

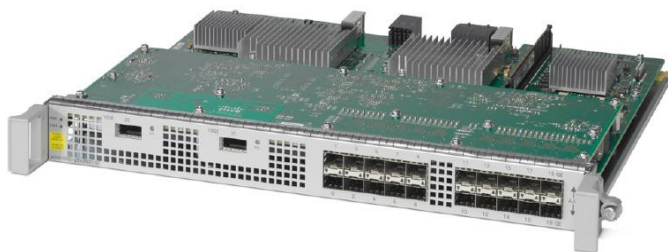
# Cisco ASR 1000 Series Ethernet Line Cards

## Product overview

The Cisco® ASR 1000 Series Fixed Ethernet Line Cards (ASR1000-2T+20X1GE and ASR1000-6TGE) are fixed port Ethernet line cards for the Cisco ASR 1000 Series Aggregation Services Routers. The line cards are capable of 40-Gbps full-duplex traffic forwarding using a fixed-port interface design. The ASR1000-2T+20X1GE has twenty 1 Gigabit Ethernet ports and two 10 Gigabit Ethernet ports (Figure 1). The ASR1000-6TGE has six 10 Gigabit Ethernet ports (Figure 2).

The Small Form-Factor Pluggable (SFP) and 10-Gbps SFP (XFP) modules allow you to configure the line card for different media types (copper or fiber) and different optical requirements (single- or multimode fiber), as available. The line cards have one power LED, one line-card status LED, and 22 port or link-status LEDs.

**Figure 1.** Cisco ASR 1000 Series Fixed Ethernet Line Card (ASR1000-2T+20X1GE)



**Figure 2.** Cisco ASR 1000 Series Fixed Ethernet Line Card (ASR1000-6TGE)



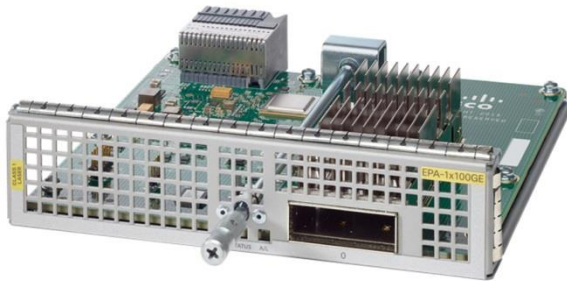
With these line cards, the ASR 1000 Series routers can achieve greater Ethernet density and a lower price per port. However, this fixed configuration means that the Ethernet line cards are not compatible with the Shared Port Adapters (SPAs) that are currently used with the SPA interface processors. Instead, the Ethernet line cards take the slot of the SPA interface processor. Table 1 lists the differences between the fixed Ethernet line cards and the SPA interface processors.

The Cisco ASR 1000 Series Modular Interface Processor (ASR1000-MIP100) (Figure 3) is a full-duplex 100-Gbps modular Ethernet line card that is capable of hosting up to two Cisco ASR 1000 Series Ethernet Port Adapters (EPAs) (Figures 4 through 8). The EPAs are new interface cards that introduce 40 Gigabit Ethernet and 100 Gigabit Ethernet connectivity to the Cisco ASR 1000 Series. Like the fixed Ethernet line cards, the modular interface processor with EPAs offers the same feature parity and functionality as the SPA interface processor and SPA combination. Table 1 shows the features of the three types of interface cards.

**Figure 3.** Cisco ASR 1000 Series Modular Interface Processor (ASR1000-MIP100)



**Figure 4.** Cisco ASR 1000 Series 1-port 100 Gigabit Ethernet port adapter



**Figure 5.** Cisco ASR 1000 Series 10-port 10 Gigabit Ethernet port adapter



**Figure 6.** Cisco ASR 1000 Series 18-port 1 Gigabit Ethernet port adapter



**Figure 7.** Cisco ASR 1000 Series 1-port 40 Gigabit Ethernet port adapter (2 physical QSFP ports)



**Figure 8.** Cisco ASR 1000 Series 2-port 40 Gigabit Ethernet port adapter



Other aspects of the fixed Ethernet line cards and the modular interface processor include:

