Ok, we have an OpenFlow-based Bandwidth on Demand, but now what?

Alaitz Mendiola
SDN Developer at GÉANT Association

Internet2 Technology Exchange 2018, Orlando FL
Public

www.geant.org
What to expect during this session...

• Introduction to Bandwidth on Demand
• DynPaC framework
• The SDN-based multi-domain BoD solution
• Open discussion

People involved in the SDN-based BoD

• Alaitz Mendiola, GÉANT Association
• Jordi Ortiz, University of Murcia
• Adam Pavlidis, NETMODE Laboratory, NTUA
• Kostas Stamos, Technological Educational Institute of Western Greece
• Mian Usman, GÉANT Association
• Guy Roberts, GÉANT Association
• Jovana Vuleta-Radojičić, University of Belgrade - Computer Centre / AMRES
Introduction

Bandwidth on Demand
Bandwidth on Demand today

- Inter-Domain Manager
  - East-west communication
  - NSA

- Domain Manager
  - Handles the particularities of each domain

- Technology Proxy
  - Technology dependent
  - North-South communication towards network elements

Bandwidth on Demand today

Current limitations

• No automatic network discovery
• No service protection
• High service request rejection ratio

There is no BoD connection
Try:
• SDN
DynPaC

• Dynamic Path Computation Framework
  • Traffic Engineering in Software-Defined Networks

• Main features
  • Path computation for the optimization of the network resources
  • Advance reservations
  • Resilience / Protection
  • Automatic topology discovery
  • Open REST API
DynPaC

- Establishment of L2 VLAN circuits
  - Automated network programming
DynPaC

• Establishment of L2 VLAN circuits
  • Optimization of network resources
    • Bandwidth
    • VLAN tags
DynPaC

- Establishment of L2 VLAN circuits
  - Guaranteed reserved bandwidth
    - Meters at ingress devices
DynPaC

• Establishment of L2 VLAN circuits
  • Protected services
DynPaC

- REST API
  - NFV Orchestrators
  - Multi-domain agents
DynPaC

• Architecture
SDN-Based multi-domain Bandwidth on Demand
But... now what?

• OpenFlow... is it dead?
• Open source controller
  • No maintenance support
  • Who do we need to call in case of failure?
    • SDN Application developer?
    • SDN Controller developer?
    • Network engineer?
• Can we achieve the same flexibility with NETCONF, PCEP, Segment Routing... ?
• Coexistence with other SDN applications?
Thank you

Any questions?

www.geant.org