

Deploying Software Defined Networking

Dale W. Carder
Sr. Network Engineer
University of Wisconsin
dwcarder@wisc.edu

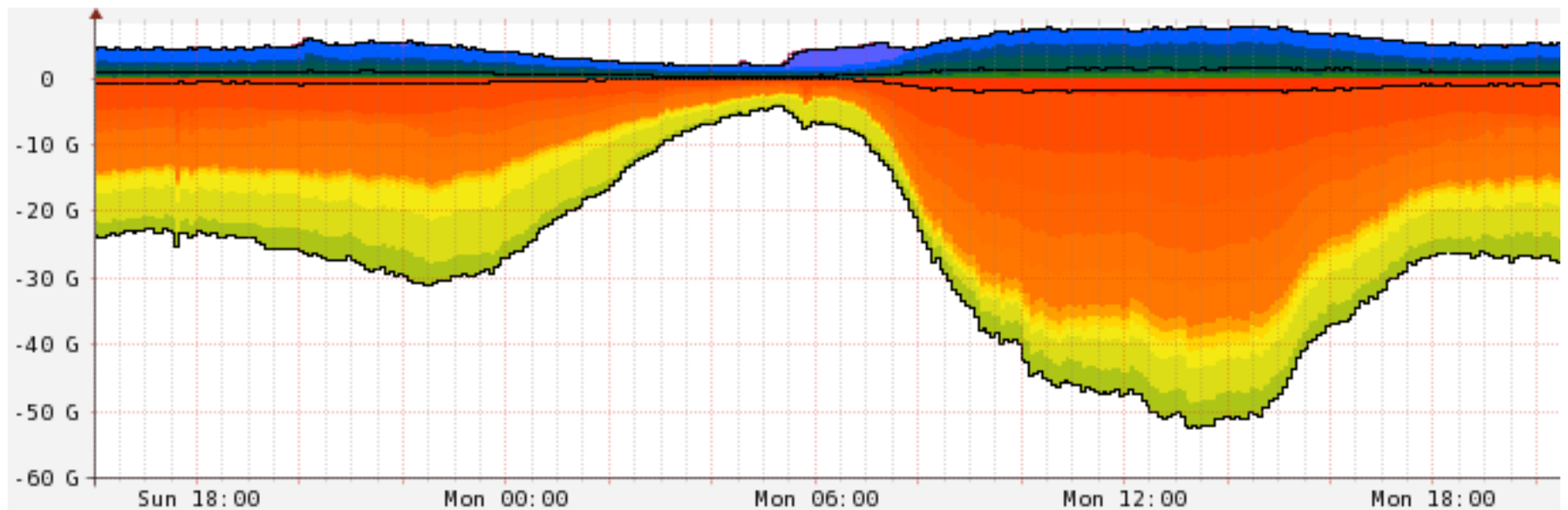


What do we want out of “SDN”

- Performance (guaranteed?)
- Smarter decision making
- Single network control point
- Visibility
-
-
- Profit

