Human Infrastructure 110: Is Network Engineering Dying?

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Is Network Engineering Dying?

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.

Part 1 was published in last week's issue. Please enjoy part 2 today. Parts 3 and 4 will follow in later editions of Human Infrastructure.

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."

Is network engineering dying? Am I an idiot for choosing this career?

Q: I'm relatively young in my career. Listening to your podcasts, it sounds like the profession is dying.

Loosely Held Opinion

I feel that network engineering has a difficult career path ahead.

Junior roles are probably going away in the long run as network automation becomes more effective. Middle-tier roles are likely fading due to cloud adoption. Senior roles will be few and far between, although still needed at large companies with complex networking needs.

None of this means the need for networking expertise will go away. However, if the rudiments of networking are sufficiently automated and reliable, we'll need fewer dedicated network gardeners. Instead, we'll need broad experts with networking specialization that can be brought to bear when the extraordinarily complex systems we're building today break down.

Automation is an abstraction layer. Abstraction layers mask complexity, but do not eliminate it. Someone will need to build and repair the robots. Is that still network engineering? Yes. Consider the following:

Being an "automation expert" is akin to saying you're a "screwdriver expert." No one would describe themselves like that. In the same way, automation expertise isn't helpful by itself. To effectively automate, you need networking expertise. You can't automate what you don't understand.

You could argue that networking is dying, but what's happening to the profession is more nuanced.

Contrarian View

Enterprises move slowly when it comes to adopting new technology. In addition, old technologies have a strange way of never dying. Both of those facts suggest that network engineers will have a role to play for a long time. Truly talented networkers who are also effective communicators will get paid as network engineers for many years to come.

Q: I'm listening to how people that took up this profession are, for a lack of a better phrase, blundering idiots. I find that hard to believe, and I have yet to find the network as just a thing that nobody needs to manage.

Loosely Held Opinion

You're not an idiot for choosing a networking career. However, you will limit your options if you isolate yourself in the networking domain.

There are job descriptions for folks who are competent with routers, switches, and firewalls. Companies want competency in OSPF, BGP, SNMP, VLAN, IPSEC, VPN, etc. However, I believe these sorts of job descriptions will become increasingly rare.

Companies will instead look for cloud engineers. If a networking weakness exists on an infrastructure team, the hiring manager might seek a new member who is strong in networking. But would they hire a route/switch geek who doesn't know anything about cloud? I'm dubious.

I believe that overly specialized IT engineers will become unemployable over time.

Contrarian View

Networking is complex. The products related to networking solve complex problems. Cloud is exacerbating this complexity, not ameliorating it. Networking specialists will never lack for work. While some aspects of networking might become automated, most of that automation will be tied to endpoint connectivity and overlays.

Underlay network design will be crucial. Hybrid and multi-cloud interconnection network design will also be crucial. Designing, implementing, and operating these sorts of networks will arguably always require a human to properly consider latency and resiliency. Let's not forget security, a critical network role exemplified by cloud features such as AWS Transit Gateways.

Hybrid and multi-cloud deployments will create a network that is more complex, not less. Networkers are already discovering bizarre cloud networking behavior that will keep them gainfully employed for the foreseeable future. Perhaps that network engineer will be wearing an AWS hat and Azure t-shirt, but fundamentally their role will stay the same.

In part 3 of this series, I'll consider the following question: Is deep networking knowledge still valuable?

Tech Blogs: How To

Why You Should Block Notifications and Close Your Browser - Rule 11 Reader

https://rule11.tech/why-you-should-block-notifications-and-close-your-browser/

Russ White address the technical reasons why blocking notifications and habitually closing your browser is smart behavior. Hint. It's not about distractions. It's about security. - Ethan

How to: Designing a mission-critical network - APNIC Blog

https://blog.apnic.net/2019/04/16/how-to-designing-a-mission-critical-network/

Quincy Liao, principal network design engineer at Airways NZ, talks through several principles of network design for mission-critical networks. “For the aviation industry, and most mission critical systems, SAFETY is the key priority of its business. And from a network design point of view, it is our priority to build a robust, fully redundant and resilient network to protect the systems from predictable outages and human mistakes, as well as provide enough flexibility for certain degrees of tolerance of unforeseen issues.” - Ethan

Improved Solution: Create Network Diagram from LLDP Data - ipSpace.net

https://blog.ipspace.net/2019/04/improved-solution-create-network.html

Ivan brings up a solution he’d presented that was improved upon by Erik Ruiter. Helpful for those leveraging Ansible, NAPALM, and Jinja2 in their network automation. - Ethan

SRE fundamentals: SLIs, SLAs and SLOs - Google Cloud Blog

https://cloud.google.com/blog/products/gcp/sre-fun...

