NTP Server

NTP (Network Time Protocol)

NTP is a protocol which runs over port 123 UDP.

Internet is complusary

NTP synchronize clients time and date with a master server.

The NTP package is no longer supported in RHEL 8 Chrony is default NTP client as well as an NTP sever on REDHAT 8.

In the world of NTP, stratum levels define the distance from the reference clock. A reference clock is a stratum-0 device that is assumed to be accurate and has little or no delay associated with it.

The NTP Stratum model is a representation of the hierarchy of time servers in an NTP network, where the Stratum level (0-15) indicates the device's distance to the reference clock. Stratum 0 means a device is directly connected to e.g., a GPS antenna.

Install chrony

```
[root@vivek ~]# dnf install chrony -y
Updating Subscription Management repositories.
Unable to read consumer identity
This system is not registered to Red Hat Subscription Management. You can use su
bscription-manager to register.
Last metadata expiration check: 12:53:26 ago on Thu 24 Feb 2022 10:25:54 AM EST.
Package chrony-3.5-1.el8.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
```

Services start and enable

```
[root@vivek ~]# systemctl start chronyd
[root@vivek ~]# systemctl status chronyd
● chronyd.service - NTP client/server
   Loaded: loaded (/usr/lib/systemd/system/chronyd.service; enabled; vendor preset: enab
   Active: active (running) since Tue 2022-02-22 06:12:21 EST; 2 days ago
     Docs: man:chronyd(8)
           man:chrony.conf(5)
 Main PID: 998 (chronyd)
    Tasks: 1 (limit: 11160)
   Memory: 1.4M
   CGroup: /system.slice/chronyd.service
           └─998 /usr/sbin/chronyd

Feb 24 23:15:58 vivek.gandhi.com chronyd[998]: Forward time jump detected!
Feb 24 23:15:58 vivek.gandhi.com chronyd[998]: Can't synchronise: no selectable sources
Feb 24 23:15:58 vivek.gandhi.com chronyd[998]: Source 192.46.210.39 offline
Feb 24 23:15:58 vivek.gandhi.com chronyd[998]: Source 134.209.151.214 offline
Feb 24 23:15:58 vivek.gandhi.com chronyd[998]: Source 178.215.228.24 offline
Feb 24 23:15:58 vivek.gandhi.com chronyd[998]: Source 162.159.200.1 offline
Feb 24 23:15:58 vivek.gandhi.com chronyd[998]: Source 192.46.210.39 online
Feb 24 23:15:58 vivek.gandhi.com chronyd[998]: Source 134.209.151.214 online
Feb 24 23:15:58 vivek.gandhi.com chronyd[998]: Source 178.215.228.24 online
Feb 24 23:15:58 vivek.gandhi.com chronyd[998]: Source 162.159.200.1 online
[root@vivek ~]# systemctl enable chronyd
```

Firewall port enable

```
[root@vivek /]# firewall-cmd --permanent --add-service=ntp
success
[root@vivek /]# firewall-cmd --reload
success
[root@vivek /]#
```

Configuration file change

```
[root@vivek /]# vim /etc/chrony.conf
[root@vivek /]#
```

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allow configuration directive and uncomment it and set its value to the network or subnet address from which the clients are allowed to connect

```
# Allow NTP client access from local network.
#allow 192.168.0.0/16
allow 192.168.254.139/24
```

restart the chronyd **service configuration to apply the recent changes**

```
[root@vivek /]# systemctl restart chronyd
[root@vivek /]#
```

Port verifies in server

```
[root@vivek /]# netstat -tulpn |grep 123
udp        0      0 0.0.0.0:123             0.0.0.0:*                          14414/chronyd
[root@vivek /]#
```

Firewall side port check enable or not

```
[root@vivek ~]# firewall-cmd --permanent --add-port=123/udp
success
[root@vivek ~]# firewall-cmd --reload
success
[root@vivek ~]# firewall-cmd --list-all
public (active)
  target: default
  icmp-block-inversion: no
  interfaces: ens160
  sources:
  services: cockpit dhcpv6-client ftp mountd nfs ntp rpc-bind ssh
  ports: 21/tcp 20/tcp 64000-64321/tcp 514/tcp 514/udp 123/udp
  protocols:
  masquerade: no
  forward-ports:
  source-ports:
  icmp-blocks:
  rich rules:
```

Chrony checked shrink or not

```
[root@vivek ~]# chronyc sources
210 Number of sources = 0
MS Name/IP address         Stratum Poll Reach LastRx Last sample
===============================================================================
```

Client side install application

```
[root@pooja ~]# yum install chrony -y
Updating Subscription Management repositories.
Unable to read consumer identity
This system is not registered to Red Hat Subscription Management. You can use su
bscription-manager to register.
Repository rhel8 is listed more than once in the configuration
Repository baseos is listed more than once in the configuration
Last metadata expiration check: 0:33:02 ago on Thursday 24 February 2022 11:18:1
4 PM EST.
Package chrony-3.5-1.el8.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
```

