

DHCPv6 Failover Update

`dhcp-ietf-dhc-dhcpv6-failover-design-04.txt`

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(Former) DHCPv6 Failover Grand Plan

- **Step 0: Redundancy considerations**
 - Published as RFC6853
- **Step 1: Requirements document (info)**
 - Published as RFC7031
- **Step 2: Design document (std)**
 - Passed WGLC
 - AD review
 - IESG submission
- **Step 3: Protocol document (std)**
 - TBD
- Possible extension drafts

AD feedback for dhc-dhcpv6-failover-design-04



- - Not implementable on its own
- Design decision discussion not really appropriate for standards track RFC
- What if protocol draft (step3) needs some changes that belong to the design?



Not ready for IESG

Ted, Kim and Tomek decided to split failover-design and move forward to produce failover-protocol draft.

draft-ietf-dhc-dhcpv6-failover-design-04 becomes two drafts

failover-design-05 (info)

- Answers question: why?
- Intro
- Protocol overview
- Resource Allocation
- Information Model
- Failover mechanisms overview
- Time skew
- MCLT
- Lazy Updates
- Overview of DDNS

failover-protocol-00 (std)

- Answers question: how?
- Connection management
- Failover states
- DDNS details
- Messages
- Option Formats
- Sending/receiving BNDUPD
- Reallocating leases
- Acknowledging reception

Table Of Contents

failover-protocol-00 (std) 49 pages

failover-design-05 (info) 35 pages

- 3. Introduction
 - 3.1. Design Requirements
 - 3.2. Features out of Scope: Load Balancing
- 4. Protocol Overview
 - 4.1. Failover State Machine Overview
 - 4.2. Messages
- 5. Connection Management Overview
 - 5.1. Endpoint Identification
- 6. Resource Allocation
 - 6.1. Proportional Allocation
 - 6.2. Independent Allocation
 - 6.3. Choosing Allocation Algorithm
- 7. Information model
- 8. Failover Mechanisms
 - 8.1. Time Skew
 - 8.2. Lazy updates
 - 8.3. MCLT concept
 - 8.3.1. MCLT example
 - 8.4. Unreachability detection
 - 8.5. Re-allocating Leases
 - 8.6. Sending Binding Update
 - 8.7. Receiving Binding Update
 - 8.8. Conflict Resolution
 - 8.9. Acknowledging Reception
- 9. Proposed extensions
 - 9.1. Active-active mode
- 10. Dynamic DNS Considerations
 - 10.1. Relationship between failover and dynamic DNS update

- 3. Introduction
- 4. Message and Option Definitions
 - 4.1. Message Framing for TCP
 - 4.2. Messages
 - 4.2.1. BNDUPD
[... Every message discussed ...]
 - 4.3. Options
 - 4.3.1. OPTION_F_SERVER_STATE
[... Every option discussed ...]
- 5. Connection Management
 - 5.1. Creating Connections
 - 5.2. Endpoint Identification
 - 5.3. Connection Maintenance Parameters
 - 5.4. Unreachability detection
- 6. Binding Updates
 - 6.1. Sending Binding Update
 - 6.2. Receiving Binding Update
 - 6.3. Conflict Resolution
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- 7. Resource Allocation
 - 7.1. Re-allocating Leases
- 8. Endpoint States
 - 8.1. State Machine Operation
 - 8.2. State Machine Initialization
 - 8.3. STARTUP State
 - 8.3.1. Operation in STARTUP State
 - 8.3.2. Transition Out of STARTUP State

[... every failover endpoint state discussed ...]
- 9. Dynamic DNS Considerations
 - 9.1. Exchanging DDNS Information
 - 9.2. Adding RRs to the DNS
 - 9.3. Deleting RRs from the DNS
 - 9.4. Name Assignment with No Update of DNS
- 10. Reservations and failover

} Next slides

Lots of them

Protocol Connection Management

Messages

CONNECT

CONNECTACK

DISCONNECT

CONTACT

STATE

Options

OPTION_F_RELATIONSHIP_NAME

OPTION_F_TLS_REQUEST

OPTION_F_TLS_REPLY

OPTION_F_RECEIVE_TIME

OPTION_F_PROTOCOL_VERSION

OPTION_F_MCLT

OPTION_F_MAX_UNACKED_BNDUPD

OPTION_F_SERVER_STATE

OPTION_F_SERVER_FLAGS

OPTION_F_START_TIME_OF_STATE

OPTION_F_PARTNER_DOWN_TIME

Protocol Lease State Data Transmission

Messages Options

BNDUPD	OPTION_CLIENT_DATA (from RFC 5007)
BNDACK	OPTION_LQ_BASE_TIME
	OPTION_F_BINDING_STATUS
	OPTION_F_START_TIME_OF_STATE
	OPTION_F_STATE_EXPIRATION_TIME
	OPTION_F_FAILOVER_EXPIRATION_TIME
	OPTION_F_PARTNER_RAW_CLT_TIME
	OPTION_F_NEXT_PARTNER_LIFETIME
	OPTION_F_NEXT_PARTNER_LIFETIME_SENT
	OPTION_F_REQUESTED_FQDN
	OPTION_F_DNS_INFO
	OPTION_F_DNS_REMOVAL_INFO

Additional Messages

Messages

UPDREQ

UPDREQALL

UPDDONE

POOLREQ

POOLRESP

Next steps

- **Finish protocol draft** (60% complete, 49 pages so far)
 - Failover state operations: 85% complete
 - Connection management: 70% complete
 - Message overview: 90% complete
 - Options: begun, 10% complete (+15 p)
 - BNDUPD time usage needs depth (+5 p)
 - DDNS needs depth (+5 p) – defer to extension?
- **Design draft** (85% complete, 35 pages so far)
 - Needs editing after surgery
 - May need more explanations of what is in protocol draft