*IN THIS WEEK'S ISSUE: How To Stay Focused; Why Communication Is Key For Data Center Moves. Please remember to enable the images; the magazine looks a lot better that way!*


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**(aka The Project Plan)**



**Issue Number 44**

**11/10/2016**

The "Take a deep breath" issue.

**Thought For The Week:**
Now what?

# 1. On Focus

## by Ethan Banks

*Focus is a skill lost to most modern humans. Our attention is divided constantly. Yet, in IT, we must master evolving technologies to advance our careers. Often, these are difficult technologies with specific use cases, nerd knobs, and dependencies. Divided attentions and topical mastery are not compatriots. How does an IT engineer remain technically literate? We must learn to focus*.

**Focus by setting goals.** If you have an important goal that can only be reached through dedication, set a specific, tangible goal. Put a date on that goal. Map out the steps required to reach that goal by the end date.

**Focus through single-minded purpose.** If you set a goal, stick with that one goal. Don't set seventeen goals at the same time, or you're back to the problem of divided attention. This is a battle I fight with task management. I use a system of "Today," "This Week," and "This Month" lists. I tend to overload the "Today" list, resulting in discombobulation when tasks are left undone. When I have this struggle, I remind myself to work in a linear fashion — one task at a time.

**Focus by eliminating distraction.** What shiny objects distract you? To achieve a goal, take them away. Notifications distract me, so I disable them. If what's going on outdoors is a distraction, draw the shade or reorient your workstation, assuming you can. If your favorite music distracts you, turn it off. If you use music to drown out the trendy open office you're imprisoned in, replace music with a pink noise track designed for concentration.

**Focus through experience.** I learn by reading, but also by doing. Therefore, I supplement what I'm reading with lab exercises. Dig deeply into those exercises, making sure to understand tasks. Real-world experience proves the text, helping make sense of the author. Sometimes, no amount of reading will drill a concept into your head. Taking time out to perform what is being discussed in the book can

make the difference.

**Focus by chasing down questions.** Rabbit trails pop up during lab work. For example, when learning Python, you'll soon need to comprehend dictionaries and lists. You might not need to know much about them to achieve your initial goals, but understanding them will provide knowledge helpful in adding Python to your toolbox. Many rabbit trails are worth going down — just find your way back to the main path.

**Focus through mind maps.** If you don't care for mind maps, consider writing. Either way, this focus technique requires that you consider and organize everything you've learned about a topic. You have to find the connections, distinctions, and dependencies among topics, and then express them accurately.

**Focus via agreements with others to allow it.** Culture expects that we respond quickly to emails and chat. Family and employers both want and deserve attention. Therefore, people of focus need to arrange for interactivity vacations. Coworkers and loved ones should be okay with you being out of touch for a few hours.

**Focus by listening, not talking.** Some personalities are good at listening, and some not. If you're not, squelch your questions, comments, and objections that arise during a presentation. Many of those will take care of themselves as a presentation progresses, whether that presentation is in the form of a book chapter, blog post, podcast, or video. Concentrate on what others are sharing. That focus will allow you to make the most of the information.

*Remember that distraction in a world of notifications is about what other people want you to do. Twitter wants you to read your timeline. E-mail senders want you to do the work they've outlined, and so on. But what do you need to get done? Focus helps you to prioritize appropriately. Yes, we all have obligations to our jobs and people, but*

*those obligations can be grouped. Compartmentalization allows you to achieve the goals that are important to you.*

