

Dedication	
Preface	
1. The Age of IPv6	
1.1 INTRODUCTION	
1.2 PROTOCOL STACK	
1.3 CONCLUSIONS	
2. Protocol Architecture	
2.1 INTRODUCTION	
2.2 COMPARISONS OF IP HEADER FORMATS	
2.3 EXTENSION HEADERS	
2.3.1 Options Headers	
2.3.2 Routing Header	
2.3.3 Fragment Header	
2.3.4 No Next Header	
2.4 PACKET SIZE AND PATH MTU	
2.5 FLOW LABEL	
2.6 TRAFFIC CLASS	
APPENDIX A: ASSIGNED INTERNET PROTOCOL NUMBERS	
3. Address Architecture	
3.1 INTRODUCTION	
3.2 EXPRESSION OF IPv6 ADDRESS	
3.3 UNICAST ADDRESS	
3.3.1 Unspecified address	
3.3.2 Loop-back address	
3.3.3 Global unicast address	
3.3.4 IPv6 address with embedded IPv4 address	
3.3.5 Local-scope unicast address	
14 ANYCAST ADDRESS	
3.5 MULTICAST ADDRESS	
35.1 Multicast address format	
3.5.2 Reserved multicast address	
3.6 REQUIRED ADDRESSES	
4. Internet Control Message Protocol for IPv6 (ICMPv6)	
4.1 INTRODUCTION	
4.2 RULES TO DETERMINE SOURCE ADDRESS FOR MESSAGE	
4.3 MESSAGE PROCESSING	
4.4 MESSAGE FORMATS	
4.4.1 Error messages	
4.4.2 Information message	
5. Neighbor Discovery	
5.1 INTRODUCTION	
5.2 CONCEPTUAL MODEL OF A HOST	
52.1 Sending algorithm	
5.3 SERVICES FROM NEIGHBOR DISCOVERY PROTOCOL	
5.3.1 Router discovery	
5.3.2 Address resolution	
5.3.3 Neighbor unreachability detection	
5.3.4 Redirect function	
5.4 MESSAGES FORMATS	
5.4.1 Router Solicitation	

- 5.4.2 Router Advertisement
- 5.4.3 Neighbor Solicitation
- 5.4.4 Neighbor Advertisement
- 5.4.5 Redirect
- 5.5 OPTIONS
 - 5.5.1 Source Link-Layer Address
 - 5.5.2 Target Link-Layer Address
 - 5.5.3 Prefix Information
 - 5.5.4 Redirected Header
- 555 MTU
- 6. Address Autoconfiguration
 - 6.1 INTRODUCTION
 - 6.2 STATELESS AND STATEFUL AUTOCONFIGURATIONS
 - 6.2.1 Algorithm for autoconfiguration
 - 6.2.2 Details in address configuration
 - 6.3 DUPLICATED ADDRESS DETECTION (DAD)
 - 6.4 OPTI-DAD
 - 6.4.1 Consideration of delay in DAD
 - 6.4.2 Modifications for opti-DAD
 - 6.4.3 Example
- 7. Dynamic Host Configuration Protocol (DHCPv6)
 - 7.1 INTRODUCTION
 - 7.2 TERMINOLOGY
 - 7.3 DHCP SERVER SOLICITATION
 - 7.4 DHCP CLIENT-INITIATED CONFIGURATION EXCHANGE
 - 7.4.1 Request and Reply message exchange
 - 7.4.2 Confirm and Reply message exchange
 - 7.4.3 Renew and Reply message exchange
 - 7.4.4 Rebind and Reply message exchange
 - 7.4.5 Release and Reply message exchange
 - 7.4.6 Decline and Reply message exchange
 - 7.5 DHCP SERVER-INITIATED CONFIGURATION EXCHANGE
 - 7.5.1 Renew and Reply message exchange
 - 7.5.2 Information-Request and Reply message exchange
 - 7.6 RELAY AGENTS
 - 7.7 DHCP UNIQUE IDENTIFIER (DUID)
 - 7.7.1 DUID-LLT
 - 7.7.2 DUID-EN
 - 7.7.3 DUID-LL
 - 7.8 IDENTITY ASSOCIATION (IA)
 - 7.9 MANAGEMENT OF TEMPORARY ADDRESSES
 - 7.10 MESSAGE FORMATS
 - 7.10.1 Message formats for client and server
 - 7.10.2 Message formats for relay agent and server
 - 7.11 OPTIONS
 - 7.11.1 Client Identifier and Server Identifier options
 - 7.11.2 IA_NA option
 - 7.11.3 IA_TA option
 - 7.11.4 Option Request option
 - 7.11.5 Preference option

