

Case Study

Latin American Operator Restores Mobile Services and Community Morale

How a Tier 1 Latin American operator used VIAVI NITRO Mobile after a hurricane to propel themselves to become the number one mobile service provider

The Critical Challenge:

After dodging severe cellular outages with passage of another major hurricane the week prior, a Latin American mobile operator braced itself for yet another direct hit by an ominous Category 5 hurricane. When the hurricane made landfall, it severely reduced cell service to 8-9% coverage of the entire network. With power outages covering most of the mobile service area, the head of network operations found his NOC was also without communications. Restoring cell service for the entire mobile network, was going to be unlike any challenge they'd previously faced. While the mobile operator had generator power to over 40% of their cell sites and their NOC, with more diesel, batteries and vehicles at the ready ahead of the storm, how would they know which nodes were still operational after the storm? Where should their restoration work start given vast destruction?

NITRO Mobile: Network and Service Visibility to the Rescue

This Latin American mobile operator purchased the NITRO Mobile assurance and intelligence solution from VIAVI in 2016. With soaring growth in mobile data, they faced an urgent need to implement a solution to quickly and proactively find network and subscriber issues for mobile services. They desired a solution that would scale cost effectively with the explosive growth of subscriber data demand, that was easy to learn and use, and that was designed with a "future-proof" architecture, allowing for continued cost-effective scaling in a future virtualized environment.

"We never thought about using NITRO Mobile as a disaster recovery solution, but we did it... and it really sped up recovery!"

*Head of Network Operations,
Tier 1 Latin American mobile operator*

Noting that, in the wake of the devastation left by the hurricane, NITRO Mobile helped them identify which nodes were operational, where to begin, and where to focus their recovery efforts.



Citizens attempting to get service days after the hurricane made landfall. (Photo: REUTERS/Alvin Baez)

The hurricane had wiped out most service for all subscribers, including competing service providers. The head of network operations, while trying to manage his NOC team, did what he had always done each morning: once the NOC was successfully switched over to generator power, he launched the NITRO Mobile Customer Experience Assurance (CEA) user interface to look at a map of the cell tower locations to see where the problems were. Figure 1 is what he observed. Just a handful of cell tower locations showed as online, but with the majority of those online in critical status.

