

DetNet Controller Plane Framework

draft-malis-detnet-controller-plane-framework-05

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IETF 109

Background & Purpose

- Background:
 - The DetNet Architecture defines the DetNet Controller Plane in Sec. 4.4.2: The Controller Plane corresponds to the aggregation of the Control and Management Planes in RFC 7426 (SDN Layers and Architecture Terminology)
 - Some DetNet drafts (such as the Data Plane Framework) include requirements for the Controller Plane
- Purpose:
 - Compile all DetNet controller plane requirements in one place
 - Provide an overview of possible control plane architecture/considerations and give guidance for following control plane work

Update

- Addressed comments in IETF 108 and WG ML
 - Section 5.2.2 of the document is updated
 - Reference to DetNet MPLS OAM and DetNet IP OAM are added.

Control Plane Requirements

General Requirement:

- Support the dynamic creation, modification, and deletion of DetNet flows.
- Support DetNet flow aggregation and de-aggregation
- Allow flow instantiation requests to originate in an end system
- Scale to handle the number of DetNet flows expected
- Provision flow identification information at each of the nodes along the path

Service sub-layer Requirement:

- Support service protection, such as: packet replication elimination and ordering

Forwarding sub-layer Requirement:

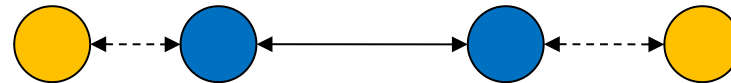
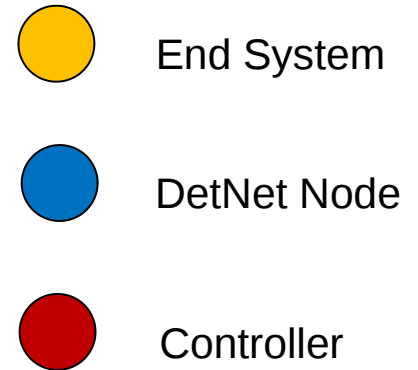
- Advertise static and dynamic node and link resources
- Explicit path and resource allocation
- Queue control techniques

Management Plane Requirements

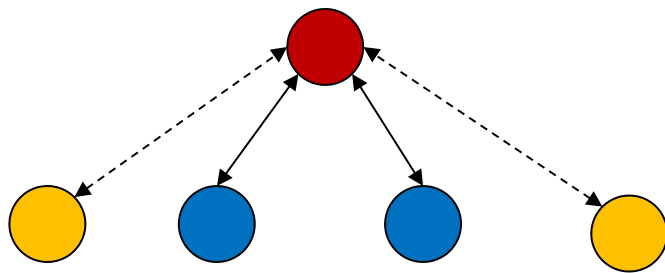
Management Plane Requirements:

- Monitor the performance of DetNet flows and nodes to ensure that they are meeting required objectives, both proactively and on- demand.
- Support DetNet flow continuity check and connectivity verification functions
- Support testing and monitoring of packet replication, duplicate elimination, and packet ordering functionality in the DetNet domain.

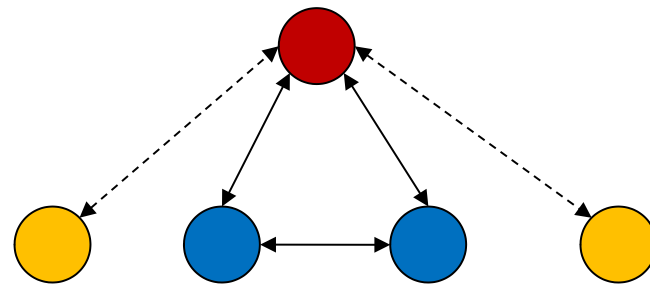
Control Plane Architecture



Distributed Control Plane and Signaling Protocols



SDN/Fully Centralized Control Plane



Combined Control Plane

Control Plane Considerations

- Explicit Paths
 - Path computation
 - Path establishment
 - Strict or loose paths
- Resource Reservation
 - Resource Allocation
 - Device Configuration
- PREOF Support

Management Plane Overview

- OAM for Performance Monitoring
 - Active PM
 - Passive PM
- OAM for Connectivity and Fault/Defect Management (CFM)

Next steps

- Ready to move forward
 - WG adoption

Thanks!