High-capacity, High-performance Metro Cloud Networking

Solutions Overview

Arista Networks and Infinera have partnered to create a scalable, turn-key metro cloud networking solution that combines high-performance data center switching along with high-capacity, rack-and-stack optical transport. As the bandwidth demands between data centers continue to increase, deployment of larger scale data-center switching fabrics is driving strong demand for 10GbE, 40GbE, and 100GbE connectivity. The integration of Arista's flagship 7500E and 7280SE data center switching solutions equipped with deep buffers and native 10/40/100GbE ports alongside Infinera's data center optimized Cloud Xpress (CX) optical transport system offers the ideal modular, data center networking solution suitable for bandwidth intense metro cloud applications such as IP storage networking, big data environments, and media and entertainment networking.

High Performance, Bandwidth Intensive Networking Today's cloud and data centers are employing higher-speed storage and compute solutions, driving up the need for higher rate Ethernet interfaces. It is not uncommon today to find data centers within a metro or regional network requiring hundreds of gigabits or terabits of bandwidth interconnectivity to carry multiple 10/40/100GbE links over a single fiber pair. Due to the distributed nature of data centers networking within metro regions, stemming from factors such as real-estate constraints, cloud virtualization, and disaster recovery mandates, it is also not uncommon to find a broad range of distances separating these data centers, ranging from a few kilometers to 100-200 kilometers.

In addition to supporting the growing fiber capacity needs for data center interconnect and the evolution to higher rate Ethernet interfaces, solutions today must also maintain high performance expectations, such as minimal overall networking latency and jitter as well as high availability. The need for this capacity/performance/reach combination can easily be found amongst networks supporting mission critical large-scale cloud networking applications, high-performance computing applications, IP storage networking, content-intensive networking, and virtualized data centers.

The combination of Arista's lossless data center switching solution along with Infinera's low-latency, high-capacity Cloud Xpress transport platform creates the ideal inter-data center networking solution that satisfies the demands from cloud, content, media production, and IP storage networks.

Integrated Data Center Switching and Transport Solution

The combination of Arista's flagship 7500 spine and 7280 TOR leaf switching platforms along with Infinera's CX Ethernet transport platform creates a compact, high performance, highly scalable rack-and-stack solution ideal for space-constrained data center footprints:

• Ultra-deep buffers for high performance, loss-less spine/leaf data center designs
• High density line-rate 10/40/100GbE port speeds
• Most power efficient Ethernet system
• Scalable up to 30 Tb/s switching fabric
• Under 4us latency

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what THE NETWORK will be
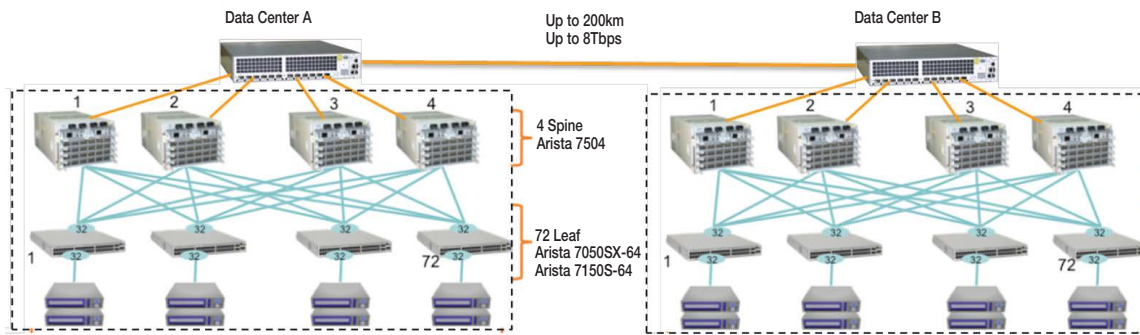
For enabling extended reach Ethernet connectivity between data centers, the Infinera CX provides the industry's most compact and power-efficient Wavelength Division Multiplexing (WDM) solution:

• 1 Tb/s of transport traffic (500Gbps client traffic + 500Gbps WDM capacity) in 2RU footprint
• Options to support 10/40/100GbE and mixed client interfaces
• Reach extension up to 200 kilometers
• Stackable to support up to 8 Tb/s per fiber capacity
• Industry's lowest power density footprint (~100W per 100 Gb/s transport)
• Ultra-low latency 100G Forward Error Correction (FEC)
• Plug-and-play optical networking with fast three-step provisioning

The Infinera CX can be used for optically transporting both traditional north/south inter-DC traffic as well as east/west traffic within a DC fabric physically distributed between space-constrained data centers.

Sample Configuration

With the Arista 7504 spine and 7050SX/7150S-64

top-of-rack leaf switches, a highly scalable data center switching and transport design can be designed to fit in a small amount of rack space. A configuration employing a 7504 Spine 4-way ECMP to Arista 64-port 10G leaf switch with no over-subscription is illustrated below, providing scalability up to 2304 nodes, or 23.04 Tb/s of switching. Assuming 90% east-west traffic internal to the data center, this results in 2.3 Tb/s of north/south inter-data center bandwidth, which can be easily accommodated with a stack of 5 Infinera CXs in 10RU.

The equipment required at each data center site for this solution configuration includes:
• Four Arista 7504 7RU switches, and 72 Arista 7050SX-64 1RU switches, providing 23 Tb/s of L2 switching capacity
• Five Infinera CX-40E-500S 2RU Ethernet transport systems and a 1RU passive mux, providing a total of 60 x 40GbE ports, and 2.5 Tb/s WDM capacity
• Total rack space: 111RU, less than three racks worth (not including servers)

For more information, contact your Arista and Infinera sales teams.

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