

===== NTP_Configuration(Chrony) =====

NTP (Network Time Protocol) is a protocol which runs over port 123 UDP. NTP synchronize clients time and date with a master server. Chrony is a default NTP client as well as an NTP server on Red Hat Enterprise Linux 8.

Service name = chronyd

```
# dnf install chrony -y
```

```
# yum install chrony -y
```

```
[surya@surya rsyslog.d]$ sudo yum install chrony.x86_64
[sudo] password for surya:
Updating Subscription Management repositories.
This system is registered to Red Hat Subscription Management, but is not receiving updates. You
Red Hat Enterprise Linux 8 for x86_64 - BaseOS 4.3 kB/s | 4.1 kB 00:00
Red Hat Enterprise Linux 8 for x86_64 - BaseOS 1.3 MB/s | 72 MB 00:55
Red Hat Enterprise Linux 8 for x86_64 - AppStream 11 kB/s | 4.5 kB 00:00
Red Hat Enterprise Linux 8 for x86_64 - AppStream 2.2 MB/s | 66 MB 00:30
Zimbra RPM Repository 105 kB/s | 3.0 kB 00:00
Zimbra New RPM Repository 85 kB/s | 3.0 kB 00:00
Zimbra New RPM Repository 64 kB/s | 3.0 kB 00:00
Package chrony-3.5-1.el8.x86_64 is already installed.
Dependencies resolved.
=====
Package Arch Version Repository Size
=====
Upgrading:
chrony x86_64 4.5-1.el8 rhel-8-for-x86_64-baseos-rpms 353 k

Transaction Summary
=====
Upgrade 1 Package

Total download size: 353 k
Is this ok [y/N]: y
Downloading Packages:
chrony-4.5-1.el8.x86_64.rpm 355 kB/s | 353 kB 00:00
-----
Total 354 kB/s | 353 kB 00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : chrony-4.5-1.el8.x86_64 1/1
Running scriptlet: chrony-4.5-1.el8.x86_64 1/1
Running scriptlet: chrony-4.5-1.el8.x86_64 1/2
Upgrading : chrony-4.5-1.el8.x86_64 1/2
Running scriptlet: chrony-4.5-1.el8.x86_64 1/2
Running scriptlet: chrony-3.5-1.el8.x86_64 2/2
Cleanup : chrony-3.5-1.el8.x86_64 2/2
Running scriptlet: chrony-3.5-1.el8.x86_64 2/2
Verifying : chrony-4.5-1.el8.x86_64 1/2
Verifying : chrony-3.5-1.el8.x86_64 2/2
```

Now start the chronyd service, enable it to auto start at system boot and verify the running status:

```
# systemctl start chronyd

# systemctl status chronyd

# systemctl enable chronyd
```

```

[root@surya ~]# systemctl start chronyd.service
[root@surya ~]# systemctl status chronyd.service
● chronyd.service - NTP client/server
   Loaded: loaded (/usr/lib/systemd/system/chronyd.service; enabled; vendor preset: enabled)
   Active: active (running) since Sat 2024-09-14 08:04:04 PDT; 44min ago
     Docs: man:chronyd(8)
           man:chrony.conf(5)
  Main PID: 19479 (chronyd)
    Tasks: 1 (limit: 19005)
   Memory: 1.7M
    CGroup: /system.slice/chronyd.service
            └─19479 /usr/sbin/chronyd

Sep 14 08:04:03 surya.in systemd[1]: Starting NTP client/server...
Sep 14 08:04:03 surya.in chronyd[19479]: chronyd version 4.5 starting (+CMDMON +NTP +REFCLOCK +RTC +PRIVDR0
Sep 14 08:04:03 surya.in chronyd[19479]: Loaded 0 symmetric keys
Sep 14 08:04:03 surya.in chronyd[19479]: Frequency -13.002 +/- 12.019 ppm read from /var/lib/chrony/drift
Sep 14 08:04:03 surya.in chronyd[19479]: Using right/UTC timezone to obtain leap second data
Sep 14 08:04:04 surya.in systemd[1]: Started NTP client/server.
Sep 14 08:04:09 surya.in chronyd[19479]: Selected source 172.232.97.196 (2.rhel.pool.ntp.org)
Sep 14 08:04:09 surya.in chronyd[19479]: System clock TAI offset set to 37 seconds
Sep 14 08:04:11 surya.in chronyd[19479]: Selected source 14.139.60.103 (2.rhel.pool.ntp.org)

[root@surya ~]# systemctl enable chronyd.service
[root@surya ~]#

