Assure Customer Training Experience Hosted in AWS Cloud with NETSCOUT

Organizations are motivated to implement visibility for ensuring end-user experience one of two ways - either in response to receiving reports of user problems or to avoid users contending with issues. It was the latter that inspired this high-tech company to initiate visibility for performance monitoring and end-user experience assurance for their newly designed, global customer training initiative hosted in Amazon Web Services (AWS) cloud.

Issue

The COVID-19 pandemic had required this high-tech company's annual user conference to go from an in-person experience to a virtual event. A cornerstone of this meeting was the attendees' ability to take multiple hands-on training courses – from beginner, to intermediate, to advanced sessions on multiple products – gaining certification status in the technologies that also improved user's abilities to perform their jobs. That was when the company's innovative training, support, and IT organizations came together and designed a customer training initiative that was literally "Born in the Cloud." They would deliver their traditional hands-on-labs live, not in-person, by offering their course materials and lab technology in AWS cloud.

The deployment on the part of the high-tech company was complex, but their top priority was to ensure that the feel of this virtual training would have the same quality of experience for the end-users as though they were taking in-person training labs. The IT team turned to their network and application performance and end-user experience assurance partner, NETSCOUT®, to develop a solution.

Impact

The impact on the end-users was obvious – if they experienced problems between their location and the training modules hosted in the AWS cloud, they would be unable to either keep up with the live training session, which could mean they might not complete the session and receive their certification, or they might have to retake the class at another time, either of which meant a productivity disruption in their day.

However, it could lead to other issues as well. Users that were unable to achieve completion and mastery of the material could be less prepared to perform their jobs and would likely speak poorly of the training, and the company, to co-workers. This could affect the sterling reputation for customer service that the high-tech company had developed over the years. Furthermore, it could impact repeat business, putting revenue at risk.

Ultimately, the company had always put their customers' experience first, thus was the motivation in implementing the end-user experience monitoring solution with NETSCOUT in the AWS cloud.

Troubleshooting

The high-tech's customers were located around the world and up to 3,500 of them could be taking live classes at a given time, which made hosting the training labs in AWS's CloudFormation a perfect solution. In this SaaS Model, each attendee had their own lab, which replicated laptop setup they would normally have in an in-person class. Each attendee accessed a hands-on lab in the AWS Region closest to their location (e.g., N. Virginia, Singapore, Paris, or São Paulo), providing a crisp experience for each user.

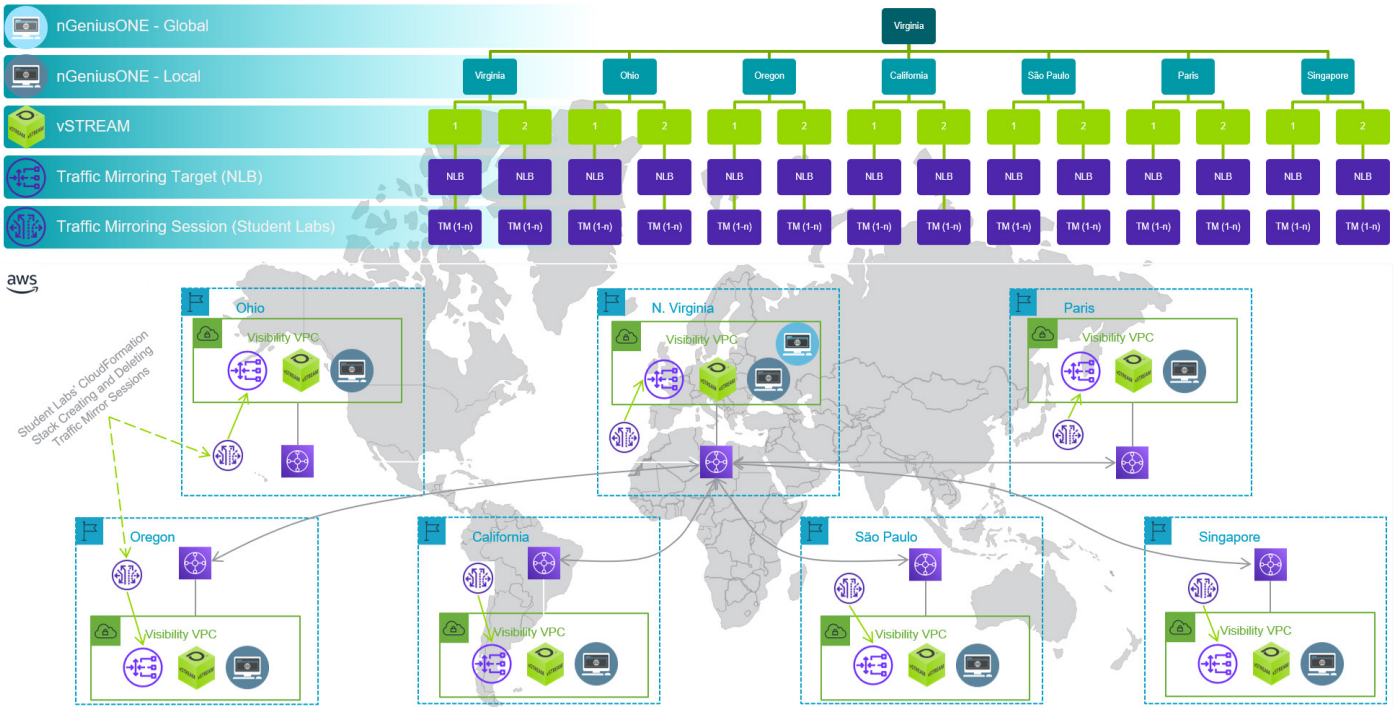

Figure 1: To monitor performance and quality of end-user experience with the training session the company leveraged nGeniusONE, which used AWS's VPC Traffic Mirrors to send a copy of the training traffic to vSTREAM virtual appliances for real-time analysis, trending, and reporting.

With the assistance of their premium service engineer from NETSCOUT, the IT team developed a visibility stack for the nGeniusONE® Service Assurance (nGeniusONE) solution using AWS's Virtual Private Cloud (VPC) Traffic Mirrors to send a copy of the traffic to vSTREAM® virtual appliances to monitor performance of the classes, as well as end-user experience. (Figure 1)

In fact, with on-demand regional scaling, this all happened seamlessly, with AWS CloudFormation providing the automation piece for launching the labs and traffic mirroring in individual Visibility VPCs. When a class started anywhere in the world, it was immediately detected in the closest regional location, and virtual taps began mirroring traffic to the vSTREAM in that region to track user experience. Instances of nGeniusONE were in each region for real-time analysis, providing the ability to coalesce those sites in the nGeniusONE Global Manager for analysis and reporting of the training performance around the world.

The IT team, working with their NETSCOUT resources, created a series of dashboards to improve their mean-time-to-knowledge (MTTK), including User Experience by Region (Figure 2) and Geography, User Experience by Application (application = an actual class), and User Experience by Application Performance. For each of the multiple regions where the classes were hosted, the dashboard provided quick identification of failures in server connect time, client connect time, and call set up.

If issues were revealed in any of the regions, the IT staff could leverage logical, intuitive drill downs to gain more information found in Service Dependency Maps that visualized the service delivery environment; to Universal Monitor or specific monitors that helped quickly identify sources of degradations in the service delivery environment; to Session Analysis for hop-by-hop details on root cause of issues; or to Grid Views for over-time analysis. (Figure 3) Many details and metrics were monitored and analyzed, including application utilization (for the individual class modules), application performance, MOS tests, network utilization, TCP retransmissions, and protocol performance, such as HTTP, SSH, DHCP, just to name a few.

Configurable Grid Views in nGeniusONE provided them over-time information deemed important to the IT organization. In this case, the high-tech company was tracking TCP Retransmissions, knowing this would identify potential emerging issues. They found in most locations, for most of the day's classes that were held, there were minimal TCP Retransmissions. However, for May 3rd, where all sites showed minor spikes, that were unnoticed by the users, IT was able to share details with AWS to collaboratively investigate further.

