Intuit: Pervasive Monitoring and Security Across Multiple Data Centers

Highlights

Challenge

- Reduce tap and tool silos—creating an environment that allowed teams to quickly and efficiently monitor and secure Intuit's multiple datacenters.

- Economically scale monitoring and security tools to accommodate Intuit's global reach, growing cloud and mobile delivery model.

Solutions

- Leverage DANZ Monitoring Fabric, a next- generation Network Packet Broker (NPB) that has been designed from the ground up to build a pervasive visibility fabric.

Results

- Multi--tenant, role based access across all traffic, making monitoring more efficient.

- Realizing increased CapEx/OpEx savings with scale, operational agility and investment protection.

Intuit Inc. creates business and financial management solutions that simplify the business of life for small businesses, consumers and accounting professionals.

Its flagship products and services include QuickBooks®, Quicken® and TurboTax®, which make it easier to manage small businesses, payroll processing, personal finance, and tax preparation and filing.

Objective

Founded in 1983, Intuit traditionally served its customers with packaged software. However, the company prides itself on innovation, and staying with the times, and is shifting its delivery model more and more toward cloud and mobile, while expanding to serve a global market. "Everything is driving towards the cloud. Even when customers buy our software off the shelf, the data is uploaded and can be accessed from their phone, tablet, etc.," says Ted Turner, Senior Network Engineer at Intuit.

Intuit manages its cloud offerings from a number of core data centers. In addition, they partner with cloud service providers to store a lot of the static graphics and provide mobile delivery from localized points. User experience and data security are of utmost importance to the Intuit team, considering the sensitive nature of the information their customers trust to them. The Intuit team uses upward of 72 tools to monitor everything from system logs to SNMP and does a lot of packet aggregation to the monitoring and security tools within all their data centers.

Until recently, Intuit was leveraging a legacy Network Packet Broker (NPB) for monitoring their data center networks. In this approach, each team would install their own NPB in the part of the network that they were responsible for. As an example, only the 24X7 Services Team had access to the Edge nodes or switches of the network for application performance monitoring. They would install multiple NPBs to connect to the Edge switches and bring traffic to their APM tools. Likewise, the security team had access to only the aggregation and core layers of the network.

They would install their NPBs to the aggregation and core switches—and their security tools were connected to these NPBs. The approach caused tap and tool silos, and the silos resulted in inefficient utilization of tools and resulted in the monitoring budget growing linearly with the data center network growth (an unsupportable long-term economic model). Compound these problems across different geographies and multiple datacenters—Intuit found the traditional model to be very inefficient for their new, modern approach to delivering financial and business management solutions.

Solution

As Intuit was looking to enable pervasive visibility across all their data centers with an approach that was economical to scale, they decided to use DANZ Monitoring Fabric (DMF) from Arista Networks. "We wanted more points of input than our traditional NPB could handle economically, so we decided to go with a merchant silicon solution and DANZ Monitoring Fabric to gather packets and forward them to the tools as needed," stated Mr. Turner. The DANZ Monitoring Fabric is a next-generation Network Packet Broker (NPB) that has been designed from the ground up to build a pervasive visibility fabric that addresses the challenges of current NPB- based monitoring solutions.

Controllers—an HA pair of virtual machines or hardware appliances—that enable centralized configuration, monitoring and troubleshooting in a simplified manner. With DMF's scale-out architecture, simplified operations and ethernet economics, it is perfect for companies looking to monitor every rack and those that wish to monitor multiple data centers, like Intuit.

DANZ Monitoring Fabric's support of topology agnostic, highly scalable fabrics was ideal for Intuit as each Intuit data center is split into multiple zones (zones 1–8). Each zone consists of multiple racks of servers (compute nodes) and runs multi-tier applications. Each tier has strict security and compliance requirements, due to the highly sensitive data Intuit customers trust them with.

Additionally, different teams have different responsibilities and priorities—the application teams want their applications to run extremely smoothly, the network operation team wants to ensure there are no network bottlenecks or hotspots (especially during peak tax season) and the security team needs to ensure there are no breaches.

With the DANZ Monitoring Fabric deployment, Intuit was able to cleanly separate the tasks associated with traffic delivery (provided by DMF) from traffic analysis (from the tools). For its scale-out design, Intuit used a 3-tier architecture:

• a layer of switches labeled as "filter" switches

• a layer of switches labeled as "delivery" switches

• an intermediate layer of switches labeled "core" switches

Ports on the filter switches are wired to passive optical taps or switch/router/firewall span ports in the production network and are configured as "filter ports" in the DMF Controller software user interface. Ports on the delivery switches are wired to tools and are configured as "delivery ports." Filter ports (where packets come into the fabric) and delivery ports (where packets go out of the fabric) represent the primary functions of the DANZ Monitoring Fabric.

Additionally, service ports were configured where packets are sent to legacy NPBs for various packet modification services. This investment protection mechanism ensures that features of Intuit's older NPBs can be used at higher scale in this new monitoring fabric design. Lastly, due to its scale (many hundreds of ports), an intermediate layer of switches known as the "core" layer was added to increase bandwidth and scale. All tools (from various teams) were put in a centralized tool farm, eliminating silos and creating further economic synergies.

Results

With the deployment of DANZ Monitoring Fabric prior to the peak tax season, Intuit realized many benefits:

- Multi-Tenant Capability and Role-Based-Access-Control: Each Intuit team could now create their own policies directly from the DMF Controller and deliver all needed traffic to their tools. This role-based access eliminated ticket creation workflows and enables more productivity, as teams have immediate access to needed traffic and data.

- Scale-out Agility: DANZ Monitoring Fabric's scale-out architecture eliminated the need to invest in more NPBs as the data center or the zones expanded. Now Intuit would simply add Merchant Silicon switches to the existing DANZ Monitoring Fabric as they grow the data center or zones. This is exactly how they are currently, cost-effectively scaling the pervasive security initiative across zones 1 to 8.

- Operational Ease: DANZ Monitoring Fabric is provisioned and managed through the single pane of glass — DMF controller CLI, GUI or REST APIs. This operating model allows for an easier integration with existing management systems as well as monitoring tools and significantly reduces the operational costs associated with box-by-box management of traditional NPBs.

- Economical: The DANZ Monitoring Fabric enables optimized and efficient monitoring while providing a multi-fold reduction in total cost of ownership (TCO), making it affordable to have the needed pervasive network monitoring. The decision to purchase new tools is no longer based on geography or location of monitoring points in the data center but on bandwidth requirements of their policies—making usage extremely efficient. Additionally, with DMF, Intuit is now able to monitor 5-times more traffic within their original budget.

- Investment Protection: As mentioned earlier, existing NPB investment is protected (and made more efficient, just as the Tools) as they are now connected to the DANZ Monitoring Fabric as Service nodes. Specifically, while DMF supports sFlow capability, some parts of the traffic in Intuit's case needed to use Netflow. To enable that capability, existing NPB nodes were used as Service nodes, all managed from the DMF Controller.

"We are using SDN first in our monitoring space and are now evaluating where we want to go next," concluded Mr. Turner. Get hands--on experience with DANZ Monitoring Fabric within Arista Labs (https://dmf-labs.arista.com).

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