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## How The Network Engineer Position Will Change

**By Ethan Banks**

Welcome to a four-part series expressing my opinion on how network engineering might change in the coming years.

The difficulty in presenting a series like this is that I don't believe any one simple truth about the future of network engineering. I think different trends will affect organizations, geographic regions, and people in different ways.

This series is not a simple roadmap to success. Rather, it's a set of observations you can compare with your own experiences. If the observations seem valid, you might choose to tweak your own career plan.

The series is a response to a Packet Pushers listener, Robert, who emailed me a detailed query about the future of networking. I've made comments, especially when hosting Datanauts episodes, that might make people think I believe networking is dying or even dead. My actual belief is more complicated.

I've divided Robert's email into several questions. I responded to each first with my loosely held opinion. By loosely held, I mean I might change my mind if evidence points me in a new direction.

After my loosely held opinion, I share a contrarian view. That is, I express an alternate perspective that might prove true for some, but probably not most, people.

The four parts are as follows. Please enjoy part one today, and the subsequent parts in later issues of Human Infrastructure Magazine.

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 a button-pushing tedium?

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

## Part 1 - Is The Network Important?

*Q: I'd love to hear more about your thoughts on how the network engineer position will change.*

### Loosely Held Opinion

Traditional networking positions existed as one of several technical silos in an IT organization. However, cloud adoption is collapsing these silos. IT architects building cloud infrastructure need to understand the full technology stack, including networking.

In this context, network engineering positions will change in a few possible ways.

1. They will disappear outright.
2. Their functions will be subsumed into more broadly technical positions that feature "cloud" in the job title.
3. The number of positions will decrease over time as fewer organizations require dedicated network engineers.

### Contrarian View

The migration to cloud will mostly affect data centers and their tiny cousins, computer rooms. Access networks are not going to be impacted as campuses and office complexes still require a network to reach the cloud. Endpoint management, security policy deployment, and network infrastructure will still require a gardener to tend the many switches, routers, firewalls, authentication servers, VNFs, and wireless APs that make up access networks.

In many organizations, that gardener role will remain a full-time function described as “network engineer.”

Q: I feel like most of the content right now is along the lines of, “The network is not important! It’s table stakes that is easy to overcome!”.

## Loosely Held Opinion

Developers keen on deploying code as quickly as possible tend to minimize infrastructure considerations. Fast-moving devs don’t want to have to think about where their workloads are running, or how infrastructure is provisioned to support their workloads. The expectation is that workloads will simply run. This expectation includes connectivity.

For instance, Kubernetes provides rudimentary networking to connect containers to each other and to a load balancer, and the load balancer to the public Internet. There are a number of network providers for Kubernetes that bring some sanity to this scheme. Networking is required, but the network engineer has less oversight and influence than in a traditional data center.

From a cloud-native perspective, why care about networking for ephemeral workloads? Get those containers talking as quickly as possible, and move on. Just make it work. The lifecycle of the individual workload tends to be short, so what’s the point of making it pretty?

These folks often assume that the problem with networking is automation. That is, if only network provisioning could be predictably automated, agility would bring the network into the modern age, and we could all forget about the fussy details. There is a general belief that automation will change the game in networking’s foreseeable future.

Hyper-converged infrastructure is one plausible sign that this might be happening. The qualified success of software defined networking is another. The plethora of automation tools and open source projects is yet a third.

## Contrarian View

IT professionals unfamiliar with networking tend to minimize its importance, because networking is poorly understood by those who have never worked on network infrastructure. Networking actually begins where most IT professionals want it to end-- at the IP address assigned to an endpoint.

Connecting domains reliably and securely with sufficiently low latency is enormously challenging. While networking benefits from standardization, the variety of protocols available and constraints imposed by budget, WAN infrastructure, and business requirements mean that networks, despite standards, are infinitely nuanced and variable.

This means that the network is anything but table stakes. Therefore, network engineers will always be needed to maintain the cycle of installing, operating, repairing, and refreshing the network.

Evidence of this includes the transition from IPv4 to IPv6, a significant undertaking. Wireless technology is also in an active transition, with movements to Wi-Fi 6 and 5G in their very earliest stages of multi-year adoption cycles. SD-WAN is yet another major networking technology shift requiring deep expertise to deploy with greatest effect.

Yet further evidence of the poignant need for networking expertise is cloud connectivity. Even tasks as seemingly simple as deploying a hybrid cloud DNS is a significant connectivity challenge complicated by the peculiarities of these cloud native services.

