Another week of being a Human in IT Infrastructure. Are you still alive to talk about it?

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IN THIS WEEK'S ISSUE: How To Build A Certification Roadmap, Refined By Fire, Silicon Valley's Happy Face Lie. 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)

Issue Number 28

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The "We're trying to be helpful, inspirational, and a little cynical" issue.

Thought For The Week:
Time is an illusion. Lunchtime doubly so. - Ford Prefect

1. How To Build Your Certification Roadmap
by Ethan Banks

Are you struggling to complete a vendor certification? Do you have the will, but perhaps not the way? Getting through a cert program is tough -- I've completed several of them. And I've developed a methodology for successfully completing a cert. With luck, this process might help you move ahead.

1. **Understand what, exactly, is expected of you by the vendor.** This might seem obvious, but it's a crucial point. You must understand the knowledge domains, classroom time, real-world experience, and examinations required to obtain the certification. Different certs have different objectives. Determining the vendor's expectations is the first step in deciding just how to approach the program.

2. **Create a sheet with all blueprint topics listed.** In most cases, a vendor will publish a blueprint of topics you are expected to master as the certification candidate. Write them all down. I recommend that you don't copy and paste them. Rather, actually type them out to force yourself to think about each of them individually.

   As you work through the list, you should see some topics that are familiar due to your day job or lab work, topics that aren't quite so familiar, and topics that you've never even heard of. This process puts you on notice for just how much work is ahead of you as pursue mastery of the topics.

3. **Write down how you'll master each of these blueprint topics.** If the vendor put the topic on the list of stuff you have to know, then there's a way to get the required knowledge. For example, you might read a book, do some lab work, attend a class, or run through online training.

   At this stage, be as specific as possible about the "how." For example, writing down "Read CCENT book, chapter 5," next to a blueprint topic is a specific, easy-to-follow step. "Read," is not specific enough, as it places a burden on you to figure out what, exactly, to read sometime later.

   This means that you'll do a significant amount of research up front to figure out where the information you need resides. A hint for Cisco certification seekers is that what you need to know can often be found in articles on cisco.com, if your Google-fu is strong. Cisco's tech article repository is astonishingly deep, mostly well-written, and completely free.

4. **Put a specific duration next to the learning task.** Estimate how long each learning task will take you. If you're new to this, make an initial estimate, then double or even triple that time for your final estimate.

   I can't stress enough that "reading" a chapter while slumped in the couch in a stress-induced Doritos coma after a long day of work is not effective study. Your time must include careful contemplation and topical review so that your mind fully comprehends the information.

   Effective study is not simply reading a chapter in a book or blasting through a course module. To master the information, you will need to take notes, comprehend review questions, and, depending on the topic, practice in a lab.

5. **Set a date next to each learning task.** Your study calendar is what rules your life when you are seeking a certification. You don't go out with

friends. You don't hone your PS4 skills. You don't pose for selfies with your book. You don't binge-watch House of Cards. You do what the darn calendar says. And if it says you're doing 2 online modules, reviewing with lab exercises, and then writing a blog as a way to review what you learned, then that's what you bloody well do.

If you don't treat your study calendar with this sort of gravity, you'll never finish the cert.

Will there ever be exceptions to this stern perspective? Maybe. Family emergencies. A crisis at work. Illness that truly knocks you flat on your backside. And in those situations, you have to adjust your study calendar, and get right back after it as soon as possible.

6. **Build in time for breaks.** When studying, get up once every hour or two for 5-10 minutes. Clear your head. Get a little food. Caffeinate if you need to. Walk around. But keep your mind quiet. Don't check Facebook. Don't go through voicemail. Just have a few minutes away where you disengage from study.

   If you are unused to long periods of focused study, these breaks will help you get through it. If you happen to be capable of extended focus, then you might not need breaks as frequently.

   For CCIE candidates, you should be training yourself for 10+ hours of uninterrupted focus, in my opinion. You need this much focus to get through the lab. If that's daunting, work up to it, increasing your consecutive hours of focus over time. If you've never considered this before, I strongly recommend you make this deep focus a goal.

7. **Build in time for review. You won't remember it all the first time. You MUST review regularly.** Vendors like to cram an enormous amount of information into their exam requirements, and some of the study guides are hundreds

of pages long as a result. If the information is new to you, there is precisely a (let me think...okay...got it) ZERO chance that you'll remember it all after the first pass.

