

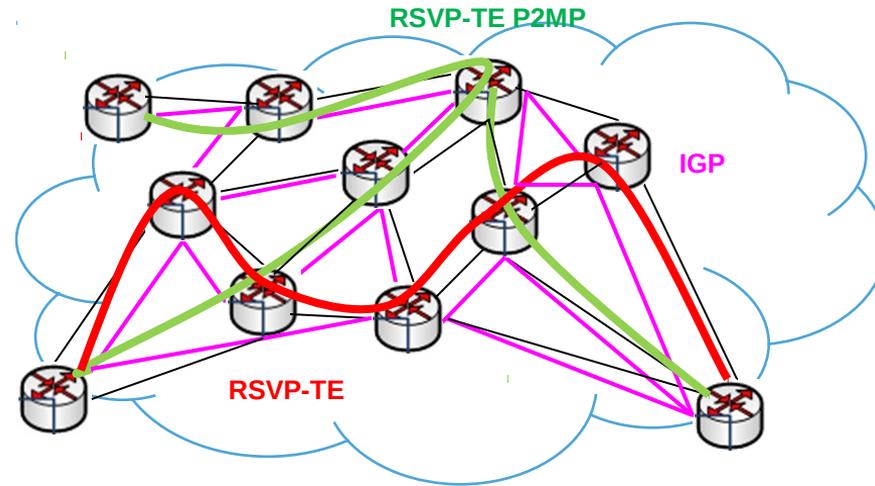
Using PCECC in SDN Environment

- draft-zhao-pce-central-controller-user-cases-01
- draft-zhao-pce-pcep-extension-for-pce-controller-01

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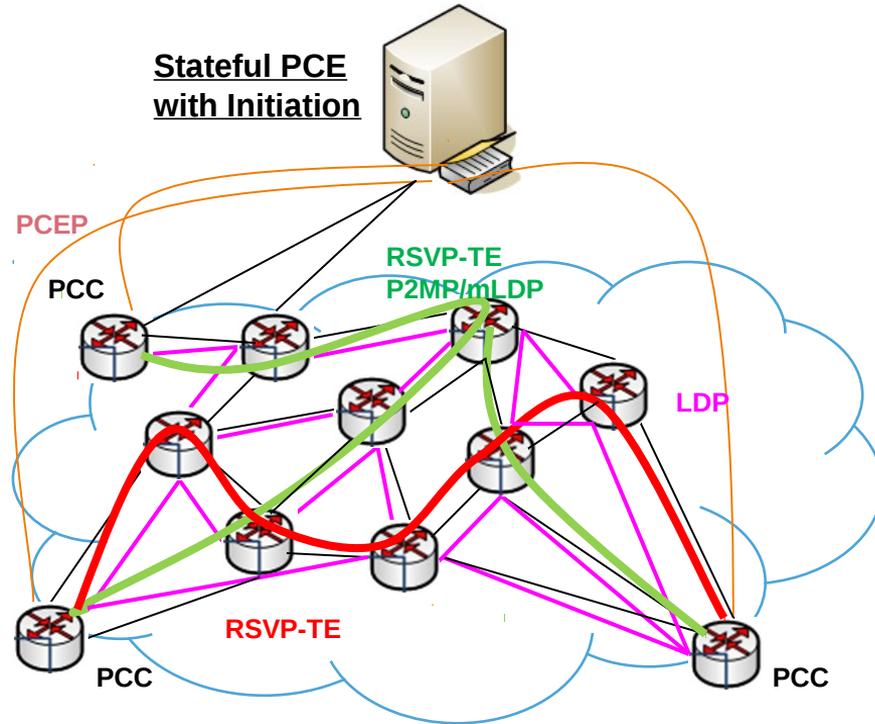
IETF-94 : Yokohama : November 2015

