How to Install and Configure NTP in RHEL Systems

Matei Cezar | Last Updated: February 8, 2024 | Read Time: 2 mins | CentOS, RedHat | 32 Comments

NTP (Network Time Protocol) is a protocol that runs over port 123 UDP at the transport layer and allows computers to synchronize time over networks for an accurate system time.

While time passes by, the computer's internal clocks tend to drift which can lead to inconsistent time issues, especially on servers and client's logs files or if you want to replicate servers' resources or databases.

This tutorial will demonstrate how you can install and configure NTP (chrony) server on RHEL-based distribution to automatically synchronize time with the closest geographical peers available for your server location by using the NTP Public Pool Time Servers list.

How to Install Chrony in Linux

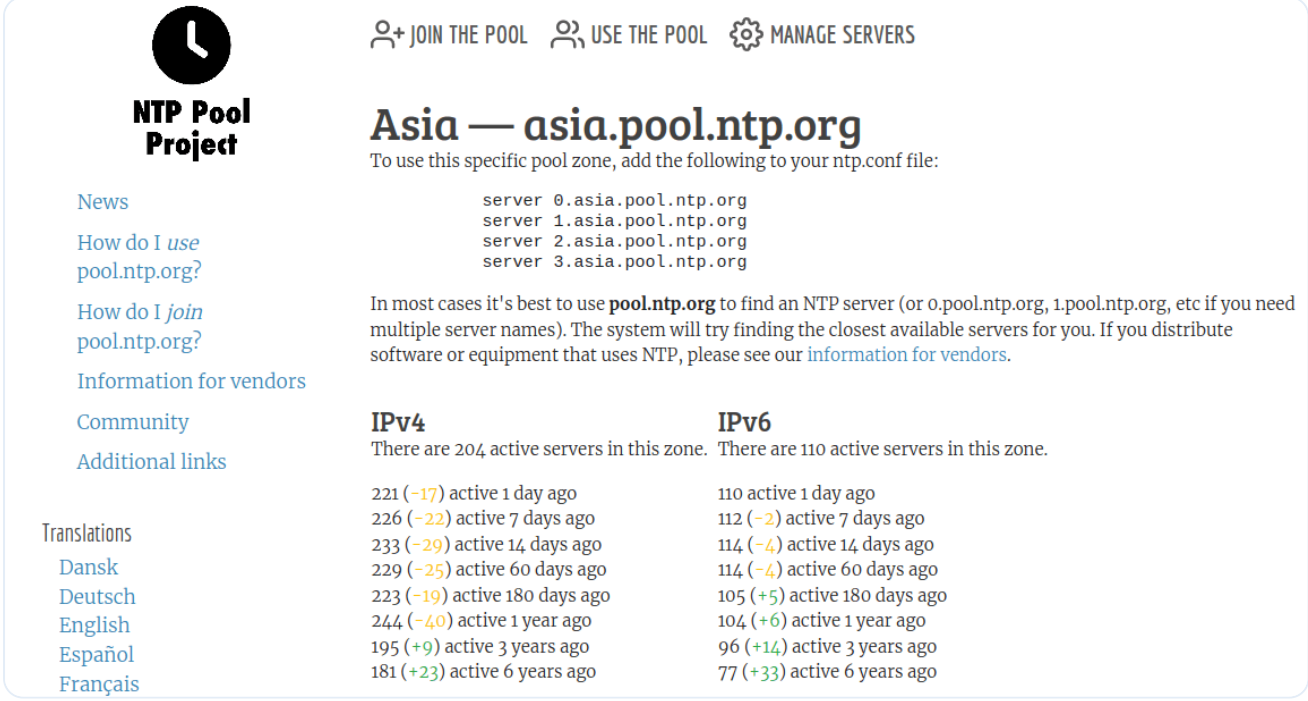
Chrony is an implementation of the Network Time Protocol (NTP), which is used to synchronize the system clocks across a network of computers to a high degree of accuracy.

Chrony is specifically designed to address some limitations and challenges associated with other NTP implementations. It is the default NTP implementation in many Linux distributions, including Red Hat Enterprise Linux (RHEL) 8.

