```
joe@ns2:~$ echo "install the packages required for tftp, to server out the bootable file"
install the packages required for tftp, to server out the bootable file
joe@ns2:~$ echo "This could be on ANY machine in our network"
This could be on ANY machine in our network
joe@ns2:~$ sudo apt install inetutils-inetd tftpd-hpa
```

```
[joe@ns2:~$ echo "Make sure you are using a machine that has plenty of disk space
 because we will store an ISO file on it"
Make sure you are using a machine that has plenty of disk space because we will
store an ISO file on it
joe@ns2:~$ 
```

```
[joe@ns2:~$ echo "We must configure tftpd to start automatically"
We must configure tftpd to start automatically
[joe@ns2:~$ sudo vi /etc/default/tftpd-hpa █
```

```
# /etc/default/tftpd-hpa

TFTP_USERNAME="tftp"
TFTP_DIRECTORY="/var/lib/tftpboot"
TFTP_ADDRESS=":69"
TFTP_OPTIONS="--secure"
~
~
~
~
~
~
~
~
~
~
~
~
~
~
"/etc/default/tftpd-hpa" 6L, 125C written                    2,0-1          All
```

```
# /etc/default/tftpd-hpa

RUN_DAEMON="yes"
OPTIONS="-l -s /var/lib/tftpboot"
TFTP_USERNAME="tftp"
TFTP_DIRECTORY="/var/lib/tftpboot"
TFTP_ADDRESS=":69"
TFTP_OPTIONS="--secure"
~
~
~
~
~
~
~
~
~
~
~
~
~
"/etc/default/tftpd-hpa" 8L, 176C written                    4,33          All
```

```
[joe@ns2:~$ echo "restart it"
restart it
[joe@ns2:~$ sudo /etc/init.d/tftpd-hpa restart
[ ok ] Restarting tftpd-hpa (via systemctl): tftpd-hpa.service.
joe@ns2:~$ 
```

```
[joe@ns2:~$ netstat -atu
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address          Foreign Address         State
tcp        0      0 ns2.mojojojo.ml:domain *:*                     LISTEN
tcp        0      0 localhost:domain       *:*                     LISTEN
tcp        0      0 *:ssh                   *:*                     LISTEN
tcp        0      0 localhost:953           *:*                     LISTEN
tcp        0    280 ns2.mojojojo.ml:ssh     noodledoodle.cs.d:43066 ESTABLISHED
tcp6       0      0 [::]:domain             [::]:*                  LISTEN
tcp6       0      0 [::]:ssh                [::]:*                  LISTEN
tcp6       0      0 localhost:953           [::]:*                  LISTEN
udp        0      0 ns2.mojojojo.ml:domain *:*
udp        0      0 localhost:domain       *:*
udp        0      0 *:tftp                  *:*
udp6       0      0 [::]:domain             [::]:*
udp6       0      0 [::]:tftp               [::]:*
[joe@ns2:~$ echo "Is it running?"
Is it running?
joe@ns2:~$
```

```
[joe@dhcp:~$ echo "Now to configure DHCP for netboot"
Now to configure DHCP for netboot
[joe@dhcp:~$ sudo vi /etc/dhcp/dhcpd.conf
```

```
#declare my subnet
subnet 144.38.201.32 netmask 255.255.255.224 {
    # define the range we are allowed to serve dynamically
    # the addresses I have already statically assigned
    # should NOT be here
    range 144.38.201.40 144.38.201.50;
    # could override global settings from above
    option domain-name-servers 8.8.8.8;
    option domain-name "mojojojo.ml";
    option subnet-mask 255.255.255.224;
    option routers 144.38.201.33;
    default-lease-time 600;
    max-lease-time 7200;
    #file to look for on tftpd server
    filename "pxelinux.0";
    #tftp server address
    next-server 144.38.201.35;
}



"/etc/dhcp/dhcpd.conf" 137L, 4473C written              48,29          25%
```

```
[joe@dhcp:~$ sudo service isc-dhcp-server restart
[joe@dhcp:~$ ps aux | grep dhcp
dhcpd     10575  0.0  2.6  35752 13480 ?          Ss    08:30   0:00 dhcpd -user dhc
