CaSToR

Connectivity as Service to Top-of-Rack Elastic Software-Defined Interconnects

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Problem/Opportunity

- Internet Exchange Point (IXP) = Route-Servers + L2-data-plane:
  - Hygiene: Ether-types, ARP broadcasts, multicasts, one MAC per-port, …
  - Free-riding: no enforcement of policy
  - Static provisioning (and pricing), poor telemetry

- SDN presents an opportunity:
  - Leverage IXP's natural separation of control and data plane
    - But can enforce tighter coupling between the two!
  - Replace data-plane layer-2 switch with SDN switch (similar cost)
  - Augment control-plane with SDN app (CaSToR)

CaSToR: SDN Interconnect
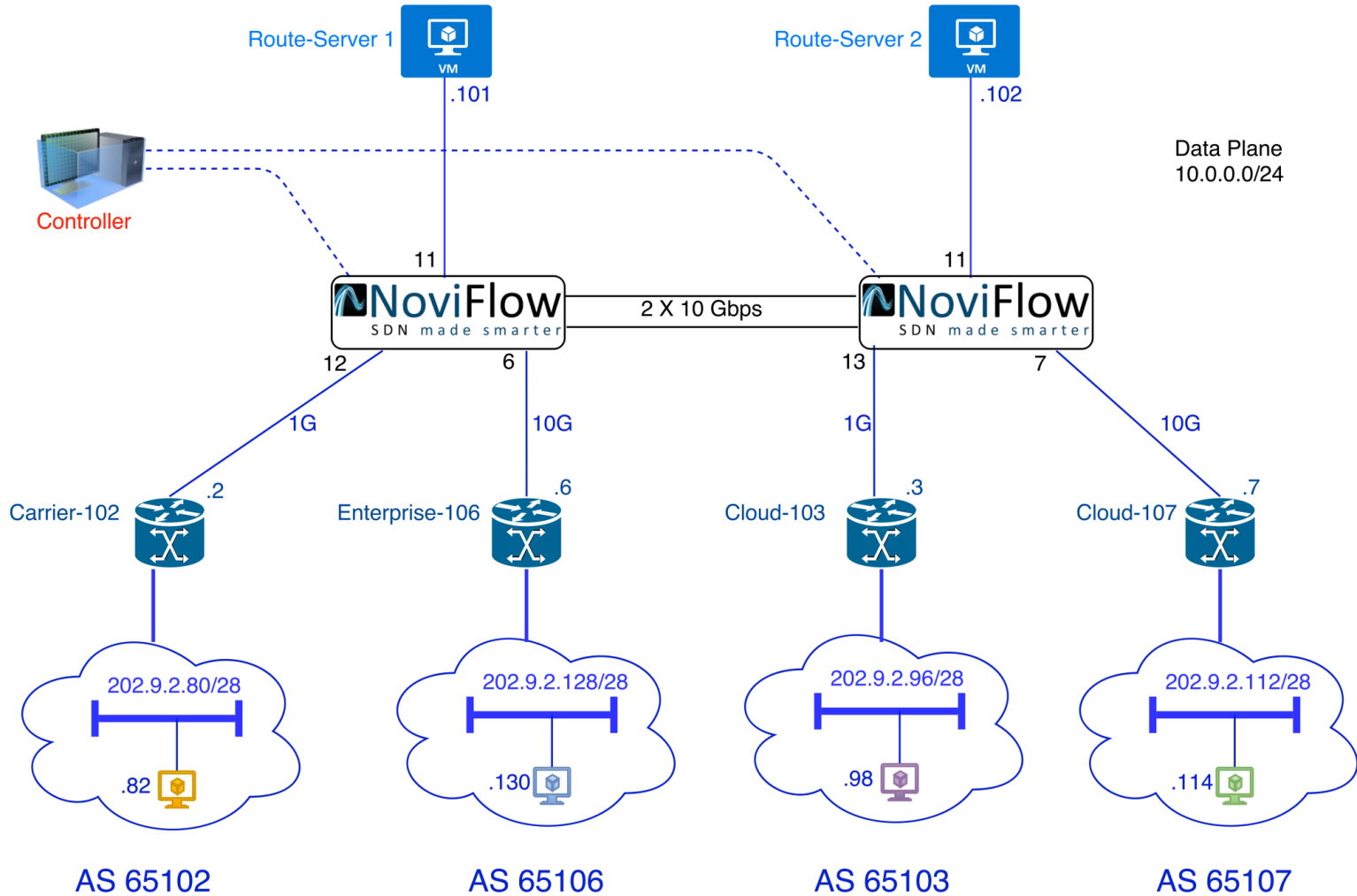
CaSToR GUI

CaSToR: Benefits and Roadmap

- Matches today's IXP architecture:
  - Completely transparent to connected Ases (legacy border router)
  - Enforces fabric hygiene; ARPs unicast not broadcast
  - Web-based (ReactJS/HTML5) portal for easy provisioning (via REST APIs)
- Platform for innovations:
  - Granular telemetry – instant visualisation of inter-AS traffic (InfluxDB+Grafana)
    - Bandwidth metering and management
  - Security policy enforcement
  - Automated provisioning and elastic scaling (pricing) of cloud-connects
- Status and future plans:
  - Currently operational at 8 sites across Australia; peering with US/Europe
  - CaSToR is standard in of next release of ONOS
  - Looking for IXPs who are keen for trials!
- Paper at European Workshop on SDN (The Hague, Netherlands, Oct'16): http://www2.ee.unsw.edu.au/~vijay/pubs/conf/16ewsdncastor.pdf