



NETWORKING 101

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- From the Director 1
- User Data Abuse and How to Protect Yourself 2
- Network Operations Center 3
- Degreeworks Highlights 3
- Professional Development Application Benefits Schools 3
- Dial-Up Internet Service to be Decommissioned 3
- The Intenet 2 Experience 4-5
- Years of Service Awards 6
- National High School Cyber Challenge 7

From the Director's Office

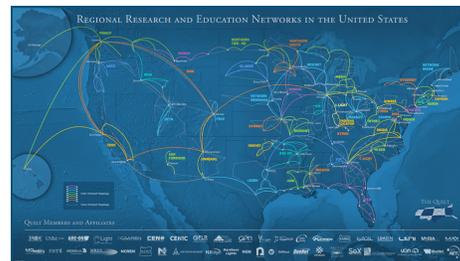


Allen Daugherty - Interim Director

Connectivity is an interesting word that most folks don't take the time to think about--in fact, it's taken for granted--that is until there's a disruption of service! Nearly everything in the 21st Century is connected, so when we lose connectivity, the conveniences that we take for granted come to a stop, and for

the most part, our ability to be productive ceases as well because of our reliance on access to the internet to connect to our communities and the world beyond. Fortunately, WVNET doesn't take connectivity or security for granted. We are hyper-vigilant in monitoring systems and telecommunications as well as the protection of data storage. But let us not forget that our ability to protect and secure these processes requires a well-trained professional staff.

Cyber-Security, for example, is very fluid, so training must also be fluid. As a research and educational network (REN), WVNET is not only committed to ensuring training for our personnel, but we are participating in several initiatives to educate the constituencies we serve. To that end, in this issue of Networking 101, you'll find tips on how to protect yourself from user data abuse, you'll learn more about WVNET's relationship with Internet2*, as well as some other interesting news like our partnership with Merit and The Quilt to host the 2019 National High School Cyber Challenge.



* Click on this map for a larger image of WVNET's connection to other Research Education Networks in the United States and Internet2 Topology.

User Data Abuse and How to Protect Yourself

—Randall Long, WVNET Systems Administrator Lead

The original intent of this article was to discuss ways to protect oneself from abusive data practices. After researching the topic, it evolved into a warning that there are few ways to ensure that your online data remains private. From company insiders illegally disclosing personal customer information to companies systematically sharing or selling user data, misuse has become a common news headline. An enormous industry has grown out of collecting and collating user data. Nearly anytime a company provides a free service, your private data is the currency being used in the transaction.



Here are some data abuse threat concerns:

- This has been said many times: “If you are not paying for the product, you are the product.” There may be exceptions, but almost every case of data abuse occurs when you don’t pay to use the product. Free VPNs, Facebook, Google...the list goes on. There is no such thing as a “free lunch.” All the information a company requires from you to use their service is most likely at risk.
- Enabling “Do Not Track” in your web browser won’t hurt. However, the trouble with this voluntary standard is that it requires good-faith cooperation from the parties at the other end of the web connection. There is no penalty if a website ignores the “Do Not Track” setting. Don’t rely on DNT settings or plugins. Before changing its business model, the popular multiple platform privacy plugin “Ghostery” was found to be selling anonymized user data to businesses. That’s not the kind of behavior you’d expect from a privacy tool.
- Some privacy experts recommend the use of a VPN service (but NEVER a free VPN service; more on that in a bit). This is flawed advice. VPN is an acronym for Virtual Private Network. A VPN creates a private tunnel over the open internet. The idea is that everything you send is encapsulated in this private communications channel and encrypted so that even if your packets are intercepted, they can’t be deciphered. Here’s how it works: Most VPN services provide an application which encrypts your data, and it travels in its encrypted form through a tunnel to the VPN service provider’s infrastructure. That means web applications don’t get to see your IP address. Instead, applications see an IP address owned by the VPN service. A VPN is no magic privacy bullet. Services don’t identify you by your location. They identify you by cookies, device, user agent supported APIs, browser version, IP address, (and probably 100 more things).

Going incognito requires you to change a lot more than just one of these factors. A VPN doesn’t provide protection against a website setting a tracking cookie. A VPN can’t protect against a website recording information about products you’re interested in. A VPN can’t protect you against a website that sells your email address.

- As mentioned above, a VPN service encrypts your data until it reaches the service provider’s infrastructure where it is decrypted and sent to its destination. A free VPN service is probably mining your data once it is decrypted

Is There Nothing I Can Do?

Although there is very little you can do if you use the many services provided today, there are a few actions you can take to help minimize what information is being collected.

Pay attention to app permission requests before installing them.

