Interworking of GMPLS Control and Centralized Controller System

CCAMP WG, IETF101, London, UK

draft-zheng-ccamp-gmpls-controller-inter-work-01

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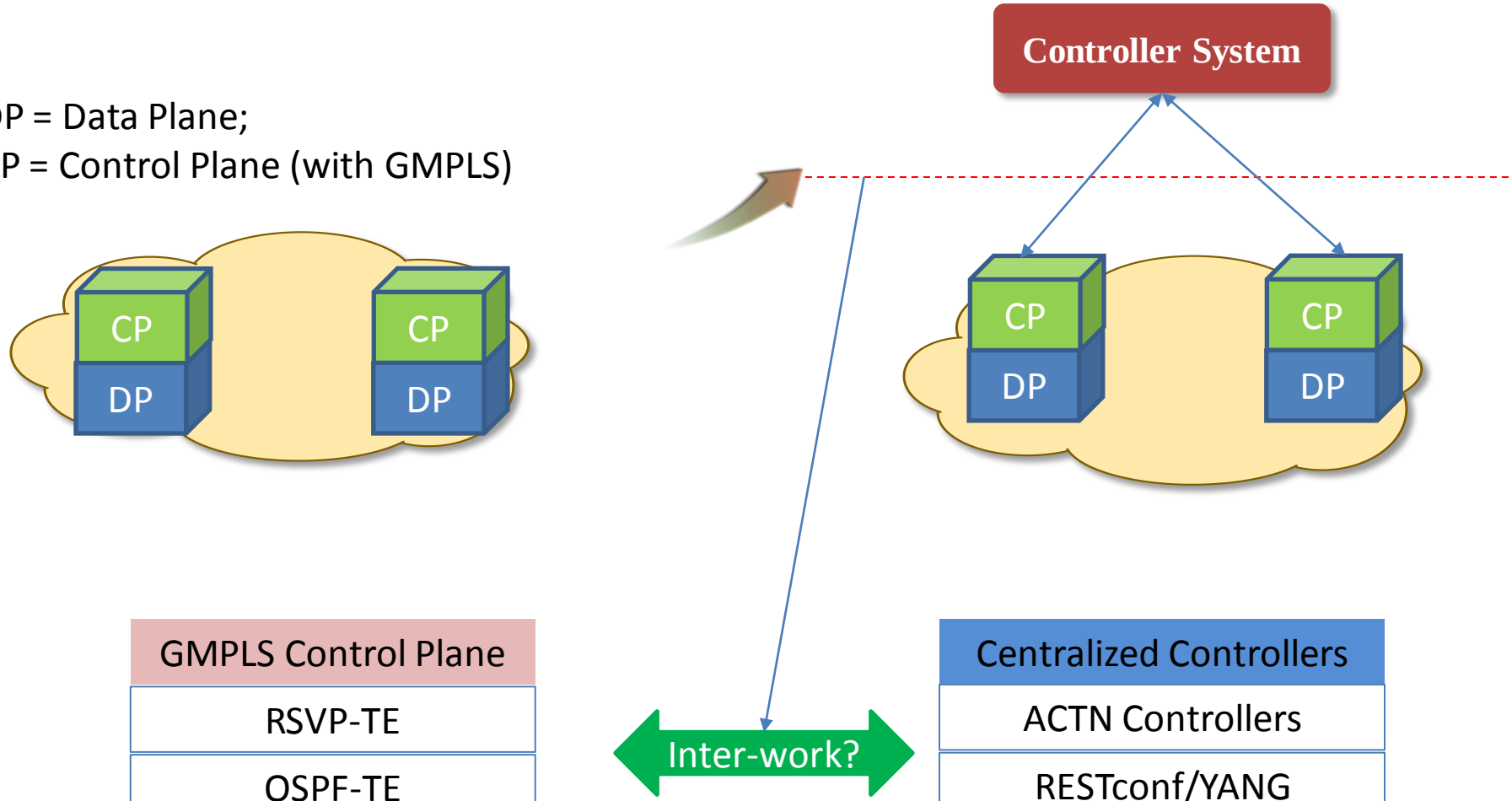
Motivation of this work

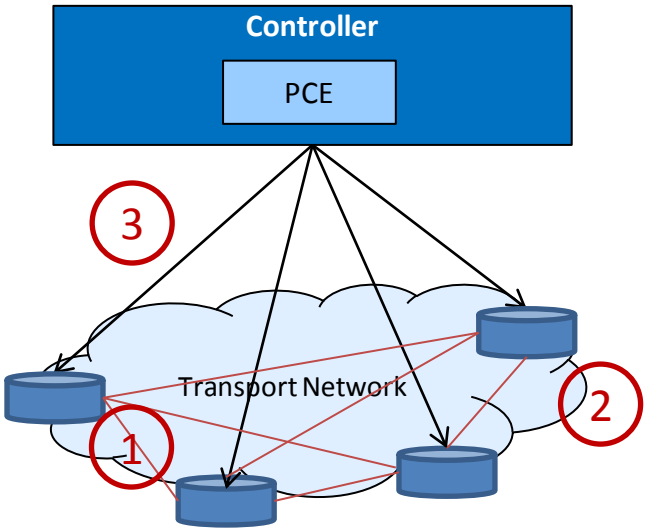
DP = Data Plane;
CP = Control Plane (with GMPLS)



Changes from -00

- Adding two co-authors;
- Updating the Scenarios that request interwork;
  - Topology Collection & Sync
  - Multi-domain/layer Service Provisioning
  - Controller Reliability
- Make the reference up-to-date;

Scenario - Topology



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: Topo Discovery and info exchange;
2. NE Level: Flooding the info to each connected NE;
3. From PCE/Controller to NE: Interaction between PCE/Controllers to NE;

Scenario – Service Provisioning

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	PCE	PCE
Path Set up	RSVP	RSVP	PCE/Netconf
Resource Update	OSPF	OSPF(NE Level, IF #2) PCEP-LS (NE2PCE, IF#3)	OSPF(NE Level, IF #2) PCEP-LS (NE2PCE, IF#3)
IETF Ref	RFC3473; RFC4872/3/4; And update	RFC8281	RFC8283

Scenario – Controller Reliability

- Problem: once a controller is shut down (and lose the control of its domain), how will the whole system react?
  - Controller Federation: use a pre-assigned back-up controller or allocate another controller after the problem;
    - This approach may need some new work;
  - Functionality Backup on NE: switch to ‘distributed control plane’ mode.
    - This approach uses existing solutions with little new work;

Summary & Next Step

- Have received good support last time;
- Expectation for consensus on:
  - In some scenarios, centralized and Distributed protocols could be complementary with each others, rather than exclusive of each other;
  - Open to variation on detail in scenarios/protocols;
- Ask for WG Adoption: