Human Infrastructure 111: Is Deep Networking Knowledge Still Valuable?

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Is Deep Networking Knowledge Still Valuable?

By Ethan Banks

In this four-part series, I'm responding to a Packet Pushers listener, Robert, who emailed me a detailed query, about the future of networking engineering. To express all of my current opinions, I divided Robert's email into several questions:

1. Is the network important?
2. Is network engineering dying? Am I an idiot for choosing this career?
3. Is deep networking knowledge still valuable?
4. Will networking become push button tedium?

I'm responding to each question with my loosely held opinion and a contrarian view. In this issue I answer part 3.

If career is on your mind and you are a premium Ignition member, you should also read Greg's four part PDF series "Enterprise IT Career Advice."

Part 3 - Is deep networking knowledge still valuable?

Q: Is there real value in knowing how networks and network protocols actually work?

Loosely Held Opinion

Understanding how networks and network protocols actually work is indeed valuable. It's even more valuable in the context of the cloud.

Well-trained and highly experienced network engineers who understand with clarity and confidence how networks behave will have the knowledge to effectively integrate cloud networking services, connect cloud environments, and provision cloud connectivity in a business-appropriate way.

Deep networking knowledge is a boon to engineers integrating complex cloud networking services into a larger network design.

Contrarian View

How often does deep networking knowledge matter, and to whom? Consider that cloud networking is often oddly implemented, so deep knowledge isn't helpful. That is, a network engineer might assume how packet forwarding works in a cloud environment based on prior experience, but that assumption might be false. Public cloud providers impose their own rules, limitations, or unique behaviors on network traffic and products.

In this context, deep networking knowledge could be viewed as a hindrance. Cloud operation requires a goodly amount of unlearning and contextual realignment to effectively consume a provider's network services. How much of a benefit is it to be a professional or expert level traditional network engineer if the cloud requires unlearning and specialized knowledge unique to each platform?

Q: I have yet to see someone with a 'DevOps' title know a lot about both operations and development. And every time I need to work with a 'cloud architect', it's a struggle to find a common language to come up with a solution for our customers.

Loosely Held Opinion

DevOps is evolving. I've read a significant number of opinion pieces exclaiming that hiring a "DevOps" anything means you're doing DevOps wrong. DevOps isn't a role--

it's a practice. A culture. A state of mind, or so the idea goes.

In that context, I'm not surprised to read that you're running into people with DevOps titles who lack sufficiently specialized knowledge in one area or another. According to DevOps proponents, existing deep specialists are supposed to be reorganized and repurposed to bring apps to life in a modern way.

To me, that implies joining multiple domains in a unified and collaborative structure. However, organizations seem to think that creating net new DevOps roles and dumping cross-discipline integration tasks on them is the way to go. But, if the objective is cultural shift, then net new clearly isn't the way to go.

I believe deep knowledge matters, but broad knowledge is increasingly important. If communication with a cloud architect results in a language barrier, then both you and the cloud architect lack some portion of broad knowledge to break down that barrier.

Contrarian View

While I don't have an overly contrarian view to offer, I think there's room for a slightly different take. Consider the following.

Traditional infrastructure operations is old and broken in the cloud era. For organizations to effectively leverage cloud, they will slowly transition into cloud-native operations. That is, rather than attempting to lift and shift workloads, organizations will retool their applications using cloud-native constructs.

Over time, this cloud-native approach will, of necessity, retrain traditional infrastructure engineers. Communication breakdowns will diminish as "cloud native" becomes the common tongue of both developers and operators. The change will be slow and iterative rather than sudden and transformative. Time will be the friend of historical specialists, as they will be able to ease into new roles and responsibilities.

Design challenges will shift from language barriers to actual business concerns. Specializations will still be helpful, but across the board, broader knowledge will eventually become common. Humans will simply adapt, and their organizations will be comfortable with this process.

In part 4, the conclusion of this series, I'll consider the following question: Will networking become push button tedium? I hope you catch it in the next issue of HIM.

Tech Blogs: How To

Replicating at Speed - NetCraftsmen

https://www.netcraftsmen.com/replicating-at-speed/

Pete Welcher takes on the classic problem of replicating large amounts of data to remote locations across links with limited bandwidth. - Ethan

Setting up Kubernetes Network Policies – A Detailed Guide - Cloud Native Computing Foundation

https://www.cncf.io/blog/2019/04/19/setting-up-kubernetes-network-policies-a-detailed-guide/

Network Policies in K8s are security profiles. What can talk to what in the K8s namespace or across namespaces? “We lay out here a step-by-step guide on how to set up network policies. The network policy spec is intricate, and it can be difficult to understand and use correctly. In this guide, we provide recommendations that significantly improve security.” - Ethan

