



Juniper's Cloud Metro Powers the Next Generation of 5G, Edge and IoT Services

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April 15, 2021

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Today, Juniper Networks announced a new vision for the future of metro networks: [Cloud Metro](#). By reimagining metro networks, operators can start overcoming their most pressing business and technical challenges and reinvent their role in the digital ecosystem.

Why is the Cloud Metro such a big deal? With the acceleration of 5G, IoT and edge services, there are incredible opportunities for network operators to benefit from this growing digitalization—and a host of new challenges, as well. These new and distributed applications are shifting service delivery from the traditional provider edge into the metro, driving more volume, more velocity and more variety of traffic within the metro. Suddenly, a new generation of [5G](#), Internet of Things (IoT) and distributed edge services become possible. And large service provider and enterprise networks are the engines that power it all.

Before we can get there, we need to start thinking differently about a part of the network that's been overlooked for too long: the metro. And by "metro", we mean that critical part of the infrastructure today that handles access and aggregation, where all the many things accessing the network come together. To unleash tomorrow's digital experiences, we must rethink our basic ideas about how metros are architected, how we operate them and even what they're used for.

Introducing the Cloud Metro for a Changing Landscape

In the next few years, metro traffic will grow 4x faster than anywhere else in the network—and most of it will stay there, serving distributed edge services. The lines separating different parts of the network and services (business, residential, mobile xHaul) will blur. And new distributed 5G and edge services will push nearly a third of all workloads out to edge clouds. Traditional metro networks built to trombone traffic through a centralized core won't get the job done. To capitalize on new 5G and edge

opportunities, network operators need a network built around experience-driven outcomes, not connectivity. They need a Cloud Metro.

Juniper's Cloud Metro vision reimagines today's siloed, point-to-point metro networks as a single, versatile IP services fabric. Our vision is built on our experience with cloud-scale operators managing massive networks at scale with automated operations. Today, we've translated those design concepts to address new needs of next-generation Metro networks. Unlike today's fragmented architectures, a Cloud Metro is built for resource-pooling, network slicing and automated cloud-based operations. It interfaces with both physical and virtual network functions to offer distributed services closer to the end user. It intelligently distributes user plane functions and the service edge wherever needed to maximize efficiency and quality. Plus, it uses a cloud-like architecture to bring cloud agility and resiliency to metro networks.

Juniper Cloud Metro: Built for Experience-First Networking



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Our Cloud Metro solution is built on three core pillars:

- **Massively scalable IP services fabric:** Juniper offers a comprehensive portfolio of platforms optimized to support any Cloud Metro use case. That includes options to move up to cloud-scale link and interface speeds (including 400G ZR/ZR+) and the latest optical technologies. And it includes platforms that meet the most stringent timing and synchronization requirements for ultra-low latency 5G enterprise services. All offer the same consistent behavior, with the same automation and a "One Junos experience" across all platforms. At the same time, an IP services fabric enables network operators to scale up with current ring topologies, but also to use scale-out topologies. These improve metro scalability

and reliability while freeing up huge amounts of protected bandwidth that currently go unused. To enhance this services fabric, Juniper is announcing two new additions to the Metro portfolio. These new platforms, designed for both metro and data center use cases, bring 4.8-Tbps of forwarding ASIC capacity and 400GbE interfaces with support for ZR/ZR+ optics to the [ACX family](#):

- **The [ACX7100-48L](#)**, a high-capacity, high-density aggregation router, is designed for the most demanding 5G use cases, offering highly flexible configuration of native 10GE, 25GE and 50GE on service ports.
- **The [ACX7100-32C](#)**, a high-capacity, secure router, delivers high fan-out density for flexible 100/400GbE use cases.
- **Service intelligence:** We've taken the most powerful cloud principles used in massive hyperscale data centers and adapted them for metro networks. The result is a service-aware Cloud Metro that facilitates any-to-any intelligent traffic steering across distributed services. The Cloud Metro brings modern traffic engineering protocols, like EVPN, SR/SRv6 and FlexAlgo, to enable new distributed service experiences. And it draws on emerging network slicing and service-aware technologies to facilitate Experience-First Networking.
- **End-to-end automation:** Our [recently announced Paragon Automation](#) portfolio provides modular, cloud-native software applications that deliver closed-loop automation in the most demanding 5G and multicloud environments. These tools provide industry-leading capabilities to make metro networks “plug-and-play” and enable zero-touch deployments and zero-touch provisioning (ZTP). They can help automate the end-to-end service lifecycle, from initial provisioning to continuous assurance. And they enable closed-loop automation to optimize Cloud Metro performance.

Together, these capabilities create a foundation for a world of new 5G, edge and IoT services. And they enable superior end-user experiences—all automatically measured and assured.

Expanding Metro Capabilities

What can network operators do with a Cloud Metro from Juniper? For starters, they can:

- **Use one converged network for all use cases:** A Cloud Metro converges all metro use cases—residential, business, mobile xHaul transport—onto a single converged architecture with a single operational model. Network operators can apply special treatment to different traffic and service types, under different service-level agreements (SLAs) and over the same infrastructure.
- **Enable agile service delivery:** A Cloud Metro intelligently steers traffic to the right physical and virtualized resources, in the most efficient way, to optimize the user experience. It optimizes capacity and utilization with CUPS and modern traffic engineering protocols. And it uses our unique Active Assurance technology to

measure actual service quality—not just infer it based on passive testing—and ensure that each slice meets the required SLA.

- **Support both brownfield and greenfield environments:** No matter at what point network operators start, they can evolve toward a Cloud Metro architecture. When building out a new greenfield deployment, they can build a metro that looks and acts like a cloud scale-out environment. Meanwhile, they can scale up capacity and intelligence in existing ring topologies, with both architectures coexisting in the same network. Network operators can also gradually migrate traffic, while improving resiliency and agility as they go.

Reimagine the Metro

The looming 5G, IoT and cloud era brings incredible opportunity for businesses in every industry—and a host of daunting new challenges. Many of these challenges can only be solved by operators and their transformed networks. But network operators won't be able to meet these challenges by relying on a metro designed for yesterday's static transport and aggregation needs.

With a Cloud Metro, network operators can drive down the costs and complexity of today's siloed metro architectures and operations. More importantly, they can add unique value to the most exciting new 5G and edge applications. They can be the sole player in the digital ecosystem that brings cloud resources and intelligence closer to end users while providing the latencies, timing and guaranteed performance to make next-generation digital experiences possible.

Learn More about Cloud Metro

Ready to start your metro transformation? Visit the [Cloud Metro web page](#)