NETWORKING 101

About that online shopping...

With the holidays right around the corner, online shopping can be a great solution, allowing us to find the perfect gift and saving time. However, it can also end with identity theft, malware, and other cyber unpleasantness. We can take a few simple security precautions to help reduce the chances of being a cyber victim. When purchasing online this holiday season and all year long, keep these tips in mind to help minimize your risk:

* **Do not use public computers or public wireless internet access for your online shopping.** Public computers and wireless networks may contain viruses and other malware that steal your information, which can lead to identify theft and financial fraud.

* **Secure your computer and mobile devices.** Be sure to keep the operating system, software, and/or apps updated/patched on all of your computers and mobile devices. Use up-to-date antivirus protection and make sure it is receiving updates.

* **Use strong passwords.** Using strong, unique passwords is one of the simplest and most important steps to take in securing your devices, computers, and online accounts. If you need to create an account with the merchant, be sure to use a strong, unique password. Always use more than ten characters, with numbers, special characters, and upper and lower case letters. Use a unique password for every unique site.

* **Know your online shopping merchants.** Limit your shopping to merchants you know and trust. If you have questions about a merchant, check with the Better Business Bureau or the Federal Trade Commission. Confirm the online seller's physical address, where available, and phone number in case you have questions or problems. Do not create an online account with a merchant you don't trust.

* **Pay online with one credit card.** A safer way to shop on the Internet is to pay with a credit card rather than debit card. Debit cards do not have the same consumer protections as credit cards. Credit cards are protected by the Fair Credit Billing Act and may limit your liability if your information was stolen or used improperly. By using one credit card, with a lower balance, for all your online shopping you also limit the potential for financial fraud to affect all of your accounts. Always check your statements regularly and carefully, though.

* **Look for "https" in the Internet address (URL) when making an online purchase.** The "s" in "https" stands for "secure" and indicates that communication with the webpage is encrypted. This helps to ensure your information is transmitted safely to the merchant and no one can spy on it. Alternatively, look for the lock symbol (it's sometimes green) in the Internet address bar.

* **Do not respond to pop-ups.** When a window pops up promising you cash or gift cards for answering a question or taking a survey, close it by pressing Control + F4 on a Windows computer and Command + W on a Mac. These could be social engineering attempts designed to convince you to open malware or click on a malicious link.

* **Do not auto-save your personal information.** When purchasing online, you may be given the option to save your personal information online for future use. Consider if the convenience is really worth the risk. The convenience of not having to reenter the information is insignificant compared to the significant amount of time you'll spend trying to repair the loss of your stolen personal information.

* **Use common sense to avoid scams.** Don't give out your personal or financial information via email or text. Information on many current scams can be found on the website of the Internet Crime Complaint Center: http://www.ic3.gov/default.aspx and the Federal Trade Commission: http://www.consumer.ftc.gov/scam-alerts

* **Review privacy policies.** Review the privacy policy for the website/merchant you are visiting. Know what information the merchant is collecting about you, how it will be stored, how it will be used, and if it will be shared with others.

What to do if you encounter problems with an online shopping site:
Contact the seller or the site operator directly to resolve any issues. You may also contact the following:

* Your state's Attorney General's Office or Consumer Protection Agency

* The Better Business Bureau: www.bbb.org

* The Federal Trade Commission: http://www.ftccomplaintassistant.gov

(Excerpted from the Multi-State Information Sharing & Analysis Center MS-ISAC November 2016 Newsletter)

FROM THE DIRECTOR

The one thing you can always count on in life is change. Recently, I participated in the search for a new Chief Technology Officer at K-12. We will miss Sterling Beane however, as I said, change happens constantly. Another outstanding leader is also leaving K-12 soon, Dr. Martirano. As State School Superintendent, Dr. Martirano achieved many wonderful things in a very short time. His dynamic leadership will be sorely missed, but again change happens and you deal with it.

Several employees left WVNET recently. We will miss them all, however it has opened up positions to bring in some new talent and give young people a chance to step up and show what they can do.

In the political arena, we will soon have a new Governor and perhaps some changes in the legislative area. This too will be a change as each new person comes with a new agenda for education and technology. So, as I said, change is the only constant. At WVNET we are technologists and we specialize in change. These are exciting and interesting times to say the least!

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In the month of Thanksgiving I always count my blessings. This year I am particularly grateful for three things: The first is our customers at WVNET. They are truly a blessing to us. They work with us to make things better for their students and faculty. They keep things moving forward and work with us to sort out any bumps in the road. The next thing is my wonderful employees at WVNET. They are my second blessing and are truly a joy to work with all day every day. That's right, there is never a day that WVNET employees aren't working. We are there for you 24/7/365. These dedicated employees are completely committed to helping our customers. They also use their spare time to increase and update their technical skills to stay ahead of the curve. This state is lucky to have them! The final blessing in my life is my wife, Dr. Kathy O'Hanlon. She is a family doctor who sees thousands of patients each year. This year was our 40th wedding anniversary and our happiest year ever. That is my best blessing and on Thanksgiving Day and every day I will try to remember all of these wonderful things in my life.

