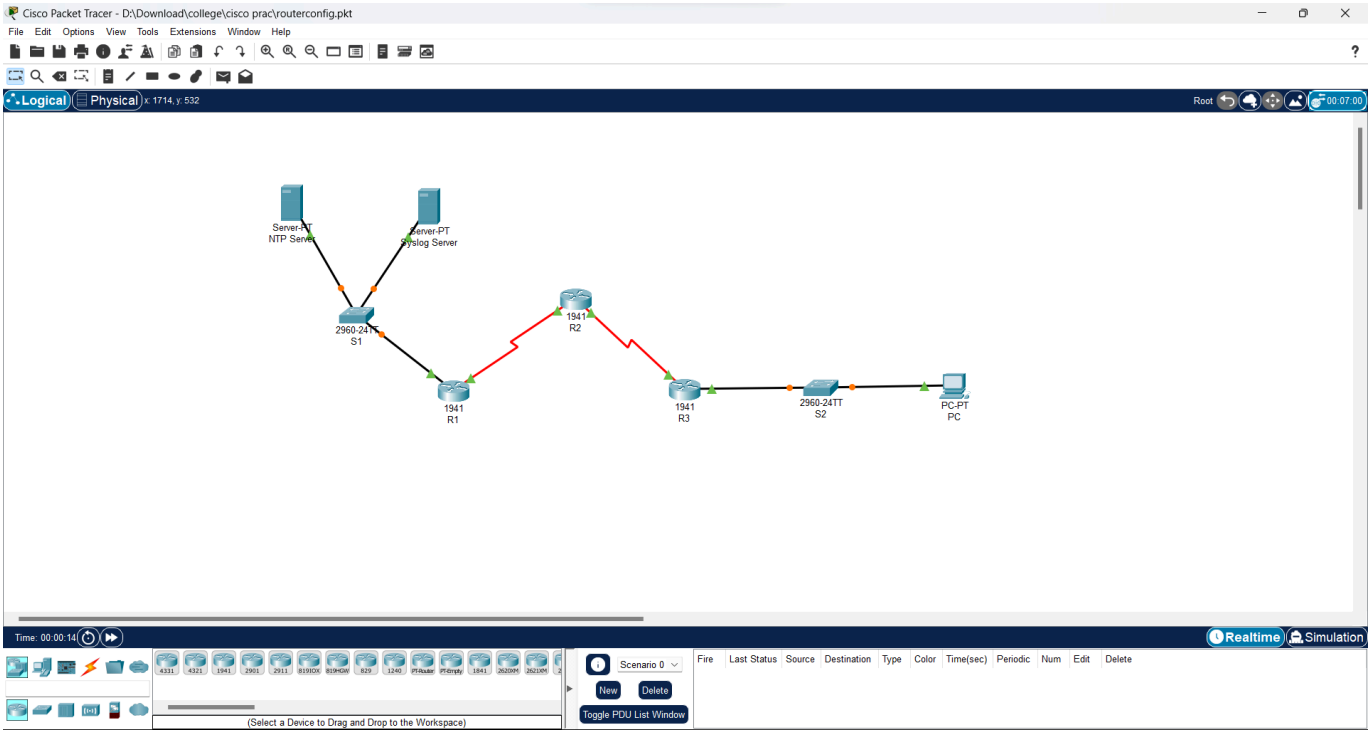
Security in Computing
Practical - 1

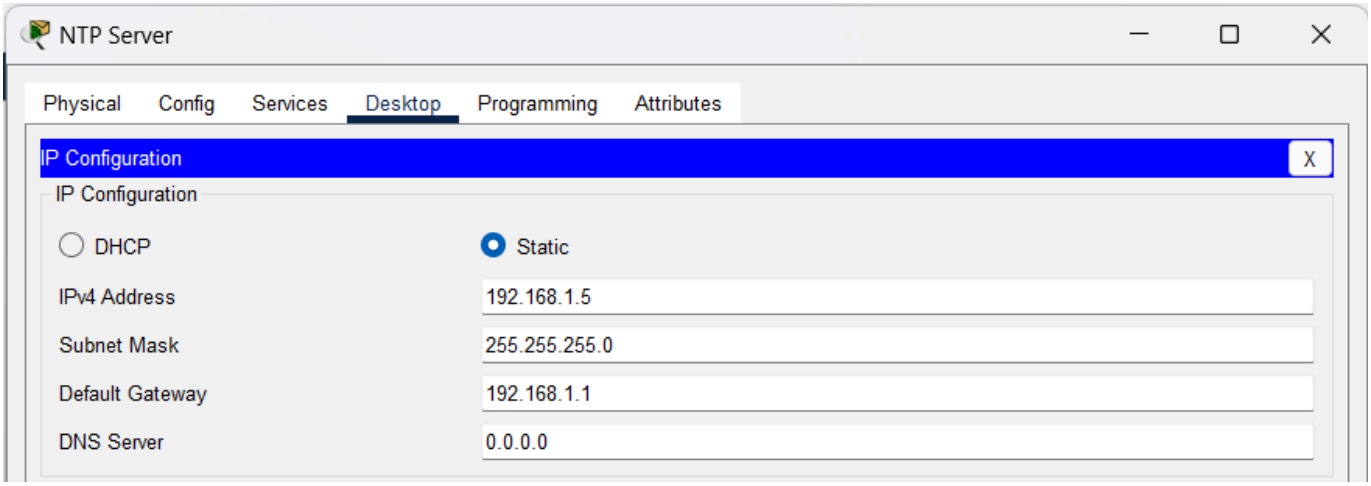
➢ **Aim: Configure Routers**

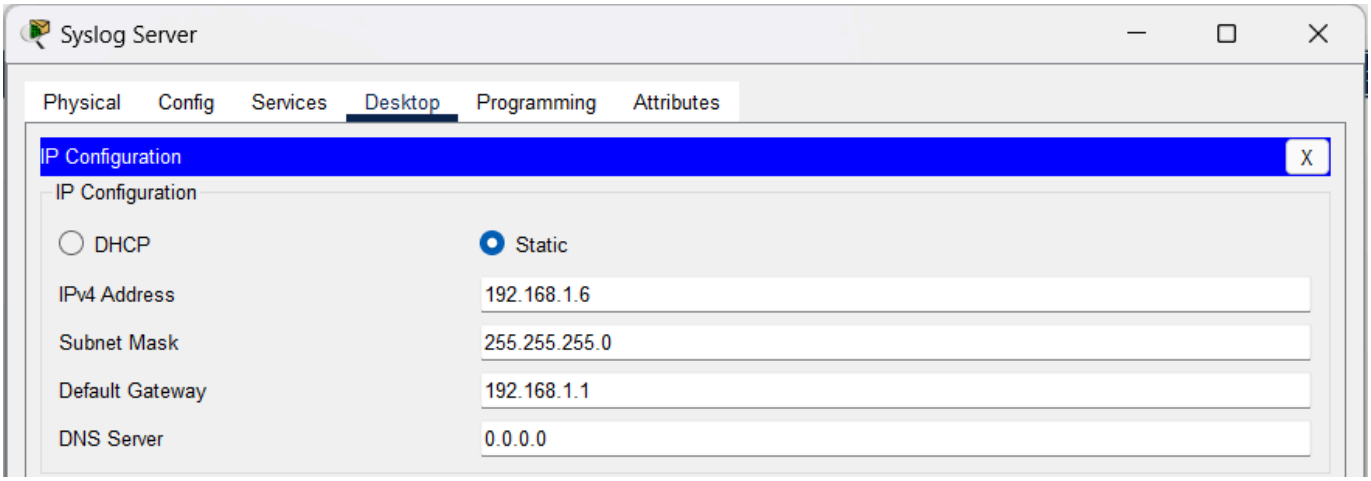