- 7.11.6 Elapsed Time option
- 7.11.7 Relay Message option
- 7.11.8 Authentication option
- 7.11.9 Server Unicast option
- 7.11.10 Status option
- 7.11.11 Rapid Commit option
- 7.11.12 User Class option
- 7.11.13 Vendor Class option
- 7.11.14 Vendor-Specific Information option
- 7.11.15 Interface-ID option
- 7.11.16 Reconfigure Message option
- 7.11.17 Reconfigure Accept option
- 8. Interconnection between IPv4 and IPv6
 - 8.1 INTRODUCTION
 - 8.2 TERMINOLOGY
 - 8.3 DUAL STACK
 - 8.4 IPv6 IMPLEMENTATION OVER IPv4 TUNNEL
 - 8.4.1 IPv6 configured tunnel
 - 8.4.2 Automatic tunnel with IPv4-compatible IPv6 address
 - 8.4.3 6over4 tunnel
 - 8.4.4 6to4 tunnel
 - 8.4.5 ISATAP
 - 8.4.6 DSTM
 - 8.4.7 Tunnel broker
 - 8.4.8 Teredo
 - 8.5 TRANSLATION MECHANISM
- 9 Domain Name System (DNS)
 - 9.1 INTRODUCTION
 - 9.2 TERMINOLOGY
 - 9.3 DNS ARCHITECTURE
 - 9.4 DOMAIN NAME SPACE
 - 9.4.1 Horizontal aspect of DNS
 - 9.4.2 Vertical aspect of DNS
 - 9.5 NAME RESOLUTION
 - 9.6 PACKET FORMAT
 - 9.6.1 DNS Header
 - 9.6.2 Query message
 - 9.6.3 Reply message
 - 9.7 DNS EXTENSION
 - 9.8 REQUIREMENT FOR DNS SUPPORT IN TRANSITION
 - 9.9 EXAMPLE: DNSv6 USING WINDOWS SERVER 2003
- APPENDIX A: COUNTRY-CODE TOP-LEVEL DOMAINS
- 10 Mobility Support for IPv6
 - 10.1 INTRODUCTION
 - 10.2 TERMINOLOGY AND CONCEPT
 - 10.2.1 Communication entities
 - 10.2.2 Address types
 - 10.2.3 Handover types
 - 10.2.4 Message types
 - 10.2.5 Route optimization

- 10.2.6 Databases defined in MIPv6
- 10.3 PROTOCOL OVERVIEW OF MIPv6
 - 10.3.1 Communication over non-optimized path
 - 10.3.2 Communication over optimized path
- 10.4 BINDING UPDATE TO THE HOME AGENT
 - 10.4.1 Registration of primary care-of address
 - 10.4.2 De-registration of primary care-of address
- 10.5 BINDING UPDATE TO CORRESPONDENT NODES
 - 10.5.1 Return routability
 - 10.5.2 Binding update
- 10.6 PREFIX MANAGEMENT
 - 10.6.1 Prefix solicitation
 - 10.6.2 Prefix advertisement
 - 10.6.3 Dynamic home agent discovery
 - 10.6.4 JIPv6 home-agents anycast address
 - 10.6.5 Home Agent List
- 10.7 MESSAGE TYPES
 - 10.7.1 Mobility messages
 - 10.7.2 Mobility options
 - 10.7.3 Home Address option
 - 10.7.4 Type 2 Routing Header
 - 10.7.5 ICMPv6 message types
- 10.8 CHANGES IN IPv6 NEIGHBOR DISCOVERY PROTOCOL
 - 10.8.1 Modified Router Advertisement message
 - 10.8.2 Modified Prefix Information option
 - 10.8.3 Advertisement Interval option
 - 10.8.4 Home Agent Information option
- 11. Enhanced Handover Schemes for Mobile IPv6
 - 11.1 INTRODUCTION
 - 11.2 HIERARCHICAL MOBILE IPv6 (HMIPv6)
 - 11.2.1 Concept
 - 11.2.2 Terminology
 - 11.2.3 Operation
 - 11.2.4 Binding update to MAP
 - 11.2.5 Message format
 - 11.3.1 Concept
 - 11.3.2 Terminology
 - 11.3.3 Operation
 - 11.3.4 Message formats
 - 11.3.5 Options
- 11.4 EARLY BINDING UPDATE
 - 11.4.1 Concept
 - 11.4.2 Terminology
 - 11.4.3 Operation
- 12. Security in Mobile IP
 - 12.1 INTRODUCTION
 - 12.2 VPN PROBLEMS AND SOLUTIONS IN MIPv4
 - 12.2.1 Concept
 - 12.2.2 Mobile IP and VPN deployment scenarios
 - 12.3 APPLYING CGA TO OPTIMIZE MIPv6

- 12.3.1 Concept
- 12.3.2 Generating CGA
- 12.3.3 Protocol performance
- 12.3.4 Message formats 261
- 12.4 NSIS FIREWALL TRAVERSAL
- 12.4 Concept
- 12.4.2 Route optimization
- 12.4.3 Bi-directional tunneling
- 12.4.4 Triangular routing
- Index



<http://www.springer.com/978-0-387-25429-6>

Understanding IPv6

Mun, Y.; Lee, H.K.

2005, XVI, 279 p. 175 illus., Hardcover

ISBN: 978-0-387-25429-6