OSPF Incremental Link State Database Synchronization (draft-retana-ospf-ils-00)

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Motivation

- OSPF has the ability to transport non-routing information to be used by other applications (Opaque LSAs). In order to not impact the convergence of routing information, a simple process is described to incrementally synchronize the routing and non-routing information residing in an OSPF LSDB.
  - The process is applicable to differentiating any two (or more) types of information in an LSDB.

Incremental LSDB Synchronization Process

1. ***LSA Prioritization***

   The contents of the local LSDB are classified to determine which LSAs require **prioritized synchronization**.

   LSAs containing **routing-specific information** SHOULD be classified as requiring prioritized synchronization.

2. ***Prioritized LSDB Synchronization***

   This step corresponds to the **adjacency establishment process** [RFC 2328].

   LSAs classified as not requiring prioritized synchronization MUST NOT be included in DBD Packets during the Database Exchange Process. The OSPF routing table structure SHOULD be calculated at this point.

3. ***Final LSDB Synchronization***

   Any remaining LSAs SHOULD be sync'd. The routers MUST use **Out-of-Band LSDB Resynchronization** [RFC4811].

The process is described in terms of LSAs containing (or not) routing-specific information, but it may be generalized to include any other criteria considered significant in the local network and protocol instance.

The last step MAY be used recursively to achieve an incremental LSDB synchronization through different types of data, making it also applicable to environments where only non-routing information exists.

Graceful Restart

- Graceful OSPF Restart (OSPFv2[RFC3623]/ OSPFv3RFC5187]
  - No changes to the adjacency establishment process.

  - ILS can be used by the Helper Neighbor during the Grace Period; if so, then the Helper Node MUST include any Grace- LSAs in the DBD Packets during the Prioritized LSDB Synchronization step.

- OSPF Restart Signaling [RFC4812]
  - Defines a mechanism to inform neighbors about a local restart, in which the LSDB synchronization is achieved using OOB Resync.

  - The Prioritized LSDB Synchronization step would use OOB Resync if the non-restarting router uses ILS. No other changes to the process are needed.

Backward Compatibility

- The operation of ILS depends on the support of OOB Resync during synchronization. If not supported by one of the routers, then the LSDB synchronization would fall back to the default adjacency establishment process.

- If OOB Resync is supported, but ILS has not been implemented by all the routers involved, the operation is still backwards compatible.
  - The process depends on the database description by the local router.
  - A router may decide to not fully describe the contents of its LSDB to its neighbor during the adjacency establishment process, and later use OOB Resync to incrementally describe the difference; the receiver doesn't need to be aware of ILS.

Next Steps

- Adopt as a WG Document
  - Category: Informational

  - The process complements the use of multiple instances. It is not intended as a replacement.