

# Intelligent Early Warning and Seamless Workflows Enable Quick Resolution of Customer Outage

## Overview

### Region

North America

### Business Challenge

- Mobile subscribers not able to access the 3G network
- Inability of existing troubleshooting tools to provide a clear indication of service-affecting problem

### Business Value

- Early warning indication of abnormal behavior with service enabling applications that can affect user experience
- Comprehensive workflows from alerting to analysis to resolution
- Ability to identify what services, what locations and what customers are affected by a problem
- Seamless coverage across 3G and 4G LTE networks



### Customer Profile

The customer is a leading provider of wireless voice and data services with over 90 million mobile subscribers. They deliver a wide array of services over their 3G and LTE networks to customers in North America.

### Business Challenge

Service providers are deploying next-generation Long Term Evolution (LTE) networks to provide faster speeds and improved user experience, and as a platform to deliver new and innovative multimedia-blended services to their subscribers. This customer is deploying an LTE network alongside their existing 3G CDMA2000 network, and as such, requires connectivity between the technology domains to assure that their subscribers will have a seamless user experience as they move from the coverage area of one Radio Access Technology (RAT) to another.

To facilitate interworking, this customer has been evolving its existing mobile access and core components to support transactions in both 3G and LTE domains. The evolved High Rate Packet Data network (eHRPD) is the Radio Access Network (RAN) that leverages CDMA2000 access in addition to supporting connectivity to the Evolved Packet Core (EPC) of the LTE network. In order for customers to access network resources and services in either the 3G network or the LTE network, they need to authenticate and authorize with the AAA platform in the 3G environment and the Home Subscriber Server in the LTE domain.

In the 3G environment, the RADIUS application provides the means by which network elements communicate with the AAA server. In LTE, the repository for the subscriber data is the Home Subscriber Server (HSS), and it is responsible for authentication and authorization. This platform

uses the Diameter application to carry out these tasks with the downstream network elements. This service provider was confronted with a situation where several of its customers were having a problem getting authorization to the 3G network. The operations team responsible for this part of the network was unable to identify the problem with their existing performance monitoring tools even though they could see the RADIUS requests being sent from the eHRPD network.

### NetScout Solution

The nGenius® solution was deployed to monitor the HSS platform in the IP core to provide visibility into applications like Diameter that supported authorization and authentication to the LTE network as well as the IP Multimedia Subsystem (IMS). They had deployed the nGenius analytics module to provide visibility into the health of the transactions that enabled the customer to attach to the network and access mobile data services. The nGenius solution was configured to break out the performance of

this aspect of user experience on a region-by-region basis so they could more easily isolate the location of the problem as well as understand which customers were being affected when there was an issue.

The team monitoring the performance in the IP core noticed an increase in the amount of authentication denials in one area of the network. The nGenius solution was able to provide them the magnitude and region of the network where customers were experiencing the problem. Further analysis quickly showed that while there was still the same number of successful authorizations to the LTE network, there was an increase in the number of requests all of which were subsequently denied. Further investigation into packet-level analysis identified the problem: the HSS was getting RADIUS authorization requests from the eHRPD network that should have been going to the AAA server for the 3G network. These requests were being summarily rejected and was the reason 3G customers were not able to connect.

The IP core team relayed this information to their counterparts troubleshooting the problem in the 3G network, who were then able to successfully resolve the issue and restore proper service levels.

### Business Value

The nGenius solution provided the IP core team with visibility to help them identify, isolate and resolve abnormal issues that were affecting user experience. The early warning views provided by nGenius solution allowed the IP core team to understand what service was being impacted, the region involved, the magnitude of the problem and what customers were impacted. The comprehensive workflows in the nGenius solution allowed them to quickly analyze, down to the packet level, and identify the root cause of the problem and share this information with the appropriate teams. With the nGenius solution, they were able to reduce the time it took to resolve the problem, and restore service levels and user experience.

Solution Highlights	
<b>NetScout Equipment Deployed</b>	nGenius solution with multiple specialized analytics modules and over 300 InfiniStream® appliances.
<b>Users</b>	Over one hundred users in multiple departments.
<b>Breadth of Coverage</b>	The nGenius solution is used to monitor, troubleshoot and report on applications and service enablers in the CDMA2000 network. It was expanded to monitor key interfaces and applications in the LTE and IMS core.
<b>Services Covered</b>	The nGenius solution provides visibility into 3G service, enabling applications such as Authentication, Profile download, Policy download, Authorization, and Charging related Diameter-based services.
<b>Networks Covered</b>	LTE Evolved Packet Core, IMS core, eHRPD/CDMA2000 network.



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