# Sponsor: Nuage Networks

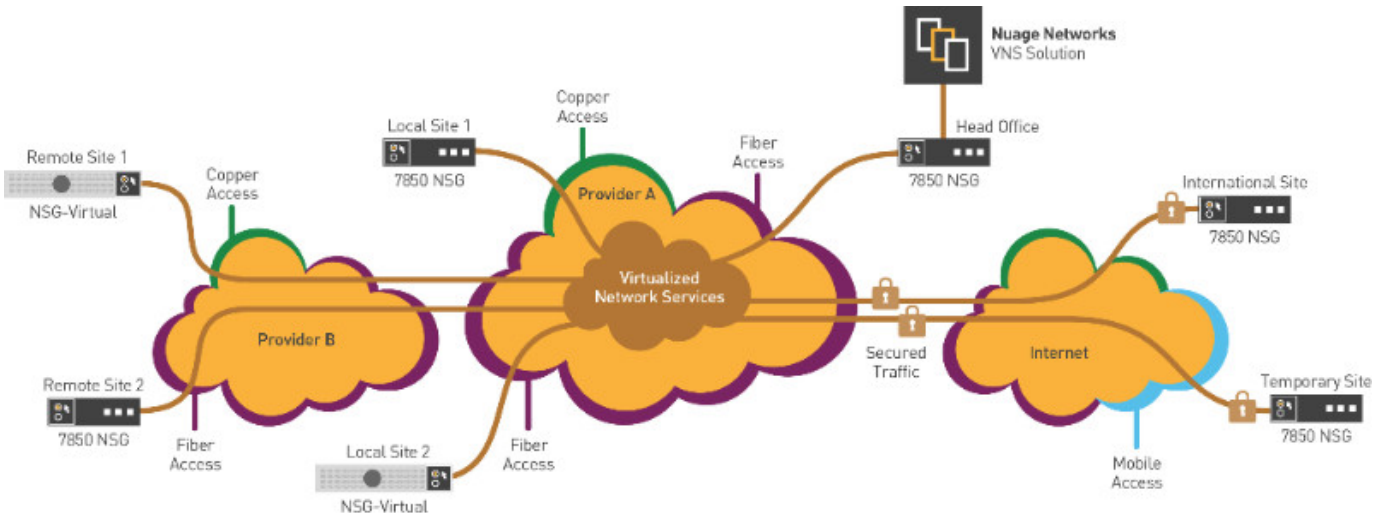
## Why Your WAN Needs SDN

Wide area networks are faster than they used to be, but they're still very challenging to manage. Changes must be rigorously managed, which slows responsiveness. Commissioning take a long time. There are so many devices — routers, firewalls, WAN accelerators — that connecting branch offices is complex. And security is cumbersome.

While the WAN remains cumbersome and complicated, Software Defined Networking (SDN) is changing the way data center networks are built and deployed. A dynamic and agile SDN environment in the data center is already enabling the move to cloud-based IT. Companies around the globe are reaping the rewards of virtualized infrastructures that can instantly and securely deliver compute, storage, and networking resources to thousands of user groups.

It makes sense to extend the reach of virtualized network services from the data center across the WAN to staff in branch offices. SDN cuts complexity while increasing flexibility and functionality:

- Respond faster and with greater agility to changes in your WAN environment.
- Offer a self-service portal to staff in branch offices so they can manage their own moves, adds, and changes.
- Reduce the number and complexity of the devices you install at branch locations.
- Have the freedom to choose different bandwidth providers at each branch location.




## Get SD-WAN On Your Terms

The Nuage Networks SD-WAN solution uses a centralized policy manager so all functionality is based on a template of networking and security policies. And the hardware installed at branch locations is based on the same x86 hardware that you have installed in your data center.

## Branch Out With Freedom, Flexibility And Control

Find out more about the next evolution in wide area networking. Read the case studies. And watch John implement an SD-WAN in minutes, turning from zero to hero as he easily brings cloud networking to a branch location. Visit http://www.nuagenetworks.net/SD-WAN.

# 2. Moving A Data Center: Communication Is Key

## by Jedadiah Casey

My company recently consolidated our in-house data center and moved the entire operation to a private cage in a nearby colocation facility. Fifteen years ago, our data center filled an entire room with nearly 100 racks of equipment. Thanks to advances in technology, especially server virtualization, we can now squeeze all of that computing power and much more into a tenth of that space. We decided it was no longer cost-effective to run our own personal data center.

