ACTN Discussion

http://datatracker.ietf.org/doc/draft-actn-requirement/

Daniele Ceccarelli (Ericsson)

Young Lee (Huawei)

Luyuan Fang (Microsoft)

Diego Lopez (Telefonica)

Sergio Belotti (Alcatel-Lucent)

Daniel King (Lancaster University)

Dhruv Dhody (Huawei)

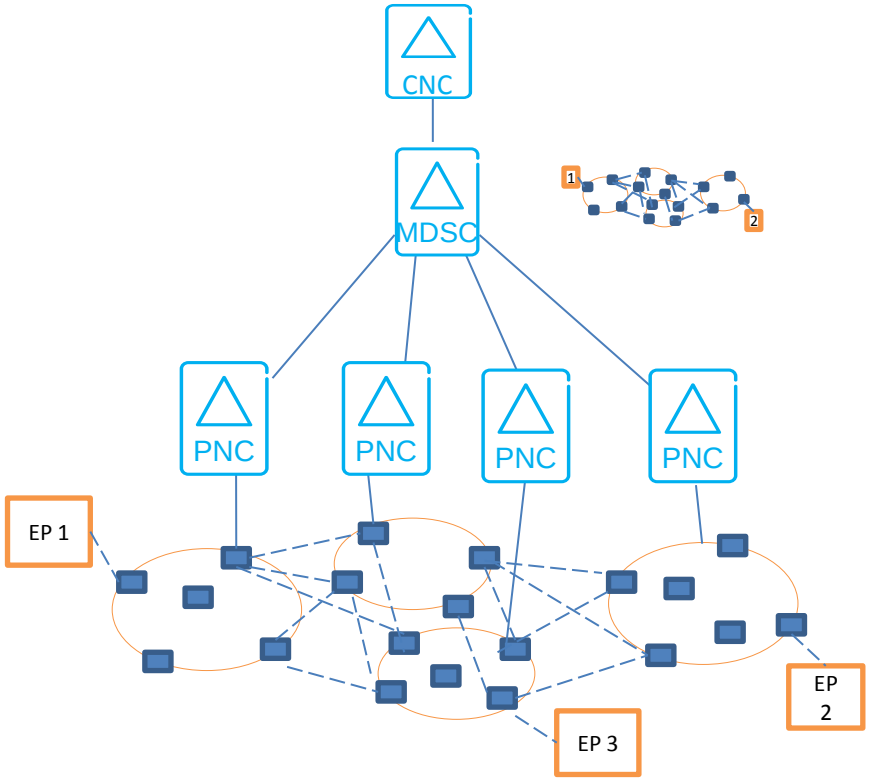
Khuzema Pithewan (Infinera)

What is ACTN?

- Provide customers an ability to create VNS (Virtual Network Service) based on the VNs that meet their **service requirement and policy.**
- Connectivity spans multiple transport network domains due to the **distributed** nature of customer end points (e.g., data centers).
- Recognize **heterogeneous** control/management technologies (e.g., GMPLS/ASON, PCE, EMS/NMS, OF, etc.)
- South Bound Interface of the lowest level network controller is **out of scope** of ACTN.
  - Device (NE) - Controller model is out of scope
  - **Controller - Controller model is the main focus**

Single Virtualized Network Topology

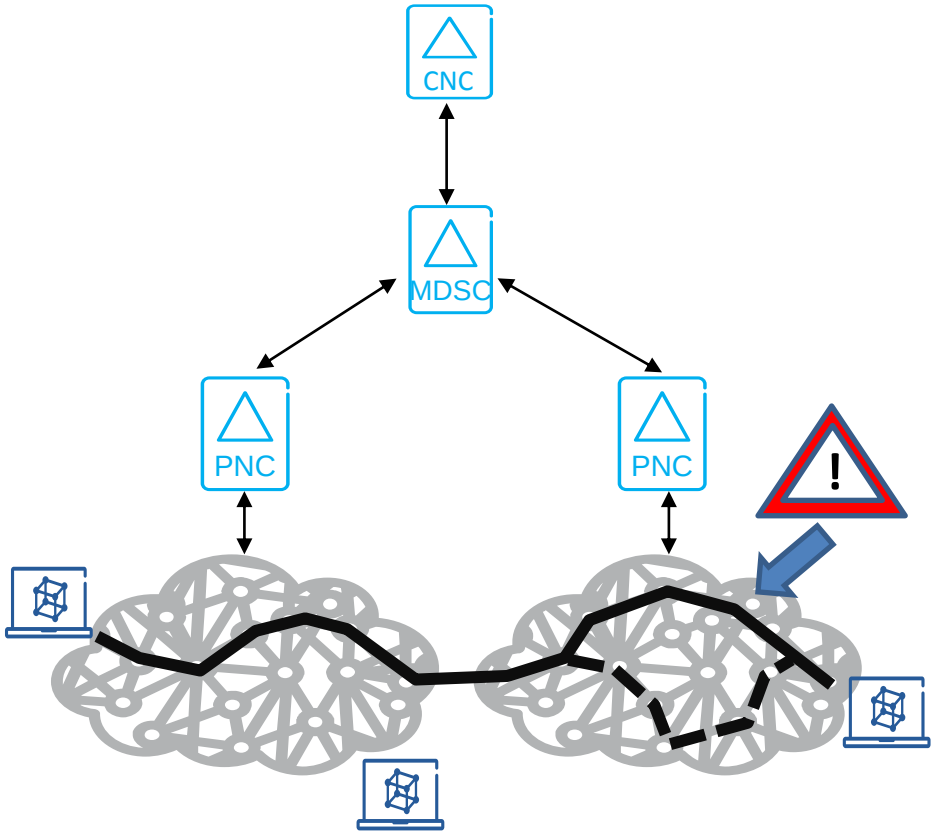
1. Ability to build virtual network operation infrastructure based on multi-layer, multi-domain topology abstracted from multiple physical network controllers (e.g., GMPLS, OpenFlow, PCE, NMS, etc.)



