

Operational Issues in MPLS backbone network carrying GSM traffic and Solutions

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Pre-requisite

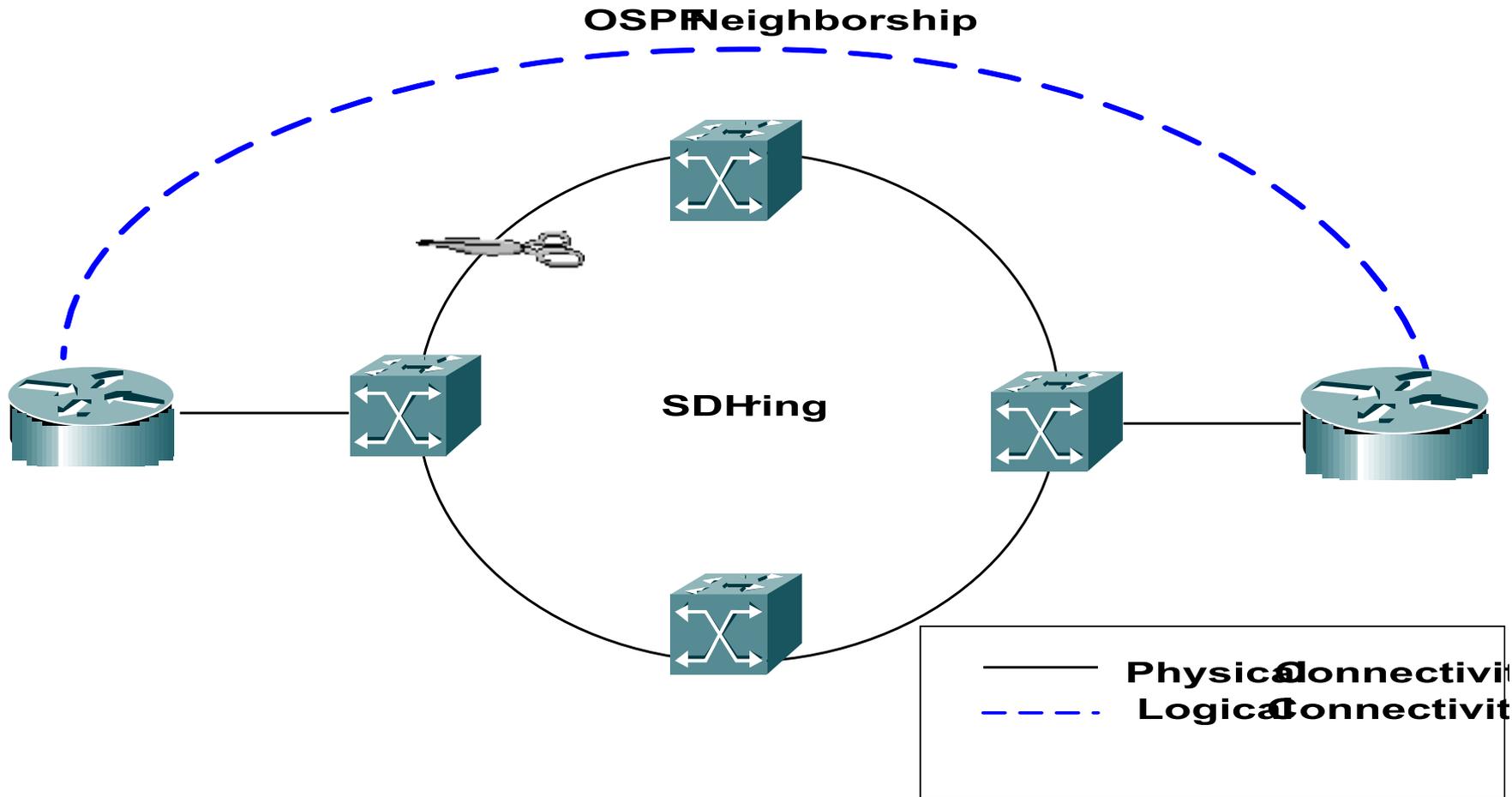
- Basic Knowledge of IP routing Protocols
- Knowledge of MPLS network and related Protocols