```

Now Configure NTP Server Using Chrony:

set up your RHEL 8 server a master NTP time server. Open the
/etc/chrony.conf:

vim /etc/chrony.conf 'or' nano /etc/chrony.conf

```
GNU nano 2.9.8 /etc/chrony.conf

# 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

# Record the rate at which the system clock gains/losses time.
driftfile /var/lib/chrony/drift

# Allow the system clock to be stepped in the first three updates
# if its offset is larger than 1 second.
makestep 1.0 3

# Enable kernel synchronization of the real-time clock (RTC).
rtcsync

# Enable hardware timestamping on all interfaces that support it.
#hwtimestamp *

# Increase the minimum number of selectable sources required to adjust
# the system clock.
#minsources 2

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

# Serve time even if not synchronized to a time source.
#local stratum 10

# Specify file containing keys for NTP authentication.
keyfile /etc/chrony.keys

# Get TAI-UTC offset and leap seconds from the system tz database.
leapsectz right/UTC

# Specify directory for log files.
logdir /var/log/chrony

# Select which information is logged.
#log measurements statistics tracking
```

Now search for the “allow” configuration directive and uncomment it and set the network addresses from which the clients are allowed:

```
#allow 192.168.0.0/16
now save and exit
```

```
GNU nano 2.9.8 /etc/chrony.conf

# 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

# Record the rate at which the system clock gains/losses time.
driftfile /var/lib/chrony/drift

# Allow the system clock to be stepped in the first three updates
# if its offset is larger than 1 second.
makestep 1.0 3

# Enable kernel synchronization of the real-time clock (RTC).
rtcsync

# Enable hardware timestamping on all interfaces that support it.
#hwtimestamp *

# Increase the minimum number of selectable sources required to adjust
# the system clock.
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# Allow NTP client access from local network.
allow 192.168.0.0/16

# Serve time even if not synchronized to a time source.
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# Get TAI-UTC offset and leap seconds from the system tz database.
leapsectz right/UTC

# Specify directory for log files.
logdir /var/log/chrony

# Select which information is logged.
#log measurements statistics tracking
```

Restart the chronyd service

```
# systemctl restart chronyd
[root@surya ~]# systemctl restart chronyd.service
[root@surya ~]#
```

Now open NTP service in firewalld configuration to allows for incoming NTP requests:

```
# firewall-cmd --permanent --add-service=ntp
```

```
# firewall-cmd --reload
```

```
# firewall-cmd --permanent --remove-service=chrony
```

Configure NTP Client

installing the chrony package on client side:

```
# yum install chrony
```

```
[root@ansible ~]# yum install chrony
Updating Subscription Management repositories.
Red Hat CodeReady Linux Builder for RHEL 9 x86_64 (RPMs)
Red Hat CodeReady Linux Builder for RHEL 9 x86_64 (RPMs)
Red Hat Enterprise Linux 9 for x86_64 - BaseOS (RPMs)
Red Hat Enterprise Linux 9 for x86_64 - BaseOS (RPMs)
Red Hat Enterprise Linux 9 for x86_64 - AppStream (RPMs)
Red Hat Enterprise Linux 9 for x86_64 - AppStream (RPMs)
Last metadata expiration check: 0:00:03 ago on Wednesday 18 September 2024 10:44:18 PM.
Package chrony-4.5-1.el9.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@ansible ~]#
```

