

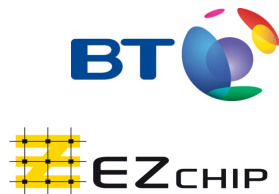
NFV Network and Compute Intensive H/W Acceleration

NFV PoC (Proof of Concept) #21

http://nfvwiki.etsi.org/index.php?title=Network_Intensive_and_Compute_Intensive_Hardware_Acceleration

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Very Briefly...

- **We want to bring to your attention an initiative to standardize or open source hardware acceleration mechanisms/APIs for NFV.**
- **There are numerous advantages to hardware acceleration, performance, power, density, delay, jitter, security etc.**
- **However proprietary hardware was the impetus for NFV, so how can we get the gains of hardware acceleration while staying true to the original goals of NFV?**
- **Obvious answer is common APIs and to divide network functions into slow and fast parts around those APIs.**
- **A good model is what happened with video graphics cards & math co-processors. (Device drivers etc.)**

What we are doing

- A group of vendors and service providers are building proof-of-concept demonstrations to explore these APIs/models.
- The proof-of-concepts or POCs are based on use cases provided by service providers.
- Multiple vendors then show different methods to accelerate these functions on common hardware with H/W acceleration techniques/cards etc.
- The first such demonstrations were just given in Germany at the SDN/Openflow world congress.

Example Demos

- **Demos of HAproxy L7 load balancing acceleration were given.**
 - **Openflow++ was used as the API to cause splicing of TCP connections by adjacent H/W thereby avoiding the hops into and out of the CPU through the software LB.**
 - **A 25 x throughput gain at 90% reduced CPU was observed.**
- **Demos of OpenSwan IPSEC acceleration were given.**
 - **Examples included the IKE Diffie-Hellman key exchange (ie huge number math) done in a NIC based FPGA and called from OpenSwan.**
 - **A 25x speed up in tunnel creation rate was observed.**

Next Steps

- **Explore acceleration other VNFs**
 - **Video trans-coding.**
 - **Service chaining.**
 - **Others based on interest (i.e more SPs & more vendors).**
- **Standardize protocol extensions OpenFlow ++ in ONF.**
 - **Protocol Independent/Agnostic additions for switches in NFV DC.**
- **Standardize APIs for higher performance packet termination/compute/scanning etc.**
 - **Where to do this work?**
 - **Seems to make sense to do this in openNFV?**

More Info

- http://nfvwiki.etsi.org/index.php?title=Network_Intensive_and_Compute_Intensive_Hardware_Acceleration
- <http://www.poforwarding.org/>
- http://www.eantc.de/fileadmin/eantc/downloads/test_reports/2014/EANTC-ETSI_NFV_PoC21-v3.0.pdf
- ONF2014.451 [OF PI: A Protocol Independent Layer](#)
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