Tailoring LOKI for Telcos

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About me

- Born in Chile but living in Mexico City for the last 20 years.
- Computer science junkie
  - Bachelor's degree, Computer Engineering
  - Master's degree, Computer Science
  - PGP - DS/BA + AI/DL
- Developer / Sysadmin
- Distributed file-system researcher
- Ceph community ambassador
- OpenInfra community ambassador

Agenda

- Why Linux?
  - Linux Tooling and Performance tweak
- Why OpenStack?
- Why Kubernetes?
- What's LOKI?
- What problems LOKI solves for TELCO companies?
- References
- Community URLs (some of them)

Why Linux?

Highly configurable Linux can be optimized for different purposes such as networking performance, computation performance, deployment on systems with limited memory & specific hardware platforms, and storage or computing resources.

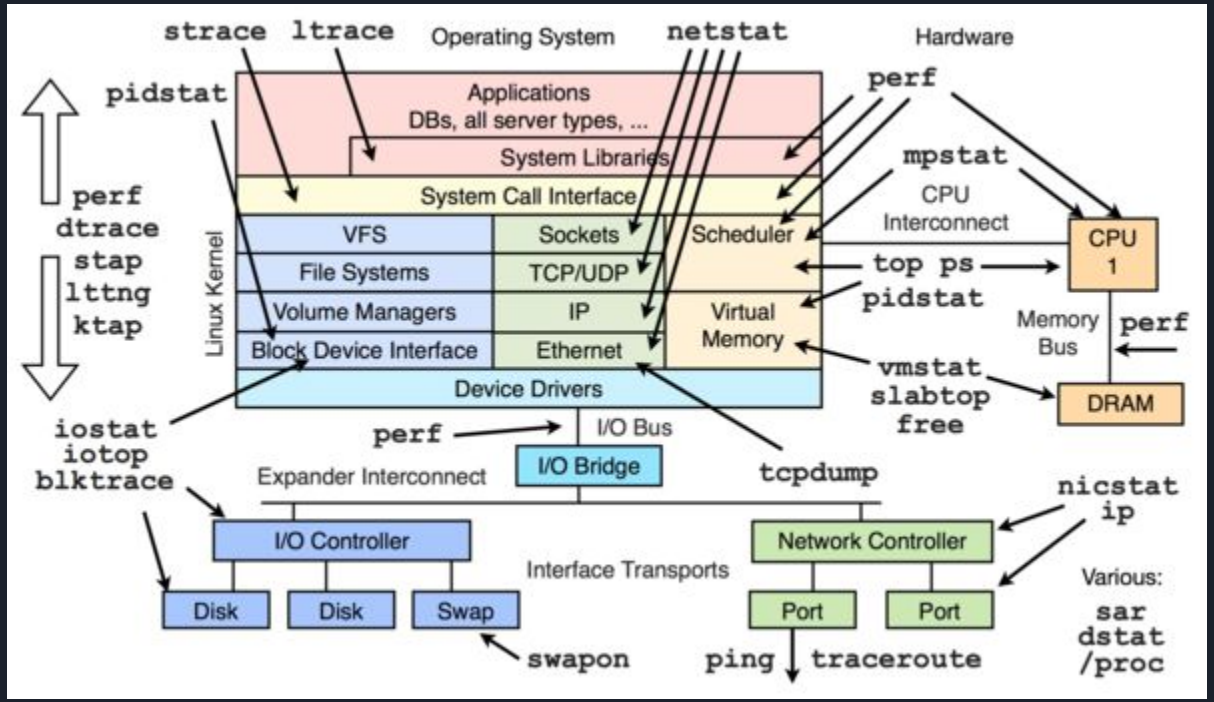
The growing demand for open-source OS and rising security concerns is a major growth driver for the Linux OS as it is much more secure than other operating systems from various perspectives. Besides, the growing demand for Linux OS for gaming PCs has a positive impact on the market. The dominance of Linux OS amongst the top 500 supercomputers across the globe substantiates the market value.

