451 Research

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Arista brings key software functionality and 100Gb Ethernet options to flagship switch

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In a busy week of pre-Interop product launches, Arista announced two new 100Gb interface blades for its high-end 7500E datacenter switch, as well as extended software functionality in the platform. The blade offerings bring new choices for Arista customers (and prospects) for migration from 10Gb to 100Gb Ethernet, with new blades that incorporate either six ports of CFP2 modular optical drivers, for long-haul (10km) interconnect use, or 12 ports of the newer and denser QSFP for a broad set of 10/40/100 optics. These blades join the successful 12-port multi-speed (MXP) blade released in 2013 in the 100Gb arsenal for the 7500E.

Quietly included in the launch is the extension of three key features of Arista's Extensible Operating System (EOS) to the 7500E. The company has migrated network monitoring (DANZ) functionality, VXLAN tunneling and termination and Smart System Upgrades (SSU) into the high-end switch from its 7150 switch. Although not as visceral as 100Gb metro-optical interconnects, this software functionality will prove key for Arista to expand its presence in service providers and high-end enterprise datacenters.

The 451 Take

Although the migration of customers from 10Gb to 40/100Gb Ethernet is a tangible and lucrative market transition, we feel the real substance of the announcement is in the software additions to the flagship switch. The VXLAN protocol (which Arista helped co-author with VMware) has emerged as the de facto virtual tunneling protocol of choice for many vendors, including Cisco, and Arista extending hardware-accelerated VXLAN to the 7500E burnishes the company's position as a feature leader in highly virtualized datacenters. Arista has the opportunity to profit greatly from the coming network virtualization wars between the server-centric approach, personified by VMware, and the network-centric approach, personified by Cisco, regardless of which approach ultimately dominates.

Context

Prior to Interop, the marquee networking conference of the year, Arista announced two new 100Gb blades for its high-end 7500E datacenter Spine/Core switch targeted at accelerating the transition from 10Gb to 40Gb and 100Gb. In the Networking Wave 10 Outlook report from TheInfoPro, a service of 451 Research, upgrades to the network core and datacenter expansions were two of the top three projects for enterprise managers. Many of these projects are upgrades from legacy 1/10Gb infrastructure to 40Gb or 100Gb; however, the

cost of first-generation 100Gb Ethernet technology has consistently exceeded 10x10Gb ports, effectively discouraging the adoption of the technology in favor of the more price-accessible 40Gb. In 2013, Arista began to address this by releasing an innovative 12-port multi-speed optical blade for the 7500E that could be configured for 10Gb, 40Gb or 100Gb, putting the optical components on the line card and using software and a set of optical headers between the line card PC board and connector depending on the configuration. The optics used were limited to 400m transmission and these new options extend range beyond that. The company is doubling down on this bet by releasing these two new aggressively priced 100Gb blades for core and metro use.

Of the software announcements, foremost is the extension of the VXLAN VTEP features within EOS to the 7500E, as well as the ability to extend VXLAN configuration options from within the datacenter to between datacenters and clouds. Arista also added its Data Analyzer (DANZ) network monitoring functionality in the 7500E, which had also previously existed only in the 7150, which works in tandem with EOS's Tap Aggregation Manager feature to filter and slice network traffic, with some speed buffering as required, to tools such as network traffic recorders or traffic analysis appliances. The final set of EOS software feature that Arista extended to the 7500E is its Smart System Upgrade (SSU) functionality for graceful insertion/shutdown of network services for the purpose of reconfiguration or upgrade.

Company

Arista was founded in 2004 as a datacenter and cloud networking focused switch vendor by Silicon Valley legends Andy Bechtolsheim and David Cheriton, both of whom have lengthy pedigrees of startups, successful exits and technology investing. In 2008, Bechtolsheim and Cheriton brought in Jayshree Ullal, a network industry veteran and senior Cisco executive, as CEO. The company has been rumored to be on the verge of filing an S-1 for many years.

Technology

The new functionality that Arista has developed for the 7500E centers around scaling VXLAN in large-scale environments, and as such they have done engineering 'heavy lifting' in multi-tenancy and tunneling VXLAN over WANs for datacenter-to-datacenter interconnect, be it within a private wide area network or cloud environment.

