draft-tlmk-infra-dnssd: Providing Local DNS-SD Service on Infrastructure

“Unicast Local Discovery”

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Goals / Scope

- A way to do link-local discovery with minimal multicast
- Interoperable with mDNS devices on the same link
- When ULD server is available, ULD clients can ignore mDNS

- Draft defines “Unicast Local Discovery (ULD)”, a discoverable service that combines
  - SRP registrar
  - Discovery Proxy
  - Advertising Proxy

Changes from draft 02

Direct use of “.local”

- ULD aims for adoption at a system / DNS-SD library level
  - transparent mDNS replacement from application perspective
  - ULD zone must have same semantics as .local
- Interpret “.local” semantically, not as a transport selector
- Updates RFC6762: .local queries sent to ULD or multicast
- Clients connect to ULD server via link-local address, preserves link scoping of .local. Off-link .local queries are refused.
- Rewriting in Advertising and Discovery Proxy becomes a no-op

Changes from draft 02

ULD server discovery refinements

- Use DNS-SD service pattern (PTR / SRV / TXT) on mDNS
  - Service type `_uld._tcp` (to be registered)
  - Service priority: `pri` key in TXT record
  - Both infrastructure and ad-hoc servers advertise this way

  → ULD clients can use ULD to look for higher-priority server

- Tie-breaker: numerically lowest link-local AAAA

  → Clients converge on a single server

- Infrastructure servers also advertise via RA option
  - Clients must check RA option for infrastructure servers

  → infrastructure designation can be protected by RA Guard

Changes from draft 02

Other changes

- Discuss how .local results from the SRP zone and the Discovery Proxy are combined.
- Support repeated standard DNS queries for shared records (“browse” queries) to support constrained clients. Clients SHOULD use DNS Push.
- Added IPv4 / Dual-Stack section: Server MUST fully support IPv6, MUST participate in mDNS on IPv4, SHOULD accept requests over IPv4.
- Discuss when a CE router should claim infrastructure status.
- Editorial changes, focus on link-local use case.

Open Questions

- To enable library-level ULD adoption, preserving mDNS conflict behavior is useful: ULD client would need mDNS conflict feedback from the Advertising Proxy.
  - Could be a 2 bit EDNS(0) option in the SRP response (any records in conflict, any records pending)
- Support RA advertisement for ad-hoc servers? Would need to carry TXT record info (currently `pri`)
- Allow link-local DNS Push over TCP (without TLS) instead of / in addition to supporting repeated standard queries?
- Handling of Reverse Address Mapping in ULD?