a. OSPF MD5 authentication
b. NTP
c. To log messages to the syslog server
d. To support SSH connections

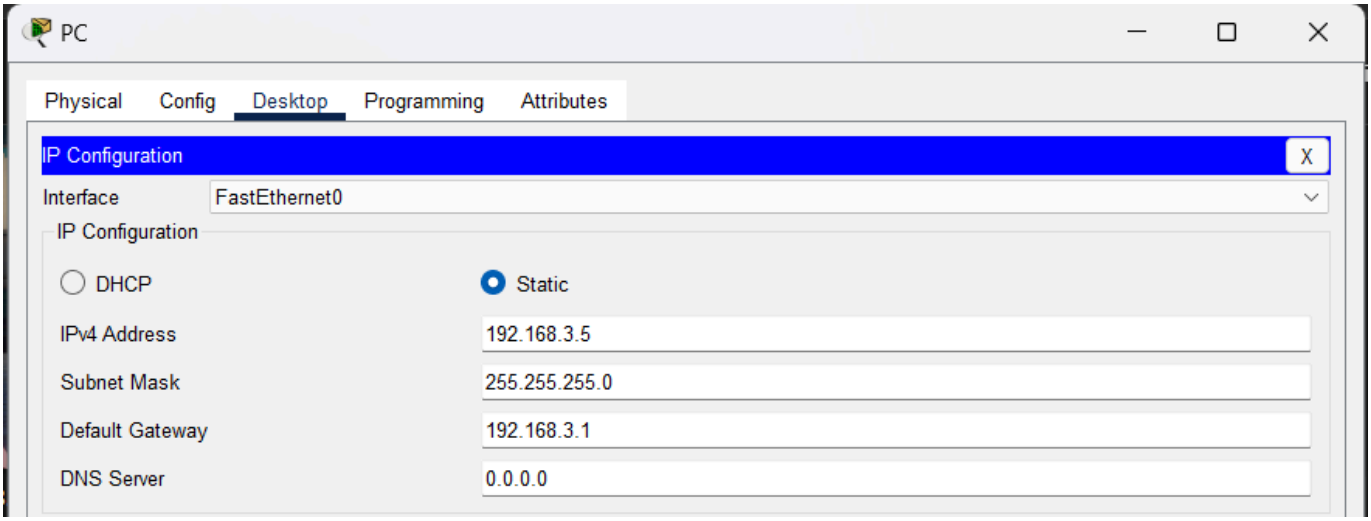
Topology Diagram:



