

1.1

Reference: <http://serverfault.com/questions/24515/how-do-i-request-a-new-ip-address-from-my-dhcp-server-using-ubuntu-server>

```
#dhclient -r
```

```
#dhclient
```

1.2

In the meanwhile, there isn't any new host connecting to the DHCP server.

2.1

Reference: <http://www.omnisecu.com/tcpip/advantages-of-distributed-dns-infrastructure-architecture.php>

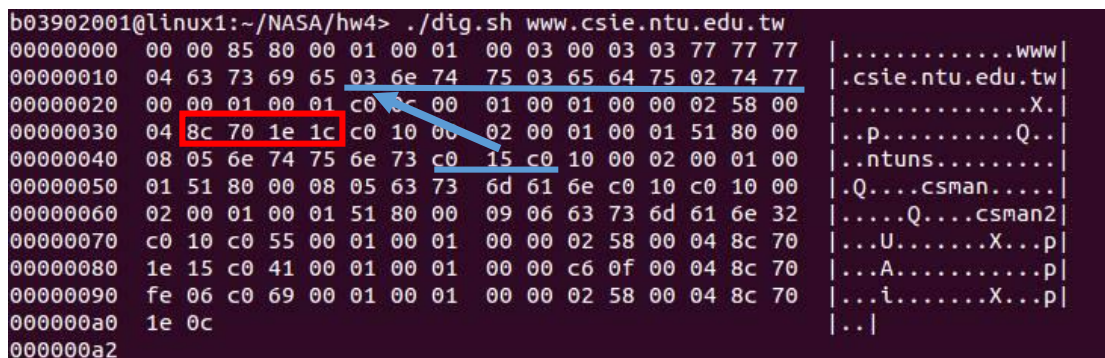
1.A single DNS server cannot deal with the huge traffic nowadays.

2.If a single DNS server fails, the whole DNS service stops.

3.It is hard to update and maintain.

2.2

The numbers in the red box.



```
b03902001@linux1:~/NASA/hw4> ./dig.sh www.csie.ntu.edu.tw
00000000 00 00 85 80 00 01 00 01 00 03 00 03 03 77 77 77 |.....www|
00000010 04 63 73 69 65 03 6e 74 75 03 65 64 75 02 74 77 |.csie.ntu.edu.tw|
00000020 00 00 01 00 01 c0 0c 00 01 00 01 00 00 02 58 00 |.....X.|
00000030 04 8c 70 1e 1c c0 10 00 02 00 01 00 01 51 80 00 |..p.....Q..|
00000040 08 05 6e 74 75 6e 73 c0 15 c0 10 00 02 00 01 00 |..ntuns.....|
00000050 01 51 80 00 08 05 63 73 6d 61 6e c0 10 c0 10 00 |.Q....csman....|
00000060 02 00 01 00 01 51 80 00 09 06 63 73 6d 61 6e 32 |.....Q....csman2|
00000070 c0 10 c0 55 00 01 00 01 00 00 02 58 00 04 8c 70 |...U.....X...p|
00000080 1e 15 c0 41 00 01 00 01 00 00 c6 0f 00 04 8c 70 |...A.....p|
00000090 fe 06 c0 69 00 01 00 01 00 00 02 58 00 04 8c 70 |...i.....X...p|
000000a0 1e 0c |..|
000000a2
```

2.3

Reference:(1) <https://www.ietf.org/rfc/rfc1035.txt>

(2) https://en.wikipedia.org/wiki/Domain_Name_System#Protocol_transport

The decompression is indicated in blue above.

DNS query primarily consists of a single UDP request and a single UDP response.

If the response doesn't compress and exceeds the maximum size of the UDP packet, the TCP is used, which may slow down the traffic.

2.4

Reference: <http://www.lijyyh.com/2012/07/dns-dns-server-security-management.html>

DNS amplification attack: send out lots of DNS queries with a forged IP address to make an open DNS resolver reply back to the victim's address.