In part 2 of this series, I'll consider the following question. Is network engineering dying? Am I an idiot for choosing this career?

## Tech Blogs: How To

### 802.11ax Is NOT A Wireless Switch - The Networking Nerd

<https://networkingnerd.net/2019/04/10/802-11ax-is-not-a-wireless-switch/>

Tom Hollingsworth discusses why 802.11ax's OFDMA (breaking down wireless channels into subchannels to allow more than one client to be on the air at a time) is not the equivalent of a wireless network switch. His majesty, the Networking Nerd, brings the techxplanation. - Ethan

### BIER Basics - Rule 11 Reader

<https://rule11.tech/bier-basics/>

BIER is emerging as a potential alternative to PIM for multicast networks, although BIER faces near-term adoption problems due to hardware limitations. Russ White performs a packet walk through a simple BIER architecture, concluding with an explanation of the hardware challenges and possible solutions being considered. - Ethan

### Kickball/awesome-selfhosted - GitHub

<https://github.com/Kickball/awesome-selfhosted>

I've been pondering self-hosting instead of giving Big Internet my personal data in exchange for convenience. In response to a tinfoil hatted tweet of mine, @gp\_ifconfig sent this great GitHub resource, listing free software for the digital DIY'ers among us. "Self-hosting is the process of locally hosting and managing applications instead of renting from SaaS providers. This is a list of free software network services and web applications which can be hosted locally." - Ethan

## Prevent route leaks by explicitly defining policy - Donatas Abraitis

<https://blog.donatas.net/blog/2019/02/19/ebgp-requires-policy/>

Donatas reviews a variety of filtering mechanisms, including pros and cons, for preventing route leaks. - Drew

## Creating A Cloud Security Standard - Chris Harris

<https://www.chrisfarris.com/post/cloud-security-st...>

I would say this is more of a cloud security policy model rather than a standard, but let's set aside that quibble for the time being. If you're looking for a guide on how to develop and document internal security policies for the cloud, the outline and examples Chris shares look like a good place to start. - Drew

## Running Facebook's Open/R in EVE-NG - Neckercube

<https://neckercube.com/index.php/2019/03/27/runnin...>

Open/R is a routing protocol developed by Facebook and is now available as an open-source project. Jed Casey has written a detailed overview, including links and configuration samples, to help you get it up and running. You may never run it in the real world, but as Jed notes "...it is exciting to me to know that new and potentially more creative ways are being researched and developed which could have future applicability across the majority of our industry." - Drew

# Meet The Packet Pushers & Gluware Live In NYC

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.



The banner features the Gluware logo and 'Intent '19 >' on the left, and the Packet Pushers logo on the right. The main text reads 'Learn how to accelerate enterprise network automation'. Below this, it specifies the date and time: 'Tuesday, May 14 2019 1-5 pm' and 'Cocktail Reception 5-7 pm'. It also includes the location: 'Executive Conference Center 1601 Broadway 7th Floor New York, NY 10019'. A 'Register Now' button is positioned at the bottom right. The background is dark blue with a geometric pattern of light blue triangles.

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## Tech Blogs: Opinion

### Should I Feel this Stupid? - The IT Hollow

<http://theithollow.com/2019/04/08/should-i-feel-this-stupid/>

All the feels to Eric Shanks, who writes, “Learning new things can be pretty exciting, and lucky for IT Professionals, there is no lack of things to learn. But this exciting world of endless configurations, code snippets, routes, and processes can have a demoralizing effect as well when you’re constantly bombarded with things you don’t

know.” Yep. I’ve been digging into segment routing, and I feel increasingly like an idiot the deeper I dig. Hopefully, I can return to simple imposter syndrome soon. - Ethan

## **Ansible Networking: From Science Fair Project toward Mature Product - ipSpace.net**

<https://blog.ipospace.net/2019/04/ansible-networking-from-science-fair.html>

Ivan Pepelnjak thinks Ansible modules for networking have done a lot of growing up. He reports that documentation has improved and programming interfaces have stabilized. I even think I sensed his curmudgeonly smile coming through the ether. - Ethan

## **Well, Technically - Nick Russo**

<http://njrusmc.net/blog/2019/04/06-well-technically.html>

Nick Russo writes, “We’ve all heard it. Maybe we’ve even partaken in it. Someone makes a comment that is generally correct or reasonably illustrates a point. Perhaps the statement was incomplete or too vague. Either way, the ‘well, technically’ brigade comes out in force to pick your pithy remark apart with minutia. How to react?” How, indeed? Useful perspective from Nick. - Ethan