“The Linux kernel is a free and open-source, monolithic, modular, multitasking,

Unix-like operating system kernel.”

- Wikipedia -

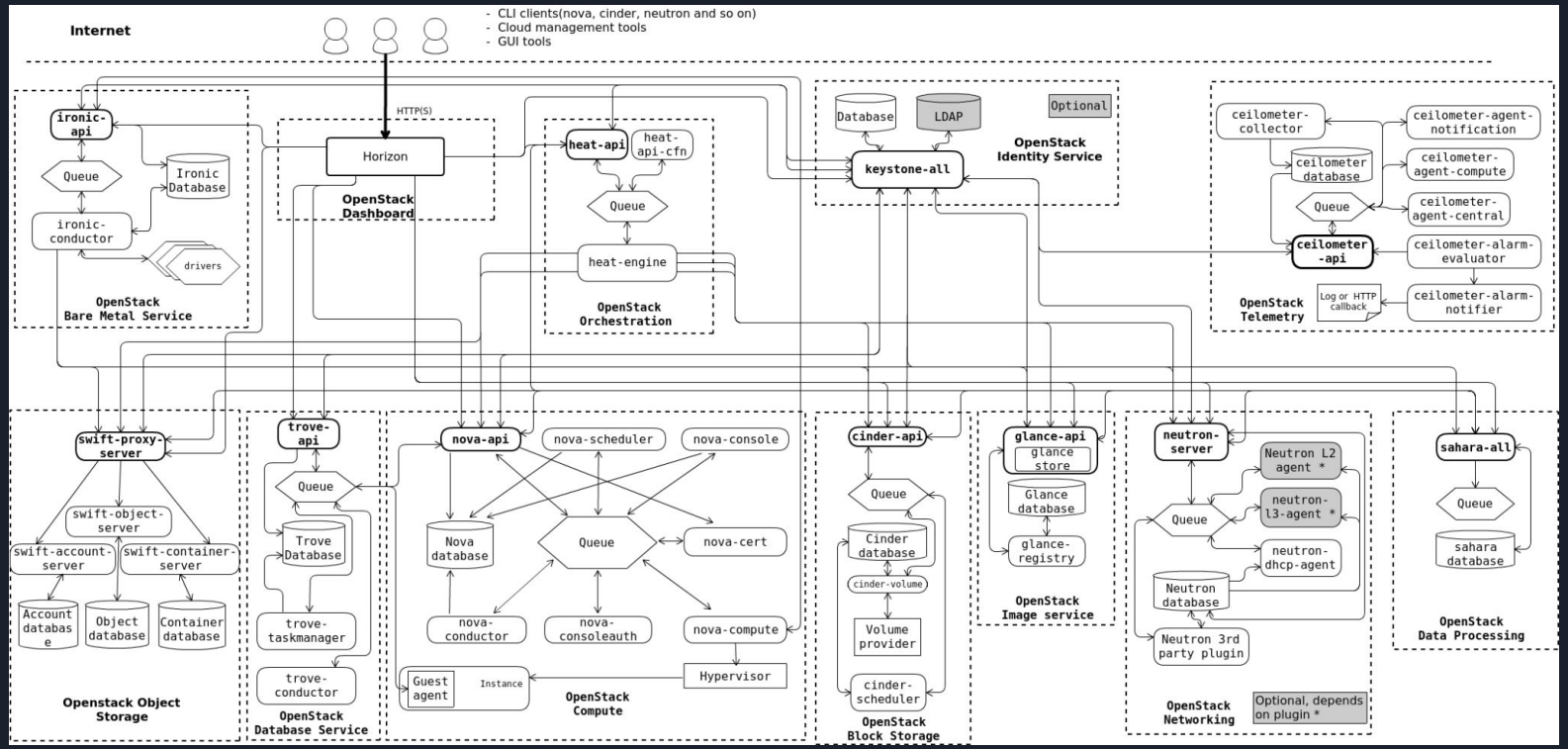
Linux Tooling and Performance tweak



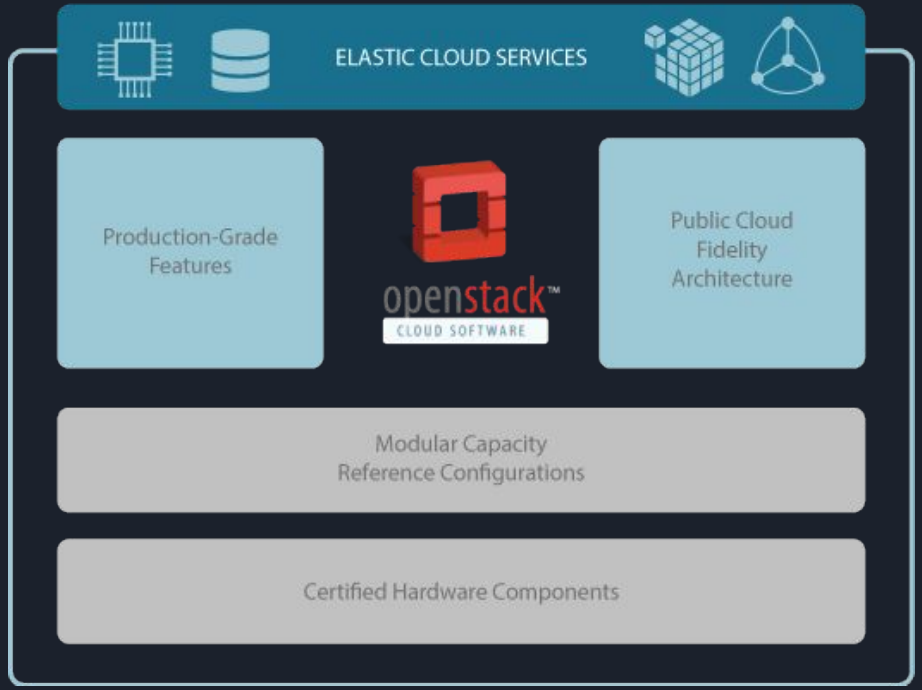
Inverse win-modem analogy

- Let’s the OS do everything and hardware can be cheaper and stupid.
- Let’s the hardware do everything because it needs to work everywhere.
- Let’s go back to the OS to do everything because LINUX is the best.
- Now let’s go back to the hardware to do everything because we need the best performance.

Why OpenStack?

