

I N D E X

Computer Networks

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AIM:

Study of various Network commands used in Linux and windows.

Basic Networking Commands:

1] arp -a: It will show IP address of your computer.

O/P: Interface : 172.16.75.74 -- OX12

Internet Address	Physical Address	Type
172.16.72.1	1C-5A-1C-CF-BE-41	dynamic
172.16.75.71	4C-82-09-78-8C-85	dynamic
172.16.79.255	ff-ff-ff-ff-ff-ff	static
239.255.255.251	01-00-5E-7F-ff-fb	static

2] hostname: It displays the name of computer.

O/P: DESKTOP-C0IBHTD

3] ifconfig | all: The command display detailed configuration information.

- O/P: Windows IP configuration.
 - Host name - DESKTOP-C0IBHTD
 - Primary Dns Suffix - 8.8.8.8
 - Node Type - Hybrid
 - IP Routing Enabled - NO
 - WINS Proxy Enabled - NO

- Ethernet Adapter Ethernet 3
 - Media State - Media disconnected
 - Connection-specific DNS Suffix
 - Description - Intel(R) Ethernet Connection(I219-LM)
 - Physical Address - 20-88-10-86-C7-A6
 - DHCP Enabled - Yes
 - Auto Configuration - Yes

4] **nbstat -a**: Displays protocol statistics and current TCP/IP connection using NBT

O/P:

Remote name - Remote host machine name

IP Address - Dotted decimal representation of the IP address.

Interval - Redisplays selected statistics, pausing interval seconds between each display. Press **ctrl + C** to stop redisplaying statistics.

5] **netstat**: It displays a variety of statistics about computer active TCP/IP connections.

O/P:

Proto	Local Address	Foreign Address	state.
TCP	127.0.0.1:49678	DESKTOP-C01BHTD: 49679	ESTABLISHED
TCP	172.16.75.74:59030	204.79.197.222: https	CLOSE_WAIT
TCP	172.16.75.74:59499	maa05328-in-f5: https	TIME_WAIT
TCP	172.16.75.74:59883	maa05306-in-f3: https	ESTABLISHED
TCP	172.16.75.74:59885	172.16.72.1.domain	TIME_WAIT

6] **nslookup**: [name server lookup] is a tool used to perform DNS lookups in linux.

O/P: nslookup www.google.com

Server: dns.google

Address: 8.8.8.8

non-Authoritative Answer:

Name: www.google.com

Address: 2404:6800:4001:82a::2004
142.250.196.36

7] **Ping**: command is the best way to test connectivity between two nodes.

O/P:

Ping www.Rajalakshmi.org

Pinging www.Rajalakshmi.org [14.99.10.232] with 32 bytes of data.

Reply from 14.99.10.232: bytes=32 time=9ms TTL=127

Reply from 14.99.10.232: bytes=32 time=9ms TTL=127

Ping statistics for 14.99.10.232:

Packets: Sent=4, Received=4, Lost=0(0% Loss),

Approximate round trip times in milliseconds:

Minimum = 4ms, Maximum = 9ms, Average = 6ms

8) Route: It is used to show / manipulate the IP routing table.

O/P:

command

One of these:

Print

Prints a route

Add

Add a route

delete

Delete a route

destination - specifies the host

MASK - specifies that the next parameter is 'netmask' value

netmask - specifies a subnet mask value for this route entry if not specified, it defaults

to 255.255.255.255.

Gateway - specifies gateway.

Interface - the interface number for specified route.

Metric - specifies the metric i.e. cost for destination.

9) Pathping: Pathping is unique to windows and is basically a combination of the Ping and Traceroute commands.

Some important linux commands.

[1] ip

It shows address information, manipulating routing, plus display network resources devices, interfaces and tunnels.

a) ip address show:

1: `enp2s0 : < BROADCAST, MULTICAST, UP, LOWER_UP >`
 mtu 1500 qdisc fq-codel state UP group default 1000
 link/ether 50:9a:4c:34:ad:4e brd ff:ff:ff:ff:ff:ff
 inet 172.16.9.206/22 brd 172.16.11.255
 scope global dynamic enp2s0
 valid_lft 3083 sec preferred_lft forever.
 intt 8 fe80::c5db:8882:cfbd:a5af/164 scope link
 valid_lft forever preferred_lft forever.

