# Module 4: System Services Assignment

## 1 – Configure your system to sync from 1.centos.pool.ntp.org

[root@server1 akmtir]#
**[root@server1 akmtir]# ntpdate -q 1.centos.pool.ntp.org**
server 213.136.0.252, stratum 1, offset 39169.475810, delay 0.08931
server 129.250.35.251, stratum 2, offset 39169.475306, delay 0.08617
server 178.62.248.116, stratum 3, offset 39169.531275, delay 0.08742
server 178.239.61.38, stratum 2, offset 39169.475507, delay 0.08742
 6 May 06:59:37 ntpdate[3632]: step time server 213.136.0.252 offset 39169.475810 sec
[root@server1 akmtir]#
**[root@server1 akmtir]# vi /etc/ntp.conf**
[root@server1 akmtir]#
**[root@server1 akmtir]# service ntpd restart**
Redirecting to /bin/systemctl restart  ntpd.service
[root@server1 akmtir]#
**[root@server1 akmtir]# grep server /etc/ntp.conf**
# Use public servers from the pool.ntp.org project.
***server 0.centos.pool.ntp.org iburst***
***server 1.centos.pool.ntp.org iburst***
***server 2.centos.pool.ntp.org iburst***
***server 3.centos.pool.ntp.org iburst***
#broadcast 192.168.1.255 autokey    # broadcast server
#broadcast 224.0.1.1 autokey         # multicast server
#manycastserver 239.255.254.254           # manycast server
[root@server1 akmtir]#

## 2 – Switch to runlevel-3 and start X server

[akmtir@server1 ~]$
**[akmtir@server1 ~]$ systemctl isolate multi-user.target**
[akmtir@server1 ~]$
**[akmtir@server1 ~]$ startx**
[akmtir@server1 ~]$

# 3 – Securely copy a file and folder to a remote machine using scp command

```
----------------------------------------------
Client Machine   192.168.1.2
----------------------------------------------
root@akmtir-ThinkPad-T400:/home/akmtir#
root@akmtir-ThinkPad-T400:/home/akmtir# ping 192.168.1.3
PING 192.168.1.3 (192.168.1.3) 56(84) bytes of data.
64 bytes from 192.168.1.3: icmp_seq=1 ttl=64 time=0.322 ms
64 bytes from 192.168.1.3: icmp_seq=2 ttl=64 time=0.228 ms
64 bytes from 192.168.1.3: icmp_seq=3 ttl=64 time=0.225 ms
64 bytes from 192.168.1.3: icmp_seq=4 ttl=64 time=0.235 ms
^C
--- 192.168.1.3 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 2999ms
rtt min/avg/max/mdev = 0.225/0.252/0.322/0.043 ms
root@akmtir-ThinkPad-T400:/home/akmtir#
root@akmtir-ThinkPad-T400:/home/akmtir# ssh edureka@192.168.1.3
The authenticity of host '192.168.1.3 (192.168.1.3)' can't be established.
RSA key fingerprint is a4:94:1f:9a:08:4f:e3:f6:16:2c:0c:1b:9b:d2:e0:0b.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.1.3' (RSA) to the list of known hosts.
Last login: Sat May  6 09:18:01 2017 from 192.168.1.3
[edureka@localhost ~]$ pwd
/home/edureka
[edureka@localhost ~]$ whoami
edureka
[edureka@localhost ~]$ uname -a
Linux localhost.localdomain 2.6.32-431.29.2.el6.i686 #1 SMP Tue Sep 9 20:14:52 UTC 2014 i686
i686 i386 GNU/Linux
[edureka@localhost ~]$
[edureka@localhost ~]$ exit
logout
Connection to 192.168.1.3 closed.
root@akmtir-ThinkPad-T400:/home/akmtir#
root@akmtir-ThinkPad-T400:/home/akmtir# mkdir scp-data-client
root@akmtir-ThinkPad-T400:/home/akmtir# cd scp-data-client/
root@akmtir-ThinkPad-T400:/home/akmtir/scp-data-client# ls -lahi > ls-root
root@akmtir-ThinkPad-T400:/home/akmtir/scp-data-client# mkdir folder
root@akmtir-ThinkPad-T400:/home/akmtir/scp-data-client# date
Sat May  6 18:22:57 CEST 2017
root@akmtir-ThinkPad-T400:/home/akmtir/scp-data-client# date > folder/dateFile
root@akmtir-ThinkPad-T400:/home/akmtir/scp-data-client# ls -lR
.:
total 16
```

```
drwxr-xr-x 2 root root 4096 May  6 18:23 folder
-rw-r--r-- 1 root root  185 May  6 18:21 ls-root

./folder:
total 12
-rw-r--r-- 1 root root 30 May  6 18:23 dateFile
root@akmtir-ThinkPad-T400:/home/akmtir/scp-data-client#
root@akmtir-ThinkPad-T400:/home/akmtir/scp-data-client# cd ..
root@akmtir-ThinkPad-T400:/home/akmtir#
```
**root@akmtir-ThinkPad-T400:/home/akmtir# scp -r scp-data-client/**
**edureka@192.168.1.3:/home/edureka/scp-data**
*ls-root*                          *100%  185    0.2KB/s   00:00*
*dateFile*                         *100%  30     0.0KB/s   00:00*
```
root@akmtir-ThinkPad-T400:/home/akmtir#
root@akmtir-ThinkPad-T400:/home/akmtir# pwd
/home/akmtir
root@akmtir-ThinkPad-T400:/home/akmtir# cd /root/
root@akmtir-ThinkPad-T400:~# cd .ssh/
root@akmtir-ThinkPad-T400:~/.ssh# ls
id_rsa  id_rsa.pub  known_hosts
root@akmtir-ThinkPad-T400:~/.ssh#
```

