

Applicability of Abstraction and Control of Traffic Engineered Networks (ACTN) for Packet Optical Integration (POI) service assurance

draft-ietf-teas-actn-poi-assurance-04

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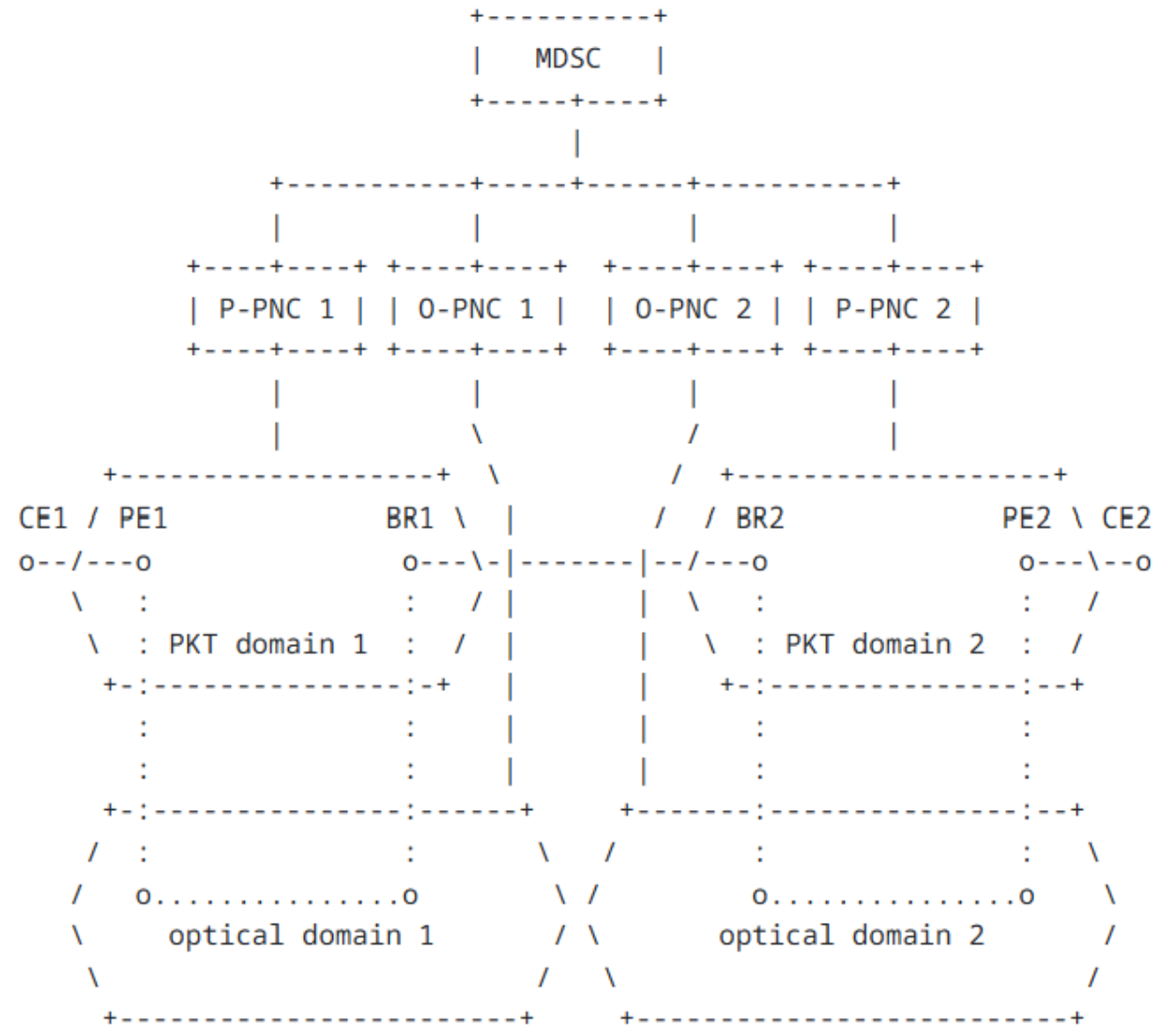
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Motivation

- Packet Optical Integrated Networks Need Multi-Layer Assurance
 - Builds on the work in [draft-ietf-teas-actn-poi-applicability](#)



Need for Multi-Layer Assurance

- Operators increasingly deploy packet over optical networks to support services such as L2VPN and L3VPN requiring strict SLA guarantees
- Failures may occur in either packet or optical layers, or both.
- Service assurance must correlate:
 - Optical degradation
 - IP/MPLS failures
 - Multi-domain operational visibility
- **Goal of the Draft**
 - **Analyse how existing IETF protocols and YANG models support multi-layer service assurance in ACTN-based POI deployments.**

Current Status of the Draft

- Major sections of the document:
 - Reference packet-optical network architecture
 - Applicable IETF YANG data models
 - Fault management scenarios
 - Performance monitoring scenarios
 - Protection and recovery mechanisms
 - Identification of gaps in current standards

Main Changes from v03 to v04

- Editorial and Structural Improvements
 - Clarifications in several sections describing service assurance workflows.
 - Improved alignment with terminology used in the ACTN architecture.
- Improved Gap Analysis
 - Updated discussion of YANG models applicable to assurance workflows.
 - Additional clarification of missing modules and modelling gaps.
- Failure and Performance Scenarios
 - New VPN Service Fault Monitoring section
 - Further refinements to the description of:
 - optical faults
 - correlated failures across layers
- General Improvements
 - Expanded explanations of how ACTN controllers cooperate during assurance operations.
 - Updated references and consistency with related drafts.

Open GitHub Issues

- For your viewing (dis)pleasure: <https://github.com/IETF-TEAS-WG/actn-poi-assurance>
- Issues may be grouped into:
 - Editorial / Clarification
 - Terminology alignment with ACTN architecture
 - Additional explanation of assurance workflows
 - Technical Issues
 - Clarification of YANG model applicability
 - Identification of remaining modelling gaps
 - Scope of performance monitoring metrics
 - Are there additional models that should be referenced?
 - Architecture Questions
 - Role of MDSC vs PNCs in assurance workflows
 - Correlation of packet and optical fault information

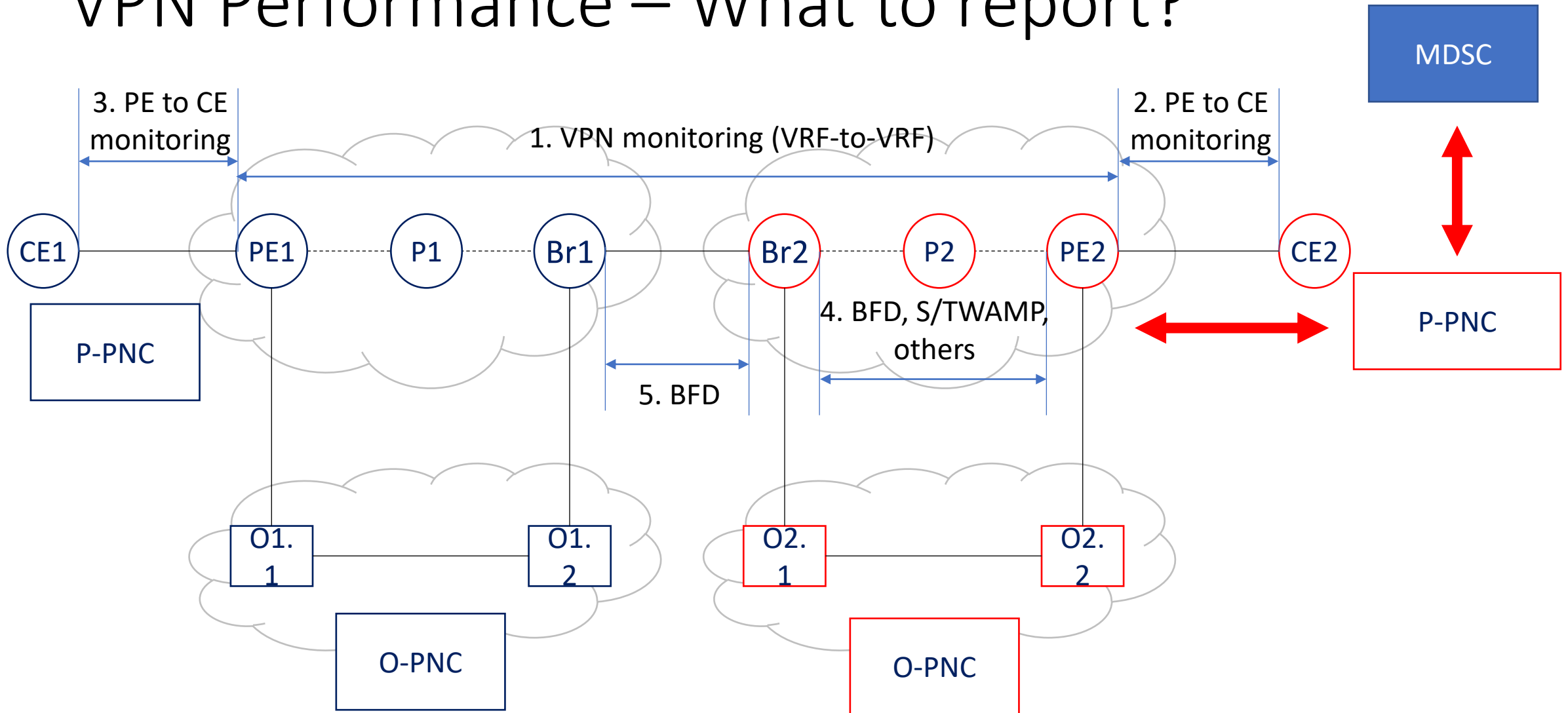
But wait, there is more!

- Non-author agreement of the Operational Scenarios?
 - Are the fault and performance scenarios representative of real deployments?
 - Additional multi-layer failure scenarios?
- Gap Analysis
 - Are the identified gaps accurate?
 - Should additional standardisation work be considered?
- End-to-End VPN Performance Monitoring in ACTN POI
 - See next few slides

End-to-End VPN Performance Monitoring

- Per-domain monitoring alone is insufficient for SLA assurance.
 - Operators require end-to-end VPN performance visibility (CE-to-CE).
 - Monitoring must correlate conditions across technology domains
- MDSC
 - Performs cross-domain correlation and diagnostic, determination of where degradation originates from:
 - access interface (PE-CE)
 - packet domain
 - optical transport domain
- PNC
 - Reports PE port status, counters, and notifications.
 - Enables the MDSC to localise faults and performance issues.

VPN Performance – What to report?



VPN Performance Monitoring and Telemetry

- Plan to update the VPN PM Section with
 - TCA Info
 - End-to-end VPN monitoring (VRF-to-VRF) across domains
 - What to collection and report for Node, Interface, Service, et al.
- Which VPN monitoring mechanisms to use?
 - Polling versus Streaming
 - BFD, TWAMP, STAMP, et al.
- Optical Path Status
 - Monitoring between border routers over optical core
- Reporting operational state
 - P-PNC to MDSC (device and domain-level thresholds)
 - MDSC to CNC (service-level SLA thresholds)

Next Steps

- In no specific order
 - Provide answers/proposals to the VPN Monitoring questions
 - Address open GitHub issues
 - Stabilise document, then polish for readability and succinctness
- Additional reviews and contributions highly encouraged