IETF 116 – ccamp Meeting

Applicability of ACTN to Packet Optical Integration (POI) extensions to support Router Optical pluggable interfaces.

draft-poidt-ccamp-actn-poi-pluggable-00*

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* Former draft-mix-teas-actn-poi-extension
ACTN POI Next Steps - Overview

ACTN POI (step 1)
- Inventory, Service and Topology Discovery
- Establishment of L2VPN/L3VPN with TE requirements

ACTN POI (step 2a) – service assurance
- Optical Network failures and degradation
- IP/Optical Edge failures

ACTN POI (step 2b) – pluggable
- Pluggable WDM interfaces on routers
- Same scenarios as in step 1

TEAS WG

CCAMP WG
ACTN POI Next Steps - Motivation

- Interest from operators to analyse applicability of ACTN to additional POI capabilities/architectures
  - Service assurance
  - Pluggable WDM interfaces on the routers
- Why new drafts?
  - Not to overweight the current draft
  - Difference level of maturity of the content
- Why different WGs?
  - POI service assurance impacts both IP and Optical technologies — TEAS WG scope
  - Pluggable impacts O-PNC and P-PNC for optical tunnel setup — CCAMP WG scope
- Keep CCAMP, TEAS and OPSAWG updated
Why draft-poidt-ccamp-actn-poi-pluggable

1. The new DWDM pluggable technology is mature and deployed in field
2. The operators are targeting to have an end-to-end SDN management architecture of the full network including those new DWDM pluggables in the Routers.
3. Extend the draft-ietf-teas-actn-poi-applicability (the parent draft) to networks where the DWDM (pluggable) transceivers are located in the Routers.
4. Define a set of use cases to address as well as their corresponding workflows, identifying possible gaps in terms of YANG models for each use case and provide indications to extend existing Yang drafts
5. Co-ordinate the use cases implementation with draft-poidt-teas-poi-assurance
The network reference

P.N. = Packet Node (Router)
O.N. = Optical DWDM Node
ROADM = Lambda/Spectrum switch
Px = DWDM (coherent pluggable) Router ports

NOTE: terminology to be aligned with specific L0
POI reference NW

NOTE: terminology to be aligned with specific L0
The supported services

The different services supported by the network are shown below.

IP-link = IP service, out of this document scope
Eth-link = Ethernet connection
DCO-link = Pluggable connection (OTSi connection)
MC-link = Media Channel link (MC optical circuit)
The supported use cases

**Inter Domain Link discovery and provisioning**
The inter-layer links are the interconnections (fiber) between the pluggable ports (in the Packet Layer) and the ROADM ports (in the Optical Layer). They are set in the Packet and DWDM nodes either manually (e.g. CLI) or via PNCs. The values identifying the inter layer links may be defined by MDSC which has the visibility of both IP and Optical layers.

**Network topology discovery and provisioning**
MDSC retrieves the packet network topology from the P-PNC and the optical network topology from the O-PNC. MDSC collects and rebuilds the service topology based on the services information coming from P-PNC and O-PNC as described in draft-ietf-teas-actn-poi-applicability. [I-D.draft-ietf-teas-actn-poi-applicability]

**End to End Packet service provisioning / deletion**
MDSC is asked to set a Packet service between two Routers requiring additional connectivity bandwidth.

**Optical Circuit provisioning / deletion**
MDSC is asked to set an Optical Circuit between two router ports (O-PNC will receive the same request from MDSC). This is specially needed during the network installation to provide Connectivity between two Routers, the IP link will be set up later using this optical circuit.

**LAG extension**
MDSC is asked to extend a service bandwidth. This may require more Router optical connectivity.

**Optical Restoration**
O-PNC detects an optical network failure and reroutes the optical circuits to a different path (and lambda).

**Network Maintenance Operations**
MDSC is asked to isolate part of the optical network for maintenance and coordinate the O-PNC and P-PNC to preserve the traffic during the maintenance operation.
Next steps

• Update the draft with the proper IETF terminology (e.g. the terminology in the above pictures is wrong)
• Maintain the GitHub repo to support the DT:
  • https://github.com/ggalimba56/draft-poidt-ccamp-actn-poi-pluggable
• Streamline the use cases set
• Address new use cases like:
  • End to End Performance management KPI
  • End to End Alarm Correlation at MDSC
• Get feedbacks and harmonize the terminology to the “parent draft” and L0 specific drafts (e.g. draft-ietf-ccamp-optical-impairment-topology-yang).
• Open to new authors and contributors
• Keep alignment on draft-ietf-teas-actn-poi-applicability and draft-poidt-teas-poi-assurance
• Give directions to define the (Yang) models to support the Pluggables in Routers (in Yang drafts)
• Start discussion how to progress to a WG adoption

IETF-116 hybrid meeting, March 2023