



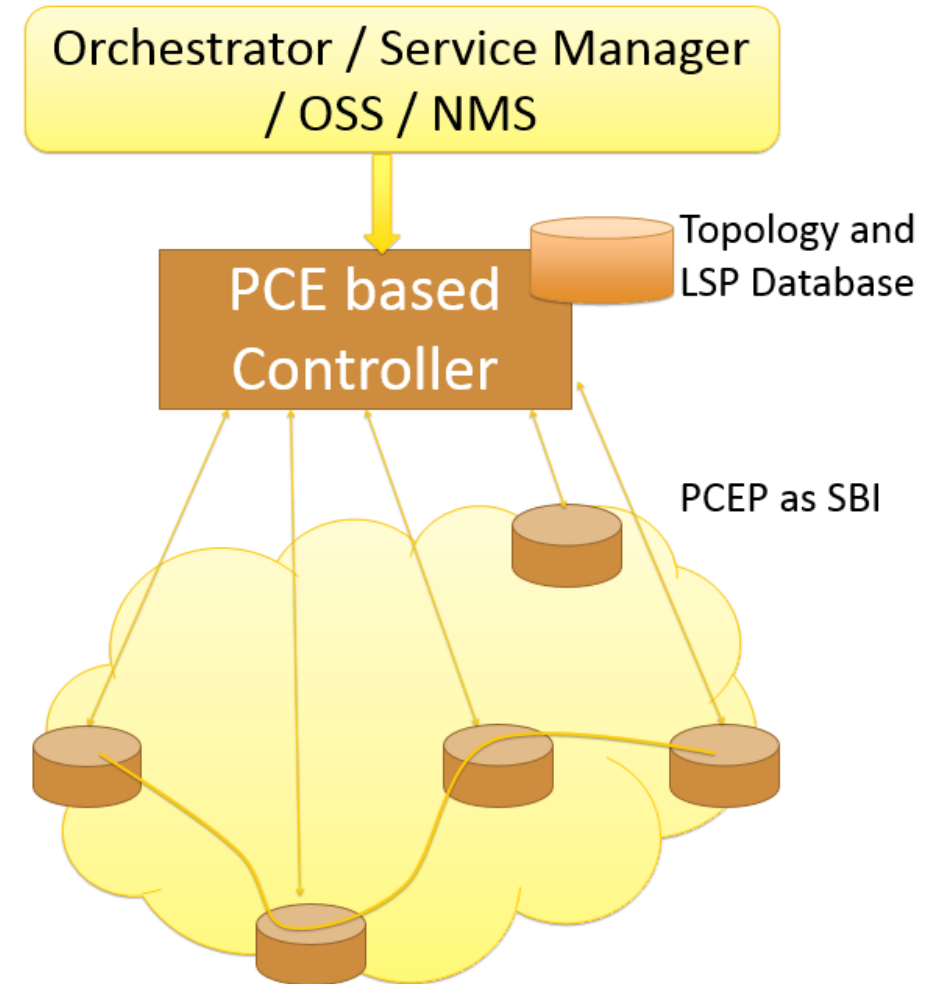
PCE BASED CENTRAL CONTROL

IETF 96 Hackathon Results



PCE BASED CENTRAL CONTROL

- PCE in SDN
 - PCE function is an integral part of any network controller
 - The controller can communicate with a conventional router using PCEP and can also use the same protocol to program individual routers
 - Each router along the path is told what label forwarding instruction to program and what resources to reserve
 - PCE-based controller is responsible to manage some part of label space
- TEAS WG
 - draft-zhao-teas-pce-control-function (candidate for WG Adoption)
- PCE WG
 - draft-zhao-pce-pcep-extension-for-pce-controller
- Participation – Dhruv, Oscar, Diego, Andrea, Boris, Satish
- Remote – Hari, Rama, Mahesh
- Basic Demo
 - <https://www.youtube.com/watch?v=MeWODiWeAJM>
 - <https://www.youtube.com/watch?v=6dnf1imHQYY>



FOR THE HACKATHON

Label DB Sync

- Support Label-DB synchronization procedures with optimization
 - Avoidance and incremental sync
- Implement – [draft-palle-pce-controller-labeldb-sync](#)
- Tested via wireshark –
 - With Huawei Development Sandbox environment
 - When session flaps and no change in labels, the label synchronization can be skipped

PCEPS – PCEP over TLS

- Added TLS security over PCEP
- Implement – [draft-ietf-pce-pceps-09](#) (partially)
- Testing on going...
- Moving from experimentation to standards strack!