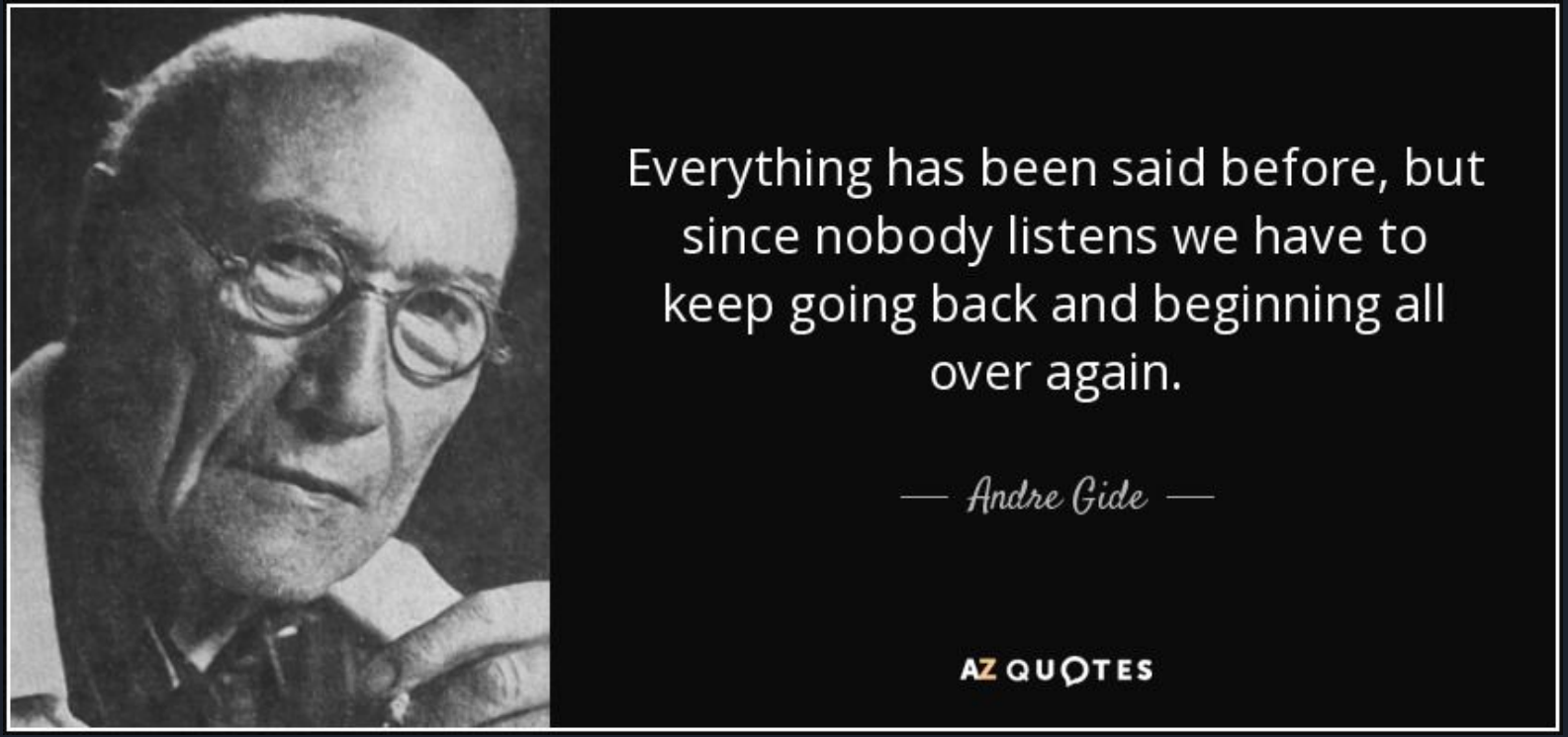


Why Openstack? (Let's get real)



