IN THIS WEEK'S ISSUE: The Rise Of Controllers; Avoiding Tool Temptation; Please remember to enable the images--the magazine looks a lot better that way!

PACKETPUSHERS
Human Infrastructure Magazine
A Newsletter About a Life in Networking

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(aka The Project Plan)

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The "Control issues" issue.

Thought For The Week:

Networking is like a box of chocolates: You know what you're going to get because you read the manual

1. SDN Controllers Will Shift Enterprise Standardization

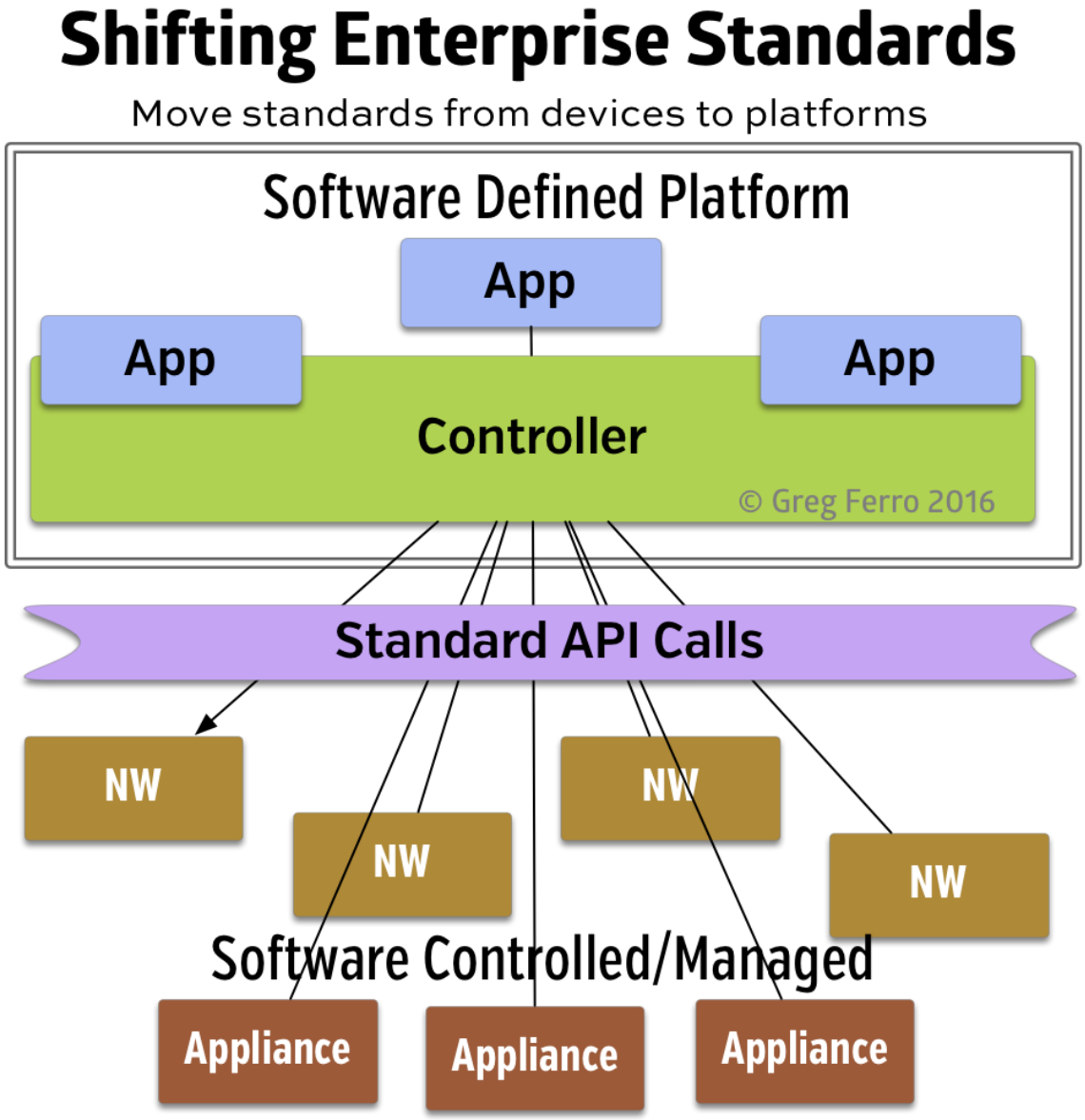
by Greg Ferro

Enterprise IT standardizes around certain products and vendors for the purpose of simplification. Because IT products have complex interfaces, are hard to understand, and flat out too complicated, we restrict our product selection to a just a few brands.