To install Chrony, use the following dnf or yum command.

```
sudo dnf install chrony
OR
sudo yum install chrony
```

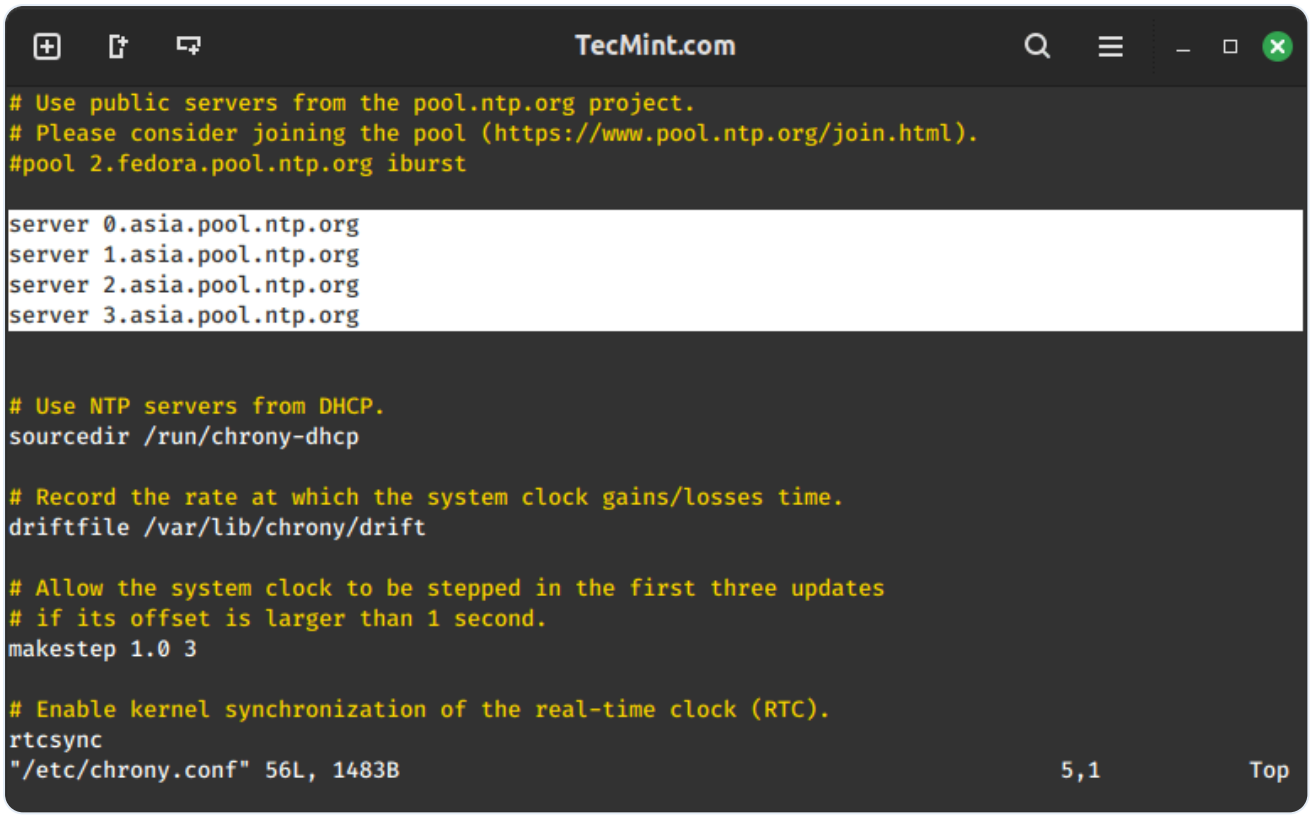
After the server is installed, first go to the official NTP Public Pool Time Servers, choose your **Continent** area where the server physically is located, then search for your **Country** location and a list of NTP servers should appear.