There are thousands of apps designed specifically to collect, process, and share/sell user data in the Google and Apple app stores. Usually, most of these apps can be easily detected. Pay attention to the permissions being requested. When a VPN app asks for permissions to access your contacts, this should be the first red flag. When an app requests access to permissions it doesn’t need to deliver the service it is designed for, don’t use the app.

Sandbox Web Browser Accounts

Firefox offers an add-on called “Multi-Account Containers” that allows you to easily separate browsing accounts. Tracking data isn’t shared across the containers.

Avoid Google and Social Media

Today, most people use social media in every aspect of their daily life. Those with a crucial need for privacy avoid Facebook, Instagram, Snapchat or just about any other social media service. Gmail and Google are replaced with more secure services like ProtonMail (an end-to-end encrypted email service located in Switzerland) and duckduckgo.com (an internet search engine that emphasizes privacy).

Hope for Regulations

Data abuse will continue as long as it remains profitable. The European law General Data Protection Regulation (GDPR) addresses issues on data protection and privacy for individuals in the European Union. In countries without data protection and privacy regulations, these practices will likely continue until it costs the companies more than it’s worth in fines.

Network Operations Center

—Kim Jenkins, WVNET Operations Manager

During the month of September 2018, the WVNET Network Operations Center logged 841 tickets and for October 2018, a phenomenal 902 tickets. 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.



Dial-Up Internet Service to be Decommissioned 12/31/18

—Eric Burgy, WVNET Telecommunications Manager

WVNET will be decommissioning dial-up Internet service on December 31, 2018. This service has been provided by WVNET for the last several decades. However, due to extremely limited use, it is no longer feasible to continue to offer this service. Customers that still require dial-up service may contact the provider of their choice for alternative plans. WVNET has reached out to Citynet to ensure customers have at least one alternative. Citynet does offer dial-up Internet and can be reached at 1-800-881-2638. Tell them that you are an existing dial-up WVNET customer, and Citynet will take it from there.



DegreeWorks Highlights

—Barbara Long, WVNET DegreeWorks Team Lead

WVNET conducted another successful online training course, in partnership with Ellucian, DegreeWorks Scribe 201, for our DegreeWorks community. In total, five institutions participated in this two-day, virtual training event. Congratulations to Southern West Virginia Community & Technical College for migrating to DegreeWorks Web Scribe. Scribe is the tool used to transcribe an institution's course catalog into DegreeWorks. By moving from the PC version to the web-based, Southern WVCTC positioned itself for future DegreeWorks upgrades.



In addition, WVNET also provided email accounts associated with the provisioned dial-up Internet accounts. Since that time, some customers have opted to use only the email portion of these accounts. WVNET will also be eliminating email accounts when we decommission the dial-up service.

Email accounts that are assigned to individuals (those **NOT** affiliated with employment by a State of West Virginia agency or institution) will need to be transitioned to another provider by June 30, 2019. This means their email address and domain name will be changing. WVNET will provide email forwarding from the time we are notified of the new email address until June 30, 2019.

Email accounts that **ARE** affiliated with employment by a State of West Virginia agency or institution will be permitted to remain active and unchanged. State of West Virginia affiliated email accounts will be maintained by WVNET and accessible from an Internet connection at the current annual charge.

Please contact the WVNET help desk at 304-293-5192, option 1 or extension 248, for additional assistance.

Professional Development Application Benefits Schools

—Chevee Dodd, Software Developer

The Professional Learning and Development system (PLAD) has continued to evolve based on feedback from our partners. PLAD was initially designed for a single school district to help them track and manage their staff's professional development hours. As the project moved forward, we found many more customers were excited to use the software and have since grown to over 1,000 users. We always evaluate feedback we receive and frequently update the software with new features, tools, and reporting options. We are very excited to continue developing the platform to meet our customers needs.



The Internet2 Experience

—Frank Seesink, WVNET Network Specialist III



The Internet2 community is quite amazing. And if you let it, it can affect your life in profound ways. This is my perspective on that community as shown by my journey within it to date.

Internet2 is a member-driven, advanced-technology community

founded by the nation's leading higher education institutions in 1996. Internet2 provides a collaborative environment where U.S. research and education organizations can solve common technology challenges and develop innovative solutions in support of their educational, research and community service missions. Our community touches nearly every major innovation that defines our modern digital lives—and continues to define “what’s next.”

Internet2 operates the nation’s largest and fastest, coast-to-coast research and education network that was built to deliver advanced, customized services that are accessed and secured by the community-developed trust and identity framework, with Internet2 Network Operations Center powered by Indiana University. Internet2 serves 331 U.S. universities, 60 government agencies, 44 regional and state-education networks and, through them, supports more than 94,000 community anchor institutions, over 900 InCommon participants, 65 leading corporations working with our community, and 61 national research and education network partners that represent more than 100 countries.