You must review earlier studies to cement unfamiliar facts in your mind. Many people use flash cards for this. I'm a writer, and so my strategy is to keep extensive notes and/or post blogs about my studies. Other folks I know prefer to write notes longhand. Like savages.

8. **Book the exam. This will help you stay focused and committed.** Booking the exam always induces angst, but it can also induce motivation. "That test is coming. There it is, on the calendar. Wow...I better put the game controller down and study."

   Note that your local testing center isn't sitting around waiting for you to book a slot. Testing centers are often booked weeks or even months ahead of time. Don't wait until you think you're ready, and then expect to book the test for the following day. That is unlikely to work out, in my experience.

9. **As you complete tasks, cross them out.** Crossing out tasks might seem pedantic, but there is satisfaction that comes from this, especially if you are task-oriented person like I am. Also, seeing what's crossed out vs. not crossed out is a good progress indicator. You get a visual reference displaying how far you have to go.

10. **Fear no topic.** In certification programs, there are always those topics that seem intimidating. Maybe you've run into the topic before, and you just didn't get it. Or maybe you work with the technology and have had a frustrating experience. Seeing that topic on the list fills you with dread. (Multicast. There. I said it.)

Look - if other humans can get it, so can you. This is such an important concept to grasp. Stop doubting your ability to be a master of topics that, on the surface, seem beyond your comprehension. Those other people that crafted this technology aren't likely to be any smarter than you. You can 100% do it, and I don't mean this in a Disney-esque "believe in yourself" way. The simple fact that someone else gets it means that you can as well. Period. All you have to do is dig in.

One tip is that some texts are written horribly. Don't waste your time with a text where you read a paragraph and find the content so buried in jargon and sadness that the information is inaccessible. Get what you can from that text, and then go find a description of the technology written by someone who understands it well enough to explain it clearly.

11. **First understand the "why." Then worry about the "how."** A classic mistake when learning technology is to dive into the configuration paragraphs as if memorizing commands somehow indicates topical mastery. CLI-fu is the LAST step in learning a new technology.

    Technology confusion often comes by focusing on configuration details without understanding the point of the technology. I believe deep in my guts that there's little "hard" about any technology once you grasp the overview of what it's for and how it's meant to function. So, skip the CLI until you have a clear picture in your mind of what the tech is for. Only then will the configuration steps have enough context to be memorable.

Certifications happen when you break them down into their component parts and take them on one at a time. Now go eat the elephant.

Sponsor: Interop

See The Future Of Networking With The Packet Pushers

[Interop](#) is the leading independent IT conference, and the Packet Pushers are putting together a two-day "Future of Networking Summit" for Interop Las Vegas 2016.

The goal of this summit is to identify current and emerging technologies that are going to affect the networking industry over the next 5 to 10 years.

Experts, practitioners, and of course the Packet Pushers themselves will talk about the changing state of network operations, advances in network hardware and silicon, open networking, SD-WAN, containers and more.

Besides the Future of Networking Summit, Interop is assembling a full slate of independent, top-notch content on security, virtualization, IT leadership, SDN, and more.

Make your plans now to join us at Interop Las Vegas, May 2nd through the 6th, at Mandalay Bay. Use the code PPUSHERS [when you register](#) and get 25% off 5-Day, 3-Day, and 2-Day conference passes.

2. Refined By Fire
by Phil Gervasi

Last night one of my students told me that he's scared to death of getting his

first job in networking. He doesn't believe he's skilled enough to work on some complex routing design in a big network, and thinks he would likely break the Internet.

With a little good-natured snark, I assured him no one would give him the reins to that sort of network any time soon, so it was nothing to worry about.

But the truth is, I still get scared when undertaking major, high-impact changes on a large network. Not scared enough to stop me from getting the job done, but enough to cause a few butterflies in my stomach.

Early in my career those nerves were probably a result of a lack of planning and a general uneasiness about all the things that could go wrong. Today I think they're more a result of the high-risk types of changes I typically make.

But in both cases, every time things didn't go well, I learned incredibly valuable lessons. Yes, TAC was often involved; but each TAC call and intense troubleshooting session in the middle of a cutover was like taking a super-focused class on networking.

