CASE STUDY
NATS

NATS ENSURES A SAFE TRANSITION FROM AN ANALOGUE TO AN IP-BASED GROUND-AIR COMMUNICATIONS NETWORK WITH ITRINEGY VIRTUAL TEST NETWORKS

NATS (formerly National Air Traffic Services) is the UK's leading provider of air traffic control services. Providing services to 14 UK airports, each year it handles 2.4 million flights and 250 million passengers in UK airspace.

The Project

Prior to 2016 NATS relied on its remote trusty DaVinci (Data and Voice Integrated NATS Communication Infrastructure), a non-internet-based Wide Area Network, to connect its air traffic control centres with airports, radar and communication sites, reliably carrying operational radar, voice and flight data right across the UK, from the Channel Islands to the Shetland Islands.

However, demands on the analogue communications network were growing exponentially. In addition, the DaVinci network had a limited lifespan, which eventually led to a notification from the provider that it was being withdrawn from service. NATS saw this as an opportunity to move to a newer networks platform.

Installing new technology would meet the European requirements to harmonise technologies among participating European partners to deliver one seamless European aviation infrastructure. These include centralised functions such as Air Traffic Flow Management initiatives and Voice over Internet Protocol (VoIP).

Work on the Enhanced DaVinci Project began in 2011, and over the next five years NATS set about designing, building and transitioning a new IP-based network.

iTrinegy's Network Emulators played a vital role in ensuring the transition went smoothly

The Requirement

Given the safety-critical nature of communication between pilots and air traffic controllers, effective testing was clearly going to be of paramount importance. With this in mind, NATS set about finding tools that would enable it to complete testing with minimal impact of the live systems. One technology that fitted the bill was network emulation which enabled NATS to recreate a wide variety of network conditions in which to test the way IP-based networks interacted with NATS systems.

The Solution

After researching the market, NATS selected iTrinegy's INE Enterprise network emulator to help it achieve realistic systems testing over networks. The INE Enterprise, with its ability to reproduce complex multi-path (meshed) networks, was used as part of the NATS test environment to mimic many of the 1000+ individual connections that exist between 62 geographical locations.

Being able to adjust the network characteristics (latency, packet loss, available bandwidth etc.,) of such links in a controllable and consistent manner enabled NATS to thoroughly test the resilience of their systems and provided them with the confidence that the transition could be achieved safely.

INE Enterprise continues to be an integral part of the NATS test infrastructure and was also used to verify the robustness of remote radar station communication feeds as part of a major upgrade to the UK's 23 radar station network.