Policy Enforcement

2. Ability to provide service requirement/policy (Between Customer and Network) and mechanism to enforce service level agreement.

   - Endpoint selection policy, routing policy, time-related policy, etc.



VN Query

3. Ability to request/respond VN Query (Can you give me VN(s)?)
   - Request Input:
     - VN end-points (CE end)
     - VN Topology Service-specific Multi-Cost Objective Function
     - VN Topology diversity (e.g., VN1 and VN2 must be disjoint)
     - VN Topology type: path, graph
   - Response includes VN topology
     - Exact
     - Potential

VN Instantiate

4. Ability to request/confirm VN Instantiation
   - VN instance ID
   - VN end-points
   - VN constraints requirement
     - Latency only, B/W guarantee, Latency and B/W guarantee together
   - VN diversity
     - Node/Link disjoint from other VNs
   - VN level diversity (e.g., VN1 and VN2 must be disjoint)
   - VN type
     - Path (tunnel), Node/Links (graph)
   - VN instance ID per service (unique id to identify VNs)

Dynamic VN Control

5. Dynamic/On-demand VN Modification/Confirmation with feedback loop to the customer
   - Traffic monitoring and control policies sent to the network
   - Network states based traffic optimization policies
   - Utilization Monitoring (Frequency of report)
   - Abstraction of Resource Topology reflecting these service-related parameters

VN Lifecycle M&O

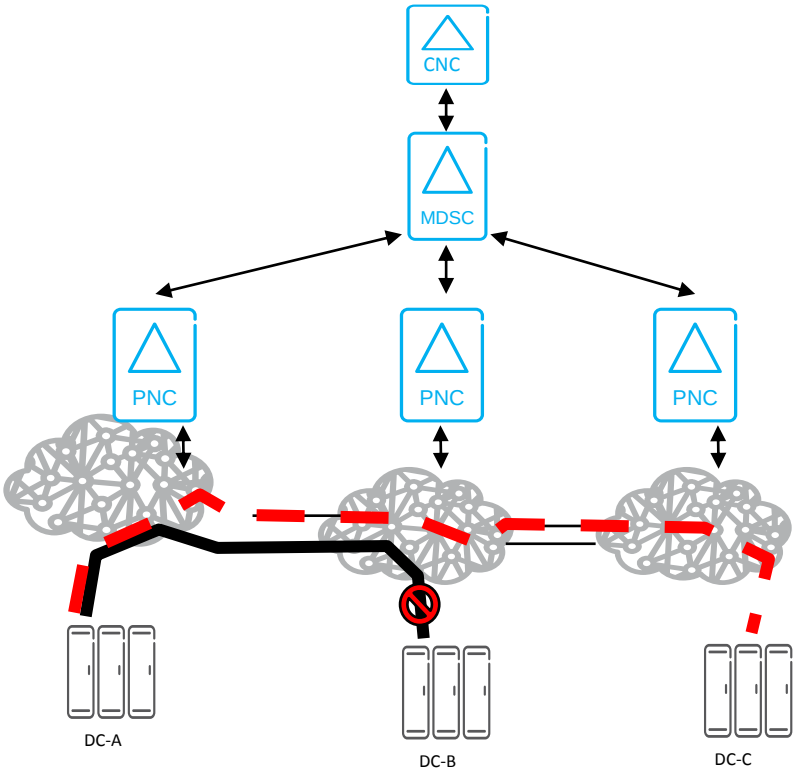
6. VN lifecycle management/operation
   - Instantiate
   - Delete
   - Modify
   - Update (VN level OAM Monitoring) under policy agreement

VN Service Operation

7. Ability to setup and manage end-2-end service on the VN involving multi-domain, multi-layer, meeting constraints based on SLAs

