Expt. No.	Name : Piyush Pandurang Burate Class : TYCS Roll No.: 523
	Title of Experiment : Configure NTP server
Date	

Sub titles : Assignment/ Problem Solution, Flow chart/Algorithm, Problem Listing,
Input Screen, Output Screen, Comments (If any)

<u>Aim</u> :- Configure NTP server : Install and configure NTPd configure NTP client (Ubuntu and Windows)

<u>Theory</u> :-

- Network Time Protocol (NTP) is a widely used protocol for synchronizing the time across computer systems using a reference clock on the network. NTP provides a co-ordinated universal time to ensure consistent time synchronization.

- NTP clients utilized a set of algorithms and mechanism to achieve accurate time synchronization. This algorithm is called clock discipline and has the following key processes :-

  • Measuring the offeset between the local system clock and the reference time.

  • Selecting the most accurate time sources based on their stability, reliability and proximity

  • Adjust the system clock frequency to align it with the selected time sources for long time accuracy

Remark

Signature

- Installing NTP
  - For Ubuntu and Debian-based linux distribution you can use the 'apt' package manager to install NTP
  - Steps :
    1) Update the package list
       $ sudo apt update
    2) Install the NTP package by executing the following command.
       $ sudo apt install ntp

- When a computer system wants to synchronize its time the following process is done :-
  - The system sends a request to an NTP server.
  - The server responds with the current time info including the timestamp of when the server sent the response.
  - The client adjusts it time based on the received information.

