REPORT REPRINT

Arista builds on its CloudVision network controller for automatic physical topology

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06 OCT 2015

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Arista has introduced new network configuration functionality that enables the insertion of network services – firewalls in the first instance – into the data plane of a datacenter network, and has enabled automation of the use of this functionality so that the physical network topology can be driven directly from suitable firewall policies, thereby eliminating the need for manual network reconfiguration when security policies change. The net result is a means of efficiently inserting firewall resources into the 'east/west' datacenter traffic.

Arista calls this functionality Macro-Segmentation Services (MSS), to contrast with how virtual networking software, such as VMware NSX, is used to implement network security and policy at the VM level (micro-segmentation). The company states that these are complementary capabilities, and that MSS often provides capabilities that NSX cannot.

THE 451 TAKE

Arista's key differentiation continues to be its EOS software architecture, as demonstrated recently by the introduction of CloudVision – an EOS-based network management platform – and now by MSS, a relatively straightforward CloudVision application. The brutally difficult part of network management is the myriad details that have to be right and mutually consistent. Describing a desired change in physical network topology (the path that packets take) is simple – accomplishing that change via traditional network device administration (CLI tools) is what takes time and is prone to errors. Arista continues to cleverly expand the functionality it provides customers, doing so within the brownfield multi-vendor configurations that a relatively small vendor is bound to encounter, and thereby positioning itself against the large-scale ambitions of Cisco.

CONTEXT

In the past, many datacenters have implemented 'perimeter' security, in which firewalls were used to substantiate defenses for the systems in the datacenter while communication between the systems within the perimeter remained relatively unfettered. Increasingly, firewalls are used to protect within the datacenter, as well – for example, to limit the systems that can connect to sensitive resources. To minimize device and cabling moves and changes (all wonderful sources of unanticipated errors), network managers want to use as few large firewalls as reasonable, and to route the necessary traffic through a large firewall that is configured to perform many different functions. These sensible goals often mean that security-policy changes require network traffic changes (to assure the traffic flows though the right firewall), in addition to the necessary programming of the firewall to implement the policy. The MSS automation significantly simplifies the process and eliminates many sources of human error.

Arista's EOS programmability enables simple (from the point of view of programming) and valuable automation for this process in the following way. First, Arista CloudVision is an instance of EOS that aggregates the state of all the switches under management, so CloudVision knows what the physical topology of the network is and when changes occur (devices are moved or inserted). Second, by interfacing to cloud management tools (e.g., VMware or OpenStack), EOS also understands the relationship of virtual machines to physical servers, as well as their location within the network topology and when that changes. With MSS, Arista is adding analogous integration with security management tools (for example, the Palo Alto Networks Panorama policy management application), and by doing so 'learns' the implemented security policies and sees in real-time when they change. Connecting the dots, MSS is able to understand what traffic needs to flow through which firewall, so that the policy can be enforced, and to make changes automatically when either security policies or physical network topology changes. This relatively simple management application enables firewalls to be statically connected to the network, and the network traffic flow to be automatically configured appropriately, removing network configuration dependencies from security policy changes and thereby eliminating the potential of human error with cabling or network configuration changes.

Arista continues to exhibit strong growth in challenging markets, achieving an $800m-per-year run rate, with more than 40% growth YoY in its Q2 2015 results. Arista has been sued by Cisco for violation of Cisco patents, with the threat of an ITC action that would prohibit the import of Arista products (manufactured in Asia) into the US.

PRODUCTS

Macro-Segmentation Services (MSS) are software functionality running on top of the Arista CloudVision management application, and will be available at no additional cost to licensed CloudVision users. MSS will be entering beta this fall, and will be generally available within the first half of 2016 (because MSS enables convenient insertion of firewalls into east/west traffic that can break important functionality, Arista wants to make sure best practices are understood before evangelizing broad use). The application is capable of using security policy manager APIs (e.g., APIs provided by the Palo Alto Networks Panorama firewall policy manager application) to extract and monitor the desired security policies (expressed as packet transmission rules between specific IP numbers or groups). Having done so, it automatically configures and adapts the data flow in the physical network so that traffic subject to policies is seen by the programmed firewall.

PARTNERS

Arista says that it has partnered with a set of orchestration and network services vendors. The network service vendors include Palo Alto Networks (with which the greatest integration has been done), Checkpoint, A10, F5 and Fortinet. The virtual network overlay controllers include VMware NSX, Microsoft Hyper-V and OpenDaylight; the cloud orchestration systems include OpenStack, HP, VMware and Dell. Arista had done significant integration with cloud orchestration and overlay controllers already.

STRATEGY

As a small new vendor, Arista has done an artful job of finding ways to land and expand within datacenters. MSS fits this model nicely because it enables the insertion of network services anywhere within an Arista network or at the edges, and thereby allows services be deployed between various virtual and physical systems, as well as within virtualized environments, without requiring a large-scale initial commitment that would be challenging for a new vendor.

COMPETITION

Arista competes with Cisco, HP, Dell, Juniper, Brocade and others as a datacenter switch provider, as well as with the ODM manufacturers of those products now offering white-box alternatives with disaggregated software (e.g., from Cumulus Networks or Big Switch). If that weren't enough, the largest-scale providers – Google, Amazon, Facebook and Microsoft, which collectively consume a remarkable share of the equipment sold to cloud providers – increasingly are rolling their own rather than using commercial products.

SWOT ANALYSIS

STRENGTHS

Arista has created a nearly $1bn switch business in a brutally competitive and (at best) slow-growing market while using merchant semiconductors and competing with large incumbents.

WEAKNESSES

Arista is still a small vendor, although it is doing remarkably well, attaining competitive share in the core segments in which it participates.

OPPORTUNITIES

Arista's key assets – programmability and software agility – are at the center of many of the market drivers (system automation and agility) enabling Arista to develop new and valuable functionality quickly.

THREATS

Arista is now in Cisco's competitive crosshairs (which has been a good indicator of commercial troubles to come), and a competitor in slow-growing markets under severe price pressure – where the largest customers increasingly build their own switches using the same merchant parts that Arista does.