

INFOBRIEF

# Checklist for Packet Performance

Cloud services, broadband video, mobile technologies, apps, and other forms of information and entertainment are all driving tremendous traffic volumes on metro networks. This packet-based network traffic, connecting people to content, travels on metro networks as soon as it leaves the data center. Network providers are feeling the pressure of unpredictable traffic volume, and current solutions only add complexity. What is needed is a converged packet and optical solution that allows providers to keep pace with demand growth while reducing complexity and enabling the addition of new services.

Following is a list of concepts driving the evolution of metro networks today, with descriptions of how Ciena's programmable 8700 Packetwave® Platform can lower costs and reduce power consumption and space requirements while meeting ever-growing bandwidth demands.

## 1. Metro networks are evolving—FAST.

Metro Ethernet networks have rapidly evolved from 1GbE to 10GbE and 100GbE in just a couple of years. These networks are the main aggregation point for network providers, accepting traffic from multiple sources, including cell towers, office buildings, and residences to drive demand. Legacy networks cannot keep pace with bandwidth demands. New services, such as high-definition streaming video or LTE and advanced mobility features, put tremendous strain on traditional networks.

Who Needs 100G?  
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## 2. Cloud services are spreading—FAST.

Cloud services—applications accessed on a local device but run on a remote server in a data center—are also driving demand for high-performance metro networks. In addition, businesses want their high-performance, mission-critical applications running in remote data centers over metro networks to be as reliable and secure as those previously run in onsite data centers.

## 3. High-resolution video is making inroads around the globe.

Users expect high-performance streaming video content. The migration from standard definition to HD and from HD to 4K or HEVC to accelerate. Metro networks must be prepared to handle the demand generated by HD and HEVC for 100GbE network services. For example, sporting events—such as the 2014 World Cup, which will broadcast three matches in 4K—generate tremendous amounts of video, placing new demand on metro networks.

## 4. Boosting energy efficiency is imperative.

As network speeds have accelerated, power consumption also increases—an unsustainable trend that must be reversed. A key principle of Ciena's 8700 Packetwave® Platform is that it allows networks to scale without consuming more space, while reducing power. The 8700 is a breakthrough in energy efficiency allowing the network to grow by a factor of 10 or 100 without consuming equivalent amounts of space or power.

## 5. 100GbE is the new normal.

Ethernet is the standard way to build metro network infrastructure. By 2017, it is estimated that over 75 percent of all global bandwidth will be Ethernet-based.<sup>1</sup> This outlook has driven a unique set of economics never before experienced in the network infrastructure arena, making 10GbE standard unit of measure in metro networks—and the migration to 100GbE has already begun.

## 6. Connect, compute, and storage are merging.

The network is now front and center, with a goal of transforming to serve the many needs of service delivery. Connect, capacity, and store are merging to form a better programmable platform. Of those three key elements, the connect function has the most direct impact on user quality of experience.

## 7. Consolidation is a crucial success factor.

Network elements that combine the best features of the data center, including high-scale aggregation and switching, will combine with the best features of the metro network, such as Ciena's WaveLogic Photonics for high-capacity wide area networking. Ciena's 8700, a programmable, multi-terabit Ethernet-over-DWDM platform, is the first example of this trend. The 8700 is the first platform to consolidate the best features of both data center and metro network into a single platform, enabling twice the density in half the space, and consuming half the power compared to competing solutions.

## 8. Ready for an unpredictable future.

Ciena's 8700 offers high-performance connectivity between data centers. The fully programmable 8700 helps service providers prepare for emerging Software-Defined Networking (SDN), turning the network itself into an application enabler that offers massive scalability and simplicity and compelling economics.

## 9. Programmability enables future growth possibilities.

Agile networks must be able to recognize and react to conditions in the metro network automatically by adding or

removing capacity on demand. Networks are moving toward a SDN architecture, which employs programmable platforms to rapidly deliver highly differentiated network services. These SDN features significantly reduce capital and operational costs while simplifying training, services management, power, space, and time to market for delivering new data-centric services. This virtualized approach will allow network operators to deliver bulk bandwidth now, with the flexibility to program new capabilities in the future.

## 10. Modernization brings a big win.

Government network operators will find the 8700 an ideal solution to introduce the scalability, flexibility, and programmability required to build networks that will serve all constituents inside and outside an agency or department. Enterprises will gain the scalability, flexibility, and compelling economics to meet their growing service demands by leveraging a platform that delivers twice the density and requires half the power and space of competing solutions.

### Transform Metro Ethernet Networks to Exceed Service Demands

Metro networks have rapidly evolved away from legacy services to Ethernet services, with 10GbE and 100GbE as the dominant connection rates.

Ciena's 8700 is key to enabling a transformation in metro networks, aiding the migration of metro network services from 10GbE to 100GbE cost-effectively and more efficiently in its use of power and space.

A programmable platform, the 8700 combines scalable hardware with flexible software design, making it uniquely well-positioned to meet the needs of network operators today and the evolving requirements of SDNs in the future.

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1. Vertical Systems Group - ENS, Global Business Bandwidth Trends Ethernet vs. Legacy Services 20 Year Perspective'