Better planning leads to better results, and a smoother migration process. I won't go as far as saying you can never plan too much, because at some point you'll have diminishing returns. However, we spent nearly a year planning the move, and an amazing number of details were worked out ahead of time.

For the networking side, we fully planned out both the physical and logical connectivity so that on move day, all systems could be connected to the network and ready to go without our intervention.

We reviewed the details with everyone from the infrastructure team, and established communications channels with all involved parties. We communicated with the systems administrators during planning

and the move so that when the migration was done, it appeared to the rest of the company as if nothing had changed. Services may have been interrupted temporarily, but when they came back online, it made no difference that they were placed within a new infrastructure.

Communicating with outside third-parties and keeping them on schedule was another part of the move. We relied on a company to build the inter-rack network cabling infrastructure. There were several points during the operation that the company was falling behind based on the agreed-upon schedule, and we had to push hard to keep them on track because so many other company-wide deadlines were based upon the majority of the systems being moved to the new data center on a specific date. Unfortunately, they were still finishing the job as we were moving equipment into the racks.

Finally, in the spirit of busting silos, the infrastructure team made an effort to work with everyone affected by the systems we maintain. We communicated with the DBAs when those particular systems were brought back online so they could verify operations. Then, we had to talk with the developers once the databases were back up so they could verify their side of things.

We established and maintained those communication channels during the entire migration. We set the precedent of what teams should expect, and when to expect it. This way, when all systems were re-established and online, they could get to work testing their applications.

When nearly the entire organization is brought down in a specific order, and then brought back up in reverse, you gain a real appreciation for the interdependencies of the entire stack, as well as all of the people involved with making the whole thing run smoothly. Strong cross-silo communication was the key to our overall success, and ultimately to a stronger organization.


Join the Datanauts on their mission to bust silos and explore the latest developments in cloud, convergence, data centers, and more. Sign up free here.


Network Break is a weekly podcast that delivers news & analysis on the networking industry in a fun, fast-paced style. Subscribe here!

# Internets Of Interest

**A collection of pre-loved links that might interest you. "Pre-loved" because I liked them enough to put into this newsletter. It's not *true* love.**

**By Greg Ferro & Drew Conry-Murray**

## Networking @ Scale Videos - May 2016

Facebook hosts a regular conference on networking. It's an invitation-only, boutique style conference so it's a unique level of content. Absolutely worth watching the videos here on your lunch break.

# Facebook Voyager - Open Optical

Yet another network project from Facebook. This time it's an Open Packet DWDM system code-named Voyager. The hardware components for a DWDM switch are widely available and the design is outsourced to a company that designs and manufactures them for your favorite vendor. They removed the only proprietary part of the DWDM system:

> *"The DWDM transponder hardware includes DSP ASICs and complex optoelectronic components, and thus accounts for much of the cost of the system. These components are a maturing technology, with recent advancements mainly in integrating functions to drive down the power, size, and cost. The software that runs the transponder is traditionally bundled with the hardware, and innovation happens only at the system level. By opening up the transponder, Voyager will enable greater innovation at the component level."*

Once again, Facebook is producing open source hardware that will change the way networks are sold and built. Facebook has its own software for the Voyager, and so far it's fairly simple and supports a limited number of functions to suit Facebook's needs.

DWDM is key to getting cheaper bandwidth and better performing websites which leads to more revenue for Facebook, of course. It will take a couple of years to be completed.

If carriers choose to simplify their networks and look to reduce costs this could shake up the proprietary and closed DWDM market.

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## Thanks for the memory: How cheap RAM changes computing

This article from Ars Technica provides a good overview of how organizations are taking advantage of falling RAM prices to move more data off traditional disk and into memory for faster processing. It also looks at different types of non-volatile RAM that are emerging, including magnetoresistive RAM (MRAM), spin-torque transfer MRAM, and 3D Xpoint.

> *"...faster, cheaper, and larger quantities of RAM should result in quicker, deeper, more insightful analysis of in-memory data sets—as long as the software keeps up, anyway."*

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## Doing “The Paperwork” – the CWNE Application

There are a lot of reasons for getting industry certifications, but Lee Badman, a wireless network architect, provides some compelling insight about what drove him to go for the CWNE. It's not just about the next job or bragging rights.

