Using ALTO for exposing Time-Variant Routing information

draft-contreras-tvr-alto-exposure-02

Luis M. Contreras (Telefonica)

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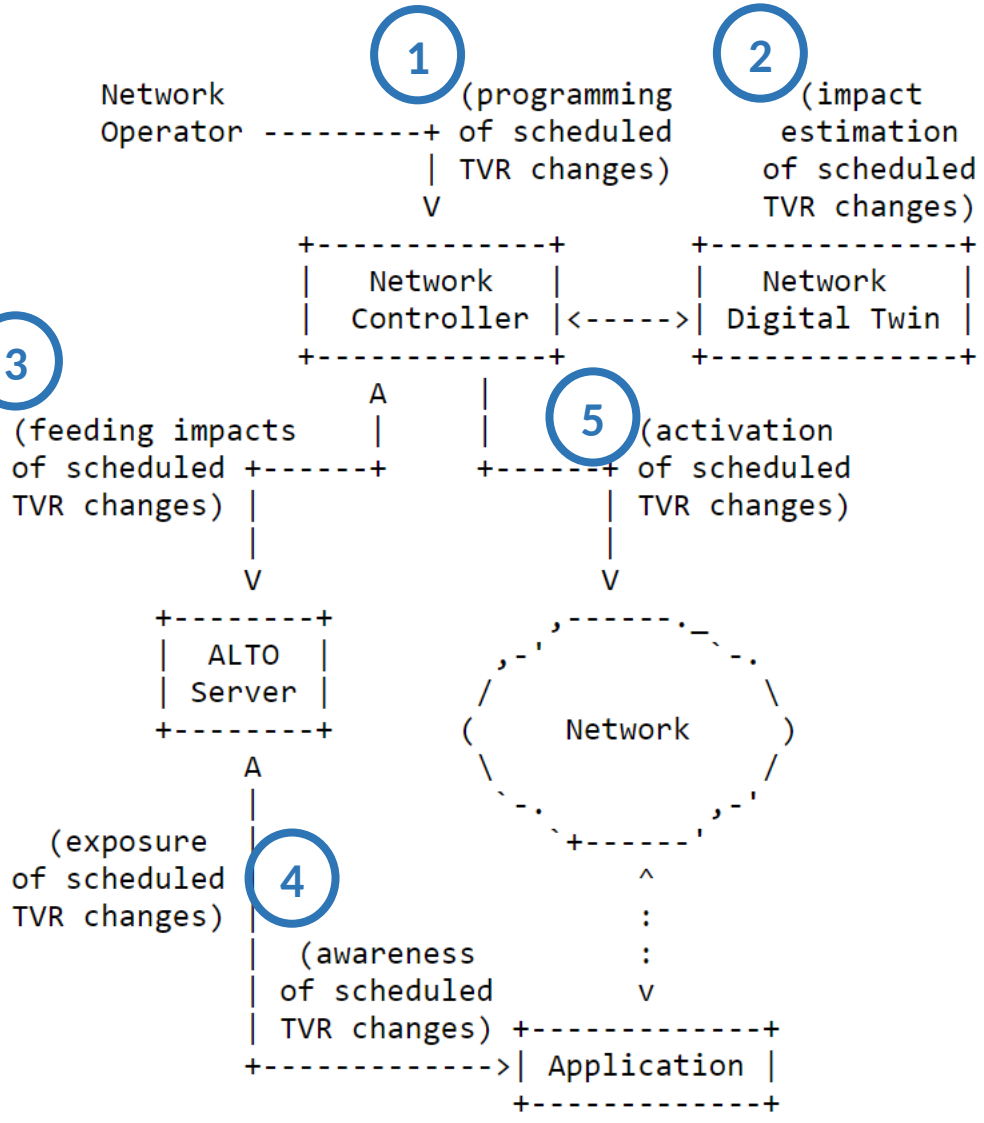
Background



- Presented at IETF 116 & 117
- It enables an off-path mechanism for exposing scheduled topological changes
- It serves the purpose of exposing scheduled topological changes to Applications/Services so those can become aware of routing variations impacting them
- ALTO allows to expose anticipated and predictable topological changes by leveraging on the cost calendar feature, defined in [RFC8896]

Changes from -01

- Assessment of ALTO as off-path solution against TVR requirements (v -00)
- Question about similarities wrt contact plan discussed on the mailing list
- Editorial updates (references, etc)

Requirement	Compliance	
(3.1) Resource scheduling	Feasible to reflect scheduled changes in a topology by means of a sequence of network and cost maps along the time	✓
(3.2.1) Scope of Time-Variability	Combines both time-invariant and time-variant entities. Allows representation of global and individual changes	✓
(3.2.2) Time Horizon	Specified by means of "time-interval-size" attribute expresed in seconds	✓
(3.2.3) Time Precision	Determined in units of seconds	✓
(3.2.4) Validity in a Schedule	Permits to accommodate multiple subsequent schedules	✓
(3.2.5) Periodicity in a Schedule	Repetitive states specified by means of the attribute "repeated"	✓
(3.2.6) Continuity in a Schedule	Governed by the "time-interval-size" attribute expresed in seconds	✓
(3.2.7) Time-Overlap and Priority	Not supported. It would require extension of RFC8896	✗
(3.2.8) Property Value Interpolation	Zero-order hold mode. Other modes could be potentially supported	✓
(3.2.9) Changes to Model State	Support of fine-grained changes	✓
(3.3) Topologies	Schedules applicable to nodes an links. Support of potential future connectivity	✓

Advantages of the proposed approach

- By leveraging on ALTO, it is possible to **offload the processing of changes from the network elements**, avoiding also undesirable cascading / propagation effect
  - I.e., one scheduled change notified by one network element triggers advertisement of subsequent predicted changes in other network elements, and so on
- It can easily **solve the case of considering predicted changes due to the appearance of new nodes / links** not currently present in a topology
  - Network elements know about present nodes and links, but not about nodes and links not yet existing in the topology
- It allows to **expose the scheduled topological changes to Applications / Services**
  - Application/Services usually do not have access to internal routing information

Next steps

- Collect feedback from the WG
- Ask for WG adoption as off-path solution for TVR
- Any comment / feedback is more than welcome