IS-IS Multicast Synchronization Digest

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Digest Proposal

- High quality LSP digest, based on a cryptographic hash function (e.g. SHA-256)
  - Normalize each node LSP information to a fixed-size quantity

- Topology digest is the XOR of all the digests of the LSPs in the LSP database for the area
  - Order independent
  - Supports incremental updates

- Invalid, expired, or purged LSPs must be excluded
  - LSPs for nodes for which LSP zero is not present or for which LSP zero has a remaining lifetime of 0 are excluded
  - LSPs with checksum errors, with a 0 sequence number, or with a remaining lifetime of 0 or greater than MaxAge are also excluded
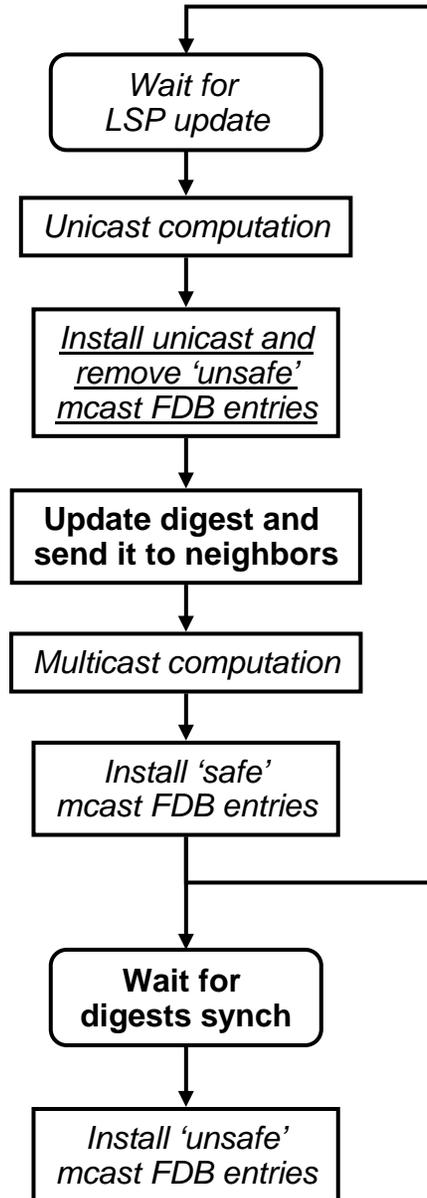
Figure 1

```
                    ┌──────────────────┐
                    │  Wait for        │◄─────────────┐
                    │  LSP update      │              │
                    └──────────────────┘              │
                             │                        │
                             ▼                        │
                    ┌──────────────────┐              │
                    │ Unicast computation │           │
                    └──────────────────┘              │
                             │                        │
                             ▼                        │
                    ┌──────────────────┐              │
                    │ Install unicast and │            │
                    │ remove 'unsafe'   │             │
                    │ mcast FDB entries │             │
                    └──────────────────┘              │
                             │                        │
                             ▼                        │
                    ┌──────────────────┐              │
                    │ Update digest and │             │
                    │ send it to neighbors │          │
                    └──────────────────┘              │
                             │                        │
                             ▼                        │
                    ┌──────────────────┐              │
                    │ Multicast computation │          │
                    └──────────────────┘              │
                             │                        │
                             ▼                        │
                    ┌──────────────────┐              │
                    │ Install 'safe'   │              │
                    │ mcast FDB entries │             │
                    └──────────────────┘              │
                             │                        │
                             ├────────────────────────┘
                             ▼
                    ┌──────────────────┐
                    │  Wait for        │
                    │  digests synch   │
                    └──────────────────┘
                             │
                             ▼
                    ┌──────────────────┐
                    │ Install 'unsafe' │
                    │ mcast FDB entries │
                    └──────────────────┘
```

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Figure 2

IS-IS LSDB

32 byte LSP digest

XOR

32 byte LSP digest

XOR

32 byte LSP digest

XOR

32 byte LSP digest

32 byte LSDB digest