

```
Last login: Sun Jan 29 00:09:18 on ttys000
> pwd
/Users/surajmandal
> ls
Applications      Documents      Dropbox      MEGAsync      Music      Pictures      google-cloud-sdk
Desktop      Downloads      Library      Movies      OneDrive      Public
> cd Desktop/humber/5002-sdn/lab1
> mkdir test
> cd test
> netstat -r
Routing tables

Internet:
Destination      Gateway      Flags      Netif  Expire
default          mynetwork   UGScg      en0
127              localhost   UCS        lo0
localhost        localhost   UH         lo0
169.254          link#12     UCS        en0      !
192.168.2        link#12     UCS        en0      !
192.168.2.1/32   link#12     UCS        en0      !
mynetwork        98:1e:19:fd:fe:fa UHLWIir    en0      1198
192.168.2.16     a:f9:da:bc:fd:87 UHLWII     en0      1027
192.168.2.32/32  link#12     UCS        en0      !
192.168.2.255    ff:ff:ff:ff:ff:ff UHLWbI     en0      !
224.0.0/4        link#12     UmCS       en0      !
224.0.0.251      1:0:5e:0:0:fb  UHmLWI     en0
239.255.255.250  1:0:5e:7f:ff:fa UHmLWI     en0
255.255.255.255/32 link#12     UCS        en0      !
broadcasthost    ff:ff:ff:ff:ff:ff UHLWbI     en0      !

Internet6:
Destination      Gateway      Flags      Netif  Expire
ifconfig
default          fe80::%utun0  UGcIg      utun0
default          fe80::%utun1  UGcIg      utun1
default          fe80::%utun2  UGcIg      utun2
default          fe80::%utun3  UGcIg      utun3
default          fe80::%utun4  UGcIg      utun4
localhost        localhost     UH         lo0
fe80::%lo0       suraj-m1.local UcI        lo0
suraj-m1.local   link#1        UHLI       lo0
fe80::%anpi0     link#4        UCI        anpi0
suraj-m1.local   ba:22:96:9:db:f2 UHLI       lo0
fe80::%anpi1     link#5        UCI        anpi1
suraj-m1.local   ba:22:96:9:db:f3 UHLI       lo0
fe80::%ap1       link#11       UCI        ap1
suraj-m1.local   3e:a6:f6:7:c9:3b UHLI       lo0
fe80::%en0       link#12       UCI        en0
surajs-iphone.loca a:f9:da:bc:fd:87 UHLWII     en0
suraj-m1.local   96:68:2e:64:6d:e7 UHLI       lo0
fe80::8421:1ff:fe9 86:21:1:91:74:e9 UHLI       lo0
fe80::8421:1ff:fe9 86:21:1:91:74:e9 UHLI       lo0
fe80::%utun0     suraj-m1.local UcI        utun0
suraj-m1.local   link#15       UHLI       lo0
fe80::%utun1     suraj-m1.local UcI        utun1
suraj-m1.local   link#16       UHLI       lo0
fe80::%utun2     suraj-m1.local UcI        utun2
suraj-m1.local   link#17       UHLI       lo0
fe80::%utun3     suraj-m1.local UcI        utun3
suraj-m1.local   link#18       UHLI       lo0
fe80::%utun4     suraj-m1.local UcI        utun4
suraj-m1.local   link#19       UHLI       lo0
ff00::           localhost     UmCI       lo0
ff00::           link#4        UmCI       anpi0
ff00::           link#5        UmCI       anpi1
ff00::           link#11       UmCI       ap1
ff00::           link#12       UmCI       en0
ff00::           link#13       UmCI       awdl0
ff00::           link#14       UmCI       llw0
ff00::           suraj-m1.local UmCI       utun0
ff00::           suraj-m1.local UmCI       utun1
ff00::           suraj-m1.local UmCI       utun2
ff00::           suraj-m1.local UmCI       utun3
ff00::           suraj-m1.local UmCI       utun4
ff01::%lo0       localhost     UmCI       lo0
ff01::%anpi0     link#4        UmCI       anpi0
ff01::%anpi1     link#5        UmCI       anpi1
ff01::%ap1       link#11       UmCI       ap1
ff01::%en0       link#12       UmCI       en0
ff01::%utun0     suraj-m1.local UmCI       utun0
ff01::%utun1     suraj-m1.local UmCI       utun1
ff01::%utun2     suraj-m1.local UmCI       utun2
ff01::%utun3     suraj-m1.local UmCI       utun3
ff01::%utun4     suraj-m1.local UmCI       utun4
ff02::%lo0       localhost     UmCI       lo0
ff02::%anpi0     link#4        UmCI       anpi0
