ARISTA PRODUCT BRIEF

TAP Aggregation with DANZ

INSIDE

Introduction

Organizations are increasingly making the decision to build out-of-band monitoring networks in response to the need for better visibility into application and network performance. These monitoring networks are also becoming essential in enabling improved security, compliance and reporting within the data center.

Existing solutions use a combination of passive network TAPs and port mirroring to feed traffic from a limited number of locations back to TAP aggregators (also known as Network Packet Brokers). Aggregators provide traffic consolidation, source identification, packet processing for elimination of unneeded traffic, and distribution of packets to the appropriate monitoring tools. Traditional Network Packet Brokers have been built with expensive network processors and FPGAs, resulting in low density and high cost per port. As a result, their acquisition and annual support costs make it impossible to effectively build and scale monitoring networks – limiting their scope and ultimately inhibiting network visibility as speeds increase.

New requirements resulting from the application workloads associated with dense virtualization and the deployment of data analytics have driven east-west traffic within the data center to unprecedented levels. This demands high density non-blocking wire speed 10 and 40GbE connections and in some applications even 100GbE, increasingly oversubscribing Network Packet Broker appliances that were designed to principally handle 1GbE or lightly utilized 10GbE interfaces.

In addition, the amount of critical data now flowing in data center networks requires the traditional sample-based approaches of coarse-grain flow analysis to be augmented by a more pervasive architectural model of terabit-speed, always-on, cost-effective monitoring.

Arista offers a new approach to TAP aggregation that delivers high density, non-blocking 10/40/100GbE networks powered by award-winning Arista EOS software to deliver an order of magnitude improvement in the economics of building cloud-scale monitoring. The Arista Data ANalyZer (DANZ) solution delivers scalable end-to-end network and application monitoring with exceptional flexibility and precision, while enabling existing third-party monitoring tools to integrate directly with captured data.

