN performance and SD-WAN services.

BASE THROUGHPUT

1 Gbps

Upgradable to 2 Gbps

ONBOARD WAN/LAN

4x GE

4x RJ-45 + 4x SFP Ports

EXPANSION SLOTS

3x NIM + 2x SM

1x ISC (PVD4) Slot

PLANE MEMORY

4GB Control

2GB Data Plane DRAM

KEY PLATFORM ARCHITECTURAL FEATURES

Dual Control & Data Plane Architecture

Separates control/services processing (4 GB DRAM, upgradable to 16 GB) from dedicated data plane hardware (2 GB DRAM), guaranteeing deterministic routing performance under heavy multi-service loads.

High-Density Module Expansion

Houses 3 Network Interface Module (NIM) slots and 2 Enhanced Service Module (SM-X) slots, supporting high-speed T1/E1, 4G/5G, PoE switch blades, and server compute modules.

Cisco Catalyst SD-WAN Integration

Full support for Cisco Catalyst SD-WAN architecture with zero-touch provisioning (ZTP), central cloud control via vManage, application-aware multi-path routing, and cloud security overlays.

Redundant & PoE Boost Power Support

Dual power supply slots supporting N+1 power redundancy or PoE Boost mode providing up to 950W dedicated PoE power to connected switch modules and IP endpoints.

SYSTEM HARDWARE & INTERFACE SPECIFICATIONS

Component	Specification Details
Onboard WAN/LAN Interfaces	4x 10/100/1000 Gigabit Ethernet Ports (4x RJ-45 + 4x SFP optical combo capability)
NIM Expansion Slots	3x Network Interface Module (NIM) slots (Supports single-wide or dual-wide modules)
SM-X Expansion Slots	2x Enhanced Service Module (SM-X) slots (Supports 1x Double-Wide SM-X)
Internal Services Card (ISC)	1x Onboard ISC slot supporting High-Density PVD4 Voice DSP Modules
Control / Services DRAM	4 GB default (DDR3 ECC) – Upgradable to 16 GB maximum
Data Plane DRAM	2 GB default dedicated Data Plane memory
Flash Memory Storage	8 GB default onboard Flash – Upgradable to 32 GB maximum
Console & Auxiliary	1x Micro-USB Console + 1x RJ-45 Serial Console + 1x RJ-45 Auxiliary Port
External USB Ports	2x USB 2.0 Type-A high-speed host ports for logs, software updates, and USB tokens

PERFORMANCE & LICENSING METRICS

Performance Tier	Throughput	License / Software Requirement
Base Default Performance	1 Gbps Aggregate	Standard IP Base / SEC License included out-of-the-box
Performance License Tier	2 Gbps Aggregate	Software Performance License Upgrade (FL-4450-PERF-DEF)
Boost License Tier	Uncapped / Multi-Gbps	Boost License Upgrade (FL-4450-BOOST-DEF)
IPsec VPN Throughput	Up to 1.6 Gbps	Hardware IPsec crypto engine with Security (SEC) License
Concurrent IPsec Tunnels	Up to 4,000 Tunnels	High-density site-to-site encrypted VPN termination

NETWORKING, SECURITY & VOICE PROTOCOL MATRIX

Supported Cisco IOS XE Architecture Features

Cisco IOS XE

BGP4 / MP-BGP

OSPFv3

EIGRP

VRF-Lite

DMVPN

GETVPN

IPsec AES-256

Zone-Based Firewall

Snort IPS

Cisco Umbrella

Cisco CUBE (Unified Border Element)

SRST / Voice Gateway

HQoS / NBAR2

PHYSICAL, ENVIRONMENTAL & POWER SPECIFICATIONS

Parameter	Specification Details
Form Factor	2RU Rack-Mountable Metal Chassis (19-inch standard rack mounts included)
Dimensions (H x W x D)	3.5 x 17.25 x 18.5 in. (88.9 x 438.15 x 470 mm)
Unit Weight	28.88 lbs (13.1 kg) without additional modules
Power Supply Architecture	Dual Internal Power Bays (Support AC, DC, and PoE power supply units)
Power Consumption	Typical: 158W Max AC non-PoE: 450W Max PoE Redundant: 1000W Max PoE Boost: 1450W
PoE Capacity	500W Max Endpoint PoE (Redundant) Up to 950W Endpoint PoE (Boost Mode)
Operating Temperature	32°F to 104°F (0°C to 40°C) at sea level
Operating Relative Humidity	5% to 85% non-condensing relative humidity
Compliance Standards	UL 60950-1, CAN/CSA C22.2 No. 60950-1, EN 60950-1, FCC Part 15 Class A, CE Mark

TARGET DEPLOYMENT SCENARIOS & ORDERING INFO

Target Deployment Scenarios Designed for large enterprise headquarters, regional branch hubs, university perimeters, data center access points, and cloud edge routing requiring high-throughput encryption, multi-core processing, and PoE density.	Ordering Information Base Part Number: ISR4451-X/K9 Performance Upgrade: FL-4450-PERF-DEF= Boost License: FL-4450-BOOST-DEF= Power Supply Options: PWR-4450-AC / PWR-4450-POE-AC
--	--