I wish you all a very Happy Thanksgiving and hope that you will also count your many blessings that day and always.

CUSTOMER SATISFACTION SURVEY
And this month's winner is...

Each of us at WVNET would like to extend heartfelt holiday wishes to all of our customers across the great State of West Virginia. As the weather turns colder, we hope that you stay warm and have good times with your families, great food, and all the presents and giving that you can hope for through the holiday season.

Each month, WVNET recognizes a customer who took the time to fill out our Customer Satisfaction Service Survey to let us know how we are doing. We thank everyone who takes that extra few minutes to give us advice, kudos, or criticisms that will help us improve our service. This month we would like to congratulate our winner, *Tiffany Arndt, an employee of Mildred Mitchell Bateman Hospital*. Tiffany called into our fulltime help desk as she was not being able to work due to her West Virginia Office of Technology account being locked out. WVNET has an agreement with the Office of Technology to handle their after-hours support. Network Operations employee Tony Masi was able to quickly assist her, getting her account unlocked and allowing her to work for the evening.

Tiffany commented on the experience that it was *"very pleasant, and the problem was resolved quickly."* Thanks, Tiffany, that's our job, and we strive to achieve this level of service each and every day. WVNET's Network Operations Center (help desk) performs many functions not just for WVNET or the Office of Technology (WVOT). There are a variety of ways we serve our customers by offering outstanding customer service as well as our typical help desk support. If you are looking for access to a statewide help desk to support a function that requires it, you may contact me at 304-293-5192 or email me at btwiii@mail.wvnet.edu. I would love to discuss our services with you.

As always, at the end of every month, we will draw a winner and contact them by email and then send WVNET memorabilia in appreciation. Please complete our survey by looking within the incident email of any interaction that you have had with us. All comments are taken seriously and help to improve what we do on a daily basis. Thank you *Tiffany*, and thanks again to all our customers who continue to shape and improve WVNET.

(Guest article by WVNET staff member Booker Walton, III, pictured.)

GOOGLE'S PROJECT LOON: THE IDEAL BROADBAND SOLUTION FOR THE TOPOLOGY OF WV

Google Fiber is no longer rolling out to new cities. Google is hitting pause on its project to deploy superfast fiber broadband across the country. Wireless broadband is the future. Their new project is called Loon, a name chosen for its association with both flight and insanity.

For almost a decade, Google has been developing a balloon-based broadband communications delivery system. These balloons carry solar-powered telecommunications equipment 11 miles in the sky, connecting with each other to form a wireless network. To navigate, they share data about wind directions at various altitudes. All they do is ascend and descend -- the wind takes care of the rest.

Google says these balloons can deliver widespread economic and social benefits by bringing Internet access to the 60 percent of the world's people who don't have it. Many of those 4.3 billion people live in rural places where telecommunications companies haven't found it worthwhile to build cell towers or other infrastructure. The LTE signal broadcast by the balloons can be picked up by smartphones or special home routers.

Project Loon is a product of Google's moonshot group, Solve for X, and is now much less like a science project. In 2013 a pilot study was performed in New Zealand, and in 2014 they did larger-scale testing in Brazil. They've signed agreements with the governments of France and Sri Lanka, as well as three ISPs in Indonesia. And they're looking for more places to expand. There's a contact form on their website for telecommunications firms who have an interest in partnering with them.

Mike Cassidy, Project Loon's leader, says the technology is now sufficiently cheap and reliable for Google to start planning how to roll it out. X has broken the record for longest stratospheric balloon flight several times, and holds the current record at 187 days.

It's hard to find new customers in Internet markets such as the United States. However, due to its rugged terrain, West Virginia has many places that ground-based ISPs have found too costly to reach, leaving many counties without access to high speed internet. Cell towers don't work very well in West Virginia, where the signal is easily blocked by our geography. The high-flying Project Loon could be the ideal solution to bring internet to these remote regions.

The people of West Virginia won't be the sole beneficiaries of the Loon project. West Virginia is becoming a tourist location. Businesses that provide services to consumers who visit many of West Virginia's famous tourism destinations, such as Canaan Valley, Timberland, and Blackwater Falls, suffer from a lack of connectivity. Executives are unlikely to schedule business trips and conferences to locations that cut them off from their customers.

The balloons are only half the equation. They still need ground stations for their aerial network to connect to. Providing those relay stations is the job of the governments and ISPs that they partner with. Google expects cellular providers to rent access to the balloons to expand their networks.