Configure NTP Server (NTPd)

```
root@user-VirtualBox:~# apt-get -y install ntp
Reading package lists... Done
Building dependency tree
Reading state information... Done
Suggested packages:
  ntp-doc
.....
Unpacking ntp (1:4.2.8p4+dfsg-3ubuntu5.10) ...
Processing triggers for man-db (2.7.5-1) ...
Processing triggers for systemd (229-4ubuntu21.1) ...
Processing triggers for ureadahead (0.100.0-19) ...
Setting up ntp (1:4.2.8p4+dfsg-3ubuntu5.10) ...


root@user-VirtualBox:~# sudo nano /etc/ntp.conf
pool ntp.ubuntu.com # add servers of your timezone for time synchronization
server ntp1.jst.mfeed.ad.jp iburst
server ntp2.jst.mfeed.ad.jp iburst
server ntp3.jst.mfeed.ad.jp iburst
# line 50: add the network range you allow to receive requests
restrict 10.0.0.0 mask 255.255.255.0 nomodify notrap

root@user-VirtualBox:~# systemctl restart ntp
root@user-VirtualBox:~# ntpq -p
     remote        refid     st t when poll reach  delay  offset jitter
================================================================================
======
0.ubuntu.pool.n .POOL.      16 p  - 64   0   0.000  0.000  0.000
1.ubuntu.pool.n .POOL.      16 p  - 64   0   0.000  0.000  0.000
2.ubuntu.pool.n .POOL.      16 p  - 64   0   0.000  0.000  0.000
3.ubuntu.pool.n .POOL.      16 p  - 64   0   0.000  0.000  0.000
ntp.ubuntu.com .POOL.       16 p  - 64   0   0.000  0.000  0.000
+ntp1.jst.mfeed. 133.243.236.17  2 u  1  64   1  176.240 -37.190 20.321
*ntp2.jst.mfeed. 133.243.236.18  2 u  2  64   1  156.136  -5.123 35.267
root@user-VirtualBox:~# apt-get -y install ntpdate
Reading package lists... Done
.....
  ntpdate
0 upgraded, 1 newly installed, 0 to remove and 561 not upgraded.
Need to get 49.1 kB of archives.
```
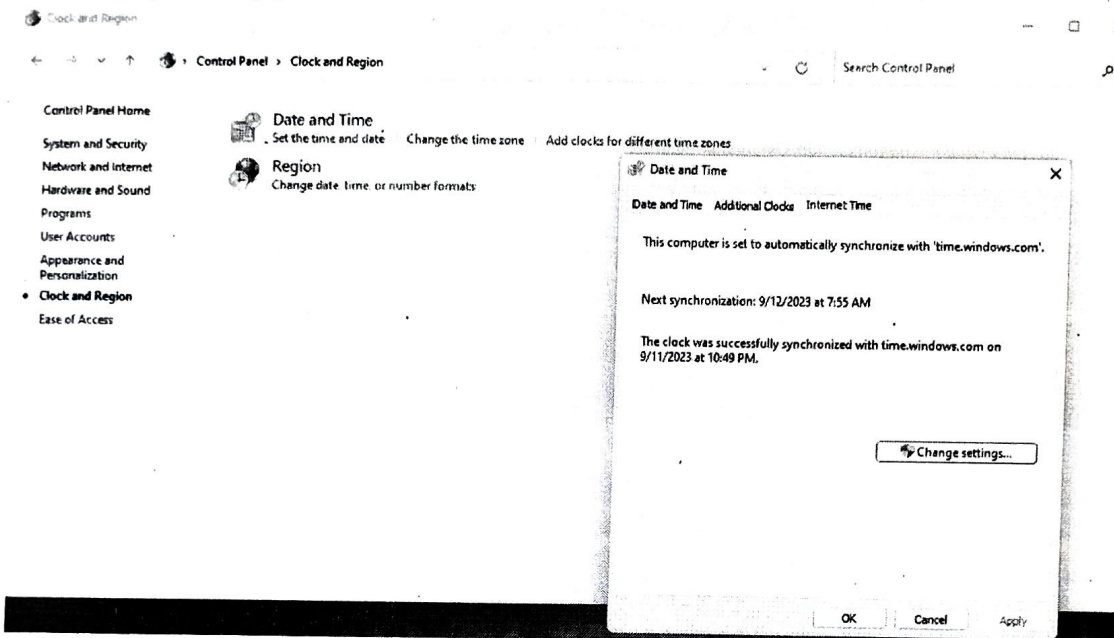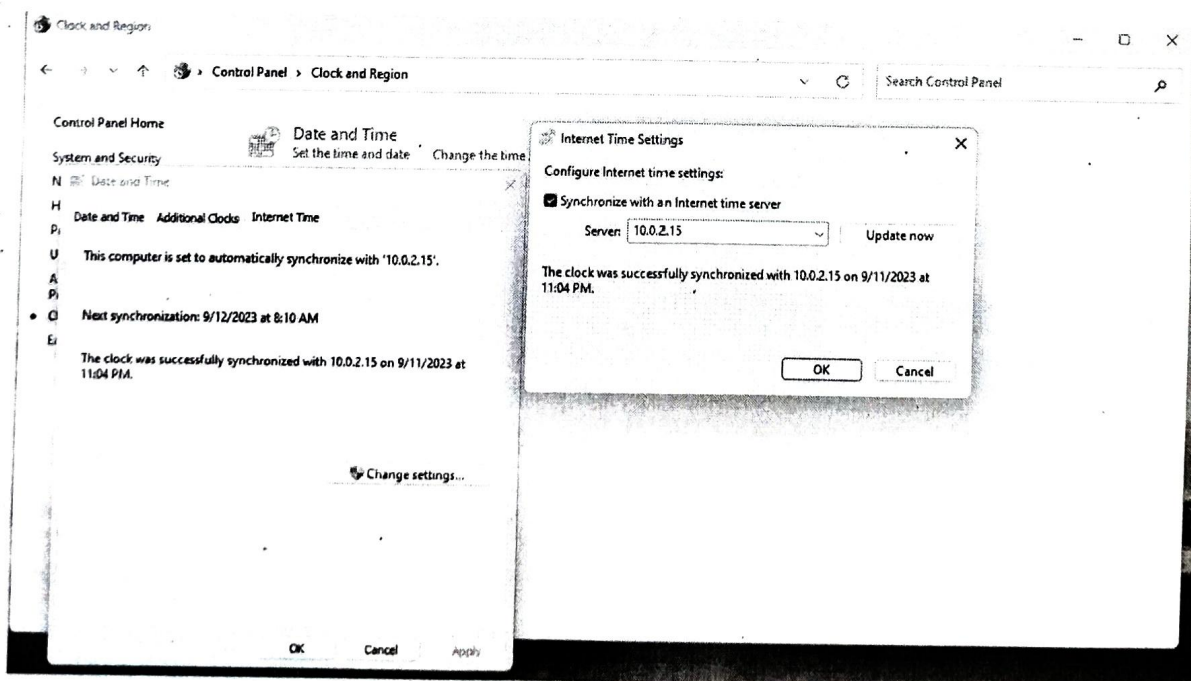
root@user-VirtualBox:~# ntpdate ntp1.jst.mfeed.ad.jp
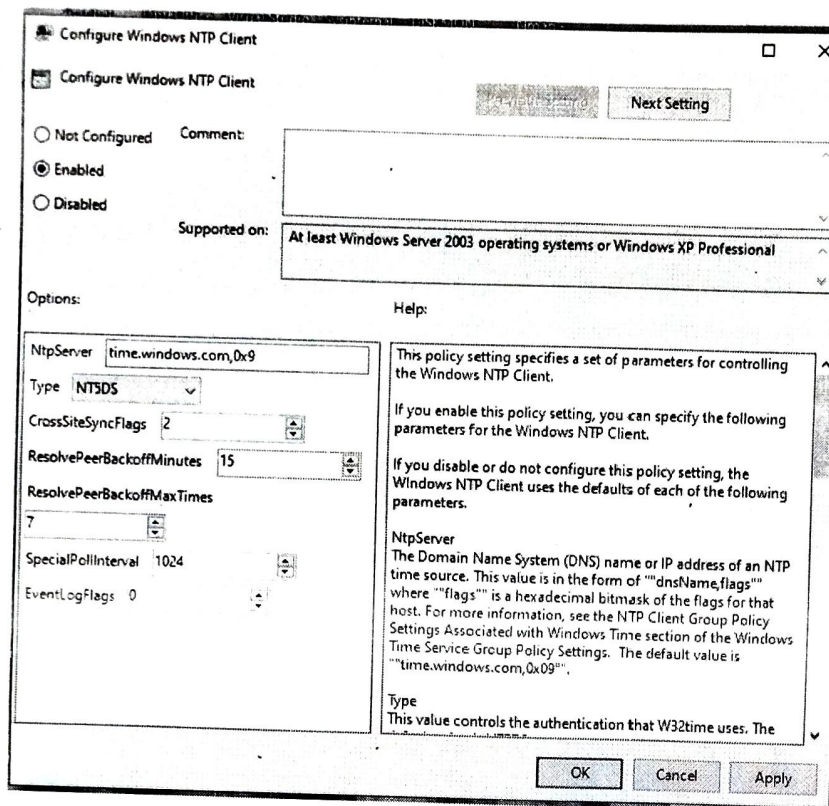11 Sep 21:58:44 ntpdate[5778]: the NTP socket is in use, exiting

