Answer Sheets

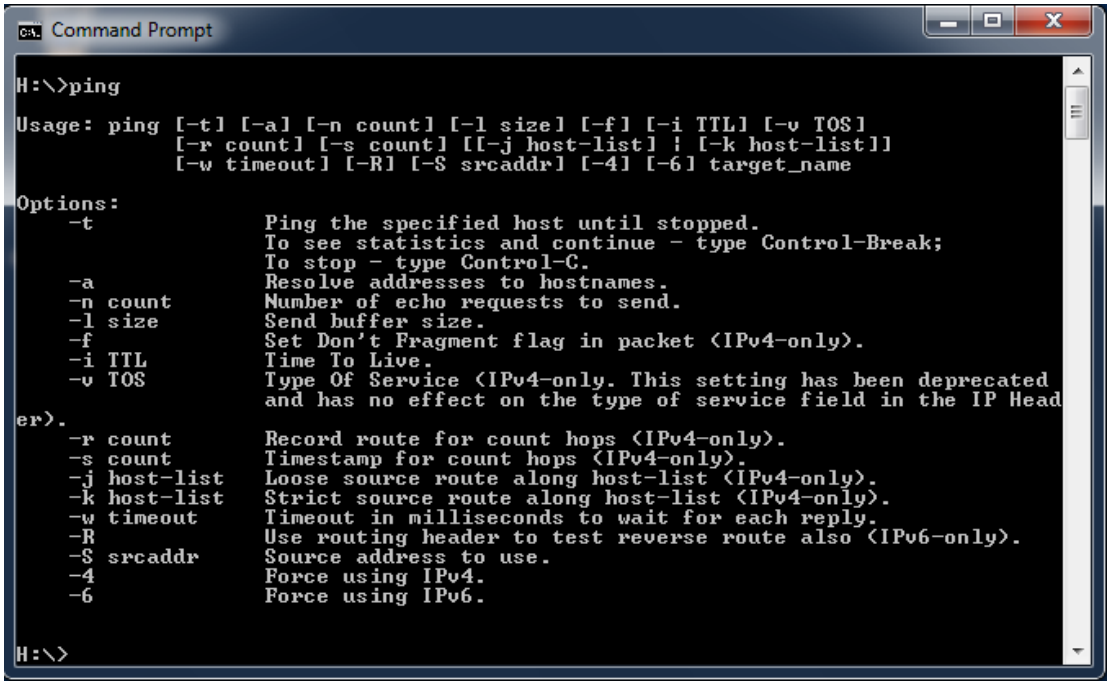
Ipconfig exercise

IP address of the machine	136.206.10.30
MAC address	B8-AC-6F-A5-6C-04

Ping exercise 1

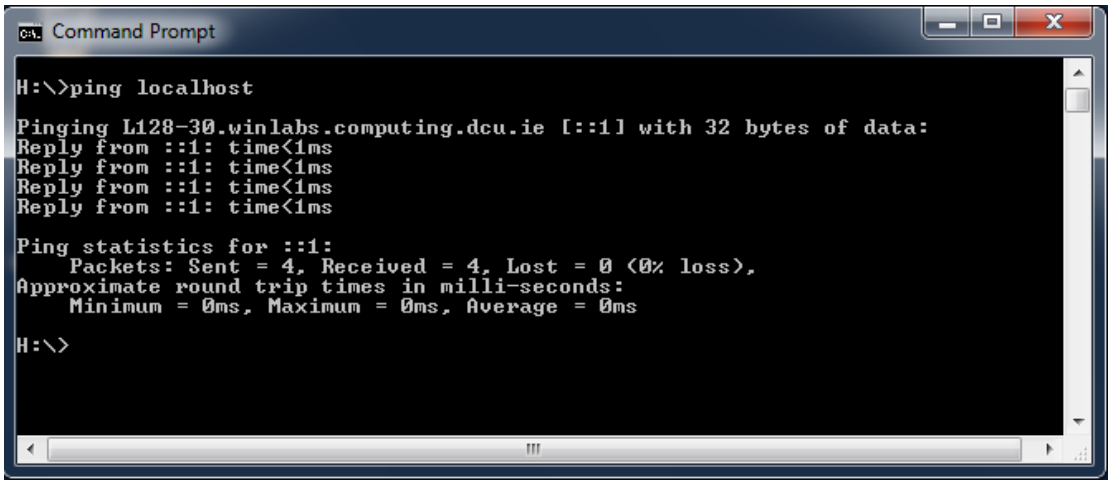
What is displayed?

