

Devices to be used in labs

1. Routers: 2811
2. Switches: 2960-24TT (or simple 2960)
3. End Devices: Generic (any PC or laptop)
4. Connections:
 - a. Copper Crossover: connecting similar devices
 - b. Copper Straight-through: connecting non-similar devices
 - c. Serial DTE: between routers
5. Network Interface Cards:
 - a. WIC-1ENET for one extra ethernet ports
 - b. WIC-2T for two serial ports for router connections

FOR ROUTER- TO-ROUTER

Static Routing:

For directly connected:

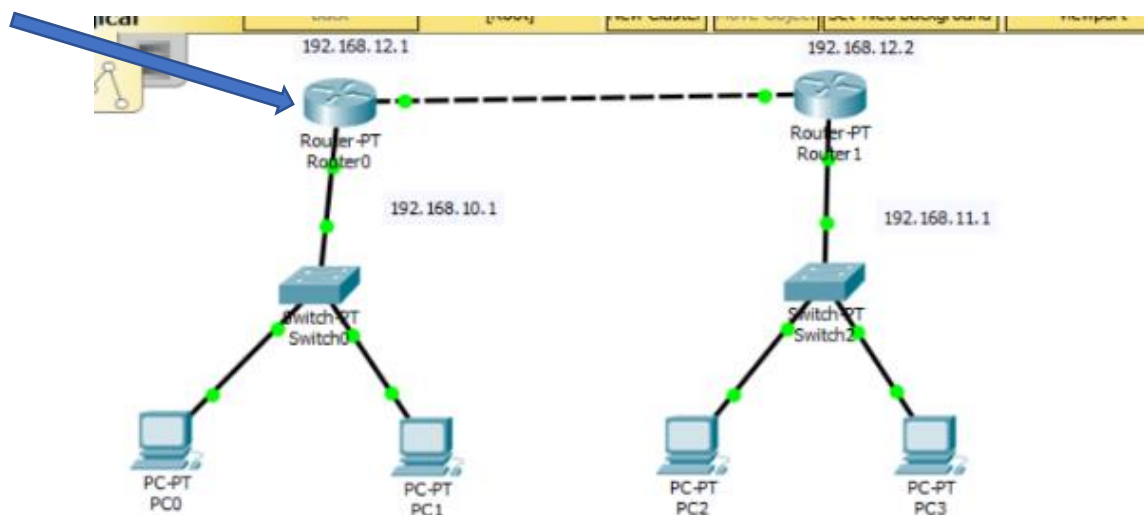
ip add a.b.c.d subnet mask

network access for router1 from right side of router2(i.e not connected):

ip route "giving route to which you want to connected " " subnet mask" " ip of next hop"

example:

ip route 192.168.11.0 255.255.255.0 192.168.12.2



RIP:

router rip

version 2

network a.b.c.d

no auto summary

EIGRP:

router eigrp 10

network x.x.x.x subnet mask

OSPF:

router ospf 1

network x.x.x.x "wildcard mask" area 1

****** DHCP ******

Go to dhcp server and add ip address, subnet mask and default gateway .

