Integrating YANG Configuration and Management into an Abstraction & Control of TE Networks (ACTN) System for Optical Networks

draft-gstk-ccamp-actn-optical-transport-mgmt

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ACTN for Abstract Management of Optical Networks

• Abstraction and Control of TE Networks (ACTN) [RFC8453]
  • Abstracts TE network resources to provide a limited network view for customers to request and self-manage connectivity services
  • Provides functional components to orchestrate and operate a TE network

• However, ACTN does not include consideration of more traditional management functions:
  • MTOSI/CORBA Interfaces
  • TMF Resource Models
  • Fault, Configuration, Accounting, Performance, and Security aspects of management (known as FCAPS)

• New IETF Inventory models will play a big role in enhanced management
  • Need to leverage the new Inventory models to provide Fine-Grain Network Management for optical networks
Extending ACTN to Support FCAPS

• In ACTN the function of the PNC may be provided by an NMS or an EMS

• In a conventional management system, the OSS uses an interface with the Domain Controller to exchange FCAPS information.
  • Historically, this interface has been based on CORBA/XML
  • Furthermore, in an ACTN system, the OSS is likely the point of origin for policy instructions that guide the MDSC in how it orchestrates customer service requests and configures the network

• In [RFC8453] the MPI is used by the MDSC to instruct the PNCs about how the network must be configured to deliver the customers' services.
  • The MPI also reports to the MDSC on the status of provisioning commands and the availability of network resources

• In the future a Transport SDN Controller (which supports ACTN) will also need to request FCAPS capabilities to lower ACTN components (such as PNC)

• Our document examines how the ACTN architecture can augmented and the MPI extended, to provide FCAPS functions for Fine Grain Network Management
  • Supporting a range of use cases for FCAPS capabilities
    • Leveraging recent CCAMP and IVY data models
    • Using IETF RESTful APIs
Emerging ACTN Management Requirements

- I-D Reference Network Architecture

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ACTN FGNM for Optical Networks

Note that ACTN and ACTN FGNM are not mutually exclusive!
Conclusion

• Evolve legacy MTOSI/CORBA configuration and operation functions, to an ACTN Architecture and Fine Grain Network Management using IETF data models with RESTful APIs
  • Will provide the ability export much more detail from the technology domain and element itself
    • Great for fine grain configuration
    • Troubleshooting and performance management
    • Node and network resource optimisation
    • Still retains the abstract control functions of ACTN

• Already received feedback since posting the I-D
  • “Is this only applicable to optical networks?”
  • “You did not include [insert my YANG model]”
  • “Do we need to extend the existing abstract models, or will we need new ones?”

• Early work, still much more investigation needed
• Any questions?