

Default Locator-pair selection algorithm for the shim6 protocol

shim6 meeting

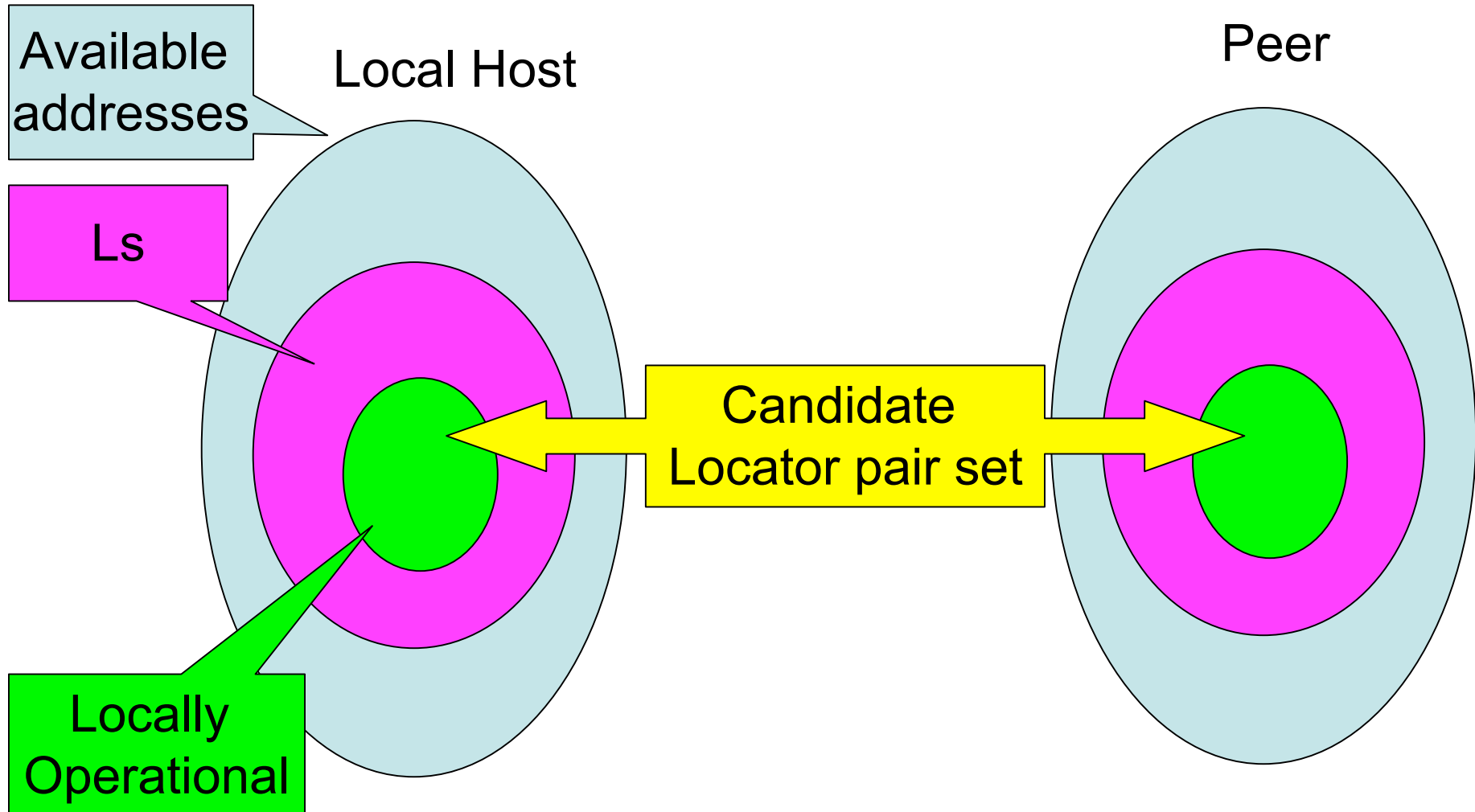
IETF66 - Montreal

Marcelo Bagnulo

About the algorithm

- When? after an outage
- Why not RFC3484? Additional information is needed (reachability information, preferences), differences between loc sel and id sel
- Proposed algorithm: list of tie-break rules that can be used as comparison criteria for a sorting algorithm

