# Arista's 10/40/100G Scale Enables SAP HANA

To deploy and grow at the aggressive pace that was needed to keep up with the everincreasing needs of big data, SAP's goal was to enable the ability to deploy peta-scale HANA infrastructure. SAP needed a networking technology partner that would allow them the ability to deploy and expand at the aggressive pace required.

SAP needed a partner that not only had the ability to support the thousands of potential machines in a HANA cluster but could also enable the company to deploy new HANA infrastructure quickly and programmatically through their integration with internally developed SDN tools. SAP sought the best of breed to meet the needs of today and that understood the escalating needs of big data deployments.

Arista Network's support for dense 10Gigabit Ethernet, while being highly committed to both 40GbE and 100GbE as the future of data center infrastructure, has allowed SAP to exceed its initial networking requirement for the HANA cluster designs and has given them room to grow as data demand has driven expansion.

**Arista's 10/40/100 GbE Scale Enable SAP HANA Growth**

Due to the unique demands placed on the infrastructure by big data, SAP chose Arista's 7500 Series platform for the core of their largest cluster deployments along with both the 7150 and 7050X Series 1RU fixed configuration switches. The 7500 Series is a high-density, modular, non-blocking and deep-buffer switch that is ideally suited for the HANA environment. Arista's 7500 Series also allows SAP to have a platform that scales through unparalleled investment protection, providing both flexible migration and upgrade paths to next generation line cards, avoiding fork lift upgrades. SAP was able to upgrade their 7500 Series systems tripling density from 384 to 1152 10G ports, adding 40G and 100G line card options, while also tripling the packet buffers.

Figure 1: Arista 7500E

**Programmability Speeds HANA Cluster Deployments**

HANA Cloud Frames are a software defined cluster of resources joined together to form a customer dedicated virtual HANA Appliance. Utilizing Arista's extensible API (eAPI), SAP has automated the deployment of new clusters and can also handle the creation and movement of HANA Cloud Frames around the network. Integrating Arista switches into SAP's provisioning system has allowed network engineers to abstract the network configuration needed for the individual roles inside a Cloud Frame and deploy the network policy with the simple click of a mouse.
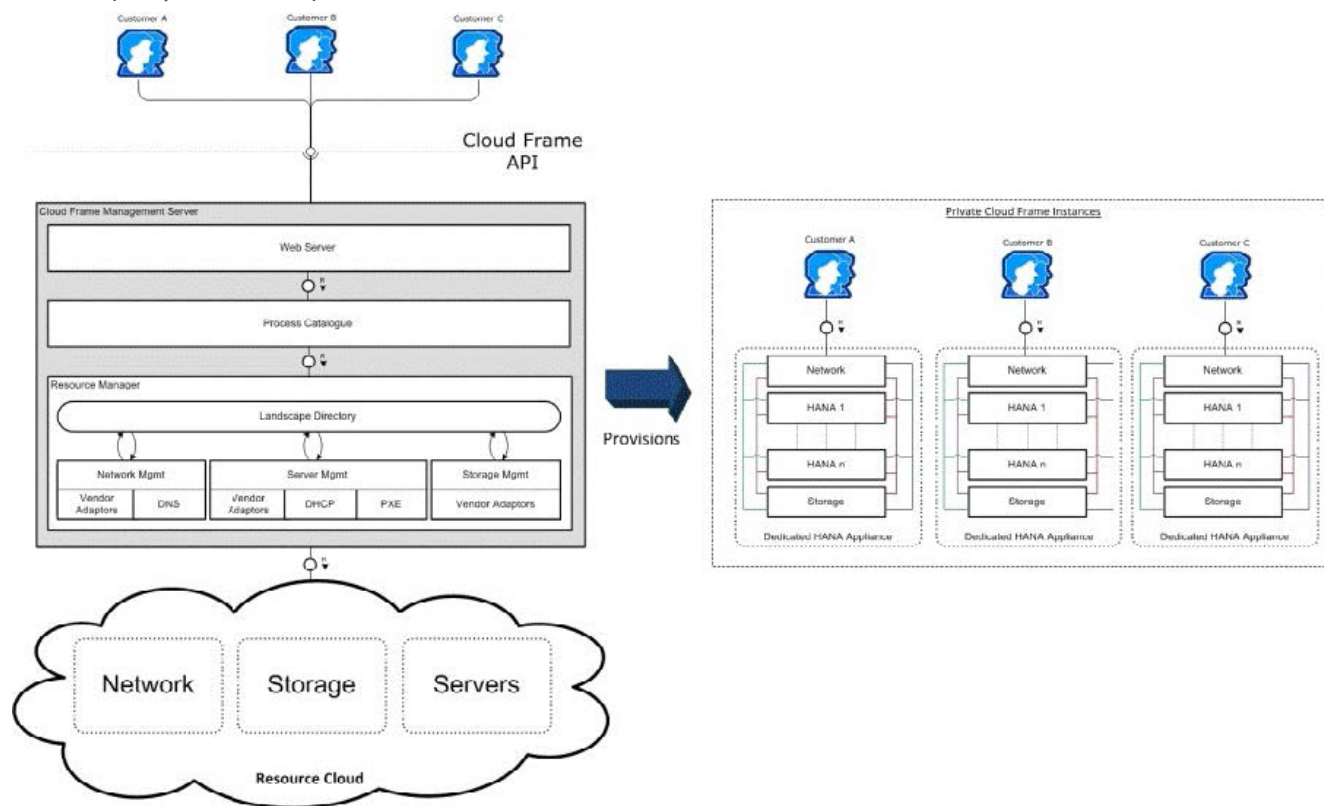
Figure 2: HANA Cluster Deployment - http://scn.sap.com/docs/DOC-34406

