Networking 101

West Virginia Network (WVNET)

Strategic Milestone Updates

IMPORTANT NOTICE>>>>>

If your agency has any of the Cisco BTOP routers, Cisco 3945s bought with stimulus money, be aware that the Cisco provided maintenance is set to expire on October 6, 2018. This will be the first time maintenance has had to be purchased since the acquisition of the equipment. Each entity that is using a BTOP router will be responsible for covering it under maintenance. This maintenance covers any type of hardware failure and/or software updates depending on the level of protection you wish to purchase. To purchase a maintenance contract on this equipment, please contact the Cisco partner of your choice to request a quote. You will be required to provide the serial number of the equipment in order to get the quote processed. Please contact the WVNET help desk with any questions 304-293-5192.

Telecommunications Team
(Article by WVNET staff member Jason Chastain)

Helping all customers secure their telecommunications services is a high priority for WVNET. We often get calls from our hosted and non-hosted clients for information on best practices to prevent and/or intercept ransomware attacks. Ransomware is loosely defined as *"a type of malicious software designed to block access to a computer system until a sum of money is paid."* It is the fastest growing type of cyberattack, with global damage costs predicted to exceed $8 billion dollars in 2018. As this sort of attack can be quite profitable for the criminals, it is only expected to increase. Government, education and hospitals are some of their prime targets, though attacks against individuals are increasing.

You can help protect yourself from ransomware the same way you would against other types of malware: don't get infected in the first place. Start by making sure that you have an up-to-date, anti-virus program from a trusted vendor. While anti-virus software cannot block or remove all malicious programs, vendors are constantly updating their products with new capabilities to detect and remove malware. And, of course, cyber criminals are constantly innovating and developing new and more sophisticated malware that can evade said detection. So, we're basically in an arms race, with both sides constantly attempting to outwit the other.

Cyber criminals often infect computers or devices by exploiting known vulnerabilities in your software. The more current your software is kept, the fewer known vulnerabilities your systems should have. Make sure your operating systems, applications, and devices are enabled to automatically install updates and check periodically that those updates are being installed successfully.

Cyber criminals often trick people into installing malware for them. For instance, they might send you an email that looks legitimate and contains an attachment or a link. Perhaps the email appears to come from your bank or a friend. However, if you were to open the attached file or click on the link, you would activate malicious code that installs malware on your system.   Perhaps the best way to recover from a ransomware infection is to recover your files from known-to-be-good backups. Keep in mind that if your backup can be accessed from the infected system, ransomware might delete or encrypt your backup files. Therefore, it's important to back up files to reputable cloud-based services (WVNET offers this service) or to store your backups on external drives that are not always connected to your system.

More reading:
https://www.us-cert.gov/sites/default/files/publications/Ransomware_Executive_One-Pager_and_Technical_Document-FINAL.pdf
https://www.ic3.gov/media/2016/160915.aspx
https://www.sans.org/reading-room/whitepapers/incident/enterprise-survival-guide-ransomware-attacks-36962
https://heimdalsecurity.com/blog/top-online-scams/
https://us.norton.com/internetsecurity-emerging-threats-how-do-cybercriminals-get-caught.html
https://www.webroot.com/us/en/resources/tips-articles/what-is-social-engineering
https://www.pcworld.com/article/2084002/security/how-to-rescue-your-pc-from-ransomware.html

*For more information, contact us 24x7x365
at 304.293.5192 or wvnet.edu*

Telecommunications Team Continued...
(Article by WVNET staff member Nathan Justice)

On September 12, WVNET replaced the Akamai server and switch in our Charleston Data Center. Akamai is a Content Delivery Provider (CDP) that makes servers and switches designed to be assembled into Content Delivery Networks (CDN). *"Akamai has the most pervasive content delivery network (CDN) - more than 240,000 servers in over 130 countries and within more than 1,700 networks around the world." (Akamai UK*)*

A CDN is meant to minimize the distance between users and content providers by establishing content caches in multiple geographical locations, Points of Presence (POP). Less distance equals faster access to desired content and reduced network congestion from traffic all trying to get to a single point. (Incapsula*)

Using a Windows update as an example, instead of all the PCs in the office going out to Microsoft's servers in Silicon Valley for an update, Akamai servers will cache the update locally, so the download is closer. This reduces the time it would take to get the download done and lightens bandwidth loads worldwide.

The equipment that was upgraded was an aging switch and 3 server blades running in a 4-Gigabit port channel. These were replaced by a single new server blade and switch with a new 10-Gigabit fiber channel. That represents a significant improvement in theoretical speeds for accessing important content and critical updates.

 *Sources
What is a CDN? How does a CDN Work? | Incapsula
https://www.incapsula.com/cdn-guide/what-is-cdn-how-it-works.html
Facts & Figures | Akamai UK
https://www.akamai.com/uk/en/about/facts-figures.jsp

Systems Team
(Articles by WVNET staff members Steven White and Randall Long)

Back to School... It's that time of year again when the students return to the classrooms. A large part of that return is demonstrated in not only the physical classroom, but in the virtual one as well. WVNET helps to facilitate that role with providing Blackboard for WVROCKS and multiple other state institutions.

