IETF 123 – CCAMP Meeting

Use cases, Network Scenarios and gap analysis for Packet Optical Integration (POI) with coherent pluggables under ACTN Framework.

draft-ietf-ccamp-actn-poi-pluggable-usecases-gaps-01

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Recap on motivatation

- Goal: Faend-to-end SDN control and management of the **including the programmable pluggables** in IP/MPLS routers.
- Work on IETF in pluggable has focus on **scenarios, use cases and modelling work** under general ACTN framework.
- This draft defines the Network scenarios and use cases. It has served as input to the modelling work
- Weekly open calls, led by operators.
- IETF CCAMP Github to track issues:
  https://github.com/ietf-ccamp-wg/draft-ietf-ccamp-actn-poi-pluggable-usecases-gaps/issues

Updates since adoption

- New Scenarios included:
  - **MOPA (Mobile Optical Pluggables Alliance)** https://mopa-alliance.org/ reached out and proposed to include the use of case of coherent pluggables in base stations.
    - The MOPA Transport Scenarios where verified
  - Optical protection scenario
- Formal reference and definition of Operational mode:
  - Included a pointer to draft-ietf-ccamp-optical-impairment-topology-yang-17
- Editorial issues

Main Open issues (1)

- Issue #12: Distinct Characterization of a Pluggable for Planning Purposes
  - **Problem Statement:** To accurately compute detailed physical impairments, a controller or planning tool needs comprehensive information about the pluggable. This enables precise assessment of path feasibility under specific operational modes.
  - Two approaches have been identified:
    - The controller/planning tool retrieves all relevant data from external sources based on inventory information (e.g., part number).
    - The controller/planning tool accesses a “manifest” containing all necessary details, allowing it to operate independently.
  - Proposed path forward:
    - Document the use case incorporating both options.
    - Option 1 aligns with the existing Inventory YANG model (as part numbers are already included).
    - Option 2 necessitates developing a YANG model for the “manifest.”
- Issue #14: Breakout Use Case
  - Programmable pluggables may support breakout into multiple ports. Should a specific use case be introduced to address the additional complexities this presents for modeling?

Main Open issues (2)

- Issue #15 Add use case on maintenance or in-service upgrades at the optical layer
  - In the operators call it was proposed that a common operational use case that might requires reconfiguring pluggable is how to deal with maintence windows or in-service upgrades at the optical layer where the normal operating path is scheduled not to be available
- Issue #42 Avoid sequence:
  - Problem to be solved: The use case is the provisioning of an IP link, including both creating a media channel in the optical layer and configuring the pluggables in the packet devices.
  - Currently, a "workflow" was specified.
  - During the discussions, different workflows were used in the industry.
    - First pluggables, then line system
  - Proposal: rewrite the use case without explicty including the sequence
- Issue #32 Formal Definition of optical disaggregation
  - Best possible reference is IETF docuent optical impairments topology draft
  - Other sources are TIP (non standard). ITU?
- Issue #46 Trigger mechanism
  - Which is the trigger of a new plug-to-plug connectivity on demand? Bandwidth increase in a VPN?
- Editorial issues: (bunch of issues with minor editorial issues)

Main Open issues (3)

- Issue clarify use case with ROADM access link detection #44
  - Problem to be solved: automatically linking the ROADM access link and router without human manual inventory
  - Is this a problem space IETF can do anything? ROADM do not send signals.

- Issue #16: Review by Deborah
  - Incorporate operational considerations into the draft:
    - Ensure network continuity without disruption
    - Software upgrades or maintenance at the packet or optical layer should not impact the other layer.
  - Define security levels for the various entities (IP/Optical)
  - Clarify whether protection/restoration requires further investigation.
  - Include strategies for network-wide multi-layer re-optimization to avoid fragmentation and optimize capacity usage (e.g., RFC5557 offers guidance when employing a PCE).
  - Implement measures to safeguard against network destabilization.
  - Establish procedures to enable graceful deletion across all layers.
  - Develop a fault escalation plan to coordinate responses across layers.
  - Provide mechanisms to aggregate, summarize, and selectively enable or disable inter-layer notifications to prevent overwhelming the controller.

Next steps

- Solve open issues (mostly editorial).
- Collaboration with the Yang solution document solving the use cases & scenarios.
- Decission on