

NETWORKING 101

WEST VIRGINIA NETWORK (WVNET)



West Virginia Statewide Technology Conference

'Using Technology to Make Learning Personal'

The goal of the conference is to foster partnerships between educators by sharing knowledge about the latest advances in educational technology. The 9th annual West Virginia Statewide Technology Conference is being held July 30-August 1, 2013, at the Waterfront Place Hotel and Morgantown Event Center in Morgantown, WV.

Register online now conference.wvnet.edu or call 304-293-5192 for more information

The opening session keynote speaker is *Bob Wise, President, Alliance for Excellent Education and Governor, West Virginia, 2001-2005*. He will speak on "Planning for the Future: A Vision for Digital Learning."

The closing session keynote speakers are *Dr. Teresa Engle, Dean, Marshall University College of Education and Professional Development* and *Dr. Lynne Schrum, Dean, West Virginia University College of Education and Human Services*. They will speak on "Personal Learning and Pathways."

Over 140 concurrent sessions offer conference attendees educational opportunities on:

- ◆ Personalized learning
- ◆ Distance learning
- ◆ Cloud computing
- ◆ Security and network management
- ◆ Digital citizenship
- ◆ Technology in Education and eLearning

50+ Exhibitors — Murder Mystery Dinner Theatre

VOLUME 3, ISSUE 7

JULY 2013

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West Virginia Higher Education Technology Conference 2013

WVHETC 2013 will be held at the Waterfront Place Hotel and Morgantown Event Center in Morgantown, West Virginia, on October 28 and 29, 2013. Please join us and two hundred or more attendees who will participate in the return of this important higher education technology conference. Featuring numerous concurrent sessions, conference goers are sure to find several sessions that meet their needs, as well as gain valuable insight into the latest and greatest products from technology vendors showcasing what's available in today's business market.

<http://wvconference.com/>



SDNOPS

MASSIVE OPEN ONLINE COURSE

Software Defined Networking/OpenFlow is emerging as one of the most promising and disruptive networking technologies of recent years. It has the potential to enable network innovation and create choice, and thus help realize new capabilities and address persistent problems with networking. It also promises to give network operators more control of their infrastructure, allowing customization and optimization, therefore reducing overall capital and operational costs. Industry is embracing SDN. Network operators plan to build their infrastructure using this innovative technology. Incumbent vendors as well as startups are developing a range of products for different market segments including data center, service provider and enterprise. Are you ready to get down in the trenches and work with real world industry experts to create your own SDN? Then this is the MOOC for you. Each lesson gives users an opportunity to work in a lab environment to create their own SDN. The live course begins on May 16 and will continue with weekly lessons until July 14, 2013. Enroll now! This MOOC is brought to you by West Virginia's Network for Education (WVNET) and West Virginia's Remote Online Collaborative Knowledge System (WVROCKS).

Learning Objectives

After successful completion of this course, students will be able to

- Define the basic concepts of Software Defined Networking (SDN) and OpenFlow (OF)
- Identify today's packet switched networks
- Distinguish between control, data, and management planes
- Analyze the history of SDN's and OF environments in relation to hardware defined networks, and
- Create an SDN.

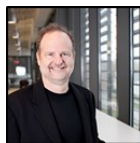
We thank the instructors who were instrumental in making this happen:



Ivan Pepelnjak, a 25-year veteran of the networking industry. He has more than ten years of experience designing, installing, troubleshooting, and operating large service provider and enterprise WAN and LAN networks and is currently the Chief Technology Advisor at NIL Data Communications, focusing on advanced IP-based networks and web technologies. Although, Mr. Pepelnjak won't be teaching, he has generously offered the use of resources that will enhance learners' knowledge of SDN. Check out his website at [ipSpace](#).



Brent Salisbury, a former Marine and a Network Architect at the University of Kentucky, where he received his undergraduate degree. He completed his CCIE in 2004 and has been an active proponent of software defined networking. Along with University business, Brent spends a great deal of time with friends around the state to build a statewide regional network for research and education. He is interested in disruptive technologies and believes them to be among the core tenets of computing: more with less. Check out his Blog: [NetworkStatic](#).