Arista's eAPI has also allowed SAP to automate the configuration of Arista's hardware throughout the infrastructure. eAPI, which communicates via a standard JSON interface, utilizes industry-standard CLI syntax to simplify the creation of scripts and allows automation software to read information from and control all Arista devices. SAP was able to rapidly and efficiently create and adapt their existing provisioning systems to seamlessly integrate with the Arista hardware, which has the benefit of drastically decreasing the amount of time to launch a new cluster.

**EOS Extensibility to Lower Deployment Time/Increase Visbility**

SAP is now working to expand the use of the unique EOS® capabilities to further simplify their workflow of deploying new HANA clusters. Utilizing the ability to run VMs and extensions natively on the switch, Arista EOS can handle DHCP requests directly and allow servers to PXE boot directly from the switch. Enabling and configuring the switch to act as a DHCP server and having the switch create Cloud Frames can remove multiple steps from the current process, remove unnecessary burden from other devices on the network.

SAP is continuing to expand the role of the switch including investigating its use as a name server for a local cluster deployment. Each HANA cluster is unique and local to its individual deployment, which makes the Arista switch an ideal location to programmatically assign static DNS resolution, moving more services onto the switching platform and further removing extra steps in HANA cluster deployments.
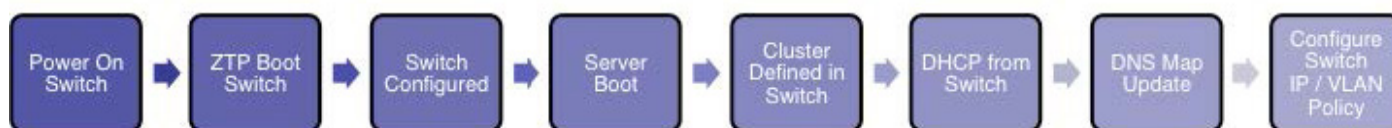


Figure 3: Automatic Cluster Deployment using Arista Extensibility

**Arista Helps SAP Push HANA Enterprise Cloud's Into The Future**

As HANA deployments continue to outpace their current environments and the demand for ever-increasing density continually expands, Arista switches have enabled SAP to meet the expectations of their customers. Big Data drives an exponential growth in bandwidth and in turn creates demand for a path to dense non-blocking 100G ports. The Arista 7500E offers best in class non-blocking 100G density in combination with large packet buffers to handle microbursts and longer duration spikes.

SAP continues to investigate ways to add greater options and flexibility to its HANA Cloud Frames with one design utilizing VXLAN to bridge an HANA Cloud Frame to an on-premise HANA cloud infrastructure. All Arista devices that SAP currently deploys, the 7500E series, 7150 series and 7050X series of platforms have the ability to perform VTEP functions in hardware, allowing SAP to deploy VXLAN with a simple software upgrade.

**Arista DANZ Suite Can Give SAP Valuable Visibility Into The Network**

Arista EOS offers a valuable suite of rich integrated data analytics options that enable greater visibility for both SAP and their customers. Latency Analyzer (LANZ) provides real-time visibility of congestion hot spots and how they affect application performance and latency at nanosecond resolution. LANZ data can be used to provide historical accounts of microbursts or to proactively identify areas of sustained congestion.

Tap Aggregation and Advanced Mirroring features on the 7150 series and 7500E allow SAP HANA Enterprise Cloud customers to visualize and respond to data traffic patterns in real-time. Mirroring of filtered traffic to tap aggregation devices gives truncated or full stream information of the chosen traffic.

Combining real time buffer data and streaming data collected through mirroring/tap aggregation with sFlow and SNMP information into an easy to read portal can give customers unparalleled visibility into the status, health and performance of their individual HANA Cloud Frames.

Figure 4: Example Dashboard View of DANZ Data

**Conclusion**

SAP's need to scale HANA exponentially as the services grew made Arista's 7500 series platform and accompanying fixed configuration 1RU switches an ideal choice in the HANA cell architecture. Commitment to delivering intelligent solutions and leading edge data center platforms has enabled SAP to create an offering that addressed the needs of their customers. Leveraging the unparalleled extensibility provided by Arista's EOS has allowed SAP to remove layers of applications from the provisioning stack, reducing the amount of time to implement a customer environment as well as the ability to offer deep, real-time visibility into the network stack like never before.

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