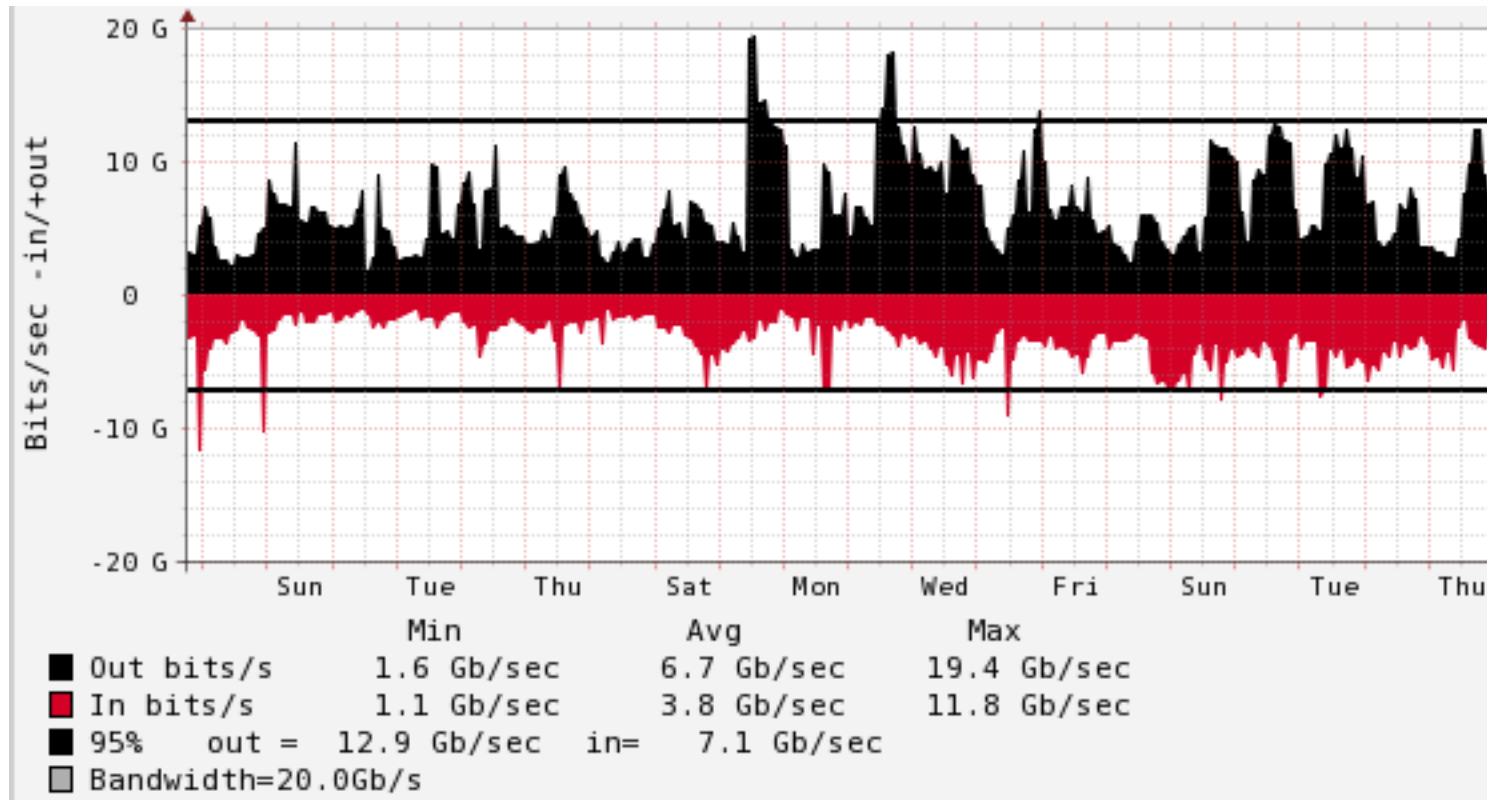
What do we want out of “SDN”

What we expect:



What do we want out of “SDN”

What we have:



What have we learned?

IPv6

- incremental deployment failure
- touching deep into applications is a disaster

DNSSEC

- Cool, but not cool enough to care

Interdomain routing (BGP)

- Network policy per Autonomous System

What have we learned?

Interdomain QoS

- I do not actually trust you
- Doing it right (shapers) way too expensive

MPLS

- Smart edge, dumb middle
- Divide & Conquer

Multicast

- Holding state
- Protocol Soup

The State of SDN

OSCARS / DYNES

- OK idea, poor implementation
- Can perform worse than doing nothing
 - Out of order packet delivery
 - Policers can destroy TCP goodput
 - Extremely fragile