2: `wlp3s0 : < BROADCAST, MULTICAST >`
 mtu 1500 qdisc noqdisc state DOWN group default qlen 1000
 link/ether ee:cb:2c:80:c:cc brd ff:ff:ff:ff:ff:ff

b) ip address add 192.168.1.254/24 dev enp2s0

c) ip address del 192.168.1.254/24 dev enp2s0

d) ip link set enp2s0 up

e) ip link set enp2s0 down

f) ip link set enp2s0 promisc on

g) ip route add default via 192.168.1.254 dev enp2s0

h) ip route add 192.168.1.0/24 via 192.168.1.254

i) ip route add 192.168.1.0/24 dev enp2s0

RTNETLINK: Fib exists.

j) ip route delete 192.168.1.0/24 via 192.168.1.254

k) ip route get 10.10.1.4

10.10.1.4 dev enp2s0 src 192.168.1.254 nud 0
cache.

2) Ifconfig:

Output:

enp2s0: flags = 4163 ^{UP, Broadcast, Running.}
Multicast > mtu 1500.

inet 172.16.8.118 netmask 255.255.255.0
broadcast 172.16.11.255

inet 6 fx80::84T:5699:0:990 perifclet
64 scoped 0x20 dink >
RX errors 0 dropped 37 over run 0
frame 0.

lo : flags = 72L ^{up, loopback, Running} >
mtu 65536

inet 127.0.0.1 netmask 255.0.0.0

inet 6 ::1 perifclet len 128 scoped 0x10 <host>
loop + X queue len 1000 (local.loop)

3) ifconfig:

ifconfig br00gh.com

C - prompt #

Output:

localhost.localdomain (0.0.0.0)

bcols: Help display mode

Abstract statistic order of fields quit

Most

1) 172.16.8.1

2) static 41.229.249.49 - test@dc.co.in

3) 142.250.171.162

4) 142.251.227.215

5) 142.250.228.81

6) mac 05512-in - f10.1e.100.net.

4) Ping:

Ping www.google.com

OUTPUT:

64 bytes from mac 05512-9n-f14 to 100.net
: Pemp - seq = 1 Att6 = 120 time = 8.26 ms.
64 bytes from mac 05512-9n-f14 to 100.net : Pemp
- seq = 2 Att6 = 120 time = 42.15 ms
64 bytes from mac 05512-9n-f14 to 100.net
(IA2-250.67.46) Pemp - seq = 3
Att6 = 120 Time = 2.88 ms

5) Tcpdump:

dnf install -y tcpdump

Package tcpdump-14.4.0-2.fc22.9686 is already
installed, completed.

tcpdump -D

1. enp250 [up, running]

2. lo [up, running loopback].

3. wlp350 [up].

tcpdump -i enp250

10: 38:21.937811 ARP, Request who-has 172.16.11.28
tell 172.16.9.182, length 46.

10: 38:21.959532 IP local host. local domain. 39740>
gateway domain; 9299 + PTR? 28.11.16.172. In address.arpq.

tcpdump -i eth0 -c 10.

10: 43:22.861515 ARP, Request who-has 172.16.11.200
tell 172.16.11.168, length 46.

10: 43:22.869014 IP Gateway-domain > local-host.
local domain. 58 925:50925 NXDomain * 0/0 10 (44)

tcpdump -l eth0 -c 10 host 8.8.8.8
listening on enp2s0, link-type EN10MB (Ethernet),
capture size 262144 bytes.

tcpdump -l eth0 src host 8.8.8.8

tcpdump -C eth0 dst host 8.8.8.8

Capture traffic to and from a network.

tcpdump -l enp2s0 net 10.1.0.0 mask 255.255.255.0

tcpdump -l enp2s0 net 10.1.0.0/24.

Capture traffic to and from port numbers.

tcpdump -l eth0 port 53

10.58.46.85 5849 IP [localhost.localdomain] > chat.google.com.
ejacicay.domain: 18237+A? chat.google.com.

tcpdump -q enp2s0 host 8.8.8.8 and port 53

tcpdump -q enp2s0 -c 10 host www.google.com
and port 443.

tcpdump -q enp2s0 port not 53 and not 25.

tcpdump -q enp2s0 port 175

11: 03:21.810111 IP [172.18.1.55] > 239.255.255.250
ssdp: UDP, length 175.

