

# Using DHCPv6 for DNS Configuration in Hosts

`draft-ietf-droms-dnsconfig-dhcpv6-00.txt`

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# Problem Statement

- Describe mechanism through which host can obtain configuration information for client's DNS resolver
  - List of DNS servers
  - Domain name
  - Domain search list
- First information is a property of the client's local environment; other two are a property of the client

# DNS Discovery Design Team report

- Evaluation criteria are loosely defined and not applied uniformly
- Merges two logically distinct problem into one
- Omits configuration information entry by sysadmin as evaluation criterion; makes unstated assumptions about source of information returned to client
- Doesn't evaluate recommended solution against DHCP (as a solution)
- Recent progress on DHCP may have impact on design team report

# DHCP for DNS Discovery

- *Information-request* used for two-message DHCP exchange (“stateless DHCP”)
  - Transports configuration parameters without address assignment
  - DHCP server maintains no dynamic state for each client
  - Can be as simple as returning same three DHCP options to every *Information-request*
- Current specification uses site-scoped multicast for *Information-request*

# Deployment Scenarios

- Stateless DHCP server in routers
- Stateless DHCP server colocated with DNS server
- Co-existence with full DHCP service
  - *Information-request* answered by any server
  - Address assignment request ignored by stateless DHCP server

# Evaluation

- Scalability
  - Using anycast or multicast scales as described in DDDT report
  - Can deploy multiple DHCP servers for load distribution
  - Placing DHCP server in router scales with router deployment
  - Can use existing DHCP relay agent infrastructure
- Security: DHCPv6 spec includes authentication
- Time to deploy
  - Uses same DHCP client code
  - Simple server must be developed
- Business motivation
  - ‘M’ bit requires implementation of DHCP client
  - Simple DHCP servers deployed in IPv4 devices today
- Standardization
  - DHCPv6 spec to go to last call immediately after IETF 52
  - No other protocols or standards need to be changed

# Evaluation (continued)

- Fate sharing
  - DNS server list separate from DNS servers; however, stateless DHCP server can be colocated with DNS server
  - Domain name and domain search list must be configured *somewhere*
- Standardization
  - DHCPv6 spec to go to last call after IETF 52
  - No other protocols or standards need to be changed
- Convergence time (learning about service)
  - List of DHCP servers provides reliability
  - Using anycast or multicast scales as described in DDDT report
  - Deployment based on DHCP Relay Agents requires configuration for redundancy
- Scenarios
  - No routers: deploy with DNS server
  - No multicast: use anycast or DHCP relay agents
  - NBMA: use anycast

# Evaluation (continued)

- Convergence time (are they really different; accessing service?)
  - Using anycast or multicast scales as described in DDDT report
  - Using DHCP relay agents requires specific deployment for redundancy or reconfiguration of relay agents
- Scenarios
  - No routers: deploy with DNS server
  - No multicast: use anycast or DHCP relay agents
  - NBMA: use anycast
- Configuration of client information:
  - Server on router or with DNS server can extract configuration from router or use simple, one time configuration
  - Part of normal DHCP server configuration
- Client simplicity: client uses one mechanism for DNS configuration whether or not using DHCP for address assignment

# DHCP specification status

- DHCPv6 specification draft will go to WG last call immediately after IETF 52
- DHCP *Information-request* and use of multicast is included in current specification; can easily add anycast

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