An additional consideration worth mentioning is that Arista has stated that it intends to partner with and support multiple controller frameworks. The most recent of these is Arista's integration with VMware NSX, although a number of vendors including Dell and Juniper have recently announced their own controllers that range from provisioning and management to actively mediating traffic using OpenFlow or an OpenFlow-esque model.

The Data Analyzer features in EOS enable supported Arista switches (previously only the 7150, and now with this announcement, the 7500E) to be used as network monitoring switches. These products act as traffic aggregators for buffering, filtering, load-balancing and traffic 'slicing' (discarding portions of a packet to result in only the sections of relevance to the downstream analysis tool[s]). Unlike similar platforms from Gigamon and Ixia, DANZ does not de-duplicate the traffic to the monitoring tools, which may limit the addressable

market for the feature. Anecdotal feedback from other vendors is that Arista has had success in selling DANZ in Arista-switched customer environments alongside 7150s performing traditional packet switching.

Products

In addition to the new software functionality, the company released a six-port CFP2 100Gb blade, as well as a 12-port QSFP 100Gb blade, for the 7500E. Both of these blades have planned pricing at or below comparable high-density 10Gb blades (between $5,500-6,500 per 100Gb port) to persuade customers to move away from 10Gb port aggregation (4x10Gb or 10x10Gb) to 100Gb interfaces. The blades are positioned as high-density for spine and router in wide-area deployments. The CFP2 (single-mode) card targets long-haul optical-interconnect up to 10km, while the QSFP uses the smaller and denser optics modules. The blades will be generally available to customers in Q3 (CFP2) and Q4 (QSFP).

Marketing

Arista has been successful in penetrating high-frequency trading environments and larger datacenters, and has been rumored to be providing the backbone in a number of large production commercial cloud environments, including Microsoft Azure. Most recently, the company has seen interest by carriers for use of its product for Network Function Virtualization (NFV), specifically for cloud tenant L4-7 services and service chaining, although we have not seen any of this functionality announced or exposed publicly within EOS.

Competition

Arista competes against Cisco, HP and Dell in the datacenter switch arena, with these competitors each offering a different approach to the same market segment. In 2013, Cisco announced its Application Centric Infrastructure architecture and products, which it has been fleshing out with new products and features since the initial launch, resulting in the Nexus 9000 Series switch family, which innovatively incorporate VXLAN headers as the basis for supporting simultaneous switching within and between multiple virtual and physical networks. Cisco is the dominant vendor in this market segment, and is carefully and deliberately managing the upgrade cycle from the Catalyst 5000, 6000, and Nexus 7000 switches to the new ACI-enabled Nexus switches.

HP and Dell both offer networking products that leverage each vendor's storage and server assets, with Dell recently announcing a new flagship datacenter switch (Z9500), network controller (Active Fabric Controller), and integration with a new version of its system-wide management platform (Active System Manager 3.0).

SWOT analysis

Strengths	Weaknesses
Arista has positioned itself as the network hardware complement to VMware's NSX, and as such is in the pole position to benefit from early adopters of NSX. The company's strength in engineering talent shines through in its hardware execution as well as in the versatility of its software, EOS.	Arista is, for all of its strengths, still a small player in contrast to its much larger competitors Cisco, Dell and HP. Each of these companies can absorb lower margins (by stealing revenue from other, more margin-rich, product offerings) and can outspend Arista in engineering, marketing and heavily discounted upgrade programs.
Opportunities	**Threats**
The larger enterprise datacenter market is in the beginning stages of a broad upgrade cycle to 40Gb/100Gb, driven by the compound impact of growing application bandwidth and greater intra-application (East/West) traffic, so the launch of these new features and products at a competitive price point, paired with Arista's positive market reputation, could potentially open up more general/less-specialized datacenter deals to the vendor.	Market leader Cisco is managing a product upgrade cycle while under attack from traditional competitors like HP, Dell and Juniper, and also simultaneously managing the market transition to SDN and Network Virtualization. If the company's history is any guide, it executes best in sales and engineering when it has strong competition, like Arista.