The ping command returns a list of options that supply information on how the computer is communicating over the network. A brief explanation of what each option does is also displayed.



Ping exercise 2

Ping localhost



1. What information is returned?
2. What is the localhost?

Answer 1

The information returned is a diagnostic on the latency and delay in sending packets locally through the computer's virtual interface. The hostname and IPv6 address is displayed which was pinged with 32 bytes of data. We are shown the number of packets sent and received from the localhost, and how many are lost. There are also statistics displayed in the approximate round trip times. The average ping for a round trip appears to take ~0ms.

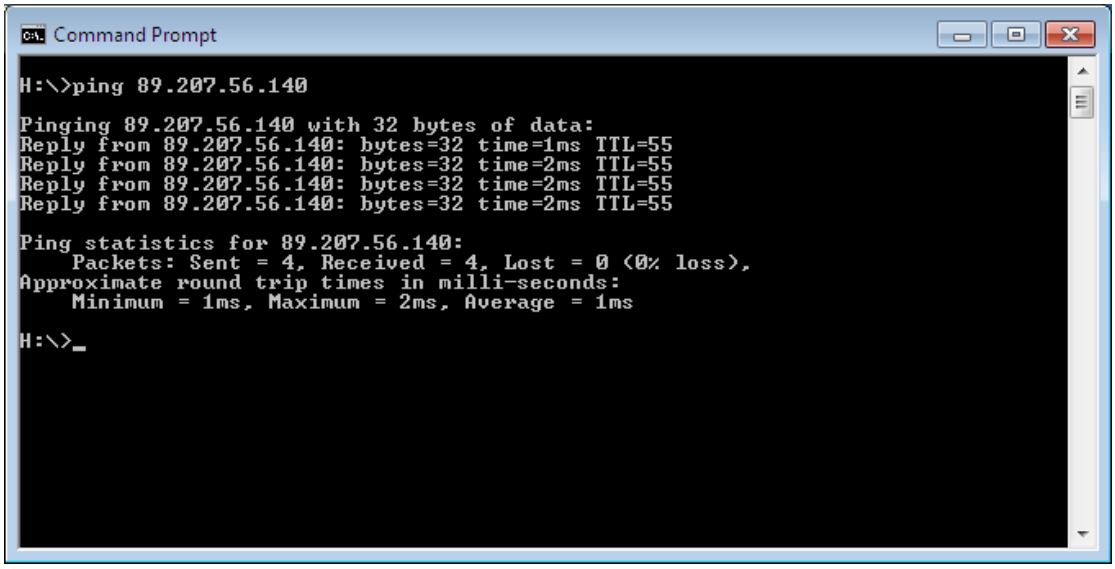
Answer 2

The localhost refers to the local computer's address, basically the computer's "internal" IP address. This can also be referred to the loopback address. Here, mine is L128-30.winlabs.computing.dcu.ie.

