SaaS Infrastructure Done Right

Executive Summary

Medallia enables companies to stay close to their customers and employees. Its enterprise SaaS platform helps businesses around the world listen to and act on customer feedback by putting actionable customer insights in the hands of all employees.

KEY BENEFITS

- Non-blocking 50/100GbE network providing open networking and higher performance with fewer links

  » Flexible 50/100GbE network delivering higher bandwidth at lower cost

  » Open Ethernet solution supporting Cumulus Linux on fast and reliable Mellanox switches

- Fast and efficient container networking

  » Fast, efficient and scalable application networking for containers and microservices

- Accelerated Ceph storage performance

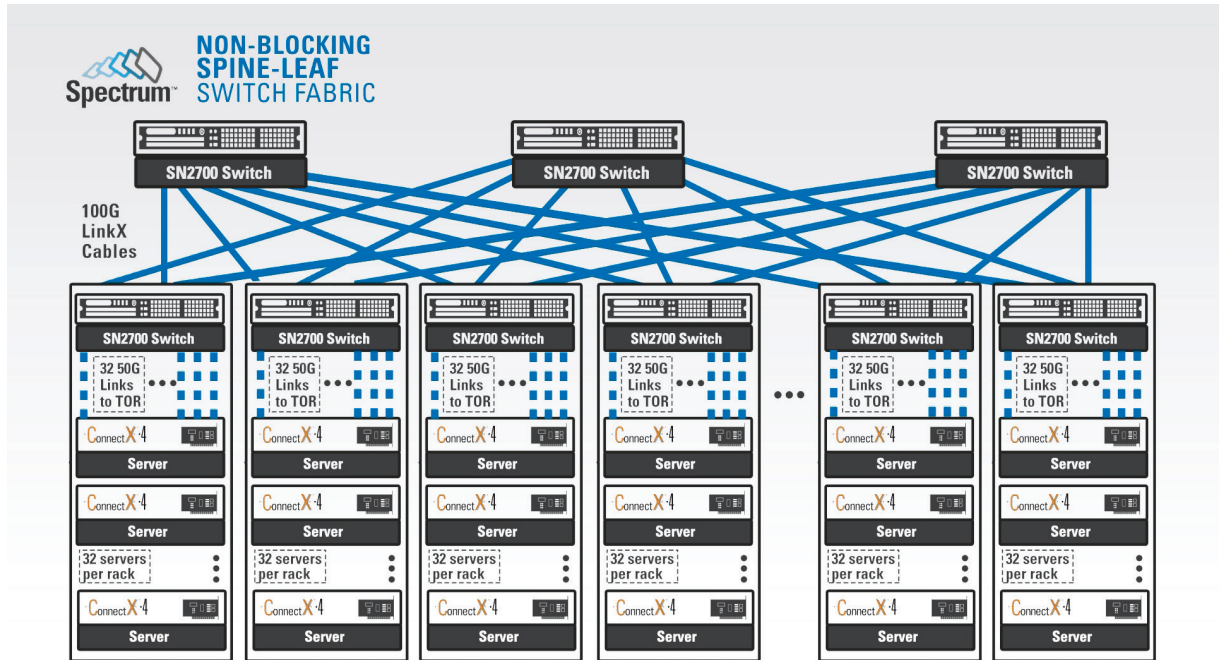- Remote access to flash storage with the same performance as local SSDs

Medallia selected Mellanox for its performance and ability to scale. The key benefits of the Mellanox end-to-end Ethernet data center fabric solution are:

- Total infrastructure efficiency
- Deployment flexibility
- Management simplicity

Background

Based in Silicon Valley, Medallia is the fastest growing Customer Experience Management (CEM) company in the world with offices in New York, London, Paris, Sydney, Buenos Aires and Tel Aviv. Behind its growth is Medallia's highly sophisticated Big Data analytics platform which allows companies to slice and dice terabytes of customer feedback data from multiple channels in real time.

Medallia's foray into 40G networking began in 2013 when they re-architected their analytics engine to make it containerized and distributed in order to cope with their rapid growth and to drive better system economics. This, combined with extremely large amounts of data, dictated an infrastructure that is horizontally scalable. High-performance networking is essential to any scale-out system, and that understanding was what motivated Thorvald Natvig, software architect at Medallia, to initially look into using 2x10G network links to the server. On a $/Gbps basis, it made sense to go directly to 40G. That was when Medallia first selected Mellanox to provide ConnectX-3 40G server adapters and LinkX cables to power its infrastructure.

Fast forward to 2016: driven by further growth, and additional advancements in compute and networking technologies, Medallia upgraded its data center fabric and became one of the first adopters of 50 and 100 Gigabit Ethernet. Medallia also upgraded their production network to use Mellanox Technologies' flagship Spectrum switches

The Solution

As illustrated in Figure 1 Medallia SaaS infrastructure with Mellanox end-to-end Interconnect, the Mellanox Ethernet solutions are used to construct the entire leaf-and-spine fabric.

