

Default Nickname based approach for multi-level TRILL

draft-tissa-trill-multilevel-00

83rd IETF Paris
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Why we need Multi-level TRILL ?

- To limit the size of IS-IS LSP DB
- To limit the volatility of forwarding plane
- Optimize multicast, broadcast and flooding in large campuses

Goal

- Provide a solution that can utilize RFC6325 defined forwarding
- Leverage existing IS-IS concepts

Proposal-unicast

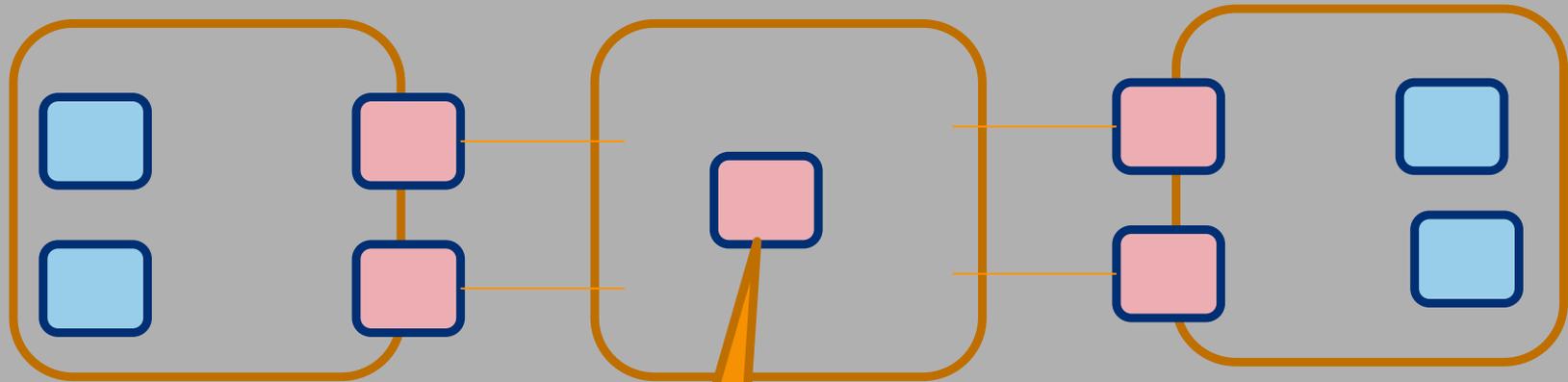
- Divide TRILL campus in to a set of IS-IS Level-1 Areas
- Interconnect the Level-1 areas using backbone
- Area Border RBridges (ABR) advertise it self with "Attached" bit set to indicate it self as the gateway.
- Related information in L1 areas are advertised with "S" Flag in Router Capability TLV set. (This indicate "leak such information to the backbone").
- Level-1 RBridges forward all remote traffic towards the ABR using the default nickname.
- ABR and backbone RBridges forward traffic using complete nickname space.

