Agile Data Center Connectivity

Cisco® Agile Data Center Connectivity is a flexible and scalable distributed edge solution that is part of Cisco Agile Services Networking, a new and innovative architecture to power AI connectivity, designed for the intelligent delivery of highly differentiated services at scale.

Agile Data Center Connectivity provides a converged IP and optical infrastructure for connecting distributed data centers while extending reliable connectivity and performance to users and endpoints. Data Center Interconnect (DCI) technology can be used for robust inter-data center communication and metro/core infrastructure to support the performance demands of Artificial Intelligence (AI) applications, helping ensure reliable, secure, and high-speed access for end users.

Benefits

- **High-performance connectivity.** Adaptable and flexible handling of AI traffic across data centers, users, and devices provides seamless and efficient transport.
- **Optimized CapEx and OpEx.** High-performance systems consume less energy while automation reduces spend.
- **Improved quality of experiences.** Proactive, intent-based assurance with real-time telemetry and granular performance metrics across devices improves the end user experience.

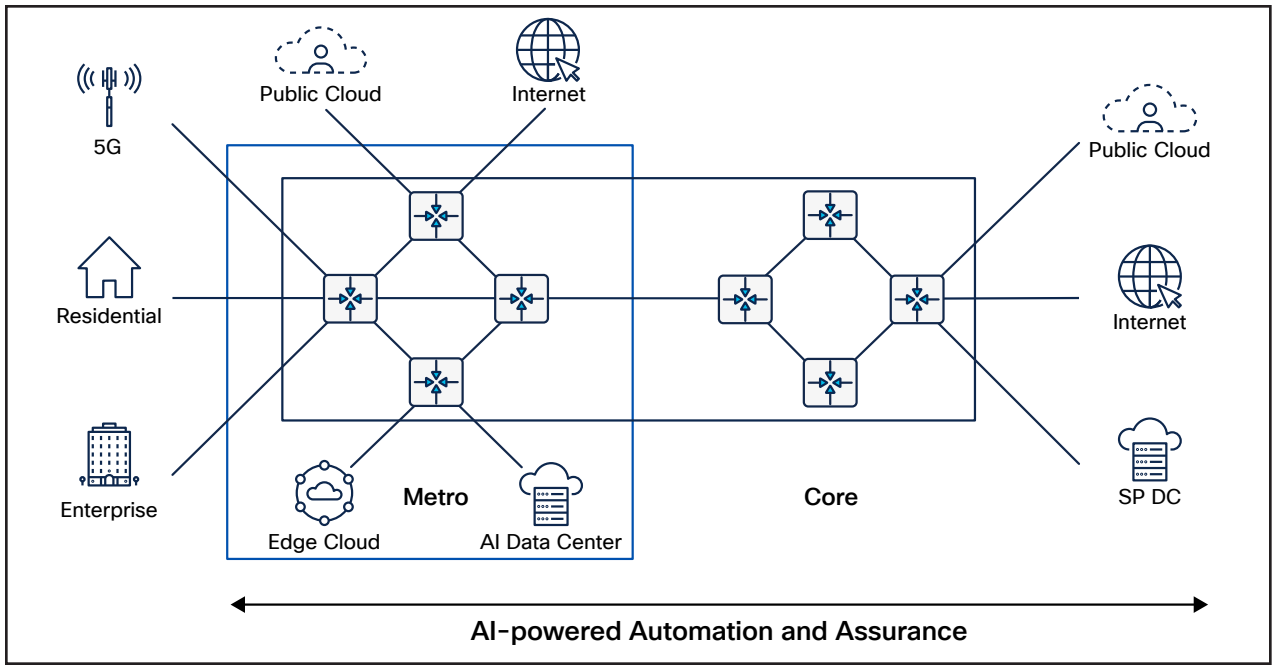

Figure 1. Agile Data Center Connectivity

Drive seamless data center interconnectivity

AI is generating an increasing amount of data that must be processed, transported, and accessed across a growing number of connected devices, locations, and users. To manage this data—and the services that rely on it—service providers must rethink the way they design and structure their networks.

More than half of organizations today expect data volumes will grow by 16% to 30% next year (source: IDC). AI-training and inference applications will be increasingly distributed across data centers (source: 2025 MEF NaaS Industry Blueprint). S&P Global Market Intelligence agrees, projecting that by 2027 62% of total data will be processed at the edge. Meanwhile, a recent Lightwave white paper states that 40% of internet content providers already report AI workloads are driving an increase in DCI capacity of up to 30%.

Agile Data Center Connectivity demonstrates how advanced networking technologies and strategies, particularly those driven by AI demands, can be deployed to optimize data center interconnectivity.

A cut above the rest

Cisco sets itself apart through advanced Cisco Silicon One™ based routing platforms and Cisco coherent pluggable optics. The Cisco 8000 Series third-generation portfolio, powered by the carrier-grade Cisco IOS® XR network operating system, offers enhanced performance and robust power efficiency. Cisco coherent pluggable optics deliver coherent wavelengths directly from 100 Gbps to 800 Gbps IP ports using standardized ZR/ZR+ optics to connect simplified optical line systems at distances up to 3000 km at dramatically reduced cost.

Routed optical networking converges optical and IP networking layers to provide scalable, efficient, and reliable connectivity. It uses high-density routers with coherent pluggable optics to converge services over an IP infrastructure connected by simplified optical line systems. When combined with multilayer automation and assurance, this approach simplifies converged network operations and improves digital experiences. Routed optical networking can reduce your total cost of ownership by up to 48%, with energy savings up to 83% (source: ACG report).

Further, assured connectivity services with real-time telemetry and analytics, intent-based provisioning, health monitoring, and optimization make it simple to automate and scale deployments.

This use case highlights the integration of Cisco's cutting-edge technologies to drive seamless data center interconnectivity and endpoint connections, addressing the critical needs of modern enterprises and service providers.

Provide high-bandwidth, low-latency connectivity between edge, regional, and centralized data centers

Agile Data Center Connectivity enhances the way data centers connect to one another and to users through a robust metro/core infrastructure, helping ensure seamless, high-performance connectivity across distributed edge data centers. This approach not only supports traditional data demands but is particularly tuned to handle the intensive requirements of increasingly distributed applications like AI training and inferencing, including for generative and agentic AI.

How does it work?

- **Cisco Routed Optical Networking** combines IP and optical layers into a single network domain, reducing complexity and improving bandwidth efficiency for large AI data loads.
- **Metro/core infrastructure** enables robust connectivity for linking data centers to end users and endpoints, helping ensure data accessibility and application responsiveness.
- **End-to-end policy control** and network programmability with segment routing enable differentiated network slices that can help ensure that DCI applications meet stringent performance requirements, boosting the overall efficiency of data transport.

Learn more

Learn how Cisco Agile Services Networking can help you monetize services with an architecture optimized for intelligent delivery. Remove complexity and assure experiences with resilient networks and services enabled by AI-powered automation, observability, and security.

Explore the Cisco Crosswork Network Controller and Automated Assurance.

Explore the 8000 Series Routers, ASR 9000, NCS 5700/5500, and Agile Metro.

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