DNSSD Status Update

Stuart Cheshire, Apple

99th IETF, Prague, Czech Republic, July 2017
Reminder

Why all this non-multicast discovery work?

On 10Mb/s coaxial Ethernet, multicast is cheap and easy
On many modern network technologies, multicast is expensive and/or unreliable
  • Wi-Fi
  • Advanced home networks with more than a single link
  • Mesh networks like Thread
  • Enterprise networks with thousands of Wi-Fi clients
Four New Documents

draft-cheshire-dnssd-roadmap-00
draft-sctl-service-registration-00
draft-sctl-discovery-broker-00
draft-sctl-dnssd-mdns-relay-00
Three Updated Documents

draft-ietf-dnssd-push-12

draft-ietf-dnsop-session-signal-03

draft-cheshire-edns0-owner-option-01
One Document Awaiting Others

draft-ietf-dnssd-hybrid-06
… depends on draft-ietf-dnssd-push
… which depends on draft-ietf-dnsop-session-signal
… which is stuck in debate in the DNSOP Working Group
Two Documents Not Written

Advertising Proxy

• Lets a remote device advertise using Multicast DNS on a link to which it is not directly connected

Zone Stitching

• Coordinates uniqueness of Multicast DNS names on separate links

Both of these become unnecessary as we move away from Multicast DNS
Overview
Service Discovery Road Map
draft-cheshire-dnssd-roadmap-00

Work has intentionally been broken into small independent components

• Modularity is a good thing
• But can be confusing

Road Map document explains how modules fit together
Client Config: (RFC 6763 Section 11)
Look for services in link1.example.com.
Discovery Proxy on link1.example.com.

Multicast DNS Queries on link1

Server on link1.example.com.

DNS Push Notifications over DNS Session
Client Config:
Look for services in:
link1.example.com.
link2.example.com.
link3.example.com.
Client Config:
Look for services in:
link1.example.com.
link2.example.com.
link3.example.com.
Discovery Proxy on link1.example.com.

Client

Discovery Proxy on link2.example.com.

Client

Discovery Proxy on link3.example.com.

Client

Server on link1.example.com.

Server on link2.example.com.

Server on link3.example.com.
Client Config:
Look for services in:
services.example.com
Client Config:
Look for services in:
services.example.com

Client

Discovery Broker for services.example.com
Client Config:
Look for services in:
services.example.com
Client

Discovery Broker for services.example.com

Discovery Proxy on link1.example.com.

Server on link1.example.com.

Discovery Proxy on link2.example.com.

Server on link2.example.com.

Discovery Proxy on link3.example.com.

Server on link3.example.com.
Client

- Discovery Proxy for link1.example.com
  - Discovery Relay on link1.example.com.
  - Server on link1.example.com.

- Discovery Proxy for link2.example.com
  - Discovery Relay on link2.example.com.
  - Server on link2.example.com.

- Discovery Proxy for link3.example.com
  - Discovery Relay on link3.example.com.
  - Server on link3.example.com.
How data gets into the namespace, part 1: Legacy mDNS devices
Discovery Proxy

draft-ietf-dnssd-hybrid-06

Essential part of the backwards-compatibility story, for existing devices

Document finished and stable

Waiting for:

• draft-ietf-dnssd-push
• draft-ietf-dnsop-session-signal
Multicast DNS Discovery Relay

draft-sctl-dnssd-mdns-relay-00

Analogous to BOOTP relay agent for DHCP servers

Addition to Discovery Proxy (but doesn't block that document)

(Ted to say more on this shortly)
How data gets into the namespace, part 2: Active registration
Service Registration Protocol

draft-sctl-service-registration-00

Based on DNS Update (RFC 2136)

Plus automatic garbage collection

• Dynamic DNS Update Leases (draft-sekar-dns-ul-01)

Plus FCFS security

Plus support for energy saving (aka “Sleep Proxy”)

• EDNS0 OWNER Option (draft-cheshire-edns0-owner-option-01)
How clients do queries
DNS Push Notifications

draft-ietf-dnssd-push-12

Facilitates asynchronous change notification (instead of expensive polling)
Builds on DNS Session Signaling (draft-ietf-dnsop-session-signal-03)
Service Discovery Broker

draft-sctl-discovery-broker-00

Provides ‘bundling’ of multiple domains into one

Meta Discovery Proxy

Network intermediary

• Looks like Discovery Proxy to clients
• Looks like client to Discovery Proxies and other servers

Improves efficiency

• Client talks to one Discovery Broker, which talks to several Discovery Proxies on its behalf
• Discovery Proxy on link can serve single Discovery Broker, which serves multiple clients
DNSSD Status Update

Stuart Cheshire, Apple

99th IETF, Prague, Czech Republic, July 2017