Discussed Issues

- š. OSPF neighbourship issue due to MSP switching in SDH network
- š. Black holing of traffic in reconvergence of LDP
- 5. Load-balancing issue due to IGP shortest path selection

1. Problem

- OSPF detect changes before MSP switching in SDH ring and break its neighbourship



1. Impact

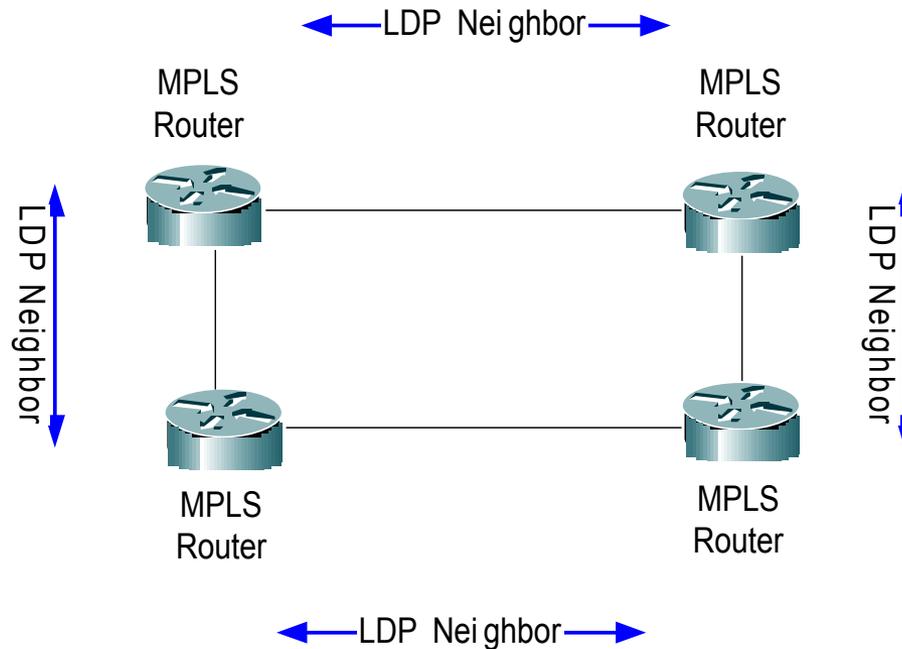
- Change in OSPF neighbourhood will result in all router in the area in recalculating of SPF algorithm.
- Impact on traffic using this link will depend upon the time IGP(OSPF) take to re-converge
- A high frequency of this event will result in high CPU utilization on effected routers

1. Solution

- According to ITU-T standard standards for SDH equipment, maximum time for MSP switching can be 50 msec
- Solution is to hold-off the triggering of SDH alarms up to time that the SDH network take to switch.
- "*pos delay triggers line 60*" command holds off LOS/LOF/AIS for n ms before the command triggers the line down

2. Problem

- IGP converge first and LDP converge after IGP. Traffic coming after IGP convergence to LDP convergence goes to black-hole



