



## Release Notes for Cisco Agile Metro, Release 1.1

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# Cisco Agile Services Networking

Cisco Agile Services Networking is an architecture evolution of Cisco Converged SDN Transport (CSDN-T) that is focused on converging network infrastructure in multiple dimensions to change the way networks are built. The Metro solution considers edge as a set of functions which can be enabled anywhere in the network.

## Cisco Agile Metro

Cisco Agile Metro is a dynamic and flexible edge solution that is part of Cisco Agile Services Networking. The solution introduces new Silicon One A100, K100, and P100-based fixed and centralized routers and line cards to deliver improved experiences for residential, business and mobile services with a network that is simpler and more cost-effective to build, operate, and scale from locations closer to end-users.

The Agile Metro architecture focuses on these key aspects:

- Enhanced scale and resiliency through distributed networking
- Simplified packet transport and overlay services
- Simplified and converged business, residential, and transport infrastructure
- Enhanced automation

### Benefits of Agile Metro

These are the key benefits of Agile Metro:

- Technology benefits:
  - High-capacity edge silicon
  - Convergence of network service functions
  - Flexible network design and systems to fit any size location in the network
- Business benefits:
  - Deliver services closer to users and applications
  - Cost savings
  - Sustainability benefits
- Operational benefits:
  - Improved services resilience
  - Network efficiency
  - Enhanced operations through network automation and orchestration

## What's new in Agile Metro

### What's new in Agile Metro, Release 1.1

Cisco Agile Metro Release 1.1 continues to enhance the Agile Metro solution. The release introduces the 8011-4G24Y4H-I fixed aggregation router, powered by Cisco Silicon One, thereby enhancing hardware capabilities. Additionally, the solution integrates updated versions of Cisco Crosswork suite of network automation products, offering expanded capabilities to efficiently manage and assure large-scale networks.

For details on the latest version of various Agile Metro components, see the [Agile Metro components](#) section.

## Hardware introduced

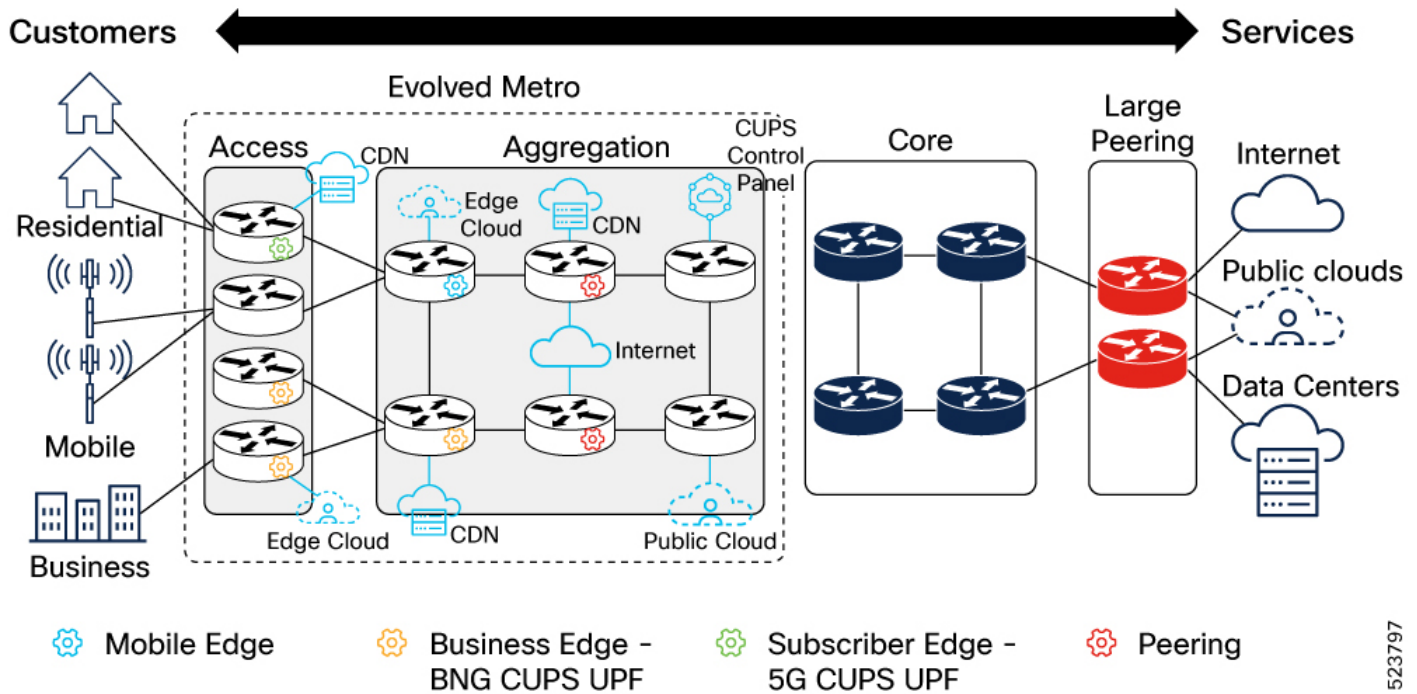
### Hardware introduced in Agile Metro, Release 1.1

Hardware	Release introduced	Description
<a href="#">8011-4G24Y4H-I</a>	Cisco IOS XR Software Release 25.1.1	Powered by the Cisco Silicon One A100 ASIC, the Cisco 8010 Series Large Density Fixed Routers offer Class C timing support and end-to-end encryption, enabling seamless network growth and scalability. They offer versatile Ethernet interface options, ranging from 1G and 25G to 100G and 400G. Built on the robust Cisco IOS XR operating system, these routers are designed for use in dense metro access and pre-aggregation deployments, delivering both Capital Expenditure (CapEx) savings and enhanced operational simplicity.

## Agile Metro architecture

The Metro network evolution is driven by increasing bandwidth demands, resulting in network functions distributed in the network closer to the end user. This evolution is driving a consequent network architecture evolution. The classical split between access, pre-aggregation, aggregation, and edge leaves room for a more homogeneous network without distinct boundaries between the domains.

Figure 1: Cisco Agile Metro architecture



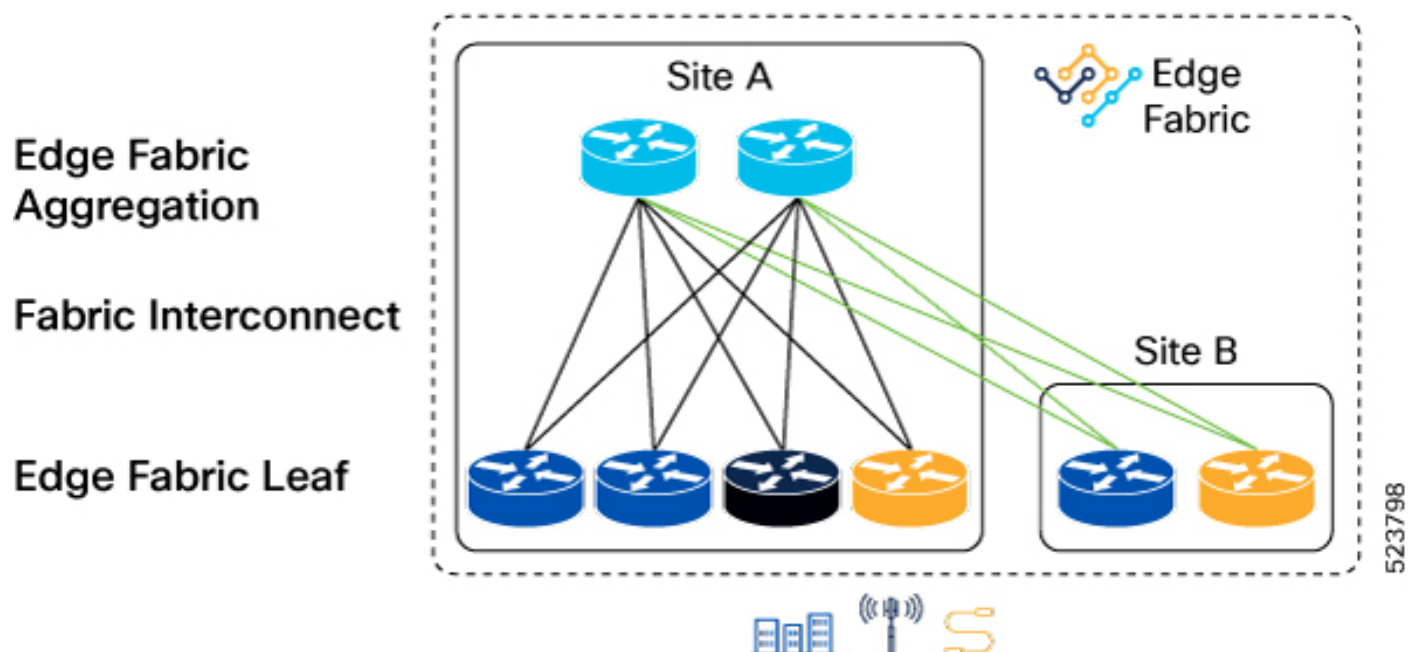
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## Metro Edge Fabric

