Nick Smith

Lab4 Writeup

1.

Static:

RA-Config:

Interface fastethernet2/0
 Ip address 192.168.0.2 255.255.255.0
 No shut
Interface fastethernet2/1
 Ip address 192.168.1.1 255.255.255.0
 Ip address 192.168.1.3 255.255.255.0 secondary
 Ip address 192.168.1.4 255.255.255.0 secondary
 Ip address 192.168.1.5 255.255.255.0 secondary
 Ip ospf priority 90
 No shut
Ip nat inside source static 192.168.0.3 192.168.1.3
Ip nat inside source static 192.168.0.4 192.168.1.4
Ip nat inside source static 192.168.0.5 192.168.1.5

RB-Config:

Interface fastethernet2/0
 Ip address 192.168.1.2 255.255.255.0
 No shut

```
RA#sh ip nat tran
RA#sh ip nat translations
Pro Inside global      Inside local       Outside local      Outside global
--- 192.168.1.3        192.168.0.3        ---                ---
--- 192.168.1.4        192.168.0.4        ---                ---
--- 192.168.1.5        192.168.0.5        ---                ---
RA#
```

```
interface FastEthernet2/0
 ip address 192.168.0.2 255.255.255.0
 ip nat inside
 ip virtual-reassembly
 duplex auto
 speed auto
!
interface FastEthernet2/1
 ip address 192.168.1.3 255.255.255.0 secondary
 ip address 192.168.1.4 255.255.255.0 secondary
 ip address 192.168.1.5 255.255.255.0 secondary
 ip address 192.168.1.1 255.255.255.0
 ip nat outside
 ip virtual-reassembly
 ip ospf priority 90
 duplex auto
 speed auto
!
router ospf 2
 log-adjacency-changes
 network 192.168.1.0 0.0.0.255 area 0
!
!
!
ip http server
no ip http secure-server
ip nat inside source static 192.168.0.3 192.168.1.3
ip nat inside source static 192.168.0.4 192.168.1.4
ip nat inside source static 192.168.0.5 192.168.1.5
!
!
!
!
!
 --More--
```

Dynamic:

RB-Config:

Ip nat pool Pool 192.168.1.3 192.168.1.6 prefix-length 24

Access-list 1 permit 192.168.0.0 0.0.0.7

Ip nat inside source list 1 pool Pool

```
RA#sh ip nat trans
Pro Inside global      Inside local       Outside local      Outside global
--- 192.168.1.3        192.168.0.3        ---                ---
--- 192.168.1.4        192.168.0.4        ---                ---
--- 192.168.1.5        192.168.0.5        ---                ---
RA#
```

```
RA#sh ip nat statistics
Total active translations: 3 (0 static, 3 dynamic; 0 extended)
Outside interfaces:
  FastEthernet2/1
Inside interfaces:
  FastEthernet2/0
Hits: 155  Misses: 10
CEF Translated packets: 165, CEF Punted packets: 0
Expired translations: 10
Dynamic mappings:
-- Inside Source
[Id: 1] access-list 1 pool Pool refcount 3
 pool Pool: netmask 255.255.255.0
        start 192.168.1.3 end 192.168.1.6
        type generic, total addresses 4, allocated 3 (75%), misses 0
Queued Packets: 0
RA#
```

PAT:

RB-Config:

Remove dynamic pool

Nat inside source list 1 interface FastEthernet 2/1 overload

```
RA(config)#ip nat inside source list 1 interface fastEthernet 2/1 overload
RA(config)#exit
RA#sh ip nat trans
Pro Inside global      Inside local       Outside local      Outside global
icmp 192.168.1.1:1     192.168.0.3:1      192.168.1.2:1      192.168.1.2:1
RA#
```

```
RA#sh ip nat trans
Pro Inside global      Inside local       Outside local      Outside global
icmp 192.168.1.1:1     192.168.0.3:1      192.168.1.2:1      192.168.1.2:1
RA#sh ip nat stats
RA#sh ip nat statistics
Total active translations: 0 (0 static, 0 dynamic; 0 extended)
Outside interfaces:
  FastEthernet2/1
Inside interfaces:
  FastEthernet2/0
Hits: 160  Misses: 11
CEF Translated packets: 171, CEF Punted packets: 0
Expired translations: 11
Dynamic mappings:
-- Inside Source
[Id: 2] access-list 1 interface FastEthernet2/1 refcount 0
Queued Packets: 0
RA#
```

```
RA#sh ip nat translations
Pro Inside global      Inside local       Outside local      Outside global
tcp 192.168.1.1:49347  192.168.0.3:49347  192.168.1.2:23     192.168.1.2:23
tcp 192.168.1.1:49297  192.168.0.4:49297  192.168.1.2:23     192.168.1.2:23
tcp 192.168.1.1:49409  192.168.0.5:49409  192.168.1.2:23     192.168.1.2:23
RA#
```

