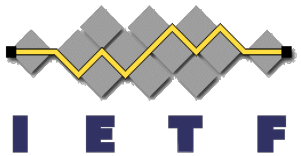
OSPF Transport Instance Extensions

IETF 109, Virtual



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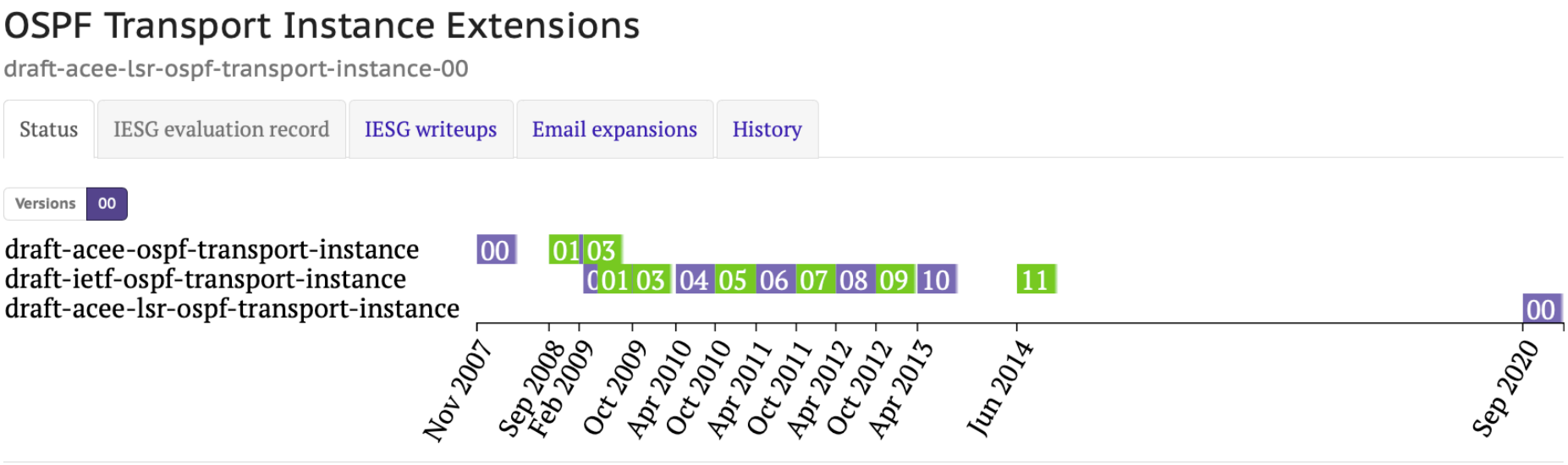
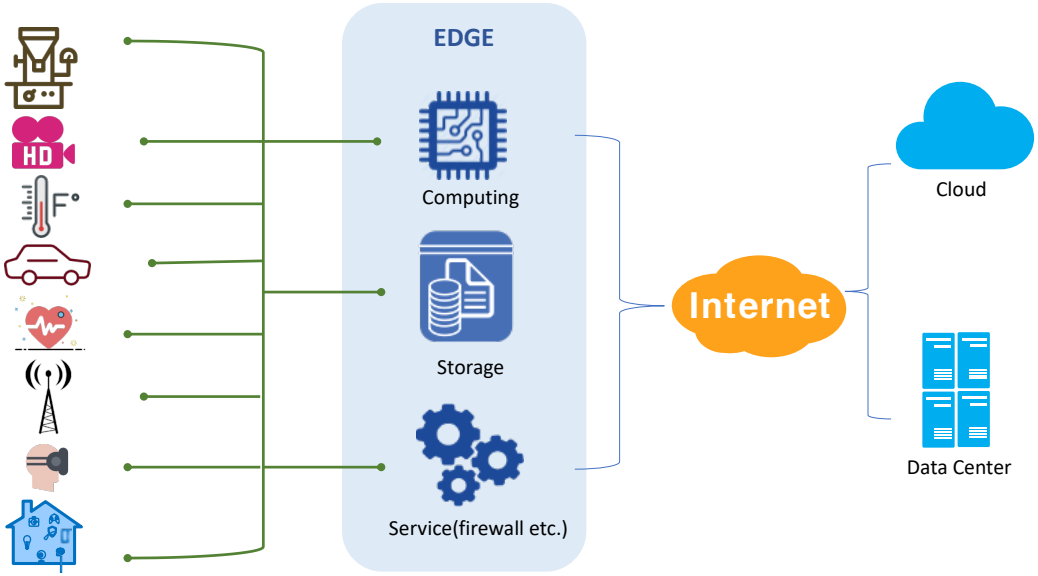
History of this draft



RFC 6823
Advertising Generic Information in IS-IS
describes how generic application information (i.e., information not directly related to the operation of the IS-IS protocol) should be advertised in IS-IS LSPs and defines guidelines that should be used when flooding such information.