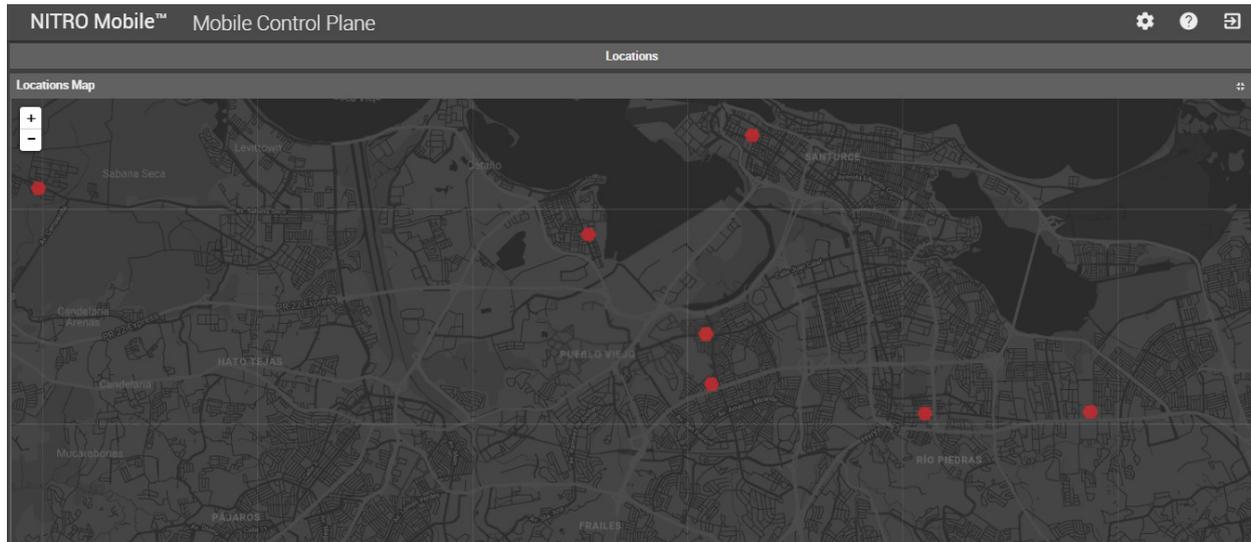


Figure 1: NITRO Mobile CEA - Network health post hurricane landfall.

Before the hurricane, the network was in good status as depicted in Figure 2 —a sharp contrast in network availability.

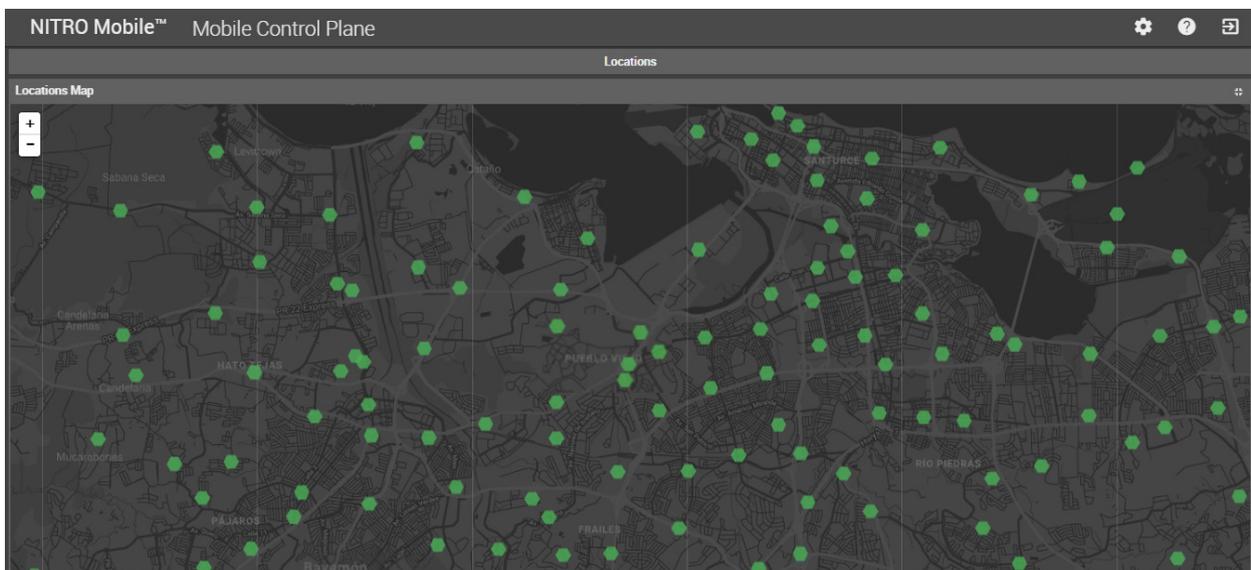


Figure 2: NITRO Mobile CEA - Mobile network health before the hurricane.

The head of network operations realized that many cell sites were functioning with back-up power as they had generators and the most likely reason they were not showing in NITRO Mobile was due to backhaul/fiber cuts. "We never thought about using NITRO Mobile as a disaster recovery solution, but we did it!", he said, "...it was easy to tell where the fiber cuts were and it really sped up recovery." Once fiber teams were dispatched to those fiber repair locations that he could estimate via the NITRO Mobile user interface, and once fiber repairs were made and connectivity was restored, he could see more nodes appear online in the CEA map, confirming the availability and performance of generator-powered cell service being restored to citizens.

