

EVENT FLASH

Juniper Brings Virtualization to the Core

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IN THIS EVENT FLASH

This IDC Flash discusses bringing virtualization to core networking and the introduction of the TX Matrix Plus.

SITUATION OVERVIEW

Service providers are dependent on the infrastructure they build to deliver profitable services, but they must also be nimble and flexible to scale these services. Investment protection and operational continuity are also critical components in purchasing infrastructure. Ideally, revenue for the carrier should be increasing while capital and operational expenditures are decreasing. Juniper Networks is helping provide this in two new ways. Juniper is introducing the TX Matrix Plus switching fabric to interconnect up to 16 T-series core routers. With up to 1024 10G ports or 256 40G ports, one can build a 25Tb routing platform in only 11 racks. All interfaces, software, and high-availability features come standard on the platform as well as the JUNOS operating system. Juniper is also introducing integrated optics (DWDM interfaces) supporting G.709 and GMPLS. Juniper has been criticized for not having this matrix available to date, but the real question is, is there really a need for a routing node of this high capacity? The answer is actually yes but for different reasons than building just one single 25Tb node. Providers have built multiple IP overlay networks with little or no convergence of those networks. Each network that is built for a specific service is, in fact, a routing overlay. Which means that providers that support multiple services for several product-marketing divisions must build multiple networks to support these services.

And here lies the interesting change in infrastructure we are seeing; service provider and carrier networks are beginning to look more and more like IT infrastructure. The datacenter today adopts virtualization as the de facto operating model, and although it may take a while to adopt this model in service provider networks, it is a paradigm shift that is indeed happening. Virtualization can and will fundamentally change infrastructure networks in the same way it changed datacenters. Providers know they need to converge their networks, but embedded in their organizations are standard ways of operating that may take longer to change. Juniper is introducing network virtualization so that providers can enable virtualization in their core without changing their operating environment.

The hardware combination of the TX Matrix Plus with the JCS 1200 enables the secure virtualization, and brings all the "separate" routers onto one common infrastructure, without changing the organizational structure of the provider, the business model, or the network. It decouples the infrastructure and services into secure and isolated networks on individual hardware, where accounting, billing, and services for the wireline, wireless, and wholesale divisions within the provider operate on the same common equipment. How does it work? JCS 1200 creates protected system domains — essentially hardware logical routers — using one or more slots on a physical router. Each protected system domain may perform network functions, such as core or aggregation, and/or service functions, such as VPN or peering. In essence, each division and/or service is isolated and secured within a hardware logical router. With this key feature, providers can optimize their network and support new business models on shared but secure infrastructure.

The benefits are clear: services are decoupled from the infrastructure, the organizational model within the provider need not change, each network is still operated individually by its organization, and expansion can be done with little risk to the existing network. Each division runs its own service, sharing space and power, and optionally sharing uplinks. Each slot or set of slots is literally a "hardware virtual router" that shares common equipment. Virtual routing in the past has been limited because the separation of network elements was done in software, which is potentially less secure. Juniper's virtualization is a hardware-based approach (think hardware VPN) for each network, which is great for carrier providers that demand or require physical or isolated hardware for each network exchange they support. Availability of the TX Matrix Plus is 3Q09, and the virtualization feature comes in 4Q09 when paired with the JCS 1200.

FUTURE OUTLOOK

Network virtualization opens up new business opportunities like the "open garden" approach where partner traffic can be treated with the same priority as the traffic within the network (or garden). Another option is to lease the IP backbone to a small wireless provider that cannot afford its own backbone, bringing additional revenue to the carrier at a lower-cost option to the wireless provider.

Virtualization brings a new paradigm where sharing the infrastructure, engineering, technologies, and maintenance of the network actually brings disparate groups together on a common platform. While we at IDC have never been sure if networks define the organization or if the organization defines the network, clearly if multiple networks can operate securely on one platform, it will have impact on the overall organization in real and clearly positive ways.

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