

Interworking of GMPLS Control and Centralized Controller System

TEAS WG, IETF105, Montreal, Canada

draft-ietf-teas-gmpls-controller-inter-work-01

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Review on Status & Changes

- Status:
 - Adopted in June;
 - Updated in July;
- Changes:
 - Enable more interwork scenarios;
 - More explicit description on scenarios; (mainly multi-domain)

Interworking

* Controller can be any SDN controller of EMS/NMS

Newly Added Description

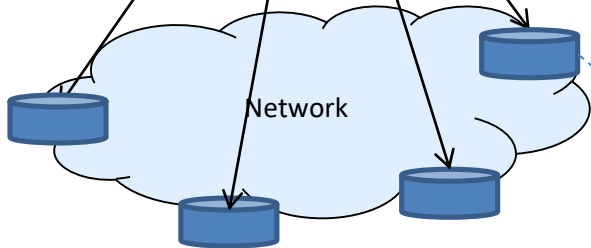


RESTconf/YANG

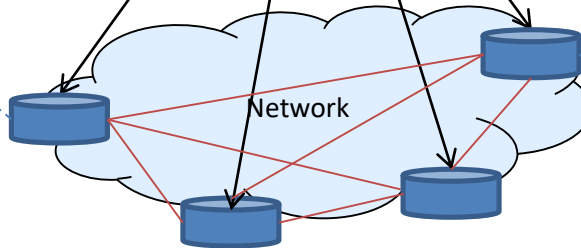


RESTconf/YANG

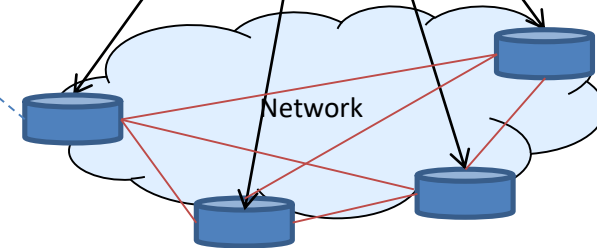
PCEP or others



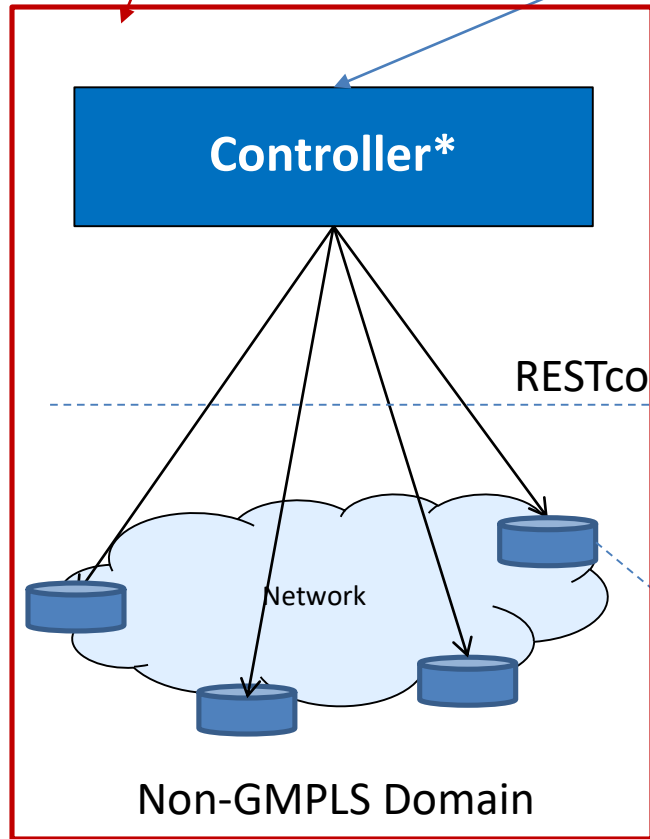
Non-GMPLS Domain



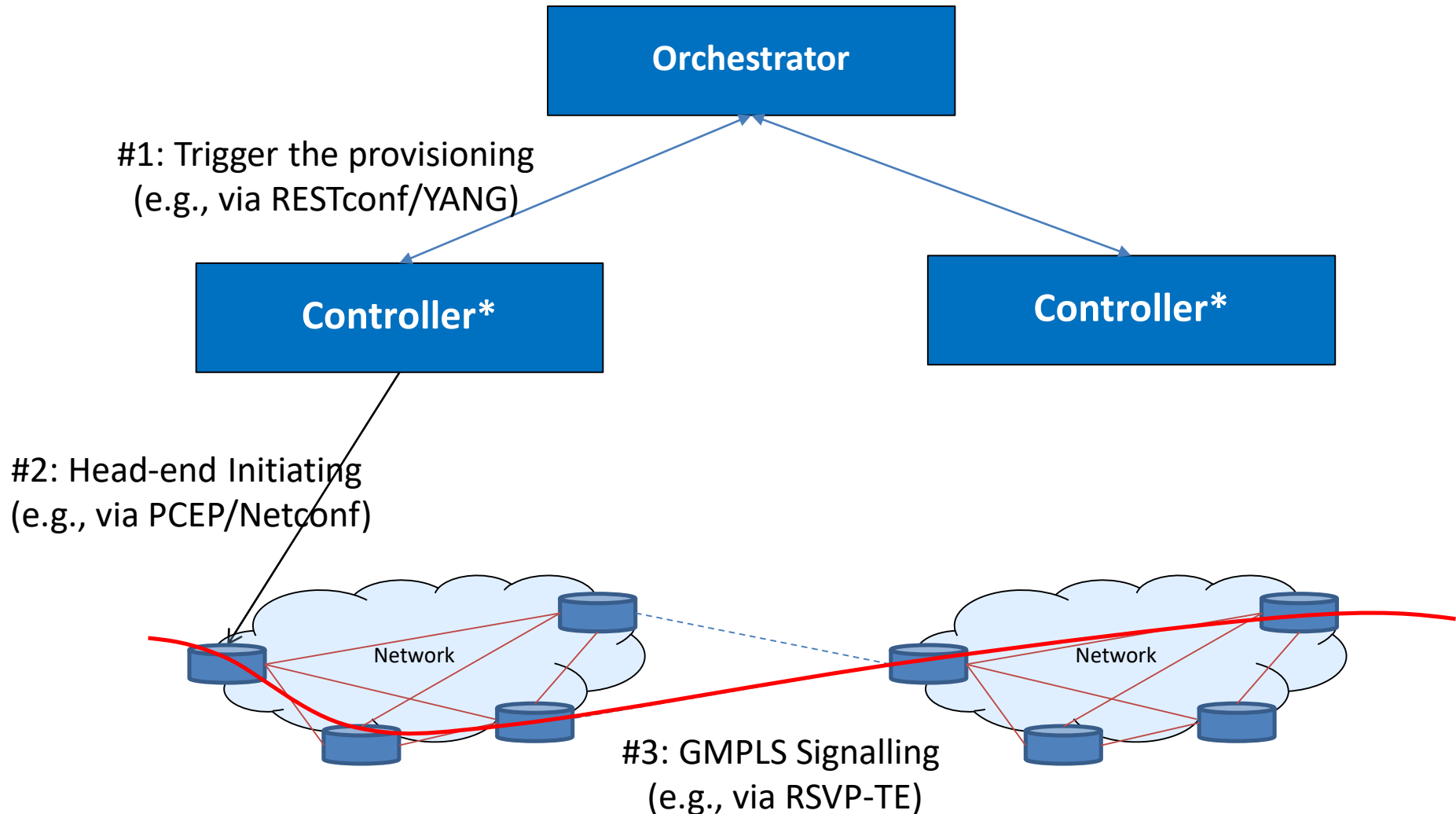