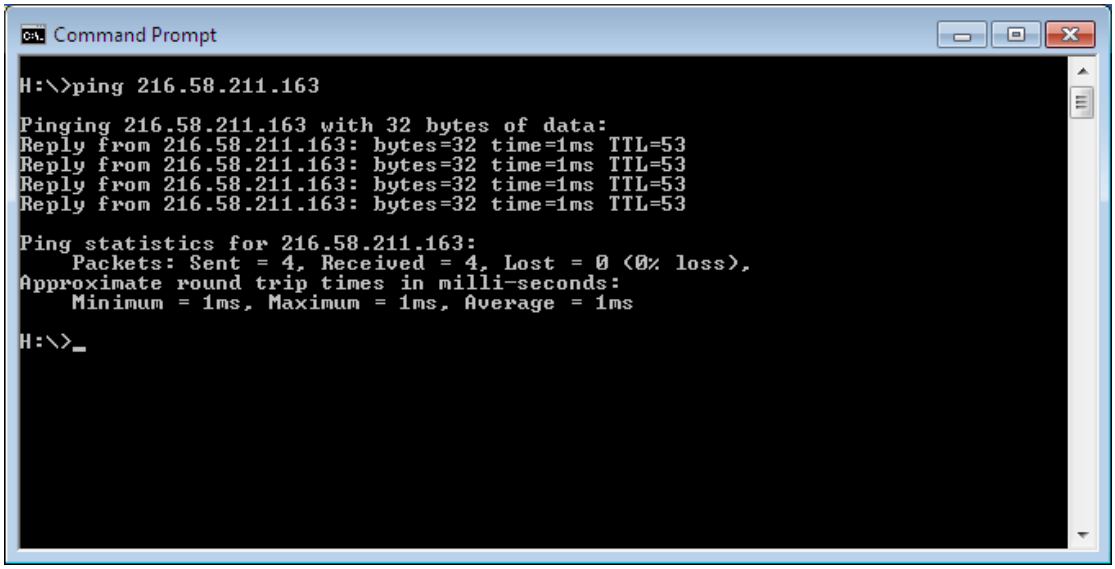
Additional marks

The IP address for 89.207.56.140 is associated with https://www.rte.ie/. It is owned by RTE. The address is RTE, Donnybrook, Dublin 4, Ireland. The email for the registrar is abuse@rte.ie. Their phone number is +353 1 2082636. Their Eircode is D04 KC99. The website was registered in 2013. The IP address 216.58.211.163 is associated with https://www.google.ie. It is owned by Google. The email for the registrar is arin-contact@google.com. The registrar's address is 1600 Amphitheatre Parkway, Mountain View, CA, USA. Their phone number is +1-650-253-0000. Their postal code is 94043. The website was registered in 2000. All this information was acquired from https://www.whois.com and https://finder.eircode.ie/.

Ping the IP address 89.207.56.140:



Ping the IP address 216.58.211.163:

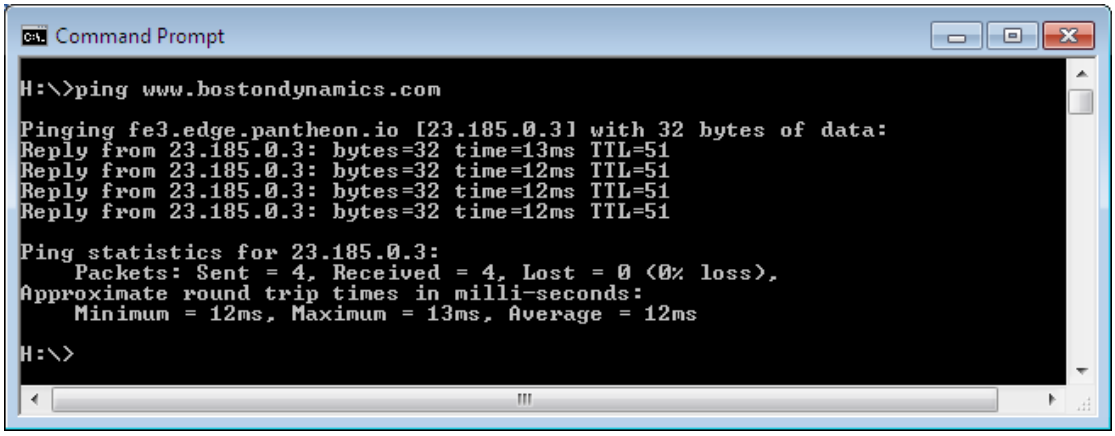


Explain output here, item by item.

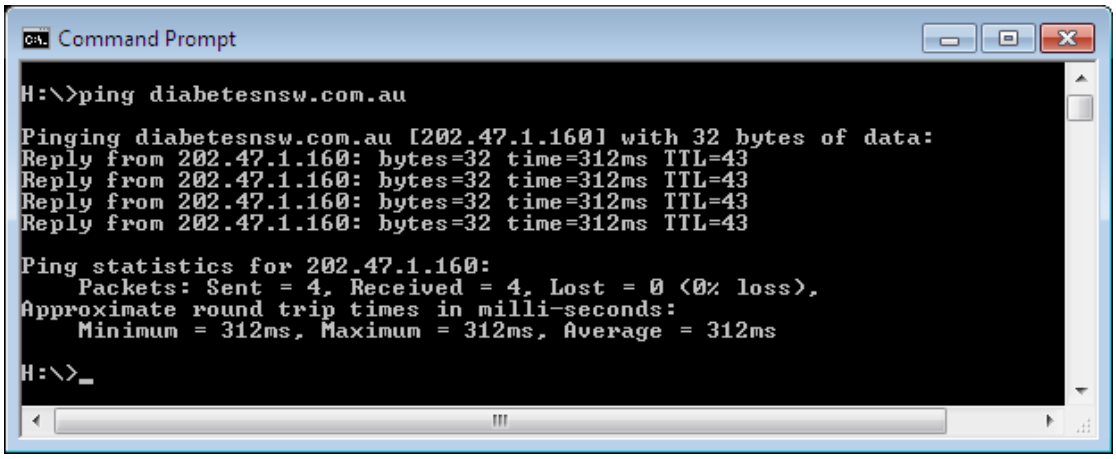
The first line tells us that we are sending 32 bytes of data to the IP address we are pinging (89.207.56.140 in this case). Next, in lines 2-5, we see the IP address that the reply is coming from, the bytes sent, the time taken and the TTL (time to live) which limits the lifespan of these bytes. In this case, we can see that it took less hops to arrive to 89.207.56.140 because the TTL number is larger. Next, in lines 6-7, we are given the information on how many packets were sent, received and lost. Lastly, in lines 8-9, we are given statistics on the round-trip times of the packets we sent. Even though the TTL is larger when we pinged 89.207.56.140, the approximate round trip is still said to take ~1ms, the same as when we pinged 216.58.211.163.

Exercise 3

Paste window 1



Paste window 2



	Website 1	Website 2
Name of the website pinged	www.bostondynamics.com	www.diabetesnsw.com.au
What is the IP address returned?	23.185.0.3	202.47.1.160
What is the TTL figure?	51	43
Average round trip time	12ms	312ms

The largest round-trip time I could find was for www.diabetesnsw.com.au in Australia. It took over 20 times the amount of time to took to reach Boston Dynamic's website. The webserver for Diabetes NSW is in New South Wales, Australia whereas the webserver for Boston Dynamics is based in Toronto, Canada.

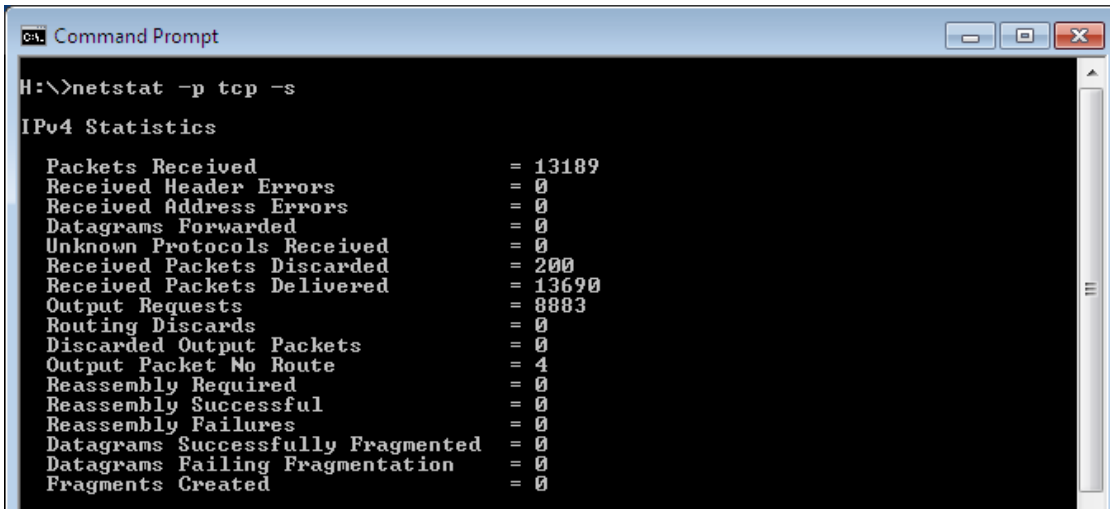
Your comments on **administrative information** that you found by searching on the Internet about the websites from experiment 3. Things like, who owns it, phone numbers, email addresses, registered addresses etc, anything at all that tells us about the website and its administration.

Google Inc. owns bostondynamics.com. The registered address for the administrator it is 36 Mowat Ave, Toronto, ON, Canada. The postal code is M4K 3K1. The contact phone number is +1.4165385487. The contact email address is email@contactprivacy.email. Diabetesnsw.com.au is registered under TPP Internet to Jennifer Thomas of the Diabetes Australia – New South Wales organisation. Jennifer has over 15 years experience in digital marketing. The contact email is whois.ausregistry.com.au.