- Rich Ethernet Layer 2, Layer 3, IP, IPv6, and Multiprotocol Label Switching (MPLS) packet-processing capabilities, as previously provided on the Cisco ASR 1000 Series platforms
- Rich Quality-of-Service (QoS) functions:
  - Ingress and egress QoS, as previously provided on the Cisco ASR 1000 Series platforms
  - Egress queuing capability, as previously provided on the Cisco ASR 1000 Series platforms
  - High- and low-priority lanes to Cisco ASR 1000 Series Embedded Services Processors for high priority, low-latency forwarding

The 18-port 1 Gigabit Ethernet port adapter, 10-port 10 Gigabit Ethernet port adapter, 2-port 40 Gigabit Ethernet port adapter, and 1-port 40 Gigabit Ethernet port adapter are hardware-ready for MACsec.

**Table 1.** SPA and EPA compatibility on Cisco ASR 1000 Series line cards

Feature	Cisco ASR 1000 Series SPA Interface Processors	Cisco ASR 1000 Series Fixed Ethernet Line Cards	Cisco ASR 1000 Series Modular Interface Processor
Shared Port Adapters (SPAs)	Yes	No	No
Ethernet Port Adapters (EPAs)	No	No	Yes
Built-in Ethernet ports	No	Yes	No

## Ordering information

Tables 2, 3, and 4 give ordering information for the line cards and hardware, respectively, and Tables 5, 6, and 7 give the minimum Cisco IOS® XE Software version required.

**Table 2.** Ordering Information for Ethernet line cards and Ethernet port adapters

Product name	Part number
Cisco ASR 1000 Fixed Ethernet Line Card, 6x10GE	ASR1000-6TGE
Cisco ASR 1000 Fixed Ethernet Line Card, 2x10GE + 20x1GE	ASR1000-2T+20X1GE
Cisco ASR 1000 Ethernet Line Card, 100G Modular Interface Processor	ASR1000-MIP100
Cisco ASR 1000 1x100GE Ethernet Port Adapter	EPA-1X100GE
Cisco ASR 1000 2x40GE Ethernet Port Adapter (Native QSFP)	EPA-2X40GE
Cisco ASR 1000 1x40GE Ethernet Port Adapter (2 physical QSFP ports - optional license to enable 2 <sup>nd</sup> port)	EPA-1X40GE
Cisco ASR 1000 1x40GE e-Delivery Port license for EPA-1X40GE	L-FLA1-EPA-1X40GE=
Cisco ASR 1000 2x40GE Ethernet Port Adapter (breakout cable)	EPA-CPAK-2X40GE
Cisco ASR 1000 10x10GE Ethernet Port Adapter	EPA-10X10GE
Cisco ASR 1000 18x1GE Ethernet Port Adapter	EPA-18X1GE

**Table 3.** Cisco ASR 1000 Series Fixed Ethernet Line Cards compatible hardware (6x10GE and 2x10GE + 20x1GE)

Product name	Part number
Cisco ASR 1004 Router Chassis	ASR1004
Cisco ASR 1006 Router Chassis	ASR1006
Cisco ASR 1006-X Router Chassis	ASR1006-X
Cisco ASR 1009-X Router Chassis	ASR1009-X
Cisco ASR 1013 Router Chassis	ASR1013
Cisco ASR 1000 Route Processor 2	ASR1000-RP2
Cisco ASR 1000 Route Processor 3	ASR1000-RP3
Cisco ASR 1000 Embedded Services Processor, 40G	ASR1000-ESP40 (Up to 4 ASR1000-2T+20X1GE/ASR1000-6TGE on ASR1013 with ESP40)
Cisco ASR 1000 Embedded Services Processor, 100G	ASR1000-ESP100
Cisco ASR 1000 Embedded Services Processor, 200G	ASR1000-ESP200

Refer to the [Cisco ASR 1000 Series Fixed Ethernet Line Card Hardware Installation Guide](#) for the latest compatibility details.