Assign IP Addresses:








```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#host R1
R1(config)#interface GigabitEthernet0/0
R1(config-if)#ip address 192.168.1.1 255.255.255.0
R1(config-if)#no shut

R1(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

R1(config-if)#interface Serial0/0/0
R1(config-if)#ip address 10.1.1.1 255.255.255.252
R1(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R1(config-if)#^Z
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#exit
```

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#host R2
R2(config)#interface Serial0/0/0
R2(config-if)#ip address 10.1.1.2 255.255.255.252
R2(config-if)#no shut

R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

R2(config-if)#interface Serial0/0/1
R2(config-if)#ip address 10.2.2.2 255.255.255.252
R2(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
R2(config-if)#^Z
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#exit
```

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#host R3
R3(config)#interface Serial0/0/0
R3(config-if)#ip address 10.2.2.1 255.255.255.252
R3(config-if)#no shut

R3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

R3(config-if)#interface GigabitEthernet0/0
R3(config-if)#ip address 192.168.3.1 255.255.255.0
R3(config-if)#no shut

R3(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
^Z
R3#
%SYS-5-CONFIG_I: Configured from console by console

R3#exit
```

Displaying IP Address Details of Routers:

```
R1>show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     192.168.1.1     YES manual up                    up
GigabitEthernet0/1     unassigned      YES unset  administratively down down
Serial0/0/0            10.1.1.1        YES manual up                    up
Serial0/0/1            unassigned      YES unset  administratively down down
Vlan1                  unassigned      YES unset  administratively down down

R2>show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     unassigned      YES unset  administratively down down
GigabitEthernet0/1     unassigned      YES unset  administratively down down
Serial0/0/0            10.1.1.2        YES manual up                    up
Serial0/0/1            10.2.2.2        YES manual up                    up
Vlan1                  unassigned      YES unset  administratively down down

R3>show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     192.168.3.1     YES manual up                    up
GigabitEthernet0/1     unassigned      YES unset  administratively down down
Serial0/0/0            10.2.2.1        YES manual up                    up
Serial0/0/1            unassigned      YES unset  administratively down down
Vlan1                  unassigned      YES unset  administratively down down
```

Configure OSPF on Routers:

```
R1>en
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#router ospf 1
R1(config-router)#network 192.168.1.0 0.0.0.255 area 0
R1(config-router)#network 10.1.1.0 0.0.0.3 area 0
R1(config-router)#^Z
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#exit
```

```
R2>en
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#router ospf 1
R2(config-router)#network 10.1.1.0 0.0.0.3 area 0
R2(config-router)#network 1
00:21:20: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.1.1 on Serial0/0/0 from LOADING to FULL, Load
R2(config-router)#network 10.2.2.0 0.0.0.3
% Incomplete command.
R2(config-router)#network 10.2.2.0 0.0.0.3 area 0
R2(config-router)#^Z
R2#
%SYS-5-CONFIG_I: Configured from console by console
```

```
R3>en
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#router ospf 1
R3(config-router)#network 192.168.3.0 0.0.0.255 area 0
R3(config-router)#network 10.2.2.0 0.0.0.3 area 0
R3(config-router)#^Z
R3#
%SYS-5-CONFIG_I: Configured from console by console

R3#
00:23:20: %OSPF-5-ADJCHG: Process 1, Nbr 10.2.2.2 on Serial0/0/0 from LOADING to FULL, Loading Done
exit
```

Displaying Routing Table of Routers:

```
R1>show ip route
Codes: L - local, 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, E - EGP
       i - IS-IS, 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

     10.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
C       10.1.1.0/30 is directly connected, Serial0/0/0
L       10.1.1.1/32 is directly connected, Serial0/0/0
O       10.2.2.0/30 [110/128] via 10.1.1.2, 00:03:25, Serial0/0/0
     192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/24 is directly connected, GigabitEthernet0/0
L       192.168.1.1/32 is directly connected, GigabitEthernet0/0
O    192.168.3.0/24 [110/129] via 10.1.1.2, 00:01:35, Serial0/0/0

R2>show ip route
Codes: L - local, 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, E - EGP
       i - IS-IS, 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

     10.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
C       10.1.1.0/30 is directly connected, Serial0/0/0
L       10.1.1.2/32 is directly connected, Serial0/0/0
C       10.2.2.0/30 is directly connected, Serial0/0/1
L       10.2.2.2/32 is directly connected, Serial0/0/1
O    192.168.1.0/24 [110/65] via 10.1.1.1, 00:04:02, Serial0/0/0
O    192.168.3.0/24 [110/65] via 10.2.2.1, 00:01:56, Serial0/0/1
```

```
R3>show ip route
Codes: L - local, 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, E - EGP
       i - IS-IS, 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

     10.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
O       10.1.1.0/30 [110/128] via 10.2.2.2, 00:02:02, Serial0/0/0
C       10.2.2.0/30 is directly connected, Serial0/0/0
L       10.2.2.1/32 is directly connected, Serial0/0/0
O    192.168.1.0/24 [110/129] via 10.2.2.2, 00:02:02, Serial0/0/0
     192.168.3.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.3.0/24 is directly connected, GigabitEthernet0/0
L       192.168.3.1/32 is directly connected, GigabitEthernet0/0
```

