Interconnecting OpenFlow over transpacific

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Outline

• Introduction of RISE/JGN-X
• Interconnection between RISE/JGN-X and NDDI
• Embedding our OF controller into OESS
RISE over JGN-X network

- VLAN-based Network only
  - number of virtual networks would be limited due to VLAN limitation

- RISE over JGN-X
  - Made it possible to create multiple virtual network, without concerning VLAN ID limitation in the existing networks.

Research Infrastructure for large-Scale network Experiments
Advantages and activities

• RISE controller is based on “Trema”
  – All-in-one package
  – Sophisticated OpenFlow APIs for Ruby and C
  – Integrated developing environment

• Most recent Activities
  – IPv4 multicast
  – Security(drop malicious traffics)
  – Long-haul transmission with Asian countries
In next APAN meeting in August, Singapore plans to conduct a demo.

- Data Backup / Recovery among 3 countries (SG/TH/JP)
- Virtual Machine resource copy / restore over OpenFlow
- Network controlled from APAN venue (Colombo / Sri Lanka)
Towards global OpenFlow testbed

- International presence of RISE, OF testbed by JGN-X
  - United States: in LA
  - Asia: in Japan, Thailand and Singapore

- Inter-connection among OpenFlow testbeds
  - Planning to connect RISE and OFELIA (EU), and NDDI(US)
    - With OFELIA, starting from using each other’s OF testbed
    - With NDDI, RISE will inter-connect by utilizing OESS
RISE in OESS

RISE side

OSCARS

Controller API

DBUS handler

RISE Controller

Intra-domain Services

_attempt to create L2 circuit using IDP

Data /Control path for OpenFlow establishes

NDDI side

OSCARS

Controller API

DBUS handler

NOX Controller

Intra-domain Services

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Summary

• RISE is an international OpenFlow testbed built over JGN-X.

• RISE is developing inter-connect function of OpenFlow testbeds by in its OF controller using OESS.
  – Thanks to James Williams / Steven Wallace / John Hicks / their staff

• RISE is planning to provide reachability to a wide-variety of ICT facilities such as network storages, servers, and emulation environments.

Thank you