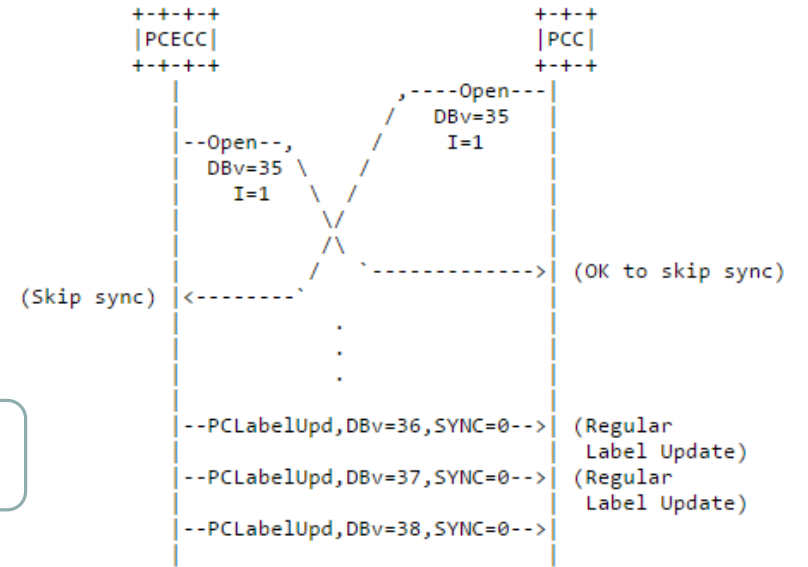


Figure 4: LABEL-DB synchronization Skipped

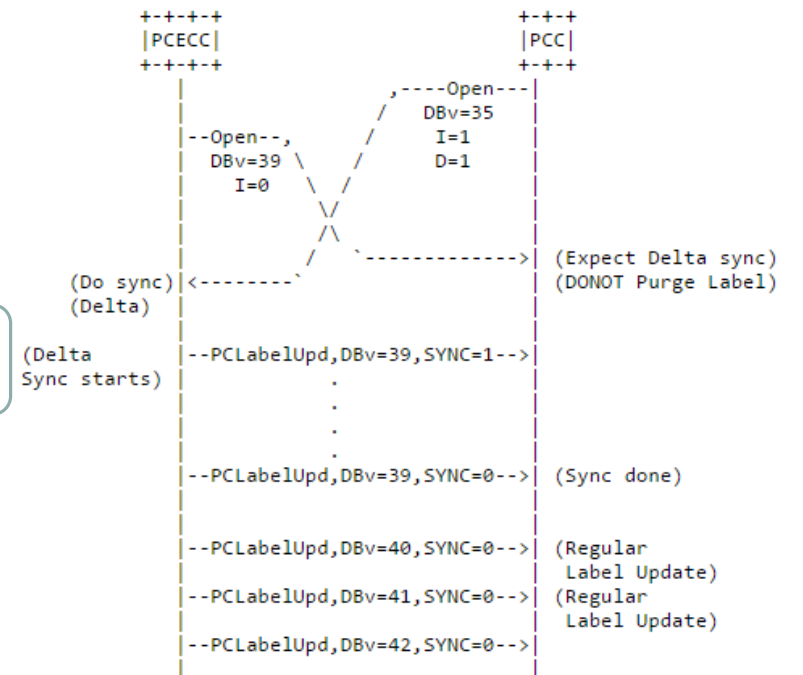
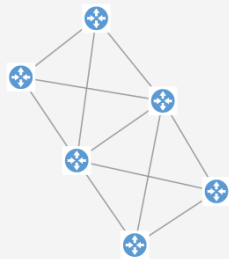
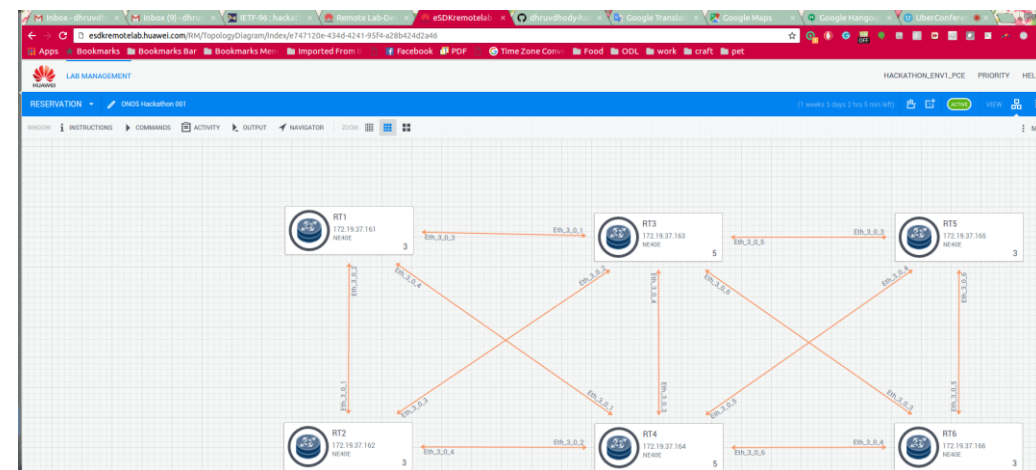