## **Working for a startup makes increasingly less sense - Jatins**

<https://jatins.gitlab.io/me/why-startup/>

Lots of people have starry eyed visions of working for a startup and making beaucoup bucks. In reality, your chances are less than a lottery ticket. I doubt that this person even made enough to cover the overtime:

“That startup sold for 200 million dollars and, as the 10th engineer, I made ... 15000 dollars from that exit. Let me put that figure in perspective. That is the same amount a recent college grad would make at Facebook in 2 months. “ - Greg

## **You Are Not Google - Bradfield**

<https://blog.bradfieldcs.com/you-are-not-google-84912cf44afb>

This article aims at software developers who quickly latch onto tools and technologies used by hyperscale Web companies like Google and Amazon, even though those tools and technologies are overkill if you aren’t operating at their scale. The lesson also applies to networking. The author provides a handy checklist you can ask yourself before you start throwing time and resources into a technology that may not solve your problem. - Drew

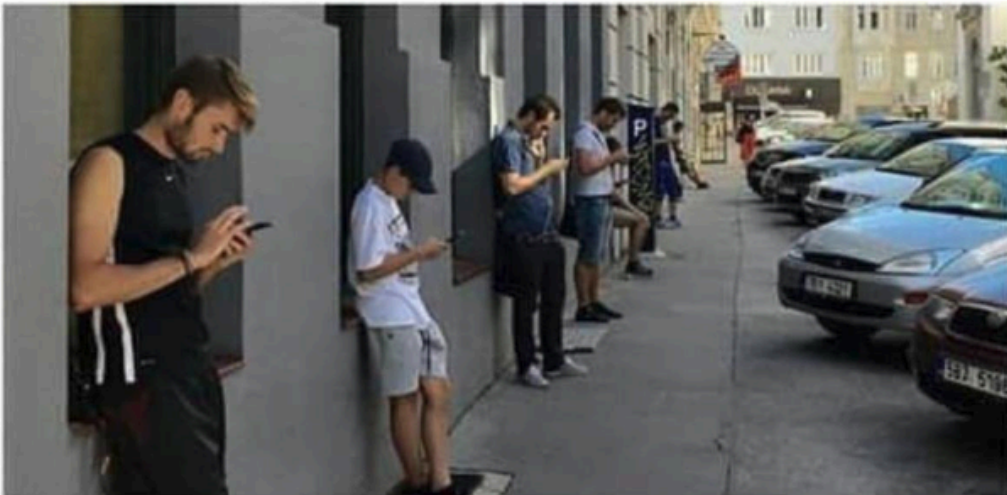
## Hybrid Cloud Shakeup with Google's Anthos Announcement - Wahl Network

<https://wahlnetwork.com/2019/04/10/hybrid-cloud-sh...>

Chris Wahl provides some context and opinion on Google's recent Anthos launch. Anthos is a new platform for building hybrid cloud applications; that is, applications that run in part on your premises, and in part in the public cloud. Chris sets the stage with a quick overview of how Azure and AWS are tackling hybrid, and then provides some commentary on Anthos and shares links with more details. By the way, Chris also co-hosts [The Datanauts podcast](#) on Packet Pushers if you'd like to check it out. - Drew

## The Lulz

The more things change...



Via @cynicalinfosec



# IT News

## APNIC EC endorses policy changes to IPv4 allocations - APNIC Blog

<https://blog.apnic.net/2019/04/09/apnic-ec-endorses-policy-changes-to-ipv4-allocations/>

APNIC governance has done some governing. “Prop-127 “Change maximum delegation size of 103/8 IPv4 address pool to a /23”, prop-128“Multihoming not required for ASN”, and prop-129 “Abolish waiting list for unmet IPv4 requests” will now be implemented by the APNIC Secretariat.” - Ethan

## Pearson VUE to deliver AWS Certification exams globally - Pearson VUE

<https://home.pearsonvue.com/About-Pearson-VUE/Press-Room/2019/Pearson-VUE-to-deliver-AWS-Certification-exams.aspx>

You have to take your AWS certification exams somewhere. As of now, it might as well be your local Pearson VUE testing center, complete with ancient PCs, filthy floors, unsanitized ear protection, and a printer that might or might not spit out your test result. I’m not saying anyone else does it better. I’m just saying I’ve spent thousands on certification exams (many at VUE centers), and the experience has always been a form of punishment. Time for a new experience from the certification industry. - Ethan