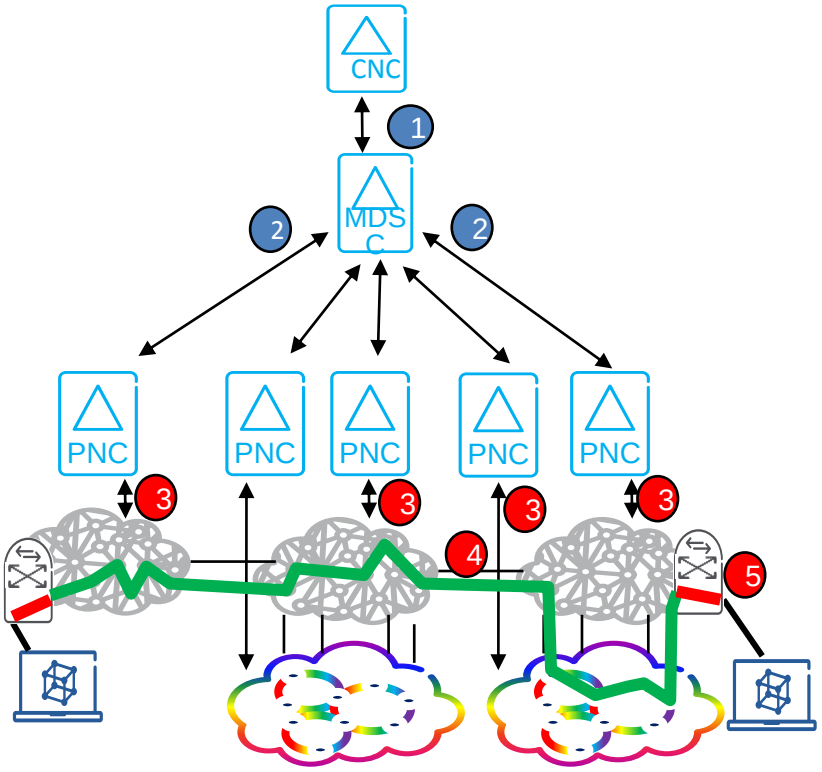
Multi-destination Coordination

8. Coordination of multi-destination service requirement/policy to support dynamic applications such as VM migration, disaster recovery, load balancing, etc.
   - Service-policy primitives and its parameters



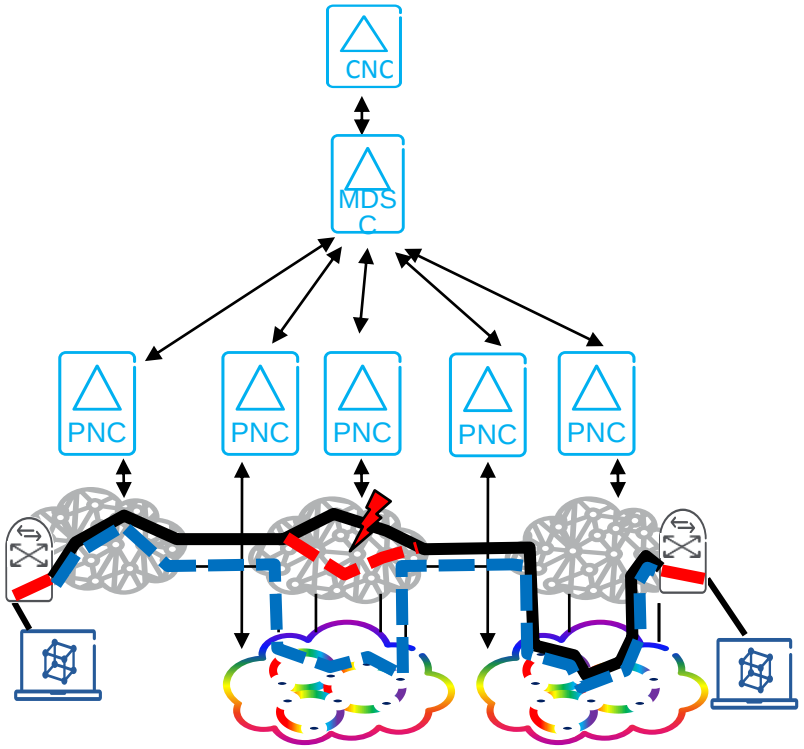
Multi-domain & Multi-layer Coordination

9. Ability to Coordinate multi-domain and multi-layer path computation and setup operation (network)
   - Computes E2E path across multi-domain (based on abstract topology from each domain)
   - Determines the domain sequence
   - Request path signaling to each domain controller
   - Find alternative path if any of the domain controllers cannot find its domain path



E2E Path Restoration

10. Ability to perform E2E Path Restoration Operation
    - Intra-domain recovery
    - Cross-domain recovery



Work to be Done

- ACTN Requirement
  - Fits in the TEAS WG?
  - If yes, we can get on with the work
- ACTN Framework
  - Fits in the TEAS WG?
  - Initial work in progress
- We plan to produce ACTN info/data models
- Protocol extensions what/where TDB?

Backup

ACTN framework based on use-cases