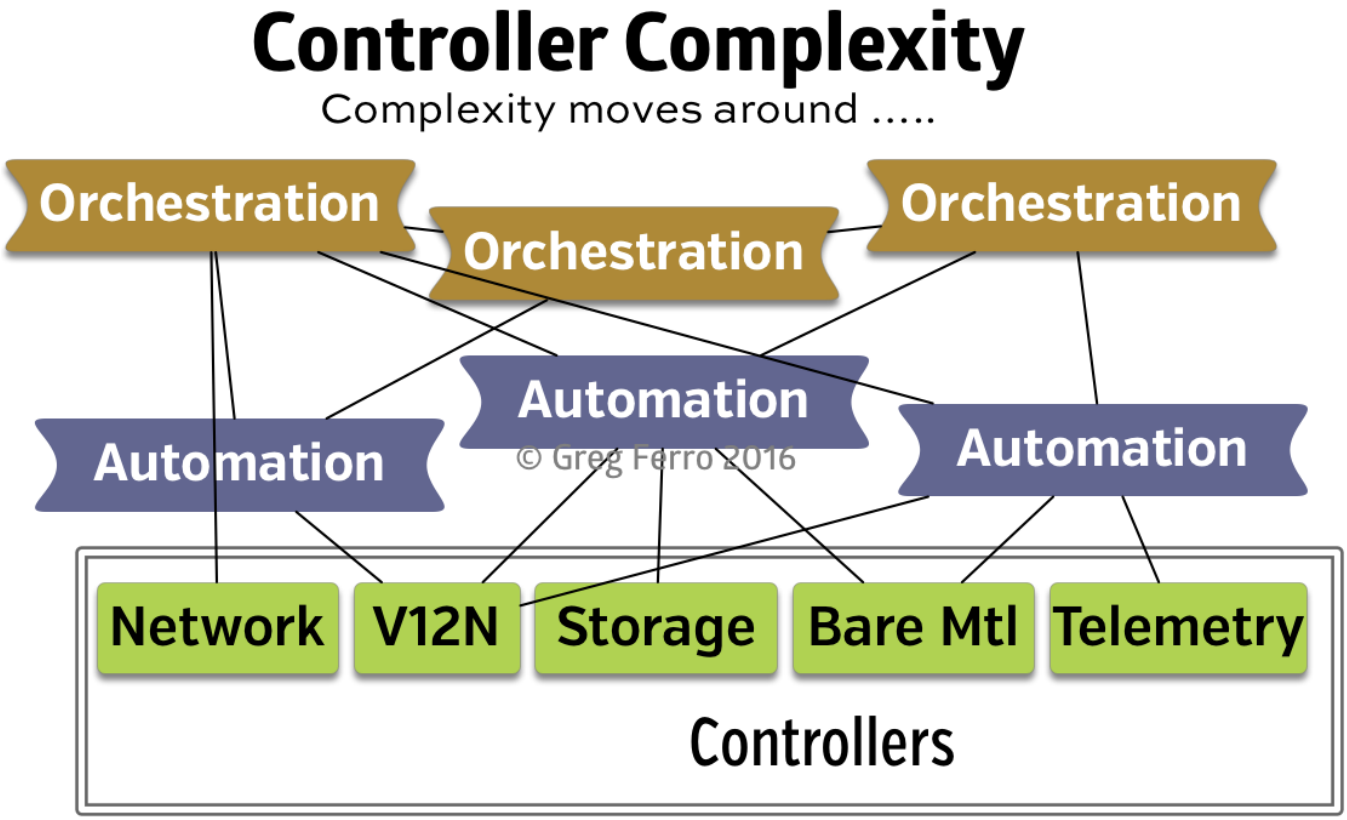
Our 'standards' say that we will use these vendor products, these specified hardware platforms, and these operating systems. We force our business units to use the applications that we already have.

I believe that will change. The "software-defined" movement will upend the way we standardize.

The heart of "software-defined" is the three tier architecture of app/controller/device, so a rough schematic looks something like this:



The layer of abstraction provided by the SDN controller means that standardizing around devices and appliances is less important. Over time, I expect that device standardization will become a very small matter. What I am certain about is that IT architects must focus on standardization around 'software defined' because those systems are the gateways. The controller simplifies diverse devices but becomes a chokepoint for integration.