Steven Wallace, the Director of InCNTRE at the University of Indiana. Steve has taught classes all over the world on implementing SDN, particularly OpenFlow. He has more than 25 years of experience working in network design, research, and deployment, which includes 10 years leading IU's engineering support for Abilene (Internet2's first high-speed backbone) and directing the University's Advanced Network Management Lab. Although Mr. Wallace won't be teaching, he too has generously provided resources to enhance learners' knowledge of SDN. [Read more about Steve and InCNTRE](#).



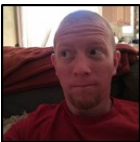
Dustin Burns, a Network Engineer for CSC assigned to the General Dynamics Boat account, where he manages a growing data center and the design facility for electric boat. He currently holds certifications as CCNT and CCNA, and is working on his CCNP. Dustin has been working in IT for about nine years and is interested in bleeding technology. Learn more about Dustin on his Blog [BitChaser](#).




Ed Henry, who currently works for Connecticut Education Network, under the University of Connecticut umbrella. They're a regional optical network concentrating on research and education within the communities of Connecticut. Along with his day job, he is an avid techie and has been working toward advancing his career in the realm of computer and SDN. Read more about what Ed's up to on his Blog: [NetworkN3rd](#)



Bill Owens, the Chief Technology Officer for NYSERNet, a private non-profit corporation created to foster science and education in New York State. NYSERnet's primary mission, to advance network technology and related applications for education, mirrors Bill's interest in SDN. [Learn more about NYSERnet](#).



Nick Buraglio is a Lead Network Engineer at the University of Illinois and the principal Network Engineer/Architect at Buraglio Consulting. In the past, he has worked as the Network Engineer at the National Center for Supercomputing Applications. [Learn more about Nick](#).

 **SDNOPS Mid-Term Stats** *(from live portion of WVNET SDNOPS MOOC on CourseSites May 16-June 16, 2013)*
MASSIVE OPEN ONLINE COURSE

- ⇒ 121 Students (136 total users)
- ⇒ 70 Students have actually logged in and accessed the course content (57%)
- ⇒ 12 Students are actively participating and earning badges (10%, 5% above the national average)
- ⇒ 1526 Total Hours invested in the course (21.8 hours per user)
- ⇒ The top 12 students have invested an average of 80 hours in the course to date.
- ⇒ Thursdays are the most active day, followed by Monday, Tuesday, Sunday, Wednesday, and Saturday.

In our eighth week of the live class, enrollments have increased to 147 students (163 total users). We are anxious to compare our statistical percentages with other MOOCs to gauge the impact that our unique pedagogical approach (applying practical knowledge in an active lab environment with badge validation) had on student retention.

Although the SDNOPS MOOC finishes on Sunday, July 14th, the content will remain on CourseSites until further notice and/or interest wanes. Students may continue to self-enroll and earn badges until that time. Be sure to read a detailed summary of the MOOC process in our August newsletter.



From the Director...

Since Dr. Mary Stewart has worked so hard to make WVNET's MOOC [Massively Open Online Course] a success, it was only fitting that she received the email. It read:

Hello Mary

I'm pleased to announce that WVNET's MOOC has been featured on the recently published list of the 99 Best Resources on Open Courseware and MOOCs.

You can check it out here: <http://top5onlinecolleges.org/mooc/>

We're passionate about the power that technology has in increasing the accessibility of education. Massively Open Online Courses and Open Courseware are a huge part of that movement, so we thought it would be useful to provide a list of some of the best sites offering information on these topics to our readers. Many of these sites offer actual courses or course materials themselves, which we think will be a great resource for our readers. Your site is a fantastic addition to the collection.

We'll be making sure this article reaches as many people beyond our own readership as possible to ensure maximum recognition for these quality sites. That said, any help you could give by sharing this on your site or through social media would be greatly appreciated!

