

GOVERNMENT SOLUTIONS

The Network Environment

A highly redundant and secure network spanning North America, built with Cisco Systems equipment.

Challenge

To deliver consistently high performance on an extremely mission-critical network. This requires performance issues to be addressed quickly, and any potential changes to the network to be analyzed at the packet level.

Solution

NORAD uses a wide range of NetScout solutions across the enterprise network, including Sniffer Distributed, Application Intelligence, Visualizer, Administrator and Sniffer InfiniStream.

Benefits

NetScout solutions allow the NORAD network team to maintain the highest levels of network performance while reducing the time required to solve network issues by a factor of ten to 15.

“Without Sniffer Application Intelligence there’s no efficient way we could understand the traffic patterns, and how much load we were putting on the network with applications.”

**Network Management
Architect supporting NORAD**

NetScout and North American Aerospace Defense (NORAD) Watch the Skies

Introduction

Responsible for protecting the airspace of two vast countries, the North American Aerospace Defense (NORAD) Command keeps vigilant watch over Canadian and U.S. skies – from Alaska to the Florida Keys, and from Newfoundland to California. Thousands of U.S. and Canadian military members have worked side-by-side in both countries for more than 40 years to protect North America against an aerospace attack. In today’s extremely security-conscious environment, NORAD relies on an expansive enterprise network to share information and communicate with split-second response. In turn, it relies on multiple contractors to maintain and operate NORAD’s network, and deliver the utmost in network performance – a complex task made simpler and more effective with Sniffer® Solutions including Sniffer Distributed, Application Intelligence, Visualizer, Administrator and Sniffer InfiniStream™.

Angelo Tenaglia, a network management architect supporting NORAD, specializes in creating integrated network management solutions for enterprise architectures. He says, “In today’s post-9/11 environment, NORAD plays a critical role in combating terrorism in our domestic airspace. From the airspace monitoring systems, to routers and switches, to email and Microsoft Active Directory servers, all components of the enterprise network must perform optimally.”

VoIP Intelligence Helps Determine VoIP Feasibility

Packet-level analysis was also required to help Tenaglia determine if the NORAD network could support voice over IP (VoIP) traffic at the necessary quality level, without degrading performance of the network or other applications. He used Sniffer Distributed with the VoIP Intelligence software option to determine the maximum number of concurrent calls the NORAD network could sustain before the VoIP activity affected available bandwidth on the wide area network (WAN).

“Leveraging our existing Sniffer Distributed probes loaded with VoIP Intelligence, we used a subset of the production network to test VoIP feasibility,” Tenaglia recalls. He and his team monitored voice calls going across the network subset, captured them and then exported the files into OpNet, an offline modeling and simulation tool. “The outcome was we learned that we could only make a small number of calls simultaneously from one site before bandwidth was affected. After we determined that we were able to set our Cisco VoIP call managers accordingly to ensure sustained high quality service levels. We did additional captures on the site probe to determine the root cause of the performance issue.”

Application Intelligence Delivers Packet-Level Network Information

Tenaglia and the NORAD network management team must address all seven OSI layers of the mission-critical enterprise network to ensure full visibility. In doing so, they employ a full suite of network and application management tools from NetScout and other providers. "The NORAD network is so big and is so mission-critical, before we implement any new application or change the network we need to explore any possible situation that could arise," he says.

Application Intelligence is central to Tenaglia's investigative efforts. "Prior to using Application Intelligence, our challenge was being able to monitor and characterize the NORAD network, and perform modeling and simulation. To do that we needed performance monitoring tools to capture data flows and help us understand application loads so we could do modeling studies. Application Intelligence is the ideal tool. We are using it to model command-and-control systems and characterize the traffic they will carry. Without Application Intelligence there's no efficient way we could understand the traffic patterns, or how much load we were putting on the network with applications."

Sniffer Distributed: Ready to Solve Problems

Tenaglia has deployed, and continues to use and support, a constellation of NetScout devices across the NORAD network, ready to provide essential data should a performance issue arise. He recently tapped a Sniffer Distributed device at a far-flung location to quickly solve a network performance problem that stemmed from an excessively "chatty" Microsoft Active Directory server. He says, "We received a trouble ticket from a site with a half-T1 connection. The complaint was that

the connection was filling up with voluminous amounts of traffic during a specific, consistent timeframe. Pulling in data from the Sniffer Distributed probe that was already at that site, I used Enterprise Visualizer to isolate what type of traffic was causing this heavy load. We then took Enterprise Administrator and did additional studies to isolate the problematic traffic."

Tenaglia quickly discovered that the site's Microsoft Active Directory server was misconfigured and was updating its records every fifteen minutes within a several-hour timeframe, instead of hourly. This information was replicating across the network, causing the bottleneck. "Without Sniffer Distributed it would've taken us three or four weeks to pinpoint the problem, since it would be very difficult to sort out the traffic at a packet level. With Sniffer Distributed it only took us two days to get that portion of the network performing at its usual high level," he says. "It's just another example of how NetScout solutions help us keep the NORAD network up and running at peak performance, every day."

Epilogue

Angelo Tenaglia, a network management architect supporting NORAD, says: "There's no doubt that the Sniffer solution provides true traffic visibility, allowing us to understand traffic conversations and pairs, and application behavior. The NetScout solution is perfect for us – we have a central location and need to understand the entire network using a distributed model that Sniffer provides. Other vendors are more isolated and offer only point products; we wanted to be able to gather information from one central location and get the big picture. NetScout has exceeded our expectations."



About NetScout Systems

NetScout Systems provides advanced network and application service assurance solutions that deliver complete visibility into real-time, packet/flow-based operational intelligence. IT operators at the world's largest enterprises, government agencies, and service providers use the Sniffer and *nGenius* solutions to troubleshoot service degradations faster and more efficiently in order to reduce MTTR.

Our world-renowned Sniffer and *nGenius* solutions include:

- Intelligent Data Sources for high capacity, deep-packet recording and monitoring
- Analysis Software for real-time and historical network and application performance management, troubleshooting, capacity planning, and reporting
- Advanced Intelligence for early detection and in-depth analysis of complex or specialized application services

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