cpacket
NETWORKS

Benefits

- **Minimizes Business Risk**
  The visibility solution is instrumental for assuring operational continuity, end-user experiences, customer satisfaction, and business success

- **Accelerated Problem Resolution**
  Connectivity and responsiveness problems that previously took days to troubleshoot are now resolved within minutes or hours

- **Democratized Network Intelligence**
  The entire IT organization can easily access a novel Visibility as a Service portal for assuring application performance and security

- **Reduced Cost and Complexity**
  The visibility solution made it possible and cost-effective to use cloud-native mirroring

"We quickly progressed from being frustrated by a lack of visibility to being fascinated by the ways we can use the cPacket cCloud Visibility Suite to provide visibility to ourselves and to our colleagues throughout the broader IT team."

- Network Operations Team Leader

Customer

The organization is a large financial services provider who offers a broad range of SaaS solutions to customers that include enterprises, small businesses, and individuals. It has a global presence, employs roughly 100,000 people, and conducts its business from approximately 20 office locations in 10 countries. The organization recently migrated its SaaS applications from several of its own self-managed data centers to public cloud infrastructure. Acquisitions also spawn workload migrations to its preferred public cloud.

As a technology company providing financial services solutions, its IT operations are critical to the organization's revenue, profit margins, growth, and the financial health of its customers. Service outages due to connectivity disruptions and other types of performance degradation are catastrophic, therefore the SaaS services must be continuously available and responsive.

Challenges

This organization learned that migrating workloads is daunting and fraught with pitfalls, especially while operating SaaS applications. Problems at the infrastructure level during migrations and in production often require technical support from the cloud service provider (CSP). While problems are being solved frustration and customer dissatisfaction adversely impact the organization's business, so keeping mean-time-to-resolution (MTTR) low is important. Supporting the CSP's technical support team with network packet data quickly became a necessity to solve problems and keep MTTR low.

The large global infrastructure required to host the organization's distributed applications is vast, consisting of thousands of virtual private clouds (VPC), and tens of thousands of virtualized network adapters. Utilization of its SaaS applications are subject to peak activity that vary by the type of service and seasonal dynamics that are typical for the financial services industry – such as shopping holidays, paydays, tax season, volatility of equities, and interest rate fluctuations. Hosting more than 50,000 simultaneous connections between their SaaS applications, external services, and end-users is common.

The organization experienced connectivity and user experience problems that were difficult for the application operations (AppOps) team to isolate and resolve. As an example, end-users experienced a application hanging; it was difficult to troubleshoot because visibility gaps inhibited tracing the problem to the root cause. It was common for the AppOps team to request troubleshooting help from the network operations (NetOps) team. Some problems required troubleshooting at the infrastructure-level, so the CSP technical support team had to be engaged, who would request packet capture (PCAP) files that contained network packets from the time and subnets of *when* and *where* problems occurred. Without a method to manage and harness the high volume of network packets, creating and providing specific PCAP files requested by the CSP technical support agents was not feasible because of the size of the organization's infrastructure with thousands of network adapters. So, merely turning on native mirroring was not viable.

Solution

The organization deployed cPacket Networks' Intelligent Observability Platform in their data centers several years prior to migrating their workloads to the cloud. Their positive experiences led them to start off by evaluating the cPacket cCloud Visibility Suite. During the evaluation, several problems were quickly solved, so when they concluded their evaluation, they transitioned their implementation to production use without evaluating solutions from any other vendors.

Despite being a best practice, provisioning visibility is often overlooked when starting to use cloud-based IT infrastructure.

Vendor technical support teams, just like in-house IT teams, need visibility to investigate and solve problems. The more information and the better the visibility that the CSP technical support team has, the faster they can resolve problems for customers using its infrastructure. To address this need, the organization's NetOps team designed and implemented its own visibility solution that exceeds what is natively available from the CSP.

The NetOps team also realized that network traffic visibility needed to be democratized for themselves, the AppOps team, and the entire IT team, so all teams could do their jobs collaboratively and effectively. The NetOps team devised a visibility as a service strategy to acquire, capture, and analyze network packet data from their public cloud infrastructure using the cCloud Visibility Suite. The implementation was straightforward and did not require agents, so they were quickly able to evaluate and move to production. The AppOps team uses the visibility for troubleshooting on a self-service basis to obtain network KPIs, search for packets by timeframe and/or by specific nodes, group them, retrieve them from storage, and analyze them.

Regarding the application problem that was randomly hanging, the CSP technical support and NetOps teams identified the root cause using the newly implemented visibility solution by tracing the traffic. The trace replays immediately revealed the problem was caused by response variations from an external source. Sometimes the responses were so slow the application would timeout. The time and magnitude of the variances were shared with the vendor, who was able to troubleshoot their service and take the necessary corrective action.

