



Broadband providers that receive funding through certain Federal Communications Commission (FCC) Universal Service Fund (USF) programs are required to submit data to the commission to verify that services provided meet the commission's performance standards. The funding covers some of the costs of providing broadband service to high-cost rural areas.

The year 2021 marks the first year that providers are required to conduct and submit the tests.

This white paper looks at the experiences of two rural broadband providers that are required to provide the broadband performance testing results to the FCC. It is based on conversations with representatives from those providers who were involved in selecting and implementing technology to support the FCC performance testing requirements.

Both providers chose a solution from National Information Solutions Cooperative (NISC). Offering a broadband speed test solution for rural broadband providers is a natural addition to the portfolio of NISC's software and IT solutions that have been custom developed for Member-Owners who are primarily utility cooperatives and broadband companies across the nation.

FCC Broadband Performance Testing

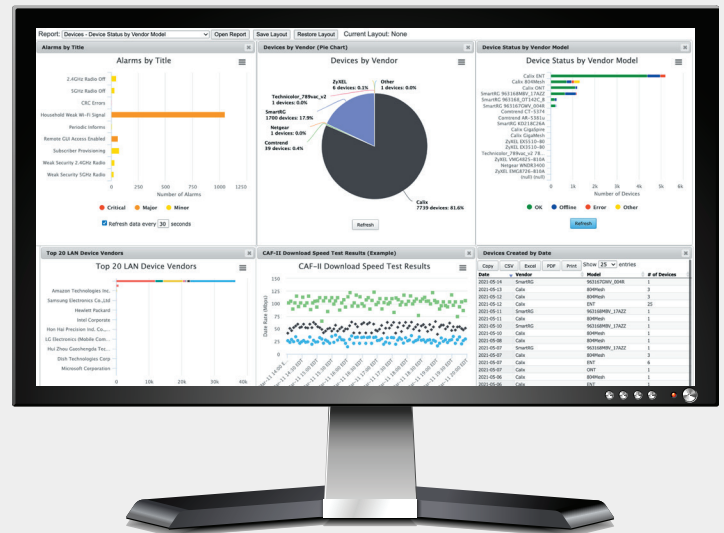
Service providers that must submit performance testing results include those that receive high-cost USF support based on the Alternative Connect America Model (A-CAM). That model estimates what it would cost to provide service in unserved areas of the U.S. based on factors such as terrain and population density.

Previously all providers receiving high-cost USF support were funded based on embedded costs. But several years ago, the FCC offered USF recipients the option of continuing to receive funding through the traditional program or to receive funding based on the A-CAM.

Carriers choosing the A-CAM option were given more aggressive broadband buildout requirements in comparison with those remaining on the traditional program. Another requirement is to conduct quarterly broadband performance testing to confirm that the service provided meets program requirements.

The testing requirement began this year, with experiences this year serving as a dry run for technology and processes. While the commission will review test results, there are no plans to penalize providers for non-compliance issues in 2021. Beginning in 2022, however, the commission will begin imposing penalties for providers that are not able to demonstrate compliance with testing requirements and broadband performance requirements.

In preparation for FCC broadband performance testing requirements beginning this year, service providers have been required to submit a list of customers whose service is made possible through the USF program that requires the tests. Service providers must submit those lists to the Universal Service Administrative Company (USAC), which is responsible for administering the FCC broadband performance testing program. USAC then randomly selects 10% of those customers for the service providers to test for each state and speed tier. If the number of internet subscribers submitted is more than 500, 50 random locations are tested.



The NISC User Services System

NISC's approach to meeting FCC performance testing requirements is based on its User Services System (USS), a cloud-based platform that is designed to manage customers' internet gateways and devices connected to them. The USS offering troubleshoots problems and alerts service providers of problems before customers become aware of them. Customers also can use the same tools to view broadband usage, resolve connectivity issues, manage devices, and receive alerts.

The USS works with existing customer premises equipment (CPE) by leveraging the Broadband Forum TR-143/TR-069 standards. It also integrates across key enterprise platforms, including billing and mapping software. The latter capabilities enable the USS to reduce the burden of coordinating data flow involving test software, reporting and analysis tools. That data flow is required for site location identification and association of subscriber identify with locations selected by USAC for testing.

Hillsboro Telephone Company

Hillsboro Telephone Company, based in Hillsboro, Wisconsin, has just over 1,000 internet customers spread over 160 square miles in the southwest corner of the state.

The company receives funding through the high-cost USF program based on the A-CAM option and has begun deploying high-speed broadband to eligible areas. In preparation for testing requirements beginning this year, Hillsboro Telephone submitted a list of 487 locations qualified for testing to USAC and received a list of 49 locations to test.

Initial Hillsboro Telephone Company plans called for the company to use a vendor other than NISC for FCC performance testing, but when that vendor advised the company in November 2020 that it would not be able to deliver its solution as planned, Hillsboro considered other options.

One possibility was an offering from the vendor that Hillsboro Telephone uses for broadband equipment, but that option would have required Hillsboro to use a different optical network terminal and Hillsboro didn't want to do that.

