Next Generation of Programmable Datapath
What happened in 2016 so far?
OVS 2.6 was released

We just released OVS 2.6 with non-experimental support for OVN and a number of other nice additions! #openvswitch
openvswitch.org/pipermail/anno ...

9:03 AM - 28 Sep 2016
First ever OVN release

In honor of the first release of OVN, the speaker gifts for #ovscon are actual ovens. Speakers, please email preference for gas or electric.
The Open vSwitch podcast that I've been working on is in "beta". Please report bugs. 2 more episodes to edit. ovsorbit.benpfaff.org

Not subscribed yet? ovsorbit.org
Docker followed (Aug 16)

Announcing the Official @docker #Podcast - #Dockercast! Hosted by @botchagalupe!

Introducing Dockercast – the Docker Podcast
Today, we’re thrilled to introduce Dockercast the official Docker Podcast. The Docker and container ecosystem is moving fast and it can be hard to catch up with the latest projects or features...
blog.docker.com

11:00 PM - 2 Aug 2016
What is up next?
Stickers Available!
BPF Helpers: Interacting with the outside world

- Map Lookup/Update/Delete
- Get ktime
- printk to trace buffer
- Get random number
- Get SMP processor ID
- Load/store n bytes in skb data
- Replace L3/L4 checksum of skb
- Name/UID/GID of current process
- Push/pop VLAN header
- Set/get tunnel key and options
- Tail call

- Read/write perf event ring buffer
- Redirect/clone to other net_device
- Get routing realm
- Calculate checksum diff over memory buffer
- Change protocol of skb
- Change type of skb (local/broadcast/…)
- Check for cgroup membership
- Access skb->hash or mark invalid
- Trim tail of skb
- Make skb linear
Experimenting with BPF

- Apply BPF to container networking & security
- Generate individual bytecode for each container at startup
  - Incredible flexibility and versatility
  - Majority of configuration becomes constant
- Decouple code (bytecode) and state (maps)
  - Allow for regeneration at any time without breaking connections
Intel Xeon 3.5Ghz Sandy Bridge, 24 cores, 1 TCP flow per core, netperf -t TCP_SENDFILE, 10’000 policies
Learned Lessons

- Datapath development on steroids.
- Verifier complexity limit requires to split programs into multiple blocks that inherit state.
- We have probably not added the last helper yet.
- Helper requirements define minimal kernel version, so it’s pretty much kernel 4.8+ for anything non trivial.
Q&A

Remember to get your BPF stickers!

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