DHCP

Saturday, November 2, 2024 12:30 PM

First, Install ISC DHCP Server on Machine A (Router)
By using the command:
sudo dnf install dhcp-server -y

Configure DHCP server on Machine A by editing the ***/etc/dhcp/dhcpd.conf***

Use ***ip a*** command to find the interface and MAC address of the machines:

```
[root@dns0 ~]# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: ens192: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:50:56:89:df:99 brd ff:ff:ff:ff:ff:ff
    altname enp11s0
    inet 100.64.28.2/24 brd 100.64.28.255 scope global noprefixroute ens192
       valid_lft forever preferred_lft forever
```

edit the file using nano editor:

```
option domain-name "dundermifflin.com";
option domain-name-servers 128.138.240.1, 128.138.130.30;
default-lease-time 600;
max-lease-time 600;

subnet 100.64.28.0 netmask 255.255.255.0 {
  range 100.64.28.100 100.64.28.199;
  option routers 100.64.28.1;
}
subnet 10.21.32.0 netmask 255.255.255.0 {
  range 10.21.32.100 10.21.32.199;
  option routers 10.21.32.1;
}

host dns0 {
  hardware ethernet 00:50:56:89:df:99; (MAC Address of Machine B)
  fixed-address 100.64.28.2; (IP Address of Machine B)
  option host-name "dns0.dundermifflin.com";
}
host web0 {
  hardware ethernet 00:50:56:89:ee:d3; (MAC Address of Machine C)
  fixed-address 100.64.28.3; (IP Address of Machine C)
  option host-name "web0.dundermifflin.com";
}
host web1 {
  hardware ethernet 00:50:56:89:ac:f4; (MAC Address of Machine D)
  fixed-address 100.64.28.4; (MAC Address of Machine D)
  option host-name "web1.dundermifflin.com";
}
host nfs {
  hardware ethernet 00:50:56:89:2e:78; (MAC Address of Machine E)
  fixed-address 10.21.32.2; (MAC Address of Machine E)
  option host-name "nfs.dundermifflin.com";
}
host dns1 {
  hardware ethernet 00:50:56:89:d3:ee; (MAC Address of Machine F)
  fixed-address 100.64.28.6; (MAC Address of Machine F)
  option host-name "dns1.dundermifflin.com";
}
host bsd {
  hardware ethernet 00:50:56:89:79:1a; (MAC Address of Machine X)
  fixed-address 100.64.28.7; (MAC Address of Machine X)
  option host-name "bsd.dundermifflin.com";
}
```

save and exit

Start and Enable the DHCP Service on Machine A
By using the command:

sudo systemctl enable dhcpd
sudo systemctl start dhcpd

after doing the configuration in Machine A
Do the following steps in other machines:
In Machine B:
By using the command we can find the name of the primary network interface:
nmcli connection show
by using the command set connection to use DHCP
nmcli connection modify "ens192" auto
nmcli connection up "ens192"

to verify the changes use the following command
nmclt connection show "ens192"

```
802-3-ethernet.accept-all-mac-addresses:-1 (default)
ipv4.method:                            auto
ipv4.dns:                               --
ipv4.dns-search:                        --
ipv4.dns-options:                       --
ipv4.dns-priority:                      0
ipv4.addresses:                         100.64.28.2/24
ipv4.gateway:                           100.64.28.1
```

```
IP4.ADDRESS[1]:                         100.64.28.2/24
IP4.GATEWAY:                            100.64.28.1
IP4.ROUTE[1]:                           dst = 100.64.28.0/24, nh = 0.0.0.0, mt = 100
IP4.ROUTE[2]:                           dst = 0.0.0.0/0, nh = 100.64.28.1, mt = 100
IP4.DNS[1]:                             128.138.240.1
IP4.DNS[2]:                             128.138.130.30
IP4.DOMAIN[1]:                          dundermifflin.com
DHCP4.OPTION[1]:                        dhcp_client_identifier = 01:00:50:56:89:df:99
DHCP4.OPTION[2]:                        dhcp_lease_time = 600
```

