

Deterministic Networking (DetNet) Controller Plane - VPFC Planning Information Model Based on VPFP in Scaling Deterministic Networks

draft-guo-detnet-vpfc-planning-02

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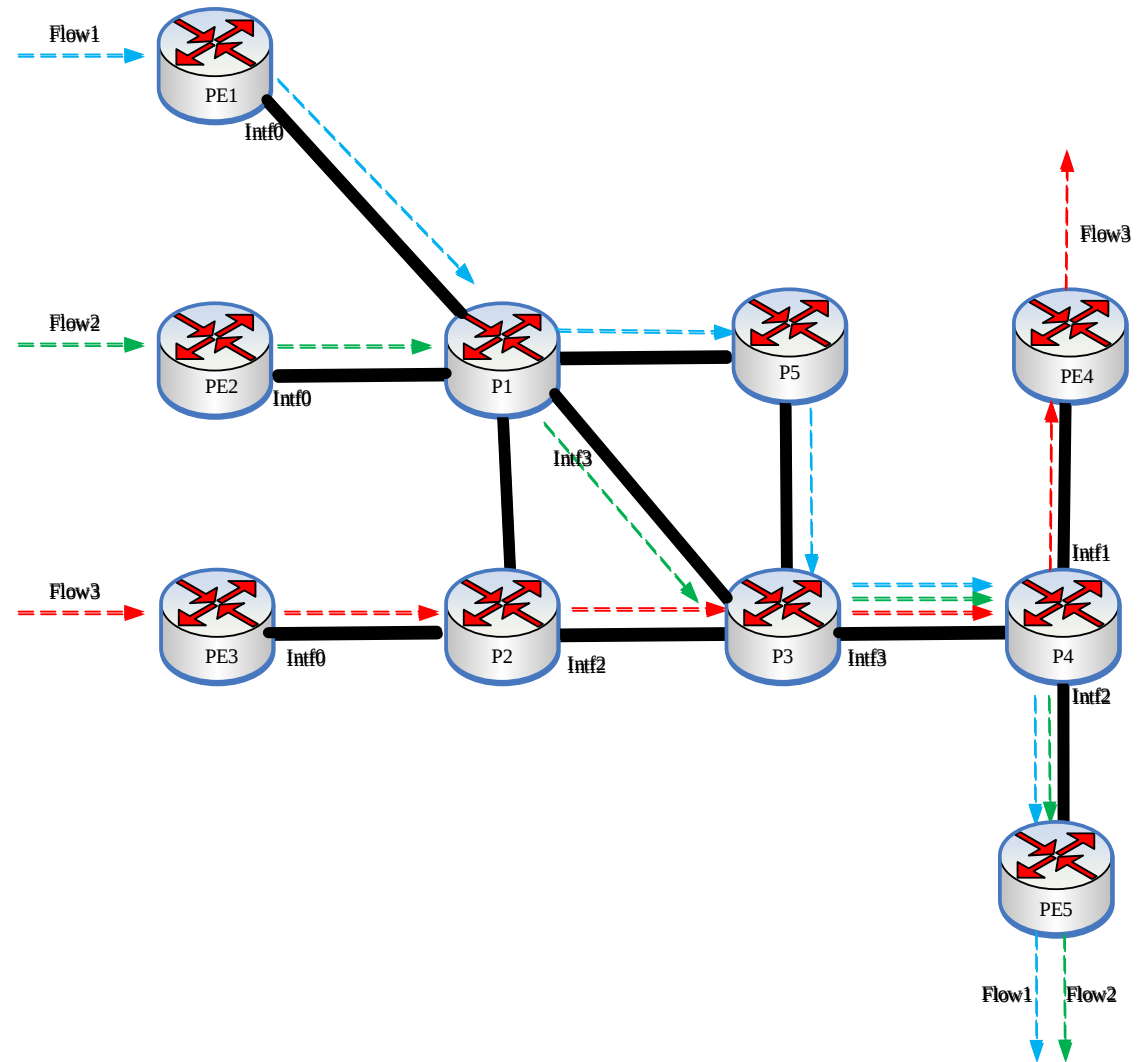
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Use Case

- In Scaling DetNet, non-linear topology will make queuing resource collision problem more difficult to solve
- When conflict happens on the converged point, change the planning cycle of the head node and perform cycle calculation to eliminate the collision



Modeling



VPFP&VPFC

VPFP

- **Virtual Periodic Forwarding Path (VPFP)** : In the forwarding path, the virtual path forwarding based on the cycle and the mapping relationship between cycles is called a VPFP. The VPFP has the following characteristics:
- The outbound interface of each node in the forwarding path supports cycle-based forwarding;
- In each segment link of the path, there is a mapping relationship between the scheduling cycle of the outbound interface of the upstream node and the scheduling cycle of the outbound interface of the downstream node

VPFC

- **Virtual Periodic Forwarding Channel (VPFC)** : A forwarding channel established on VPFP. The basic elements of a VPFC are:
- VPFCID(VPFC Identifier). VPFCID is an integer that uniquely identifies a VPFC within the same deterministic periodic forwarding domain;
- VPFP. VPFP is the path that carries the VPFC;
- Cycle Info. Cycle Info contains the scheduling cycle and the resources corresponding to the scheduling cycle, describes the bandwidth and periodicity characteristics of the VPFC, and is the result of resources reservation

Benefits

- To realize the resources planning model as part of DetNet controller plane which meet the requirement of CSQF, TCQF or Timeslot etc.
- The head node of VPFP schedules the data of the DetNet flow according to the cycle resources owned by the VPFC to which the DetNet flow belongs
- Resources reservation and recycling are transparent for network nodes. Make the implementation of resources reservation for data plane devices as lightweight and stateless as possible
- VPFC can be shared by multiple app-flows

Recent Update

- Welcome ZTE Xiong, Quan
- Change the topic from “Deterministic Networking (DetNet) Controller Plane– VPFC Planning Scheme Based on VPFP in Largescale Deterministic Networks” to “Deterministic Networking (DetNet) Controller Plane - VPFC Planning Information Model Based on VPFP in Scaling Deterministic”
- Change the description of Introduction, including adding reference of TCQF, modifying the reference file name of TCQF and from scheme to information model
- Redefine Forwarding Path, and modifying the define of VPFP

Next step

- Add description of configuration info model for swap mode
- Extend the planning model to improve resource utilization efficiency
- Your comments, suggestions are always welcome

Thank you!