pd -group dhcpd -f -4 -pf /run/dhcp-server/dhcpd.pid -cf /etc/dhcp/dhcpd.conf
joe       10585  0.0  0.1  14224   924 pts/0      S+    08:31   0:00 grep --color=au
to dhcp
joe@dhcp:~$
```

```
[joe@ns1:~$ echo "let's test to make sure tftp is running. Could be from any mach]
ine in our network"
let's test to make sure tftp is running. Could be from any machine in our networ
k
joe@ns1:~$ sudo apt install tftp
```

```
root@ns2:~# echo "Create a file in the tftp direcctory"
Create a file in the tftp direcctory
root@ns2:~# echo "Foo file" > /var/lib/tftpboot/foo.txt
root@ns2:~#
```

```
joe@ns1:~$ tftp 144.38.201.35
tftp> get foo.txt
Received 10 bytes in 0.0 seconds
tftp> quit
joe@ns1:~$ ls
foo.txt
joe@ns1:~$ echo "Got it!"
Got it!
joe@ns1:~$
```

```
[root@ns2:~# echo "Since it is working, let's now put the real files that we want
 in that ftp directory"
Since it is working, let's now put the real files that we want in that ftp direc
tory
[root@ns2:~# pwd
/home/joe
[root@ns2:~# wget http://mirror.cs.dixie.edu/ubuntu-cds/xenial/ubuntu-16.04.3-ser
ver-amd64.iso
--2018-01-18 08:45:03--  http://mirror.cs.dixie.edu/ubuntu-cds/xenial/ubuntu-16.
04.3-server-amd64.iso
Resolving mirror.cs.dixie.edu (mirror.cs.dixie.edu)... 144.38.192.6
Connecting to mirror.cs.dixie.edu (mirror.cs.dixie.edu)|144.38.192.6|:80... conn
ected.
HTTP request sent, awaiting response... 200 OK
Length: 865075200 (825M) [application/x-iso9660-image]
Saving to: 'ubuntu-16.04.3-server-amd64.iso'


buntu-16.04.3-serve  18%[==>                      ] 151.92M  64.9MB/s
```

```
[root@ns2:~# ls
ubuntu-16.04.3-server-amd64.iso
[root@ns2:~# echo "We need to pull some files out of that iso"
We need to pull some files out of that iso
[root@ns2:~# mkdir mnt
[root@ns2:~# mount -o loop ubuntu-16.04.3-server-amd64.iso mnt/
mount: /dev/loop0 is write-protected, mounting read-only
root@ns2:~# 
```

```
[root@ns2:~# cd mnt/ubuntu
[root@ns2:~/mnt/ubuntu# ls
boot   doc   install    md5sum.txt   pool      README.diskdefines
dists  EFI   isolinux   pics         preseed   ubuntu
[root@ns2:~/mnt/ubuntu# cp -r install/netboot/* /var/lib/tftpboot/
[root@ns2:~/mnt/ubuntu# echo "Copied the required netboot files"
Copied the required netboot files
root@ns2:~/mnt/ubuntu#
```

```
[root@ns2:~/mnt/ubuntu# echo "Now to netboot a client and see what happens"
Now to netboot a client and see what happens
root@ns2:~/mnt/ubuntu#
```

```
jfrancom@desdemona:~$ citv createvm
A machine name, RAM(MB) size, disk size(GB), VLAN(number) must be specified.
A CPU count may be specified.
jfrancom@desdemona:~$ citv createvm mojojojo_netboot 512 10 2018
/qemu/bin/qemu-new-image jfrancom-mojojojo_netboot 10 /qemu/images;
Formatting '/qemu/images/jfrancom-jfrancom-mojojojo_netboot.img', fmt=raw size=1
0737418240
User jfrancom has created the machine mojojojo_netboot : 1389 with 512 memory
jfrancom@desdemona:~$ citv bootvm mojojojo_netboot n
/usr/bin/ssh -q cordelia "/qemu/bin/qemu-boot 1389 'jfrancom-mojojojo_netboot' 5
12 '52:54:00:08:05:6C' '' '' '' 'n' 1 1 2018 '/qemu/images';"
User(jfrancom) has booted machine(mojojojo_netboot) on server(cordelia:1389) wit
h 512 memory.
jfrancom@desdemona:~$
```

ubuntu

Installer boot menu

Install
Command-line install
Advanced options   >
Help

Press ENTER to boot or TAB to edit a menu entry

```
[root@ns2:~/mnt/ubuntu# echo "wasn't that so very exciting.  But realize, the ins
tall media was booted over the network"
wasn't that so very exciting.  But realize, the install media was booted over th
e network
root@ns2:~/mnt/ubuntu#
```