2. Impact

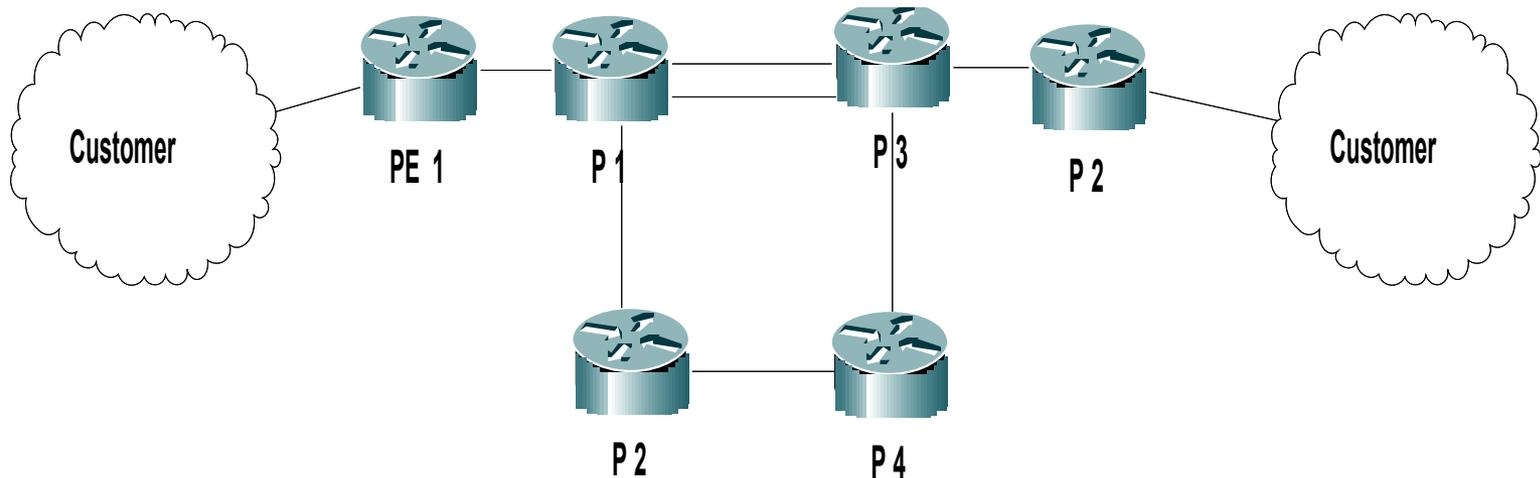
- All the traffic that is being routing on that interface will be dropped until LDP neighbourship formed
- Traffic will drop infinitely if due to some error or misconfigurations LDP is not forming neighbourship

2. Solution

- Inform IGP that LDP is mandatory on that interface, If interface is not LDP enabled then do not count this interface as routable.
- "*mpls ldp igp sync*" command under IGP configurations inform IGP to hold the re-routing of traffic on the interfaces where no LDP neighbourship is formed.
- Further you can remove this condition from specific interfaces by using "*no mpls ldp igp sync*" command on the interface.

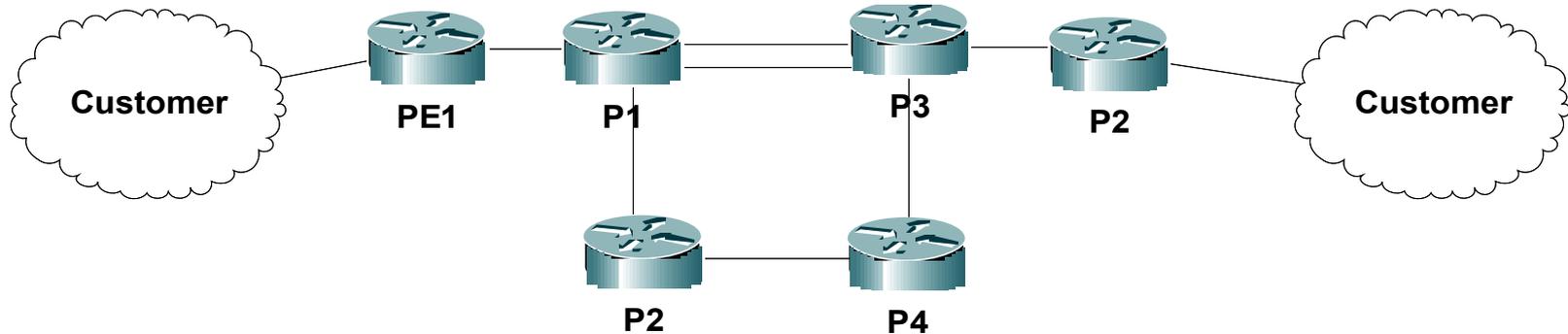
3. Topology

- Customer is sending traffic equally load balanced to PE routers.



3. Problem

- Bandwidth is not equal proportions between P and PE



- How to load balance traffic according to Bw proportion ? Will TE help here ? Can TE help w/o dividing prefix base ?

References

- SONET Triggers

http://www.cisco.com/en/US/tech/tk482/tk607/technologies_tech_note09

- MPLS LDP IGP SYNC

http://www.cisco.com/en/US/docs/ios/12_0s/feature/guide/fsldpsyn.html

- MPLS Traffic Engineering Example

http://www.cisco.com/en/US/tech/tk436/tk428/technologies_configuratio

Thank You