Getting Your VCP-NV Certification - vMiss.net

https://vmiss.net/2019/04/18/vmware-vcp-nv-certification/

If you’re a networker, this VMware cert might interest you more than some of their others. As vMiss puts it, “When it comes to the VMware NSX certification path, starting with VCP-NV, it may be the one for you if: 1. You love to #RunNSX! 2. You find networking interesting and want to learn more about it. 3. You already have some Cisco certifications, which makes obtaining the VCP-NV a little quicker.4. You want to learn more about one of the most rapidly advancing technologies.” - Ethan

Record and share your terminal sessions, the right way - asciinema

https://asciinema.org

Install this app from your preferred package manager and glory in the playback of your CLI from a web platform. - Greg

Traffic Selectors on a Route-based VPN - Clay Haynes

https://alostrealist.com/2019/04/23/traffic-select...

If you’re looking to configure traffic selectors on Juniper SRXs, Clay Haynes walks through the process with a diagram and configuration samples. - Drew

IaC – unit tests with jSNAPy and Ansible - IPEngineer.net

http://ipengineer.net/2019/04/iac-unit-tests-jsnapy-ansible/

This is another Juniper-related post. David Gee provides details on using JSNAPy to run unit tests on device configurations. JSNAPy is a Python-based version of Juniper’s Snapshot Administrator. David writes “JSNAPy creates snapshots of a device’s

operational or configurational state, the content of which depends on tests. JSNAPy then can diff and check these snapshots, which when combined with your test logic, means you can detect when things change or don't change as per your desire." - Drew

Packet Pushers Live In New York City

Join Gluware and the Packet Pushers live and in person on May 14th in Times Square, NYC!

In this free half-day mini-conference you'll hear from Merck and other guests about how they're automating their networks with Gluware technology, attend a live Packet Pushers podcast recording, and get the nitty-gritty on getting automation off the whiteboard and into production.

Join us after the tech talks for a complimentary reception to mingle with the Packet Pushers, your IT peers, and our Gluware hosts.

Event start: 1:00 pm

Reception: 5:00 - 7:00 pm

Location: Executive Conference Center, 7th Floor, 1601 Broadway at 48th Street, NYC

Register now for this exclusive live event. Tickets are free, but they're also limited, so don't wait.

Tech Blogs: Opinion

It Is Too Complex - Nick Russo

http://njrusmc.net/blog/2019/04/20-its-too-complex.html

Nick talks through whether new technology is really too complex, or merely described as too complex by those who don't want to learn something new. Nick has this way of cutting through nonsense to get to the beating heart of the matter. - Ethan

What would an EvE online Internet look like? - Benjojo.co.uk

https://blog.benjojo.co.uk/post/eve-online-bgp-internet

I don't know if Ben has too much, or not enough, time on his hands, but he put some serious effort into transposing a map of fictional star systems from the online game EvE into what that map would look like as BGP routes. He also did the same thing with a map of the London Underground. He assembled a software program to run these transpositions, and has made the code available if you want to play with it yourself. - Drew

SRv6+ - Why we want it - Andrew Alston on LinkedIn

https://www.linkedin.com/pulse/srv6-why-we-want-andrew-alston/

Andrew Alston, Group Head Of IP Strategy at Liquid Telecommunications, talks through the status of IPv6 Segment Routing (SRv6), advocating for significant revisions. He lists four IETF drafts that will compress the huge SRH, separate functions from the v6 address in the header to prevent address overloading, allow VPNv6 without MPLS, and embed OAM information. "Why do we want it? Because the overhead imposed by SRv6 is not acceptable - the overloading of IPv6 addresses makes no sense and imposes certain dangers…[etc.]" - Ethan

Microsoft Edge Based on Chrome is a Win for the Enterprise - Not Your Dad's IT

https://www.notyourdadsit.com/blog/2019/4/19/edge-based-on-chrome-is-a-win-for-the-enterprise

Nathaniel Avery looks at the latest version of Microsoft's Edge browser and makes a case for why it's good for the enterprise. In short, he argues that because Edge can handle internal and external sites, companies can standardize on Edge and reduce operations issues like patch management from having to support multiple browsers. - Drew

Improving the availability and resilience of the root zone in DNS - APNIC Blog

https://blog.apnic.net/2019/04/24/improving-the-av...

Geoff Huston looks at two alternatives to make the DNS root zone more resilient: hyperlocal roots and NSEC. He starts with some background and history, then drills into each approach, and finally explains his reasoning for why he prefers NSEC. Read for yourself and see if you agree. - Drew

The Lulz

This sounds like wishful thinking, but I'm on board.