The result is that we will have effectively moved complexity from the devices to the controllers. This is probably better because apps/controllers are modern, more flexible, and readily changed. The challenge is whether Enterprise IT understands this transition.

PS: For networking, it's most likely that there will more than one controller in your system. Here's how I see it: one controller for each data center (private or public), one for the WAN (public and/or private), one for middle boxes (firewalls, proxies, etc.) and one for visibility/analytics platforms. Don't forget that controller concepts work for public and private cloud operations.

2. Avoiding Wireless Tool Temptation

by Lee Badman

Wi-Fi professionals can get really, really into their tools. Ask which survey software is better in a crowd of WLAN engineers and you risk starting a religious war between the AirMagnet (now NetScout) and Ekahau fans.

For packet capture, those who favor the native capabilities of Macbooks will do conversational battle with their Windows contemporaries until their last breaths. We like what we like, and we like that other people share our tastes.

Better wireless-specific tools are generally not cheap. If you can swing a NetScout AirCheck G2, you'll get value out of it every time you power it up.

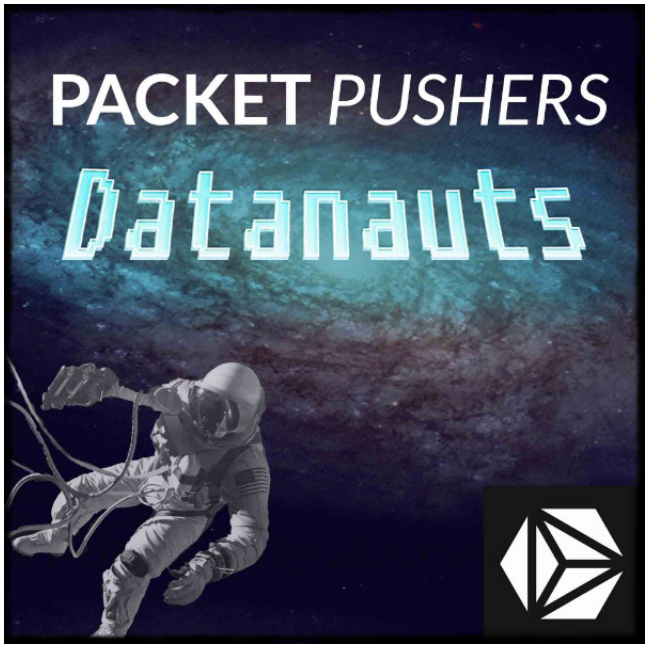
If you can't afford a G2, there are some handy low-end apps for the budget-minded. Fo instance, an old copy of MetaGeek InSSIDer is better than nothing for Wi-FI support, as long as you know its limits.

But the best tool out there won't work if you don't use it—or if you don't know how to get the most out of it. This observation doesn't just apply to Wi-Fi, but there are more wireless gadgets, software, and licensing competing for our dollars than for the other parts of the network.

And now that Wi-Fi is tied directly to worker productivity, it's easy to ask the business "Can I get product X? I hear it's really slick!" You can end up spending A LOT per technician or engineer this way.

Wi-Fi engineers can be tempted into buying something just because the other cool kids have one, rather than because it will solve a problem they have. But if you purchase a tool, you need to follow up by learning it, and then using it enough to get ROI. Otherwise you're just wasting money.

Instead of trying to keep up with the Jones', dig into the features and capabilities of what you already have on hand. You may be surprised to find you can do more than you thought instead of just throwing money at the next shiny toy.



Join the Datanauts on their mission to bust silos & explore the latest developments in cloud, convergence and more.

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

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

Machine Learning Maths

Machine learning is hard because maths. The article The Mathematics of Machine Learning by Akinfaderin Adewale looks deeply into the maths and explains clearly why a few pivot tables in Excel isn't going to cut it (as a lot of executives think about ML).

> *Machine Learning theory is a field that intersects statistical, probabilistic, computer science and algorithmic aspects arising from learning iteratively from data and finding hidden insights which can be used to build intelligent applications. Despite the immense possibilities of Machine and Deep Learning, a thorough mathematical understanding of many of these techniques is necessary for a good grasp of the inner workings of the algorithms and getting good results.*

You don't have to understand machine learning to use it. This blog post provided me with a basic overview and understanding of its application.