The fiber repair teams made steady restoration progress. The mobile operator took to social media, just two weeks after the hurricane's landfall, to inform any citizens with service that subscribers could count on the operator as their fiber teams were connecting them. (See Figure 3)



Figure 3: Social media showing the messaging from the operator regarding fiber repairs

Despite the lack of consistent power, the growth in service availability began to gain the attention of the press covering the hurricane's devastation:

From a news article dated two weeks after the storm: "*<the Latin American mobile operator> has stepped up to a challenge in the wake of <the hurricane> that <its> peers...have been slower to address, residents said.*

...eleven days after the hurricane hit,<the operator> had restored service in 28 of 78 municipalities, reaching about 310,000 customers.

'<The mobile operator> is the only one with service here,' said a local citizen...who was waiting outside the operator's store hoping to buy a phone to call his wife, whom he has heard from just once since the storm.'

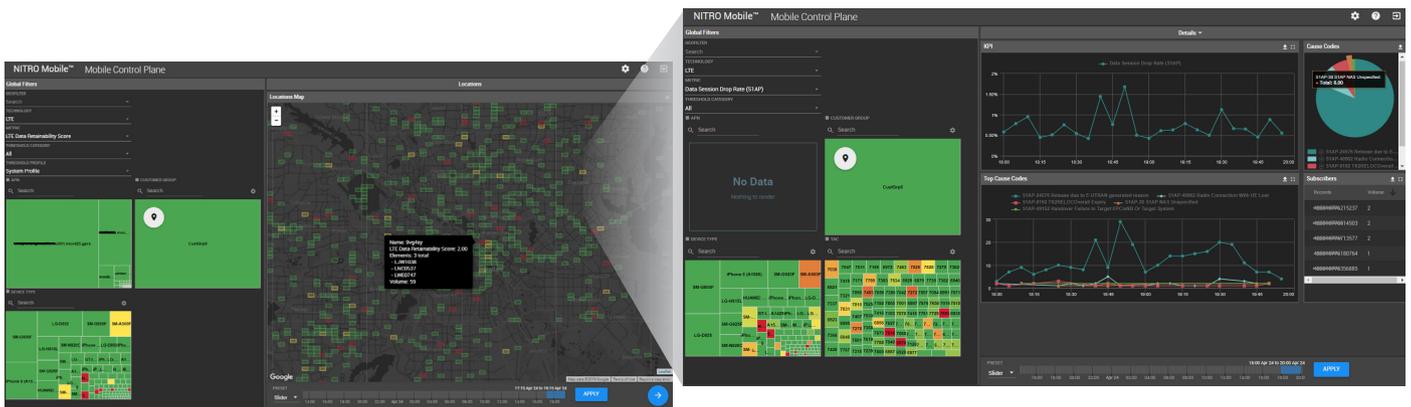
The ability of NITRO Mobile's intuitive proactive workflow allowed the network operations and fiber repair teams to start at a cell site and work backward towards the core of the network, assuring connectivity and power to provide service. With the visibility provided, despite the harsh conditions, the mobile operator began assuring basic cell site coverage, returning later to tune.

In some cases, new radios needed to be installed on the ground temporarily to provide basic service until more detailed repairs such as tower and antenna alignment repairs could be performed. This enabled even more service to be offered, propelling the mobile operator to a position to also address wireline customers that had no service. They began offering WiFi routers with SIM cards to their wireline customers who were without service, further increasing citizens' ability to communicate while also growing the number of wireless subscribers.