NTP Pool Server

Then open the NTP daemon main configuration file (/etc/chrony.conf) for editing, comment on the default list of Public Servers from the **pool.ntp.org** project and replace it with the list provided for your country like in the screenshot below.

```
$ sudo vi /etc/chrony.conf
```



Add NTP Servers

Further, you need to allow clients from your networks to synchronize time with this server. To accomplish this, add the following line to the NTP configuration file, where **restrict** statement controls, what network is allowed to query and sync time – replace network IPs accordingly.

```
restrict 192.168.1.0 netmask 255.255.255.0 nomodify notrap
```

The **nomodify notrap** statements suggest that your clients are not allowed to configure the server or be used as peers for time sync.

If you need additional information for troubleshooting in case there are problems with your NTP daemon add a log file statement which will record all NTP server issues into one dedicated log file **/var/log/chrony**.

Allow Chrony in the Firewall

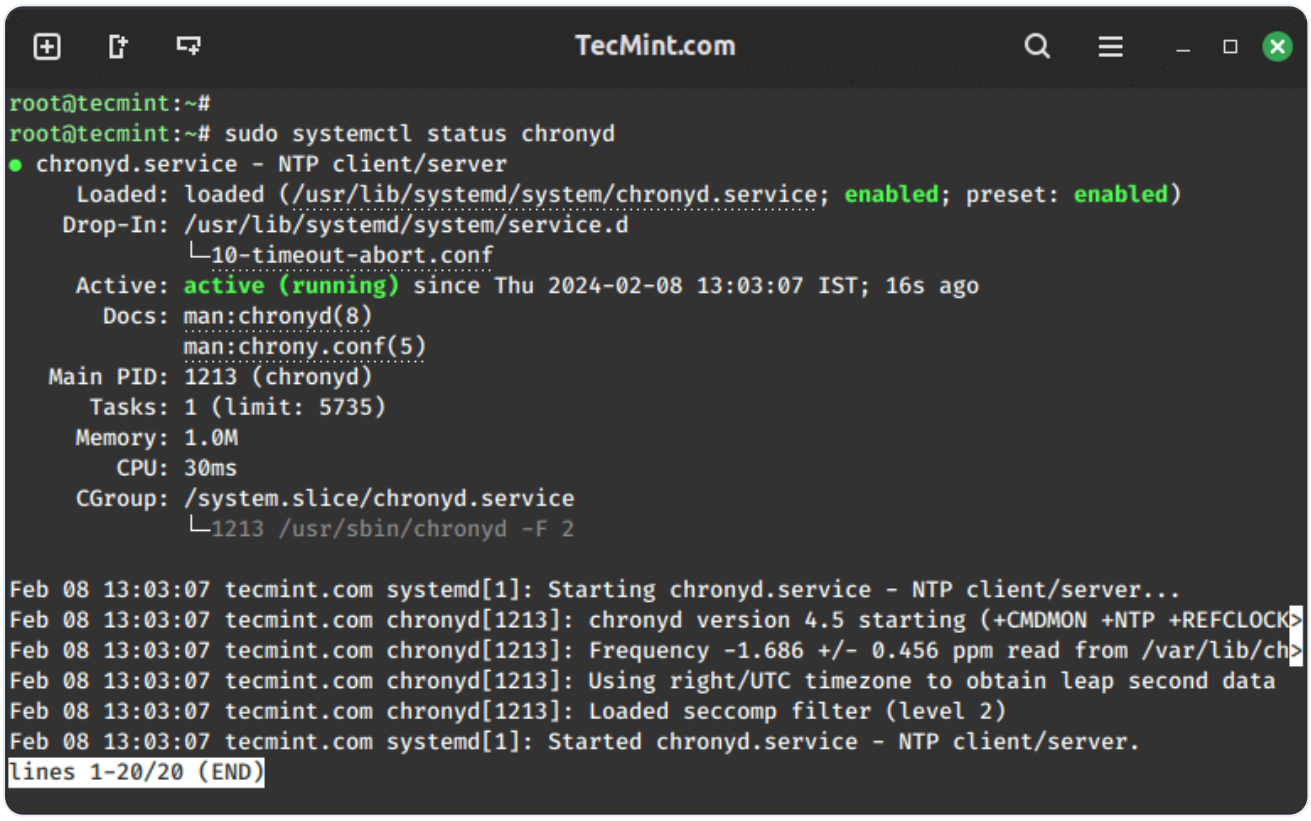
NTP service uses UDP port 123 on the OSI transport layer (layer 4), which is designed particularly to resist the effects of variable latency (jitter).