Seamless BFD

I'm reasonably certain that Bidirectional Forwarding Detection (BFD) is the most significant advance in routing protocols in 20 years. So it's great to see some further advances to make BFD easier to use. Below is an excerpt from the IETF draft.

> *Specifically, this document defines Seamless Bidirectional Forwarding Detection (S-BFD), a simplified mechanism for using BFD with a large proportion of negotiation aspects eliminated, thus providing benefits such as quick provisioning, as well as improved control and flexibility for network nodes initiating path monitoring. S-BFD enables cases benefiting from the use of core BFD technologies in a fashion that leverages existing implementations and protocol machinery while providing a rather simplified and*

largely stateless infrastructure for continuity testing.

Cisco DNA Readiness Model

Cisco Digital Network Architecture is interesting because it's a sign that someone at Cisco is working on software appliances and SDN. This blog post from Cisco includes a link to a PDF, the Cisco Digital Network Architecture Readiness Model, that attempts to explain the complexity of DNA and embrace the dozens of layers of value, money, impact and technologies that must be addressed.

Resources for Segment Routing

I'm spending more and more time with segment routing and getting to grips with the possibilities. This page from the IETF is a collection of resources that is helping me to understand it.

> *Segment Routing is being standardized by the IETF. The architecture and use-cases are handled in the SPRING working group. Protocol extensions are handled in their specific protocol working group (ISIS, OSPF, IDR, PCEP, 6MAN).*

Tuning Linux Networking

The blog post Monitoring and Tuning the Linux Networking Stack provides a detailed (and I mean *detailed*) look at tuning Linux networking.

> *This blog post explains how computers running the Linux kernel receive packets, as well as how to monitor and tune each component of the networking stack as packets flow from the network toward userland programs.*

You have to learn it.

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WEEKLY SHOW

Where Too Much Networking Would *NEVER* Be Enough

[The Weekly Show channel] is our one-hour deep dive on networking technology.

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Priority Queue

Where Too Much Networking Would *NEVER* Be Enough

[Priority Queue] tackles niche and nerdy tech topics and cutting-edge research projects.

Product News

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

Cisco Stealthwatch

Based on products from the Lancope acquisition, [Steathwatch] uses NetFlow for visibility, analytics, and protection. By capturing flow records from IOS routers you can do quite a bit of analytics and discover what's happening in your network.

Cisco is embracing the capabilities of NetFlow and delivering a package of

functions to customers that is long overdue. What took so long for this product to arrive?

Cisco Umbrella Roaming

Cisco announced a DNS firewall product called Umbrella Roaming that runs on a couple of models of routers.

Based on OpenDNS, which Cisco bought a while back, it's a simple and effective way to block outbound Internet access, reduce malware/viruses, and log what your employees are looking at. As a DNS firewall it's quite similar to all the other products like Infoblox, F5, and Barracuda, so there's not much tell you.

I don't understand how Umbrella does a better or worse job than Firesight URL scanning or why you would have multiple product that do nearly the same thing.

Recent Articles

The last five articles published on EtherealMind and Packet Pushers

EtherealMind.com Latest

Logical Razors Can Take on Corporate Babble

Canned Response to BGP Networking Questions – Reddit

IETF RFC 8374 BGPsec Design Choices and Summary of Supporting Discussions

Net Neutrality Hasn’t Ended, We Don’t Know When

Next Market Transition ? Cheaper Buying, Less Selling

PacketPushers.net - The Last Five

Network Break 182: BGP Hijacked For Cryptocurrency Heist; Juniper, Big Switch Unveil New Products

Show 387: AWS Networking – A View From The Inside

PQ 147: Connecting Security And GDPR Compliance (Sponsored)

Datanauts 131: Masters And Mentorship

Network Break 181: Russia Accused Of Infrastructure Attacks; US Targets ZTE

Watch This!

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

Martin Casado (he of Nicira/NSX fame now investor at A16Z) explains the future of software infrastructure. This will make you think.

After a war between conglomerates has devastated the world, a remnant soldier wanders the desolate lands in his mobile mech unit searching for power sources.

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: Certification Costs

How much of your own money have you spent on industry certifications, including exam fees, training, and travel costs?

A. $1,500 or less
B. $3,000 or less
C. $4,500 or less
D. Holy crap, that much?

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.