Networking

**ARP –** Address Resolution Protocol

* Used for mapping IP address to physical machine address recognised in local network.
* Provides the protocol rules for making correlation of MAC address and IP address in ARP cache table and providing address conversion in both directions (IP address to MAC address and MAC address to IP address)
* Protocol differs for each type of local area network, there are separate ARP requests for comments (RFC), for Ethernet (uses ARP), switching technology (ATM – Asynchronous Transfer Mode), Fibre Distributed-Data Interface (Obsolete in LAN – replaced by Fast Ethernet), HIPPI (High Performance Parallel Interface – replaced by ever faster standard interfaces like Fibre channel and later 10 Gigabit Ethernet), and other protocols.

**ARP Cache –**

* Table used to maintain correlation between each MAC address and its corresponding IP address.

**ARP in action –**

1. Incoming packet destined for host machine on local area network arrives at gateway
2. Gateway asks ARP to find physical host or MAC address that matches IP address
3. ARP looks in ARP cache
4. If ARP finds address in ARP cache, packet is converted to right packet length and format and sent to machine
5. If no entry found for IP address, ARP broadcasts request packet in special format to all machines on LAN to see if one machine knows that it has that IP address associated with it.
6. If machine recognises IP address as its own, it returns a reply indicating this.
7. Arp updates ARP cache for future reference and then sends packet to the MAC address that replied.

**RARP –** Reverse Address Resolution Protocol

* Used when host machines don’t know their IP address
* Enables host machines to request their IP address from the gateway’s ARP cache.