

IP Services Liaison to IETF IDR and BESS WGs



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We would like to inform you that during our 1Q2016 meeting, MEF approved a new project on IP Service Attributes. We previously liaised this to the IETF Ops area and the L3SM, IPPM and MPLS working groups. However, it has been brought to our attention that the IDR and BESS working groups may also be interested in this work. We have set out some background and further details below.

MEF is well known for the definition of Carrier Ethernet (CE) services (in [MEF 6.2](#), [MEF 33](#) and [MEF 51](#)) based on service attributes (defined in [MEF 10.3](#) and [MEF 26.1](#)). In MEF terms, a "service" refers to the set of attributes and their values that are agreed between the provider of a service and the customer of that service. These attributes are independent of how the service is implemented; for example a CE service could be implemented using Provider Backbone Bridging (802.1Q) or using VPLS (RFC 4761/4762) to provide the connectivity across the service provider's network. MEF defines both end-to-end services agreed between a subscriber and a service provider, where the end points are all User-Network Interfaces (UNIs), and inter-provider services supplied by one service provider or operator to another, where the end points may be UNIs or External Network-Network Interfaces (ENNI).

Although IP Services are widely deployed, there is currently no standard definition of the attributes and values used to describe them. Each Service Provider has their own way of describing IP services (including in some cases their own terminology); this makes it hard for customers to compare service offerings from different providers, and in particular makes it hard for providers to interconnect with each other – each Service Provider must form a specific bilateral agreement with each other Service Provider they wish to connect with.

Furthermore, there is a desire among service providers to improve service delivery times by automating the service ordering and configuration process. This is a key aspect of MEF Lifecycle Services Orchestration (LSO). The aim of MEF LSO is to deliver the MEF Third Network vision, to provide Assured, Agile and Orchestrated connectivity services of all types in a consistent way. MEF LSO enables automation and orchestration of service ordering and management between service providers ("East/West interfaces") through the creation of standard data models and APIs. However, a pre-requisite for defining those is to have a standard definition of the service that is to be managed.

The new project is intended to address these issues by providing a standard definition of IP Services, including both end-to-end services and inter-provider services, through the definition of a standard set of Service Attributes that can be used in each case. The scope is limited to

IP-VPN and Internet Access services (IP peering/transit for internet traffic is precluded). The same approach is being taken as for Carrier Ethernet services, i.e. the service attributes define the externally visible behaviour of the service, independent of how it is implemented within the network. Of course, in practice managed IP services are generally implemented using MPLS/BGP VPNs; however, this is not mandated.

It is intended that this project is the first step in enabling multi-operator service orchestration of IP Services using MEF LSO, and that later projects will use the Service Attributes to create standard data models and APIs. The intent of LSO is to provide a common framework across different service technologies; MEF is working with TMF and ONF to create common models for services, and the standard data models and APIs for IP Services will tie into this framework.

We have exchanged liaisons with the IETF L3SM working group and are aligning our work with the L3SM Yang model where appropriate. If a future MEF project develops a yang model based on our IP Service Attribute definitions, the intent is that it will be able to extend or augment the L3SM yang model.

The scope of the initial phase of the IP Service Attributes project includes:

- Definition of attributes for IP-capable UNIs and NNIs, for IP Service connections, and for IP Service End Points at UNIs and ENNIs
- IP address allocations and IP control protocols (e.g. DHCP) etc at UNIs
- OAM across the external interface (by reference to IETF protocols and mechanisms)
- Service Level Specification (SLS) definitions including performance monitoring/performance objectives (by reference to IETF protocols and metric definitions)
- Redundant links at an external interface (Subscriber/Service provider or between Service Providers), including options for different routing protocols.
- Multi-CoS services (i.e. QoS classification) and classification of Green/Yellow packets including diffserv, Bandwidth profiles, etc.
- IPv4, IPv6 and dual stack services
- Inter-operator IP-VPN services using options A, B or C from RFC4364
- Unicast only (multicast is deferred to a future phase).
- Other topics may be added as the project progresses.

It is important to note that we intend to make extensive reference to existing IETF RFCs where applicable; it is not our intent to specify new protocols or mechanisms where there are existing solutions.

Note: further information about MEF LSO can be found in the LSO Reference Architecture, [MEF 55](#).

We look forward to any feedback you may have and will keep you informed as our work progresses. Please note that the next MEF meetings are:

- August 1-4, 2016 – Boston, USA
- October 24-27, 2016 - Ottawa, Canada