(A) OSPF MD5 authentication

Configure OSPF MD5 authentication on Routers:

```
R1>en
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#router ospf 1
R1(config-router)#area 0 authentication message-digest
R1(config-router)#^Z
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#exit
```

```
R2>en
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#router ospf 1
R2(config-router)#area 0 authentication message-digest
R2(config-router)#^Z
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#exit
```

```
R3>en
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#router ospf 1
R3(config-router)#area 0 authentication message-digest
R3(config-router)#^Z
R3#
%SYS-5-CONFIG_I: Configured from console by console

R3#exit
```

Configure the MD5 key for all routers:

```
R1>en
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#interface Serial0/0/0
R1(config-if)#ip ospf message-digest-key 1 md5 mdpwd
R1(config-if)#^Z
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#exit
```

```
R2>en
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#
00:35:31: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.1.1 on Serial0/0/0 from FULL to DOWN, Neighbor
Down: Dead timer expired

00:35:31: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.1.1 on Serial0/0/0 from FULL to DOWN, Neighbor
Down: Interface down or detached

R2(config)#interface Serial0/0/0
R2(config-if)#ip ospf message-digest-key 1 md5 mdpwd
R2(config-if)#interface Serial
00:36:31: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.1.1 on Serial0/0/0 from LOADING to FUL
R2(config-if)#interface Serial0/0/1
R2(config-if)#ip ospf message-digest-key 1 md5 MD5pa55
R2(config-if)#^Z
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#exit
```

```
R3>en
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#interface
00:37:50: %OSPF-5-ADJCHG: Process 1, Nbr 10.2.2.2 on Serial0/0/0 from FULL to DOWN, Neighbor Down:
Dead timer expired

00:37:50: %OSPF-5-ADJCHG: Process 1, Nbr 10.2.2.2 on Serial0/0/0 from FULL to DOWN, Neighbor Down:
Interface down or detached

% Incomplete command.
R3(config)#interface Serial0/0/0
R3(config-if)#ip ospf message-digest-key 1 md5 MD5pa55
R3(config-if)#^Z
R3#
%SYS-5-CONFIG_I: Configured from console by console
```

Displaying OSPF details of the routers:

```
R1>show ip ospf interface Serial0/0/0

Serial0/0/0 is up, line protocol is up
  Internet address is 10.1.1.1/30, Area 0
  Process ID 1, Router ID 192.168.1.1, Network Type POINT-TO-POINT, Cost: 64
  Transmit Delay is 1 sec, State POINT-TO-POINT,
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:06
  Index 2/2, flood queue length 0
  Next 0x0(0)/0x0(0)
  Last flood scan length is 1, maximum is 1
  Last flood scan time is 0 msec, maximum is 0 msec
  Neighbor Count is 1 , Adjacent neighbor count is 1
    Adjacent with neighbor 10.2.2.2
  Suppress hello for 0 neighbor(s)
  Message digest authentication enabled
    Youngest key id is 1
```