I attribute much of my experience and knowledge of this craft to training and professional development, but my real ability to herd packets comes from the hard experiences.

Think about it for your own career. Consider the tough cutovers, the network-down scenarios, the reluctant rollbacks when all you needed was one more minute. Those are the times that try a network engineer's soul, and those are the times that sharpen us and propel us forward in knowledge and confidence.

It took me six or seven years to take that knowledge and actually apply it to my career, but now I look forward to those major changes because I know that through them is the path—though sometimes terrifying—that leads to becoming a better engineer.

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

3. Silicon Valley's Happy Face Lie

by Drew Conry-Murray

Dan Lyons, a reporter who covered the tech industry for Newsweek (and wrote the "Fake Steve Jobs" blog) has just published "Disrupted: My Misadventure in the Start-Up Bubble."

As you might expect from a jaded, 52-year old journalist known for his satirical bite, the book is a critique of the more grotesque aspects of startup culture, which he describes as part Montessori, part frat house, and part cult.

In an interview on Fresh Air, Lyons noted how tech companies spout grandiose rhetoric about changing the world and enabling personal growth and

empowerment.

When Lyons started covering technology in the early days of the PC, he said companies like Microsoft and Intel didn't talk about changing the world or making the world a better place—they just wanted to build stuff and make money.

Ironically, those companies actually did have a significant impact on the world at large.

By contrast, he said in the interview, "The new guys have much less interesting companies in a lot of ways, and are making much easier things that aren't really even technically challenging. But they talk a lot about changing the world and being on a mission"

"There should be a meter," he said. "The more someone or a company talks about changing the world and being on a mission—probably the less important their stuff really is."

I think he's partly right; lots of tech companies drape themselves in overblown language to disguise a frivolous product or a lack of innovation.

But I also think there's something more pernicious going on in the way tech companies talk about themselves, and it ties back to the early days of the PC industry.

Hide Your Ambitions

During its rise to power, Microsoft was never shy about its ambitions to eat the world and crush all competitors. Its corporate strategy could've been written by [Conan The Barbarian](#).

But that attitude earned the company a lot of ill will. It was easy to hate Microsoft, to cheer on upstarts looking to unseat it, and to root for governments to go all anti-trust on it.

I think other tech companies learned to hide their raw, animal lust for

dominance and control. These companies are more palatable to the world if they put on friendly faces, act like they're on the side of the customer/user, and issue declarations like 'Don't be evil.'

Vague but positive-sounding messages of goodwill and empowerment have become even more important as technology penetrates deeper into our lives, tracks our habits and whereabouts, and hoovers up and pimps out our personal information. But it's all cool because we're buddies, right?

Frankly, I'd prefer tech companies be honest about the will to power, about their desire to rule and get rich. It's fine to talk about changing the world, as long as you remind us you're changing it for your own benefit.

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.

Ukraine Emerges as Bogus Routing Source

According to research from Dyn, someone in the Ukraine diverted a large number of /17 and /18 routes for some of the biggest carriers in the world.

(But BGP route security still isn't a problem for service providers.)

[LINK](#)

A $2 Billion Chip to Accelerate Artificial Intelligence

Technology Review reports on a new chip from Nvidia, the Tesla P100, that's

custom-designed to power more research into artificial neural networks.

From **Technology Review:** "*It has a total of 15 billion transistors, roughly three times as many as Nvidia's previous chip. Huang said an artificial neural network powered by the new chip could learn from incoming data 12 times as fast as was possible using Nvidia's previous best chip.*"

[LINK](#)

Touching a Robot's 'Intimate Parts' Makes People Uncomfortable

A story at IEEE Spectrum reports on a Stanford study that measured physiological arousal in humans (not sexual arousal, just a measure of "attention, alertness, and awareness") when they are asked by a robot to touch its butt.

Frankly, I think it's a little creepy that someone designed this study in the first place, but hey, it's all for science.

From **IEEE Spectrum:** "*As robots get more sophisticated and better able to mimic humans in both appearance and actions, this question of touch interaction is going to become increasingly relevant. It'll also be important to better define the gradient towards human-ness that makes it somehow okay to touch the butt of a cellphone, but weird to touch the butt of a NAO.*"

[LINK](#)

What Infrastructure Should Learn from NPM JavaScript Debacle

A blog by Lori MacVittie at f5's DevCentral raises a great point about the

"infrastructure as code" movement: You've got to think carefully about where and how you're going to manage all the templates, scripts, and other artifacts that underpin an automated environment.