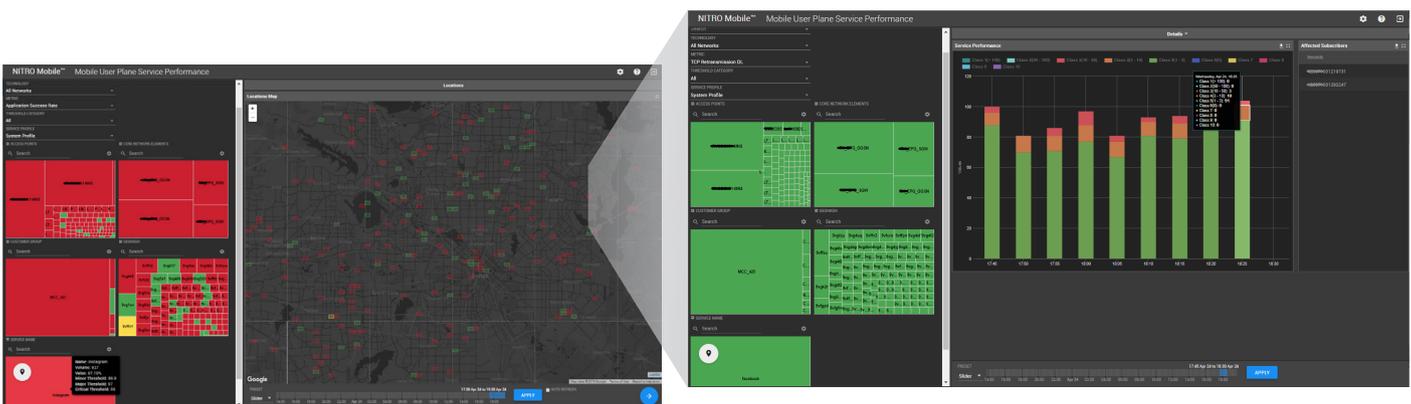
Finally, the operator began offering their network temporarily to other mobile operators, as the focus in the first several months was full recovery vs. traditional competition. As repairs were made and as the number and types of wireless subscribers increased, the NOC had the ability to see network and subscriber health via NITRO Mobile to assure their customer's best experience considering the significant challenges that continued throughout the hurricane affected areas' recovery.

