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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](http://www.network1.net)  
800.578.6381



Our 20th year in business is going strong and we look forward to another 20 years with you. In this issue you can learn more about our managed hosting services, how to build rapport with your customers and how the DHCPatriot can function even without authentication via Option 82 support!



# FOCUS

YOUR CONNECTION TO FIRST NETWORK GROUP NEWS

Oct – Dec 2015

## In This Issue

Still Flexible After All These Years!	pg 1
Hosted Servers and Off-Site Storage	pg 2
How Big is Google?	pg 2
Windows 10 Update Reminder	pg 3
DHCPatriot and No Authentication	pg 3



As we at First Network Group celebrate our 20th anniversary, we also celebrate our clients – both new and old. I want to personally thank you for your faith in us and the opportunities you have given us to serve you. We have always worked to have the flexibility to provide you with what you need and this year is no exception!

As of July 2015, FNGi Technical Support has completed over 920,000 support and service calls and we expect to pass 1 MILLION soon. To a large extent, we owe this to your trust as you've asked us to support your new products and services. Whether it has been new CPE, a new service rollout or a completely new arena (your POTS, Cell, CATV, Trusted Third Party services, etc.) – you have asked and we have delivered.

Customizing what we do for you is truly gratifying. It has been an honor to serve you over the last twenty years, and the flexibility that you demand and we supply makes me confident we will be with you for the next twenty. Thinking of a new product or service offering? I encourage you to contact us and allow us to help. Like a promotion from the 70s offered: "We'll show you how it works."

Sincerely,

**Stephen C. Walter**  
Founder, President and CEO  
First Network Group, Inc.





## Managed Hosted Servers and Off-Site Storage Now Available

Do you need to host a server at a remote location for redundancy or disaster recovery? Just need to host an important application, and don't want the hassle of having to deal with the hardware and software yourself?

Do you require off-site storage for backups or disaster recovery? First Network Group, Inc. now offers fully managed servers, hosted at our location, as well as hosted storage solutions to meet all of your needs. FNGi has a broad range of offerings, from shared

web hosting to dedicated virtual servers to collocation of your own servers. Let us build you a solution that fits your needs.

We specialize in ISP solutions for hosting mail, web, DNS and other services. Whether you need to cover a few users, or thousands of users, we have you covered. Take advantage of our fully redundant network, protected by battery backup and on-site diesel generator. Virtual servers are hosted on a redundant server cluster which utilize a cluster of NetApp storage systems for ultimate resiliency.

We also have options to have data replicated to an off-site system. If you wish to host servers at your own location, but need off-site backups, we can do that too. From simple backup storage to live synchronization of NetApp storage systems, we can cover your data backup and disaster recovery needs.

Contact **Randy Carpenter** at 800-578-6381 Opt. 1 or [rcarpen@network1.net](mailto:rcarpen@network1.net) for details or to request a custom quote.

## How Big is Google?



Google has become a household name and even in some aspects powering portions of our homes, our calls and most certainly our phones.

If you're not using an Android smart-phone, you are probably still using Google search on your phone. And when it used to be fashionable to have a non-network email address like Hotmail or Yahoo,

Google's Gmail has become the defacto standard for non-network, web-based email. And now that Google ties all its other services around your Gmail address, it's more valuable than ever.

## How Many Searches?

In 2012, Google reported that they had completed 1.2 trillion searches worldwide. US based searches account for around 12.4 billion queries.

## But It's Not All Search

In 2013, all worldwide internet traffic dropped 40% when many Google services went down for around 5 minutes. Google drives a lot of traffic!

And speaking of Google driving, Google Maps including Street View stores more than 20 Petabytes worth of data. That's roughly 21 million gigabytes!

## Google Owns YouTube and YouTube Owns Online Video

YouTube is localized for use in over 75 countries in 61 different languages and has over 1 billion users currently. Those users aren't just consuming video either, they're sharing their own video or self-made TV shows, instructional videos and company promotions. This all adds up to over 300 hours of video uploaded to YouTube every single minute! That's a total of 432,000 hours in a single day! If you watched every minute of all those new videos it would take you nearly 49 years to complete!

