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CSC323-A
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DHCP

- 1) The DHCP messages are coming over UDP.
- 2) Yes, the port numbers are the same as in the example given in the lab assignment.
- 3) The link-layer address to my host is 44:37:e6:1e:0f:b1.
- 4) The values in the DHCP discover message that differentiate this message from the DHCP request is the values in Option 53.
- 5) The value in each of first four DHCP messages are 0xef5243b4, 0xef5243b4, 0x7033b2d1, and 0x7033b2d1. The purpose of the transaction-ID field is so the server can tell the difference between client requests during the request process.
- 6) The source IP address is 255.255.255.255, and the destination IP is 192.168.0.9.
- 7) The IP address of my DHCP server is 192.169.0.1.
- 8) The IP address the DHCP server is giving to my host is 192.168.0.9. The DHCP message that contained the offered DHCP address is DHCP message type.
- 9) The values in the trace that indicated an absence of a relay agent is 0.0.0.0 in my addresses. Therefore, I have no relay agent.
- 10) The purpose of the router line is to decide what default gateway to use, while the subnet mask line shows what default subnet mask to use.
- 11) The client's requested address is 192.168.0.9.
- 12) The purpose of lease time is the amount of time a DHCP server assigns an IP address to a client.
- 13) The purpose of a DHCP release message is to cancel a lease on a IP address. No, the DHCP server does not issue an acknowledgment of receipt of client's DHCP request. If the release message is lost, the DHCP server waits until the lease period is over until releasing it for another client.
- 14) Yes, ARP packets requests are made by the DHCP server. The DHCP server issues an ARP request for offered IP to make sure the IP address is not used by another workstation.

272 92.746024 0.0.0.0 255.255.255.255 DHCP 342 DHCP Discover - Transaction ID 0x7033b2d1
Frame 272: 342 bytes on wire (2736 bits), 342 bytes captured (2736 bits) on interface 0
Ethernet II, Src: HonHaiPr_1e:0f:b1 (44:37:e6:1e:0f:b1), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255
User Datagram Protocol, Src Port: 68, Dst Port: 67
Bootstrap Protocol (Discover)

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71 0.000027      192.168.0.9      192.168.0.1      DHCP      342      DHCP Request - Transaction ID 0xe480162f
Frame 71: 342 bytes on wire (2736 bits), 342 bytes captured (2736 bits) on interface 0
Ethernet II, Src: HonHaiPr_1e:0f:b1 (44:37:e6:1e:0f:b1), Dst: Technico_1b:1c:6c (08:95:2a:1b:1c:6c)
  Destination: Technico_1b:1c:6c (08:95:2a:1b:1c:6c)
    Address: Technico_1b:1c:6c (08:95:2a:1b:1c:6c)
      .... ..0. .... = LG bit: Globally unique address (factory default)
      .... ..0. .... = IG bit: Individual address (unicast)
Source: HonHaiPr_1e:0f:b1 (44:37:e6:1e:0f:b1)
  Address: HonHaiPr_1e:0f:b1 (44:37:e6:1e:0f:b1)
    .... ..0. .... = LG bit: Globally unique address (factory default)
    .... ..0. .... = IG bit: Individual address (unicast)
Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 192.168.0.9, Dst: 192.168.0.1
User Datagram Protocol, Src Port: 68, Dst Port: 67
Bootstrap Protocol (Request)
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272 0.199140      0.0.0.0      255.255.255.255  DHCP      342      DHCP Discover - Transaction ID 0x7033b2d1
Frame 272: 342 bytes on wire (2736 bits), 342 bytes captured (2736 bits) on interface 0
Ethernet II, Src: HonHaiPr_1e:0f:b1 (44:37:e6:1e:0f:b1), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255
User Datagram Protocol, Src Port: 68, Dst Port: 67
Bootstrap Protocol (Discover)
  Message type: Boot Request (1)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 0
  Transaction ID: 0x7033b2d1
  Seconds elapsed: 0
  Bootp flags: 0x0000 (Unicast)
  Client IP address: 0.0.0.0
  Your (client) IP address: 0.0.0.0
  Next server IP address: 0.0.0.0
  Relay agent IP address: 0.0.0.0
  Client MAC address: HonHaiPr_1e:0f:b1 (44:37:e6:1e:0f:b1)
  Client hardware address padding: 00000000000000000000
  Server host name not given
  Boot file name not given
  Magic cookie: DHCP
  Option: (53) DHCP Message Type (Discover)
    Length: 1
    DHCP: Discover (1)
  Option: (61) Client identifier
    Length: 7
    Hardware type: Ethernet (0x01)
    Client MAC address: HonHaiPr_1e:0f:b1 (44:37:e6:1e:0f:b1)
  Option: (50) Requested IP Address
    Length: 4
    Requested IP Address: 192.168.0.9
  Option: (12) Host Name
    Length: 7
    Host Name: Free-PC
  Option: (60) Vendor class identifier
    Length: 8
    Vendor class identifier: MSFT 5.0
  Option: (55) Parameter Request List
    Length: 13
    Parameter Request List Item: (1) Subnet Mask
    Parameter Request List Item: (15) Domain Name
    Parameter Request List Item: (3) Router
    Parameter Request List Item: (6) Domain Name Server
    Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
    Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type
    Parameter Request List Item: (47) NetBIOS over TCP/IP Scope
    Parameter Request List Item: (31) Perform Router Discover
    Parameter Request List Item: (33) Static Route
    Parameter Request List Item: (121) Classless Static Route
    Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
    Parameter Request List Item: (252) Private/Proxy autodiscovery
    Parameter Request List Item: (43) Vendor-Specific Information
  Option: (255) End
    Option End: 255
  Padding: 0000000000000000
```

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|-----|----------|-------------|-----------------|------|-----|---------------|-----------------------------|
| 71 | 0.000027 | 192.168.0.9 | 192.168.0.1 | DHCP | 342 | DHCP Request | - Transaction ID 0xe480162f |
| 75 | 0.576501 | 192.168.0.1 | 192.168.0.9 | DHCP | 355 | DHCP ACK | - Transaction ID 0xe480162f |
| 151 | 0.811059 | 192.168.0.9 | 192.168.0.1 | DHCP | 342 | DHCP Request | - Transaction ID 0xb1abe381 |
| 154 | 0.997564 | 192.168.0.1 | 192.168.0.9 | DHCP | 355 | DHCP ACK | - Transaction ID 0xb1abe381 |
| 227 | 0.438790 | 192.168.0.9 | 192.168.0.1 | DHCP | 342 | DHCP Release | - Transaction ID 0xef5243b4 |
| 272 | 0.199140 | 0.0.0.0 | 255.255.255.255 | DHCP | 342 | DHCP Discover | - Transaction ID 0x7033b2d1 |
| 273 | 0.003995 | 192.168.0.1 | 192.168.0.9 | DHCP | 355 | DHCP Offer | - Transaction ID 0x7033b2d1 |
| 274 | 0.000361 | 0.0.0.0 | 255.255.255.255 | DHCP | 353 | DHCP Request | - Transaction ID 0x7033b2d1 |
| 278 | 0.200681 | 192.168.0.1 | 192.168.0.9 | DHCP | 355 | DHCP ACK | - Transaction ID 0x7033b2d1 |

| | | | | | | | |
|-----|----------|-------------|-----------------|------|-----|---------------|-----------------------------|
| 272 | 0.199140 | 0.0.0.0 | 255.255.255.255 | DHCP | 342 | DHCP Discover | - Transaction ID 0x7033b2d1 |
| 273 | 0.003995 | 192.168.0.1 | 192.168.0.9 | DHCP | 355 | DHCP Offer | - Transaction ID 0x7033b2d1 |
| 274 | 0.000361 | 0.0.0.0 | 255.255.255.255 | DHCP | 353 | DHCP Request | - Transaction ID 0x7033b2d1 |
| 278 | 0.200681 | 192.168.0.1 | 192.168.0.9 | DHCP | 355 | DHCP ACK | - Transaction ID 0x7033b2d1 |

```
273 0.003995      192.168.0.1      192.168.0.9      DHCP      355      DHCP Offer      - Transaction ID 0x7033b2d1
Frame 273: 355 bytes on wire (2840 bits), 355 bytes captured (2840 bits) on interface 0
Ethernet II, Src: Technico_1b:1c:6c (08:95:2a:1b:1c:6c), Dst: HonHaiPr_1e:0f:b1 (44:37:e6:1e:0f:b1)
Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.9
User Datagram Protocol, Src Port: 67, Dst Port: 68
Bootstrap Protocol (Offer)
  Message type: Boot Reply (2)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 0
  Transaction ID: 0x7033b2d1
  Seconds elapsed: 0
  Bootp flags: 0x0000 (Unicast)
  Client IP address: 0.0.0.0
  Your (client) IP address: 192.168.0.9
  Next server IP address: 192.168.0.1
  Relay agent IP address: 0.0.0.0
  Client MAC address: HonHaiPr_1e:0f:b1 (44:37:e6:1e:0f:b1)
  Client hardware address padding: 00000000000000000000
  Server host name not given
  Boot file name not given
  Magic cookie: DHCP
  Option: (53) DHCP Message Type (Offer)
    Length: 1
    DHCP: Offer (2)
  Option: (1) Subnet Mask
    Length: 4
    Subnet Mask: 255.255.255.0
  Option: (2) Time Offset
    Length: 4
    Time Offset: (0s) 0 seconds
  Option: (3) Router
    Length: 4
    Router: 192.168.0.1
  Option: (23) Default IP Time-to-Live
    Length: 1
    Default IP Time-to-Live: 64
  Option: (51) IP Address Lease Time
    Length: 4
    IP Address Lease Time: (3600s) 1 hour
  Option: (54) DHCP Server Identifier
    Length: 4
    DHCP Server Identifier: 192.168.0.1
  Option: (58) Renewal Time Value
    Length: 4
    Renewal Time Value: (1800s) 30 minutes
  Option: (59) Rebinding Time Value
    Length: 4
    Rebinding Time Value: (3150s) 52 minutes, 30 seconds
  Option: (6) Domain Name Server
    Length: 8
    Domain Name Server: 209.18.47.61
    Domain Name Server: 209.18.47.62
  Option: (15) Domain Name
    Length: 12
    Domain Name: twcnyc.ny.ny.com
  Option: (255) End
    Option End: 255
```

274 0.000361 0.0.0.0 255.255.255.255 DHCP 353 DHCP Request - Transaction ID 0x7033b2d1
Frame 274: 353 bytes on wire (2824 bits), 353 bytes captured (2824 bits) on interface 0
Ethernet II, Src: HonHaiPr_1e:0f:b1 (44:37:e6:1e:0f:b1), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255
User Datagram Protocol, Src Port: 68, Dst Port: 67
Bootstrap Protocol (Request)
Message type: Boot Request (1)
Hardware type: Ethernet (0x01)
Hardware address length: 6
Hops: 0
Transaction ID: 0x7033b2d1
Seconds elapsed: 0
Bootp flags: 0x0000 (Unicast)
Client IP address: 0.0.0.0
Your (client) IP address: 0.0.0.0
Next server IP address: 0.0.0.0
Relay agent IP address: 0.0.0.0
Client MAC address: HonHaiPr_1e:0f:b1 (44:37:e6:1e:0f:b1)
Client hardware address padding: 00000000000000000000
Server host name not given
Boot file name not given
Magic cookie: DHCP
Option: (53) DHCP Message Type (Request)
Length: 1
DHCP: Request (3)
Option: (61) Client identifier
Length: 7
Hardware type: Ethernet (0x01)
Client MAC address: HonHaiPr_1e:0f:b1 (44:37:e6:1e:0f:b1)
Option: (50) Requested IP Address
Length: 4
Requested IP Address: 192.168.0.9
Option: (54) DHCP Server Identifier
Length: 4
DHCP Server Identifier: 192.168.0.1
Option: (12) Host Name
Length: 7
Host Name: Free-PC
Option: (81) Client Fully Qualified Domain Name
Length: 10
Flags: 0x00
A-RR result: 0
PTR-RR result: 0
Client name: Free-PC
Option: (60) Vendor class identifier
Length: 8
Vendor class identifier: MSFT 5.0
Option: (55) Parameter Request List
Length: 13
Parameter Request List Item: (1) Subnet Mask
Parameter Request List Item: (15) Domain Name
Parameter Request List Item: (3) Router
Parameter Request List Item: (6) Domain Name Server
Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server
Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type
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Parameter Request List Item: (31) Perform Router Discover
Parameter Request List Item: (33) Static Route
Parameter Request List Item: (121) Classless Static Route
Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)
Parameter Request List Item: (252) Private/Proxy autodiscovery
Parameter Request List Item: (43) Vendor-Specific Information
Option: (255) End
Option End: 255

278 0.200681 192.168.0.1 192.168.0.9 DHCP 355 DHCP ACK - Transaction ID 0x7033b2d1
Frame 278: 355 bytes on wire (2840 bits), 355 bytes captured (2840 bits) on interface 0
Ethernet II, Src: Technico_1b:1c:6c (08:95:2a:1b:1c:6c), Dst: HonHaiPr_1e:0f:b1 (44:37:e6:1e:0f:b1)
Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.9
User Datagram Protocol, Src Port: 67, Dst Port: 68
Bootstrap Protocol (ACK)
Message type: Boot Reply (2)
Hardware type: Ethernet (0x01)
Hardware address length: 6
Hops: 0
Transaction ID: 0x7033b2d1
Seconds elapsed: 0
Bootp flags: 0x0000 (Unicast)
Client IP address: 0.0.0.0
Your (client) IP address: 192.168.0.9
Next server IP address: 192.168.0.1
Relay agent IP address: 0.0.0.0
Client MAC address: HonHaiPr_1e:0f:b1 (44:37:e6:1e:0f:b1)
Client hardware address padding: 00000000000000000000
Server host name not given
Boot file name not given
Magic cookie: DHCP
Option: (53) DHCP Message Type (ACK)
Length: 1
DHCP: ACK (5)
Option: (1) Subnet Mask
Length: 4
Subnet Mask: 255.255.255.0
Option: (2) Time Offset
Length: 4
Time Offset: (0s) 0 seconds
Option: (3) Router
Length: 4
Router: 192.168.0.1
Option: (23) Default IP Time-to-Live
Length: 1
Default IP Time-to-Live: 64
Option: (51) IP Address Lease Time
Length: 4
IP Address Lease Time: (3600s) 1 hour
Option: (54) DHCP Server Identifier
Length: 4
DHCP Server Identifier: 192.168.0.1
Option: (58) Renewal Time Value
Length: 4
Renewal Time Value: (1800s) 30 minutes
Option: (59) Rebinding Time Value
Length: 4
Rebinding Time Value: (3150s) 52 minutes, 30 seconds
Option: (6) Domain Name Server
Length: 8
Domain Name Server: 209.18.47.61
Domain Name Server: 209.18.47.62
Option: (15) Domain Name
Length: 12
Domain Name: twcnv.rr.com
Option: (255) End
Option End: 255

73 0.000020 HonHaiPr_1e:0f:b1 Technico_1b:1c:6c ARP 42 192.168.0.9 is at 44:37:e6:1e:0f:b1

0.0.0.0 255.255.255.255 192.168.0.1 192.168.0.0

