ACTN INFORMATION MODEL

draft-ietf-teas-actn-info-model-04

IETF 100 – Singapore

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ACTN Model background

- The model is described in terms of
  - Action Primitives : they are basic actions needed to support different ACTN network control functions e.g. network topology request/query , VN service instantiation/deletion/modifications, path computation, VN service policy negotiation/enforcement
  - Objects and their properties (attributes) : the object represents ACTN resources needed to be exchanged along interfaces and used in the context of primitives.

Updates from 02 and 03 version

- Restructure of the draft separating explicitly types of primitives depending on the type of interface
  - Virtual Network primitives at CMI
  - Traffic Engineering primitives at MPI
- Section objects refinements
  - Added VN Topology and VN Member
  - TE Tunnel Characteristics and TE Topology Update
  - General refinements
- Refinement on Mapping between primitives and objects.
- Change name of PNC : Provisioning Network Controller

Restructure

- Virtual Network primitives at CMI :does not need for detailed TE information since the basic functionality is to translate customer service information into virtual network service operation.
- Traffic Engineering primitives at MPI: at MPI interface, the orchestrator controller (MDSC) has the main scope for multi-domain coordination and creation of a single e2e abstracted network view which is strictly related to TE information
- Related different definitions regarding Topology:
  - virtual network topology : a customized topology for view and control by the customer.
  - TE topology: TE topology associated with provider network operati on which it is possible to apply policy to obtain the required level of abstraction to represent the underlying physical network topology.

VN Action Primitives

VN Action	Description
VN Instantiate	Customer/application (C/A) requires creation of VNs (type 1 or type2) (1)
VN Modify	C/A request for modification of an instantiated VN
VN Delete	C/A request to delete an instantiated VN
VN Path Compute	C/A request for a priory exploration to compute network resource availability and getting a possible VN view which path details can be specified matching C/A constraints. (2)
VN Query	Permit to get topology view (pull model)
VN Update	Refers to any update to the VN that need to be reported to the subscribers (push model)

(1) VN type 1 : set of edge-to-edge links , VN type 2: VN topology (i.e. topology composed by a set of virtual node(s) and virtual link(s))

(2) This action may not guarantee the availability of computed network resource at the instantiation time

TE Action Primitives

VN Action	Description
TE Instantiate	An action issued from MDSC to PNC to instantiate new TE tunnels.
TE Modify	An action issued from MDSC to PNC to modify existing TE tunnels.
TE Delete	An action issued from MDSC to PNC to delete existing TE tunnels.
Path Compute	An action composed by a request a reply between MDSC and PNC to request a path computation and obtain related computed paths results.
TE Topology Update	Action providing TE resource update between any domain controller towards MDSC regarding the actual or abstracted view of TE topology resources depending on negotiated policy.

new Objects

New VN objects

<VN Topology> ::= <VN node list> <VN link list>

<VN node list> ::= <VN node> [<VN node list>]

<VN link list> :: = <VN link> [<VN link list>]

<VN_Member_List> ::= <VN Member>
[<VN_Member_List>]

<VN Member> ::= <Ingress VN End-Point>

[<VN Associated LSP>] <Egress VN End-Point>

New TE objects

<TE-topology-list> ::= <TE-topology> [<TE-topology-list>]

<TE-topology> ::= [<Abstraction>] <TE-Topology-identifier>
<Node- list> <Link-list>

<Node-list> ::= <Node>[<Node-list>]

<Node> ::= <Node> <TE Termination Point-list>

<TE Termination Point-list> ::= <TE Termination Point>
[<TE-Termination Point-list>]

<Link-list> ::= <Link>[<Link-list>]

Mapping of Primitives with Objects

VN Primitives mapping

<VN Instantiate> ::= <VN Service Characteristics> <VN Member-List> [<VN Service Preference>] [<VN Topology>]

<VN Modify> ::= <VN identifier> <VN Service Characteristics> <VN Member-List> [<VN Service Preference>] [<VN Topology>]

<VN Delete> ::= <VN Identifier>

<VN Update> :: = <VN Identifier> [<VN Member-List>] [<VN Topology>]

<VN Path Compute Request> ::= <VN Service Characteristic> <VN Member-List> [<VN Service Preference>]

<VN Path Compute Reply> ::= <VN Computed Path>

<VN Query> ::= <VN Identifier>

<VN Query Reply> ::= <VN Identifier> <VN Associated LSP> [<TE Topology Reference>]

TE Primitives mapping

<TE Instantiate> ::= <TE Tunnel Characteristics>

<TE Modify> ::= <TE Tunnel Characteristics>

<TE Delete> ::= <Tunnel Id>

<TE Topology Update> :: = <TE-topology-list>

<Path Compute Request> ::= <TE Tunnel Characteristic>

<Path Compute Reply> ::= <TE Computed Path> <TE Tunnel Characteristics>

Next Steps

- Co-authors believe that the draft is ready for LC