Figure 7: Incremental Synchronization Procedure

DEMO



ONOS Summary	
Version :	1.6.1*
Devices :	6
Links :	22
Hosts :	0
Topology SCCs :	1
Intents :	0
Tunnels :	0
Flows :	0



Full sync

No.	Time	Source	Destination	Protocol	Length	Info
123	9.976441000	172.16.0.29	172.16.4.13	PCEP	60	[TCP Retransmission] KEEPALIVE MESSAGE
141	11.742389000	172.16.4.14	172.16.0.29	PCEP	62	KEEPALIVE MESSAGE
155	12.766708000	172.16.0.13	172.16.0.29	PCEP	62	KEEPALIVE MESSAGE
157	13.083009000	172.16.0.29	172.16.13.16	PCEP	60	KEEPALIVE MESSAGE
161	13.283228000	172.16.0.29	172.16.13.17	PCEP	60	KEEPALIVE MESSAGE
163	14.383143000	172.16.0.29	172.16.13.18	PCEP	60	KEEPALIVE MESSAGE
164	14.383159000	172.16.0.29	172.16.13.13	PCEP	60	KEEPALIVE MESSAGE
169	14.849730000	172.16.4.166	172.16.0.29	PCEP	136	OPEN MESSAGE
171	14.850230000	172.16.0.29	172.16.4.166	PCEP	104	OPEN MESSAGE
172	14.861796000	172.16.0.29	172.16.0.29	PCEP	62	KEEPALIVE MESSAGE
173	14.862055000	172.16.0.29	172.16.4.166	PCEP	60	KEEPALIVE MESSAGE
174	14.867459000	172.16.4.166	172.16.0.29	PCEP	96	Unknown Message (10).
175	14.882623000	172.16.0.29	172.16.13.12	PCEP	60	KEEPALIVE MESSAGE
176	14.882855000	172.16.0.29	172.16.4.166	PCEP	104	Unknown Message (226).
177	14.882886000	172.16.0.29	172.16.4.166	PCEP	104	Unknown Message (226).
179	14.886343000	172.16.0.29	172.16.4.166	PCEP	452	Unknown Message (226).
187	15.683266000	172.16.0.29	172.16.6.13	PCEP	60	KEEPALIVE MESSAGE
202	18.375050000	172.16.4.12	172.16.0.29	PCEP	62	KEEPALIVE MESSAGE

Only end of sync marker

No.	Time	Source	Destination	Protocol	Length	Info
6	0.468320000	172.16.0.29	172.16.4.12	PCEP	60	KEEPALIVE MESSAGE
7	0.468352000	172.16.0.29	172.16.4.14	PCEP	60	KEEPALIVE MESSAGE
8	0.468357000	172.16.0.29	172.16.4.11	PCEP	60	KEEPALIVE MESSAGE
9	0.468386000	172.16.0.29	172.16.4.13	PCEP	60	KEEPALIVE MESSAGE
17	1.067805000	172.16.0.29	172.16.6.13	PCEP	60	KEEPALIVE MESSAGE
46	4.614260000	172.16.6.13	172.16.0.29	PCEP	62	KEEPALIVE MESSAGE
48	5.124394000	172.16.4.12	172.16.0.29	PCEP	62	KEEPALIVE MESSAGE
77	6.940156000	172.16.4.166	172.16.0.29	PCEP	136	OPEN MESSAGE
79	6.940654000	172.16.0.29	172.16.4.166	PCEP	104	OPEN MESSAGE
80	6.954098000	172.16.4.166	172.16.0.29	PCEP	62	KEEPALIVE MESSAGE
81	6.955167000	172.16.0.29	172.16.4.166	PCEP	60	KEEPALIVE MESSAGE
82	7.012550000	172.16.4.166	172.16.0.29	PCEP	96	Unknown Message (10).
83	7.013284000	172.16.0.29	172.16.4.166	PCEP	92	Unknown Message (226).
107	9.267060000	172.16.13.15	172.16.0.29	PCEP	62	KEEPALIVE MESSAGE
116	9.563067000	172.16.13.14	172.16.0.29	PCEP	62	KEEPALIVE MESSAGE
123	9.801932000	172.16.13.11	172.16.0.29	PCEP	62	KEEPALIVE MESSAGE
125	10.145339000	172.16.6.14	172.16.0.29	PCEP	62	KEEPALIVE MESSAGE
138	11.379781000	172.16.4.13	172.16.0.29	PCEP	62	KEEPALIVE MESSAGE

Link: https://www.youtube.com/watch?v=yT_0hJMRZgA

THANKS!



ASK US FOR A DEMO DURING IETF WEEK!