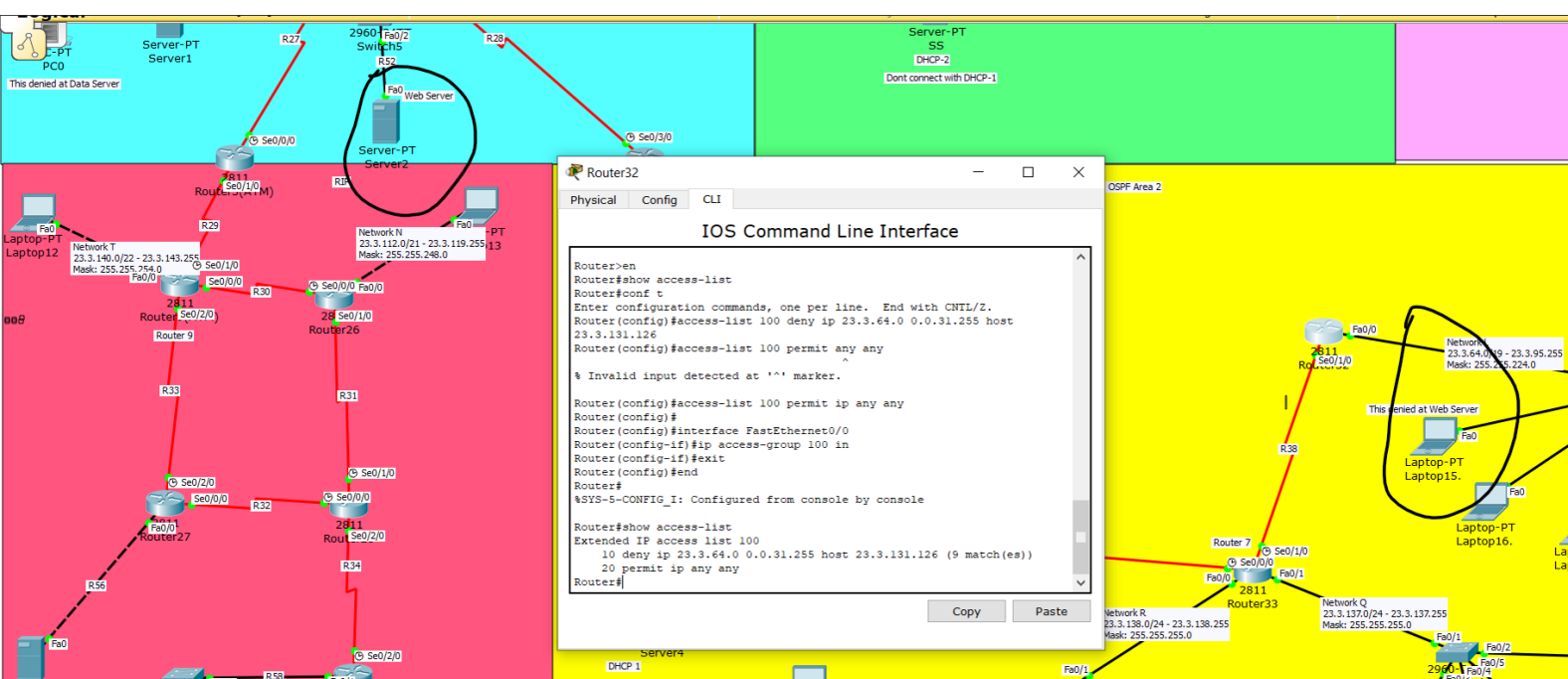
To add a pool:

1. Click DHCP on Services in DHCP Server
2. Switch Service ON
3. Add Pool Name, for Default Gateway(1st usable address in range), DNS Server(0.0.0.0), Start IP Address(next address after Default Gateway) example:
E: 37.1.3.40 - 37.1.3.47
Default Gateway: 37.1.3.41
DNS Server: 0.0.0.0
Start IP Address: 37.1.3.42
Subnet Mask: (Calculate)
Max users: $2^n - 2$
TFTP Server: 0.0.0.0

- Now go to router with which end device is connected, click on connected interface and write : **ip helper-address 192.168.1.10**(this is address of server)
- Click on Dynamic at end device

**** ACL ****

- Click on router which has network that Server doesn't want message from.
- In configure terminal, write:
access-list 100 deny ip "23.3.64.0" "wildcard mask" host "23.3.131.26"
23.3.64.0(network which is to be blocked)
23.3.131.26(Server which doesn't want message)
- access-list 100 permit ip any any**
- Go to interface on router which is connected to network:
ip access-group 100 in
- To check: **show access-list**



*** NAT ***

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/1
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#
Router(config)#interface FastEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Ethernet0/1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/2/0
Router(config-if)#ip nat outside
Router(config-if)#exit
Router(config)#access-list 1 permit 23.3.0.0 0.0.63.255
Router(config)#ip nat pool NAT_POOL 92.3.5.13 92.3.5.13 netmask 255.255.255.0
Router(config)#ip nat inside source list 1 pool NAT_POOL overload
Router(config)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console

