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 work\(^1\)

- Poses some interesting challenges\(^2\)

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\(^2\) [http://blog.bimajority.org/2014/09/05/the-network-nightmare/](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.