SHARED BY @ROBB_404

IT News

The Future of Cloud Providers in Kubernetes - Kubernetes Blog

https://kubernetes.io/blog/2019/04/17/the-future-of-cloud-providers-in-kubernetes/

The K8s Cloud Provider Special Interest Group discusses the status of in-tree (native) vs. out-of-tree (abstracted) cloud integrations. “Looking ahead, the goal of the SIG is to remove all existing in-tree cloud providers in favor of their out-of-tree equivalents with minimal impact to users...Getting to this point would mean that Kubernetes is truly cloud-agnostic with no native integrations for any cloud provider.” - Ethan

Visibility of IPv4 and IPv6 prefix lengths in 2019 - APNIC Blog

https://blog.apnic.net/2019/04/19/visibility-of-ipv4-and-ipv6-prefix-lengths-in-2019/

Senior Researcher Stephen Strowes digs into a lot of stats comparing the IPv4 and IPv6 Internet routing tables using data from 2011 vs today. It’s all about those v6 nibble boundaries. Oh, and v4 /24s. A wealth of information. - Ethan

Put the internet back under your control with the FreedomBox - ZDNet

https://www.zdnet.com/article/put-the-internet-bac...

An organization called the FreedomBox Foundation has just made available a home server that bundles a VoIP server, an encrypted chat server, Web page software, and a VPN for $100. The idea is to give consumers an option to participate on the Internet without relying on sites and services that scarf up and monetize personal information. As the article notes, this version lacks some critical features such as an email server, but the foundation aims to tackle that with future releases. It’s also going to take a little tech savvy to run; this isn’t a plug-and-play device. That said, this idea appeals to me. - Drew

How Nest, designed to keep intruders out of people’s homes, effectively allowed hackers to get in - Washington Post

https://www.washingtonpost.com/technology/2019/04/...

Security experts are taking Nest to task for prioritizing ease of use over security, not to mention the PR stumble of blaming your customers when miscreants break into a home security camera and freak out a child. Nest needs to do better on both fronts. - Drew

New Products & Industry Takes

Introducing kube-iptables-tailer: Better Networking Visibility in Kubernetes Clusters - Kubernetes Blog

https://kubernetes.io/blog/2019/04/19/introducing-kube-iptables-tailer/

K8s network policies can result in unintentional iptables drops between pods. “We needed a mechanism to seamlessly deliver alerts about those iptables packet drops based on their network policies to help app owners quickly diagnose the corresponding issues. To solve this, we developed a service called kube-iptables-tailer to detect packet drops from iptables logs and report them as Kubernetes events.” Open source. - Ethan

Network Critical SmartNA-PortPlus Scalable Network Packet Broker 1G/10G/25G/40G/100G

https://download.networkcritical.com/ds/Network%20Critical%20SmartNA-PortPlus%20Datasheet.pdf

Network Critical is a visibility fabric product competing against the likes of Gigamon, Ixia, and Big Switch Network’s Big Monitoring Fabric. The idea of a Network Critical visibility fabric is to copy packets via taps or spans to a Network Critical device. Network Critical takes the copy, filters it if you want it to, and sends whatever’s left to a tool of your choice--a packet capture device or security analyzer, for example. In this announcement, Network Critical released their PortPlus scale-out solution. Start with a single 48 port device. Add up to 3 more for a total of 192 ports. Manage the whole stack as a single visibility fabric. If you think Gigamon is hard on your budget, Network Critical might be the alternative you’re looking for. - Ethan

Channel Planning Best Practices for Better Wi-Fi - Ekahau Blog

https://www.ekahau.com/blog/2019/04/18/channel-planning-best-practices-for-better-wi-fi/

Guest blogger Tim O’Brien writes a straightforward explanation of channel planning. Tim discusses what a channel is, the impact of channel width in the 2.4GHz and 5GHz bands, Adjacent Channel Interference (ACI), and Co-Channel Interference (CCI). The article made me resent my personal Apple AirPort Extreme APs that run unconfigurable 80MHz wide channels. Even in my rural neighborhood, we’re clobbering each other. Sigh. - Ethan

Share A Tech Tip

The Packet Pushers Content Creation Brain Trust (OK, it was Ethan) came up with an idea for a new feature in Human Infrastructure: Tech Tips to share with others. What do we mean by a tech tip? It could be:

1. A useful little script
2. A favorite tcpdump command line parameter
3. Screenshot of an underappreciated feature in a GUI for some networking tool
4. A link to, and brief explanation of, a neat open source tool
5. Something else

If you've got a tech goodie you'd like to share in this newsletter, drop me a line at drew@packetpushers.net. If we like it, and it's suitable for a newsletter format, we'll publish it in an upcoming issue (giving you all due credit, of course). Then you can sit back and bathe in the adulation that's sure* to follow.

*Adulation not guaranteed

The End Bit

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.