– <https://www.internet2.edu/about-us/>

West Virginia Network (WVNET), the State’s Research & Education (R&E) Network (or REN), has been an Internet2 member since 2011. As part of the WVNET Telecommunications Group, I have had the fortune and pleasure of attending every conference/meeting since we joined, helping to represent our organization and State.

These conferences, formerly called Member Meetings and JointTechs, are now called the Global Summit and the Technology Exchange (or TechEX for short). They occur in the spring and fall, respectively. They both offer a variety of sessions, the Global Summit tends to be higher level, with more sessions aimed at decision makers and those who use Internet2’s resources such as researchers. TechEX is where one tends to find more technical subject matter, such as that used by those who plumb the networks, setup identity management systems, etc.

During our first five years as an Internet2 member, and often as the only representative from our organization, I was mostly a “lurker,” quietly attending sessions from advanced networking to identity management to high-performance computing to just about anything else I could get my hands on.

I would sit in on meetings for the Network Technical Advisory Committee (NTAC), the IPv6 Working Group, and others, eventually even joining in on the monthly Blue Jeans/Zoom calls each group had. I would always attend the Networkers “Birds of a Feather” (BoF) session, as that’s where our peers would gather. Everywhere I went, I would sit in and try to soak up as much information as I could. Considering the depth of knowledge and experience in the Internet2 community, I always felt it best to listen, as what could I possibly contribute?

In 2015, after Distributed Denial of Service (DDoS) attacks had been affecting several R&E members the previous year, the Global Summit I was part of the creation of the Security Working Group, whose first charter was to find solutions for DDoS mitigation. That working group would go on in the next year to evaluate various options, passing along information to the membership. The end result was that Internet2 itself put out a bid on behalf of its membership and eventually offered a DDoS mitigation service to any members interested, with the cost dropping as more members joined.

Over time I got myself invited to such things as the Netgurus meetings, which are held along with the conferences. Netgurus is traditionally made up of campus member institutions. I was the outlier, the only representative from a REN. But attending those meetings gave me some insight into what our higher education customers might be dealing with back home.

Then, beginning in the fall of 2017, things began to change. It started with James Deaton from Great Plains Network (GPN). During one of the NTAC monthly calls, Dean called out the lurkers, encouraging us to join in when he noted that each month there were far more people on the call than those who spoke. For some reason that resonated with me. Though I still felt I had nothing to contribute, I also really wanted to do so somehow. Everyone had provided me with so much knowledge, help, and information, I wanted to find a way to “give back.”

Then, on Tuesday, 26 September 2017, I received a call which would change my year. That was the day that Ken Goodwin and Michael Lambert from the Three Rivers Optical Exchange (3ROX), an organization WVNET is proud to be a member of, called and asked if I would be willing to do a presentation on Ansible at the semi-annual 3ROX meeting being held in two weeks time in Pittsburgh, PA. I asked why me, as I’d just begun tinkering with Ansible myself, but in the end I said I would see what I could do.

Ansible, for those not familiar, is an open-source automation and configuration-management solution which, in the past few years, has become very popular in the networking world. Ansible allows network engineers to automate the configuration and management of network equipment, notably equipment on which software often cannot be installed as it can be on servers.

continued...

The Internet2 Experience (continued)

A few days later, an email came in from Linda Roos who works at Internet2. (For many of us Linda IS Internet2.) Linda was asking for anyone to contact her if they had topics they would like to present at the Network Automation Tools and Practices Workshop being held on the Sunday before TechEX in San Francisco in October 2017 (just 3 days after the 3ROX meeting). I was already signed up for that workshop. So having just committed myself to one presentation at 3ROX, putting myself in neck deep as it were, I emailed Linda back offering to do the same presentation on Ansible at the workshop.

That very night, I began putting a slide deck together which would exceed 50 slides within 2 days. (Don't be too impressed. I'm a visual person so my slides tend to be more pictures than text. I try to avoid "Death by PowerPoint.") Amazingly, working on that slide deck really helped me focus on what I needed out of Ansible myself. It also got me thinking about what my outcome was in doing all this.

In the end, I realized that what I was after for myself was to save time. And for my presentation it was to try and give back the gift of time to others. You see, we're all familiar with folks who will ask us to give up some of our time, be it our bosses, coworkers, friends, or family. "Hey, can you do this for me?" But when was the last time you had someone give you the gift of time? "Hey, I took care of that report for you. Here's a day of your life back. Enjoy!"