A Unique Strategy – A Visibility as a Service Portal

A key objective and benefit for the NetOps team is that they centralized the entire unified monitoring fabric as shown in the following diagram. The virtual appliances (listed below) that provide packet capture, analytics, dashboards, and management of the virtual appliances. The unified fabric eased deployment and gave enabled exposing stored packet data and dashboards to the entire IT team via a Visibility as a Service (VaaS) portal. The cCloud Suite API also enables the NetOps team to extend the functionality of the VaaS portal.

The cCloud Visibility Suite helps Assure Connectivity
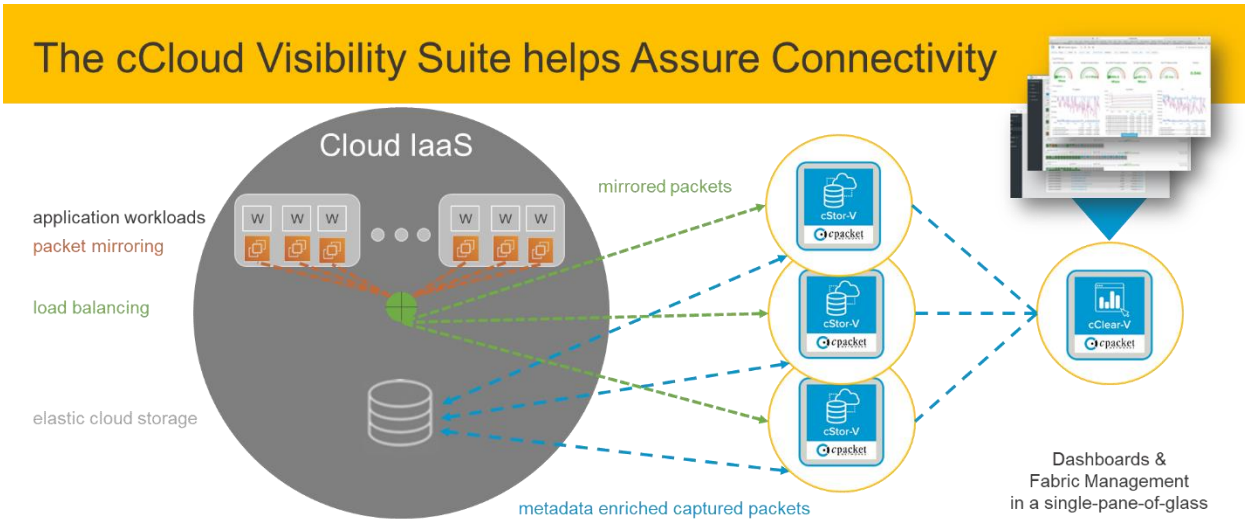
The solution was implemented using the following cCloud Visibility Suite components:

cClear®-V Analytics Engine – This virtual appliance presents user interfaces for provisioning, management, and data visualization in a single-pane-of-glass. A single instance of this virtual appliance provides customizable interactive dashboards that give the entire IT team actionable network intelligence that consists of real-time network status, KPIs, baselines, anomalies, and other analytics results.

cStor®-V Packet Capture to Storage – A cluster of cStor-V virtual appliances are deployed and centrally managed, giving the NetOps team a simple turnkey solution to capture, manage, and analyze the high velocity and volume of network packet data in a unified manner. Additional virtual appliances are easily added to accommodate growth. Network packets are routed to individual packet capture virtual appliances using the CSP's native load-balancing service. Packet data is enriched with timestamps and other metadata before being stored in the cloud. The metadata makes queries, recalling specific packets, and analysis extremely fast. For precise troubleshooting, network traffic is replayed from before through after an event for tracing and to understand exactly what happened.

Results

Immediate and widely recognized successes plus providing visibility to the entire IT team made the NetOps team heroes. The NetOps team achieved its objective to help the CSP technical support team and itself to efficiently resolve unforeseen and hard-to-diagnose connectivity problems. They exceeded their objective by going beyond attaining the visibility they needed; they also implemented a useful Visibility as a Service portal for the entire IT organization to use (and they do). The NetOps team is continually expanding the scope and benefit of its cloud VaaS portal in collaboration with cPacket Networks.

The organization realizes the following benefits:

- The IT team lowered troubleshooting and resolution times from days to just minutes or hours, especially when escalating problems to the CSP's technical support team, thereby improving the timeliness of assuring continuously exceptional end-user experiences and accelerating service agility
- The AppOps team troubleshoots and resolves connectivity problems using the self-service VaaS portal
- The NetOps team is better able to assist the AppOps team when they need help and escalate problems
- The CSP's technical support team has the evidence they needed to know if problems reported via trouble tickets are with their infrastructure, and if so that same information to aides them to efficiently resolve problems; even if not they are better enabled to help their customers troubleshoot and resolve problems
- The security operations (SecOps) team has access to stored network packet data as forensic evidence
- The organization is able to optimally and cost-effectively use cloud-native mirroring
- The line of business owners who are each responsible for a specific financial services solution benefited by removing performance problems that could cause customer churn and increasing business transaction velocity

About cPacket Networks