

Cisco ASR 1001-X Router Overview

The Cisco ASR 1000 Series Aggregation Services Routers are mid-range edge routers that establish a new price-to-performance class offering benefits to both enterprise and service providers alike. The Cisco ASR 1000 Series Aggregation Services Routers portfolio is based on an innovative custom-built ASIC called Quantum Flow Processor that aggregates services at scale.

The Cisco ASR 1001-X Router is a part of the Cisco ASR 1000 Series and offers a compact form factor that consumes less rack space and power while offering 20 Gbps forwarding throughput. The Cisco ASR 1001-X Router supports all the general-purpose routing and security features of the Cisco ASR 1000 Series Aggregation Services Routers.

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Hardware Features of the Cisco ASR 1001-X Router

The Cisco ASR 1001-X Router supports:

- Up to 16 GB (8 GB in the base configuration) of DDR3 error-correcting code-protected field- replaceable memory, with single-bit error correction and multi-bit error detection.
- A nonmodular and fixed Embedded Services Processor (ESP) with a default throughput of 2.5 Gbps that is upgradable with a software-activated performance license of 5 Gbps, 10 Gbps, or 20 Gbps.
- Up to 8 Gbps security and crypto processing through a dedicated security processor.
- RJ-45 console ports and auxiliary ports, and a mini USB console port.
- One copper Ethernet 10/100/1000 Mbps network management port.
- An embedded USB (eUSB) flash module that supports 8 GB of nonvolatile Flash storage.
- Two USB 2.0 ports for USB flash sticks or USB secure tokens (secure key distribution).
- Stratum 3E network clocking per GR-1244-CORE, using 1588, 10 GE, GE, SPA, or Network Interface Module (NIM) interfaces as timing sources.
- Six built-in 1 GE SFP-only interfaces (do not support SFP+), and two built-in 10 GE SFP+ interfaces (support only 10-GE rate) that support SyncE.
- One half-height SPA bay.
- Software redundancy using Dual IOS, similar to all the other nonhardware redundant routers from the Cisco ASR 1000 Series Aggregation Services Router family.

- LED indicators for Ethernet and console status, as well as visual system state indications.
- Command-line interface (CLI), alarm, network management, logging, statistics aggregation, and on-board failure logging (OBFL).
- Environmental chassis management.
- 10 MB ternary content-addressable memory (TCAM).
- Up to 20 Gbps sustained forwarding data traffic through the chassis.
- One Network Interface Module (NIM) bay.

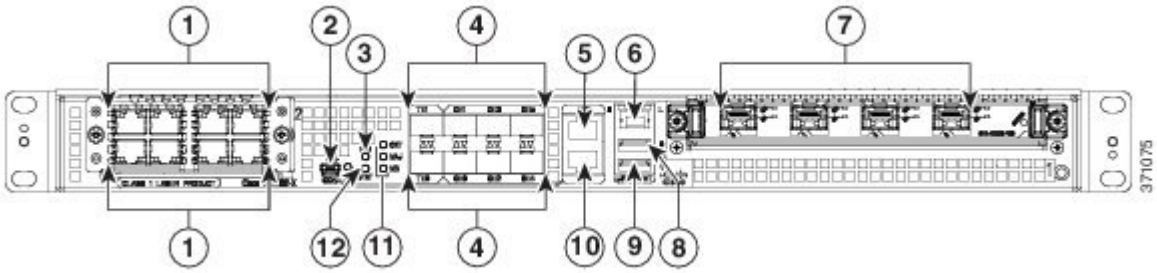
Note The NIM bay supports the T1/E1 NIMs and the Solid State Device (SSD) NIM assembly and drive.

- Field-replaceable units (FRU) with online insertion and removal (OIR).

Cisco ASR 1001-X Overall Chassis Front View

The following figure shows the front of the Cisco ASR 1001-X Router.

Figure 1: Cisco ASR 1001-X Router Front View

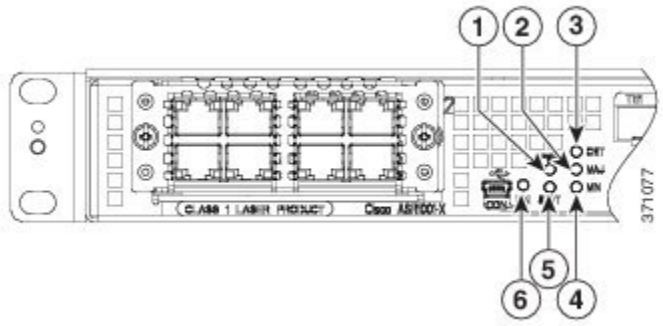


1	NIM slots	7	Shared port adapter slot
2	CON—One mini eUSB por	8	USB port 0
3	PWR—Power LED	9	USB port 1
4	Six built-in 1 GE SFP-only interfaces (do not support SFP+), and two built-in 10 GE SFP+ interfaces (support only 10-GE rate)	10	CON—One RJ-45/RS-232 compatible console port
5	AUX—One RJ-45/RS-232 compatible auxiliary port	11	CRIT LED—Critical alarm indicator MAJ LED—Major alarm indicator MIN LED—Minor alarm indicator
6	MGMT—One RJ-45 10/100/1000 management Ethernet port. The management port has two LEDs, L and S. L green indicates Link operations. S blinks the negotiated Ethernet speed (1 blink equals 10 Mbps, 2 blinks equals 100 Mbps, 3 blinks equals 1 000 Mbps).	12	STAT—Status LED

Cisco ASR 1001-X Router LEDs

The following figure shows the front panel of the Cisco ASR 1001-X Router.