## NBASE-T: Success Through #TeamSport, So What’s Next? - NBASE-T Blog

<https://www.nbase-t.org/nbase-t-success-through-teamsport-so-whats-next/>

“What’s next for the NBASE-T Alliance? We are joining with the Ethernet Alliance (“the Voice of Ethernet”) and taking our place as a key part of the larger Ethernet ecosystem.” No idea what NBASE-T Ethernet is all about? We talked to Peter Jones, NBASE-T Alliance Chairman and Cisco Distinguished Engineer, in [this podcast episode](#). - Ethan

## Millions of Facebook Records Found on Amazon Cloud Servers - Bloomberg

<https://www.bloomberg.com/news/articles/2019-04-03/millions-of-facebook-records-found-on-amazon-cloud-servers>

Bloomberg reports that third-party Facebook developers have been caught storing Facebook user data on publicly accessible Amazon S3 buckets. The data caches were

discovered by security researchers at Upguard. This is a collection of terrible individual elements--rampant data collection, promiscuous data sharing, and sloppy configuration and security controls--coming together like some kind of awful Internet sandwich. - Drew

## **Tim Berners-Lee: 'Stop web's downward plunge to dysfunctional future' - BBC**

<https://www.bbc.com/news/technology-47524474>

The BBC has a video interview with Sir Tim Berners-Lee to mark the 30th anniversary of Berners-Lee's proposal for an information system that would become the Web. Unfortunately, the Web has enabled some of the darker instincts and impulses of humans, corporations, and governments. Now Sir Tim is promoting a new project called "A Contract for the Web" that aims to "protect the open web as a public good and a basic right." - Drew

## **New Products & Industry Takes**

### **Ekahau Connect™ Launches Today, Revolutionizes Wi-Fi Planning, Analysis and Troubleshooting - Ekahau Blog**

<https://www.ekahau.com/blog/2019/04/09/ekahau-connect-launches-today-revolutionizes-wi-fi-planning-analysis-and-troubleshooting/>

Ekahau announces, "Ekahau Connect, a suite of integrated Wi-Fi tools that enable Wi-Fi professionals to design, optimize and troubleshoot any Wi-Fi network faster and easier than ever before." New shiniest include Ekahau Survey for iPad, Ekahau Capture, and Ekahau Cloud. Available today. For more info & opinion on this, [check out Lee Badman's article](#). Lee did some beta testing. - Ethan

### **Cloud-Delivered Branch - Simplicity Now Surpasses SD-WAN - Juniper Forums**

<https://forums.juniper.net/t5/Engineering-Simplicity/Cloud-Delivered-Branch-Simplicity-Now-Surpasses-SD-WAN/ba-p/461188>

Juniper announced an SD-WAN as a service offering. I think. I gotta be honest, this was a tough announcement to comprehend. I tried to get a handle on what they were saying, but struggled to cut through all the verbiage. Maybe you can make better sense of it than I did. - Ethan

## **DriveScale Takes Composable Infrastructure for Data Intensive Computing to the Next Level with Availability for NVMe Over TCP**

<https://drivescale.com/2019/04/drivescale-takes-composable-infrastructure-for-data-intensive-computing-to-the-next-level-with-availability-for-nvme-over-tcp/>

DriveScale offers composable infrastructure with a focus on storage. Don't confuse them with a storage company, though. They are more about making storage programmatically accessible and decoupled from workloads. "NVMe over TCP is now a standard feature included in the DriveScale Composable Platform which is sold globally through a network of reseller partners, including Dell EMC." - Ethan

## **The First SD-WAN Open Source Driving The Second Wave OF SD-WAN By FlexiWAN**

<https://flexiwan.com/news/first-sd-wan-open-source-driving-the-second-wave-of-sd-wan-by-flexiwan/>

FlexiWAN is open source SD-WAN, but that's only part of the story. They are also building a virtual router and other infrastructure functions, such as security. As with many OSS projects, there will be a commercial variant. Why should you care about yet another SD-WAN solution? On top of FlexiWAN, you can roll your own SD-WAN solution catered to your individual requirements. Ergo, the "flexi" in FlexiWAN means the platform is customizable. If you'd prefer to use a solution that delivers SD-WAN out of the box, FlexiWAN can do that, too. Early days for FlexiWAN. They are angel funded and looking for more folks to work with them. Maybe that's you. - Ethan

## **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 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](mailto: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

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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](mailto:drew.conrymurray@packetpushers.net).

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