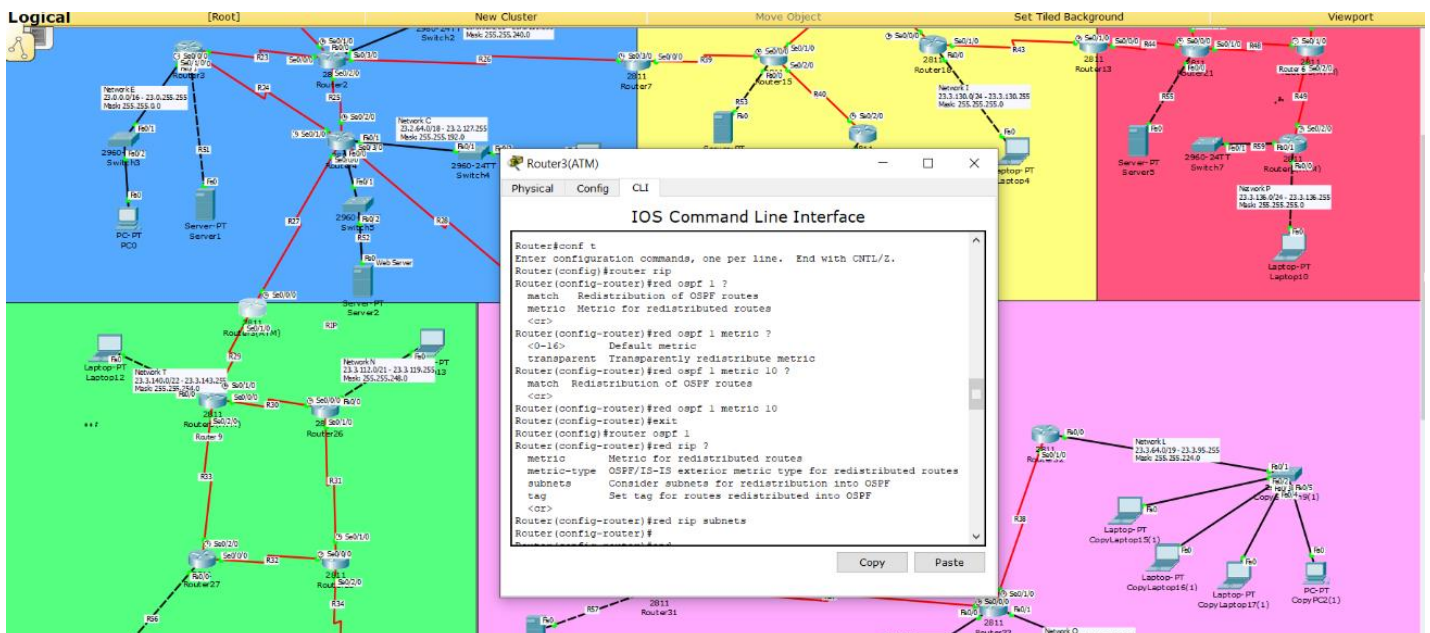
Router#show ip nat translations
Pro Inside global      Inside local      Outside local      Outside global
icmp 92.3.5.13:2       23.3.0.2:2        23.2.64.2:2        23.2.64.2:2

Router#show ip nat translations
Pro Inside global      Inside local      Outside local      Outside global
icmp 92.3.5.13:1       23.3.0.2:1        23.3.138.5:1       23.3.138.5:1
icmp 92.3.5.13:2       23.3.0.2:2        23.2.64.2:2        23.2.64.2:2