telnet

```
RA#sh ip nat translations
Pro Inside global      Inside local       Outside local      Outside global
tcp 192.168.1.1:49347  192.168.0.3:49347  192.168.1.2:23     192.168.1.2:23
tcp 192.168.1.1:49348  192.168.0.3:49348  192.168.1.2:23     192.168.1.2:23
tcp 192.168.1.1:49349  192.168.0.3:49349  192.168.1.2:23     192.168.1.2:23
tcp 192.168.1.1:49297  192.168.0.4:49297  192.168.1.2:23     192.168.1.2:23
tcp 192.168.1.1:49409  192.168.0.5:49409  192.168.1.2:23     192.168.1.2:23
RA#
```

Redistribution:

wire everything

router1-conf

```
router ospf 2
  network 192.168.1.0 0.0.0.255 area 0
  network 192.168.0.0 0.0.0.3 area 0
interface Serial 1/0
  ip ospf priority 100
```

router2-conf

```
router ospf 2
  network 192.168.0.4 0.0.0.3 area 0
  network 192.168.0.0 0.0.0.3 area 0
interface Serial 1/0
  ip ospf priority 200
```

router3-conf

```
ip route 192.168.3.0 192.168.0.10
router ospf 2
  network 192.168.0.0 0.0.0.3 area 0
  network 192.168.0.4 0.0.0.3 area 0
  redistribute static subnets
```

router7-conf

```
ip route 192.168.1.0 255.255.255.0 192.168.0.9
ip route 192.168.0.36 255.255.255.252 192.168.0.9
ip route 192.168.4.0 255.255.255.0 192.168.0.33
ip route 0.0.0.0 0.0.0.0 192.168.0.9
```

Communication between those routers is now established

router6-conf

```
router rip
  version 2
  network 192.168.0.44
  network 192.168.0.28
  redistribute static metric 1
  no auto-summary
```

router8-conf

```
router rip
 version 2
 network 192.168.0.28
 network 192.168.4.0
 redistribute static metric 1
 no auto-summary
ip route 192.168.3.0 255.255.255.0 192.168.0.34
```

Routers 6,7,8 now can communicate

router6-conf

```
router ospf 2
 network 192.168.0.24 0.0.0.3 area 0
 network 192.168.0.20 0.0.0.3 area 0
 redistribute rip subnets
 default-metric 1
router rip
 redistribute ospf 2
 default-metric 1
interface FastEthernet 2/0
 ip ospf priority 200
```

router4-conf

```
router ospf 2
 network 192.168.0.24 0.0.0.3 area 0
 network 192.168.0.40 0.0.0.3 area 0
```

router5-conf

```
router ospf 2
 network 192.168.0.20 0.0.0.3 area 0
 network 192.168.2.0 0.0.0.255 area 0
interface FastEthernet 1/0
 ip ospf priority 255
```

Routers 4,5,6 can now communicate

router4-conf

```
router eigrp
 no auto-summary
 network 192.168.0.12
 network 192.168.0.16
 default-metric 10000 100 255 1 1500
```

redistribute ospf 2
rotuer ospf 2
redistribute eigrp 3 subnets

router5-conf

router eigrp
no auto-summary
network 192.168.0.16

router3-conf

router eigrp 3
no auto-summary
network 192.168.0.12
redistribute static
redistribute ospf 2
default-metric 10000 100 255 1 1500
router ospf 2
redistribute eigrp 3 subnets

