FNGi
First Network Group Inc

4-6 Perry Street
PO Box 1662
Wapakoneta, OH 45895

Located in historic downtown Wapakoneta, Ohio, FNGi has been instrumental in developing and supporting Internet Networks across the U.S. since 1993. The FNGi team can assist you with all phases of your Internet Network from initial planning through long-term support.

www.network1.net
800.578.6381

FNGi
First Network Group Inc

FOCUS Newsletter

The air is cooler, the leaves are changing and the kids are back to school. Welcome to Fall!

In this issue, we review the importance of decreasing the gap of broadband users, specifically in rural areas, phishing issues, network speed, and more DHCPatriot API examples

---

FNGi
FOCUS

YOUR CONNECTION TO FIRST NETWORK GROUP NEWS October — December 2019

In This Issue

Bridging the Broadband Gap

First Network Group has always been focused on providing internet services to rural locations since day one. Founded in a rural portion of Northwest Ohio, we saw a way that we could help connect our neighbors, but also translate our skills and talents to other areas of the country. Our goal is to help every one of our customers to provide the best internet service possible. Our hope is that the people in underserved and rural areas can all become connected and enjoy the benefits of the Digital Age.

We want to congratulate all of our partners and customers in their continuing mission to support each of your communities to connect businesses and end-users.

While the roll out of fiber optical cable to every home in the U.S. would be the ideal, it's not always going to be able to reach everyone. There are formidable issues with right-of-way access, construction, permits and the estimated price at around $30,000 per mile. Providing that type of connectivity into areas that average around 250 people or less per square mile is just not feasible. Fixed wireless, and the use of TV "White Space" < 700MHz spectrums and low-earth orbit satellite services can solve a lot of those issues and provide a true high speed broadband experience for even the most "rural" of us.
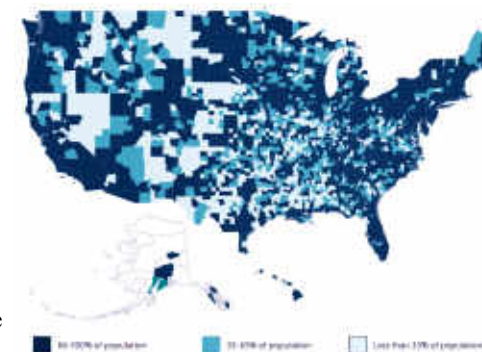
US Broadband by County

Broadband internet access translates to better educational opportunities, job growth and higher incomes. The Wall Street Journal reports that doubling broadband speeds can add the equivalent of $126 billion to our Gross Domestic Product (GDP) and that communities with narrowband access or slow unreliable broadband have lower incomes and higher unemployment rates than communities with faster broadband access. Connectivity is not just a luxury anymore.

Unfortunately, there's an estimated 34 million Americans who lack access to a true broadband connection. Reaching those customers whose "last mile" can be literal miles is extremely difficult, but we are proud to be a part of your team for making that effort. Today's internet is normally thought of just Facebook, Netflix, etc. But education requirements for K-12 students has leaned heavily on internet access and technology being a necessity and closing that gap benefits us all. And with the expansion of the Internet-of-Things and precision agricultural, such as Microsoft's "Farm Beats" system, will help us feed the nearly 10 billion people on this planet as we approach the mid century.

So whether you provide service via DSL, Coax, FTTH, fixed wireless, VHF/UHF, cellular or even satellite, we consider it our privilege to help improve your product and assist your customers make the most of your product. Connection is the key. Now let's close that gap, together!

FNGi
First Network Group Inc

From the Desk of *"The Network Guy"*

I'd Rather Be Fishing

For the majority of my life fishing as been something that I've enjoyed. Something no one enjoys, however, is "phishing" (from fishing+phreaking). It is the used method of breaching a secure account or system, and spear phishing has been the ruse of choice for some of the most notorious instances of hacking in our recent news headlines.

While phishing tries to scam the user into divulging passwords or other sensitive information, spear phishing specifically appears to have come from a trusted source. Imitating email from Apple, Amazon, Microsoft, PayPal or any of a number of common services, the user is conned into replying with username, password or other sensitive information. This technique can also be used just to get a user to open a document that contains a virus that can infect an individual computer or possibly an entire (local) network.

In July 2018, the Wall Street Journal reported how foreign hackers used spearfishing to gain access to the control rooms of U.S. Electric Utility companies. For more information scan the QR Code below this article.

Without a doubt, this kind of state sponsored attack is an act of cyber warfare and we are just beginning to appreciate the size and scope of cyber warfare on top of cyber crime. We encourage you to develop an advisory document, training and designated person, to remind your users of threats and of using best practices to avoid being a victim. It would be an even better idea to make sure you update your document regularly and send a reminder to your users at least once every six months. There are also a growing industry of 3rd party technologies who can not only educate your employees but also test them to make sure they are using the appropriate precautions online.

Sincerely,

Stephen C. Walter
The Network Guy
Founder and President, First Network Group, Inc.

READ MORE
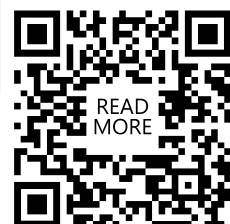
The Need for Speed

Internet customers are demanding faster and faster speeds. High-speed fiber and cable modem technology has made it easy to deliver the speed to the customer. Frequently neglected, though, are the routers, upstream links, firewalls, and other networking gear that connect your core and customer gear to the rest of the internet.

We have seen some providers starting to offer high-speed packages up to 1 Gb/s via fiber and cable, but not having the infrastructure to support it. The move from 1 Gb/s uplinks to 10 Gb/s and beyond for your uplinks can be challenging. It is, however, a necessity for properly delivering the speeds your customers expect. Newer technologies and faster port speeds has pushed down the cost considerably.