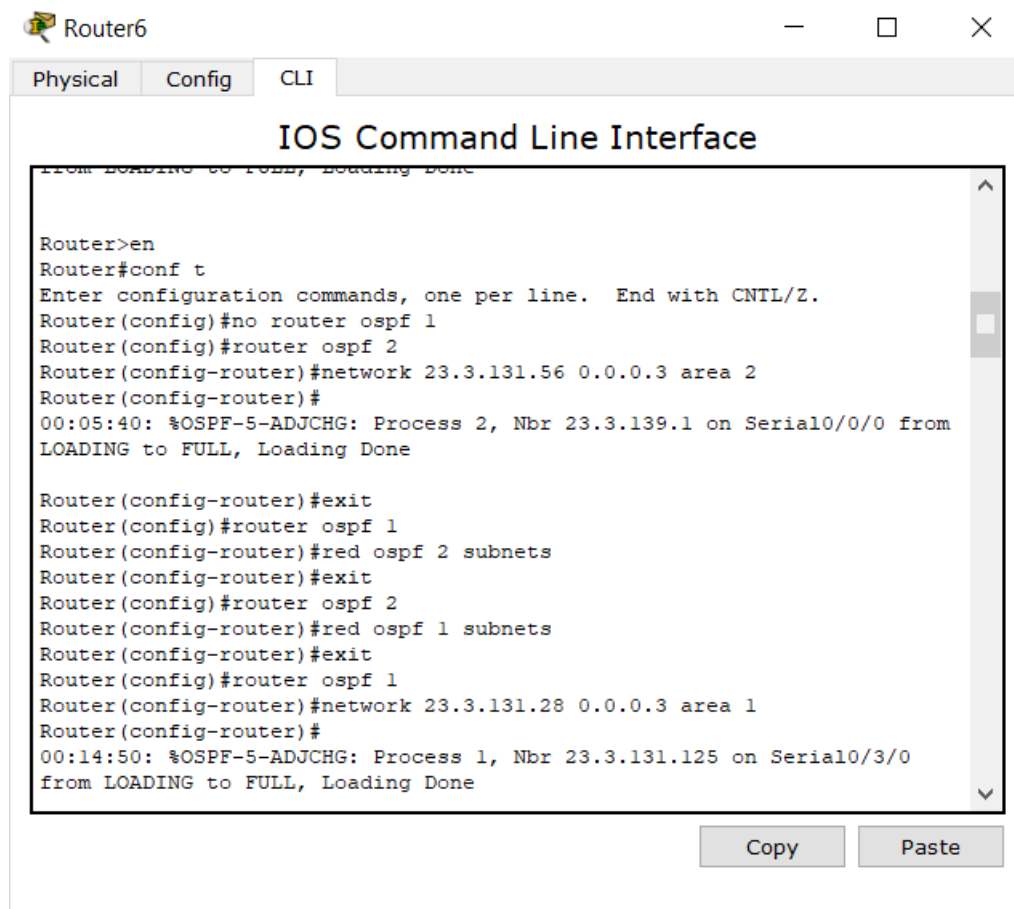
Router#
```

*** REDISTRIBUTION ***

1. Ospf1-RIP(Lower)



2. Ospf1-Ospf2



Router6

Physical Config CLI

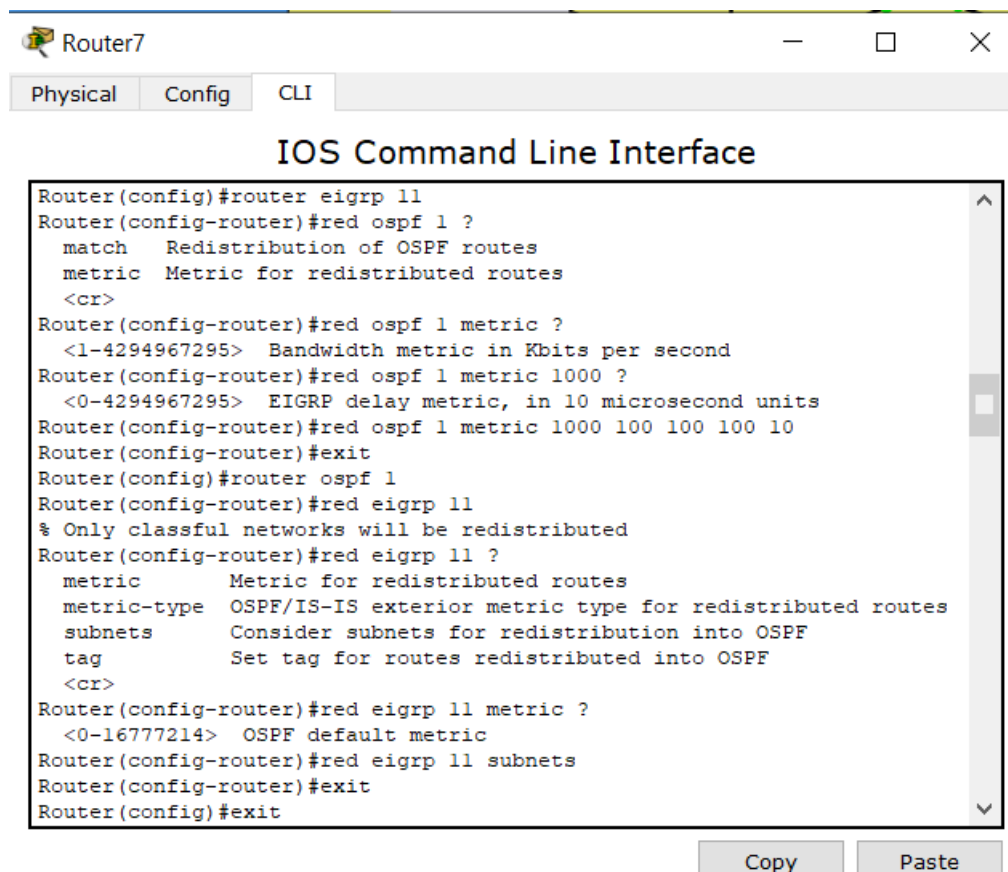
IOS Command Line Interface

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no router ospf 1
Router(config)#router ospf 2
Router(config-router)#network 23.3.131.56 0.0.0.3 area 2
Router(config-router)#
00:05:40: %OSPF-5-ADJCHG: Process 2, Nbr 23.3.139.1 on Serial0/0/0 from
LOADING to FULL, Loading Done

Router(config-router)#exit
Router(config)#router ospf 1
Router(config-router)#red ospf 2 subnets
Router(config-router)#exit
Router(config)#router ospf 2
Router(config-router)#red ospf 1 subnets
Router(config-router)#exit
Router(config)#router ospf 1
Router(config-router)#network 23.3.131.28 0.0.0.3 area 1
Router(config-router)#
00:14:50: %OSPF-5-ADJCHG: Process 1, Nbr 23.3.131.125 on Serial0/3/0
from LOADING to FULL, Loading Done
```

