

ICPs NOW CHOOSE METRO CLOUD OPTIMIZED APPLIANCE FOR NETWORK CONNECTIVITY

THE CUSTOMER

A growing number of Infinera's customers are leading ICPs responsible for search, storage, email, social media, communications, network applications and a number of other Cloud-based services. Common attributes of this customer base include:

- Strong and sustained growth in bandwidth demand
- Predominantly greenfield network deployment
- High concern for user experience, driving even greater bandwidth

THE CHALLENGE

- A single-service network that must scale quickly for Cloud services
- Need for small, simple, scalable optical networking solution for metro
- Increasing reliance on metro Clouds that require ultra-density, high power efficiency and hyper-scalability to connect datacenters

THE SOLUTION

- Infinera Cloud Xpress, specifically designed to serve this market
- High density, low-power and Cloud-optimized datacenter connectivity
- Optimum scalability with minimum complexity

THE RESULTS

- May provide 50% lower power consumption, 300% bandwidth density
- Up to 21 Tb/s line and client capacity in a single rack
- "Rack, stack and provision" network upgrades to easily meet and grow with business demands



Without the baggage of legacy networks and services, today's Internet content providers (ICPs) are free to build and adapt their infrastructures for optimal business advantage and rapid delivery of innovative services. Connecting multiple datacenters into a Metro Cloud, a rapidly growing priority for ICPs, requires solutions that offer flexibility, reach and scalability, and Infinera's high density, Cloud-optimized Cloud Xpress is proving to be an ideal solution.

About The Customer

Internet content provider

networks require a bandwidth-rich, power- and space-optimized, best-in-class solution. Unlike telecom providers, ICPs rely heavily on Internet connectivity to reach their users. Delivering quality of experience requires extending the Cloud closer to the customer by clustering datacenters across metro areas and campuses, where space and environmental costs may be high.

The Growing Wave of ICPs

Telecom Operators—such as AT&T, BT or Comcast—have long delivered broadband Internet access, creating a massive market for over-the-top entertainment and business

services. By contrast, ICPs are companies that focus on the distribution and delivery of Internet content, including blogs, news, music, movies and data.

The service possibilities are endless in this extremely fertile and competitive market, spawning an extreme diversity

Cloud applications and services have grown in importance... generating the need for new transport solutions with leaner form factors, higher densities and superior operating efficiencies.

—Paul Parker-Johnson, practice lead, Cloud and virtual system infrastructures at ACG Research

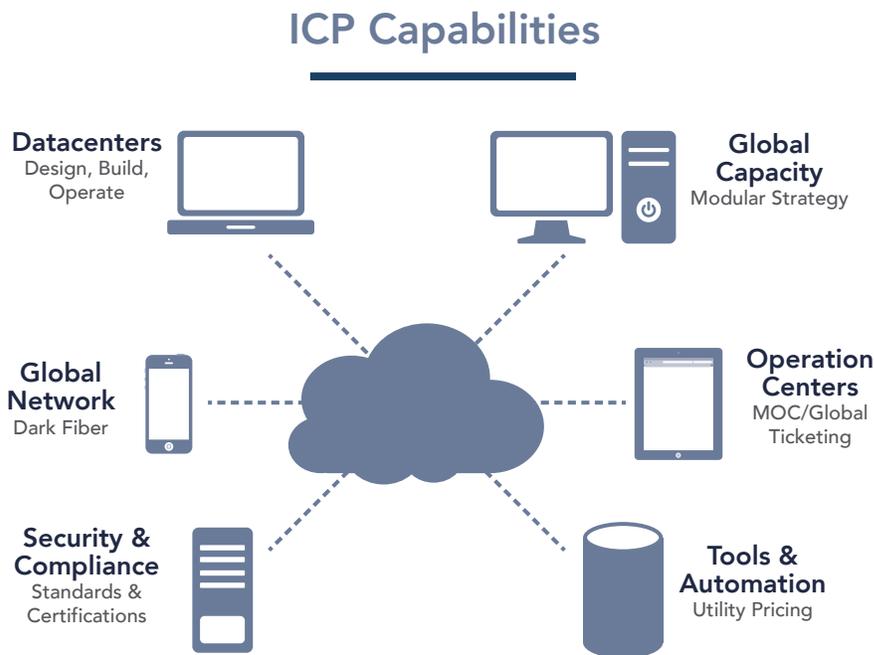


Figure 2

of offerings including storage services, Cloud mail, social media, network applications and high-end business services. Well-known ICPs include household names such as Amazon, Facebook, Google, Microsoft, Apple and Netflix.