Don't be left behind! Stay ahead of the curve by proactively preparing for the future with help from First Network Group. We can help you design an upgrade strategy to fit your needs.

To discuss this or any other networking needs, call Randy Carpenter, VP of IT Services at 1-800-578-6381, option 1.

Trivia

Q1: How many employees worked at Instagram when it was acquired by Facebook in 2012 for $1 billion?

1) 8
2) 13
3) 206

Q2: In 1995, Broadcom wanted to demonstrate how powerful their T4 Ethernet technology was. At an industry conference, they successfully sent data at 100/Mbps over:

1) Barbed wire
2) A string between two tin cans
3) The human body

Q3: In what year did the first emoticon appear on an electronic bulletin board?

1) 1976
2) 1982
3) 1996

See the next page for the answers.

API Example: Miscellaneous API tasks

This article is the fourth (and final) in a series about the API functionality available in the DHCPatriot and how it can make the management of your subscribers more streamlined. The DHCPatriot system has a rather extensive API system for automated remote management. Our API documentation is available in the DHCPatriot manual at our website http://www.network1.net. This article will describe some miscellaneous API functions and for what they might be used. Not all of the API functions have been covered in this article series. Please be sure and see the manual for further API documentation.

"Sticky" IP Management
"Sticky" IP address assignment, in the DHCPatriot system, is a simple way to tie a subscriber device to a specific IP address in a quick and easy way. It can be done by MAC address or username (in the case of authenticated DHCP).

There are three API calls that allow remote management of sticky IP assignments. The first is "Sticky IP List". This call lets you get a list of all the sticky IP assignments in an XML format. This list can be used for performing the other two API calls which are Add and Delete. This contributes to the goal of daily management of the DHCPatriot system being done without using the actual DHCPatriot web GUI.

"Static" IP Management
"Static" IP address assignment, in the DHCPatriot system, is a more advanced way to tie a subscriber device to a specific IP address. This method allows matching on MAC address or Option 82 Circuit-ID/

Remote-ID. Also, a tftp file of some kind may be assigned (for setting up ONTs for example).

There are four API calls that allow remote management of assigned static IP addresses. The first is "List Static IP Assignments". This call lets you get a list of all static IP Assignments in an XML format. This list would then be used to perform the other three API calls of Add, Edit and Delete. These calls can be used in conjunction with others to achieve a goal of daily management of the DHCPatriot system from a custom GUI instead of logging on to the DHCPatriot system directly.
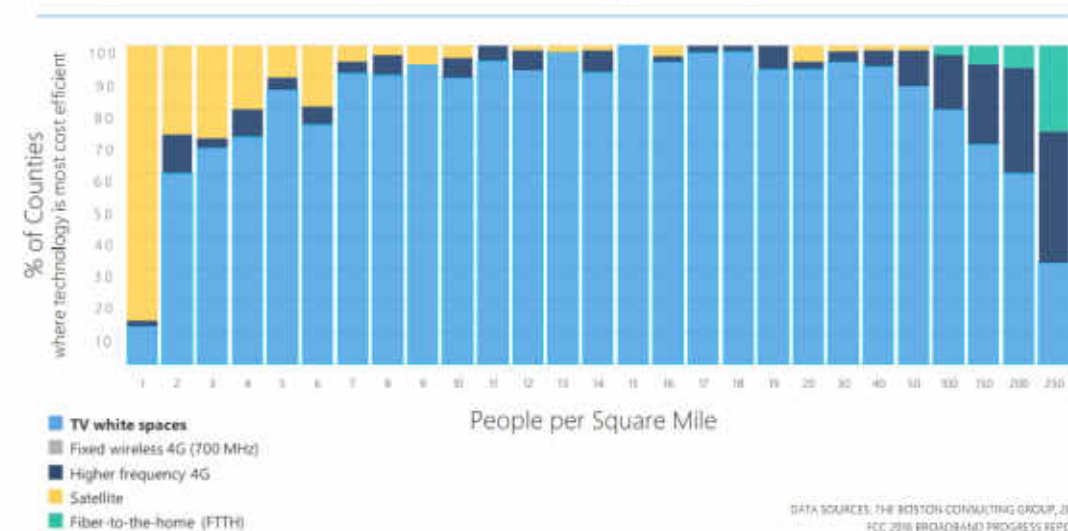
Other API calls
This is not an exhaustive list, but there are other API calls of note. Three of these are Ping, Trace and DHCP Logs. Each of these does what their names suggest. Ping and Trace can be used to ping or trace to a host using either IPv4 or IPv6 getting an XML return of the results. The third call, DHCP Logs, can be used to get DHCPv4 logs in an XML return using various search parameters. These calls can be used to perform troubleshooting with a host device which is having trouble obtaining an IP address as part of a custom management system for the DHCPatriot without logging into the DHCPatriot system web GUI.

— Darren Ankney
dankney@network1.net
1-800-578-6381 x8171

The Best Solutions for Rural Densities
Percentage of counties where a technology is most efficient within each population density band

% of Counties where technology is most cost efficient

People per Square Mile

- TV white spaces
- Fixed wireless 4G (700 MHz)
- Higher frequency 4G
- Satellite
- Fiber-to-the-home (FTTH)

DATA SOURCES: THE BOSTON CONSULTING GROUP, 2017;
FCC 2016 BROADBAND PROGRESS REPORT

Trivia Answers

Q1: Answer: 13   Q2: Answer: Barbed wire   Q3: Answer: 1982