028 ms evita www.google.com

000 bytes sent to 1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16.17.18.19.10.20.21.22.23.24.25.26.27.28.29.20.30.31.32.33.34.35.36.37.38.39.30.40.41.42.43.44.45.46.47.48.49.40.50.51.52.53.54.55.56.57.58.59.50.60.61.62.63.64.65.66.67.68.69.60.70.71.72.73.74.75.76.77.78.79.70.80.81.82.83.84.85.86.87.88.89.80.90.91.92.93.94.95.96.97.98.99.90.100.101.102.103.104.105.106.107.108.109.100.110.111.112.113.114.115.116.117.118.119.110.120.121.122.123.124.125.126.127.128.129.110.130.131.132.133.134.135.136.137.138.139.110.140.141.142.143.144.145.146.147.148.149.110.150.151.152.153.154.155.156.157.158.159.110.160.161.162.163.164.165.166.167.168.169.110.170.171.172.173.174.175.176.177.178.179.110.180.181.182.183.184.185.186.187.188.189.110.190.191.192.193.194.195.196.197.198.199.110.200.201.202.203.204.205.206.207.208.209.200.210.211.212.213.214.215.216.217.218.219.210.220.221.222.223.224.225.226.227.228.229.220.230.231.232.233.234.235.236.237.238.239.230.240.241.242.243.244.245.246.247.248.249.240.250.251.252.253.254.255.256.257.258.259.250.260.261.262.263.264.265.266.267.268.269.260.270.271.272.273.274.275.276.277.278.279.270.280.281.282.283.284.285.286.287.288.289.280.290.291.292.293.294.295.296.297.298.299.290.300.301.302.303.304.305.306.307.308.309.300.310.311.312.313.314.315.316.317.318.319.310.320.321.322.323.324.325.326.327.328.329.320.330.331.332.333.334.335.336.337.338.339.330.340.341.342.343.344.345.346.347.348.349.340.350.351.352.353.354.355.356.357.358.359.350.360.361.362.363.364.365.366.367.368.369.360.370.371.372.373.374.375.376.377.378.379.370.380.381.382.383.384.385.386.387.388.389.380.390.391.392.393.394.395.396.397.398.399.390.400.401.402.403.404.405.406.407.408.409.400.410.411.412.413.414.415.416.417.418.419.410.420.421.422.423.424.425.426.427.428.429.420.430.431.432.433.434.435.436.437.438.439.430.440.441.442.443.444.445.446.447.448.449.440.450.451.452.453.454.455.456.457.458.459.450.460.461.462.463.464.465.466.467.468.469.460.470.471.472.473.474.475.476.477.478.479.470.480.481.482.483.484.485.486.487.488.489.480.490.491.492.493.494.495.496.497.498.499.490.500.501.502.503.504.505.506.507.508.509.500.510.511.512.513.514.515.516.517.518.519.510.520.521.522.523.524.525.526.527.528.529.520.530.531.532.533.534.535.536.537.538.539.530.540.541.542.543.544.545.546.547.548.549.540.550.551.552.553.554.555.556.557.558.559.550.560.561.562.563.564.565.566.567.568.569.560.570.571.572.573.574.575.576.577.578.579.570.580.581.582.583.584.585.586.587.588.589.580.590.591.592.593.594.595.596.597.598.599.590.600.500.601.602.603.604.605.606.607.608.609.600.610.611.612.613.614.615.616.617.618.619.610.620.621.622.623.624.625.626.627.628.629.620.630.631.632.633.634.635.636.637.638.639.630.640.641.642.643.644.645.646.647.648.649.640.650.651.652.653.654.655.656.657.658.659.650.660.661.662.663.664.665.666.667.668.669.660.670.671.672.673.674.675.676.677.678.679.670.680.681.682.683.684.685.686.687.688.689.680.690.691.692.693.694.695.696.697.698.699.690.700.600.701.702.703.704.705.706.707.708.709.700.710.711.712.713.714.715.716.717.718.719.710.720.721.722.723.724.725.726.727.728.729.720.730.731.732.733.734.735.736.737.738.739.730.740.741.742.743.744.745.746.747.748.749.740.750.751.752.753.754.755.756.757.758.759.750.760.761.762.763.764.765.766.767.768.769.760.770.771.772.773.774.775.776.777.778.779.770.780.781.782.783.784.785.786.787.788.789.780.790.791.792.793.794.795.796.797.798.799.790.800.700.801.802.803.804.805.806.807.808.809.800.810.811.812.813.814.815.816.817.818.819.810.820.821.822.823.824.825.826.827.828.829.820.830.831.832.833.834.835.836.837.838.839.830.840.841.842.843.844.845.846.847.848.849.840.850.851.852.853.854.855.856.857.858.859.850.860.861.862.863.864.865.866.867.868.869.860.870.871.872.873.874.875.876.877.878.879.870.880.881.882.883.884.885.886.887.888.889.880.890.891.892.893.894.895.896.897.898.899.890.900.800.901.902.903.904.905.906.907.908.909.900.910.911.912.913.914.915.916.917.918.919.910.920.921.922.923.924.925.926.927.928.929.920.930.931.932.933.934.935.936.937.938.939.930.940.941.942.943.944.945.946.947.948.949.940.950.951.952.953.954.955.956.957.958.959.950.960.961.962.963.964.965.966.967.968.969.960.970.971.972.973.974.975.976.977.978.979.970.980.981.982.983.984.985.986.987.988.989.980.990.991.992.993.994.995.996.997.998.999.990.1000.1001.1002.1003.1004.1005.1006.1007.1008.1009.1000.1010.1011.1012.1013.1014.1015.1016.1017.1018.1019.1010.1020.1021.1022.1023.1024.1025.1026.1027.1028.1029.1020.1030.1031.1032.1033.1034.1035.1036.1037.1038.1039.1030.1040.1041.1042.1043.1044.1045.1046.1047.1048.1049.1040.1050.1051.1052.1053.1054.1055.1056.1057.1058.1059.1050.1060.1061.1062.1063.1064.1065.1066.1067.1068.1069.1060.1070.1071.1072.1073.1074.1075.1076.1077.1078.1079.1070.1080.1081.1082.1083.1084.1085.1086.1087.1088.1089.1080.1090.1091.1092.1093.1094.1095.1096.1097.1098.1099.1090.1100.1101.1102.1103.1104.1105.1106.1107.1108.1109.1100.1110.1111.1112.1113.1114.1115.1116.1117.1118.1119.1110.1120.1121.1122.1123.1124.1125.1126.1127.1128.1129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Configuring an Ethernet connection by using nmcli procedure