This section details the new disaggregated Metro Edge Fabric, including its components and distributed control plane.

The Metro Edge Fabric is a component of Agile Metro architecture that is designed to provide scalable edge services termination. The Metro Edge Fabric is designed to enhance network efficiency and scalability by separating network functions into distinct physical layers. Cisco Fabric-based Edge solution is a composition of multiple routers in a leaf-spine architecture to accommodate required functionality and scale that cannot be met in a standalone multi-service edge (MSE) model.

**Figure 2: Metro Edge Fabric in Metro architecture**



### Edge Fabric leaf

Leaf nodes are the routers that are used for network service termination use cases. You can split the specific services across a set of leaf devices based on the design and network services. The leaf nodes may be collapsed into a universal leaf for all functions or split between different network or even VPN service type. All Cisco IOS XR platforms can be used as a leaf in the deployment depending on the feature requirements and feature scale.

### Edge Fabric spine

The Edge Fabric aggregation routers or spines are the nodes that provides underlay connectivity to all leaf nodes that include service termination nodes, core networking connecting nodes, edge DC connecting nodes, and so on. These spine nodes act as L3/SR-MPLS switch that carry overlay services across leaf nodes. Spine nodes have advanced policy-based traffic management functionalities to support end-to-end QoS for selective overlay services.

### Fabric interconnect

The fabric interconnects are the links connecting leaf nodes to spine nodes. Each leaf node must be connected to every spine node to provide maximum resiliency and load balancing across the fabric. It is recommended to standardize local interconnects to one type—copper (CU) or active optical cables (AOC) being the most cost-effective method. Interconnects may also utilize WAN connectivity in the case of remote leaf devices. Longer distances can be covered using Routed Optical Networking components such as ZR/ZR+, DP04QSDD-ER1, and QSFP-DD 100G ZR coherent optics.

### Fabric control plane

The Fabric uses standard routing protocols; it does not use proprietary communication between the elements. This allows providers to easily insert any type of node, including third-party node, into the fabric.

## Network technologies and protocols

The table gives a comparison of the common network technologies and protocols that are used in legacy networks vs. the Agile Metro.

**Table 1: Common network technologies and protocols used in legacy networks vs. the Agile Metro**

Network technology and protocol	Legacy network		Agile Metro
xVPN Services	LDP	BGP	BGP for all L2VPN, and L3VPN
IP Network Scaling	BGP-LU		Segment Routing
Traffic Engineering Fast Reroute	RSVP-TE		
MPLS Overlay Protocol	RSVP-TE	LDP	
IPv6 Transport Overlay	None		
IP to DWDM Transition	Transponder or Muxponder		
	Grey Router Interface		Routed Optical Networking
Private Line Services	Dedicated OTN	Dedicated Ethernet over DWDM	Private Line Emulation
Subscriber BNG	Physical Integrated BNG		Cisco CUPS using Cloud Native BNG
PON Access	Dedicated PON Equipment		Cisco Routed Passive Optical Networking

## Key pillars of Agile Metro architecture

These are the key pillars of Agile Metro architecture:

