

Address Resolution Protocol (ARP)

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Overview

- Datalink to network layer address mapping
- ARP
- ARP tables/caches
- Proxy ARP, RARP, Inverse ARP, UnARP
- Gratuitous ARP, DHCP ARP

ARP packet format

0	8	16	24	31
HARDWARE ADDRESS TYPE		PROTOCOL ADDRESS TYPE		
HADDR LEN	PADDR LEN	OPERATION		
SENDER HADDR (first 4 octets)				
SENDER HADDR (last 2 octets)		SENDER PADDR (first 2 octets)		
SENDER PADDR (last 2 octets)		TARGET HADDR (first 2 octets)		
TARGET HADDR (last 4 octets)				
TARGET PADDR (all 4 octets)				

Typical ARP process

Sender

ARP request

- Datalink broadcast
- Fill in target IP

Receiver

ARP reply

- datalink unicast
- fill in fields
- learn sender's MAC

Variations of ARP

- Inverse ARP
 - Get MAC address when IP is known
- Reverse ARP
 - Request an IP address
- DHCP ARP
 - Used by clients to validate their leased IP
- Gratuitous ARP
 - Keep others informed of your MAC/IP
- UnARP
 - Notify stations to flush your MAC/IP ARP entry

Notes

- ARP cache issues
- ARP Cache size
- Security/authentication issues