Hillsboro made the decision to use NISC, in part, because of NISC's WiFi management offering based on the same cloud-based server platform.

"They had what we thought was a good customer managed WiFi solution," observes Chad Schmidt, systems integration manager for Hillsboro Telephone Company.

Traditionally, Hillsboro Telephone Company had required customers to purchase their own WiFi routers, but wanted to move away from that approach, which was creating challenges. Some customers had routers that were 10 years old and didn't perform well.

The decision makers at Hillsboro saw the NISC WiFi management offering as a means of simplifying and enhancing the process of managing company-owned routers.

Once the decision to use NISC for FCC performance testing was made, "implementation was pretty easy and straightforward," comments Schmidt, who notes that one requirement was to assign static IP addresses to CPE involved in the testing as a result of Carrier Grade NAT (CGNAT) not allowing the USS server back into the CPE device. CGNAT was implemented to their network in 2020, as a result of real-world IPv4 address exhaustion to their customers. NISC does offer a server option to allow CPE devices to use CGNAT in conjunction with the USS servers, but Hillsboro has not yet implemented that option.

Bandwidth (speed) testing is required to occur once an hour from 6 p.m. to 12 a.m. over a one-week period. Latency testing is required once per minute per hour from 6 p.m. to 12 a.m. over a one-week period, which for Hillsboro began in early March 2021 – the same week that daylight savings time was imposed. That created a glitch because it looked to USAC as if testing had lasted more than a week.

There were no problems when Hillsboro ran a second set of tests, however. And testing showed that the company was meeting FCC performance requirements, including providing specified speeds and latency.

Hillsboro plans to implement the NISC Auto Configuration Server (ACS), which is a cloud-based tool that integrates into NISC billing, which will streamline the process of assigning specific customers for FCC performance testing. The service provider plans to integrate the ACS with existing billing software, at which point customer service representatives will be able to hand CPE to a new customer – and when the customer connects it, it will be automatically added to the customer's account.



The company also plans to implement the NISC SmartHub, a web and mobile application that customers can use for a wide range of purposes, including paying bills, understanding usage, reporting service issues, and managing their WiFi networks, including imposing parental controls.

Customers will be able to use the SmartHub app to do the same speed tests required by the FCC, which Hillsboro sees as a useful capability as the company begins providing the WiFi routers.

Townes Telecommunications

Townes Telecommunications is comprised of seven separate service providers operating in six states. Three of those providers – serving Arkansas, Pennsylvania and Colorado—receive USF support based on the A-CAM approach and are required to do performance testing per the requirements of that program. The company must test a total of 77 specific customer locations based on the USAC rules.

Townes Telecommunications considered several performance testing vendors before settling on NISC.

One key decision factor was that “NISC is vendor agnostic; we use modems from multiple vendors, and this flexibility is something we place a lot of value in,” comments Tanner Sharman, information technology manager for Townes Telecommunications.

Townes Telecommunications also liked the fact that access to the cloud-based speed test server was included in the NISC User Services System and in NISC’s contract and pricing.

“NISC’s USS was especially intriguing because the modems at our testing locations will automatically choose the nearest NISC speed test server to use,” Sharman said. “This works great for our environment because we are required to test from multiple states.”

When Townes Telecommunications received the randomized list of customers to test, the next step was to make sure that each customer modem could support the required testing. NISC gave credentials to Townes for that purpose.

“We popped them into each modem and five seconds later, the modem showed up on the NISC server,” explains Sharman. “From there we were good to go.”

The only other steps were to set up the time zones and speed tiers.

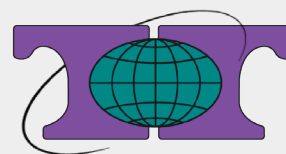
There were a few minor glitches with some of the first tests that Townes submitted to USAC. But all tests showed that Townes is meeting FCC performance requirements, and Sharman is confident that together, NISC and Townes will be able to resolve the minor glitches.

“It has been very nice to work with people at NISC,” Sharman comments. “Any question I had, within five minutes I had a response.”

Another thing that Townes likes about the NISC option is that “it has gotten us in the door to use the ACS TR-69 server,” Sharman adds.

Instead of just on-boarding customers that Townes is required to test, the company wants to get all customers on the server for WiFi management.

“We want to see what it can do for us,” Sharman says.



TOWNES TELECOMMUNICATIONS, INC.

Industry Collaborative Solution

Through a cooperative and collaborative effort, NISC has created a partnership ecosystem that includes The Broadband Forum to deliver a standards-based solution for its USS platform. Together with partnering organizations, NISC has satisfied the scheduled speed and latency testing and reporting from 10x1M to 1x1G networks. Current partners include ADTRAN, Airsonics, Comtrend, Linksys, TP-Link, and Zyxel

Further information about FCC performance testing requirements and about the NISC Auto Configuration Server, User Services System and SmartHub can be found on the NISC website at <https://www.nisc.coop/nisc-user-services-system/>.



NISC User
Services System™