- Wide range of supported interfaces:
  - 1/10/25/50/100/400GE and beyond on unified family of Metro devices
  - Any speed user–network interface (UNI) with any service
  - High speed network-to-network interfaces (NNI) and Routed Optical Networking
- Simplified connectivity model and protocols:
  - Segment Routing IPv6 (SRv6) and SR-MPLS underlay networks; SRv6-TE and SR-MPLS TE for advanced Traffic Engineered use cases
  - Secured infrastructure using Trusted Cisco platforms and advanced distributed DDoS protection
  - Co-existence with legacy underlay and overlay technologies
- Business, residential, and mobile subscriber services:
  - EVPN and L3VPN in services layer
  - Private Line Emulation (PLE) for bit-transparent transport of Ethernet and non-Ethernet (OTN, SONET, Fiber Channel)

- Next-generation subscriber edge using control plane and user plane separation (CUPS)
- Converged business and subscriber access using Cisco Routed PON
- High performance end-to-end timing and synchronization
- Automation across all components in the architecture covering provisioning, monitoring, and service assurance

## High-level use cases of Agile Metro

The Agile Metro architecture covers these high-level use cases:

- Next-generation residential subscriber networks deployments
- Enterprise business services
- Mobile network IP transport
- Centralized and edge data center connectivity including networks that are built to support artificial intelligence
- Internet peering, content delivery, and cloud connectivity

## Agile Metro components

### Main components of Agile Metro

The table lists the main hardware and software components of Agile Metro and their compatible versions.

**Table 2: Compatibility matrix for Agile Metro components**

Agile Metro component	Hardware or software component	Component version (Agile Metro 1.0)	Component version (Agile Metro 1.1)
Cisco routers	<a href="#">Cisco ASR 9000 Series Routers</a> <a href="#">Cisco NCS 540 Series Routers</a> <a href="#">Cisco NCS 5500 Series Routers</a> <a href="#">Cisco NCS 5700 Series Routers</a> <a href="#">Cisco 8000 Series Routers</a> <a href="#">Cisco 8700 Series Routers</a> <a href="#">Cisco Catalyst (SD-WAN)</a>	Not applicable	Not applicable
NOS for Cisco ASR 9000, NCS 540, NCS 5500, NCS 5700, Cisco 8000, and Cisco 8700 Series Routers	Cisco IOS XR Software	24.4.1	25.2.1

Agile Metro component	Hardware or software component	Component version (Agile Metro 1.0)	Component version (Agile Metro 1.1)
NOS for Cisco Catalyst 8500 Series Edge Platforms	Cisco IOS XE Software	17.15	17.15
Edge Fabric Management	Metro Fabric Manager Function Pack	1.0	1.0
DDoS Controller	Cisco Secure DDoS Edge Protection	24.07.09.2976	25.02.01.3261
IP Controller	<a href="#">Cisco Crosswork Network Controller</a>	7.0.1	7.1.0
Multi-Layer Controller	<a href="#">Cisco Crosswork Hierarchical Controller</a>	9.0	11.0
Network Services Orchestrator	<a href="#">Cisco Crosswork Network Services Orchestrator</a>	6.1.11.2	6.4.1.1
Workflow Management	<a href="#">Cisco Crosswork Workflow Manager</a>	1.2	2.0
SD-WAN Controller	<a href="#">Cisco Catalyst SD-WAN Manager</a>	17.15.1	17.15.1
Provider Connectivity Assurance Sensor Management	CPCA Sensor Control CPCA Orchestrator	22.x	22.x
PON Management	<a href="#">Cisco Routed PON Manager</a>	5.0	5.0
<a href="#">CUPS</a> Control Plane	<a href="#">Cisco Cloud Native BNG (cnBNG) Control Plane</a>	2024.04.0 with Cloud Native Deployment Platform (CNDP) 24	2025.02.0 with Cloud Native Deployment Platform (CNDP) 25
<a href="#">CUPS</a> User Plane	<a href="#">Cisco Cloud Native BNG (cnBNG) User Plane:</a> Cisco ASR 99XX modular chassis with Cisco ASR 9000 5th generation High Density Ethernet line cards: <a href="#">ASR 9902</a> <a href="#">ASR 9903</a>	24.4.1	25.2.1
CnBNG CFP for Day-0 and Day-1 Management	CNBNG SMI-NSO CFP	2024.04.0	2025.02.0

## Supported Cisco IOS XR OS products for Agile Metro

The table lists the supported Cisco IOS XR OS products for Agile Metro and the introduced release.