ff02::%anpi1     link#5        UmCI       anpi1
ff02::%ap1       link#11       UmCI       ap1
ff02::%en0       link#12       UmCI       en0
ff02::%utun0     suraj-m1.local UmCI       utun0
```

```
ff02::%utun1      suraj-m1.local    UmCI      utun1
ff02::%utun2      suraj-m1.local    UmCI      utun2
ff02::%utun3      suraj-m1.local    UmCI      utun3
ff02::%utun4      suraj-m1.local    UmCI      utun4
> ifconfig
lo0: flags=8049<UP,LOOPBACK,RUNNING,MULTICAST> mtu 16384
  options=1203<RXCSUM,TXCSUM,TXSTATUS,SW_TIMESTAMP>
  inet 127.0.0.1 netmask 0xff000000
  inet6 ::1 prefixlen 128
  inet6 fe80::1%lo0 prefixlen 64 scopeid 0x1
  nd6 options=201<PERFORMNUD,DAD>
gif0: flags=8010<POINTOPOINT,MULTICAST> mtu 1280
stf0: flags=0<> mtu 1280
anpi0: flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
  options=400<CHANNEL_IO>
  ether ba:22:96:09:db:f2
  inet6 fe80::b822:96ff:fe09:dbf2%anpi0 prefixlen 64 scopeid 0x4
  nd6 options=201<PERFORMNUD,DAD>
  media: none
  status: inactive
anpi1: flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
  options=400<CHANNEL_IO>
  ether ba:22:96:09:db:f3
  inet6 fe80::b822:96ff:fe09:dbf3%anpi1 prefixlen 64 scopeid 0x5
  nd6 options=201<PERFORMNUD,DAD>
  media: none
  status: inactive
en3: flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
  options=400<CHANNEL_IO>
  ether ba:22:96:09:db:d2
  nd6 options=201<PERFORMNUD,DAD>
  media: none
  status: inactive
en4: flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
  options=400<CHANNEL_IO>
  ether ba:22:96:09:db:d3
  nd6 options=201<PERFORMNUD,DAD>
  media: none
  status: inactive
en1: flags=8963<UP,BROADCAST,SMART,RUNNING,PROMISC,SIMPLEX,MULTICAST> mtu 1500
  options=460<TS04,TS06,CHANNEL_IO>
  ether 36:d4:27:ee:78:c0
  media: autoselect <full-duplex>
  status: inactive
en2: flags=8963<UP,BROADCAST,SMART,RUNNING,PROMISC,SIMPLEX,MULTICAST> mtu 1500
  options=460<TS04,TS06,CHANNEL_IO>
  ether 36:d4:27:ee:78:c4
  media: autoselect <full-duplex>
  status: inactive
bridge0: flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
  options=63<RXCSUM,TXCSUM,TS04,TS06>
  ether 36:d4:27:ee:78:c0
  Configuration:
    id 0:0:0:0:0:0 priority 0 hellotime 0 fwddelay 0
    maxage 0 holdcnt 0 proto stp maxaddr 100 timeout 1200
    root id 0:0:0:0:0:0 priority 0 ifcost 0 port 0
    ipfilter disabled flags 0x0
  member: en1 flags=3<LEARNING,DISCOVER>
    ifmaxaddr 0 port 8 priority 0 path cost 0
  member: en2 flags=3<LEARNING,DISCOVER>
    ifmaxaddr 0 port 9 priority 0 path cost 0
  nd6 options=201<PERFORMNUD,DAD>
  media: <unknown type>
  status: inactive
ap1: flags=8843<UP,BROADCAST,RUNNING,SIMPLEX,MULTICAST> mtu 1500
  options=6463<RXCSUM,TXCSUM,TS04,TS06,CHANNEL_IO,PARTIAL_CSUM,ZEROINVERT_CSUM>
  ether 3e:a6:f6:07:c9:3b
  inet6 fe80::3ca6:f6ff:fe07:c93b%ap1 prefixlen 64 scopeid 0xb
  nd6 options=201<PERFORMNUD,DAD>
  media: autoselect (<unknown type>)
  status: inactive
en0: flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
  options=6463<RXCSUM,TXCSUM,TS04,TS06,CHANNEL_IO,PARTIAL_CSUM,ZEROINVERT_CSUM>
  ether 96:68:2e:64:6d:e7
  inet6 fe80::1093:3f:b867:4508%en0 prefixlen 64 secured scopeid 0xc
  inet 192.168.2.32 netmask 0xffffffff broadcast 192.168.2.255
  nd6 options=201<PERFORMNUD,DAD>
  media: autoselect
  status: active
awdl0: flags=8843<UP,BROADCAST,RUNNING,SIMPLEX,MULTICAST> mtu 1500
  options=6463<RXCSUM,TXCSUM,TS04,TS06,CHANNEL_IO,PARTIAL_CSUM,ZEROINVERT_CSUM>
  ether 86:21:01:91:74:e9
  inet6 fe80::8421:1ff:fe91:74e9%awdl0 prefixlen 64 scopeid 0xd
  nd6 options=201<PERFORMNUD,DAD>
  media: autoselect
  status: active
llw0: flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
  options=400<CHANNEL_IO>
  ether 86:21:01:91:74:e9
  inet6 fe80::8421:1ff:fe91:74e9%llw0 prefixlen 64 scopeid 0xe
```

```
nd6 options=201<PERFORMNUD,DAD>
media: autoselect
status: active
```