- 1] # nmcli connection show :
new Device 802-3-3-ethernet Tcceb64 ^{UUID} 2A-Cf4C-4962-A06b
^{Type} - Ofb b0C2d058d
^{802-3-ethernet}
- 2] # nmcli connection modify "wired connection" "To Rename the connection"
- 3] # nmcli connection show : 02e9a3-3-^{gmacpt}
- 4] configure IPv4 settings:
nmcli connection modify "wired connection" "method auto".
nmcli connection modify "wired connection" "PPPoE"
method manual PPPoE addresses 192.0.2.1/24 gateway
192.0.0.2 192.0.2.200 dns-dns-search.
[To set a static IPv4 address, network mask,
default gateway, DNS servers and search domain]
- 5] configure IPv6 settings:
nmcli connection modify "wired connection" "IPv4 method auto".
Verification:
1] Ip address show enp250
enp250:2 BROADCAST, MULTICAST, UP, LOWERUP>mtu
1500 qdisc fq-codel state UP group default
link layer brd:9a:4c:34:d4:e4 brd ff:ff:ff:ff:
2] Ip route show default:
• default via 172.16.8.1 dev enp250 proto static metric 100
• 172.16.8.0/22 dev enp250 proto kernel scope link
src 09C 172.16.8.86 metric 100.
- 3] Ip -6 route show default.
- 4] Ping www.google.com

5] Display the DNS settings.

cat /etc/resolv.conf

generated by a Network Manager
nameserver 172.16.8.1

networking

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troubleshooting

network

- free in reports.

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ngrok

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via NetworkManager

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NetworkManager

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