I was researching the principles of SLAs and this blog post from Google expanded my thinking on the basic idea. I recently attended training on the SLO/SLA/SLI principles and has changed how I think about network analytics. This might get you started down that road. - Greg

How To Get Into SRE - Alice Goldfuss

https://blog.alicegoldfuss.com/how-to-get-into-sre...

Speaking of SREs, Alice Goldfuss offers a personal perspective on the roles and responsibilities of an SRE. She also provides a roadmap of her own journey to becoming an SRE. It’s a long post, and she’s broken down into several sections, and provided a bunch of reference links at the end, so you may want to bookmark this one so you can revisit it. - 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

The Confluence of SD-WAN and Microsegmentation - Networking Nerd

https://networkingnerd.net/2019/04/18/the-confluence-of-sd-wan-and-microsegmentation/

What's the common denominator between SD-WAN and microsegmentation? Applications, according to Tom Hollingsworth. Both technologies rely on application identification to enforce policies. In the case of SD-WAN, those policies have to do with which link a flow will take. For microsegmentation it's about deciding which applications and services can communicate, and which shouldn't. Tom anticipates that microsegmentation capabilities will come to SD-WAN. He writes "...if you can integrate the security aspect of application analytics into your platform you can make your solution very sticky. Because that functionality is critical to meeting audit goals and ensuring compliance." - Drew

More DOH - Potaroo.net

https://www.potaroo.net/ispcol/2019-04/moredoh.html

Geoff Huston continues to think deeply about what DNS-over-HTTPS (DOH) means for the future of privacy and surveillance. "We have already seen efforts to use the DNS to steer users to the closest content location by tailoring the response to suit the querier, but with DOH it is possible to go much further in customizing views of the name space based on the identity and location of the end user and the application that they are running. What becomes of a coherent name space when the resolution of a name depends on who is making the query?" - Ethan

Open Networking: Midlife Crisis or Middleware Curse? - SDxCentral

https://www.sdxcentral.com/articles/analysis/open-networking-midlife-crisis-or-middleware-curse/2019/04/

Roy Chua shares observations on the state of open networking following his attendance at the ONS 2019 conference. "This year's ONS 2019 had plenty of rich content in various tracks, from edge to AI to network automation. And yet attendance appeared lower than last year's event (no, I don't have the final counts for ONS 2019 attendees) and the buzz factor around the exhibits felt more muted." - Ethan

The Fargate Illusion - Lee Briggs

http://leebriggs.co.uk/blog/2019/04/13/the-fargate-illusion.html

Lee Briggs walks through all the steps it takes to run a container in AWS Fargate. It's an exercise he set for himself to compare Fargate against Kubernetes. While the details about Fargate are very instructive, he also addresses a broader concern that IT pros have about cloud and automation--namely, making themselves irrelevant. His conclusion: "Running containers at scale is still hard. It requires thought, it requires domain knowledge, it requires collaboration… ." - Drew

REST API Is Not Transactional - IP Space

https://blog.ipspace.net/2019/04/rest-api-is-not-transactional.html

More and more network devices use REST APIs to make them programmable, but Ivan Pepelnjak is here to raise a significant issue: What if you execute an API call and it fails? He writes "Hopefully you remember what you were doing and what you already created because you'll have to clean up your own mess and you'll have absolutely no help from the orchestration system because REST API is not transactional so there's no rollback." - Drew

The Lulz

IT News

Dragonblood: Analysing WPA3's Dragonfly Handshake - Mathy Vanhoef and Eyal Ronen

https://wpa3.mathyvanhoef.com/

The innocuous sounding title is actually an umbrella covering several WPA3 (and closely related) security vulnerabilities. “One of the main advantages of WPA3 is that, thanks to its underlying Dragonfly handshake, it's near impossible to crack the password of a network. Unfortunately, we found that even with WPA3, an attacker within range of a victim can still recover the password of the network.” My interpretation is not that it’s game over for WPA3, but that the vulnerabilities are decidedly worth understanding as WPA3 adoption begins. - Ethan

Open Networking Foundation absorbs P4.org - Fierce Telecom

https://www.fiercetelecom.com/telecom/open-networking-foundation-absorbs-p4-org

“The Open Networking Foundation announced today that it has completed its merger with P4.org, and will now host all of the P4-related activities and working groups going forward. The groups first announced that P4.org was coming under the ONF fold last year. P4.org also joined the Linux Foundation's LF umbrella at the same time.” Don’t know why you care? Then this presentation by Aaron Glenn on P4 might be interesting. - Ethan

Security Collides With Multi-Million Dollar SD-WAN Market - SDxCentral

https://www.sdxcentral.com/articles/news/security-collides-with-multi-million-dollar-sd-wan-market/2019/04/

I’ll save you a read. The article can be summed up in two points. 1. SD-WAN is huge and growing. 2. Security companies are getting in on the action. Therefore, expect to see your security vendors integrating SD-WAN into their firewall platforms more and more. Will their SD-WAN offerings be any good? That’s a different question. Your SD-WAN proof-of-concept bakeoffs will continue grow more complicated. - Ethan