Now there is full Connectivity ☺

```
R6#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

R    192.168.4.0/24 [120/1] via 192.168.0.30, 00:00:24, Serial1/1
     192.168.0.0/30 is subnetted, 12 subnets
O       192.168.0.40 [110/2] via 192.168.0.26, 00:09:33, FastEthernet2/0
C       192.168.0.44 is directly connected, GigabitEthernet0/0
R       192.168.0.32 [120/1] via 192.168.0.30, 00:00:24, Serial1/1
O E2    192.168.0.36 [110/1] via 192.168.0.26, 00:02:34, FastEthernet2/0
O E2    192.168.0.8 [110/1] via 192.168.0.26, 00:02:34, FastEthernet2/0
O E2    192.168.0.12 [110/1] via 192.168.0.26, 00:02:35, FastEthernet2/0
O E2    192.168.0.0 [110/1] via 192.168.0.26, 00:02:35, FastEthernet2/0
O E2    192.168.0.4 [110/1] via 192.168.0.26, 00:02:35, FastEthernet2/0
C       192.168.0.24 is directly connected, FastEthernet2/0
C       192.168.0.28 is directly connected, Serial1/1
O E2    192.168.0.16 [110/1] via 192.168.0.26, 00:02:35, FastEthernet2/0
C       192.168.0.20 is directly connected, FastEthernet2/1
     192.168.1.0/32 is subnetted, 1 subnets
O E2    192.168.1.1 [110/1] via 192.168.0.26, 00:02:37, FastEthernet2/0
     192.168.2.0/32 is subnetted, 1 subnets
O       192.168.2.1 [110/2] via 192.168.0.21, 00:09:36, FastEthernet2/1
O E2 192.168.3.0/24 [110/1] via 192.168.0.26, 00:09:36, FastEthernet2/0
```

NTP:

RA-Config:

Interface FastEthernet 2/0
 Ip address 192.168.0.2 255.255.255.0
 No shut
Ntp master 5

```
RA#sh ntp status
Clock is synchronized, stratum 5, reference is 127.127.7.1
nominal freq is 250.0000 Hz, actual freq is 250.0000 Hz, precision is 2**18
reference time is D9AC4E55.332D1B4B (22:01:57.199 UTC Tue Sep 22 2015)
clock offset is 0.0000 msec, root delay is 0.00 msec
root dispersion is 0.02 msec, peer dispersion is 0.02 msec
RA#
```

RB-Config:

Interface FastEthernet 2/0
 Ip address 192.168.0.3 255.255.255.0
 No shut
Ntp server 192.168.0.2 key 1 prefer

```
RB#sh ntp status
Clock is synchronized, stratum 6, reference is 192.168.0.2
nominal freq is 250.0000 Hz, actual freq is 250.0000 Hz, precision is 2**18
reference time is D9AC4DC6.DD135F32 (21:59:34.863 UTC Tue Sep 22 2015)
clock offset is -2.3103 msec, root delay is 0.78 msec
root dispersion is 3.92 msec, peer dispersion is 1.57 msec
RB#
```

RC-Config:

Interface FastEthernet 2/0
 Ip address 192.168.0.4 255.255.255.0
 No shut
Ntp server 192.168.0.2 key 1 prefer

```
RC#sh ntp status
Clock is synchronized, stratum 6, reference is 192.168.0.2
nominal freq is 250.0000 Hz, actual freq is 250.0000 Hz, precision is 2**18
reference time is D9AC4E27.3EFDF0AD (22:01:11.246 UTC Tue Sep 22 2015)
clock offset is -2.6528 msec, root delay is 0.79 msec
root dispersion is 3.95 msec, peer dispersion is 1.27 msec
RC#
```

Report Questions

PAT:
1. Commands are in question 1
2. It keeps track of the ports and using the ports you can have multiple machines using it at the same time.

Redistribution:
The administrative distance decides which route is the best route to take based off of several factors. You would have to change it if it seemed like something was off or you wanted to do it a different way.

Access List:
1. access-list deny tcp any eq 80 any
2. access-list deny ftp any any
3. access-list allow ssh 100.100.100.0 255.255.255.0 eq 20 any
4. deny icmp requests inward – It would work because you could make the outgoing request but the incoming request would get denied.

Very Useful Commands:
sh ip nat statistics --- shows the ip nat statistics
Sh ntp status --- shows you the status of ntp