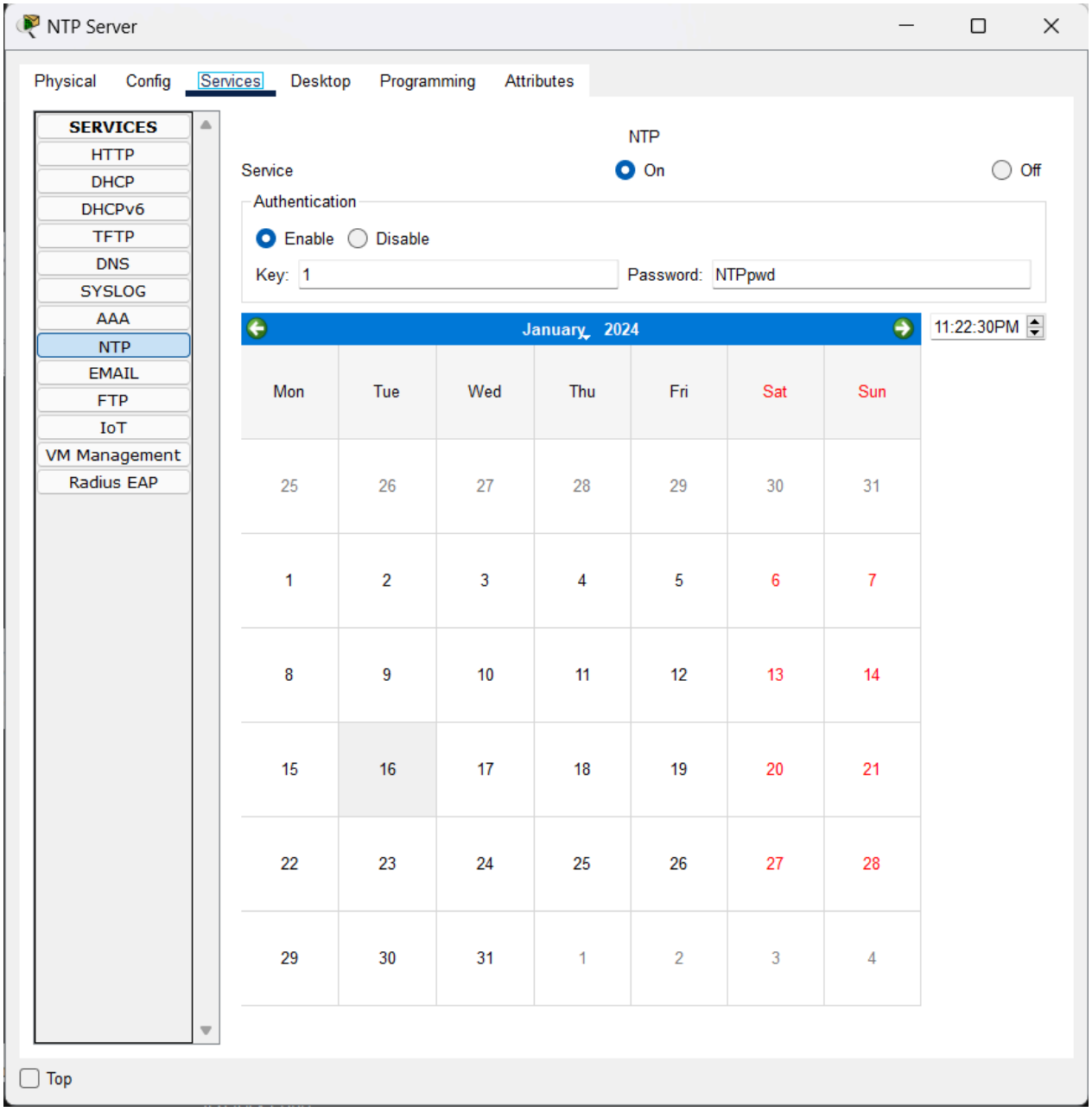
```
R2>show ip ospf interface Serial0/0/0

Serial0/0/0 is up, line protocol is up
  Internet address is 10.1.1.2/30, Area 0
  Process ID 1, Router ID 10.2.2.2, Network Type POINT-TO-POINT, Cost: 64
  Transmit Delay is 1 sec, State POINT-TO-POINT,
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:02
  Index 1/1, flood queue length 0
  Next 0x0(0)/0x0(0)
  Last flood scan length is 1, maximum is 1
  Last flood scan time is 0 msec, maximum is 0 msec
  Neighbor Count is 1 , Adjacent neighbor count is 1
    Adjacent with neighbor 192.168.1.1
  Suppress hello for 0 neighbor(s)
  Message digest authentication enabled
    Youngest key id is 1
R2>show ip ospf interface Serial0/0/1

Serial0/0/1 is up, line protocol is up
  Internet address is 10.2.2.2/30, Area 0
  Process ID 1, Router ID 10.2.2.2, Network Type POINT-TO-POINT, Cost: 64
  Transmit Delay is 1 sec, State POINT-TO-POINT,
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:03
  Index 2/2, flood queue length 0
  Next 0x0(0)/0x0(0)
  Last flood scan length is 1, maximum is 1
  Last flood scan time is 0 msec, maximum is 0 msec
  Neighbor Count is 1 , Adjacent neighbor count is 1
    Adjacent with neighbor 192.168.3.1
  Suppress hello for 0 neighbor(s)
  Message digest authentication enabled
    Youngest key id is 1

R3>show ip ospf interface Serial0/0/0

Serial0/0/0 is up, line protocol is up
  Internet address is 10.2.2.1/30, Area 0
  Process ID 1, Router ID 192.168.3.1, Network Type POINT-TO-POINT, Cost: 64
  Transmit Delay is 1 sec, State POINT-TO-POINT,
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:03
  Index 2/2, flood queue length 0
  Next 0x0(0)/0x0(0)
  Last flood scan length is 1, maximum is 1
  Last flood scan time is 0 msec, maximum is 0 msec
  Neighbor Count is 1 , Adjacent neighbor count is 1
    Adjacent with neighbor 10.2.2.2
  Suppress hello for 0 neighbor(s)
  Message digest authentication enabled
    Youngest key id is 1
```