GMPLS Domain



GMPLS Domain

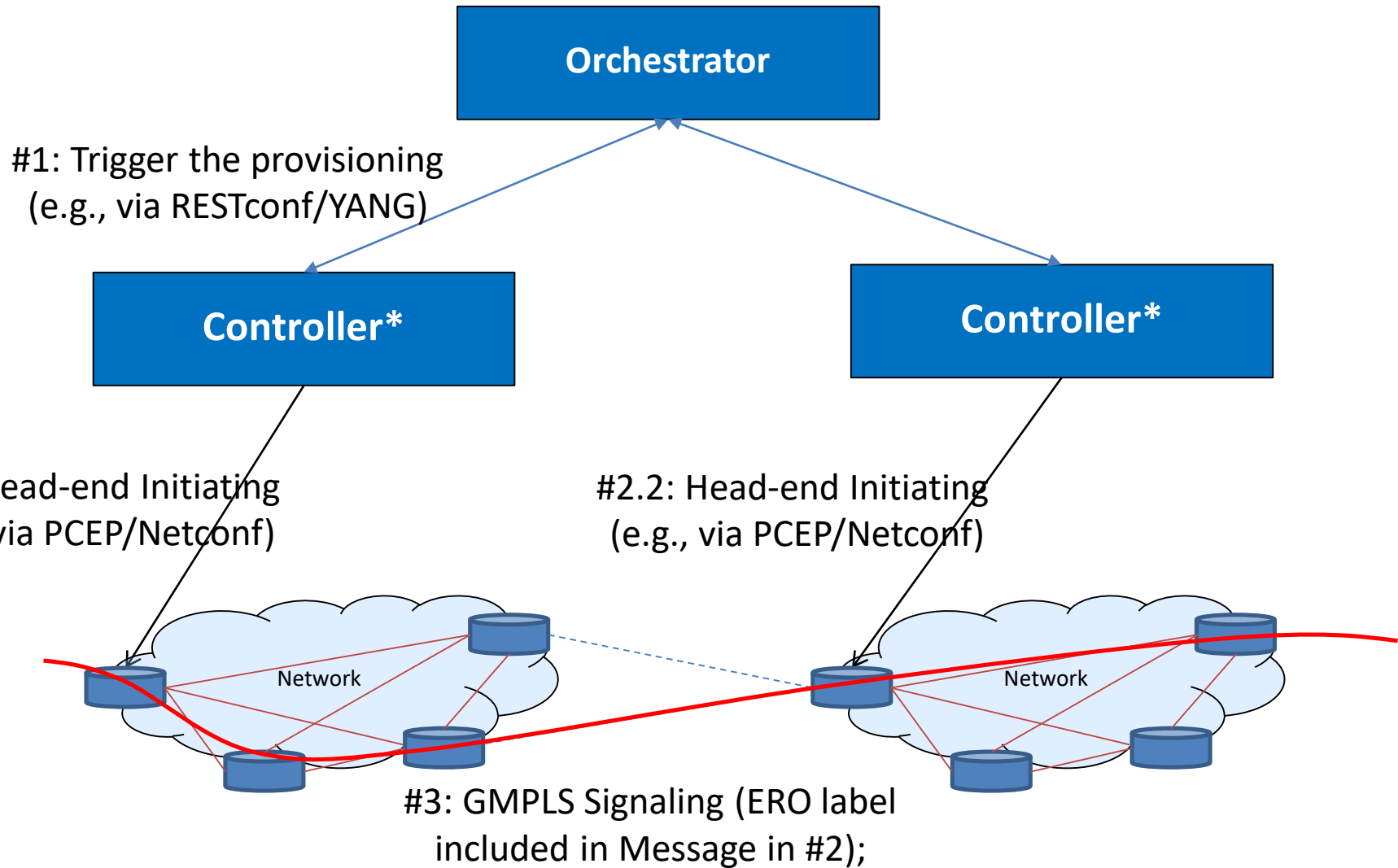


Provisioning(1) – End-to-end



Remark: in this scenario, both domains request GMPLS (to run RSVP-TE);

Provisioning(2) – Multi-segment



Remark: in this scenario, both domains request GMPLS (to run RSVP-TE);

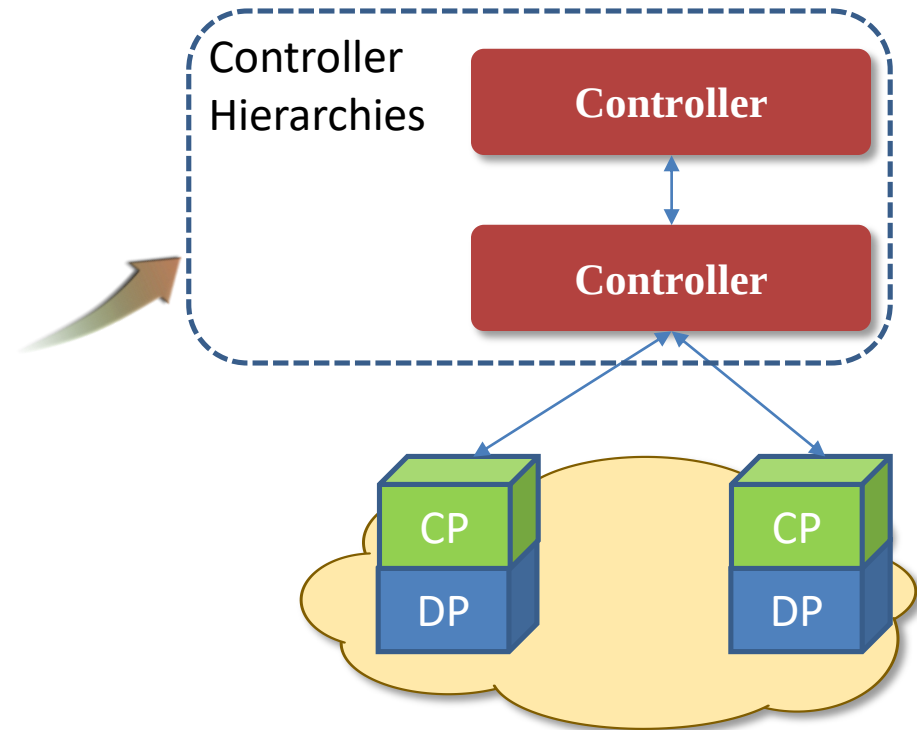
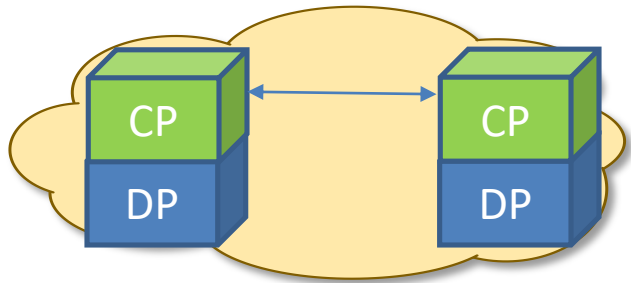
Next Step