Thanks for all you do to promote open online education.

Best, Megan Petersen

Director of Content@Top5Online



Chancellor Hill called to congratulate us and I told him we decided to teach a MOOC so that we would be ready to help our Community & Technical Colleges and 4-year schools when they were ready to offer MOOCs. Vice Chancellor Rob Anderson was also very complimentary about our selection.

WVNET found itself in the company of Harvard, Stanford, Ed-X, Coursera and many other outstanding online course sites. Our Media Services Group, headed by Mike Karolchik, has done outstanding work getting this MOOC on Software Defined Networking online and working. He has been ably assisted by Dr. Mary Stewart, Jonathan Lynch, Chris Reed, Josh Friend and Justin Robinson. They have all learned a lot along the way to this recognition. The lessons learned will make them an invaluable resource for schools [including K12 schools] which decide to offer MOOCs in the near future.

I am very proud of this national recognition for the talented, hard-working people at WVNET. They have really helped make West Virginia SHINE!

-Dan O'Hanlon, Director

PS: you can still check out our MOOC at sdnops.wvnet.edu

**WVNET PARTNERS WITH AIR.U AND WVU
ON WIRELESS BROADBAND OPPORTUNITY
(REPRINTED BY PERMISSION)**

WVUToday

<http://wvutoday.wvu.edu/n/2013/07/09/nation-s-first-campus-super-wi-fi-network-launches-at-west-virginia-university>

[West Virginia University](#) today (July 9) became the first university in the United States to use vacant broadcast TV channels to provide the campus and nearby areas with wireless broadband Internet services.

The university has partnered with AIR.U, the Advanced Internet Regions consortium, to transform the "TV white spaces" frequencies left empty when television stations moved to digital broadcasting into much-needed connectivity for students and the surrounding community.

The initial phase of the network provides free public Wi-Fi access for students and faculty at the [Public Rapid Transit](#) platforms, a 73-car tram system that transports more than 15,000 riders daily.

"Not only does the AIR.U deployment improve wireless connectivity for the PRT System, but also demonstrates the real potential of innovation and new technologies to deliver broadband coverage and capacity to rural areas and small towns to drive economic development and quality of life, and to compete with the rest of the world in the knowledge economy," said WVU [Chief Information Officer John Campbell](#).

"This may well offer a solution for the many West Virginia communities where broadband access continues to be an issue," Campbell said, "and we are pleased to be able to be a test site for a solution that may benefit thousands of West Virginians."

Chairman of the Senate Committee on Commerce, Science and Transportation Sen. Jay Rockefeller, said, "As chairman of the Senate Commerce Committee, I have made promoting high-speed Internet deployment throughout West Virginia, and around the nation, a priority. That is why I am excited by today's announcement of the new innovative wireless broadband initiative on West Virginia University's campus.

"Wireless broadband is an important part of bringing the economic, educational, and social benefits of broadband to all Americans," he said.

"My Public Safety Spectrum legislation, which the president signed into law last year, helped to preserve and promote innovative wireless services," Rockefeller said. "The lessons learned from this pilot project will be important as Congress continues to look for ways to expand broadband access and advance smart spectrum policy."

Mignon Clyburn, acting chair of the Federal Communications Commission, praised the development, saying, "'Innovative deployment of TV white spaces presents an exciting opportunity for underserved rural and low-income urban communities across the country. I commend AIR.U and West Virginia University on launching a unique pilot program that provides campus-wide Wi-Fi services using TV white space devices.

"This pilot will not only demonstrate how TV white space technologies can help bridge the digital divide, but also could offer valuable insights into how best to structure future deployments," she said.

The network deployment is managed by AIR.U co-founder Declaration Networks Group LLC and represents a collaboration between AIR.U and the WVU [Board of Governors](#); the West Virginia Network for Telecomputing, which provides the fiber optic Internet backhaul for the network; and Adaptrum Inc., a California start-up providing white space equipment designed to operate on vacant TV channels. AIR.U is affiliated with the Open Technology Institute at the New America Foundation, a non-partisan think tank based in Washington, D.C. Microsoft and Google both provided early support for AIR.U's overall effort to spur innovation to upgrade the broadband available to underserved campuses and their surrounding communities.

