EUI-64 (Extended Unique Identifier)

EUI-64 Process
- Uses a client's 48-bit Ethernet MAC address and inserts another 16 bits in the middle of the 46-bit MAC address to create a 64-bit Interface ID.
- Advantage is that the Ethernet MAC address can be used to determine the interface; is easily tracked.

EUI-64 Interface ID is represented in binary and comprises three parts:
- 24-bit OUI from the client MAC address, but the 7th bit (the Universally/Locally bit) is reversed (0 becomes a 1).
- Inserted as a 16-bit value FFFE.
- 24-bit device identifier from the client MAC address.

Example

PC>ipconfig /all

FastEthernet0 Connection:(default port)

Connection-specific DNS Suffix..:
Physical Address................: 0004.9A93.10B7
Link-local IPv6 Address.........: FE80::204:9AFF:FE93:10B7
IP Address......................: 0.0.0.0
Subnet Mask.....................: 0.0.0.0
Default Gateway.................: 0.0.0.0
DNS Servers.....................: 0.0.0.0
DHCP Servers....................: 0.0.0.0
DHCPv6 Client DUID..............: 00-01-00-01-1D-02-82-39-00-04-9A-93-10-B7

(MAC address)   0004.9A93.10B7
                       0004.9A   93.10B7
                       (0000 0000)
                       The 7th bit from the left is flipped in the IPv6 link local address.

(IPv6 Link Local Address)   FE80::204:9AFF:FE93:10B7
              FE80:0000:0000:0000:0204:9AFF:FE93:10B7
                       (0000 0010)