**Table 4.** Cisco ASR 1000 Series 100G modular interface processor compatible hardware (ASR1000-MIP100)

Product name	Part number
Cisco ASR 1000 1x100GE Ethernet Port Adapter	EPA-1X100GE
Cisco ASR 1000 2x40GE Ethernet Port Adapter (breakout cable)	EPA-CPAK-2X40GE
Cisco ASR 1000 10x10GE Ethernet Port Adapter	EPA-10X10GE
Cisco ASR 1000 18x1GE Ethernet Port Adapter	EPA-18X1GE
Cisco ASR 1000 2x40GE Ethernet Port Adapter (Native QSFP)	EPA-2X40GE
Cisco ASR 1000 1x40GE Ethernet Port Adapter (2 physical QSFP ports - optional license to enable 2 <sup>nd</sup> port)	EPA-1X40GE
Cisco ASR 1006-X Router Chassis	ASR1006-X
Cisco ASR 1009-X Router Chassis	ASR1009-X
Cisco ASR 1013 Router Chassis	ASR1013
Cisco ASR 1000 Route Processor 2	ASR1000-RP2
Cisco ASR 1000 Route Processor 3	ASR1000-RP3
Cisco ASR 1000 Embedded Services Processor, 100G	ASR1000-ESP100
Cisco ASR 1000 Embedded Services Processor, 200G	ASR1000-ESP200

**Table 5.** Minimum Cisco IOS XE Software version for Ethernet line cards

Product name	Product number	Minimum Cisco IOS XE Software release
Cisco ASR 1000 Fixed Ethernet Line Card (6x10GE)	ASR1000-6TGE	XE 3.12
Cisco ASR 1000 Fixed Ethernet Line Card (20x1GE + 2x10GE)	ASR1000-2T+20X1GE	XE 3.10
Cisco ASR 1000 Ethernet Line Card, 100G Modular Interface Processor	ASR1000-MIP100	XE 3.16.1 XE 16.2.1

**Table 6.** Minimum Cisco IOS XE Software version for Ethernet port adapters

Product number	ASR1002-HX	ASR1000-MIP100 (ASR1006-X, ASR1009-X, ASR1013)
EPA-1X100GE	XE 16.4.1	XE 3.16.1 XE 16.2.1
EPA-CPAK-2X40GE	XE 16.4.1	XE 3.16.2 (no XE 3.17) XE 16.3.1
EPA-10X10GE	XE 16.3.1	XE 16.2.1
EPA-18X1GE	XE 16.2.1	XE 16.3.1
EPA-1X40GE	XE 16.6.2	XE 16.6.2
EPA-2X40GE	XE 16.6.2	XE 16.6.2

**Table 7.** Minimum Cisco IOS XE Software version for MACsec support

Product number	ASR1001-X	ASR1001-HX	ASR1002-HX	ASR1000-MIP100 (ASR1006-X, ASR1009-X, ASR1013)
Built-in 1 GE ports	XE 3.13.1	XE 16.4.1	XE 16.3.1	N/A
Built-in 10 GE ports	XE 3.13.1	XE 16.4.1	XE 16.3.1	N/A
EPA-1X100GE	–	–	Does not support MACsec	Does not support MACsec
EPA-CPAK-2X40GE	–	–	Does not support MACsec	Does not support MACsec
EPA-10X10GE	–	–	XE 16.3.2/XE 16.4.1	XE 16.3.1
EPA-18X1GE	–	–	XE 16.3.1	XE 16.3.2/XE 16.4.1
EPA-1X40GE	–	–	Future	Future

Product number	ASR1001-X	ASR1001-HX	ASR1002-HX	ASR1000-MIP100 (ASR1006-X, ASR1009-X ASR1013)
EPA-2X40GE	–	–	Future	Future

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### For more information

For more information about the Cisco ASR 1000 Series Fixed Ethernet Line Cards, visit [https://www.cisco.com/c/en/us/td/docs/routers/asr1000/install/guide/modular\\_linecard/asr1\\_mlc\\_hig/mlc\\_asr1\\_overview.html](https://www.cisco.com/c/en/us/td/docs/routers/asr1000/install/guide/modular_linecard/asr1_mlc_hig/mlc_asr1_overview.html) or contact your local Cisco account representative.



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