-----------------------------------------
**SSH Server Machine   192.168.1.3**
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```
[edureka@localhost ~]$
```
**[edureka@localhost ~]$ netstat -atn**
Active Internet connections (servers and established)

| Proto | Recv-Q | Send-Q | Local Address | Foreign Address | State |
|-------|--------|--------|---------------|-----------------|-------|
| tcp | 0 | 0 | 0.0.0.0:10020 | 0.0.0.0:* | LISTEN |
| tcp | 0 | 0 | 0.0.0.0:50020 | 0.0.0.0:* | LISTEN |
| tcp | 0 | 0 | 0.0.0.0:111 | 0.0.0.0:* | LISTEN |
| tcp | 0 | 0 | 0.0.0.0:19888 | 0.0.0.0:* | LISTEN |
| tcp | 0 | 0 | 0.0.0.0:36179 | 0.0.0.0:* | LISTEN |
| tcp | 0 | 0 | 127.0.0.1:8020 | 0.0.0.0:* | LISTEN |
| tcp | 0 | 0 | 0.0.0.0:50070 | 0.0.0.0:* | LISTEN |
| **tcp** | **0** | **0** | **0.0.0.0:22** | **0.0.0.0:*** | **LISTEN** |
| tcp | 0 | 0 | 127.0.0.1:631 | 0.0.0.0:* | LISTEN |
| tcp | 0 | 0 | 127.0.0.1:25 | 0.0.0.0:* | LISTEN |
| tcp | 0 | 0 | 0.0.0.0:50010 | 0.0.0.0:* | LISTEN |

```
[edureka@localhost ~]$
```
**[edureka@localhost ~]$ ifconfig**
```
eth0    Link encap:Ethernet  HWaddr 08:00:27:70:7B:0D
        inet6 addr: fe80::a00:27ff:fe70:7b0d/64 Scope:Link
        UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
        RX packets:0 errors:0 dropped:0 overruns:0 frame:0
        TX packets:3 errors:0 dropped:0 overruns:0 carrier:0
```

```
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 b)  TX bytes:258 (258.0 b)

eth1      Link encap:Ethernet  HWaddr 08:00:27:99:C4:FF
          inet addr:192.168.1.3  Bcast:192.168.1.255  Mask:255.255.255.0
          inet6 addr: fe80::a00:27ff:fe99:c4ff/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:802 errors:0 dropped:0 overruns:0 frame:0
          TX packets:343 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:120468 (117.6 KiB)  TX bytes:25655 (25.0 KiB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:39508 errors:0 dropped:0 overruns:0 frame:0
          TX packets:39508 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:5548512 (5.2 MiB)  TX bytes:5548512 (5.2 MiB)