For such high profile companies, it is essential to deliver a first

class user quality of experience (QoE) and, especially for business services, reliability is paramount. To achieve this, major ICPs have built their business models around the Cloud to ensure reliability, performance and scalability. This has led to a massive investment in giant datacenters in remote green field sites, where real estate and energy costs are lowest, as power consumption is a significant overhead on this scale. They have linked these datacenters together

and to their users around the world with global networks of dark fiber and dedicated data transport equipment, allowing them to control performance and costs. ICPs have also developed a range of other competencies critical to supporting their business, including global capacity, security and compliance services and operational systems and tools to simplify their own operations and enhance their customers' experience (see Figure 2).

The Metro Cloud Phenomenon

The giant datacenters in remote locations have made the headlines, but are only part of the story, because QoE also entails moving the Cloud closer to the user in order to reduce latency and offer consistent service, especially for the lucrative business market. An enterprise would not choose a service that only delivered premium quality to certain sites, or one that provided better service to competing companies based closer to the datacenter.

Companies like Apple and Microsoft initially pushed software updates from central locations, and some even utilized third party content delivery networks (CDNs), which proved reliable, but costly. Today, ICPs have shifted their focus towards building a global network of datacenters

that are better able to ensure fast downloads, a great user experience and consistent services across every continent.

This has led to the creation of a small but very fast growing Metro Cloud market linking multiple datacenters, sometimes across great distances but more typically across metro areas or even just down the street. This growth has been driven from two sides: both by this need to bring the Cloud closer to business districts, but also by enterprises with existing facilities wanting the flexibility, performance and redundancy benefits of linking them together.

The Demands of Datacenter Connectivity

Datacenter clustering generates enormous bandwidth demand. It has been shown that a simple Internet request—say a Facebook upload—will generate nearly a thousand times the amount of internal traffic between datacenters, and each external request, measured in kilobytes, can generate megabytes of traffic in the cluster. To help scale the infrastructure well into the future, ICPs are investing heavily in 100 Gb/s connectivity and infrastructure. By 2017 the overall capital expenditure among the seven largest ICPs is expected to exceed the combined total of AT&T and Verizon's overall capital expenditure.¹

¹ Source: ISI Group Report on Hyper-scale Capex Trends, Feb 2014



Internet Content Providers ...their unique networks combined with growing budgets for networking hardware create an opportunity for equipment purpose-built for the metro cloud.

—Andrew Schmitt, principal analyst, carrier transport networking at Infonetics Research

But the biggest growth will be in the metro segment, as ACG research predicts:

“For 2014–2019, Metro traffic is predicted to increase faster (13.0 percent CAGR) than backbone traffic (8.6 percent CAGR) as more regional datacenters are located closer to the user community. As much as 70 percent of the traffic is predicted to stay within the metro from which it originated and will drive the need for additional capacity by the traditional service providers, MSOs [multiple-systems operators] and datacenter operators.”

Unlike those massive greenfield datacenters, Metro Cloud operations are typically constrained by higher energy and real estate costs, so ICPs have been caught between the demand for massive bandwidth and pressures to minimize power consumption and rack space.

Cloud Xpress—the High Density, Low Power Demand Solution

To address this market demand, Infinera developed a new appliance using feedback from

In this highly competitive market ICPs are investing heavily in Metro Cloud solutions, while keeping their cards close to their chest. Top ICPs are relying on Cloud Xpress for its hyper-scale density, low power consumption and Cloud-optimized interface.

several ICPs. The resulting two-rack-unit (89mm tall) Cloud Xpress delivers 1 Tb/s of input and output capacity with up to 500 Gb/s of line-side capacity over your choice of 10 GbE, 40 GbE and 100 GbE client-side interfaces. This all-inclusive solution integrates redundant power supplies and fans, built-in amplifiers and a hot swappable controller module, making Cloud Xpress the ICPs' best option when rack space is at a premium. Further, Cloud Xpress consumes less than one watt

per Gb/s of traffic, setting a new standard for ultra-low power consumption for metro Cloud solutions.

As well as offering significant density improvements while dramatically reducing power consumption, Cloud Xpress has been specifically designed for Cloud datacenters that use an operational model different from that of traditional service provider sites. Cloud Xpress is designed with a rack-and-stack form factor and a new software approach that allow it to plug into existing Cloud provisioning systems using open software defined networking (SDN) application program interfaces.

By offering an experience similar to the server and storage infrastructure currently deployed in the Cloud, Cloud Xpress enables smooth integration into existing operational processes—enabling Infinera's many ICP customers to scale quickly, reduce human errors and lower operational costs.

The Cloud Xpress Pay-off

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Visit the Infinera website for additional case studies spelling out the benefits of Cloud Xpress for ICPs, and just how easily and quickly they are being realized.

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