If the firewall is enabled, allow Chrony to communicate through it:

```
sudo firewall-cmd --add-service=ntp --permanent
sudo firewall-cmd --reload
```

After you have opened firewall port 123, restart the Chrony server and make sure you enable it system-wide.

```
sudo systemctl restart chronyd
sudo systemctl enable chronyd
sudo systemctl status chronyd
```

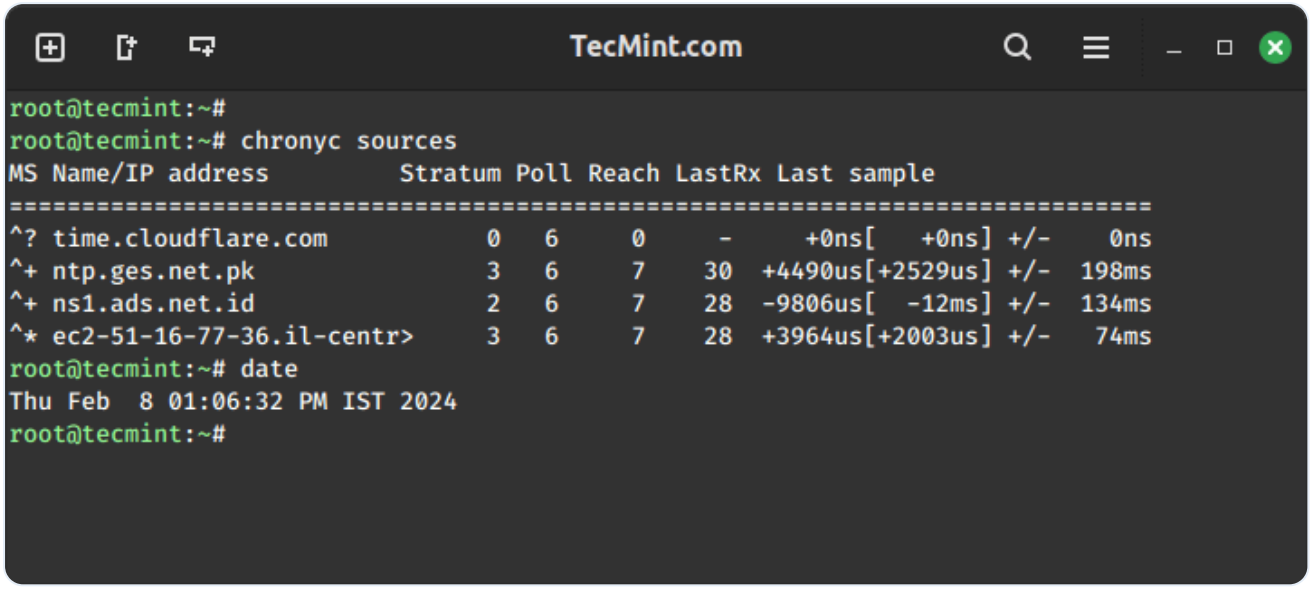


Check Chrony Status

Check Time Synchronization with NTP

After the NTP daemon has been started, wait a few minutes for the server to synchronize time with its pool list servers, then run the following commands to verify the NTP peers' synchronization status and your system time.

```
chronyc sources
```



Check Chrony Synchronization

That's all! setting up a local NTP chrony on your network ensures that all your servers and clients have the same time set in case of an Internet connectivity failure and they all are synchronized with each other.