"WVNET is proud to partner with AIR.U and WVU on this exciting new wireless broadband opportunity," WVNET Director Judge Dan O'Hanlon said. "We are very pleased with this early success and look forward to expanding this last-mile wireless solution all across West Virginia." O'Hanlon also serves as chairman of the West Virginia Broadband Council.

Because the unique propagation characteristics of TV band spectrum enables networks to broadcast Wi-Fi connections over several miles and over hilly and forested terrain, the Federal Communications Commission describes unlicensed access to vacant TV channels as enabling "Super Wi-Fi" services. For example, WVU can add additional Wi-Fi hotspots in other locations around campus where students congregate or lack connectivity today. Future applications include public Wi-Fi access on the PRT cars and machine-to-machine wireless data links supporting control functions of the PRT System. [Continued on Page 6](#)

WVNET Partners with AIR.U and WVU on Wireless Broadband Opportunity Continued...

AIR.U's initial deployment, blanketing the WVU campus with Wi-Fi connectivity, demonstrates the equipment capabilities, the system throughput and performance of TV band frequencies to support broadband Internet applications. AIR.U intends to facilitate additional college community and rural broadband deployments in the future.

"The innovative WVU network demonstrates why it is critical that the FCC allows companies and communities to use vacant TV channel spectrum on an unlicensed basis," said Michael Calabrese, director of the Wireless Future Project at the New America Foundation. "We expect that hundreds of rural and small town colleges and surrounding communities will soon take advantage of this very cost-effective technology to extend fast and affordable broadband connections where they are lacking."

"Microsoft was built on the idea that technology should be accessible and affordable to everyone, and today access to a broadband connection is becoming increasingly important," said Paul Mitchell, general manager/technology policy, at Microsoft. "White spaces technology and efficient spectrum management have a huge potential for expanding affordable broadband access in underserved areas and we are pleased to be partnering with AIR.U and West Virginia University on this new launch."

The AIR.U consortium includes organizations that represent over 500 colleges and universities nationwide, and includes the United Negro College Fund, the New England Board of Higher Education, the Corporation for Education Network Initiatives in California, the National Institute for Technology in Liberal Education, and Gig.U, a consortium of 37 major universities.

"We are delighted that AIR.U was born out of the Gig.U effort," said Blair Levin, executive director of Gig.U and former executive director of the National Broadband Plan. "The communities that are home to our research universities and colleges across the country need next generation speeds to compete in the global economy and we firmly believe this effort can be a model for other communities."

Founding partners of AIR.U include Microsoft, Google, the Open Technology Institute at the New America Foundation, the Appalachian Regional Commission, and Declaration Networks Group, LLC, a new firm established to plan, deploy and operate Super Wi-Fi networks.

"Super Wi-Fi presents a lower-cost, scalable approach to deliver high capacity wireless networks, and DNG is leading the way for a new broadband alternative to provide sustainable models that can be replicated and extended to towns and cities nationwide," stated Bob Nichols, CEO of Declaration Networks Group, LLC and AIR.U co-founder.

-WVU-

jb/07/09/13

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Follow @WVUToday on Twitter.

EMPLOYEE SPOTLIGHT — -
DENISE GWINN :)



Meet team member Denise Gwinn, DBA-Lead, in WVNET's Administrative Applications group. Denise lives in Monongalia County in Morgantown, WV and has worked for WVNET for 37 years and the State of West Virginia for 38. Denise has an AB in Radio, TV and Film, an MA in Speech Communication and an MS in Computer Science.