When school is out, most higher education information technology departments perform major system and application upgrades. While security patches and application updates must be regularly applied, long-term outages that affect systems which provide tools for instructors must be kept to a minimum during the school year. The staff at WVNET in the Systems Department and the Distance Learning Department have all been working to complete upgrades to our environment to ensure that these systems are ready to start the new year.

Learning Management System (LMS) usage growth has created the need for additional staff to support our customers. This year, WVNET is working to meet that need on two levels. To provide quick resolutions to common LMS user problems, WVNET has provided additional Blackboard training for our Network Operations Center staff who are available around-the-clock via multiple channels: email, phone, and the OZ Ticket System. Also, to meet the challenges of providing high level customer support and systems administration support for our LMS servers, we've added depth to our Systems LMS support staff.

WVNET Email Security Gateway... An email security gateway monitors inbound email messages for malicious SMTP servers, malware, spam, phishing attempts, and infected attachments. Depending on the attack, the gateway then performs various actions to protect the intended recipient.

WVNET provides email filtering for its employees and offers this to our customers as a service. We use a commercial product called DefenderMX. The software failover functionality.

- **Centralized Logging and Reporting Using ElasticSearch**
    Problem resolution time has been decreased with the addition of log tools utilizing ElasticSearch. If desired, customers can have access to the logs for their domains.
- **Simple Spam Training**
    Customers who receive spam that wasn't detected by DefenderMX can forward the mail to DefenderMX so that the message is added to the spam database.

Systems Team Continued...

- **Informed Sender Description**
  - Recipients of messages with spoofed senders are alerted.
- **Auto-Whitelisting**
  - When messages are rejected, senders receive a bounce with a whitelist request link.
  - Legitimate senders can click the link and follow instructions to be whitelisted.

Many WVNET customers have moved their email service to Microsoft Office365. DefenderMX can filter mail for Office365. We are currently doing so for our WVROCKS Office365 instance. Even though Microsoft provides filtering for their Office365, there are many reasons to consider a 3rd party scanning service. Email security is offered in tiers for Office 365. The basic service provides moderate email security, including the ability to scan emails for files with known malware signatures. However, increased protection, including zero-day scanning and real-time protection from malicious URLs requires an upgrade to its Exchange Online Advanced Threat Protection (ATP) service.

There is only one level of service with DefenderMX. This includes scanning messages for blacklisted URLs in the body of the message and performing heuristic scanning on the message.

Email is integral to our jobs, but it is also a source of constant threats. An email security gateway will provide your institution with comprehensive protection, using multiple malware scanning services, sandboxing, advanced spam protection, and heuristic scanning to dramatically lower your risk of exposure.

NOC
(Article by WVNET staff member Kim Jenkins)

During the month of July 2018, the Network Operations Center logged 871 tickets and for August 2018, a phenomenal 1008. Please remember the WVNET Help Desk is available to serve customers 24/7. Just call 304-293-5192 to connect, or connect on the web at wvnet.edu

Human Resources
(Article by WVNET staff member Bob Roberts)

WVNET has hired a Manager of Distance Learning and Educational Services who will join the organization in January 2019, Dr. Bonnie Ordonez. Dr. Ordonez will be responsible for Blackboard, Banner functional, P20, and DegreeWorks, in addition to a variety of other projects. WVNET Interim Deputy Director, Dr. Mary Stewart, thanked the Search Committee (Suma Ponnam, Harmony Garletts, Mike Karolchik, and Bradley Smoak) for their dedicated efforts in this hiring process.

Distance Learning
(Article by WVNET staff member Harmony Garletts)

As we prepare for the beginning of another school year, the same question runs through my head; what can we do to improve student success? No matter what your role in the educational setting, the goal is always the same: make sure students have the resources they need to succeed.

In our role as administrators, faculty, instructional designers and system admins, here are a few things we can do to improve student success:

- Universal Design for Learning – One of the best sessions I attended at BbWorld was on UDL where the presenter asked us this question, *"What is one more thing you could do to make your content more accessible to different types of learners?"* That thought sticks with me as we move into a new school year. What is the "one more thing" we can do to improve student success?
- Analytics – Using Course Reports, the Performance Dashboard and Retention Center allows us to track students who may need extra attention or simply a word of encouragement to make that extra push to improve performance and engagement. The Student Performance Dashboard is also a custom tool from WVNET to gauge performance in individual courses at a glance.
- Intervention – Once we identify at-risk students, the next step is to make contact with them. The Retention Center allows the instructor to notify students who are not making adequate progress. The Full Grade Center also has a new tool to notify students when they missed an assignment or other graded work.

Let's start off this academic year with the goal of student success front and center in our thoughts. What steps will you take to help your students succeed this year?

Distance Learning Continued...
(Article by WVNET staff member George Tilko, NCRM)

Address Cleansing... Exactly what is Address Cleansing? In short, address cleansing is a process which checks addresses against data files of authentic deliverable locations and revises or *cleanses* them as needed. Approximately twenty-five percent of scanned addresses are either misspelled or have an incorrect zip code, city or state.

WVNET has redesigned its address cleansing application and at this time we are making it available to our hosted schools at no charge. Cyber threats and attacks prompt us to assure our users the information which is provided to them by their students does not get altered without the student's knowledge, while at the same time standardizing the data to match the United States Postal Service (USPS) regulations. All addresses are verified against databases which are maintained by the USPS. This database contains every deliverable address in the country, now over 145 million addresses. In addition, the National Change of Address (NCOA) feature provides the ability to follow people 'on the go' through USPS's "Move Update" feature which allows students to make address changes on the USPS.com website. These updates will eventually find their way to Banner, and the student will receive email notification that a change has taken place. All processed addresses are checked for Zip+4, spelling and validity of deliverable addresses that conform to standardization formatting.

While this application contains many optional suppression capabilities, it is designed to update Banner records with only addresses that have changed. If a school is interested in postal discounts, the Enhanced Line of Travel, Delivery Point, Correction Digit and Carrier Route are included along with approximately forty other variables that could be used within a data governance management designed process.

Also included with this application, WVNET provides over 42,000 zip codes and over 3,000 counties all synchronized and populated to Banner's GTVZIPC and STVCNTY tables. By standardizing a project of this caliber, it makes sharing software development a real possibility while reducing error corrections significantly since all users would be using the same data. If your school is interested in maintaining correct addresses and looking for assistance in managing this undertaking, then you may want to take a closer look at address cleansing. If you are looking for a way to stay in contact with your alumni, address cleansing may be a solution. For more information please contact WVNET at 304-293-5192.

Business Office
(Article by WVNET staff member Greg Kidder)

Microsoft Contract 2018...WVNET holds the Microsoft contract through an authorized reseller (Insight) for nineteen public and private higher education institutions in West Virginia. This provides faculty, staff, and students at these locations all the Microsoft products they need at the lowest possible cost through the Microsoft Campus Agreement Program.

Last October, Microsoft announced a new program that will change the way that WVNET and its member institutions will license the necessary Microsoft products. This change is called the "Knowledge Worker" model. Presently, WVNET and the member institutions are using the FTE model. After a review of the new model and price comparison quotes, it was decided that our contract would be extended for one year under the FTE model. This decision saved thousands of dollars for the higher education institutions on the contract. All institutions have now been introduced to the new Knowledge Worker model and will be able to select the proper product mix for FY 20 when WVNET rebids the reseller contract next spring.

Allen Daugherty

From the Interim Director...

August and September bring seasonal change...a time when nature starts sending signals that the final harvest is near. For WVNET, the long days of summer give way to our busiest season, when both higher education and public schools in the state resume regular sessions. For us, August/September is our busiest season—a season for which we spend the entire summer preparing. This past summer was no exception.

Our Banner and DBA Teams upgraded all of our hosted institutions to Banner 9, and they continue to apply patches and mediate technical issues to ensure the best service possible. The Banner Functional Team spent the summer traveling the state to train school personnel on Banner 9 features and functionality. Our Distance Learning Team upgraded Blackboard to the next level and they, too, have been busy this month travelling to schools to train faculty and staff on new features. The DegreeWorks Team participated in Report Training that enabled schools to do their own custom reports in ARGOS to better address their institutions need for degree audit statistics. Telecommunications has been busy upgrading our Southern and Northern Firewalls to accommodate additional traffic, enhance speed, and add more security. Systems has been extremely busy calculating load balances to ensure optimum performance for all software and systems that WVNET hosts. Our Network Operations Center is a key component of WVROCKS' success, as well, in that they field all calls for login assistance for students taking courses on the portal from eight participating institutions of higher education in the state in addition to fielding calls for all of our other services. None of these services would be possible without our business office's attention to detail in tracking Memorandums of Understanding, billing, budgets, and so on. So when others are slowing down after summer, WVNET is gearing back up to our busiest season!

Years of Service to WVNET
(Article by WVNET staff member Fran Barnes)

WVNET has an exceptional technology-savvy team with a strong customer orientation. We're happy to acknowledge the fact that these staff members have reached significant milestones in their careers with us in August and September 2018:

August 2018
Jerry Burchard—41 years
Karen Saffron—40 years
Kim Jenkins—29 years
Jason Chastain—27 years
Dave Watson—21 years
Greg Kidder—16 years
Russell McCormack—6 years
Chris Seckman—4 years

September 2018
Fran Barnes—35 years
Verne Britton—33 years
Ron Hamilton—7 years

Fond Farewell
(Article by WVNET staff member Bob Roberts)

Bradley Smoak, Web Development Team Lead, accepted an employment offer with a marketing agency in Pittsburgh and will be relocating in the next few months. In his time with us, Bradley did incredible work toward streamlining our web creation and hosting services. Having the eye of a true artist in house has been extremely valuable in assessing our hosting of sites. And, finally, Bradley was a warm and charming addition to the staff. Thank you, Bradley, for your service to WVNET. We wish you the best as you sail off toward your new endeavors.