PREVIOUS ARTICLE:

How to Find and Kill Running Processes in Linux

NEXT ARTICLE:

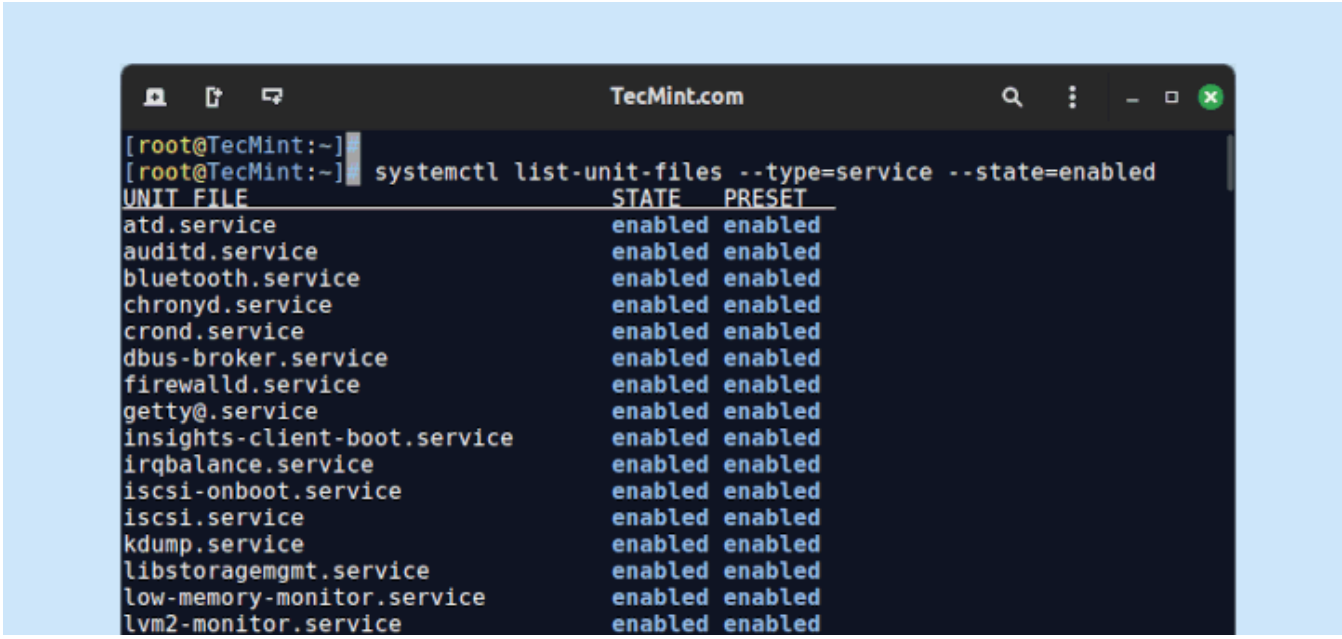
8 Best SSH Clients for Linux in 2024

Matei Cezar

I'am a computer addicted guy, a fan of open source and linux based system software, have about 4 years experience with Linux distributions desktop, servers and bash scripting.

Each tutorial at TecMint is created by a team of experienced Linux system administrators so that it meets our high-quality *standards.*