Exercise 4: Netstat exercise

Number of packets received by workstation:

I used netstat –s to determine how many packets were recieved. 13189 packets were received.



```
Command Prompt

H:\>netstat -p tcp -s

IPv4 Statistics

  Packets Received                   = 13189
  Received Header Errors             = 0
  Received Address Errors            = 0
  Datagrams Forwarded                = 0
  Unknown Protocols Received         = 0
  Received Packets Discarded         = 200
  Received Packets Delivered         = 13690
  Output Requests                    = 8883
  Routing Discards                   = 0
  Discarded Output Packets           = 0
  Output Packet No Route             = 4
  Reassembly Required                = 0
  Reassembly Successful              = 0
  Reassembly Failures                = 0
  Datagrams Successfully Fragmented  = 0
  Datagrams Failing Fragmentation    = 0
  Fragments Created                  = 0
```

ICMP packets explained:

ICMP stands for Internet Control Message Protocol. ICMP is a protocol used to troubleshoot. ICMP packets are IP packets. They carry ICMP in their IP data portion. Both times, 13 packets were sent but only 12 were received back. A packet may also be discarded if the computer is unable to process it, this may be because it has been corrupted or contains an error of some form. If the ICMP packets reach the desired network then an echo reply is sent back, which is what we see above.

Discuss the connections opened by visiting the DCU website here:

Using netstat –a shows all active connections, using it before and after we can see the connections that are opened by connecting to the DCU website. We can see that first Ossa2:http is connected to under the Foreign Header. We know a connection has been made because it is in the established state. Beneath Ossa2:http we can see various IP addresses that the computer has connected to.

Also, grab the window, showing connections opened as a result of visiting the DCU website.

```
Command Prompt
Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    0.0.0.0:135            L128-30:0              LISTENING
  TCP    0.0.0.0:443            L128-30:0              LISTENING
  TCP    0.0.0.0:445            L128-30:0              LISTENING
  TCP    0.0.0.0:902            L128-30:0              LISTENING
  TCP    0.0.0.0:912            L128-30:0              LISTENING
  TCP    0.0.0.0:3389           L128-30:0              LISTENING
  TCP    0.0.0.0:5357           L128-30:0              LISTENING
  TCP    0.0.0.0:8501           L128-30:0              LISTENING
  TCP    0.0.0.0:49152          L128-30:0              LISTENING
  TCP    0.0.0.0:49153          L128-30:0              LISTENING
  TCP    0.0.0.0:49154          L128-30:0              LISTENING
  TCP    0.0.0.0:49187          L128-30:0              LISTENING
  TCP    0.0.0.0:49210          L128-30:0              LISTENING
  TCP    0.0.0.0:58614          L128-30:0              LISTENING
  TCP    127.0.0.1:8307         L128-30:0              LISTENING
  TCP    136.206.10.30:139      L128-30:0              LISTENING
  TCP    192.168.16.1:139       L128-30:0              LISTENING
  TCP    192.168.37.1:139       L128-30:0              LISTENING
  TCP    [::]:135               L128-30:0              LISTENING
  TCP    [::]:443               L128-30:0              LISTENING
  TCP    [::]:445               L128-30:0              LISTENING
  TCP    [::]:3389              L128-30:0              LISTENING
  TCP    [::]:5357              L128-30:0              LISTENING
  TCP    [::]:8501              L128-30:0              LISTENING
  TCP    [::]:49152             L128-30:0              LISTENING
  TCP    [::]:49153             L128-30:0              LISTENING
  TCP    [::]:49154             L128-30:0              LISTENING
  TCP    [::]:49187             L128-30:0              LISTENING
  TCP    [::]:49210             L128-30:0              LISTENING
  TCP    [::]:58614             L128-30:0              LISTENING
  TCP    [::1]:8307             L128-30:0              LISTENING
  TCP    [2002:88ce:a1e::88ce:a1e]:58650  [2002:88ce:d93d::88ce:d93d]:microsoft-
ds   ESTABLISHED
  TCP    [2002:88ce:a1e::88ce:a1e]:58807  [2002:88ce:d93d::88ce:d93d]:49158   EST
ABLISHED
  UDP    0.0.0.0:123            *:*
  UDP    0.0.0.0:500            *:*
  UDP    0.0.0.0:3702           *:*
  UDP    0.0.0.0:3702           *:*
  UDP    0.0.0.0:4500           *:*
  UDP    0.0.0.0:5355           *:*
  UDP    0.0.0.0:52850          *:*
  UDP    127.0.0.1:1900         *:*
  UDP    127.0.0.1:50744        *:*
  UDP    127.0.0.1:51351        *:*
  UDP    127.0.0.1:51353        *:*
  UDP    127.0.0.1:55319        *:*
  UDP    136.206.10.30:137      *:*
  UDP    136.206.10.30:138      *:*
  UDP    136.206.10.30:1900     *:*
  UDP    136.206.10.30:55316    *:*
  UDP    192.168.16.1:137       *:*
  UDP    192.168.16.1:138       *:*
  UDP    192.168.16.1:1900      *:*
  UDP    192.168.16.1:55317     *:*
  UDP    192.168.37.1:137       *:*
  UDP    192.168.37.1:138       *:*
  UDP    192.168.37.1:1900      *:*
  UDP    192.168.37.1:55318     *:*
  UDP    [::]:123               *:*
  UDP    [::]:500               *:*
  UDP    [::]:3702              *:*
  UDP    [::]:3702              *:*
  UDP    [::]:4500              *:*
  UDP    [::]:5355              *:*
  UDP    [::]:52851             *:*
  UDP    [::1]:1900             *:*
  UDP    [::1]:55315            *:*
  UDP    [fe80::10f1:949c:79ec:75f2%13]:546   *:*
  UDP    [fe80::10f1:949c:79ec:75f2%13]:1900  *:*
  UDP    [fe80::10f1:949c:79ec:75f2%13]:55312  *:*
  UDP    [fe80::2448:ba3b:b56b:19c9%17]:546  *:*
  UDP    [fe80::2448:ba3b:b56b:19c9%17]:1900  *:*
  UDP    [fe80::2448:ba3b:b56b:19c9%17]:55314  *:*
  UDP    [fe80::a402:8d8b:7a49:e2ca%15]:546  *:*
  UDP    [fe80::a402:8d8b:7a49:e2ca%15]:1900  *:*
  UDP    [fe80::a402:8d8b:7a49:e2ca%15]:55313  *:*

H:\>_
```