> *"...the more I went to conferences, watched new products roll out with new features, and see one 802.11 standard give way to the next, I realized that I needed to get back to basics because those basics had changed since I learned them."*

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## NANOG 66 Presentations

The presentations at NANOG are focused on service providers and they tend to be tedious and boring (because telcos are boring). But every now and then you can find some gems in there.

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## Microsoft Goes Back to Blade Chassis

Recently, LinkedIn announced the Open19 server chassis. Now Microsoft has published its version to the Open Compute Foundation,

called Open Cloud Server. A story in The Next Platform has the details.

> *"The Microsoft Open Cloud Server machines may have expanded the supply chain and the market for Open Compute iron, but this would have happened if Microsoft had just adopted Facebook's own Open Compute system and storage designs. But Microsoft's engineers have their own ideas on how to build a system that supports its very diverse workloads (which are arguably much more compute intensive and varied than what Facebook needs, as you can see from the social network's system designs), and rather than switch to Facebook's variant of Open Compute gear five years ago and when it had a second chance last year when it started work on Project Olympus machines, Microsoft did its own iron."*

This seems to be a reaction to half-width servers (i.e.1RU = 2 servers) and the ability to share power/cooling. I'm also told that provisioning 100,000 servers is much faster when blades are used and much quicker to replace in operation.

Because provisioning 100K units is something you do every day.


The Weekly Show channel is our one-hour deep dive on networking technology. Subscribe today!


Priority Queue tackles niche and nerdy tech topics and cutting-edge research projects. Subscribe here!

# Product News

**We don't often get new products worth talking about, so that makes it nice to have something to say.**

## Facebook Backpack

Facebook has updated the 6-Pack Switch Chassis to a Backpack. This time it's a 100G switch with four line cards with the now-common internal architecture of a mid-plane. In less than two years, Facebook has delivered a new switch hardware platform and continued to develop the software (compare this with your existing networking vendor).

The Facebook OS and apps for this switch are a lot simpler than those used in the Enterprise (no L2 functions like MLAG, no IP Multicast) so it's a quicker development and testing cycle. Nonetheless, Facebook is doing cool stuff in data center networking while IT vendors have done very little.

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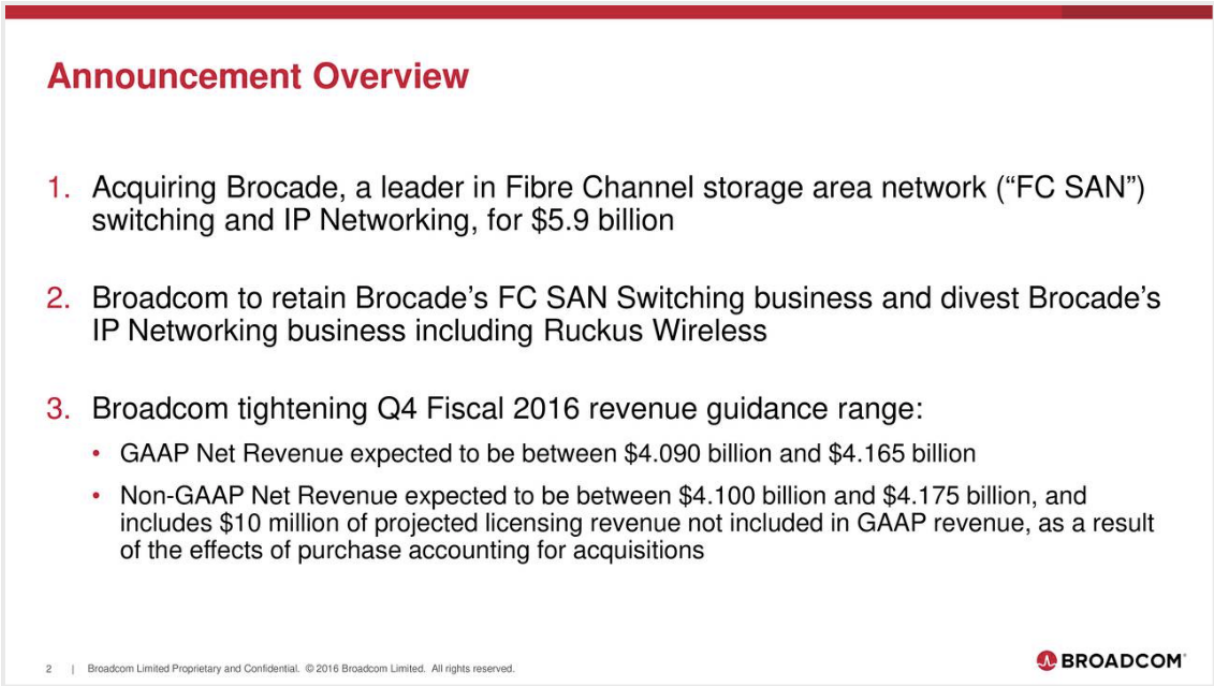
## Broadcom Buys Brocade