NTP Server

start, enable and verify the chronyd service status

```
[root@pooja ~]# systemctl start chronyd
[root@pooja ~]# systemctl enable chronyd
[root@pooja ~]# systemctl status chronyd
● chronyd.service - NTP client/server
   Loaded: loaded (/usr/lib/systemd/system/chronyd.service; enabled; vendor preset: enabled)
   Active: active (running) since Thu 2022-02-24 07:19:27 EST; 16h ago
     Docs: man:chronyd(8)
           man:chrony.conf(5)
 Main PID: 1031 (chronyd)
    Tasks: 1 (limit: 11160)
   Memory: 2.3M
   CGroup: /system.slice/chronyd.service
           └─1031 /usr/sbin/chronyd
```

start, enable and verify the chronyd service status

```
[root@pooja ~]# vim /etc/chrony.conf
[root@pooja ~]# vim /etc/chrony.conf
```

default NTP servers specified as the value of the server directive

root@client:~

```
# Use public servers from the pool.ntp.org project.
# Please consider joining the pool (http://www.pool.ntp.org/join.html).
pool 2.rhel.pool.ntp.org iburst
server 192.168.254.133 iburst prefer
```

restart the chronyd service configurations

```
[root@pooja ~]# systemctl restart chronyd
[root@pooja ~]#
```

show the current time sources (NTP server) that chronyd is accessing

```
[root@pooja ~]# chronyc sources
210 Number of sources = 1
MS Name/IP address         Stratum Poll Reach LastRx Last sample
===============================================================================
^* vivek.gandhi.com              3   6    17     19  +7271us[+5961us] +/-  173ms
[root@pooja ~]#
```

Date and time changed locally

```
[root@pooja ~]# date -s "Thu Feb 25 10:00:58 EST 2022"
Fri Feb 25 10:00:58 EST 2022
[root@pooja ~]#
[root@pooja ~]# date
Fri Feb 25 10:01:01 EST 2022
[root@pooja ~]#
```

Check server-side date and time

```
[root@vivek ~]# date
Fri Feb 25 11:12:56 EST 2022
[root@vivek ~]#
```

```
Fri Feb 25 10:01:01 EST 2022
[root@pooja ~]# systemctl restart chronyd
```

NTP Server

root@client:~

```
[root@client ~]# chronyc tracking
Reference ID    : A29FC801 (time.cloudflare.com)
Stratum         : 4
Ref time (UTC)  : Tue May 31 11:38:49 2022
System time     : 0.001088903 seconds fast of NTP time
Last offset     : +0.000376827 seconds
RMS offset      : 0.001926630 seconds
Frequency       : 12.900 ppm slow
Residual freq   : +0.091 ppm
Skew            : 10.096 ppm
Root delay      : 0.119960934 seconds
Root dispersion : 0.004297462 seconds
Update interval : 65.0 seconds
Leap status     : Normal
[root@client ~]#
```

Chrony checked shrink or not in client side

```
[root@pooja ~]# chronyc sources
210 Number of sources = 1
MS Name/IP address         Stratum Poll Reach LastRx Last sample
===============================================================================
^* vivek.gandhi.com              3    6    17     19  +7271us[+5961us] +/-  173ms
[root@pooja ~]#
```

On the server, run the following command to display information about NTP clients assessing the NTP server

```
[root@vivek ~]# chronyc clients
Hostname                       NTP   Drop Int IntL Last     Cmd   Drop Int  Last
===============================================================================
192.168.254.139                  4      0   6    -   32       0      0   -     -
[root@vivek ~]#
[root@vivek ~]# chronyc makestep
200 OK
[root@vivek ~]#
```

Chronyc packeage status

```
[root@vivek ~]# chronyc serverstats
NTP packets received       : 3
NTP packets dropped        : 0
Command packets received   : 3
Command packets dropped    : 0
Client log records dropped : 0
[root@vivek ~]#
```

NTP Server

```
[root@pooja ~]# chronyc sources -v
210 Number of sources = 1

  .-- Source mode  '^' = server, '=' = peer, '#' = local clock.
 / .- Source state '*' = current synced, '+' = combined , '-' = not combined,
| /   '?' = unreachable, 'x' = time may be in error, '~' = time too variable.
||                                         .- xxxx [ yyyy ] +/- zzzz
||      Reachability register (octal) -.   |  xxxx = adjusted offset,
||      Log2(Polling interval) --.     |   |  yyyy = measured offset,
||                             \  |     |   |  zzzz = estimated error.
||                              |  |    |    \
MS Name/IP address          Stratum Poll Reach LastRx Last sample
===============================================================================
^* vivek.gandhi.com               3   6    7    17    +56us[ -3650s] +/-  162ms
[root@pooja ~]#
```

```
[root@pooja ~]# chronyc sourcestats -v
210 Number of sources = 1
                    .- Number of sample points in measurement set.
                   /    .- Number of residual runs with same sign.
                  |    /    .- Length of measurement set (time).
                  |    |   /      .- Est. clock freq error (ppm).
                  |    |  |      /      .- Est. error in freq.
                  |    |  |     |      /      .- Est. offset.
                  |    |  |     |     |       |   On the -.
                  |    |  |     |     |       |   samples. \
                  |    |  |     |     |       |        |    |
Name/IP Address   NP  NR Span Frequency  Freq Skew  Offset  Std Dev
===============================================================================
vivek.gandhi.com   6   3  323    -8.779    158.651   -165us   4603us
[root@pooja ~]#
```

NTP Server

TASK AUTO CHANGE TIME BOTH TIME SAME AUTOMATIC

CHECKED TIME IN both SIDE

Change manually time in client side

Then checked in few time auto sysnc time same time server and client

Task completed…