Loon won't solve all our problems. We still need high-speed and redundant fiber in our state to be a viable option for internet-based businesses. But for those of us that have only one choice for Internet -- or worse, no choices at all -- Google can be a godsend. All they need is ISPs willing to work with them.

(Guest article by WVNET staff member Jonathan Lynch)

BIDS (POWERED BY WVNET)

It has recently become legal in the State of West Virginia to receive bids electronically. WVNET has created an application to provide this capability along with on-line management of requests and bids.

Our application allows an institution to post RFP's, RFQ's or RFI's in a centralized location and receive responses from vendors. A vendor can sign up for access to the bids application and then log in and upload responses electronically. Uploaded files are encrypted and stored on the bids server, where they cannot be opened until after the closing date of the request. The application displays a list of requests and information about the bids.

Since WVNET maintains a large number of state-wide contracts, we have been using our own on-line bid management system for years. This new version that supports electronic submissions is a completely rewritten and modernized application.

If your organization is interested in managing requests and bids on-line, contact mike@wvnet.edu for more information.

(Guest article by WVNET staff member Mike Karolchik)

APPLE PATCHES AN EXECUTABLE JPEG AND PDF EXPLOIT

Attention iPhone and iPad owners: there's a security update to iOS 10 that Apple says you should download without delay.

On October 24, Apple released a statement regarding the security content of iOS 10.1 which breaks down the various security-flaw patches relating to Apple iOS 10 facets and apps the platform contains or works with.

The software update (i0S10.1) patched a security hole that could allow hackers to take control of any device running an unpatched version of iOS 10 through a "maliciously crafted" JPEG photo. The flaw was discovered by Marco Grassi, a security researcher at Keen Lab.

So, should you be concerned and rush to update? If you inadvertently viewed a corrupted JPEG file, a hacker would be able to completely take control of the phone. Prepare for ANY update by doing a couple of things: Gather your login information and backup your files.

For more details about iOS10.1, go to: https://support.apple.com/en-in/HT207271

(Guest article by WVNET staff members Steven White and Randall Long)

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Save the Date...
West Virginia Statewide Technology Conference
July 18-20, 2017

Phil Snitz this month's recipient of "Moby Award..."

Phil Snitz, WVNET's Business Manager, is the latest recipient of the Moby Award. The Moby is given by one staff member to another, when they have done "a whale of a good job." Karen Saffron made the presentation, and she explained—"Phil comes to work every day in a pleasant mood. He answers lots of questions, sometimes answering the same question repeatedly, and he never gets impatient. He has a consistently friendly and helpful attitude, which makes him easy to work with." Congratulations Phil, you deserve our thanks (and Moby)!

Remembering Former Colleague George Cook

We regret the unexpected passing of our former colleague George Cook, who retired from WVNET in July 2015. George spent 34 years as a sysadmin at WVNET, most recently managing Linux servers.

One of George's many professional achievements was keeping the WVNET DEC VAXcluster running continuously from January 1996 until June 2014. This 18 year up-time accomplishment is possibly a world record for this type of equipment. George was so committed that during some electrical work in the Morgantown data center many years ago, he supplemented the large rented generator parked on the sidewalk with his personal generator to insure the cluster kept running.

George spent many personal hours programming and enhancing a version of the internet browser Mosaic for the worldwide VMS user community, having been adapted to run on OpenVMS under the X-11 windowing system. George ran Mosaic as his primary browser on the VMS workstation in his office for many years.

In parallel to the initial deployment of Banner across the state in the late 80's, George designed, configured, installed and managed the Vitalink bridged network that linked most remote campus LANs to WVNET in Morgantown. This allowed remote users and servers (mostly DEC Vax and Alpha computers at the time) to communicate with the many IT services at WVNET, including the email gateway running on the VAXcluster for BITNET and fledgling internet communications. In those early days George also managed the primary DNS server for WVNET internet domain names and those of many connected institutions.

George's commitment and innovations are a shining example of WVNET's efforts to provide the best possible service to West Virginia and contributions to the world-wide computing community. We extend our condolences to George's family, and honor and respect to his memory.

(Guest article by WVNET staff member Verne Britton)

ADJUSTABLE TOUCH SCREEN STYLUS

Assistive Technology Showcase — The adjustable stylus has Velcro straps to fit any hand and position. The length of the stylus can be adjusted to wrap the straps around your hand for a comfortable fit. You can use the stylus to press on touch screen surfaces like smart phones, tablets and touch screen computers. A pack of replaceable tips is sold separately. For more information, visit www.enablingdevices.com or call 800-832-8697.