Unicast

Forward using default nickname

Forward using complete nickname space of the campus

Forward using complete nickname space of the Area



Default forwarding is announced using IS-IS "Attached" bit

Contain complete nickname space for the campus

Information with "S" flag set are leaked into the backbone

Advertise pervasive information with "S" flag

Proposal-multicast

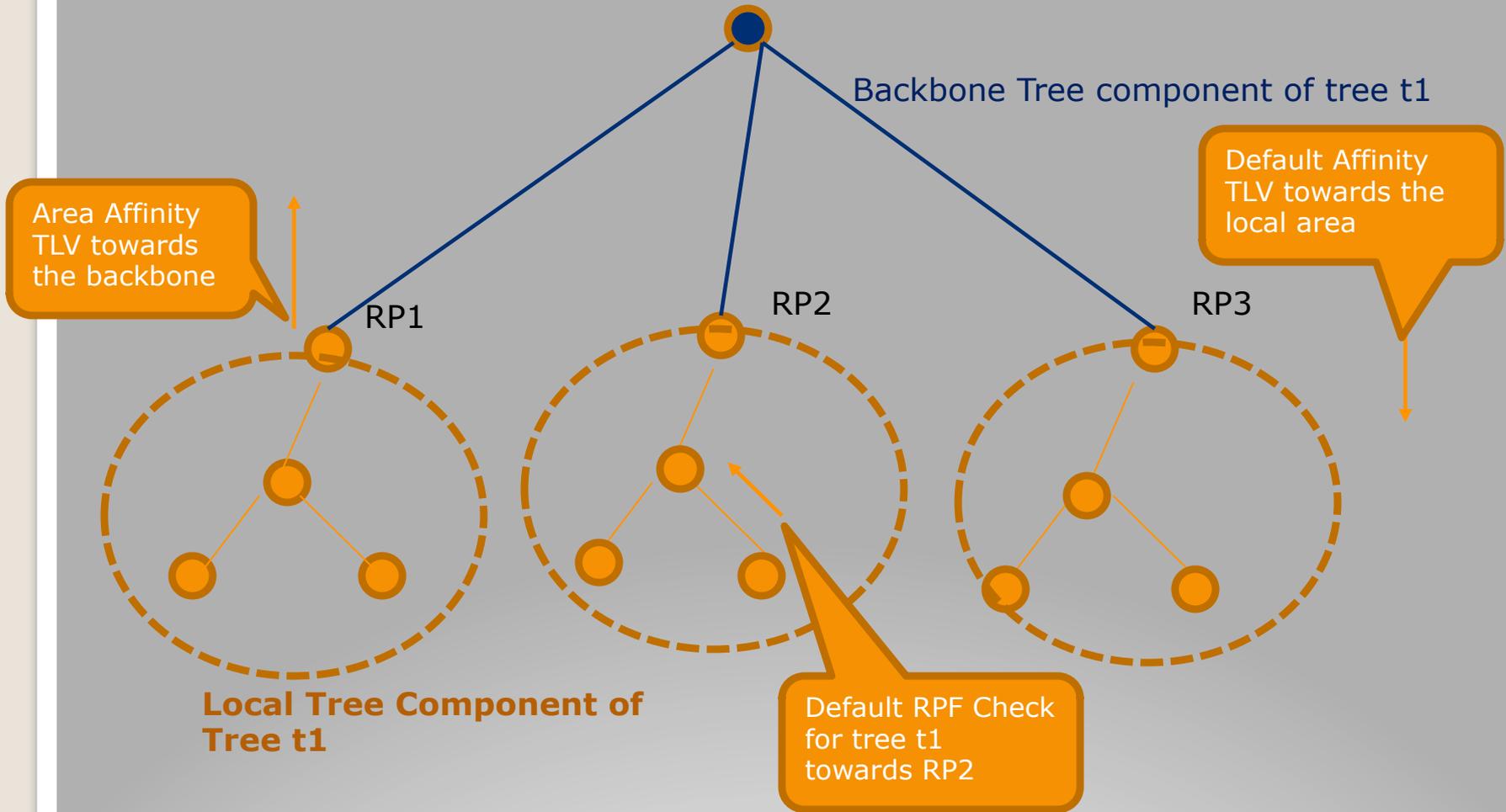
- **Campus wide multi-destination trees are divided in to two parts**
 - Backbone tree component
 - Rooted in the backbone
 - Local tree component
 - Each Area has its a own local tree component
 - Each area has a Rendezvous Point RBridge (RP)
 - RP, plumb its local tree component with the corresponding backbone tree component
 - A RP can function as the “plumber” for multiple trees

Proposal-multi-cast

- **RPF construction**

- Each RP advertise into its L1 area **Default affinity TLV**.
- Each RP advertise **Area Affinity TLV** towards backbone
- **Default Affinity TLV**
 - Indicates to RBridges to accept all unknown nicknames for this tree "only" from interface pointing towards the RP.
- **Area Affinity TLV**
 - Indicates to backbone that only to accept nicknames in the announcing area only from the interface pointing towards the announcing RP.

Anatomy of campus wide multi-destination trees



Highlights

- Forwarding plane is RFC6325 compliant.
- No MAC address learning required at the Area Border RBridges.
- Backbone control plane can be either IS-IS Level 2 or any other control protocol.
- Multicast tree construction using partial nickname space can be utilized in other applications such as Data Center Interconnects.

Q&A