In her DBA-Lead position, Denise does installations of Banner, Blackboard and Oracle. She is responsible for troubleshooting problems related to each of these things. Previous to her current position, Denise made microfiche and served as a computer operator and systems programmer --- all for WVNET. Over the years, Denise has seen both the key punch cards and microfiche become obsolete. Under the new leadership at WVNET, Denise has seen us "branch out in all directions with lots of new products and challenges."

Denise is a Master Naturalist, does a variety of volunteer work including homeless count, feed the homeless, kayaking, and is well known as a dog and cat person (having recently adopted a new kitten, as yet to be named), does Zumba and boot camp, OMG. One of her goals is "international travel," having completed a 9-day birding trip to Nicaragua in May where she saw 160 different species. Denise is looking forward to a 17-day trip to Africa, Tanzania and Zanzibar, at the end of October this year! Her priority is to "live life in the moment," and she likes old movies, mysteries, seafood and cooking. She dislikes yellow jackets.

Pictured with WVNET Director Dan O'Hanlon, Denise is sporting a t-shirt from one of her listserv friends.

EMPLOYEE SPOTLIGHT — -
LIBBY CRESS :)



Meet team member Libby Cress, Accounting Assistant II, in WVNET's Business Office. Libby lives with her husband Richard (*pictured at left*) in Monongalia County in Masontown, WV and has worked for WVNET for 14+ years and the State of West Virginia for 20. In her Accounting Assistant position, Libby provides customer service, purchasing and asset management. Her priority is to be all she can be at WVNET.

Libby's hobbies include bowling and spending time with her husband, sister and 4 grandkids. Libby likes her job, the people she works with and her church family. She dislikes bugs (the creepy crawling kind) in general. Libby and Richard celebrated their 40th *wedding anniversary* on June 30. Libby enjoys family time with her daughter, son-in-law, and grandkids; sadly, mother-in-law *Beatrice Cress* (*seated center in picture at right*) recently passed away at 92 years, a true celebration of life; however, her memory lives on in the lives of all of those she touched.



HAPPY RETIREMENT — -
BRENDA WILLIAMS :)



LONGTIME WVNET COLLEAGUE AND FRIEND BRENDA WILLIAMS RETIRES

WVNET has received word that Brenda Williams has retired from the WV Department of Education after 30 years. While we will miss our esteemed colleague and friend, most especially during the WV Statewide Technology Conferences, we know that the retirement years are some of the best life has to offer. In her retirement, Brenda will be enjoying life one day at a time-- planning more family visits and traveling. Her forwarding address is brendawill@gmail.com.

Anyone needing assistance with WVDE items should contact John Miller at 304-558-7880, jpmiller@access.k12.wv.us.



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Newsletter Archives Here

www.wvnet.edu

LETTER TO THE DIRECTOR :)

Dan,

WVUP just finished a major project with WVNET – changing the ISP from Frontier to Suddenlink for Main Campus and Downtown Center and moving our ISP management to WVNET. This project was led by Allen Daugherty and it could not have gone better. Allen hosted meetings twice a week for a couple of months prior to go live for the project to manage preparations with his team and Suddenlink as well as WVUP. In the last week, we met sometimes several times a day. Additionally, he identified a state source for free routers that were allocated to WVUP for this project. Allen was always available and responsive whenever I called – even on a vacation day. The skills Allen and his team have as well as their dedication and responsiveness ensured a successful outcome. Our final site to move to Suddenlink is the JCC location scheduled to shift in August after required permits are received from the utility company.

Additionally, Bonnie Lynch and her team have been outstanding partners for WVUP. Bonnie was the first to mention to me about the internet services WVNET offers. Bonnie and I have worked together to purchase several Banner Modules (e.g. Banner HR/FN, Mobile, Evisions' Argos, and DegreeWorks) and her team is doing a great job in getting the setup completed. Of course, the Applications Services department is also supporting all of our other Banner modules already in place. Bonnie has been my primary contact with WVNET and has served WVUP well in supporting the WVUP priorities. Thank you for being such a good partner with WVUP in meeting our needs and vision for the future. -- Valerie



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Happy 150th Birthday, West Virginia