Use Cases



MEC Service Discovery

- Auto-discovery of network service
- Service state synchronization
- Resource discovery and utilization

Application Data Dissemination

- OSPF transport instance can be used to populate application related router capabilities/functionalities without impacting the performance or convergence of the base OSPF protocol.

Intra-Area Topology for BGP-LS Distribution

- To limit the number of BGP-LS sessions and achieve full visibility to the complete topology of all the areas.

OSPF Transport Instance - 1

- Packet differentiation
  - RFC 6549, OSPFv2 Multi-Instance Extensions provides the necessary packet encoding for multiple OSPF instances.
  - OSPFv3 supports separate instances within the packet encodings.
- Relationship to normal OSPF instance
  - Condition of reachability
  - Not dependent on any other OSPF instance
- Network prioritization
  - By setting the IP/IPv6 precedence differently for OSPF transport instance packets, normal OSPF routing instances can be given priority during both packet transmission and reception. Up to implementation.

OSPF Transport Instance - 2

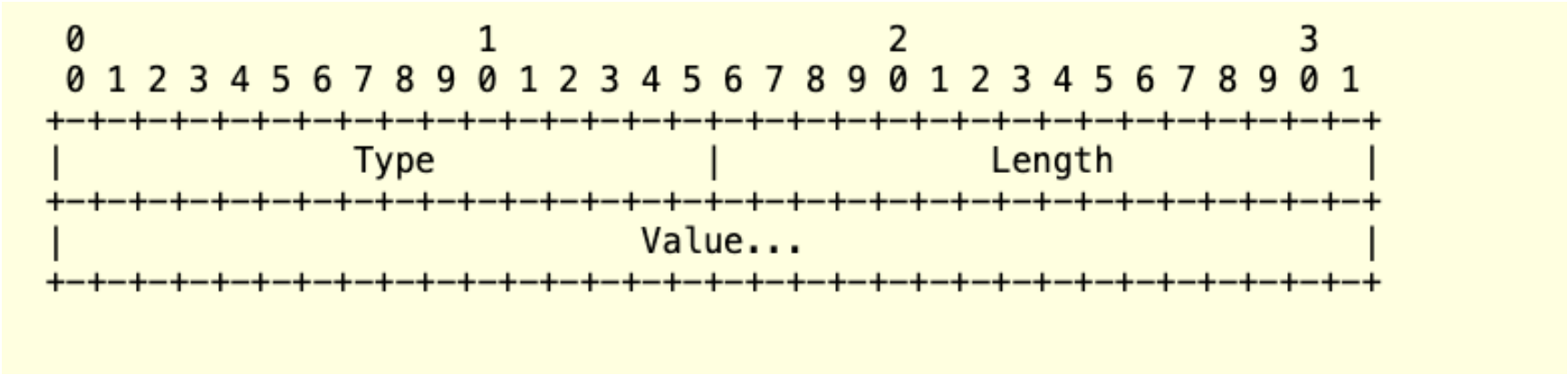
OSPFv2	summary-LSAs (type 3) AS-external-LSAs (type 5) NSSA-LSAs (type 7)
OSPFv3	inter-area-prefix-LSAs (type 2003) AS-external-LSAs (type 0x4005) NSSA-LSAs (type 0x2007) intra-area-prefix-LSAs (type 0x2009)
OSPFv3 Extended LSA	E-inter-area-prefix-LSAs (type 0xA023) E-as-external-LSAs (type 0xC025) E-Type-7-NSSA (type 0xA027) E-intra-area-prefix-LSA (type 0xA029)

LSAs not included in OSPF Transport Instance

OSPF Transport Instance - 3

- Non-Routing Sparse Topologies
  - only the routers needing to share a set of information need be part of the corresponding sparse topology.
  - **Remote OSPF neighbor**
    - OSPF routers sharing non-routing information may not be directly connected
    - A remote OSPF neighbor's address is configured and IP routing is used to deliver OSPF protocol packets.
- Multiple Topologies

Information Encoding



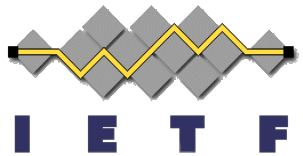
OSPFv2 Transport Instance Information Encoding

Application specific information will be flooded in opaque LSAs as specified in RFC5250.

OSPFv3 Transport Instance Information Encoding

Application specific information will be flooded in separate LSAs with separate function codes. Refer to RFC5340 and RFC8362 for details.

Example of Transport Instance Information



New Server Opaque LSA and OSPFv3 LSA type for Servers identified by address

- Identify servers by application address
- Service ID - Identify supported services
- CPU usage - A threshold-based update is suggested. For example, when the CPU availability is increased/decreased every 10%, and a throttle mechanism SHOULD be used to mitigate oscillations.
- Other server attributes

Next Steps

- Collect and address comments