Broadcom has agreed to buy Brocade for $5.9 billion for its FC SAN business because it produces a lot of cash flow. The IP networking business, including Ruckus, will be sold off as soon as possible to avoid competing with major customers like Cisco.




Link: Broadcom to Acquire Brocade

Link: Broadcom To Acquire Brocade - M&A Call Slides - Brocade Communications Systems, Inc.

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# Cisco Puts Data Center Products Under One Leader

Some signs of genuine change at Cisco when it announced an integrated data center team with a new hire to lead it. All Cisco Data Center products are now unified into a single business unit.

This is likely a reaction to several things:

1. Arista's ongoing success and growth
2. DellEMC has a unified DC business and converged offerings
3. HPE has a unified DC business unit following its own recent reorg

Expect to see a LOT of hardware products get tagged as "end of life" in the near future. There is no need for Nexus 7K/5K and 3K when the 9K is good enough for most people.

# Recent Articles

**The last five articles published on EtherealMind and Packet Pushers**

## PacketPushers.net - The Last Five

Datanauts 059: The Machine Learning Hype Cycle

Network Break 111: Broadcom Buys Brocade; OpenSwitch Changes Up

Show 313: ACI Deployments & Lumos Cloud (Sponsored)

Datanauts 058: Kubernetes – A Deep-Dive Introduction

PQ Show 98: GNS3 Network Training & Virtual Labs (Sponsored)

# Watch This!

Where we collect some videos that make us reflect, think about our inner lives, or just entertain us.


A version of cloud that I think we can all get behind.

This is an amusing, and fictional, Microsoft initiative called "We Share Your Pain." Part of me wishes it was real.


## Link Propagation Newsletter

**Our weekly newsletter delivering essential headlines, announcements, and useful news to your inbox**

Can't get enough newsletters? Check out Link Propagation, our newest publication. We send you a free weekly digest with tech news, interesting blogs, and industry announcements, all curated by the Packet Pushers. It's an easy way to keep up and stay informed. Subscribe at packetpushers.net/link-propagation.

# Quick Survey: Workplace Distractions

Distractions abound at work, whether on the screen in front of you or from the people around you. Which one is the biggest?

A. Coworkers
B. Email
C. Phone calls
D. Cat pictures
E. Social media
F. Other

# Did We Miss Something?

Got an link or an article to share? Email it to
humaninfrastructure@packetpushers.net

## The End Bit

*Sponsorship and Advertising - Send an email to* humaninfrastructure@packetpushers.net *for more information. You could reach 5,013 people.*

**Human Infrastructure is bi-weekly newsletter with view, perspectives, and opinions. It is edited and published by Greg Ferro and Drew Conry-Murray from PacketPushers.net. If you'd like to contribute, email Drew at drew.conrymurray@packetpushers.net.**

*We don't give away your email address or personal details because that would suck.*