## Google Sounds HUGE!

They are! According to Rachel Potvin, an Engineering Manager at Google, Google's software spans some 2 Billion lines of code. To put that into context Microsoft's Windows 10 Operating System is around only 50 million lines of code. The code to run all things Google is nearly 40 times larger than Windows 10's code.

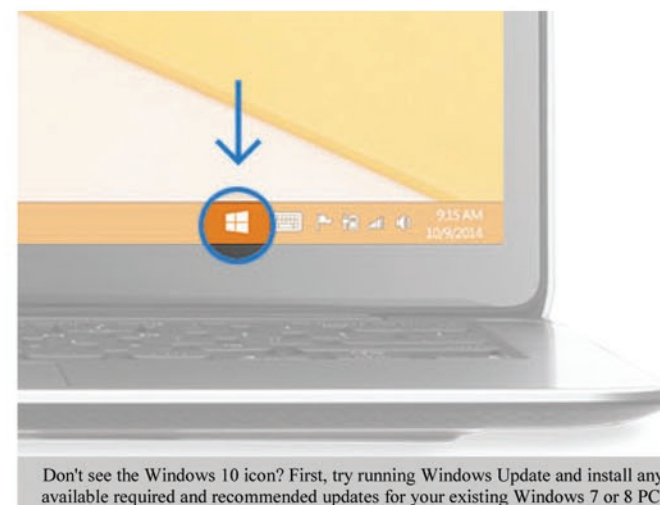
At any given time, Google has over 25,000 software engineers working on their code base. This code and all the data that Google stores are contained in roughly 20 different data centers in the U.S. and possibly a dozen abroad. These are industry guarded secrets, but we know from public building plans that some of these datacenters are over 350,000 square feet and include nearly 20,000 additional square feet for employee dormitories.

It gets a bit more murky and secretive when we are talking about total data storage sizes. But some broad discussion on the matter in 2009 stated that Google was planning on having 10 million servers up and running handling an Exabyte of information. To put that into perspective, an Exabyte is one million terabytes or 50,000 YEARS worth of DVD quality video.

## Windows 10 Update Reminder

Microsoft is offering everyone running a valid copy of Windows 7 and Windows 8 a free upgrade to their latest Operating System: Windows 10, until July 29th, 2016.

1. To reserve your free upgrade, click on the Windows 10 icon located in the lower right side of the system tray. Once in the Get Windows 10 app, click "Reserve your free upgrade" in the app window.



2. Enter your email if you want confirmation of this reservation.
3. We'll download Windows 10 to your device and notify you when it's ready. You can cancel your reservation any time.

If you'd like to create a USB drive or DVD to download once and upgrade multiple PCs visit: <https://www.microsoft.com/en-us/software-download/windows10>



[www.facebook.com/FirstNetworkGroup](https://www.facebook.com/FirstNetworkGroup)



## DHCPatriot and No Authentication

The DHCPatriot can be used in conjunction with authentication methods to identify subscriber devices, but did you know that you don't have to use authentication on the DHCPatriot system for this purpose?

It is possible to use Option 82 (<https://tools.ietf.org/rfc/rfc3046.txt>) information to identify subscriber identity without the use of authentication on the system. Option 82 sub options can contain the circuit ID of the subscriber circuit to identify the subscriber.

The only requirement is that the Option 82 information be transmitted in plain text. This is known to be the case with Calix ([calix.com](https://calix.com)) and Juniper ([juniper.net](https://juniper.net)) equipment.

The best part is, the DHCPatriot system does not require any additional configuration to take advantage of the Option 82 data. If the data is present in the DHCP packet, it will be stored with the session. It is also possible to use authentication and Option 82 simultaneously to double verify you have the right subscriber—without any additional configuration on the DHCPatriot system.

If your equipment supports Option 82 circuit ID in the DHCP packets from the DHCP Relay Agent (customer facing equipment that forwards the DHCP packets to the DHCPatriot system) you can simply enable that feature. Once enabled, and if plain text (ASCII), Option 82 will begin populating on the DHCPatriot system with the DHCP sessions recorded there. The DHCPatriot contains a reporting function called *Search Sessions*. In the results of this report, you will notice a column called 'Option82'. Clicking the link '82' in this column for any session will result in a new window showing the Circuit ID (among other things) for the session you clicked. The Circuit ID should allow you to identify the subscriber on your network.