Why Kubernetes?

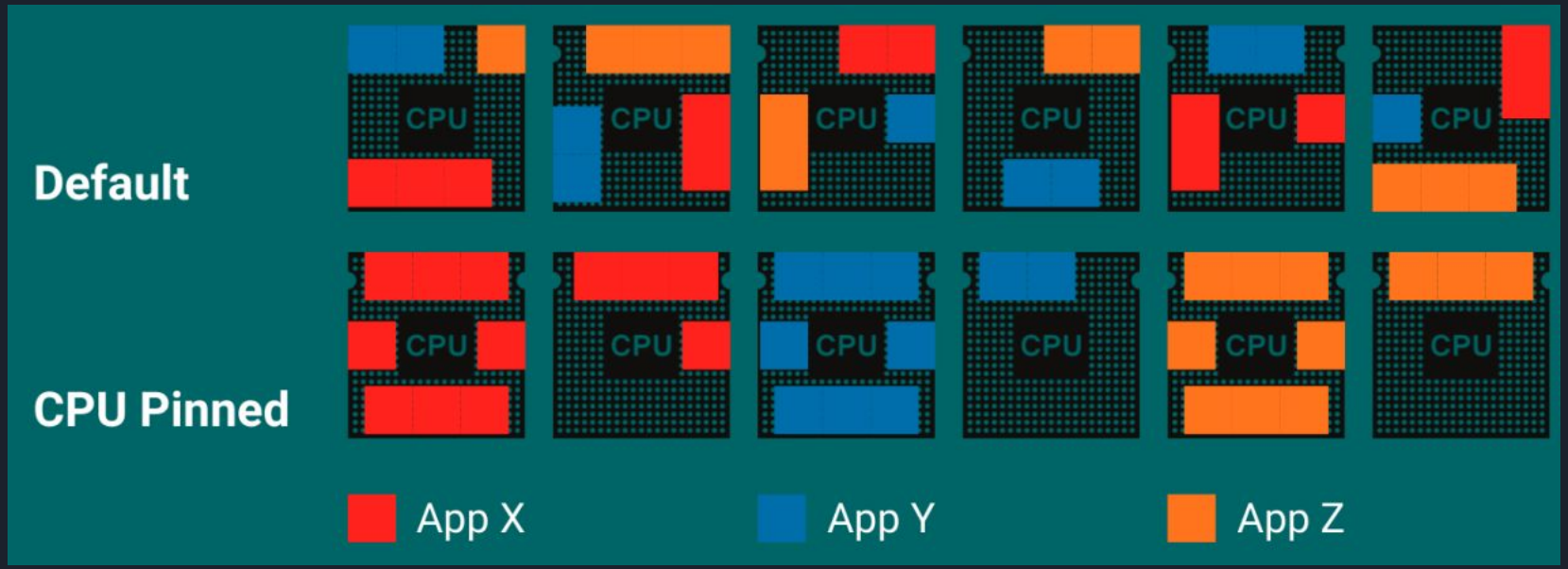
What's LOKI?