ROUTE(8)

System Manager's Manual

ROUTE(8)

NAME

route – manually manipulate the routing tables

SYNOPSIS

```
route [-dnqtv] command [[modifiers] args]
```

DESCRIPTION

Route is a utility used to manually manipulate the network routing tables. It normally is not needed, as a system routing table management daemon such as routed(8), should tend to this task.

The route utility supports a limited number of general options, but a rich command language, enabling the user to specify any arbitrary request that could be delivered via the programmatic interface discussed in route(4).

The following options are available:

- d Run in debug-only mode, i.e., do not actually modify the routing table.
- n Bypass attempts to print host and network names symbolically when reporting actions. (The process of translating between symbolic names and numerical equivalents can be quite time consuming, and may require correct operation of the network; thus it may be expedient to forget this, especially when attempting to repair networking operations).
- t Run in test-only mode. /dev/null is used instead of a socket.
- v (verbose) Print additional details.
- q Suppress all output.

The route utility provides six commands:

```
utun0: flags=8051<UP,POINTOPOINT,RUNNING,MULTICAST> mtu 2000
inet6 fe80::e1c2:de38:c654:3681%utun0 prefixlen 64 scopeid 0xf
nd6 options=201<PERFORMNUD,DAD>
utun1: flags=8051<UP,POINTOPOINT,RUNNING,MULTICAST> mtu 1000
inet6 fe80::ce81:b1c:bd2c:69e%utun1 prefixlen 64 scopeid 0x10
nd6 options=201<PERFORMNUD,DAD>
utun2: flags=8051<UP,POINTOPOINT,RUNNING,MULTICAST> mtu 1380
inet6 fe80::c7a4:f5dd:b4eb:adca%utun2 prefixlen 64 scopeid 0x11
nd6 options=201<PERFORMNUD,DAD>
utun3: flags=8051<UP,POINTOPOINT,RUNNING,MULTICAST> mtu 1380
inet6 fe80::30c3:7cea:e837:f457%utun3 prefixlen 64 scopeid 0x12
nd6 options=201<PERFORMNUD,DAD>
utun4: flags=8051<UP,POINTOPOINT,RUNNING,MULTICAST> mtu 1380
inet6 fe80::9ee2:ef24:e2b4:10ce%utun4 prefixlen 64 scopeid 0x13
nd6 options=201<PERFORMNUD,DAD>
```

> route

usage: route [-dnqtv] command [[modifiers] args]

> route --help

route: illegal option -- -

usage: route [-dnqtv] command [[modifiers] args]

> route -h

route: illegal option -- h

usage: route [-dnqtv] command [[modifiers] args]

> route help

route: bad keyword: help

usage: route [-dnqtv] command [[modifiers] args]

> man route

> hostname

suraj-m1.local

> ping 127.0.0.1

PING 127.0.0.1 (127.0.0.1): 56 data bytes

64 bytes from 127.0.0.1: icmp_seq=0 ttl=64 time=0.106 ms

64 bytes from 127.0.0.1: icmp_seq=1 ttl=64 time=0.131 ms

64 bytes from 127.0.0.1: icmp_seq=2 ttl=64 time=0.143 ms

64 bytes from 127.0.0.1: icmp_seq=3 ttl=64 time=0.128 ms

64 bytes from 127.0.0.1: icmp_seq=4 ttl=64 time=0.254 ms

^C

--- 127.0.0.1 ping statistics ---

5 packets transmitted, 5 packets received, 0.0% packet loss

round-trip min/avg/max/stddev = 0.106/0.152/0.254/0.052 ms

surajmandal@suraj-m1 ~/Desktop/humber/5002-sdn/lab1/test master*

>

4.97s