network Walks

Key Attributes 💡

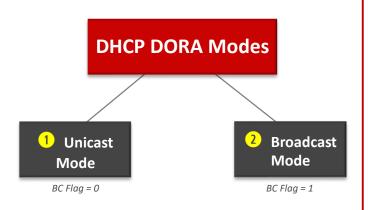|	
Protocol Type:	Layer7 Protocol (Application Layer)
Purpose:	IP Address Management
Standard:	RFC2131
Founder:	Ralph Droms
Carrier Protocol:	UDP
Protocol Model Type:	Client-Server Model
Port:	UDP67 (servers listening), UDP68 (clients listening)
	UDP57 (Zone Transfer), UDP58 (DNS Queries)

DORA Process - DHCP Working Principle (with example)

DORA

① DHCP Discover
Source MAC: **AAAA**, Source IP: **0.0.0.0**, Source Port: **UDP68**
Dest MAC: Bcast(**FF:FF:FF:FF:FF:FF**), Dest IP: Bcast(**255.255.255.255**), Dest Port: **UDP67**

② DHCP Offer
Source MAC: **BBBB**, Source IP: **2.2.2.2**, Source Port: **UDP67**
Dest MAC: Bcast(**FF:FF:FF:FF:FF:FF**), Dest IP: Bcast(**255.255.255.255**), Dest Port: **UDP68**

③ DHCP Request
Source MAC: **AAAA**, Source IP: **0.0.0.0**, Source Port: **UDP68**
Dest MAC: Bcast(**FF:FF:FF:FF:FF:FF**), Dest IP: Bcast(**255.255.255.255**), Dest Port: **UDP67**   www.networkwalks.com

④ DHCP Ack
Source MAC: **BBBB**, Source IP: **2.2.2.2**, Source Port: **UDP67**
Dest MAC: Bcast(**FF:FF:FF:FF:FF:FF**), Dest IP: Bcast(**255.255.255.255**), Dest Port: **UDP68**

DHCP Client
(UDP68 - listening)
MAC: AAAA, IP: 1.1.1.1

DHCP Server
(UDP67 - listening)
MAC: BBBB, IP: 2.2.2.2

DHCP Message Types

Message	Ref. Code	Description
DHCPDISCOVER	0x01	The client is looking for available DHCP servers
DHCPOFFER	0x02	The server response to the client DHCPDISCOVER www.networkwalks.com
DHCPREQUEST	0x03	The client broadcasts to the server, requesting offered parameters from one server specifically, as defined in the packet
DHCPDECLINE	0x04	The client-to-server communication, indicating that the network address is already in use
DHCPACK	0x05	The server-to-client communication with configuration parameters, including committed network address
DHCPNAK	0x06	The server-to-client communication, refusing the request for configuration parameter
DHCPRELEASE	0x07	The client-to-server communication, relinquishing network address and cancelling remaining lease
DHCPINFORM	0x08	The client-to-server communication, asking for only local configuration parameters that the client already has externally configured as an address

DHCP DORA Modes

① Unicast Mode
BC Flag = 0

② Broadcast Mode
BC Flag = 1

💡 There are two modes of DORA (based on Broadcast Flag in DHCP Packet):

Unicast Mode Server sends the DHCP_OFFER & DHCP_ACK on unicast MAC of client when DHCP BC Flag is set to 0

Broadcast Mode Server sends the DHCP_OFFER & DHCP_ACK on Broadcast MAC of client when DHCP BC Flag is set to 1

Unicast mode is not recommended when DHCP relay is in use. But if the client and server are on the same segment, then it is perfectly fine.

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