

RPL Objective Function 0

IETF 80 status

`draft-ietf-roll-of0`

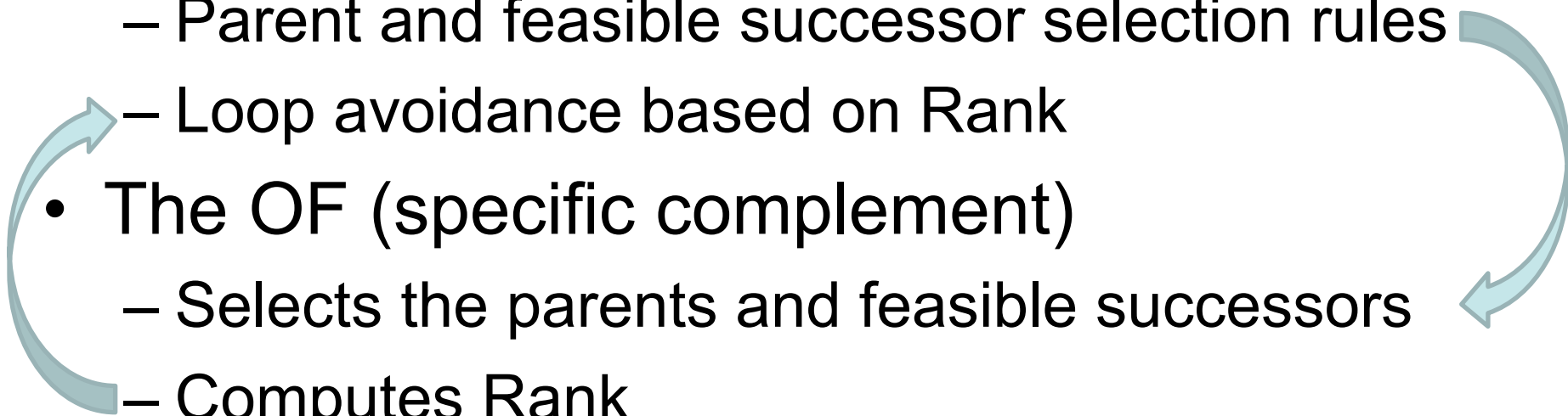
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OF0 Status

- **LATEST** is `draft-ietf-roll-of0-08`
- Now referenced in RPL
 - IESG DISCUSS for interoperability
 - If **further guidance** is **not** available then a RPL Router implementation **MUST** at least support the metric-less OF0 [[I-D.ietf-roll-of0](#)].
- Last call pending

What is an OF?

- RPL was designed as a generic core
 - Agnostic to links and metrics
 - Adapted by Objective Functions
 - RPL (generic core)
 - Parent and feasible successor selection rules
 - Loop avoidance based on Rank
 - The OF (specific complement)
 - Selects the parents and feasible successors
 - Computes Rank
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What is OF0?

- Common OF for generic implementations
 - RPL core messages and containers only
 - Specifically no metrics containers
 - Step of Rank left to implementations
- OF 0 provide
 - Normalization (best, normal, worst)
 - Guidance (admin. cost, dampening)
 - Magnifying factor to mix capabilities

Rank Factor

- Strongly distinguish links of different types within a same DAG
 - powered over battery-operated or
 - wired over wireless
 - MAC type, policy ...
- SHOULD allow a configurable Rank-factor
- MAY configure a more specific Rank-factor to specific categories of links.

OF0 Rank computation

- Goal: Allow a larger diameter
- $R(N) = R(P) + R_i$ where $R_i = R_f * S_p + S_r$.
 - S_p : Step-of-Rank
 - R_f : Rank-factor
 - S_r : Stretch-of-Rank
 - R_i : Rank-increase
 - $R(P)$: Rank of preferred parent
 - $R(N)$: Rank of this node

MINIMUM_RANK_FACTOR	<=	R_f	<=	MAXIMUM_RANK_FACTOR
MINIMUM_STEP_OF_RANK	<=	S_p	<=	MAXIMUM_STEP_OF_RANK
0	<=	S_r	<=	MAXIMUM_RANK_STRETCH

OFO Constants and norms

- MinHopRankIncrease: 256
- DEFAULT_STEP_OF_RANK: $3 * \text{MinHopRankIncrease}$
- MINIMUM_STEP_OF_RANK: $1 * \text{MinHopRankIncrease}$
- MAXIMUM_STEP_OF_RANK: $9 * \text{MinHopRankIncrease}$
- MAXIMUM_RANK_STRETCH: $5 * \text{MinHopRankIncrease}$
- DEFAULT_RANK_FACTOR: 1
- MINIMUM_RANK_FACTOR: 1
- MAXIMUM_RANK_FACTOR: 4

Discussed Issues

- Siblings removed from Main Spec
 - What do we do in OF0? (removed in 08)
- Stretch constrained to siblings
 - Do we keep a stretch? (conserved in 08)
- Parent selection
 - Need feed back from the group? (please😊)
- Asymmetric links
 - Probably not the right place (no action)

!!!Thanks!!!!

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