PTX10008 Takes Operational Efficiency to the Next Level

Overview

Service providers of all types—whether they offer traditional connectivity or more specialized services such as data center/content, hosting, collocation, or peering—have a lot more in common than they used to.

Advancements in memory and processor speed have resulted in more powerful servers that can run complex software applications, while global connectivity has increased the potential market for new services. To stay competitive with disruptive companies and technologies, operators must be able to deliver new services quickly and operate their environment in a cost-effective manner.

A common concern among operators is the need to reduce their device footprint, both in terms of physical size and power consumption. One reason network managers are so concerned about device size is that these elements compete for space with servers (storage and compute) that host the applications that organizations need to run their business. In a hybrid cloud deployment, the resources are split between the enterprise location and cloud. While this may not be an issue for businesses that own and operate their own network, it is for organizations who lease space from peering, collocation, and hosting providers where space and power usage account for upwards of 50% of their monthly operational expenses.

Another focus for reducing operational expenses is interconnectivity between sites for redundancy or additional capacity. In cases where peering or collocation providers are used, these connections use the Internet, which imposes a cost. Another area of concern is connections to sites within an organization but located outside the confines of the local data center. Depending on where the data needs to travel, there may be costs associated with peering or transit. In addition, designers must consider the impacts of latency, as the applications could be in a virtual machine environment.

Top Business Challenges

- Improve the customer experience
- Reduce operational costs
- Rapidly develop new applications and services

Top Technical Challenges

- Deliver high-density bandwidth in a compact footprint
- Provide the flexibility required to rapidly deploy new services and capacity
- Gather the detailed analytics needed for troubleshooting and predictive analysis

Insertion Points

The right solution can help businesses:

- Optimize routing capacity and reduce the footprint in their data center, collocation, peering, or hosting environment
- Streamline operations and automate processes as much as possible
- Grow revenue by efficiently adding capacity to satisfy their customers' growing needs

Juniper Solution

Juniper Networks® PTX10008 Packet Transport Router is a compact, high-performance core router optimized for next-generation data centers and collocation providers. The PTX10008 router's compact form factor efficiently uses rack space and power, reducing competition for storage and compute resources.

At the heart of the PTX10008 is ExpressPlus, a Juniper-developed ASIC. One of the benefits of using a custom ASIC is that it is designed for a specific purpose, its characteristics tuned to forward data appropriately with low latency. The ExpressPlus silicon was built with Internet peering in mind, supporting over 1.6 billion filter operations per second, enabling it to handle any peering requirements without performance degradation. An additional benefit of the ExpressPlus chipset is the availability of features and parity across Juniper platforms.

The effective scale of a router is determined by the impact of different routing functions on available CPU and memory. Scale defines the label-switching router (LSR) and peering applications the PTX10008 supports, determined by the size of the forwarding information base (FIB), also known as forwarding table, the size of the routing information base (RIB), also known as routing table, and the number of separate virtual routing and forwarding (VRF) instances it can handle. The sizes of those elements

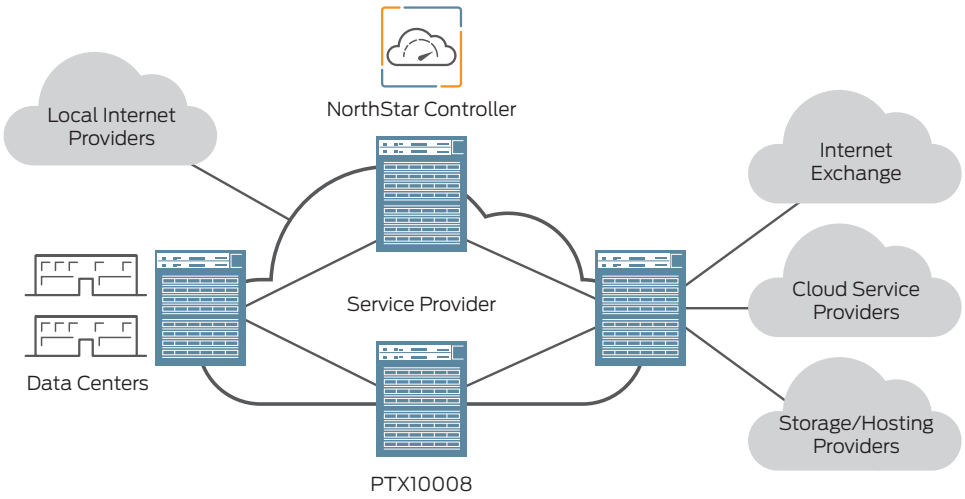

Figure 1: Applications available on the PTX10008.

vary, determined by the customer's desired application. Scale is determined by the mix of peering sites, the number of tunnels needed, or the routing table size. Figure 1 shows the varied types of applications available on the PTX10008.

To help operators manage their expanding infrastructure, Juniper has developed a telemetry interface called jVision to automate the network infrastructure. Various elements in the PTX10008 use the jVision interface to send telemetry data to a collector, such as Juniper Networks NorthStar Controller or a third-party collector. The Packet Forwarding Engine (PFE) is responsible for the inline active flow monitoring functions such as creating flows, updating flows, and exporting flow records to a flow collector. Using the telemetry data, operators can see trends and use that information to either take corrective action or anticipate issues that may cause network problems in the future.

The PTX10008 is based on the same routing code found in the Juniper Networks PTX3000 and PTX5000 Packet Transport Routers, hardened for carrier-grade routing applications and providing all the same resiliency features such as graceful Routing Engine switchover (GRES) and nonstop active routing (NSR) to ensure zero packet loss.

Proof Points

The PTX10008 helps operators reduce the space and power needed for their core routing infrastructure. Power and cooling are optimized for the high-density data center environment, consuming less than 0.5 W per gigabit. Both AC and DC versions are available.

The PTX10008 has 3 Tbps slots and can support 240 100GbE interfaces in a single chassis. It enables service and cloud providers to build a core architecture that optimizes for MPLS LSR, Internet peering, backbone, and optical convergence applications and deployments.

For More Information

To find out more about Juniper Networks products and solutions, please visit www.juniper.net.

About Juniper Networks

Juniper Networks challenges the status quo with products, solutions and services that transform the economics of networking. Our team co-innovates with customers and partners to deliver automated, scalable and secure networks with agility, performance and value. Additional information can be found at Juniper Networks or connect with Juniper on Twitter and Facebook.

Corporate and Sales Headquarters
Juniper Networks, Inc.
1133 Innovation Way
Sunnyvale, CA 94089 USA
Phone: 888.JUNIPER (888.586.4737)
or +1.408.745.2000
Fax: +1.408.745.2100
www.juniper.net

APAC and EMEA Headquarters
Juniper Networks International B.V.
Boeing Avenue 240
1119 PZ Schiphol-Rijk
Amsterdam, The Netherlands
Phone: +31.0.207.125.700
Fax: +31.0.207.125.701

3540029-001-EN June 2017