(Guest article by WVNET staff member Fran Barnes)

15 YEARS OF IPOD

The first version of the iPod media player was released at an event on Apple's campus on October 23, 2001. The original iPod's debut was a bit different than Apple debuts of these days — just a hundred or so invited guests at Apple's Cupertino headquarters to see Apple CEO Steve Jobs reveal a 5GB music player. This was going to be a nice holiday offering for Apple, but it was sort of an incentive to get users excited. Users got excited all right, to the tune of 125,000 iPods in less than two months after the device started shipping. Total iPod sales shot well past 67 million in the five years since the device launched.

The MP3 player was not a new idea when the iPod came out. There were plenty of others on the market, most notably SonicBlue's Rio, Creative's Nomad, and the Archos Jukebox. But the iPod captured the heart and minds of the public like no other device since the Sony Walkman.

SoundJam MP, developed by Bill Kincaid and released by Casady & Greene in 1998, was renamed iTunes when Apple purchased it in 2000. In 2003, Apple not only released an iPod built with Windows users in mind, but launched both iTunes for Windows and the iTunes Music Store. With the iPod operating system and the iTunes Music Store, Apple was on its way to dominating the MP3 player space.

The iPod mini, shuffle and nano transformed the device from a near-luxury item into something virtually anyone could own. Apple grabbed such a dominant foothold in the market that no competitors posed more than a temporary threat.

With the help of iTunes, it ushered in an era where digital music was an everyday fact of life instead of a novelty. Podcasts owe both their success and very name to Apple's pocket player.

In 2014, Apple opened its online store after announcing two new iPhones and a smartwatch, and the iPod classic was conspicuously absent from the iPod section.

If you're of a certain age, then, you can tell your grandchildren about the days when people carried 160GB of music in their pocket instead of streaming it all from the cloud. Oh, and get ready to explain what a spinning hard drive is, too.

(Guest article by WVNET staff members Steven White and Randall Long)

MICROSOFT WINDOWS SERVER 2016

Windows Server 2016 was released on September 26, 2016, at Microsoft's Ignite conference and became generally available on October 12, 2016.

Besides bragging about increased security and decreased administrative requirements, Windows Server 2016 offers a version called Nano Server that is remotely administered and optimized for private clouds and cloud datacenters. In a sense, there are really two Windows system platforms of Microsoft Windows Server 2016.

There will be the usual version as it is currently. The version of Windows Server 2016 that most people will use is the Windows Server that is very similar to Windows Server 2012, its predecessor, and will support the familiar file systems, and Windows applications. It is this Windows Server that will keep the installed base of tens of millions of customers who run Windows platforms humming along.

However, the cloud is increasingly dominated by Linux, as Microsoft itself acknowledged earlier this year when it revealed that around a third of virtual machines operating on its own Azure cloud are running Linux. The growth of Linux is clearly something that Microsoft is aware of, as the firm has begun to embrace it and open source over the past year or two. Earlier this year, Microsoft released a version of its .NET Framework for Linux, and surprised the world with the announcement that it is developing a version of its SQL Server database to run on Linux servers, due sometime in 2017.

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Nano Server is an important step for Microsoft's future and its battle for cloud dominance. It has its own Azure public cloud and is also being built with technologies from Azure, including its file system, support for microservices-style deployment of applications through Windows Server Containers, integrated software-defined networking, and a streamlined variant of the core Windows Server kernel. This version of Windows Server 2016 positions itself as an operating system for cloud datacenters. The Nano Server will be distributed under the Current Branch for Business (CBB) service model and restricted to customers that have signed up for its costly Software Assurance license agreements.

The question remains: How long will cloud data center customers continue to need Windows rather than a Linux server distribution?

(Guest article by WVNET staff members Steven White and Randall Long)

USEFUL THINGS TO LEARN THAT WILL HELP YOU GET A JOB IN INFORMATION TECHNOLOGY

Powershell
Perl is good to know. It is used in Web development or just general scripting.
JavaScript. JavaScript is used on server side and client side these days.
BASH Programming
IPV6. Very few people know IPV6 well. This tends to be something people try to avoid learning. Even I am guilty of this.
Programming for Linux kernel. There could be various reasons to learn this maybe you need to write a driver for a custom device etc.
Hypervisors. Currently these are the most used ones: VMWare, Microsoft's Hyper-V, Red Hat Enterprise's Virtualization Hypervisor
DNS and DNNSSEc
Linux in general. Knowing multiple distributions is helpful too. FreeBSD , CentOS
Ansible, Puppet or Chef (Choose your poison)
Docker and using it in production with best practices
Technical Writing: To be able to write documentation, articles anything.
Elasticsearch, Logstash and Kibana
Apache and Tomcat
PL/SQL
Mongodb
Working with AWS and related services on AWS. Working with the API's on AWS is very good to know.
Windows server and all of its components.
Python
SeLinux or Grsecurity
Datawarehousing
Load balancing

(Guest article by WVNET staff members Steven White and Randall Long)