Clear Insight with Rapid Issue Identification

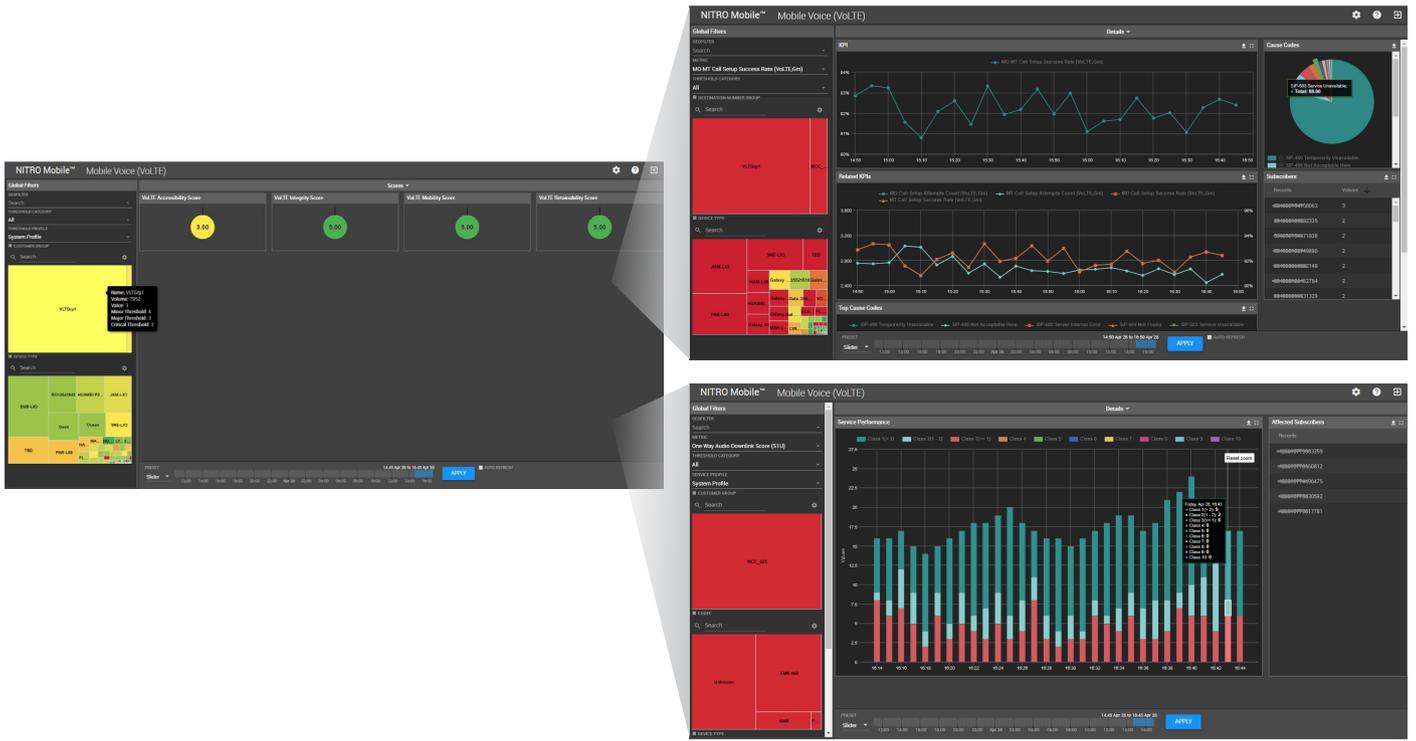
NITRO Mobile, the key solution assisting the operator with their recovery efforts, is a software-based mobile assurance and intelligence solution. It is based on the latest technologies that provide proactive network and service assurance and diagnostics, allowing for unprecedented insight and rapid issue identification. The solution also provides third-party intelligence feeds to enable analytics for mobile and IMS service providers. NITRO Mobile uses an innovative approach with open source software and leverages COTS hardware and virtualization technologies to offer the highest scale and lowest cost footprint solution in the market today. Of utmost value is the ability, with NITRO Mobile applications (Figure 4), that enable automation with in-context drill down to proactively identify root cause in just a few clicks. If deeper visibility is required, one can choose a subscriber (by IMSI) and launch into a diagnostical session trace (call flow ladder diagram) and observe the call flows and packet decodes for the flows, if needed. NITRO Mobile also has the capability, as an add-on, to gather, on demand, a full-subscriber packet capture for offline analysis if so desired (Figure 5) – giving the unprecedented visibility from the highest (cell site) to the deepest layers (subscriber packet decode) while providing a low cost solution with some of the highest scaling ability in the market today.