[edureka@localhost ~]$
[edureka@localhost ~]$ pwd
/home/edureka
[edureka@localhost ~]$ mkdir scp-data; cd scp-data
[edureka@localhost scp-data]$ pwd
/home/edureka/scp-data
[edureka@localhost scp-data]$ ls
[edureka@localhost scp-data]$
[edureka@localhost scp-data]$
[edureka@localhost scp-data]$ ls -lr
total 4
drwxr-xr-x. 3 edureka edureka 4096 May  6 21:55 scp-data-client
[edureka@localhost scp-data]$ ls -lR
.:
total 4
drwxr-xr-x. 3 edureka edureka 4096 May  6 21:55 scp-data-client

./scp-data-client:
total 8
drwxr-xr-x. 2 edureka edureka 4096 May  6 21:55 folder
-rw-r--r--. 1 edureka edureka  185 May  6 21:55 ls-root

./scp-data-client/folder:
total 4
-rw-r--r--. 1 edureka edureka 30 May  6 21:55 dateFile
[edureka@localhost scp-data]$
```

# 4 – Setup passwordless login to different machine

root@akmtir-ThinkPad-T400:~/.ssh#
root@akmtir-ThinkPad-T400:~/.ssh# ssh-copy-id root@192.168.1.3
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed

/usr/bin/ssh-copy-id: WARNING: All keys were skipped because they already exist on the remote system.

root@akmtir-ThinkPad-T400:~/.ssh#
root@akmtir-ThinkPad-T400:~/.ssh# cd ..
root@akmtir-ThinkPad-T400:~# rm -r .ssh/
root@akmtir-ThinkPad-T400:~#
root@akmtir-ThinkPad-T400:~#
**root@akmtir-ThinkPad-T400:~# ssh-keygen**
Generating public/private rsa key pair.
Enter file in which to save the key (/root/.ssh/id_rsa):
Created directory '/root/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /root/.ssh/id_rsa.
Your public key has been saved in /root/.ssh/id_rsa.pub.
The key fingerprint is:
a2:80:a4:1c:f2:f2:d0:a5:b7:60:7c:95:46:59:82:a4 root@akmtir-ThinkPad-T400
The key's randomart image is:
```
+--[ RSA 2048]----+
|   ...oo.        |
|   ....o         |
|.oE . +          |
|==.o o           |
|=.O o . S        |
| = = o .         |
| . o             |
|                 |
|                 |
+-----------------+
```
**root@akmtir-ThinkPad-T400:~# ls -la .ssh/**
total 16
drwx------  2 root root 4096 May  6 18:58 .
drwx------ 16 root root 4096 May  6 18:58 ..
-rw-------  1 root root 1675 May  6 18:58 id_rsa
-rw-r--r--  1 root root  407 May  6 18:58 id_rsa.pub
root@akmtir-ThinkPad-T400:~# cd .ssh/

**root@akmtir-ThinkPad-T400:~/.ssh# ssh-copy-id edureka@192.168.1.3**
The authenticity of host '192.168.1.3 (192.168.1.3)' can't be established.
RSA key fingerprint is a4:94:1f:9a:08:4f:e3:f6:16:2c:0c:1b:9b:d2:e0:0b.
Are you sure you want to continue connecting (yes/no)? yes
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already
installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the
new keys
edureka@192.168.1.3's password:

Number of key(s) added: 1

Now try logging into the machine, with:   "ssh 'edureka@192.168.1.3'"
and check to make sure that only the key(s) you wanted were added.


**root@akmtir-ThinkPad-T400:~/.ssh# ssh edureka@192.168.1.3**
Last login: Sat May  6 22:02:24 2017 from 192.168.1.2
**[edureka@localhost ~]$ whoami**
**edureka**
**[edureka@localhost ~]$ exit**
logout
Connection to 192.168.1.3 closed.
**root@akmtir-ThinkPad-T400:~/.ssh# whoami**
**root**
root@akmtir-ThinkPad-T400:~/.ssh#
root@akmtir-ThinkPad-T400:~/.ssh#
root@akmtir-ThinkPad-T400:~/.ssh# ifconfig

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:769 errors:0 dropped:0 overruns:0 frame:0
          TX packets:769 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1
          RX bytes:124184 (124.1 KB)  TX bytes:124184 (124.1 KB)

wlan2     Link encap:Ethernet  HWaddr 60:67:20:3e:19:14
          inet addr:**192.168.1.2**  Bcast:192.168.1.255  Mask:255.255.255.0
          inet6 addr: fe80::6267:20ff:fe3e:1914/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:69167 errors:0 dropped:0 overruns:0 frame:0
          TX packets:28909 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:51537327 (51.5 MB)  TX bytes:7324894 (7.3 MB)

root@akmtir-ThinkPad-T400:~/.ssh#

# 5 – Setup a cron job to generate timestamp based test files in /tmp folder every day at 10:30PM

**30 22 * * * /home/edureka/edureka-cron-job.sh**