ARISTA

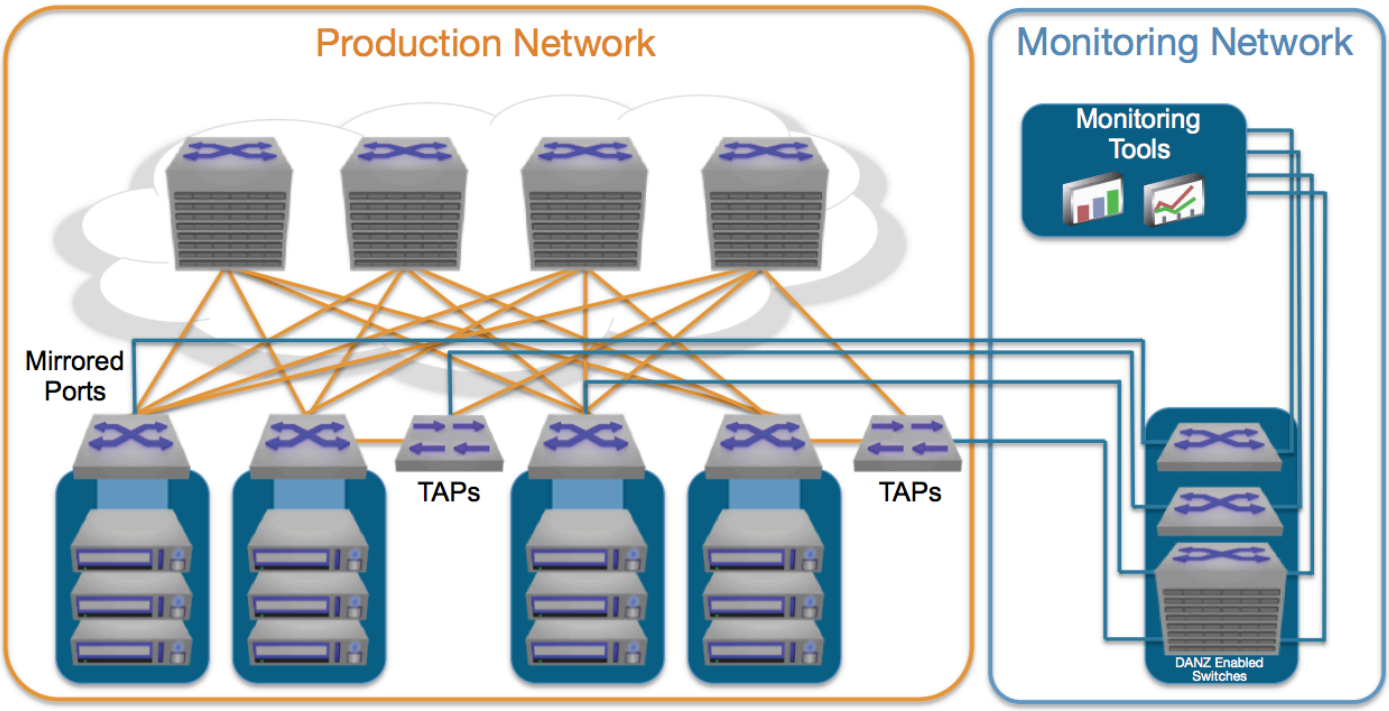


Figure 1: TAP Aggregation Network Architecture with DANZ

THE SOLUTION

Arista's unique switch-based TAP aggregation capabilities leverage state-of-the-art programmable switching platforms to integrate packet capture ubiquitously into the network as shown in Figure 1. This helps avoid the need for additional appliances, which require additional physical interconnects, power and rack space. In smaller scale environments or co-location facilities the Arista switching platforms can leverage Arista's advanced mirroring capabilities with integrated packet processing, filtering and timestamping functionality to allow direct integration with third party analysis tools, eliminating the need for a dedicated TAP aggregation network entirely. In larger scale implementations, a multi-tier approach with separate TAP and data-access layers, may be scaled as needed while leveraging the programmatic control mechanisms in Arista's EOS to configure and control the analysis network.

DISRUPTIVE ECONOMIC VALUE

Arista's TAP aggregation capabilities deliver the ability to construct monitoring networks that give ubiquitous visibility into network and application performance. All of this comes with a cost structure that is an order of magnitude less than what has been possible previously.

- Acquisition costs are substantially reduced by leveraging high performance merchant silicon
- Annual support costs are reduced by moving to higher reliability platforms with common sparing
- High efficiency designs reduce power and cooling costs
- Due to the high density of the new platforms, rack space requirements are minimized
- The operational ease-of-use and automation enabled by the programmability of Arista EOS, and its support of the industry standard CLI reduces training and deployment time

KEY ARCHITECTURAL DIFFERENTIATORS

The Arista TAP aggregation architecture delivers fundamentally new capabilities. These include:

- High density, non-blocking, wire-speed 10/40/100GbE packet capture with advanced traffic management capabilities so all network traffic can be monitored without loss
- Software Defined Networking (SDN) support, enabled by the programmability of Arista EOS, makes it possible to directly steer specific network flows to the desired analysis tools
- AgilePorts on 7150S-series and flexible MXP ports on 7500E-series so that ports can be defined in software to be 10/40/100GbE as needed to support existing and future requirements without forklift upgrades
- The Latency ANalyZer (LANZ) feature enables detection of microbursts and congestion at tool ports so network operators can take appropriate action to maintain network visibility under heavy loads
- Support for emerging network virtualization models (e.g., VXLAN, NVGRE) to maintain visibility of any workload in hyper-dynamic virtualized public and private clouds

EASE OF MANAGEMENT

As networks scale and incorporate dense virtualization and cloud capabilities, many users find that the management tools do not scale well to address the issue of visibility. Arista's TAP aggregation solutions tackle the need for flexible standards-based and open management through a set of integrated user and programmable interfaces. These include an easy to access web-based graphical user interface (GUI), an industry-standard and familiar network command line interface (CLI), and an open programming interface utilizing direct programmable JSON API structures. These interfaces are based on the core state-database of Arista EOS SysDB to provide compatibility and real-time synchronization of configuration state, and to allow for integration with event-driven and cloud platform-based orchestration and management layers.

- WEB-based GUI: user friendly graphical interface for security and dev-ops teams looking for a one-stop solution to configuring and checking the operation of monitoring policies
- Industry-standard network CLI: for network operations and design teams that are familiar with network configurations and operation. The CLI allows them to access the full power of Arista's EOS operating system to control both the monitoring networks and the physical infrastructure
- Directly programmable JSON API: eAPI provides a JavaScript Object Notation (JSON) Linux-standard application programming interface to configuration and monitoring features of TAP aggregation, as well as advanced mirroring and other system capabilities into tools and orchestration/automation frameworks