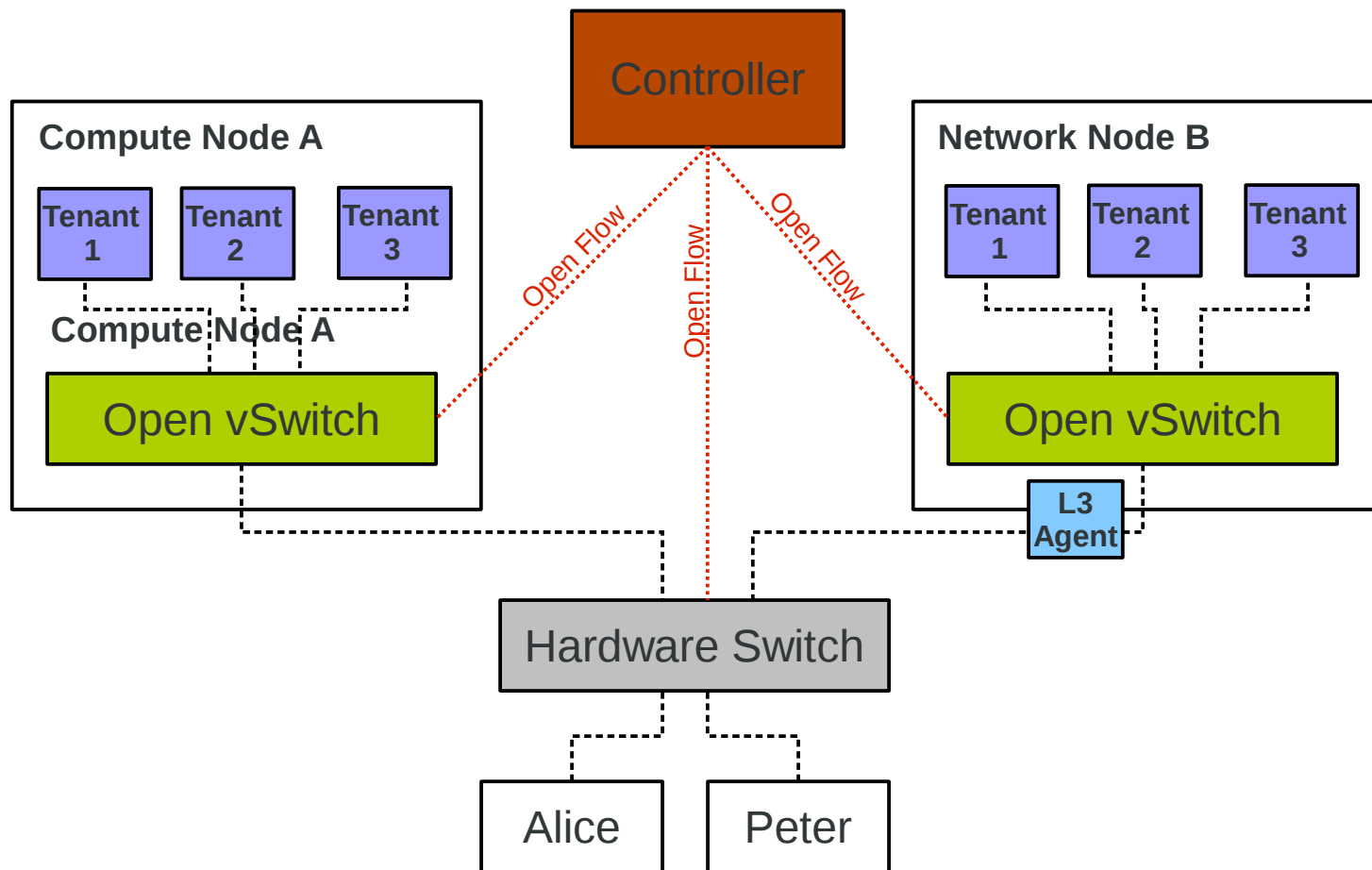
Z. Yan, M. Veeraraghavan, C. Tracy, C. Guok, “On how to provision Quality of Service (QoS) for large dataset transfers,” accepted in CTRQ 2013



The State of SDN

- Existing hardware implementations
 - OpenFlow 1.0 + extensions, 1.3
 - Understand optional & other implementation details
- SDN Controllers
 - OpenDaylight
 - Cisco ONE
 - FloodLight
 - NOX, POX, and friends

Open vSwitch



Thomas Graf <tgraf@redhat.com>

SDN Deployment Models

- Proactive vs Reactive
- “Northbound API” - REST
- Ships in the Night
- Vlan stitching
- Overlay tunnels
- Hybrid (OFPP_NORMAL)

Start playing now

- Try out Open vSwitch
 - Included in RHEL 7, (tech preview in rhel 6)
- Grab a controller
- Pester your vendors