Figure 2: Common LEDs for the Cisco ASR 1001-X Router

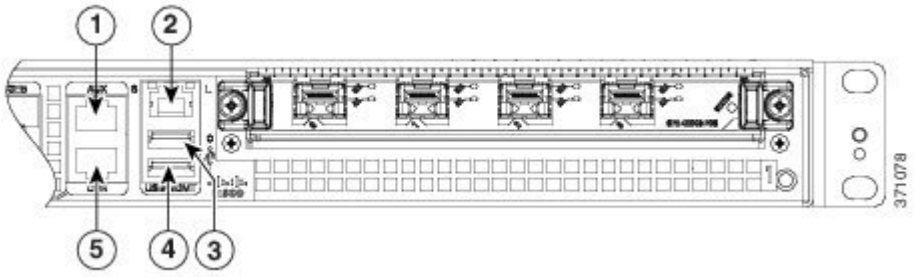


No.	LED Label	LED	Color	Behavior in the Power-Up State
1	PWR	Power	Green	All the power supplies are within operational limits.
2	MAJ	MAJOR	Red	Major alarm indicator.
3	CRIT	CRITICAL	Red	Critical alarm indicator. Will be off when the router is initially powered up and all the configured components are available.
4	MIN	MINOR	Amber	Minor alarm indicator
5	STAT	STATUS	Green	Cisco IOS has successfully booted.
			Yellow	The system is at ROMMON.
			Red	System failure. Will be off when the router is powered up.
6	EN	USB Console Enable	Green	Indicates that the mini eUSB connector is used as the console.
			Off	Indicates that the RJ-45 connector is being used as the console.

Cisco ASR 1001-X Management Storage Connections

The following figure shows the Cisco ASR1001-X Router’s management storage connections.

Figure 3: Management Storage Connections for the Cisco ASR 1001-X Router



1	AUX—One RJ-45/RS-232 compatible auxiliary port.	4	USB port 1
2	MGMT —one RJ-45 10/100/1000 management Ethernet port. The Management Port has two LEDs, L and S. L green indicates Link operations. S blinks the negotiated Ethernet speed (1 blink 10 Mbps, 2 blinks 100 Mbps, 3 blinks, 1 000 Mbps).	5	CON—One RJ-45/RS-232 compatible console port
3	USB port 0		—

Cisco ASR 1001-X Chassis Rear View

The following figure shows the rear of the Cisco ASR 1001-X Router with four fans and two AC or DC power supplies.



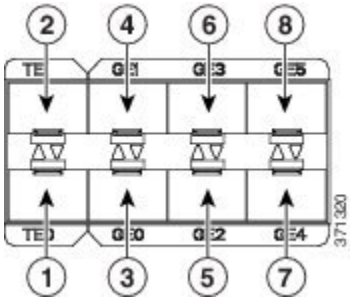
Four internal fans draw cooling air into the chassis and across internal components to maintain an acceptable operating temperature. The fans are located in the center of the chassis. The fans are numbered from 0 to 3, right to left.

Two power supplies, either two AC power supplies or two DC power supplies are accessed from the rear of the router and are hot-swappable.

Note The Cisco ASR 1001-X Router can support two AC or two DC power supplies. Do not install mixed AC and DC power supply units in the same chassis.

Cisco ASR 1001-X SPA GE and TE Ports

The 10 GE SFP+ ports are indicated in the front bezel with orange highlights, and the GE SFP ports are indicated with yellow highlights. The following figure shows the port numbering for the 10 GE SFP+ and GE SFP ports.



1	10 GE SFP+ Port 0/0/0	5	GE SFP Port 0/0/2
2	10 GE SFP+ Port 0/0/1	6	GE SFP Port 0/0/3
3	GE SFP Port 0/0/0	7	GE SFP Port 0/0/4
4	GE SFP Port 0/0/1	8	GE SFP Port 0/0/5

Field-Replaceable Units for the Cisco ASR 1001-X Router

The Cisco ASR 1001-X Router has a number of FRUs. These include:

- SPAs
- Dual In-line Memory Modules (DIMMs)
- NIMs
- SSD and SSD NIM assembly
- USB flash or secure token memory stick
- AC and DC power supplies

For more information, see "Removing and Replacing FRUs from the Cisco ASR 1001-X Router" .

Cisco Product Identification Standard

This section describes the Cisco products and services product identification standard. This feature provides you with the ability to effectively integrate and manage Cisco products in your network and business operations.