The Benefits

"Once we have the abundance of bandwidth, what else can we do with it? That is when we got into storage. What the bandwidth gives us is flat access to storage, and no locality regardless of where you are in the data center. It is really interesting when you can do remote storage at multiple GB/s, so now we have remote storage that works as fast as local SSDs. That for us meant that we can take our databases and run it over remote storage going over the Mellanox network with no performance impact, or if anything, it is a little bit faster."

"These whitebox switches were even more cost effective on a per-Gbps basis. So we looked at this and said, wait a second, if we actually go all the way to 100Gb/s, we can make a lot of the problems where we are trying to engineer around the network go away. "

Thorvald Natvig, Software Architect, Medallia

Figure 1 Medallia SaaS infrastructure with Mellanox end-to-end Interconnect

Total infrastructure efficiency

The distributed container-based microservices-oriented analytics engine, combined with the need to quickly access large amounts of data stored in all-flash Ceph cluster without worrying about storage locality, dictates that the amount of non-blocking bandwidth to each host is an important criteria for Medallia switch fabric. The more host throughput, the more workloads are able to run effectively on the infrastructure. Ultimately, the solution that provides the lowest cost per unit of bandwidth (normally Gb/s) wins.

Mellanox delivers significant savings for Medallia's SaaS infrastructure, and here is the simple math of a comparison between constructing non-blocking leaf-and-spine fabric with 40G whitebox switches vs Spectrum 50/100G SN2700 switches shows that Spectrum's cost per Gbps is 30% lower than whitebox 40G switches:

When considering the complete interconnect solution including switches, cables and adapters, Mellanox 50/100G solution delivers similar per-port cost as competitors' 40G solutions, but 25% more throughput to the host (50G vs. 40G).

Deployment flexibility

Like the majority of hyperscale web and cloud service providers, Medallia has long adopted network disaggregation and open networking in its infrastructure design practice. The fact that Spectrum can flexibly support the decoupling of switch hardware and switch operating system, and supports a choice of network operating systems (Cumulus Linux, SONiC, OpenSwitch, MLNX-OS, etc) able to run on the same high-performance switch hardware, makes it a very appealing option. This deployment flexibility empowers Medallia to freely select the best-of-breed network components, reducing business risks associated with vendor lock-in.

In addition, the Mellanox Spectrum open networking switch platform goes above and beyond generic white box switches, by providing OEM quality, reliability and service levels supported by subject matter experts with deep networking expertise. The fact that customers can enjoy the flexibility of open networking and have a single point of contact when issues arise is a plus for Medallia

Port speed	Number of ports	Number of servers per rack	Number of ToRs per rack	Number of spine switches per rack	Switch Cost per Rack	Bandwidth (Gb/s) to server host	Switch cost per 10Gb/s to server
40G	32	32	2	1	3X **	40	0.75X
100G	32 *	32	1	0.5	2.625X	50	0.525X

* 16 out of the 32 100G ports each got split into two 50G ports
** Assuming 40G switch cost is X, and 100G switch cost is 1.75X

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Management Simplicity

Medallia had already standardized on running Linux for not only its compute and Ceph-based storage, but also on its network switches using Cumulus Linux. The combined solution of Mellanox Spectrum with Cumulus Linux helps Medallia simplify the management and provisioning of the complete data center infrastructure, and enables easy automation to accelerate new workload deployment.

Streamlined support

When Medallia has any questions about the network behavior, the turn-around time is quick.

"One thing we like about Mellanox is, if we have our problem, and it is something that is slightly more difficult to troubleshoot, Mellanox has all the people who actually built the switch and the people who built the actual silicon, under one roof. So if we ask a question, we can get a very high-quality answer in a fairly short turn-around time."

About Mellanox

Mellanox Technologies is a leading supplier of end-to-end InfiniBand and Ethernet interconnect solutions and services for servers and storage. Mellanox interconnect solutions increase data center efficiency by providing the highest throughput and lowest latency, delivering data faster to applications and unlocking system performance capability. Mellanox offers a choice of fast interconnect products: adapters, switches, software, cables and silicon that accelerate application runtime and maximize business results for a wide range of markets including high-performance computing, enterprise data centers, Web 2.0, cloud, storage and financial services.

Learn more about Mellanox products and solutions: www.mellanox.com

About Medallia

Medallia is the Customer Experience Management company that is trusted by hundreds of the world's leading brands. Medallia's Software-as-a-Service application enables companies to capture customer feedback everywhere the customer is (including web, social, mobile, and contact center channels), understand it in real time, and deliver insights and action everywhere — from the C-suite to the frontline — to improve their performance. Founded in 2001, Medallia has offices in Silicon Valley, New York, London, Paris, Sydney, Buenos Aires, and Tel Aviv. Learn more at www.medallia.com.

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