Quick Review 1 :Traditional MPLS Based Traffic Engineering



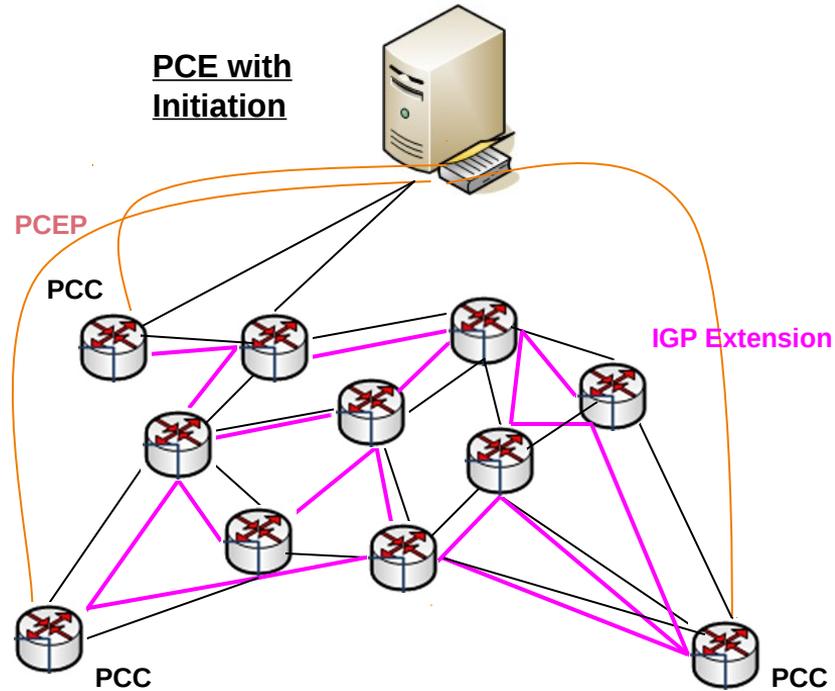
- Current IP/MPLS technologies have their own issues which can not be solved by themselves:
 - The complexity of deployment and maintaining;
 - It is not easy to add new services to the existing network architecture;

Quick Review 2 : Stateful PCE Based Application Aware Traffic Engineering



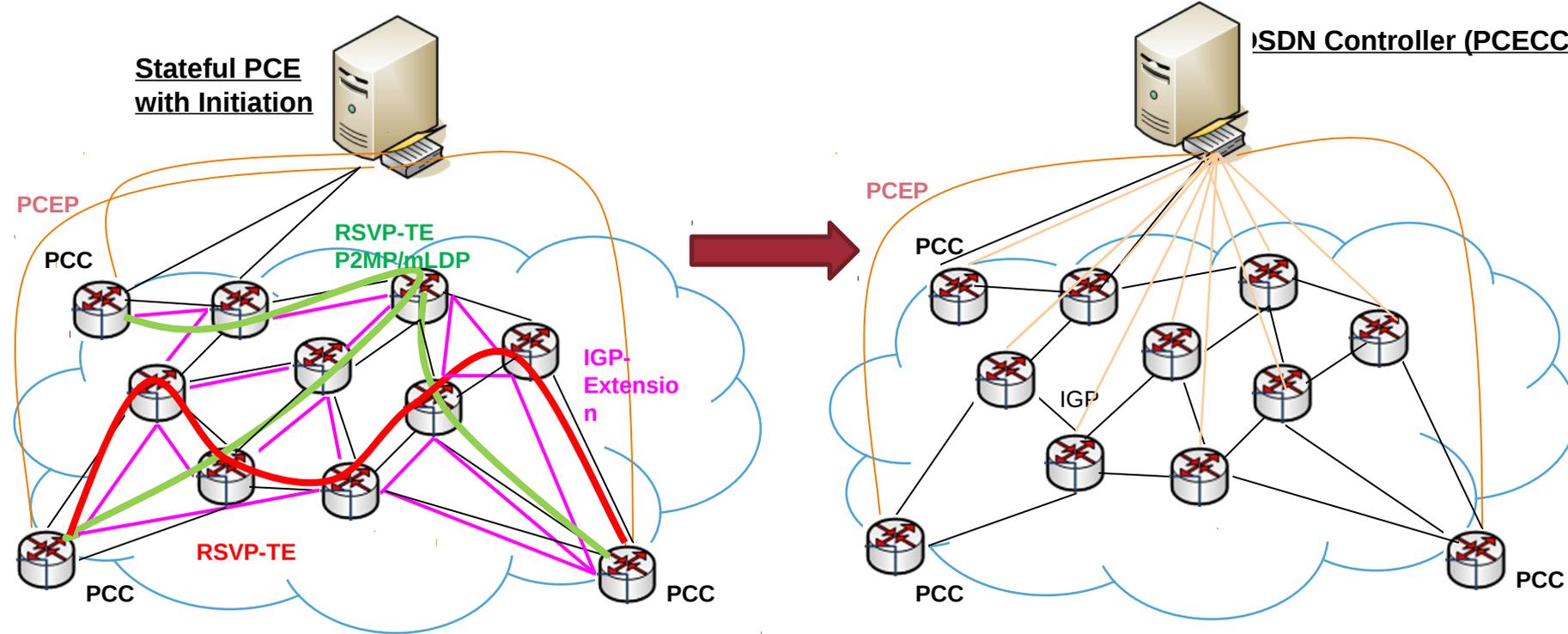
- It is easy to add new services to the existing network architecture;
- The complexity of deployment and maintaining still exist;

