Inter-Carrier OAM Requirements
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Motivation

- Inter-carrier OAM requirements are not considered <u>independently</u> of intra-carrier (single carrier) requirements.

- Carriers (i.e. Network Access Operators/ Network Service Providers) can become the <u>bottleneck</u> for OAM mechanism deployment due to e.g.

  - privacy considerations
  - business issues
  - information confidentiality
  - lack of cooperation interest
  - risk on reliability
  - different intra-domain OAM monitoring preferences
  - interoperability issues due to different transport technologies used etc.

Aim

- To support the operational regional scope of OAM mechanism proposals e.g.

  - Single Technology, Single Carrier
  - Multi-Technology Environment
  - Multi-Carrier Environment

- To differentiate between single carrier and inter-carrier OAM requirements.

- To differentiate Inter-Carrier requirements derived from inter-operability versus business interworking considerations:

  - Technological aspects related to Inter-Carrier Inter-operability issues between e.g. IP/MPLS, MPLS-TP, Ethernet, OTN etc.

  - Technical requirements derived from Inter-Carrier business/commercial considerations i.e. to support Inter-Carrier OAM agreements.
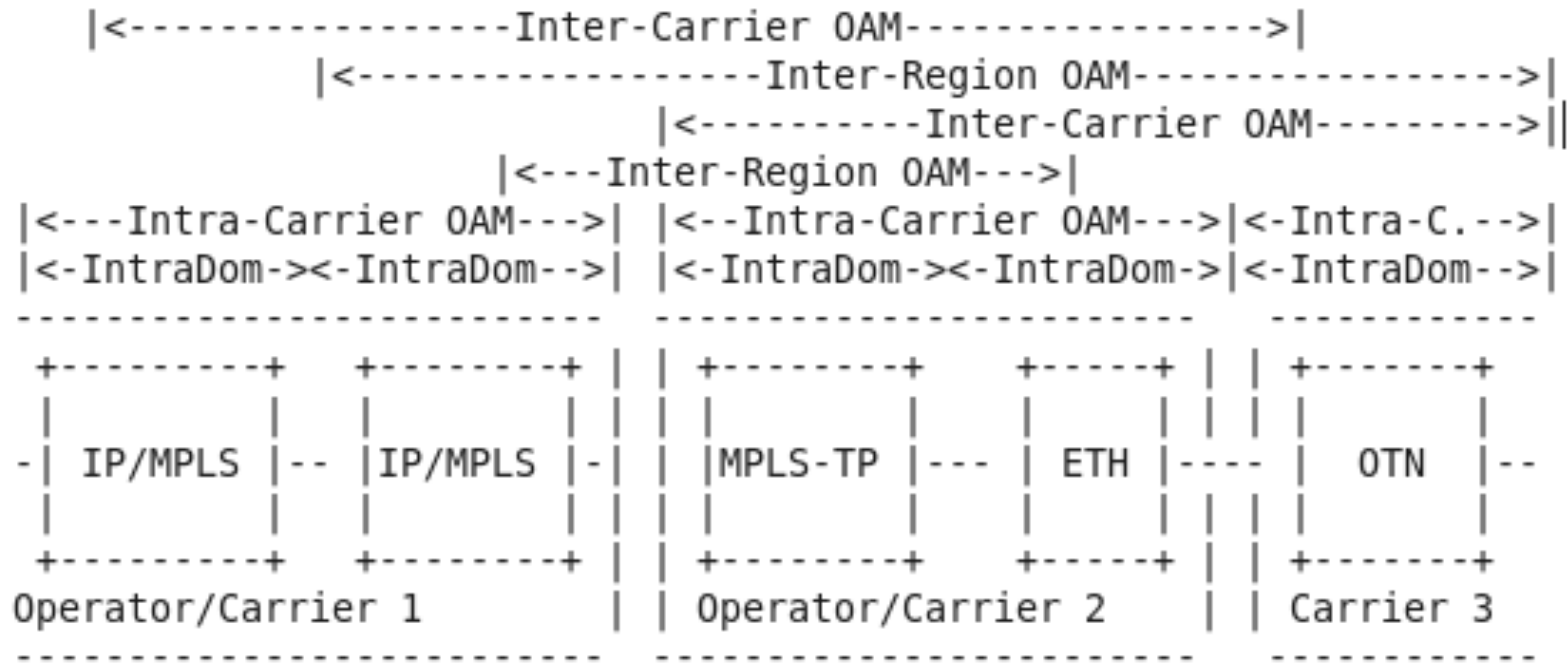
To define the
OAM Operational Area Scope

```
|<-------------------Inter-Carrier OAM---------------->|
         |<--------------------Inter-Region OAM-------------------->|
               |<----------Inter-Carrier OAM--------->||
         |<---Inter-Region OAM--->|
|<---Intra-Carrier OAM--->|  |<--Intra-Carrier OAM-->|<-Intra-C.-->|
|<-IntraDom-><-IntraDom-->|  |<-IntraDom-><-IntraDom->|<-IntraDom-->|
-------------------------    -------------------------  ------------

+---------+   +---------+ |  | +---------+   +-----+ | | +-------+
|         |   |         | |  | |         |   |     | | | |       |
-| IP/MPLS |-- |IP/MPLS |-| |  |MPLS-TP |--- | ETH |----  |  OTN  |--
|         |   |         | |  | |         |   |     | | | |       |
+---------+   +---------+ |  | +---------+   +-----+ | | +-------+
Operator/Carrier 1       |  | Operator/Carrier 2    | | Carrier 3
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Figure 1 End-to-end OAM Operation Areas Definitions

- Definining OAM Operational Area Scope is one of the items under discussion.

Differentiate between single carrier and inter-carrier OAM requirements

- The draft attempts to list all single carrier, single technology requirements identified within IETF, ITU-T, MEF and IEEE.

- A similar paradigm is followed where requirements are split into:
  - Architectural
  - Functional
    - Link Failure based
    - Performance Degradation based

- Moreover the draft wants to address
  - Network OAM vs Service OAM where the latter will be of interest for end-to-end inter-carrier service scenarios

Inter Carrier OAM Requirements addressed so far

- A. Inter-carrier OAM system should be supported by MEs that are handled by different operators (carriers).

- B. Inter-carrier OAM system should provide in-service reliable means to the network service providers (NSPs) to prove, in case of failure, which is the failing transit carrier or transit NSP etc.

- C. Inter-carrier OAM system should provide optional in-service notification messages that could be used to inform on-path service NSPs of other on-path NSPs service degradation.

- D. Inter-carrier OAM system should provide reliable means to measure an NSP's out-of-service provisioning duration; such measurement could be agreed by all involved parties.

- E. Inter-carrier OAM should provide means for confidentiality and privacy between involved carriers.

- F. Inter-carrier OAM should have the option of disclosing information forwarded by transit NSPs that are not involved under the same inter-carrier OAM agreement.

Some questions and
Open Issues from the mailing list

- How the OAM system can monitor QoS Degradation at the different carriers?

- Do we propose OAM monitoring points at interconnection points in a multi-operator scenario?

- How the OAM system is informed by the QoS-enabled network transport service on performance degradation?

Well the draft is on requirements, it doesn't propose an OAM solution or mechanism as such. These questions are of interest however and should be examined for possible further inter-carrier OAM requirements.

Thank you !