Product	Product ID	Introduced Agile Metro release
Cisco ASR 9000 Series Routers	ASR 9902 ASR 9903	1.0



<b>Product</b>	<b>Product ID</b>	<b>Introduced Agile Metro release</b>
Cisco 8000 Series Routers (Q200-based)	8201-24H8FH 8201-32FH 8202-32FH-M	1.0
	Cisco 8608 (Centralized): 86-MPA-14H2FH-M 86-MPA-24Z-M 86-MPA-4FH-M	1.0
Cisco 8000 Series Routers (P100-based)	8711-32FH-M 8212-48FH-M	1.0
Cisco 8000 Series Routers (K100-based)	8712-MOD-M	1.0
Cisco 8000 Series Routers (A100-based)	8011-4G24Y4H-I	1.1
Cisco NCS 5500 Series Routers	NCS 55A1: NCS-55A1-24Q6H-S NCS-55A1-24Q6H-SS (MACsec)	1.0
Cisco NCS 55A2 Series Routers  Cisco NCS 57C3 Series Routers	NCS-55A2-MOD-SE NCS-57C3-MOD-SE-S NCS-55A2-MOD-S NCS-57C3-MOD-S	1.0
Cisco NCS 5700 Series Routers	NCS-57B1-5DSE-SYS NCS-57B1-6D24-SYS NCS-57D2-18DD NCS-57C1-48Q6-SYS	1.0
Line cards for Cisco NCS 5500 Series Routers	NC57-48Q2D-S NC57-48Q2D-SE-S NC57-36H6D-S	1.0

Product	Product ID	Introduced Agile Metro release
Cisco NCS 540 Series Routers	N540-24Z8Q2C-SYS N540-ACC-SYS N540-24Q8L2DD-SYS N540X-16Z4G8Q2C-D/A N540-28Z4C-SYS-D/A	1.0
Cisco IOS XRv 9000 Router	Cisco IOS XRv 9000	1.0
Cisco IOS XRd virtual router	Cisco IOS XRd vRouter	1.0

## Automation components of Agile Metro

The table lists the main automation components of Agile Metro and their compatible versions.

Automation component	Component version (Agile Metro 1.0)	Component version (Agile Metro 1.1)
<a href="#">Cisco Crosswork Network Controller</a>	7.0.1	7.1
<a href="#">Cisco Crosswork Hierarchical Controller</a>	9.0	11.0
<a href="#">Cisco Crosswork Network Services Orchestrator</a>	6.1.3.1	6.4.1.1
<a href="#">Cisco Crosswork Workflow Manager</a>	1.2	2.0
<a href="#">Cisco Cloud Native BNG (cnBNG) Control Plane</a>	2024.04.0 with Cloud Native Deployment Platform (CNDP) 24	2025.02.0 with Cloud Native Deployment Platform (CNDP) 25
Cisco Cloud Native BNG NSO SMI Deployer	2024.04.0	2025.02.0
Crosswork Planning	7.0.1	7.1.0
Cisco Provider Connectivity Assurance	24.2	24.2
CX Fabric Manager	1.0	1.0

## Caveats

To know about the open caveats associated with the Cisco Agile Metro components, see the product Release Notes for the respective release.

- [Release Notes for Cisco IOS XR Software products](#)
- [Release Notes for Cisco Crosswork Network Controller](#)

## Related documentation

Use this Release Notes along with these referenced documents:

- Cisco Metro Solution Guide
- [Cisco Catalyst SD-WAN](#)
- [Cisco Crosswork Hierarchical Controller](#)
- [Cisco Crosswork Network Controller](#)
- [Cisco Crosswork Network Services Orchestrator](#)
- [Cisco Crosswork Workflow Manager](#)
- [Cloud Native BNG Control Plane](#)
- [Cloud Native BNG User Plane](#)
- [Cisco Provider Connectivity Assurance](#)
- [Cisco Routed Optical Networking](#)
- [Cisco Routed Passive Optical Networking](#)





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