Copy Paste

3. Ospf1 - Eigrp11



Router7

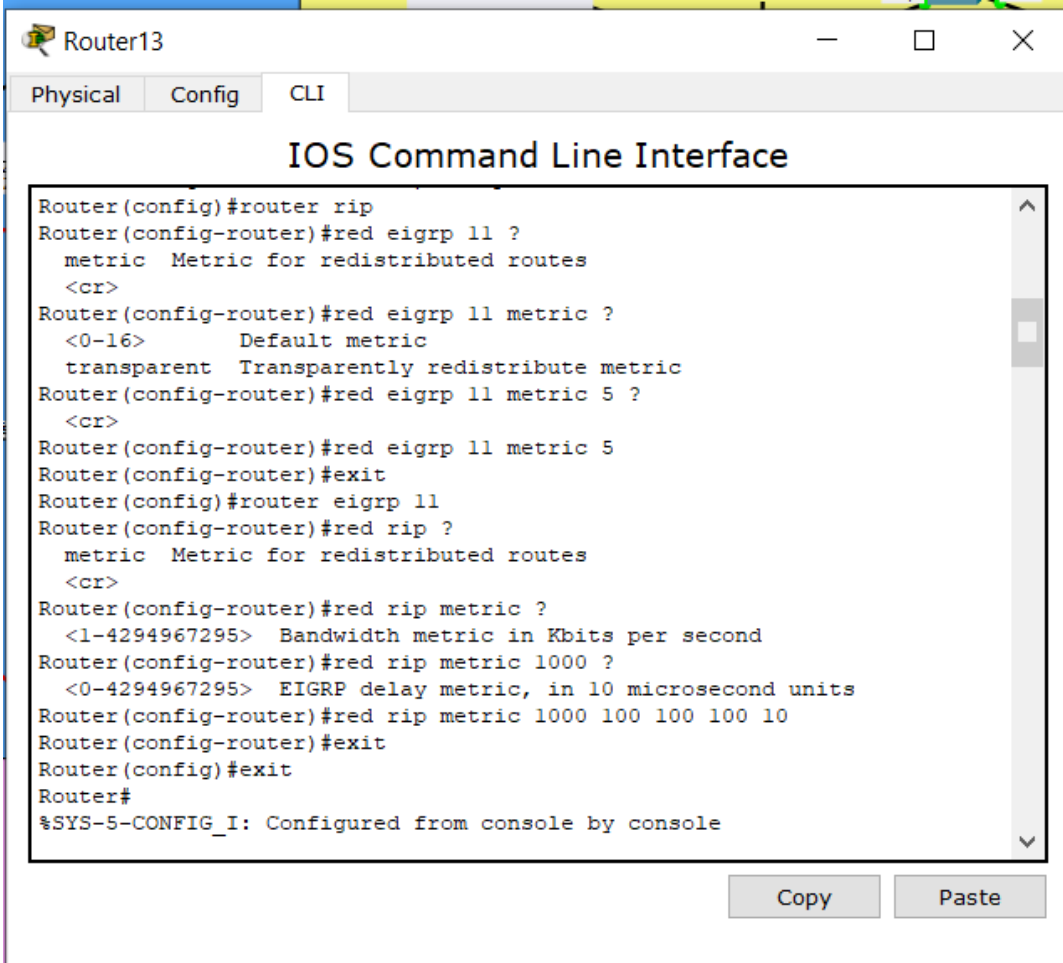
Physical Config CLI

IOS Command Line Interface

```
Router(config)#router eigrp 11
Router(config-router)#red ospf 1 ?
  match      Redistribution of OSPF routes
  metric     Metric for redistributed routes
  <cr>
Router(config-router)#red ospf 1 metric ?
  <1-4294967295> Bandwidth metric in Kbits per second
Router(config-router)#red ospf 1 metric 1000 ?
  <0-4294967295> EIGRP delay metric, in 10 microsecond units
Router(config-router)#red ospf 1 metric 1000 100 100 100 10
Router(config-router)#exit
Router(config)#router ospf 1
Router(config-router)#red eigrp 11
% Only classful networks will be redistributed
Router(config-router)#red eigrp 11 ?
  metric      Metric for redistributed routes
  metric-type  OSPF/IS-IS exterior metric type for redistributed routes
  subnets    Consider subnets for redistribution into OSPF
  tag         Set tag for routes redistributed into OSPF
  <cr>
Router(config-router)#red eigrp 11 metric ?
  <0-16777214> OSPF default metric
Router(config-router)#red eigrp 11 subnets
Router(config-router)#exit
Router(config)#exit
```

Copy Paste

4. Eigrp11-RIP(Upper)



The screenshot shows a Cisco Packet Tracer console window for Router13. The window has three tabs: Physical, Config, and CLI. The CLI tab is active, displaying the IOS Command Line Interface. The configuration process is as follows:

```
Router(config)#router rip
Router(config-router)#red eigrp 11 ?
  metric Metric for redistributed routes
  <cr>
Router(config-router)#red eigrp 11 metric ?
  <0-16> Default metric
  transparent Transparently redistribute metric
Router(config-router)#red eigrp 11 metric 5 ?
  <cr>
Router(config-router)#red eigrp 11 metric 5
Router(config-router)#exit
Router(config)#router eigrp 11
Router(config-router)#red rip ?
  metric Metric for redistributed routes
  <cr>
Router(config-router)#red rip metric ?
  <1-4294967295> Bandwidth metric in Kbits per second
Router(config-router)#red rip metric 1000 ?
  <0-4294967295> EIGRP delay metric, in 10 microsecond units
Router(config-router)#red rip metric 1000 100 100 100 10
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

At the bottom of the console window, there are two buttons: Copy and Paste.