(B) NTP

Check Clock Time in The Routers:

```
R1>show clock
*0:44:30.533 UTC Mon Mar 1 1993

R2>show clock
*0:44:30.39 UTC Mon Mar 1 1993

R3>show clock
*0:44:32.404 UTC Mon Mar 1 1993
```

Configure NTP server:



Configure NTP client:

```
R1>en
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#ntp server 192.168.1.5
R1(config)#ntp update-calendar
R1(config)#^Z
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#exit

R2>en
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#ntp server 192.168.1.5
R2(config)#ntp update-calendar
R2(config)#^Z
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#exit

R3>en
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#ntp server 192.168.1.5
R3(config)#ntp update-calendar
R3(config)#^Z
R3#
%SYS-5-CONFIG_I: Configured from console by console

R3#exit
```

Configure NTP authentication and to timestamp log messages on the routers:

```
R1>en
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#ntp authenticate
R1(config)#ntp trusted-key 1
R1(config)#ntp authentication-key 1 md5 NTPpwd
R1(config)#service timestamps log datetime msec
R1(config)#^Z
R1#
*Jan 16, 23:28:57.2828: %SYS-5-CONFIG_I: Configured from console by console
R1#exit
```

```
R2>en
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#ntp authenticate
R2(config)#ntp trusted-key 1
R2(config)#ntp authentication-key 1 md5 NTPpwd
R2(config)#service timestamps log datetime msec
R2(config)#^Z
R2#
*Jan 16, 23:30:26.3030: %SYS-5-CONFIG_I: Configured from console by console
R2#exit
```

```
R3>en
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#ntp authenticate
R3(config)#ntp trusted-key 1
R3(config)#ntp authentication-key 1 md5 NTPpwd
R3(config)#service timestamps log datetime msec
R3(config)#^Z
R3#
*Jan 16, 23:31:41.3131: %SYS-5-CONFIG_I: Configured from console by console
R3#exit
```

Check updated UTC Clock Time in the routers:

```
R1>show clock
23:34:13.912 UTC Tue Jan 16 2024
```

```
R2>show clock
23:34:30.140 UTC Tue Jan 16 2024
```

```
R3>show clock
23:34:45.37 UTC Tue Jan 16 2024
```

(C) Syslog

Configure Routers to Log Messages to the Syslog Server:

```
R1>en
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#logging host 192.168.1.6
R1(config)#^Z
R1#
*Jan 16, 23:36:15.3636: %SYS-5-CONFIG_I: Configured from console by console
*Jan 16, 23:36:15.3636: *Jan 16, 23:36:15.3636: %SYS-6-LOGGINGHOST_STARTSTOP: Logging to host
192.168.1.6 port 514 started - CLI initiated
R1#exit
```

```
R2>en
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#logging host 192.168.1.6
R2(config)#^Z
R2#
*Jan 16, 23:36:55.3636: %SYS-5-CONFIG_I: Configured from console by console
*Jan 16, 23:36:55.3636: *Jan 16, 23:36:55.3636: %SYS-6-LOGGINGHOST_STARTSTOP: Logging to host
192.168.1.6 port 514 started - CLI initiated
R2#exit
```

```
R3>en
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#logging host 192.168.1.6
R3(config)#^Z
R3#
*Jan 16, 23:37:30.3737: %SYS-5-CONFIG_I: Configured from console by console
*Jan 16, 23:37:30.3737: *Jan 16, 23:37:30.3737: %SYS-6-LOGGINGHOST_STARTSTOP: Logging to host
192.168.1.6 port 514 started - CLI initiated
R3#exit
```

```
R2>en
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#ntp authenticate
R2(config)#ntp trusted-key 1
R2(config)#ntp authentication-key 1 md5 NTPpwd
R2(config)#service timestamps log datetime msec
R2(config)#^Z
R2#
*Jan 16, 23:40:39.4040: %SYS-5-CONFIG_I: Configured from console by console
R2#exit
```

Check updated UTC clock time in the routers:

```
R1>show clock
23:41:33.615 UTC Tue Jan 16 2024
```

```
R2>show clock
23:41:46.879 UTC Tue Jan 16 2024
```

```
R3>show clock
23:42:0.259 UTC Tue Jan 16 2024
```

Configure routers to log messages to the syslog server:

```
R1>en
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#logging host 192.168.1.6
R1(config)#^Z
R1#
*Jan 16, 23:43:32.4343: %SYS-5-CONFIG_I: Configured from console by console
R1#exit
```

```
R2>en
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#logging host 192.168.1.6
R2(config)#^Z
R2#
*Jan 16, 23:44:18.4444: %SYS-5-CONFIG_I: Configured from console by console
R2#exit
```