Everything has been said before, but since nobody listens we have to keep going back and beginning all over again.
— Andre Gide —
AZ QUOTES

What’s LOKI?

There isn’t a “one-size-fits-all”

What problems LOKI solves for TELCO companies?



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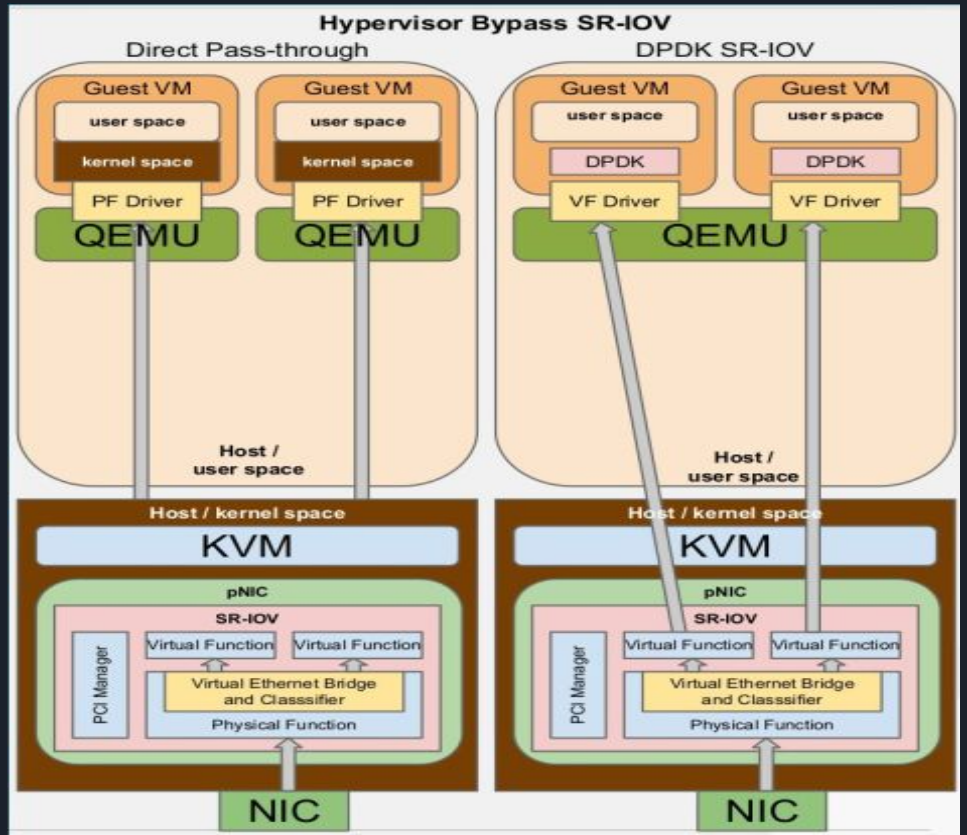