10 kB/s	4.5 kB	00:00
342 kB/s	9.1 MB	00:27
3.3 kB/s	4.1 kB	00:01
835 kB/s	31 MB	00:38
8.2 kB/s	4.5 kB	00:00
773 kB/s	40 MB	00:53

once installed, you can start, enable and verify the chronyd service status:

```
# systemctl start chronyd
```

```
# systemctl enable chronyd
```

```
# systemctl status chronyd
```

configure the system as a direct client of the NTP server. Open the /etc/chrony.conf

```
# vim /etc/chrony.conf
```

Now add the NTP server address

Please consider joining the pool (<http://www.pool.ntp.org/join.html>).

pool2.rhel.pool.ntp.org iburst

**comment out the default NTP servers set your RHEL 8 NTP server's
address.**

Server 192.168.56.12

```
GNU nano 5.6.1 /etc/chrony.conf
# Use public servers from the pool.ntp.org project.
# Please consider joining the pool (https://www.pool.ntp.org/join.html).
pool 2.rhel.pool.ntp.org iburst
server 192.168.226.137
# Use NTP servers from DHCP.
sourcedir /run/chrony-dhcp

# Record the rate at which the system clock gains/losses time.
driftfile /var/lib/chrony/drift

# Allow the system clock to be stepped in the first three updates
# if its offset is larger than 1 second.
makestep 1.0 3

# Enable kernel synchronization of the real-time clock (RTC).
rtcsync

# Enable hardware timestamping on all interfaces that support it.
#hwtimestamp *

# Increase the minimum number of selectable sources required to adjust
# the system clock.
#minsources 2

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

# Serve time even if not synchronized to a time source.
#local stratum 10

# Require authentication (nts or key option) for all NTP sources.
#authselectmode require

# Specify file containing keys for NTP authentication.
keyfile /etc/chrony.keys

# Save NTS keys and cookies.
ntsdumpdir /var/lib/chrony

# Insert/delete leap seconds by slewing instead of stepping.
#leapsecmode slew

^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location
^X Exit      ^R Read File  ^\ Replace    ^U Paste      ^J Justify    ^_ Go To Line

Save the changes in the file and close it.
```

restart the chronyd service

```
# systemctl restart chronyd
```

Now run the following command to show the current time sources (NTP server) that chronyd is accessing client side .

```
# chronyc sources
```



```
[root@ansible ~]# chronyc sources
MS Name/IP address         Stratum Poll Reach LastRx Last sample
=====
^- ntp2.ggsrv.de           2      6    17    52    +936us[ +936us] +/-   87ms
^* 139.59.15.185           6      6    17    52    +2232us[+4329us] +/-   69ms
^- ntp5.mum-in.hosts.301-mo> 2      6    17    52    -6210us[-6210us] +/-   74ms
^+ ntp6.mum-in.hosts.301-mo> 2      6    17    53     +39ms[ +41ms] +/-  132ms
^? 192.168.226.137         0      6     0     -      +0ns[  +0ns] +/-    0ns
[root@ansible ~]# date
Wednesday 18 September 2024 11:03:00 PM IST
[root@ansible ~]#
```

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

```
On server
# chronyc clients
-----
[root@surya ~]# chronyc clients
Hostname                NTP    Drop Int IntL Last      Cmd    Drop Int Last
=====
192.168.226.135         6      0    6    -    11      0      0    -    -
[root@surya ~]#
```

→ Run this command for show the information about server
chronyc tracking

```
[root@ansible ~]# chronyc tracking
Reference ID      : C0A8E289 (192.168.226.137)
Stratum          : 8
Ref time (UTC)   : Wed Sep 18 17:42:59 2024
System time      : 0.000244524 seconds fast of NTP time
Last offset      : -0.000716200 seconds
RMS offset       : 0.012945170 seconds
Frequency        : 15.692 ppm slow
Residual freq    : -0.123 ppm
Skew             : 8.122 ppm
Root delay       : 0.051746037 seconds
Root dispersion  : 0.004527497 seconds
Update interval  : 65.1 seconds
Leap status      : Normal
[root@ansible ~]#
```

Now your server is ready done.