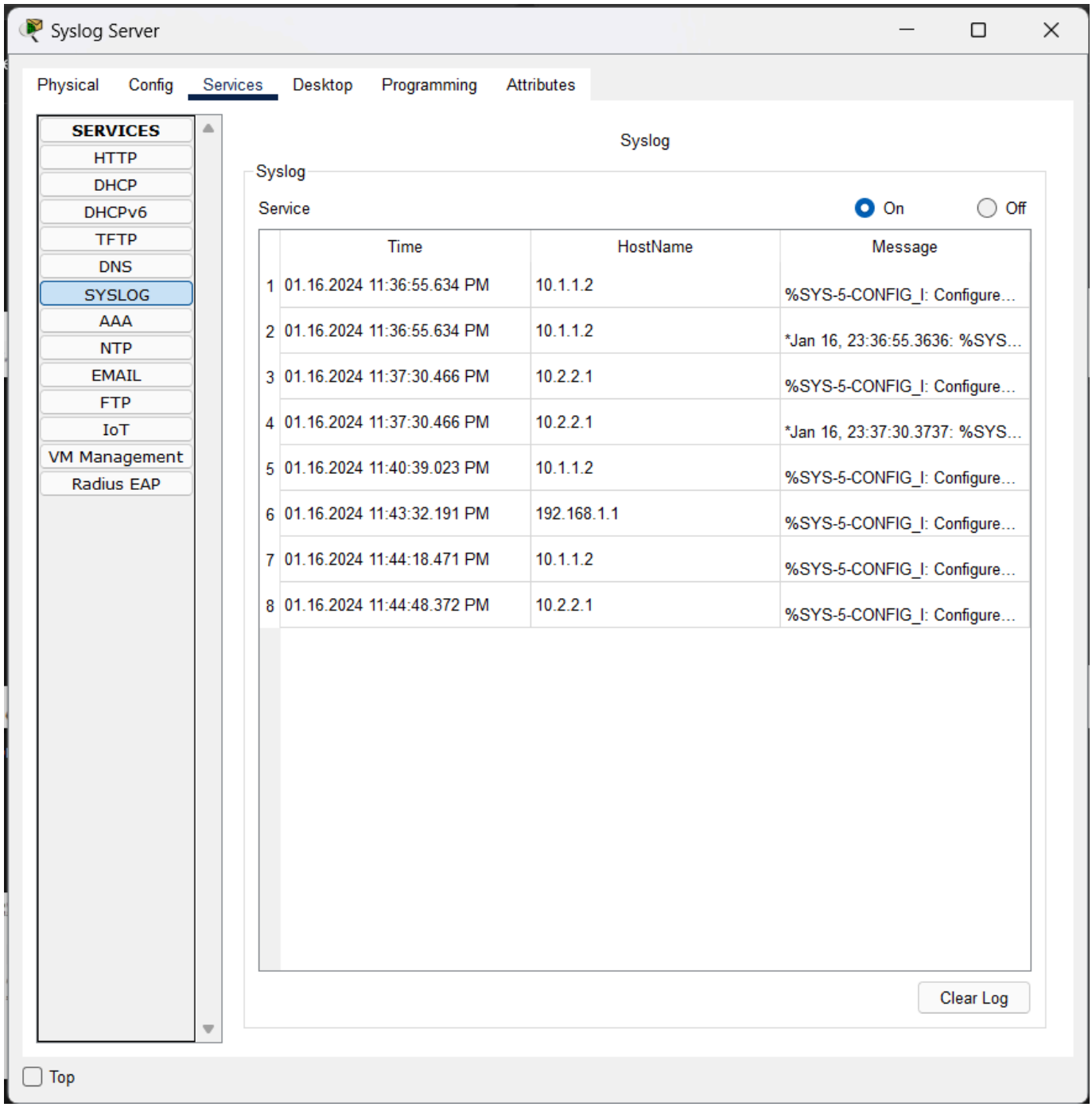
```
R3>en
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#logging host 192.168.1.6
R3(config)#^Z
R3#
*Jan 16, 23:44:48.4444: %SYS-5-CONFIG_I: Configured from console by console
R3#exit
```