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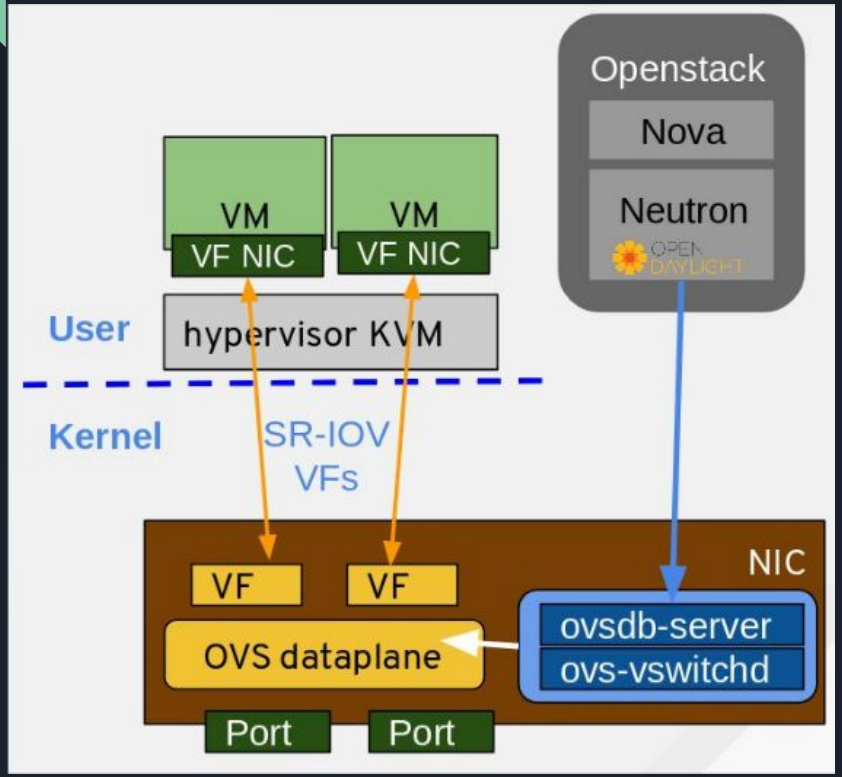