From **the blog:** "*I wholly recommend the use of version controlled repositories as you're embarking on this journey to transform the network (all of it) into a more agile and automated environment. Treating infrastructure as code can make roll-backs and replacements a whole lot easier to manage if the latest and greatest configurations can just be pulled out of a controlled repository. But that controlled repository should be just that: controlled. It should be local to the environment because otherwise it's not controlled at all.*"

LINK

Next-Generation Network Telemetry

Matt Oswalt is on the front lines of network automation, and in a recent blog post he outlines some of the changes coming to network monitoring and analytics, including streaming data rather than pulling it, open source projects such as grpc and snap, and more.

From **Matt:** "*One of the big changes coming to network monitoring is a complete pivot on how we obtain metrics. In some cases, this is due to scale of the network, but in other cases it is a simple matter of consistency. The network management model in use today is very tightly coupled to the platforms that we're monitoring, and we have to be very particular with the products we choose to use for this purpose.*

I believe network monitoring is changing in a few ways. Like anything else, this isn't going to happen overnight, but it's worth being aware of these changes, and the value they bring to the table..."

LINK

How Netflix Uses John Stamos to Optimize the Cloud at Scale

Some Netflix engineers are having a little fun here. My favorite bit is the diagram of the "Highly Available Micro-Stamos Cloud Architecture."

From the **Netflix Tech Blog:** "*Let's take a look at the numbers. Earlier this year, we were operating at a median average of Cloud 3.1. We introduced Mr. Stamos into the system in early March, and in just under a month, he has helped us achieve a remarkable 290% gain*."

Note the date on the post.

LINK

Ambient Sounds Of The USS Enterprise

Sometimes a little white noise or ambient sound can be soothing, help you sleep, or drown out a busy office environment. And what's better than ambient sound? How about the ambient sound of the USS Enterprise (Next Generation vintage)? Enjoy.

LINK

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

[GNS3 Academy](#): Training for any network, any way you want.

Research Papers

Research and deep technology papers that provide deep insight or expertise.

"Internet Measurements: a Hands-on Introduction" - Free online course

The MOOC "Internet Measurements: a Hands-on Introduction" will be available soon on the platform France Université Numérique. It will be taught by Timur Friedman from UPMC and Renata Teixeira from Inria.

This course is taught in English and will cover Internet measurement basics, including network topology and routes; connectivity, losses, latency, and geolocation; bandwidth; and traffic measurements; with hands-on exercises on PlanetLab Europe.

Trade-Offs Under Pressure: Heuristics And Observations Of Teams Resolving Internet Service Outages

The link below is a PDF of a study from Lund University in Sweden.

From **the abstract:** "*This study from explores what heuristics or rules-of-thumb engineers employ when faced with an outage or degradation scenario in a business-critical Internet service. A case study approach was used, focusing on an actual outage of functionality during a high period of buying activity on a popular online marketplace. Heuristics and other tacit knowledge were identified, and provide a promising avenue for both training and future interface design opportunities.*"

Product News

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

Arista Universal Spine

From Arista: *"With the Arista 7500R, we unveil the next generation of the Universal Spine with its many roles. Defying the traditional siloed definition of "router" and "switch" functions, the Arista 7500R blends the best of both with*

uncompromised performance and flexible cloud-scale networking."

Arista gives its headline Ethernet chassis switch a dot bump. Deep buffers and large CAM tables seem to be the headline.

LINK

Architectural Whitepaper - LINK

BGP Isn't Hard

BGP implemented in the Go Programming Language

LINK

And Brent Salisbury talking about using it:

"The team does a great job with documentation so anything I write will duplicitous but I will dump my quick notes to get up and running. There is not a binary download for Mac/Linux/Windows explicitly so its a great chance for you to learn something new by installing the Go compiler if you haven't before. Its fast and easy. If on a Mac or Linux box it is the same."

LINK

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.

It's not you. Bad doors are everywhere.

What do you get when you combine heavy metal riffs with Japanese pop and synchronized dancing? BABYMETAL!

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](#).

Did We Miss Something?

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

On average, how many cups of coffee do you drink a day? None 1–2 3–5 Too many to count