Unique Device Identifier

The Unique Device Identifier (UDI) is the Cisco product identification standard for hardware products. A product identification standard removes barriers to enterprise automation and can help you reduce operating expenses.

The UDI provides a consistent electronic, physical, and associated business-to-business information product identification standard.

The UDI is a combination of five data elements. The below table lists the UDI elements.

Table 1: UDI Elements

UDI Data Element	Electronic Visibility	Physical Visibility	Description
PID	Yes	Yes	Product ID, also known as product name, model name, product number
VID	Yes	Yes	Version ID
SN	Yes	Yes	Serial number, the unique instance of the PID
Entity Name	Yes	—	Type, such as chassis, slot, or power supply
Product Description	Yes	—	Additional product information

The combination of serial number and product ID (PID) is unique and consistent across all Cisco products. The PID that is coded on hardware is called a base product identifier.

Additional orderable PIDs can be associated to a base PID. For instance, an orderable PID may describe a packaging configuration for a product or a bundled group of products sold, tested, and shipped together. Specific unique device identifier (UDI) benefits include the following:

- Identifies:
  - Individual Cisco products in your networks
  - PIDs and serial numbers for service and replaceable products
  - Version IDs (VIDs) for product version visibility
- Facilitates discovery of products subject to recall or upgrade
- Enhances inventory automation of Cisco products

The Cisco product identification standard provides the following features:

- Version visibility—Cisco continuously improves products through feature additions. Product changes are indicated by incrementing the VID, which provides version visibility to help you understand and manage product changes. VID management ensures consistency of changes from product to product.
- Operating expense reduction—Cisco UDIs provide accurate and detailed network inventory information; identifying each Cisco product in a network element through a standard interface. Cisco operating systems can view and use this data, allowing you to automate your electronic inventory.
- Consistency across product layers—The UDIs are embedded in the hardware products and cannot be overwritten. Operating and management systems discover UDIs through standard interfaces and display UDIs in standard outputs. Standard interfaces include the IETF standard ENTITY-MIB.

show diag subslot eeprom Command

The **show diag subslot eeprom** command displays the PID, VID, PCB serial number, hardware revision, and other such information.

The following is sample output from the **show diag subslot eeprom** command:

```
Router# show diag subslot 0/0 eeprom
MIDPLANE EEPROM data:
        Product Identifier (PID) : ASR1001-X
        Version Identifier (VID) : V00
        PCB Serial Number        : JAE17450EUV
        Top Assy. Part Number    : 68-4703-06
        Hardware Revision        : 0.1
```

```
Asset ID                  :
CLEI Code                 : CMMP410DRA
```

Note Common Language Equipment Identification (CLEI) code is a ten-digit character code that identifies a specific product. A CLEI code is applied to each part within a Cisco ASR1001-X Router as they are programmed in manufacturing for shipment to customers.

show license udi Command

The **show license udi** command displays UDI information.

The following is sample output from the **show license udi** command:

```
Router# show license udi
SlotID   PID                    SN                      UDI
-------------------------------------------------------------------------------
*6       ASR1001-X              JAE17190302     ASR1001-X:JAE17190302
```

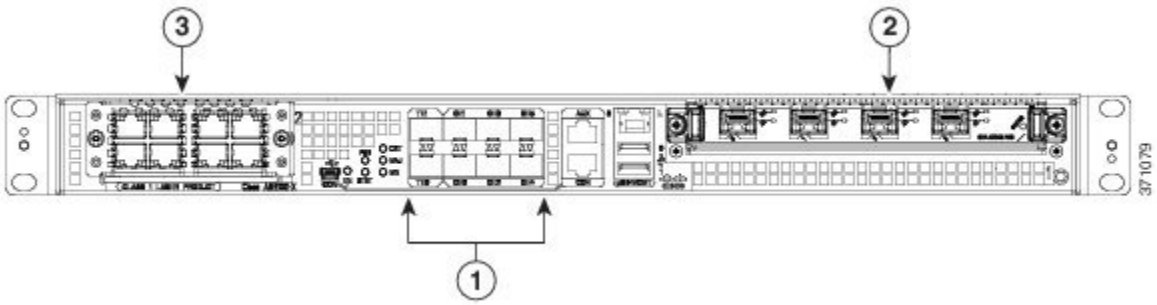
Note For complete information on the product identification standard, see http://www.cisco.com/go/udi/

SPA Slot Numbering

A shared port adapter (SPA) is a modular type of port adapter that can be inserted into a subslot to provide network connectivity and increased interface port density. The Cisco ASR 1001-X Router supports one flexible integrated NIM slot and one half-height SPA bay.

The following figure shows slot numbering on the Cisco ASR 1001-X Router.

Figure 4: Cisco ASR 1001-X Router Slot Numbering



Serial Number and PID/VID Label Location

The following figure shows a Cisco ASR 1001-X Router chassis along with the location of the serial number and the PID/VID label.

Figure 5: Cisco ASR 1001-X Router Serial Number and PID/VID Label Location