Quick Review 3 : IGP Extension Based SR



- It is easy to add new services to the existing network architecture;
- The complexity of deployment and maintaining is removed;
- IGP extension is needed, PCE Extension is needed;
- Only P2P SR-LSP is provided; no CR-LSP provided

Quick Review4 : SDN with PCE Central Controller (PCECC) Component



- Free from MPLS signaling protocols
- PCECC communicates to all nodes
- PCECC responsible for label allocation
- Central controller to provide more app aware services

In Summary:

PCECC is a Practical SDN Solution

Key Points in PCECC

- ❑ Moving tunnel and label resource up to PCE+ server
- ❑ Forwarding path sent from server to the ingress node for SR-TE LSP
- ❑ Forwarding table sent from server to each device directly by PCECC for CR-LSP

Values

- ❑ SDN features supported'
- ❑ no new protocol added into the existing network;
- ❑ All Existing MPLS features including P2P/P2MP/Mp2MP LSPs can be supported;
- ❑ Forwarding device no longer deploy MPLS signaling protocol
- ❑ Forwarding hardware need not be changed
- ❑ Achieved centralization traffic steering
- ❑ Interoperability and coexistence with existing networks

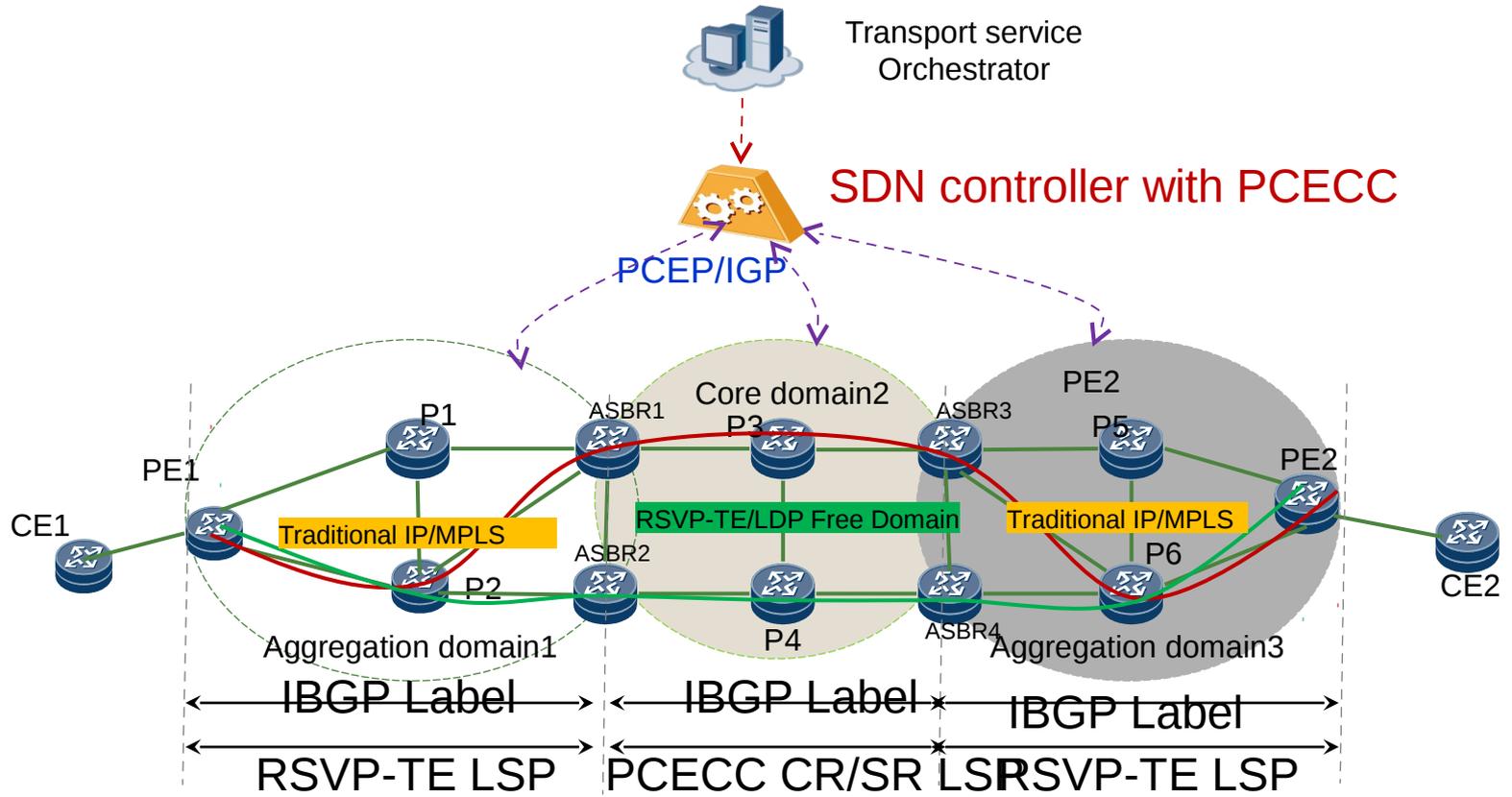
Our Experiments with PCECC

1. MPLS VPN Service

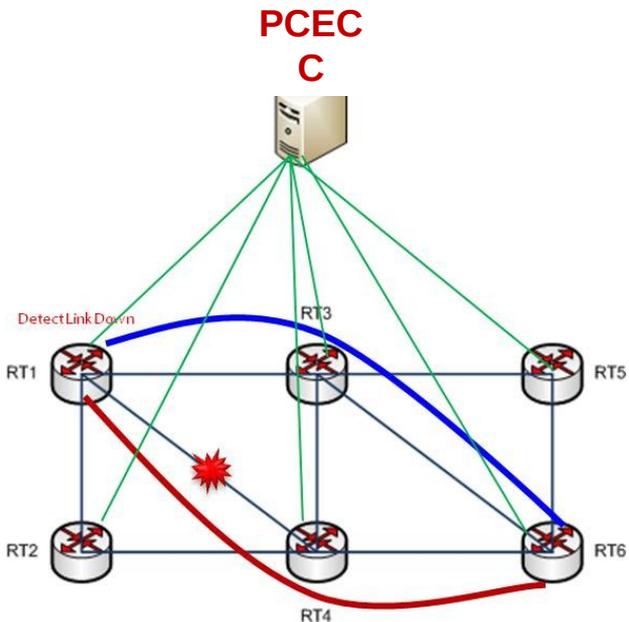
- PCECC CR-LSP
- PCECC SR LSP

2. Performance Analysis

Experiment 1. MPLS VPN Service



Experiment 2: PCECC Performance Test



Convergence Time

The Number of LSPs

