RouteFlow

FUNTTEL

Ministério das Comunicações

GOVERNO FEDERAL BRASIL PAÍS RICO É PAÍS SEM POBREZA

FINEP AGÊNCIA BRASILEIRA DA INOVAÇÃO

When IP routing meets SDN and starts going live

Background

Glue of IP routing stacks with OpenFlow

Controller-centric hybrid IP networks

Migration path to SDN

Now: From proof of concepts to value-added pilots and SDN innovation!

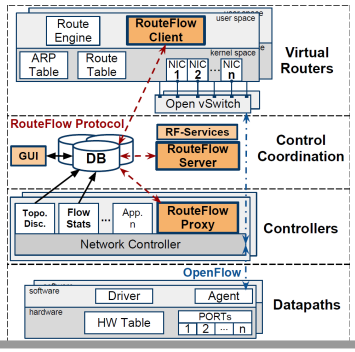
Architecture

Modular (3 components)

Hierarchical, distributed

Multi-controller support
(POX, NOX, Floodlight, Ryu)

Any Linux-based routing stack
(Quagga, XORP, BIRD)



DEMO 1 — IP-Routed Network on Demand

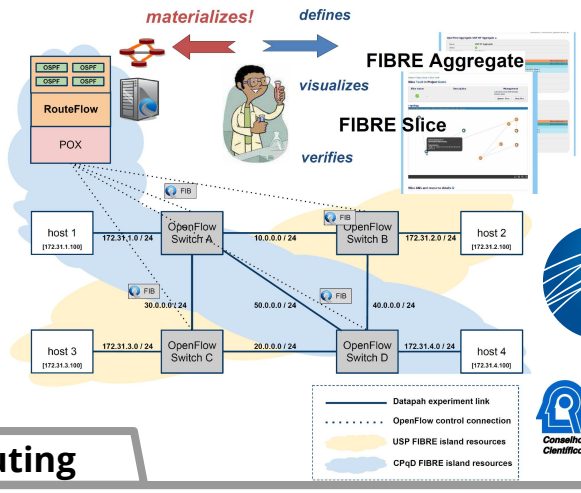
Highlights

Federation of FIBRE islands
- 4 OpenFlow switches (NetFPGAs) and 2 XEN Agents

Runs RouteFlow experiment on requested slice
- IP routing (OSPF) on sliced topology

Islands connected through VLANs in existing infrastructure (GIGA network)

Federation through FIBRE CMF provides unified cross-island experimental setup



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fibre — FUTURE INTERNET TESTBEDS EXPERIMENTATION BETWEEN BRAZIL AND EUROPE

CNPq Conselho Nacional de Desenvolvimento Científico e Tecnológico

COOPERATION

DEMO 2 — InterVLAN Routing

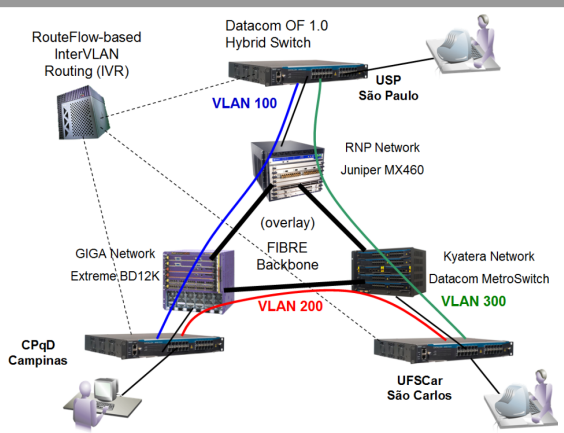
Highlights

Goal: Interconnect 32 campi

RFServer defines InterVLAN routing logic
- Router-on-a-stick paradigm

Seamless VLAN configuration

OpenFlow rules match on destination IP and perform VLAN rewrite actions



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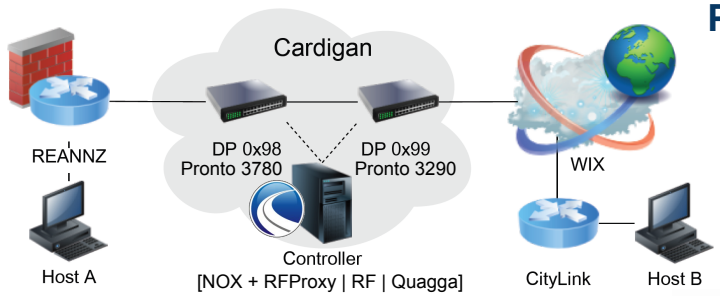
DEMO 3 — Distributed IX Router

Highlights

Deploying a distributed routing fabric
- Production traffic in live IXP

Reduced operational complexity

Easier to understand
- Aids modification and diagnosis



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Snapshot: 1134 flow entries in each switch

8 flows matching control plane traffic
(e.g., ARP, ICMP, BGP, etc.)

1 flow entry to drop traffic by default

98 flows describing BGP speakers

1028 flows representing L3 routes

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REANNZ

Open Source Routing