Repeat the same for Machine D, Machine E

For Machine C and F:
Run the following command to enable DHCP:
dhclient

To enable DHCP in machine X
run the following command to enable DHCP:
dhclient vmx0

vmx0 is the interface we can get this by using
ifconfig

```
root@bsd:~ # ifconfig
vmx0: flags=1008843<UP,BROADCAST,RUNNING,SIMPLEX,MULTICAST,LOWER_UP> metric 0 mtu 1500
        options=4e403bb<RXCSUM,TXCSUM,VLAN_MTU,VLAN_HWTAGGING,JUMBO_MTU,VLAN_HWCSUM,TSO4,TSO6,VLAN_HWTSO,RXCSUM_IPV6,TXC
SUM_IPV6,HWSTATS,MEXTPG>
        ether 00:50:56:89:79:1a
        inet 100.64.28.7 netmask 0xffffff00 broadcast 100.64.28.255
        media: Ethernet autoselect
        status: active
        nd6 options=29<PERFORMNUD,IFDISABLED,AUTO_LINKLOCAL>
lo0: flags=1008049<UP,LOOPBACK,RUNNING,MULTICAST,LOWER_UP> metric 0 mtu 16384
        options=680003<RXCSUM,TXCSUM,LINKSTATE,RXCSUM_IPV6,TXCSUM_IPV6>
        inet 127.0.0.1 netmask 0xff000000
        inet6 ::1 prefixlen 128
        inet6 fe80::1%lo0 prefixlen 64 scopeid 0x2
        groups: lo
        nd6 options=21<PERFORMNUD,AUTO_LINKLOCAL>
```

To change the hostname of the Machines
move the hostname file from /etc to root
by using the following command
mv /etc/hostname /root/

Do this in machine B C D E F and reboot the machines in order to get the hostname from the DHCP server
we need to move the hostname from /etc/hostname to other location in order to get the new hostname through the DHCP server

In machine A change the hostname statically
go and edit the hostname file in /etc/hostname

In machine X to change the hostname you have to edit the

/etc/rc.conf file:

ifconfig_vmx0="DHCP"
sshd_enable="YES"
moused_nondefault_enable="NO"
 # Set dumpdev to "AUTO" to enable crash dumps, "NO" to disable
dumpdev="NO"
zfs_enable="YES"

Reboot all the machines in order to make the changes
after rebooting the machines if you run the command ***hostname***
you will get the new hostname with the help of DHCP server.

To check the DHCP IP is working
you can verify it by using the command
systemctl status dhcpd
in **machine A**

```
[root@router ~]# systemctl status dhcpd
● dhcpd.service - DHCPv4 Server Daemon
     Loaded: loaded (/usr/lib/systemd/system/dhcpd.service; enabled; preset: disabled)
     Active: active (running) since Sun 2024-11-03 17:21:09 MST; 5h 19min ago
       Docs: man:dhcpd(8)
             man:dhcpd.conf(5)
   Main PID: 866 (dhcpd)
     Status: "Dispatching packets..."
      Tasks: 1 (limit: 4664)
     Memory: 2.0M
        CPU: 99ms
     CGroup: /system.slice/dhcpd.service
             └─866 /usr/sbin/dhcpd -f -cf /etc/dhcp/dhcpd.conf -user dhcpd -group dhcpd --no-pid

Nov 03 22:37:57 router.dundermifflin.com dhcpd[866]: DHCPREQUEST for 100.64.28.6 from 00:50:56:89:d3:ee via ens224
Nov 03 22:37:57 router.dundermifflin.com dhcpd[866]: DHCPACK on 100.64.28.6 to 00:50:56:89:d3:ee via ens224
Nov 03 22:38:29 router.dundermifflin.com dhcpd[866]: DHCPREQUEST for 100.64.28.2 from 00:50:56:89:df:99 via ens224
Nov 03 22:38:29 router.dundermifflin.com dhcpd[866]: DHCPACK on 100.64.28.2 to 00:50:56:89:df:99 via ens224
Nov 03 22:38:42 router.dundermifflin.com dhcpd[866]: DHCPREQUEST for 100.64.28.3 from 00:50:56:89:ee:d3 via ens224
Nov 03 22:38:42 router.dundermifflin.com dhcpd[866]: DHCPACK on 100.64.28.3 to 00:50:56:89:ee:d3 via ens224
Nov 03 22:39:22 router.dundermifflin.com dhcpd[866]: DHCPREQUEST for 100.64.28.7 from 00:50:56:89:79:1a via ens224
Nov 03 22:39:22 router.dundermifflin.com dhcpd[866]: DHCPACK on 100.64.28.7 to 00:50:56:89:79:1a via ens224
Nov 03 22:40:35 router.dundermifflin.com dhcpd[866]: DHCPREQUEST for 100.64.28.4 from 00:50:56:89:ac:f4 via ens224
Nov 03 22:40:35 router.dundermifflin.com dhcpd[866]: DHCPACK on 100.64.28.4 to 00:50:56:89:ac:f4 via ens224
[root@router ~]#
```