Related Posts



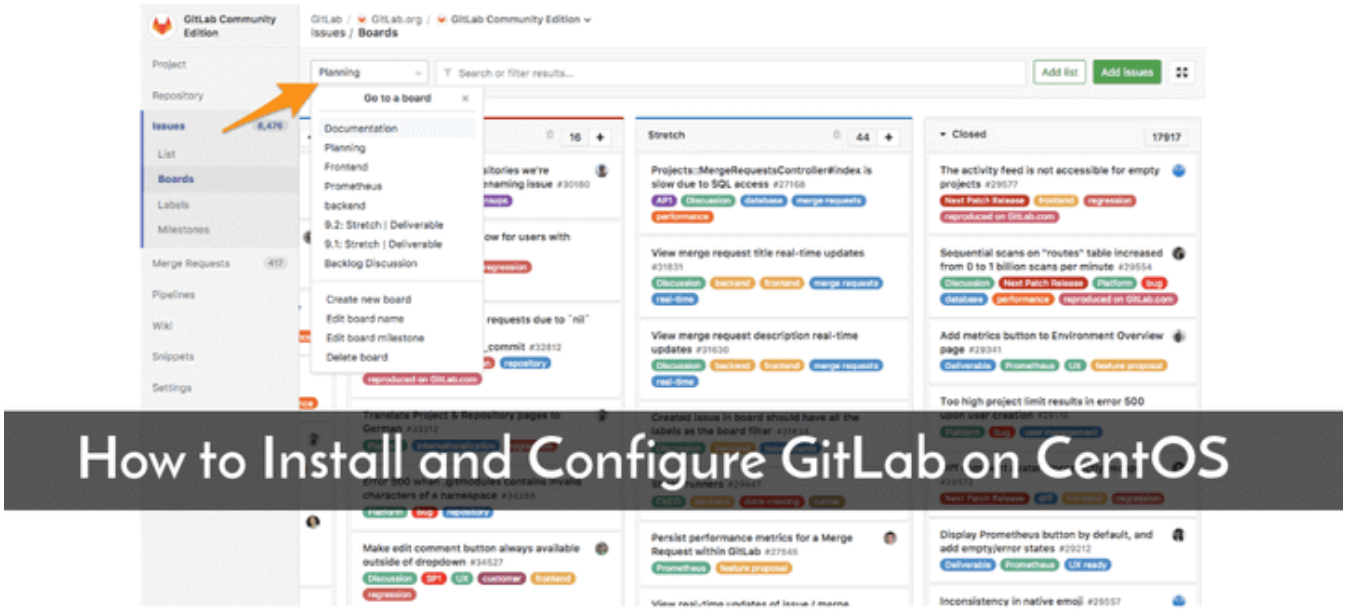
How to Disable and Remove Unnecessary Services on Linux

Improve Website Performance – Install Memcached on RHEL 9

How to Migrate CentOS 7 to Rocky Linux 9

How to Reset Forgotten Root Password in RHEL Systems

How to Install Terraform (Infrastructure as Code) in Linux



How to Install and Configure GitLab on Linux

32 Comments

Leave a Reply

seb

February 8, 2024 at 4:30 pm

Hi,

I am a bit surprised on the restrict directive. On **chrony.conf** manual it is not mentioned and on red hat official documentation neither.

My understanding is that the allow directive is used in **chrony.conf** file to enable your computer to be a ntp server (https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/7/html/system_administrators_guide/ch-configuring_ntp_using_the_chrony_suite#sect-Understanding_the_chrony_configuration_commands)

To me the restrict directive was used in former **ntpd** server configuration. Maybe it is still valid for legacy purpose?

Reply

Admin

Ravi Saive

February 9, 2024 at 9:42 am

@Sed,

Yes, you are right the “**restrict**” directive was employed in the previous configuration of the **ntpd** server. It’s possible that it still holds relevance for legacy purposes in the **chrony.conf** file.

Reply

Michel

November 11, 2020 at 9:50 am

I can’t configure the NTP client on centos 7. I just can´t find a good tutorial.

Reply

Juan

November 14, 2019 at 10:24 pm

Excellent post on setting up NTP! very simple instructions worked without any errors…

Reply

Mauricio

October 27, 2019 at 8:25 pm

Excellent article on setting up NTP on CentOS. Thank you!

Reply

ntp

December 8, 2017 at 1:21 am

Step 3: Then open NTP daemon main configuration file.

Which file?? Why didn't you mention it

Reply

Matei Cezar

December 8, 2017 at 12:59 pm

/etc/ntp.conf is the file to be edited.

Reply

Mihai P

September 21, 2017 at 12:25 pm

On my Centos 7 machine the following command has been labeled as erroneous in ntp log file:

```
restrict 192.168.1.0 netmask 255.255.255.0 nomodify notrap
```

I changed it to.

```
restrict 192.168.1.0 mask 255.255.255.0 nomodify notrap
```

and it worked fine.

Reply

Jonas

July 26, 2017 at 5:12 pm

Can you mention in your article that apparently Centos7 comes with Chrony (seems to be default). When both services are enabled, it seems that Chrony stops the NTP daemon. So I had to stop and disable NTPD and use Chrony instead.

Reply

Matei Cezar

July 27, 2017 at 5:57 pm

You can remove or disable Chrony service, which is installed by default in latest versions of CentOS 7 and enable NTP service.