Candidate locator pair set



Locator pair states

- Unidirectionally Operational state: fresh reachability information
- Non-Operational state: recent attempts to exchange packets have failed
- Unknown state: No recent reachability information is available

Locator preferences

- For remote locators: Shim6 locator preference option with priority and weight
- For source locators we assume similar information locally available
- Define weight* based on the weight information to represent the probability distribution
- Locator-pair selection table: contain preferences for src,loc prefix pairs

Default Locator-Pair Selection Algorithm

- Rule 1: Prefer the same address: If $\text{src1} = \text{dst1}$ and $\text{src2} \neq \text{dst2}$, then prefer $(\text{src1}, \text{dst1})$.
 - Iljitsch comment: drop it!
- Rule 2: Prefer appropriate scope: If $\text{scope}(\text{src1}) \geq \text{scope}(\text{dst1})$ and $\text{scope}(\text{src2}) < \text{scope}(\text{dst2})$, then prefer $(\text{src1}, \text{dst1})$.
 - Iljitsch: remove LL and SL from the candidate set.
 - Suggestion: prefer locators that are of the same scope as the ULIDs
- Rule 3: Avoid Non-Operational pairs: If $(\text{src1}, \text{dst1})$ is in Non-Operational state and $(\text{src2}, \text{dst2})$ is in Unidirectionally Operational or in Unknown state, then prefer $(\text{src2}, \text{dst2})$.

Default Locator-Pair Selection Algorithm (II)

- Rule 4: Prefer Unidirectionally Operational state: If $(src1, dst1)$ is in Unknown state and $(src2, dst2)$ is in Unidirectionally Operational, then prefer $(src2, dst2)$.
- Rule 5: Prefer fresher reachability information: If $(src1, dst1)$ and $(src2, dst2)$ are both in Unidirectionally Operational state, then prefer the one with smallest age information i.e. the one for which newer reachability information is available.

Default Locator-Pair Selection Algorithm (III)

- Rule 6: Prefer same address family: If $(src1, dst1)$ are both of the same address family (v4/v6) and $(src2, dst2)$ are of different address family, then prefer $(src1, dst1)$
 - Iljitsch: do it in the candidate locator pair set
- Rule 7: Prefer matching scope: If $scope(src1) = scope(dst1)$ and $scope(src2) < scope(dst2)$, then prefer $(src1, dst1)$
 - See discussion rule 2

Default Locator-Pair Selection Algorithm (VI)

- Rule 8: Prefer Locator-pair table match: If (dst1,src1) has a match in the Locator-pair selection table and (src2,dst2) does not have a match in the locator-pair selection table, then prefer (dst1,src1).
- Rule 9: Prefer Preferred addresses:
 - Iljitsch: drop it
- Rule 10: Prefer Local Priority: If src1 of (src1,dst1) has a lowest Priority than src2 of (src2,dst2) then prefer (src1,dst1)

Default Locator-Pair Selection Algorithm (V)

- Rule 11: Prefer Local Weight*: If src1 of (src1,dst1) has a lowest Weight* than src2 of (src2,dst2) then prefer (src1,dst1)
- Rule 12: Prefer Temporary addresses: If src1 is a temporary address [7] and src2 is a public address, the prefer (src1,dst1) over (src2,dst2)
 - Iljitsch: the point is whether to include them in the candidate locator pair set or not (i.e. Mix temp and stable addresses)

Default Locator-Pair Selection Algorithm (VI)

- Rule 13: Prefer Local Care-off Addresses:
- Rule 14: Prefer Remote Priority
- Rule 15: Prefer Remote Weight*
- Rule 16: Prefer Remote Care-off Addresses:
- Rule 17: Prefer ULID-Pair: If (src1,dst1) is the ULID-pair of the context, the prefer (src1,dst1)
 - Iljitsch: move it to after rule 5