

Default Router Preferences and More-Specific Routes in RAs

draft-ietf-ipngwg-router-selection-00

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What is this about?

- An OPTIONAL extension to Neighbor Discovery.
- Puts extra information in RAs.
 - Preference for the default router.
 - More-specific routes, with lifetimes and preferences.
- Helps hosts pick a router for off-link destinations.

What's changed?

- Specified receiver processing for the Reserved preference value.
 - Assumes possible future use meaning “black-hole” or “unreachable”
- Specified that routers should not include more than 17 Router Information options.
- Added discussion of destination cache invalidation.
- Removed discussion of “host D.”

Open Issues

- Feedback from operational folks...
- Interactions with router renumbering?

What's it good for?

- Multi-homed hosts
 - Redirects don't work.
 - ND gives no guidance
- Multi-homing is increasingly frequent
 - Wireless interfaces
 - VPN tunnel interfaces
 - v6/v4 configured tunnel interfaces
 - 6over4 interfaces

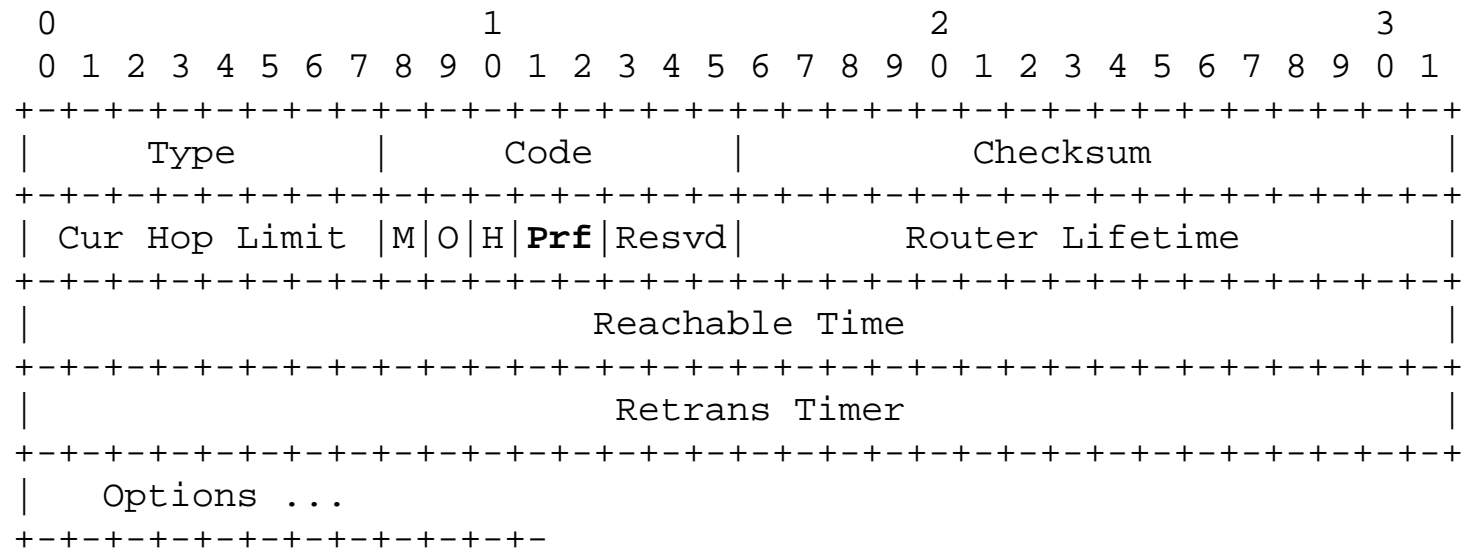
Why use Router Advertisements?

- Existing standard, stable interface for router->host communication.
- Insulates host from plethora of routing protocols and allows for independent evolution.
- Similarly, IGMP/MLD insulates host from multicast routing.
- No additional message traffic.
- Hosts already receive & parse RAs.

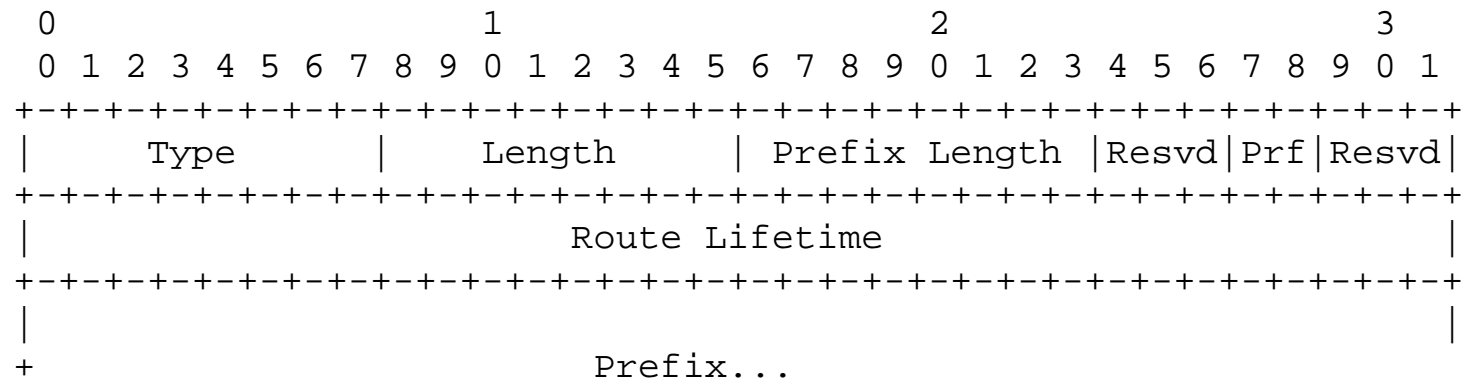
Configuration of Preferences and More-Specific Routes

- Preferences are very simple and coarse:
High, Medium, Low
- Routers do NOT advertise all their routes.
- Administratively configured.
- No direct mapping from routing table.

Changes to RA Header



Route Information Option



Conceptual Model

- Unchanged. Ignores preferences/routes.
- Uses default router preferences, ignores routes. Does not have a routing table.
- Uses preferences and routes.

Conceptual Routing Table

- Replaces Default Router List
 - May replace On-Link Prefix List
- Entries have
 - Prefix, prefix length.
 - Lifetime.
 - Preference.
 - Next-hop router.

Conceptual Sending Algorithm

For off-link destinations,

- When selecting a route in the routing table, look at matching routes:
 - Prefer reachable routers over unreachable.
 - Prefer longer matches over shorter.
 - Use route preference values.
- If the matching routers are all unreachable, round-robin among them all regardless of prefix length or preference values.

Configuration Scenarios

- A router that is not connected to the Internet, or connected through a firewall, may advertise itself with Low preference.
- A router may advertise specific routes for directly connected subnets and shorter prefixes (eg, site, NLA, TLA).
- More advanced configurations require administrative coordination among routers

Usage Scenarios

- Home user creates VPN into corp network
 - ISP advertises Normal preference for $::/0$
 - VPN advertises Low preference for $::/0$, plus Normal preference for the site prefix
- Home user with two ISPs
 - Each ISP advertises its NLA/TLA prefix

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