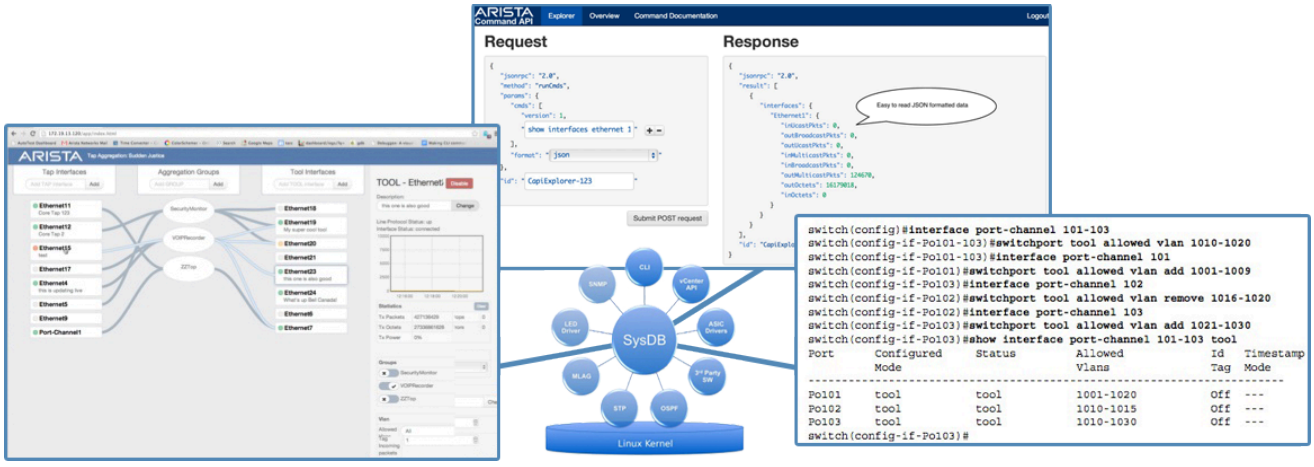
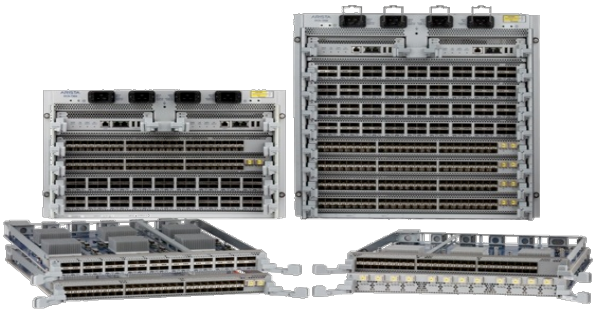


Figure 2: TAP Aggregation Management GUI, Industry-standard CLI, and Linux-JSON API

NETWORK PACKET BROKER CAPABILITIES

Advanced network packet broker functionality is supported in the Arista's DANZ feature set on Arista 7500E-series modular switches and 7150S-series fixed switches*. These capabilities include:

- The ability to aggregate, replicate and capture traffic for processing without affecting production flows
- Any:Any packet replication at 10/40/100Gbps for up to 1152 10GbE ports per system, making it possible to copy traffic to multiple tools for analysis in any size network from a single rack to large cloud infrastructures
- Extensive L2/3/4 hardware filtering for traffic identification, load reduction and distribution at wire-rate
- Flexible packet truncation for header analysis with data privacy
- Precision packet time-stamping for precision transaction flow analysis to the nanosecond level
- Source Identification tagging to determine at what parts of the network traffic was captured
- Standards-based tunneling for transit of flows to the appropriate tools across the monitoring network
- Flexible traffic distribution with multiple load sharing schemes to enable support of lower speed tools in high-speed networks with symmetrical and flow-correct placement of traffic on each tool



7500E Series

7150S Series

SUMMARY

Next generation TAP aggregation using DANZ makes it possible to cost-effectively and losslessly monitor all data center network traffic while capturing and analyzing only the traffic that is needed. With its best-in-class business value, DANZ lowers CAPEX and OPEX versus traditional packet brokers. DANZ is the first solution to bring high density and programmability for monitoring operations in a visibility solution that is built to last, all based on proven open switching platforms and without proprietary fabrics or inflexible designs. With DANZ, customers can transform opaque data center traffic into visibility for better application and network performance management, traffic recording and analysis, security threat detection and mitigation, compliance and troubleshooting.

*Note: not all of the features are supported on all platforms at first availability - check with your Arista Networks representative for more information and to discuss your specific needs for scalable, cost-effective monitoring in the data center.

ARISTA

Santa Clara—Corporate Headquarters
5453 Great America Parkway
Santa Clara, CA 95054
Tel: 408-547-5500
www.aristanetworks.com

Ireland—International Headquarters
4325 Atlantic Avenue
Westpark Business Campus
Shannon, Co. Clare, Ireland

Singapore—APAC Administrative Office
9 Temasek Boulevard
#29-01, Suntec Tower Two
Singapore 038989