ERICSSON

Path Status Notification

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PCE Should Be Aware of

- Stable network topology
  - When does it become stable?
- Status of forwarding paths
  - Are the shortest paths installed? (When?)
  - Are the Explicit Paths (EP) installed? (When?)
    - Is an EP installed successfully?
    - If not, then which bridge failed?
      - Bridges may automatically roll back in case of failed path installation
  - What is the final path in case of loose hop(s)?

Network Status and Shortest Paths

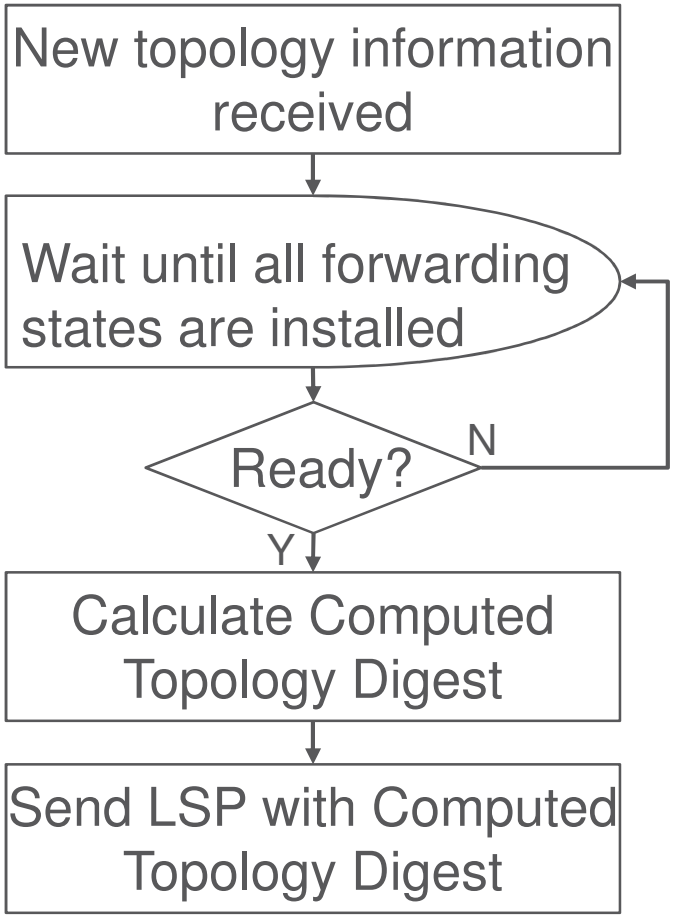
Shortest Paths

- Automatically set-up by ISIS-SPB
  - Same holds for constrained shortest paths if they are maintained by ISIS-SPB
- Computed Topology Digest (28.4.6) indicates the topology view of an SPT Bridge
- Converged, stable network domain → Computed Topology Digest of all SPT Bridges are identical
- **Proposal**
  - **Add SPB Digest sub-TLV to LSPs**
  - **Each SPT Bridge floods its Topology Digest**
  - **LSP receivers, hence PCE(s) are aware of the status of the domain**

LSP with Topology Digest

- SPB Digest is sent when the SPT bridge has finished installing all forwarding states for (constrained) shortest paths
- SPB Digest indicates
  - Topology view
  - State installation
- Identical Digest received from every SPT Bridge ➔ (Constrained) shortest paths are ready for use

- Sending the Digest



Explicit Path Status

Feedback on Explicit Paths

- IS-IS is instructed by a PCE to set-up an EP
- PCE should know what happens to the EP
  → Feedback is required
- Topology Digest is not good enough
  - It does not involve EPs
  - EPs may fail → failure report is required
    (shortest paths are installed sooner or later)

- **Proposal**
  - **SPT Bridges should send result report on EP**
  - **Result report should be included in LSPs**
  - **LSP receivers, hence PCE(s) are aware of the status of the EP**

Result Report on EP

- Strict hop only EP
  - Enough if SPT Bridges involved in the path send successful/failed report
- Loose hops
  - Each SPT Bridge has to send a report
  - SPT Bridges on the path send successful/failed
  - SPT Bridges not being on the path send “No Action Taken”
  - LSP receivers, hence PCE(s) become aware of the final path
- Result report
  - Successful
  - Failed
  - No Action Taken
- Roll back
  - SPT Bridges may roll back on receipt of a “Failed” result report
- Constrained shortest paths have to be treated as EPs with loose hops if failed report is required

Reservation

- If reservation is performed by IS-IS, then the reservation parameters are also included in the EP.
- A result report on the EP is a result report on the reservation too
  - Successful → Reservation was successful too
  - Failed → EP with the reservation is failed