Reply

Yubby McFly

August 29, 2017 at 2:22 am

If you than install the "**kde-desktop**" YUM group, it again makes sure '**chronyd**' is install and activated, disabling '**ntpd**'.

The packages that are coming down from the 'script kiddies' at Fedora aren't being screened for issues affecting enterprise implementations...

Reply

Anthony.kim

July 16, 2017 at 7:42 am

how to ntp client password setting ?

Reply

srinivas
February 3, 2017 at 6:14 pm

How to configure NTP daemon to use the system's local clock as its primary time source ?

Reply

Matei Cezar
February 6, 2017 at 12:55 pm

Add this to ntp config file:

server 127.127.1.0 # local clock
fudge 127.127.1.0 stratum 10

Reply

srinivas
February 6, 2017 at 11:44 pm

I've tried that but i got the error as
ntpdate[28681]: no server suitable for synchronization found

when i did “**ntpdate -dv**” it throws an error as “**Server dropped: strata too high**”. But i see the server doing a transfer & receive from NTP Server.

I tried changing the stratum value from 0-16 but still the same error.

I’ve this error only when i set up the NTP Server and Client with immediate IP’s like x.x.x.137 (NTP Server) & x.x.x138 (NTP Client).
I’ve an another server where the NTP server setup x.x.x.96 which syncs with external IP. With this NTP client x.x.x.138 is able to sync.

But I want to know what I am missing to set immediate NTP server and client IP’s to configure NTP sync between them?

Reply

labanda
September 22, 2016 at 10:11 am

While trying to configure ntp server, i came across this issue. The user/group should be ntp/ntp.
You need the add the following steps if you come across this error “No association ID’s returned”:
chown ntp:ntp /etc/ntp.conf
chmod 0640 /etc/ntp.conf
systemctl stop ntpd
systemctl start ntpd
systemctl status ntpd

Reply

Admin

Ravi Saive
September 22, 2016 at 11:55 am

@Labanda,

Thanks for sharing the tip, hope it will help other users who will face similar error..:)

Reply

Chetra

June 9, 2016 at 9:52 am

I am configure ntp server on centos 7 and i want to sync it on windows 10 but when i update it can't syn from ntp server. it show message : An error occurred while windows was synchronising with x.x.x.x.

Reply

Matei Cezar

June 9, 2016 at 12:39 pm

You have the same issue with other nodes trying to sync time with centos ntp server? verify if ntp port is open on server (123 tcp and udp).

Reply

Shantanu

March 17, 2016 at 2:16 pm

I have configured ntp server on centos 6.7 and entered public ntp server address " in.pool.ntp.org". when i run command "ntpq -np" or "ntpstat" then its showing its syncing the time from public ntp server but in actual its not syncing the time automatically. when i set wrong time in my ntp server and wait for some time then it doesn't correct my system time, Now if i run "ntpq -np, it says it is syncing time from local clock. In this condition i have to restart ntp service, then again it shows time syncing from public ntp server and correct the time also. But its not done automatically.
We are using clients on windows os here. i have done the necessary settings in internet time tab (Given our ntp server ip) and in registery also but those are also not syncing automatically but if i click on update now button then it corrects the time.

Please suggest on this.

Reply

Matei Cezar
March 17, 2016 at 8:49 pm

Add a cronjob to sync time, for instance every hour, using the ntpdate command: sudo ntpdate -s in.pool.ntp.org.

Reply

dedicated server zlin
January 6, 2015 at 10:58 am

Good Article!

Reply

penguin

December 17, 2014 at 8:57 pm

One slight correction:

In step 8, the line
sytemctl status ntp
should read:
sytemctl status ntpd

Reply

Admin

Ravi Saive

December 18, 2014 at 6:09 pm

@Penguin,
Thanks for correction...corrected

Reply

Prasath

March 14, 2015 at 10:05 am

sytemctl ntpd -> systemctl ntpd ?

S is missing ?