Remediation

At that time, there was no need for any adjustments to the AWS CloudFormation stacks, as the implementation and ongoing monitoring with nGeniusONE confirmed efficient operation of the training modules hosted in the cloud. Continued monitoring for all training sessions delivered identified potential problems with additional insights to any required adjustments, including evidence to back up recommendations and conclusions.

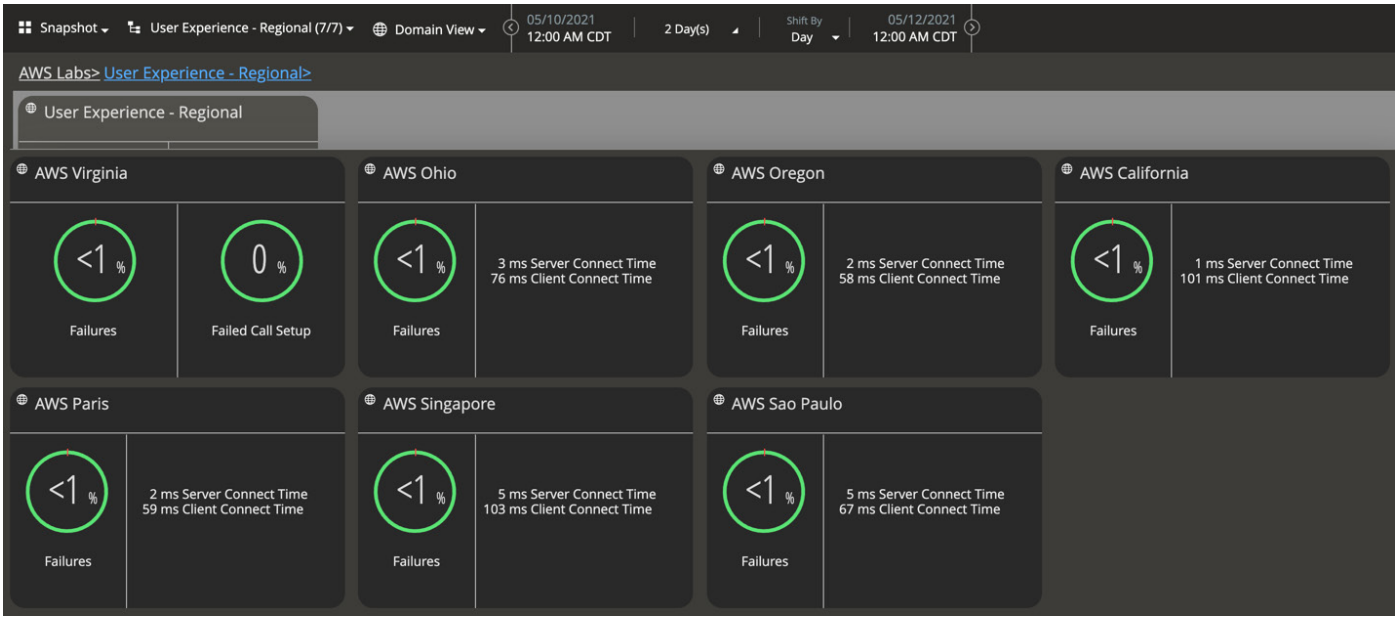

Figure 2: Views of the AWS regions offering the training classes to students worldwide confirmed quality end-user experience in all regions.

Figure 3: nGeniusONE provided configurable Grid Views of information deemed important to the IT organization. In this case, the high-tech company was tracking TCP Retransmissions.

Summary

The top priority for this company was high-quality user experience for both the instructors and the students, regardless of whether they were taking a beginner, intermediate, or advanced course from Chicago, Mexico City, London, or Beijing. Automated monitoring of the training sessions delivered through AWS, in each region of the world, using nGeniusONE and vSTREAM virtual appliances validated that their live classes operated as designed, free of degradations, and with the quality and performance the company strives to deliver.

As this high-tech company makes this training program their primary delivery mechanism post-pandemic restrictions, the company is confident that they can now offer consistently high-quality training to more customers, more often, in the comfort of their own work environments. This benefits corporations, saving travel time and money; the students, who have access to more sessions, more often, without needing to be away from home; as well as the high-tech company, as they certify more customers to use their products as part of their work responsibilities.

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