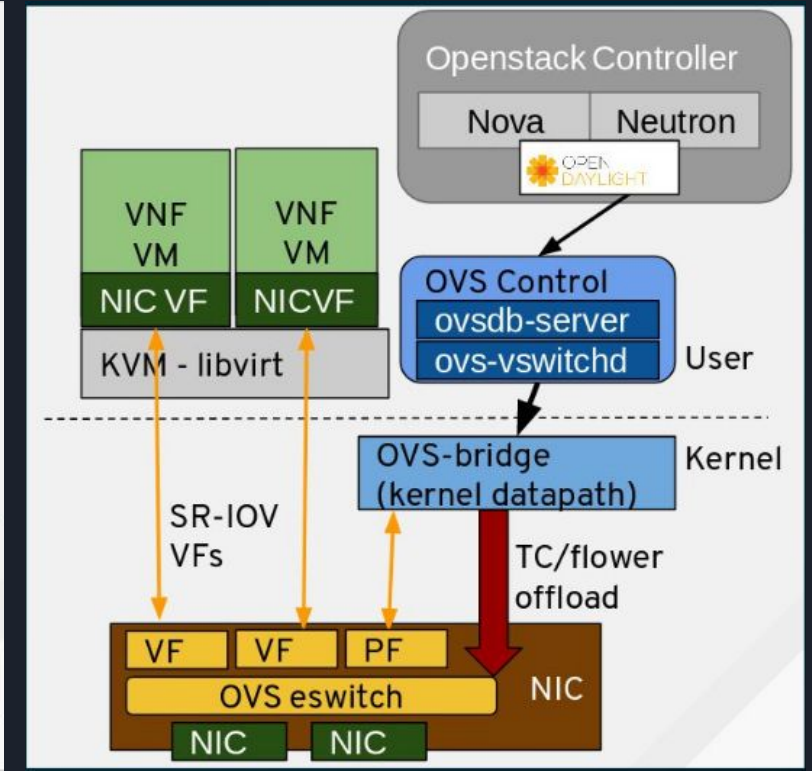

References

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- What for? - https://www.slideshare.net/OPNFV/opnfv-with-5g-applications-fileid-107800/
- What for? - https://www.economist.com/business/2016/02/20/wireless-the-next-generation
- What for? - https://arstechnica.com/information-technology/2018/04/atts-5g-trials-produce-gigabit-speeds-and-9ms-latency/
- Perfs matters not only for Telco - http://www.brendangregg.com/blog/2015-02-27/linux-profiling-at-netflix.html
- VMExit - https://www.anandtech.com/print/2480/
- VMExit - https://www.anandtech.com/show/10158/the-intel-xeon-e5-v4-review/5
- Hardware selection - CPU - https://www.anandtech.com/Gallery/Album/5720#7
- Hardware selection - CPU - https://www.anandtech.com/show/12084/epyc-benchmarks-by-intel-our-analysis-/2
- Hardware selection - NUMA & Memory - http://frankdenneman.nl/2015/02/27/memory-deep-dive-numa-data-locality/
- Hardware selection - NUMA & Memory - https://www.anandtech.com/show/8423/intel-xeon-e5-version-3-up-to-18-haswell-ep-cores-/10
- Hardware selection - NUMA & Memory - https://www.anandtech.com/show/12084/epyc-benchmarks-by-intel-our-analysis-/2
- Hardware selection - NUMA & Memory - https://lenovopress.com/lp0742.pdf
- Hardware selection - NUMA & Memory - Physical Network Interface - https://www.slideshare.net/nyechiel/sdn-fundamentals-for-nfv-open-stack-and-containers-red-hat-summit-20161
- Hardware configuration - NUMA - https://software.intel.com/en-us/articles/intelr-memory-latency-checker
- Hardware configuration - NUMA - https://github.com/opcm/pcm
- Hardware configuration - NUMA - http://www.qdpma.com/ServerSystems/MemoryLatencyII.html
- Hardware configuration - NUMA - https://www.servethehome.com/amd-epyc-infinity-fabric-latency-ddr4-2400-v-2666-a-snapshot/
- Hardware configuration - Power Management - https://software.intel.com/en-us/articles/power-management-states-p-states-c-states-and-package-c-states
- Hardware configuration - Power Management - https://builders.intel.com/docs/networkbuilders/optimizing-nfv-infrastructure-for-tcp-workloads-with-intel-xeon-scalable.pdf
- Hardware configuration - Power Management - page 10 -> https://www.intel.com/content/dam/www/public/us/en/documents/specification-updates/xeon-e5-v4-spec-update.pdf
- Hardware configuration - Power Management - page 12 -> https://www.intel.com/content/dam/www/public/us/en/documents/specification-updates/xeon-scalable-spec-update.pdf
- Hardware configuration - Turbo Boost - https://www.anandtech.com/show/11544/intel-skylake-ep-vs-amd-epyc-7000-cpu-battle-of-the-decade/8

Community URLs (some of them)

https://www.meetup.com/openinfrastructurecdmx/

https://twitter.com/OpenInfraCDMX

https://slack.openinfra.mx/

WORKSHOP ONLINE

Construyendo CLOUDS DE ALTO DESEMPEÑO con tecnologías Open Source

29 Noviembre

México **3-6 PM**
Perú/Colombia **4-7 PM**
Chile/Argentina **6-9 PM**

Vía Meet

whitestack · OpenInfra Foundation · openstack · kubernetes

Regístrate

GRACIAS!

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