Mobile Control Plane



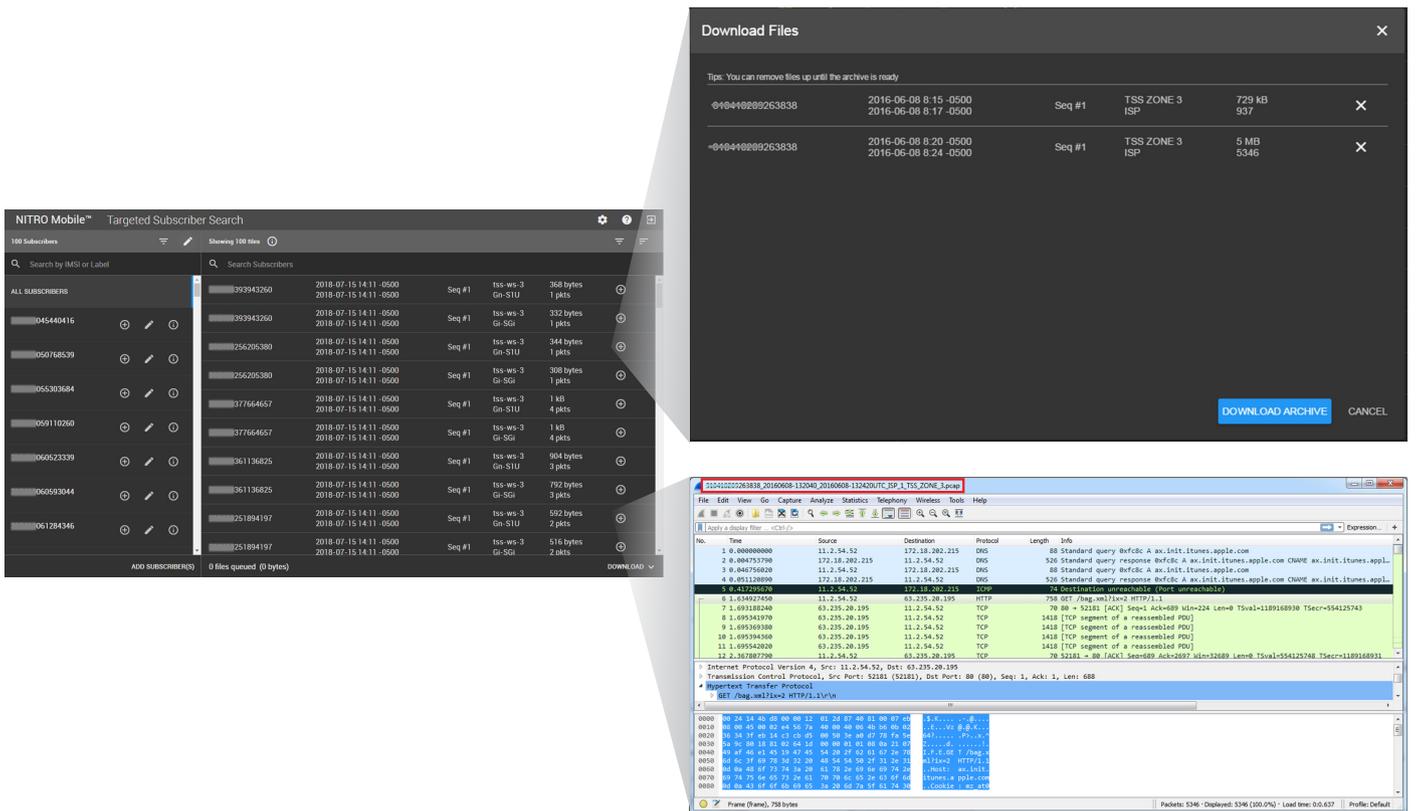
Mobile User Plane Performance



Mobile Voice (VoLTE)

Figure 4: Rapid and proactive root cause analysis via NITRO Mobile Applications.

For more information, please refer to the NITRO Mobile Solution Overview Brochure on viasolutions.com



Targeted Subscriber Search (TSS)

Figure 5: On-Demand Subscriber Full Packet Capture with NITRO Mobile Targeted Subscriber Search

The Clear Business Benefit

Before the hurricane, this Tier 1 Latin American mobile operator was the number two operator in their market. Their preparedness along with the unprecedented visibility provided by NITRO Mobile, allowed the carrier to quickly establish itself as *the* provider of service in just two weeks post landfall.

From news article a few weeks after the hurricane: "<The mobile operator> is now taking advantage of its position as the...most reliable post-hurricane carrier, allowing customers of other providers to roam on its network where a signal is available. That may be all the good publicity <they> need to win over new customers after the hurricane damage is repaired."

The ability NITRO Mobile provided to focus repairs where they were most needed to quickly re-establish service and to be able to troubleshoot network and subscriber issues as repairs were made, even while most of the local service area was on generator power, was enough to give the mobile operator an advantage. While, over time, each of the carriers went back to competing with each other as service was slowly restored over the next several months, many customers who switched stayed. In addition, the many wireline customers who switched to WiFi routers with an LTE-enabled SIM card also remained. The business benefits of the visibility and proactive rapid troubleshooting that NITRO Mobile provides are allowing the mobile operator to continue to maximize subscriber quality, increase their return on investment, and now focus on new cost savings and/or revenue producing initiatives such as 5G, network virtualization, and IoT, while maintaining their newly established market share position.



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