Reply

Admin

Ravi Saive

March 14, 2015 at 10:43 am

@Prasath,

Thanks for pointing out typo..corrected in the article…

Reply

David Newcomb

December 6, 2014 at 7:05 am

Good -ish! In section 3 you say “open NTP daemon main configuration file” but give no clue as to where it is!

Reply

Rajib

February 26, 2015 at 12:42 pm

vim /etc/ntp.conf

Reply

Denis

November 25, 2014 at 10:11 am

Excellent manual, thank you!

One subtle note – you have misspelled in p. 7 (incorrect typographic dash). It should be:
firewall-cmd –add-service=ntp –permanent

Reply

Admin

Ravi Saive
November 25, 2014 at 4:18 pm

@Denis,
Thanks for pointing out, corrected in the article..

Reply

Deepanjan
November 4, 2014 at 6:23 pm

how to bypass it through squid proxy

Reply

Joseph Liu
October 29, 2014 at 11:59 pm

Do you find that ntpdate -q is much slower under RHEL 7 versus RHEL 6?

This is what we found running ntpdate. It takes almost 7 seconds to get results back. In RHEL 6, it is quicker.

$ time ntpdate -q 0.ro.pool.ntp.org
server 194.102.255.19, stratum 2, offset -0.004015, delay 0.23289
server 89.36.93.9, stratum 2, offset 0.009549, delay 0.20610
server 85.204.240.2, stratum 2, offset -0.004843, delay 0.21089
server 91.216.151.202, stratum 2, offset -0.009425, delay 0.21852
29 Oct 11:22:26 ntpdate[22202]: adjust time server 85.204.240.2 offset -0.004843 sec

real 0m6.913s
user 0m0.002s
sys 0m0.006s

Reply

Got Something to Say? Join the Discussion...

Thank you for taking the time to share your thoughts with us. We appreciate your decision to leave a comment and value your contribution to the discussion. It's important to note that we moderate all comments in accordance with our comment policy to ensure a respectful and constructive conversation.

Rest assured that your email address will remain private and will not be published or shared with anyone. We prioritize the privacy and security of our users.

Name *

Email *

Save my name, email, and website in this browser for the next time I comment.

Post Comment

Search...

Do You Enjoy My Blog?

Support from readers like YOU keeps this blog running. Buying me a cup of coffee is a simple and affordable way to show your appreciation and help keep the posts coming!

Buy Me a Coffee

Linux Commands and Tools

Learn How to Generate and Verify Files with MD5 Checksum in Linux

The Ultimate Guide to Handling Filenames with Special Characters in Linux

How to Add, Delete and Update Files in Tar Archive in Linux

13 Practical Examples of Using the Gzip Command in Linux

How to Disable/Lock or Blacklist Package Updates using Apt Tool

13 Linux Network Configuration and Troubleshooting Commands

Linux Server Monitoring Tools

VnStat PHP: A Web Based Interface for Monitoring Network Bandwidth Usage

whowatch – Monitor Linux Users and Processes in Real Time

How to Install Zabbix on RHEL/CentOS and Debian/Ubuntu – Part 1

nload – Monitor Linux Network Bandwidth Usage in Real Time

rtop – An Interactive Tool to Monitor Remote Linux Server Over SSH

20 Useful Commands of 'Sysstat' Utilities (mpstat, pidstat, iostat and sar) for Linux Performance Monitoring

Learn Linux Tricks & Tips

10 Useful Linux Command Line Tricks for Newbies – Part 2

How to Clone a Partition or Hard drive in Linux

How to Optimize and Compress JPEG or PNG Images in Linux Commandline

How to Convert From RPM to DEB and DEB to RPM Package Using Alien

Mhddfs – Combine Several Smaller Partition into One Large Virtual Storage

Ternimal – Show Animated Lifeform in Your Linux Terminal

Best Linux Tools

12 Best Java IDE's for Linux Developers

19 Best Open Source WYSIWYG HTML Editors in 2023

3 Best Cloud-Based Music Apps for Linux

3 Best Document Collaboration Platforms for Linux in 2024

4 Best Tools for Creating Fillable PDF Forms on Linux

10 Best File Comparison and Difference (Diff) Tools for Linux