And while we can make more money, the one thing we cannot do is make more time. So, the greatest gift we can give one another is the gift of time. And the ultimate gift is giving someone some of your own. And while I was (and am) no expert in Ansible, I did know that it had already saved me incredible amounts of time; in fact, without it I might never have done

the things I did with it, as it would have been far too time consuming. So, if I could share that gift of saving time with even just one other person, that would be my contribution to the community. Heck, even if my presentation, which was a distillation of what I'd learned over several months into a half-hour presentation, saved one person some time in simply learning about Ansible, it would be worth it. In the end, the presentation I did at 3ROX went far better than I'd imagined. And when I did it again at TechEX three days later... Well, let's just say the response blew my mind. I had folks come up to me the entire conference talking about my presentation. I had no idea that doing one presentation could have such an effect. It was, quite frankly, exhilarating.

So, fast forward one year, from October 2017 to October 2018. This fall, I attended the latest TechEX, and much as I did last fall and again this past spring, I attended the network automation workshop offered. Now leading up to and at TechEX this year, I had multiple people ask if I would consider being a vice chair of different working groups I was part of, as over the past year I began speaking up more within the community as a whole.

The end result as I type this is that I have accepted being the next vice chair of the NTAC. Not only that, but after the community at TechEX expressed interest in setting it up, I have also agreed to help with a new network automation working group that is to be created.

With this, my role within the Internet2 community has shifted from quiet observer to active participant. And while making that transition can be intimidating, the end result is well worth it. Being not just part of this community, but actively participating in it, has been the most enjoyable part of my job. And I hope to bring what I have gained from these experiences back to our community.



Years of Service to WVNET

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 October and November 2018.

—Fran Barnes, Editorial Assistant



October 2018

Frank Seesink—20 years
Scott Hofer—5 years
Eric Burgy—1 year

November 2018

Buffy Vehse—4 years
Jay Waxman—4 years
Bob Burton—2 years
Suma Ponnampalath—1 year

Years of Service to the State of West Virginia

WVNET has a long history of service to West Virginia education. Our talented staff consists of bright new minds along with dedicated employees who have been with us for many years. We are certainly grateful to retain some of our expertise, experience and history as it is passed on to new generations. The State of West Virginia also appreciates dedicated employees and honors them with Years of Service awards. On October 24, Interim Chancellor Carolyn Long of the West Virginia Higher Education Policy Commission visited WVNET to present these awards to staff members who had reached significant milestones in their career. Thanks to Chancellor Long for making this a special event, and to our dedicated staff who keep WVNET shining brightly!

45 years:
George Tilko

40 years:
Fran Barnes
Allen Daugherty
Annette Dick

35 years:
Michael Karolchik
Randy Long

30 years:
Dianne Sisler

25 years:
Jason Chastain
Libby Cress
Mary Stewart
Dave Watson

20 years:
Phil Snitz
Buffy Vehse



WVHEPC Interim Chancellor Carolyn Long presents a 40 Years of Service award to WVNET Interim Deputy Director Dr. Mary Stewart

NATIONAL HIGH SCHOOL CYBER CHALLENGE

CALL FOR PARTICIPATION

COMPETITION TIMELINE:

ROUND ZERO

APRIL - JULY, 2019

An online resource that can be utilized by parents, instructors and administrators as cybersecurity warm-ups, supplements to curriculum, and more. Round Zero is an unscored challenge, and is open to unlimited participants.

ROUND ONE

OCTOBER, 2019

A four-day online challenge that will focus on networks, programming, operating systems and hacking skills. This round is open to 10-30 teams from each participating state.

ROUND TWO

NOVEMBER, 2019

The National Championship features a virtual exercise designed to test teams' skills with an intensive, timed series of cybersecurity challenges. The top 10 highest scoring teams from Round One will participate in Round Two.

THE PRIZE

Cybersecurity Bootcamp courses and examination vouchers will be awarded to the students of the winning team. These certifications will qualify the students for entry level jobs in the industry.

For more information, contact Dr. Mary Stewart
(mstewart@mail.wvnet.edu).

WVNET Partners with The Quilt and Merit for the 2019 National High School Cyber Challenge

"According to ISC2, there will be 1.8 million unfilled cyber jobs in the US by 2022"

-- Global Information Security Workforce Study (2017)

To address this growing need in the workplace, WVNET will facilitate and promote the recruitment of high school teams to compete in the 2019 National High School Cyber Challenge. This challenge is a multi-round competition that tests students' skills in networking, programming, and operating system security. The competition was developed by Merit Network and the Michigan Cyber Range. Every round of the competition is offered at no cost to schools or students who compete in teams of 1-3 members.

A "kick-off" webinar outlining the timeline for the competition (which follows) was held in early November. Merit will provide WVNET with a marketing and recruitment toolkit, sponsorship materials and an online registration page. Merit will also run and facilitate each round of the competition. WVNET will begin working with the WVDE and local county BOE's to recruit a minimum of 10 teams to represent West Virginia in this competition. We are limited to 30 teams, and we hope to reach the maximum limit!



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