Big Companies Thought Insurance Covered a Cyberattack. They May Be Wrong - NY Times

https://www.nytimes.com/2019/04/15/technology/cyberinsurance-notpetya-attack.html

The Times reports on a major legal battle between Zurich Insurance and multinational corporations Mondelez and Merck over Zurich's refusal to pay insurance claims related to the NotPetya attack. Because the US government attributed NotPetya to the Russian government, Zurich invoked a "war exclusion" in policies with Mondelez and Merck. The two companies suffered hundreds of millions of dollars in damage related to NotPetya, and are now suing Zurich. The legal case could take years to resolve. - Drew

Qualcomm just beat Apple into submission - SemiAccurate

https://semiaccurate.com/2019/04/16/qualcomm-just-...

The author tends to the theatrical but there is something in this commentary that Intel failed to deliver on a 5G modem silicon for Apple. Keep in mind that Apple committed to intel by buying and using Intel's lesser quality modems to support them. Ultimately, Intel failed to deliver and reminds us that companies are quite good at failing. Apple acquired its own 5G modem silicon team now but it's not certain that they will get a result. They have been successful with the ARM processor, can they repeat that? - Greg

New Products & Industry Takes

Nubeva Launches New Prisms Service Processor with Elastic Packet Processing for Public Cloud Networks - Nubeva.com

https://www.nubeva.com/press-release/nubeva-launches-new-psp-with-epp

"Nubeva Prisms Service Processor with EPP functionality performs advanced processing on packet streams from cloud infrastructure like VTAPs and mirrors or Nubeva Prisms agents. Advanced packet processing includes PCAP forwarding, advanced packet filtering, multiplexing and replication. Sources can be any workload in the cloud with an agent or agentless solution, like a cloud infrastructure TAP or mirror." And if things get busy, the solution auto-scales. Nubeva has been on Packet Pushers if you've not heard of them and want to know more. - Ethan

Should that be a Microservice? Keep These Six Factors in Mind - Pivotal.io

https://content.pivotal.io/blog/should-that-be-a-microservice-keep-these-six-factors-in-mind

Folks from the Pivotal team give reasons why you should--and should NOT--refactor a monolithic application into microservices. While many of these reasons are technical, there are cultural aspects, too. - Ethan

Network Reliability Engineering - Getting The Word Out - Juniper Forums

https://forums.juniper.net/t5/Enterprise-Cloud-and/Network-Reliability-Engineering-Getting-The-Word-Out/ba-p/461397

Matt Oswalt, several time Packet Pushers guest, talks about NRE Labs and the community rising up around it. There's more to this article--it borders on a manifesto about network reliability engineering. "NRE Labs a community we're continually investing in, not only as a way for us to prove that we mean what we say, but of course, to vigorously and with extreme prejudice, knock down the barriers that have made automation a challenge for so many to adopt for so long." Go, Matt! - Ethan

What's New in vRealize Operations 7.5? A Technical Overview, Part 2 - VMware

https://blogs.vmware.com/management/2019/04/whats-new-in-vrealize-operations-7-5-a-technical-overview-part-2.html

Like it says in the headline, this post looks at new features in the latest version of vRealize Operation, including nice subheading breakdowns of the features and illustrative screenshots. There's also a link to part 1 of the series. - Drew

CloudGenix Announces $65 Million in Funding, 300% Year-Over-Year Growth and the Industry's Largest Gen-1 SD-WAN Replacement - Globe Newswire

https://www.globenewswire.com/news-release/2019/04/17/1805476/0/en/CloudGenix-Announces-65-Million-in-Funding-300-Year-Over-Year-Growth-and-the-Industry-s-Largest-Gen-1-SD-WAN-Replacement.html

SD-WAN vendor CloudGenix has won new investment from backers including Bain Capital Ventures and Charles River Ventures. CloudGenix is one of a handful of pure-play SD-WAN startups that hasn't been acquired by a bigger vendor, so the money will give the company more ammunition for product development, hiring, and marketing. I read this investment as a sign of confidence that there's still a lot of growth to be had, though I wonder what the investors are planning for an exit. - Drew

Versa Networks Launches Versa Titan, a Cloud-Managed Service for Easy WAN Transformation - Versa Networks

https://www.versa-networks.com/press_release/versa-networks-launches-versa-titan-a-cloud-managed-service-for-easy-wan-transformation/

Speaking of SD-WAN, Versa Networks has released a new program for managed service providers who want to offer SD-WAN services in the mid-market. Called Versa Titan, this is a cloud-managed offering. It includes a hardware appliance, the Cloud Services Gateway, for branch and remote offices. - Drew

Got A Tech Tip To Share?

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 under-appreciated 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 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.