Verify logging configuration on routers:

```
R1#show logging
Syslog logging: enabled (0 messages dropped, 0 messages rate-limited,
          0 flushes, 0 overruns, xml disabled, filtering disabled)

No Active Message Discriminator.


No Inactive Message Discriminator.


    Console logging: level debugging, 20 messages logged, xml disabled,
          filtering disabled
    Monitor logging: level debugging, 20 messages logged, xml disabled,
          filtering disabled
    Buffer logging:  disabled, xml disabled,
          filtering disabled

    Logging Exception size (4096 bytes)
    Count and timestamp logging messages: disabled
    Persistent logging: disabled

No active filter modules.
```

```
R2#show logging
Syslog logging: enabled (0 messages dropped, 0 messages rate-limited,
          0 flushes, 0 overruns, xml disabled, filtering disabled)

No Active Message Discriminator.


No Inactive Message Discriminator.


    Console logging: level debugging, 29 messages logged, xml disabled,
          filtering disabled
    Monitor logging: level debugging, 29 messages logged, xml disabled,
          filtering disabled
    Buffer logging:  disabled, xml disabled,
          filtering disabled

    Logging Exception size (4096 bytes)
    Count and timestamp logging messages: disabled
    Persistent logging: disabled

No active filter modules.
R3#show logging
Syslog logging: enabled (0 messages dropped, 0 messages rate-limited,
          0 flushes, 0 overruns, xml disabled, filtering disabled)

No Active Message Discriminator.


No Inactive Message Discriminator.


    Console logging: level debugging, 21 messages logged, xml disabled,
          filtering disabled
    Monitor logging: level debugging, 21 messages logged, xml disabled,
          filtering disabled
    Buffer logging:  disabled, xml disabled,
          filtering disabled

    Logging Exception size (4096 bytes)
    Count and timestamp logging messages: disabled
    Persistent logging: disabled

No active filter modules.
```

Examine logs of Syslog Server:

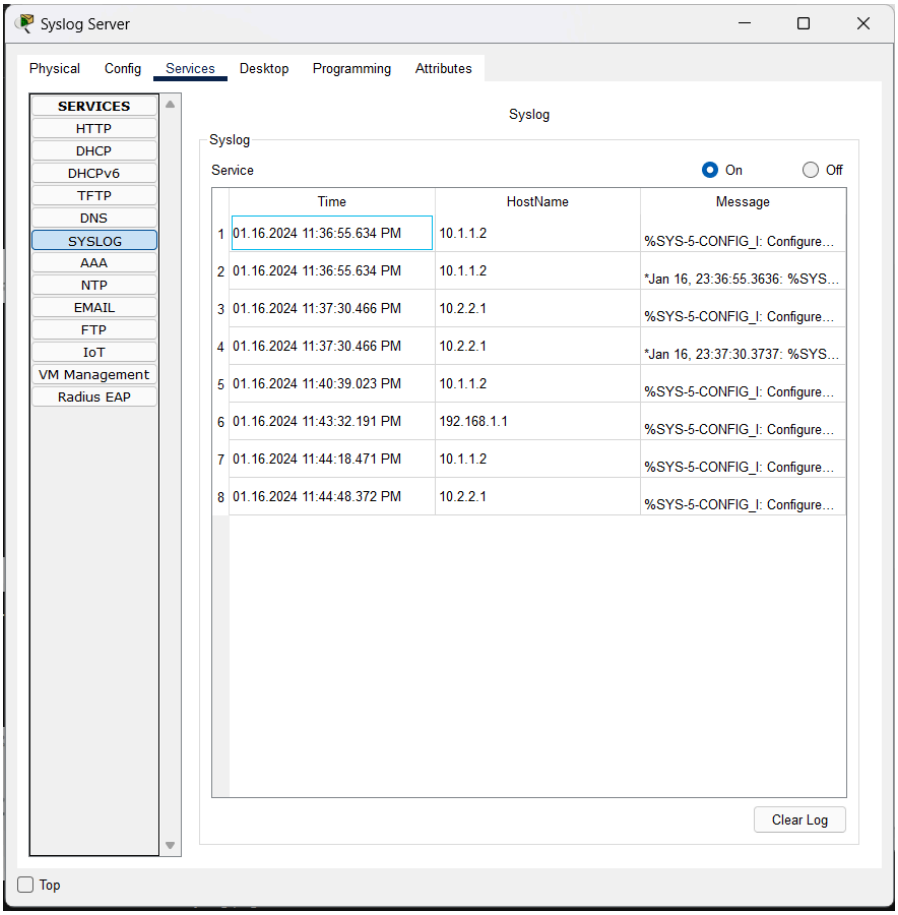


(D) SSH

Configure SSH on R3:

```
R3>en
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#ip domain-name securityincomputing.com
R3(config)#username SSHadmin privilege 15 secret sshpwd
R3(config)#line vty 0 4
R3(config-line)#login local
R3(config-line)#transport input ssh
R3(config-line)#crypto key zeroize rsa
% No Signature RSA Keys found in configuration.

R3(config)#crypto key generate rsa
The name for the keys will be: R3.securityincomputing.com
Choose the size of the key modulus in the range of 360 to 4096 for your
  General Purpose Keys. Choosing a key modulus greater than 512 may take
  a few minutes.

How many bits in the modulus [512]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]

R3(config)#ip ssh time-out 90
*Jan 16 23:51:58.721: %SSH-5-ENABLED: SSH 1.99 has been enabled
R3(config)#ip ssh authentication-retries 2
R3(config)#ip ssh version 2
R3(config)#^Z
R3#
*Jan 16, 23:53:55.5353: %SYS-5-CONFIG_I: Configured from console by console
R3#exit
```

Examine logs from Syslog Server:



Connect R3 using telnet and SSH to PC: