



# New Features in and Important Notes About Cisco ASR 1000 Series Aggregation Services Routers Release 3.16S

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This chapter provides information about the new features introduced in Cisco ASR 1000 Series Aggregation Services Routers Release 3.16S. In addition, important notes about this release are also included.

This chapter contains the following sections:

- [New and Changed Information, page 41](#)
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## New and Changed Information

The following sections list the new hardware and software features that are supported by the Cisco ASR 1000 Series Routers for Cisco IOS XE Release 3.16S:

- [New Hardware in Cisco ASR 1000 Series Aggregation Services Routers Release 3.16.2S, page 42](#)
- [New Hardware in Cisco ASR 1000 Series Aggregation Services Routers Release 3.16.1aS, page 42](#)
- [New Hardware in Cisco ASR 1000 Series Aggregation Services Routers Release 3.16S, page 42](#)
- [New Software Features in Cisco ASR 1000 Series Aggregation Services Routers Release 3.16.2S, page 42](#)
- [New Software Features in Cisco ASR 1000 Series Aggregation Services Routers Release 3.16.1aS, page 43](#)
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## New Hardware in Cisco ASR 1000 Series Aggregation Services Routers Release 3.16.2S

The Cisco ASR 1000 Series Aggregation Services Routers Release 3.16.2S introduces the 2-Port 40 Gigabit Ethernet EPA with CPAK and Breakout Cable (EPA-CPAK-2x40GE).

### 2-Port 40 Gigabit Ethernet EPA with CPAK and Breakout Cable (EPA-CPAK-2x40GE)

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/routers/asr1000/install/guide/modular\\_linecard/asr1\\_mlc\\_high.html](http://www.cisco.com/c/en/us/td/docs/routers/asr1000/install/guide/modular_linecard/asr1_mlc_high.html)

**Note**

This hardware is supported only on Cisco IOS XE Release 3.16.2S and later releases. This hardware is not supported on Cisco IOS XE Release 3.17S.

## New Hardware in Cisco ASR 1000 Series Aggregation Services Routers Release 3.16.1aS

The Cisco ASR 1000 Series Aggregation Services Routers Release 3.16.1aS introduces the Cisco ASR 1009-X Router and Cisco ASR 1006-X Router.

### Cisco ASR 1009-X Router and Cisco ASR 1006-X Router

The Cisco ASR1006-X Router and Cisco ASR1009-X Router create a future-proof modular routing platform to support next generation Forwarding and Route Processor modules with hardware redundancy. The Cisco ASR1006-X Router and Cisco ASR1009-X Router provide up to 200 Gbps slot bandwidth to enable new high density Ethernet linecards utilizing the ASR1000-MIP100 and Ethernet Port Adapters (EPAs), and integrating N+1 power-on-demand design to the ASR1000 portfolio.

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/routers/asr1000/install/guide/1009X\\_1006X/asr1009x\\_1006xhigh.html](http://www.cisco.com/c/en/us/td/docs/routers/asr1000/install/guide/1009X_1006X/asr1009x_1006xhigh.html)

## New Hardware in Cisco ASR 1000 Series Aggregation Services Routers Release 3.16S

No new hardware features were introduced in Cisco ASR 1000 Series Aggregation Services Routers Release 3.16.0S.

## New Software Features in Cisco ASR 1000 Series Aggregation Services Routers Release 3.16.2S

The following software feature was introduced in Cisco ASR 1000 Series Aggregation Services Routers Release 3.16.2S.

## Cisco ASR 1000 Series Modular Ethernet Line Card

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/interfaces\\_modules/shared\\_port\\_adapters/configuration/ASR1000/modular\\_ethernet\\_linecard/ASRmelconf\\_guide.html](http://www.cisco.com/c/en/us/td/docs/interfaces_modules/shared_port_adapters/configuration/ASR1000/modular_ethernet_linecard/ASRmelconf_guide.html)

## New Software Features in Cisco ASR 1000 Series Aggregation Services Routers Release 3.16.1aS

The following feature was introduced in Cisco ASR 1000 Series Aggregation Services Routers Release 3.16.1aS.

## Cisco ASR 1000 Series Modular Ethernet Line Card

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/interfaces\\_modules/shared\\_port\\_adapters/configuration/ASR1000/modular\\_ethernet\\_linecard/ASRmelconf\\_guide.html](http://www.cisco.com/c/en/us/td/docs/interfaces_modules/shared_port_adapters/configuration/ASR1000/modular_ethernet_linecard/ASRmelconf_guide.html)

## New Software Features in Cisco ASR 1000 Series Aggregation Services Routers Release 3.16.0S

The following are the new software features introduced in Cisco ASR 1000 Series Aggregation Services Routers Release 3.16.0S.

### Adaptive QoS Enhancements

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos\\_plcshp/configuration/xs/asr1000/qos-plcshp-xe-3s-asr-1000-book/qos-plcshp-adaptive-qos-dmvpn.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos_plcshp/configuration/xs/asr1000/qos-plcshp-xe-3s-asr-1000-book/qos-plcshp-adaptive-qos-dmvpn.html)

### Auto-custom

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos\\_nbar/configuration/xs/qos-nbar-xe-3s-book.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos_nbar/configuration/xs/qos-nbar-xe-3s-book.html)

### Asymmetric Routing Support for NAT64

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/ipaddr\\_nat/configuration/xs/nat-xe-3s-book/iadnat-stateful-nat64.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/ipaddr_nat/configuration/xs/nat-xe-3s-book/iadnat-stateful-nat64.html)

### Asymmetric Routing Enhancements for NAT44

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/ipaddr\\_nat/configuration/xs/nat-xe-3s-book/sec-d-ata-asym-route.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/ipaddr_nat/configuration/xs/nat-xe-3s-book/sec-d-ata-asym-route.html)

## Cisco ASR 1009-X Router and Cisco ASR 1006-X Router

Cisco ASR 1006-X Router and Cisco ASR 1009-X Router are the new modular routing platforms that support ESP and RP modules with hardware redundancy, provide up to 200 Gbps slot bandwidth to enable high density Ethernet line cards, and integrate N+1 power-on-demand design for ASR 1000 Series Routers.

## Custom App based on any NBAR2 extracted field

The Custom App Based on any NBAR2 Extracted Field feature provides additional custom protocol capabilities to NBAR2, which are provided through Protocol Packs in accordance with Cisco's Protocol Packs release policy.

## DMVPN Akamai NAT Ph2

The DMVPN Akamai NAT Ph2 feature leverages the tunnel inside another tunnel feature to enable the usage of point-to-point GRE tunnel interface between a hub or spoke to an Akamai gateway as source interface for DMVPN tunnel between hub and spoke.

## Domain Name System Security Extensions

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/ipaddr\\_dns/configuration/xs-3s/asr1000/dns-xe-3s-asr1000-book/Configuring\\_DNS.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/ipaddr_dns/configuration/xs-3s/asr1000/dns-xe-3s-asr1000-book/Configuring_DNS.html)

## Early Dialog UPDATE Block

For detailed information, see the following Cisco document:

<http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/voice/cube/configuration/cube-book/voi-cube-edupdate-block.html>

## EIGRP iWAN Simplification

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/iproute\\_eigrp/configuration/xs-3s/asr1000/ire-xe-3s-asr1000-book/ire-iwan-simpl.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/iproute_eigrp/configuration/xs-3s/asr1000/ire-xe-3s-asr1000-book/ire-iwan-simpl.html)

## EOAM over Port Channel

For detailed information, see the following Cisco document:

<http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/cether/configuration/xs-3s/ce-xe-3s-book/ce-cfm-ieee.html>

## EoGRE: Inter-chassis HA

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/routers/asr1000/configuration/guide/chassis/IWAG\\_Config\\_Guide\\_BookMap/eogre-iwag-inter-chassis-ha.html](http://www.cisco.com/c/en/us/td/docs/routers/asr1000/configuration/guide/chassis/IWAG_Config_Guide_BookMap/eogre-iwag-inter-chassis-ha.html)

## Flexible Netflow - Top N Talkers Support

For detailed information, see the following Cisco document:

<http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/fnetflow/configuration/xe-3s/asr1000/fnf-xe-3s-asr1000-book/cgf-topn.html>

## IWAN serviceability -- Application aware Ping, Traceroute

The **ping** and **traceroute** command can determine if IWAN is enabled on a LAN interface thereby deciding if a packet must be to be injected in the ingress path or follow the regular path. The ping and traceroute commands are updated so that packets follow the same path when received on a LAN interface.

## L3 custom any IP/Port

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos\\_nbar/configuration/xe-3s/asr1000/qos-nbar-xe-3s-asr-1000-book/dscp-layer3-cust-app.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos_nbar/configuration/xe-3s/asr1000/qos-nbar-xe-3s-asr-1000-book/dscp-layer3-cust-app.html)

## LISP MIB

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/iproute\\_lisp/configuration/xe-3s/asr1000/irl-xe-3s-asr1000-book/irl-overview.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/iproute_lisp/configuration/xe-3s/asr1000/irl-xe-3s-asr1000-book/irl-overview.html)

## MacSec max concurrent peer scale improvment

For detailed information, see the following Cisco document:

<http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/macsec/configuration/xe-3s/macsec-xe-3s-book.html>

## MACSec support on Wallander

For detailed information, see the following Cisco document:

<http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/macsec/configuration/xe-3s/macsec-xe-3s-book.html>

## Mid-call signaling block - ReINVITE Consumption

For detailed information, see the following Cisco document:

<http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/voice/cube/configuration/cube-book/voi-cube-midcall-reinvite.html>

## MPLS LDP - IGP Synchronization

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/mp\\_ldp/configuration/xe-3s/asr1000/mp-ldp-xe-3s-asr1000-book/mp-ldp-igp-synch.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/mp_ldp/configuration/xe-3s/asr1000/mp-ldp-xe-3s-asr1000-book/mp-ldp-igp-synch.html)

## MPLS MTU command for GRE Tunnels

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/mp\\_l2\\_vpns/configuration/xe-3s/asr1000/mp-l2-vpn-s-xe-3s-asr1000-book/mp-any-transport-xe.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/mp_l2_vpns/configuration/xe-3s/asr1000/mp-l2-vpn-s-xe-3s-asr1000-book/mp-any-transport-xe.html)

## NBAR2 DNS-AS support

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos\\_nbar/configuration/xe-3s/qos-nbar-xe-3s-book.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos_nbar/configuration/xe-3s/qos-nbar-xe-3s-book.html)

## NBAR2 server-name custom application

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos\\_nbar/configuration/xe-3s/qos-nbar-xe-3s-book.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos_nbar/configuration/xe-3s/qos-nbar-xe-3s-book.html)

## Potentially match

For detailed information, see the following Cisco document:

<http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos/command/qos-cr-book/qos-m1.html>

## PP support for 3.16/PI28

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos\\_nbar/configuration/xe-3s/qos-nbar-xe-3s-book.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos_nbar/configuration/xe-3s/qos-nbar-xe-3s-book.html)

## Selective Fine Grain

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos\\_nbar/configuration/xe-3s/asr1000/qos-nbar-xe-3s-asr-1000-book/nbar-fine-selapp-xe.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos_nbar/configuration/xe-3s/asr1000/qos-nbar-xe-3s-asr-1000-book/nbar-fine-selapp-xe.html)

## SGT Based PBR

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/iproute\\_pi/configuration/xe-3s/asr1000/iri-xe-3s-asr1000-book/m\\_iri-sgt-based-pbr.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/iproute_pi/configuration/xe-3s/asr1000/iri-xe-3s-asr1000-book/m_iri-sgt-based-pbr.html)

## Show unclassified port stats

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos\\_nbar/configuration/xe-3s/asr1000/qos-nbar-xe-3s-asr-1000-book/nbar-cust-assist-ssl.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos_nbar/configuration/xe-3s/asr1000/qos-nbar-xe-3s-asr-1000-book/nbar-cust-assist-ssl.html)

## SMI over virtual template

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos\\_plcshp/configuration/xe-3s/qos-plcshp-xe-3s-book/qos-plcshp-mgt-pln-prt.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos_plcshp/configuration/xe-3s/qos-plcshp-xe-3s-book/qos-plcshp-mgt-pln-prt.html)

## Spotlight NBAR2 visibility dashboard

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos\\_nbar/configuration/xe-3s/asr1000/qos-nbar-xe-3s-asr-1000-book/nbar2-vis-dashbd.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos_nbar/configuration/xe-3s/asr1000/qos-nbar-xe-3s-asr-1000-book/nbar2-vis-dashbd.html)

## SRND support

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos\\_nbar/configuration/xe-3s/qos-nbar-xe-3s-book.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/qos_nbar/configuration/xe-3s/qos-nbar-xe-3s-book.html)

## SSL - TLS 1.2 support

Cisco IOS SSL uses OpenSSL to perform SSL handshakes. To be on par with the standards in the industry and also to cater to your requirements for TLS 1.2 Cisco IOS SSL supports TLS 1.2 through the SSL - TLS 1.2 Support feature.

