

Performance for Software Defined and Virtualized Ecosystems

David Malone

SFI CONNECT / Hamilton Institute, Maynooth University.

Software Switch Performance

- A lot of high-performance software switch work ongoing.
- Switches:
 - Linux bridge,
 - Open vSwitch,
 - VALE,
 - Snabb Switch,
 - ...
- Frameworks:
 - Intel DPDK,
 - netmap,
 - ...
- Implementation still moving target.

Software Switch Performance

- Important to SDN in terms of feature design.
 - Bad to mandate if impractical in hard/soft-switch,
 - Could consider encouraging optional features,
 - Different BW between control/data plane.
- Important to NFV in terms function implementation.
 - NAT/Firewall/LB/. . . implemented,
 - Cooperation between hypervisor and hosts/instances.
- Commodity hardware can change tradeoffs (buffers, etc).

IPv6

- Slightly different requirements to IPv4.
 - Address size,
 - Multicast,
 - Privacy addressing,
 - ...
- SDN standardisation slow to encompass IPv6.
 - Limited support in OpenFlow 1.2,
 - More in 1.3.
 - In practice?
- Some NFV-IPv6 work¹
- Poses some interesting challenges²

¹<http://tools.ietf.org/html/draft-chen-v6ops-nfv-ipv6-00>.

²<http://blog.bimajority.org/2014/09/05/the-network-nightmare>.



Shared/Variable Media

- WiFi/Homeplug/xDSL all have shared & variable media.
- Used on CPE devices.
- ISPs managing/virtualising on-premises equipment.
- Available airtime, modulation and performance variable.
- Performance challenges: media management, performance management.