- Provide more detailed scenarios:
 - Multi-layer Provisioning;
 - Protection & Restoration;
 - Controller Reliability
 - Add more description on non-GMPLS domain interworking;

FOR BACKUP USE

Motivation of this work

DP = Data Plane;
CP = Control Plane (with GMPLS)

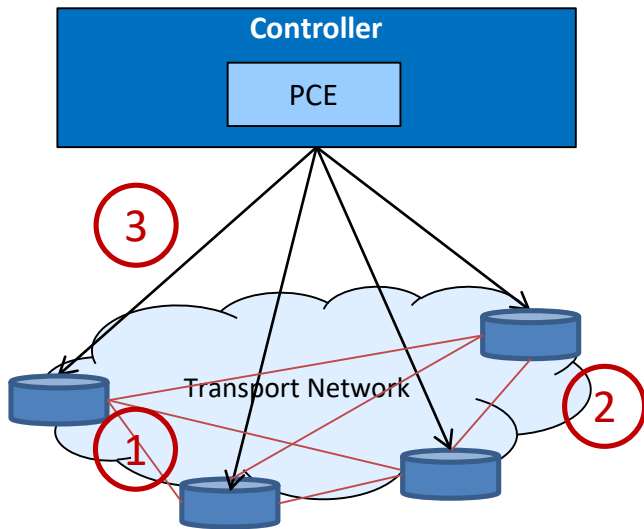


GMPLS Control Plane
RSVP-TE
OSPF-TE
LMP

Inter-work?

Centralized Controllers
ACTN Controllers
Netconf/RESTconf+YANG
PCE Protocol

Topology Discovery Scenario



IF Type:	Topology Initiation	Topology Update (e.g. add one node)
1	LMP	Number of LMP message: increase accordingly
2	OSPF (ISIS)	Message: each message will flood additional info
3	PCEP/ Netconf	New PCEP session from new node to PCE; / Need new message to configure the new node; Database will be updated

Interface Type

- 1 Neighbor Level: Local Resource Discovery (e.g. LMP)
- 2 NE Level: Topology Discovery with Flooding of Information among NEs (e.g., OSPF-TE)
- 3 From PCE/Controller to NE: Interaction between PCE/Controllers to NE

Service Provisioning Scenario

Service Provisioning Decomposition:

1. Step: Path Computation -> Path Establishment -> Database (NE/CTRL)update
2. Mode: Computation & signaling can be either centralized or distributed

	Distributed Control Plane	Centralized Path Compute + Distributed Signaling	Centralized Path Compute + Centralized Signaling
Path Compute	OSPF	PCEP/Netconf(Restconf)	PCEP/Netconf(Restconf)
Path Set up	RSVP	RSVP(inter-NE, IF#2)	PCEP/Netconf(Restconf)
Resource Update	OSPF	OSPF(inter-NE, IF #2) PCEP-LS/Netconf (IF#3)	OSPF(inter-NE, IF #2) PCEP-LS/Netconf (IF#3)
IETF Ref	RFC3473 RFC4203 RFC4872/3/4	RFC4203 RFC3473 RFC8281 RFC6241,RFC8040	RFC 4203 RFC8283, RFC6241,RFC8040