## Support for pass-through of unsupported content types in SIP INFO messages

For detailed information, see the following Cisco document:

<http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/voice/cube/configuration/cube-book/voi-cube-sip-info-messages.html>

## TrustSec Security Group Name Download

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/sec\\_usr\\_cts/configuration/xe-3s/asr1000/sec-cts-xe-3s-asr-1000-book/sec-cts-sg-download.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/sec_usr_cts/configuration/xe-3s/asr1000/sec-cts-xe-3s-asr-1000-book/sec-cts-sg-download.html)

## VXLAN- MCLAG Active-Active High Availability Support

For detailed information, see the following Cisco document:

[www.cisco.com/c/en/us/td/docs/ios-xml/ios/cether/configuration/xe-3s/asr1000/ce-xe-3s-asr1000-book/ce-active-ha-support.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/cether/configuration/xe-3s/asr1000/ce-xe-3s-asr1000-book/ce-active-ha-support.html)

## VxLAN Scaling Enhancement

For detailed information, see the following Cisco document:

[www.cisco.com/c/en/us/td/docs/ios-xml/ios/cether/configuration/xe-3s/asr1000/ce-xe-3s-asr1000-book/ce-conf-vxlan.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/cether/configuration/xe-3s/asr1000/ce-xe-3s-asr1000-book/ce-conf-vxlan.html)

## XE 3.16 GETVPN GDOI/COOP MIBS

For detailed information, see the following Cisco document:

[http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/sec\\_conn\\_getvpn/configuration/xe-3s/asr1000/sec-get-vpn-xe-3s-asr1000-book/sec-get-vpn-gdoi-mib-support.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/sec_conn_getvpn/configuration/xe-3s/asr1000/sec-get-vpn-xe-3s-asr1000-book/sec-get-vpn-gdoi-mib-support.html)

## XE Segment Routing - ISIS v4 node SID

For detailed information, see the following Cisco document:

[www.cisco.com/c/en/us/td/docs/ios-xml/ios/iproute\\_isis/configuration/xe-3s/asr1000/irs-xe-3s-asr1000-book/irs-seg-routg-isis.html](http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/iproute_isis/configuration/xe-3s/asr1000/irs-xe-3s-asr1000-book/irs-seg-routg-isis.html)

# Important Notes

The following sections contain important notes about Cisco ASR 1000 Series Aggregation Services Routers.

## End-of-Sale and End-of-Life of the Cisco Traditional NetFlow Feature

Cisco announces the end-of-sale and end-of-life of the Cisco Traditional NetFlow (TNF) Feature on the Cisco ASR1000 platform. Cisco will not have any future development, CLI support, TAC support, and documentation pertaining to the Cisco TNF feature beyond Cisco IOS XE Software Release 3.10.

Customers with the Cisco TNF feature on the Cisco ASR1000 platform are encouraged to migrate to the Cisco Flexible NetFlow (FNF) feature on the Cisco ASR1000 platform.

For details on transition to Cisco FNF, see the *Migrating from Traditional to Flexible NetFlow* white paper:

[http://www.cisco.com/en/US/prod/collateral/iosswrel/ps6537/ps6555/ps6601/ps6965/white\\_paper\\_c11-545581.html](http://www.cisco.com/en/US/prod/collateral/iosswrel/ps6537/ps6555/ps6601/ps6965/white_paper_c11-545581.html)

## Deferrals

Cisco IOS software images are subject to deferral. We recommend that you view the deferral notices at the following location to determine whether your software release is affected:

[http://www.cisco.com/en/US/products/products\\_security\\_advisories\\_listing.html](http://www.cisco.com/en/US/products/products_security_advisories_listing.html)



## Field Notices and Bulletins

- Field Notices—We recommend that you view the field notices to determine whether your software or hardware platforms are affected. You can find the field notices at the following location:

[http://www.cisco.com/en/US/support/tsd\\_products\\_field\\_notice\\_summary.html](http://www.cisco.com/en/US/support/tsd_products_field_notice_summary.html)

- Bulletins—You can find bulletins at the following location:

[http://www.cisco.com/en/US/products/sw/iosswrel/ps5012/prod\\_literature.html](http://www.cisco.com/en/US/products/sw/iosswrel/ps5012/prod_literature.html)

## Important Notes About Cisco ASR 1000 Series Aggregation Services Routers Release 3.16S

### Class of Restrictions (COR) Configuration

Class of Restrictions (COR) is a Cisco voice gateway feature that enables Class of Service (COS) or calling privileges to be assigned. It is most commonly used with Cisco Survivable Remote Site Telephony (SRST) and Cisco CallManager Express but can be applied to any dial peer. COR will work on Cisco ASR 1000 Series Aggregation Services Routers for Cisco IOS XE Release 3.17.3S and later releases only.

### radius-server host Command Deprecation

Effective with Cisco IOS XE Release 3.16.6S, the **radius-server host** command is deprecated. When you use this command a warning appears as follows:

```
Warning: This CLI will be deprecated soon
'radius-server host
Please move to 'radius server <name>' CLI
```



Note

It is noticed that the above warning appears when you configure the device using the **radius-server host** command. If a configuration is copied and pasted on the router, the warning does not appear.

For more information, see the **radius-server** command at this link:

<https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/security/m1/sec-m1-cr-book/sec-cr-r1.html#wp2612454069>.