```
[edureka@localhost ~]$
[edureka@localhost ~]$ crontab -l
[edureka@localhost ~]$ pwd
/home/edureka
[edureka@localhost ~]$
[edureka@localhost ~]$ vi edureka-cron-job.sh
[edureka@localhost ~]$
[edureka@localhost ~]$
[edureka@localhost ~]$ cat edureka-cron-job.sh
#!/bin/sh

cd /tmp
date>>file
free -m -t >> file
echo "---------------------------"
echo " "
[edureka@localhost ~]$
[edureka@localhost ~]$ ls -la edureka-cron-job.sh
-rwxrw-r--. 1 edureka edureka 94 May  6 23:09 edureka-cron-job.sh
[edureka@localhost ~]$
[edureka@localhost ~]$ crontab -e
crontab: installing new crontab
[edureka@localhost ~]$
[edureka@localhost ~]$ crontab -l
* * * * * /home/edureka/edureka-cron-job.sh
[edureka@localhost ~]$
[edureka@localhost ~]$ tail -f /tmp/file
/dev/mapper/VolGroup-lv_root
            19G  7.6G  11G  43% /
tmpfs          1.4G  238k 1.4G  1% /dev/shm
/dev/sda1      508M  62M  421M 13% /boot
Sat May  6 23:12:01 IST 2017
         total   used    free   shared  buffers   cached
Mem:      2513   1093    1419      0     111      423
-/+ buffers/cache:     558    1954
Swap:     2047      0    2047
Total:    4561   1093    3467
```

```
Sat May  6 23:13:01 IST 2017
        total     used     free   shared   buffers   cached
Mem:      2513     1095     1417        0       112      423
-/+ buffers/cache:       560     1952
Swap:     2047        0     2047
Total:    4561     1095     3465

^C
[edureka@localhost ~]$

[root@localhost ~]#
[root@localhost ~]# service crond restart
Stopping crond:                          [  OK  ]
Starting crond:                          [  OK  ]
[root@localhost ~]#
[root@localhost ~]# cron -l
-bash: cron: command not found
[root@localhost ~]# crontab -l
no crontab for root
[root@localhost ~]#
[root@localhost ~]# crontab -lu edureka
* * * * * /home/edureka/edureka-cron-job.sh
[root@localhost ~]#
[root@localhost ~]# tail -f /tmp/file
Mem:      2513     1099     1414        0       113      423
-/+ buffers/cache:       562     1950
Swap:     2047        0     2047
Total:    4561     1099     3462
Sat May  6 23:28:01 IST 2017
        total     used     free   shared   buffers   cached
Mem:      2513     1099     1414        0       113      423
-/+ buffers/cache:       562     1950
Swap:     2047        0     2047
Total:    4561     1099     3462


Sat May  6 23:29:01 IST 2017
        total     used     free   shared   buffers   cached
Mem:      2513     1099     1414        0       113      423
-/+ buffers/cache:       562     1950
Swap:     2047        0     2047
Total:    4561     1099     3462
^C
[root@localhost ~]#
```

# 6 – List the cron jobs for all the users in your system

[root@localhost ~]#
[root@localhost ~]# cron -l
-bash: cron: command not found
[root@localhost ~]# crontab -l
no crontab for root
[root@localhost ~]#
[root@localhost ~]# crontab -lu edureka
* * * * * /home/edureka/edureka-cron-job.sh
[root@localhost ~]#

# 7 – Deny a user, the ability to schedule cron jobs

[edureka@localhost ~]$
**[edureka@localhost ~]$ sudo su**
[sudo] password for edureka:
[root@localhost edureka]#
**[root@localhost edureka]# vi /etc/cron.deny**
You have new mail in /var/spool/mail/edureka
[root@localhost edureka]#
**[root@localhost edureka]# su - edureka**
**[edureka@localhost ~]$ crontab -e**
*You (edureka) are not allowed to use this program (crontab)*
*See crontab(1) for more information*
[edureka@localhost ~]$