Before dcu.ie was opened

```
Command Prompt

H:\>netstat -a

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    0.0.0.0:135            L128-30:0              LISTENING
  TCP    0.0.0.0:443            L128-30:0              LISTENING
  TCP    0.0.0.0:445            L128-30:0              LISTENING
  TCP    0.0.0.0:902            L128-30:0              LISTENING
  TCP    0.0.0.0:912            L128-30:0              LISTENING
  TCP    0.0.0.0:3389           L128-30:0              LISTENING
  TCP    0.0.0.0:5357           L128-30:0              LISTENING
  TCP    0.0.0.0:8501           L128-30:0              LISTENING
  TCP    0.0.0.0:49152          L128-30:0              LISTENING
  TCP    0.0.0.0:49153          L128-30:0              LISTENING
  TCP    0.0.0.0:49154          L128-30:0              LISTENING
  TCP    0.0.0.0:49187          L128-30:0              LISTENING
  TCP    0.0.0.0:49210          L128-30:0              LISTENING
  TCP    0.0.0.0:58614          L128-30:0              LISTENING
  TCP    127.0.0.1:8307         L128-30:0              LISTENING
  TCP    136.206.10.30:139      L128-30:0              LISTENING
  TCP    136.206.10.30:59011    Ossa2:http             ESTABLISHED
  TCP    136.206.10.30:59012    Ossa2:http             ESTABLISHED
  TCP    136.206.10.30:59013    Ossa2:http             ESTABLISHED
  TCP    136.206.10.30:59014    Ossa2:http             ESTABLISHED
  TCP    136.206.10.30:59015    Ossa2:http             ESTABLISHED
  TCP    136.206.10.30:59016    Ossa2:http             ESTABLISHED
  TCP    136.206.10.30:59017    edge-star-mini-shv-01-dub4:https  ESTABLISHED
  TCP    136.206.10.30:59018    edge-star-mini-shv-01-dub4:https  ESTABLISHED
  TCP    136.206.10.30:59019    192.229.233.25:http    ESTABLISHED
  TCP    136.206.10.30:59020    192.229.233.25:http    ESTABLISHED
  TCP    136.206.10.30:59021    93.184.220.29:http     ESTABLISHED
  TCP    136.206.10.30:59022    192.229.233.25:https   ESTABLISHED
  TCP    136.206.10.30:59023    192.229.233.25:https   ESTABLISHED
  TCP    136.206.10.30:59024    104.244.42.8:https     ESTABLISHED
  TCP    136.206.10.30:59025    104.244.42.8:https     ESTABLISHED
  TCP    136.206.10.30:59026    104.244.43.209:https   ESTABLISHED
  TCP    136.206.10.30:59027    104.244.43.209:https   ESTABLISHED
  TCP    136.206.10.30:59028    xx-fbcdn-shv-01-dub4:https  ESTABLISHED
  TCP    136.206.10.30:59029    xx-fbcdn-shv-01-dub4:https  ESTABLISHED
  TCP    136.206.10.30:59030    xx-fbcdn-shv-01-dub4:https  ESTABLISHED
  TCP    136.206.10.30:59031    xx-fbcdn-shv-01-dub4:https  ESTABLISHED
  TCP    136.206.10.30:59032    xx-fbcdn-shv-01-dub4:https  ESTABLISHED
  TCP    136.206.10.30:59033    xx-fbcdn-shv-01-dub4:https  ESTABLISHED
  TCP    136.206.10.30:59034    xx-fbcdn-shv-01-dub4:https  ESTABLISHED
  TCP    136.206.10.30:59035    13.107.5.80:https      ESTABLISHED
  TCP    136.206.10.30:59036    13.107.5.80:https      ESTABLISHED
  TCP    136.206.10.30:59037    192.229.233.50:https   ESTABLISHED
  TCP    136.206.10.30:59038    192.229.233.50:https   ESTABLISHED
  TCP    136.206.10.30:59039    104.244.46.103:https   ESTABLISHED
  TCP    136.206.10.30:59040    104.244.46.103:https   ESTABLISHED
  TCP    136.206.10.30:59041    87-32-97-11:http       ESTABLISHED
  TCP    136.206.10.30:59042    192.229.233.50:https   ESTABLISHED
  TCP    136.206.10.30:59043    192.229.233.50:https   ESTABLISHED
  TCP    136.206.10.30:59044    192.229.233.50:https   ESTABLISHED
  TCP    136.206.10.30:59045    192.229.233.50:https   ESTABLISHED
  TCP    136.206.10.30:59046    104.244.46.103:https   ESTABLISHED
  TCP    136.206.10.30:59047    104.244.46.103:https   ESTABLISHED
  TCP    136.206.10.30:59048    Ossa2:http             ESTABLISHED
  TCP    136.206.10.30:59049    Ossa2:http             ESTABLISHED
  TCP    136.206.10.30:59050    a-0001:https           ESTABLISHED
  TCP    136.206.10.30:59051    a-0001:https           ESTABLISHED
  TCP    136.206.10.30:59052    a-0001:https           ESTABLISHED
  TCP    136.206.10.30:59053    a23-66-21-99:https     ESTABLISHED
  TCP    136.206.10.30:59054    a23-66-21-99:https     ESTABLISHED
  TCP    136.206.10.30:59055    104.18.25.243:http     ESTABLISHED
  TCP    136.206.10.30:59056    a-0001:https           ESTABLISHED
  TCP    136.206.10.30:59057    a-0001:https           ESTABLISHED
  TCP    136.206.10.30:59058    a23-66-21-99:http      ESTABLISHED
  TCP    136.206.10.30:59059    a23-66-21-99:http      ESTABLISHED
  TCP    136.206.10.30:59060    a23-212-229-47:http    ESTABLISHED
  TCP    136.206.10.30:59061    a23-212-229-47:http    ESTABLISHED
  TCP    136.206.10.30:59062    93.184.221.200:https   ESTABLISHED
  TCP    136.206.10.30:59063    93.184.221.200:https   ESTABLISHED
  TCP    136.206.10.30:59064    a23-212-229-47:http    ESTABLISHED
  TCP    136.206.10.30:59065    a23-212-229-47:http    ESTABLISHED
  TCP    136.206.10.30:59066    a23-212-229-47:http    ESTABLISHED
  TCP    136.206.10.30:59067    a23-38-32-123:http     ESTABLISHED
  TCP    136.206.10.30:59068    a23-38-32-123:http     ESTABLISHED
  TCP    136.206.10.30:59069    a184-50-163-231:http   ESTABLISHED
  TCP    136.206.10.30:59070    a184-50-163-231:http   ESTABLISHED
  TCP    136.206.10.30:59071    a23-212-229-47:https   ESTABLISHED
  TCP    136.206.10.30:59072    a23-212-229-47:https   ESTABLISHED
```

After dcu.ie was opened

Netstat –r explained

The netstat –r command displays an interface list and two tables of content that contain IP routes. There is one table for iPv4 and one for iPv6. The information displayed is the routes for the network adapters in the computer. This is a collection of addresses for other networks. The information displayed in the tables shows the best route to take when the computer sends data to these networks.

```
Command Prompt

H:\>netstat -r
===========================================================================
Interface List
 13...b8 ac 6f a5 6c 04 ......Intel(R) 82578DM Gigabit Network Connection
 15...00 50 56 c0 00 01 ......VMware Virtual Ethernet Adapter for VMnet1
 17...00 50 56 c0 00 08 ......VMware Virtual Ethernet Adapter for VMnet8
  1...........................Software Loopback Interface 1
 14...00 00 00 00 00 00 00 e0 Microsoft ISATAP Adapter
 11...00 00 00 00 00 00 00 e0 Microsoft 6to4 Adapter
 12...00 00 00 00 00 00 00 e0 Microsoft Teredo Tunneling Adapter
 16...00 00 00 00 00 00 00 e0 Microsoft ISATAP Adapter #2
 18...00 00 00 00 00 00 00 e0 Microsoft ISATAP Adapter #3
===========================================================================

IPv4 Route Table
===========================================================================
Active Routes:
Network Destination        Netmask          Gateway       Interface  Metric
          0.0.0.0          0.0.0.0   136.206.10.254    136.206.10.30     10
        127.0.0.0        255.0.0.0         On-link         127.0.0.1    306
        127.0.0.1  255.255.255.255         On-link         127.0.0.1    306
  127.255.255.255  255.255.255.255         On-link         127.0.0.1    306
     136.206.10.0    255.255.255.0         On-link     136.206.10.30    266
    136.206.10.30  255.255.255.255         On-link     136.206.10.30    266
   136.206.10.255  255.255.255.255         On-link     136.206.10.30    266
     192.168.16.0    255.255.255.0         On-link      192.168.16.1    276
     192.168.16.1  255.255.255.255         On-link      192.168.16.1    276
   192.168.16.255  255.255.255.255         On-link      192.168.16.1    276
     192.168.37.0    255.255.255.0         On-link      192.168.37.1    276
     192.168.37.1  255.255.255.255         On-link      192.168.37.1    276
   192.168.37.255  255.255.255.255         On-link      192.168.37.1    276
        224.0.0.0        240.0.0.0         On-link         127.0.0.1    306
        224.0.0.0        240.0.0.0         On-link     136.206.10.30    266
        224.0.0.0        240.0.0.0         On-link      192.168.16.1    276
        224.0.0.0        240.0.0.0         On-link      192.168.37.1    276
  255.255.255.255  255.255.255.255         On-link         127.0.0.1    306
  255.255.255.255  255.255.255.255         On-link     136.206.10.30    266
  255.255.255.255  255.255.255.255         On-link      192.168.16.1    276
  255.255.255.255  255.255.255.255         On-link      192.168.37.1    276
===========================================================================
Persistent Routes:
  None

IPv6 Route Table
===========================================================================
Active Routes:
 If Metric Network Destination      Gateway
  1    306 ::1/128                  On-link
 11   1010 2002::/16                On-link
 11    266 2002:88ce:a1e::88ce:a1e/128
                                    On-link
 13    266 fe80::/64                On-link
 15    276 fe80::/64                On-link
 17    276 fe80::/64                On-link
 13    266 fe80::10f1:949c:79ec:75f2/128
                                    On-link
 17    276 fe80::2448:ba3b:b56b:19c9/128
                                    On-link
 15    276 fe80::a402:8d8b:7a49:e2ca/128
                                    On-link
  1    306 ff00::/8                 On-link
 13    266 ff00::/8                 On-link
 15    276 ff00::/8                 On-link
 17    276 ff00::/8                 On-link
===========================================================================
Persistent Routes:
  None
```