Configure NTP Client : Windows

Open [Control Panel] - [Date and Time] and move to [internet Time] tab,
then [Change settings] button.

Input NTP server you'd like to sync on [Server] section and [Update now] button.

Configure Windows NTP Client

○ Not Configured
● Enabled
○ Disabled

Comment:

Supported on: At least Windows Server 2003 operating systems or Windows XP Professional

Options:

NtpServer   time.windows.com,0x9

Type   NT5DS

CrossSiteSyncFlags   2

ResolvePeerBackoffMinutes   15

ResolvePeerBackoffMaxTimes   7

SpecialPollInterval   1024

EventLogFlags   0

Help:

This policy setting specifies a set of parameters for controlling the Windows NTP Client.

If you enable this policy setting, you can specify the following parameters for the Windows NTP Client.

If you disable or do not configure this policy setting, the Windows NTP Client uses the defaults of each of the following parameters.

NtpServer
The Domain Name System (DNS) name or IP address of an NTP time source. This value is in the form of ""dnsName,flags"" where ""flags"" is a hexadecimal bitmask of the flags for that host. For more information, see the NTP Client Group Policy Settings Associated with Windows Time section of the Windows Time Service Group Policy Settings. The default value is ""time.windows.com,0x09"".

Type
This value controls the authentication that W32time uses. The

OK   Cancel   Apply

Setting
Configure Windows NTP Client
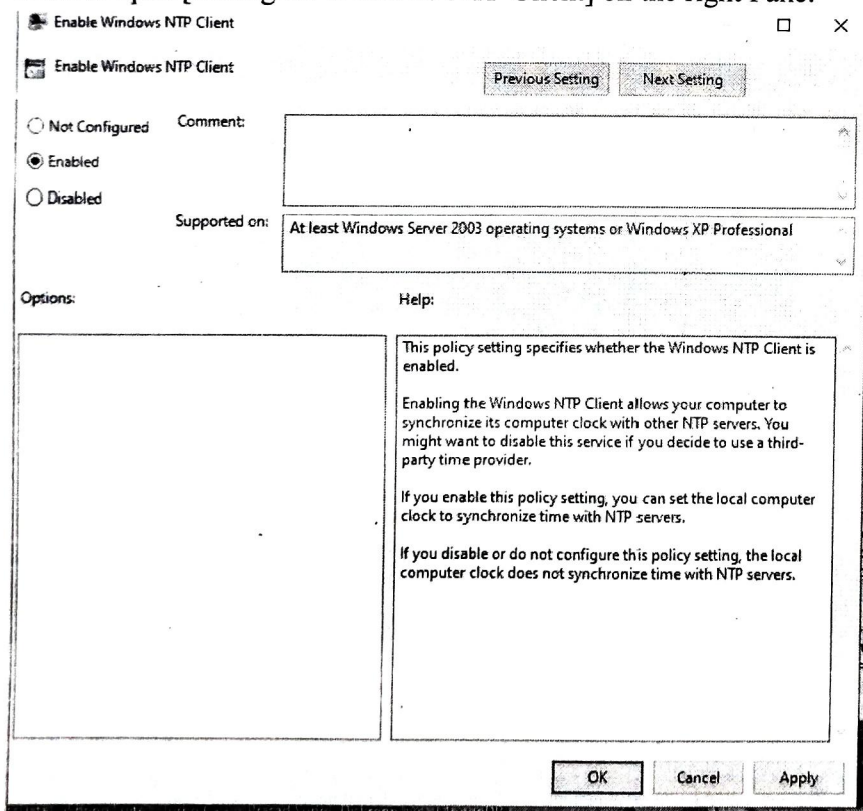Enable Windows NTP Client
Enable Windows NTP Server

Open [Control Panel] - [Administrative tools] - [Services], then Select [Windows Time] Service and click [Start the service]
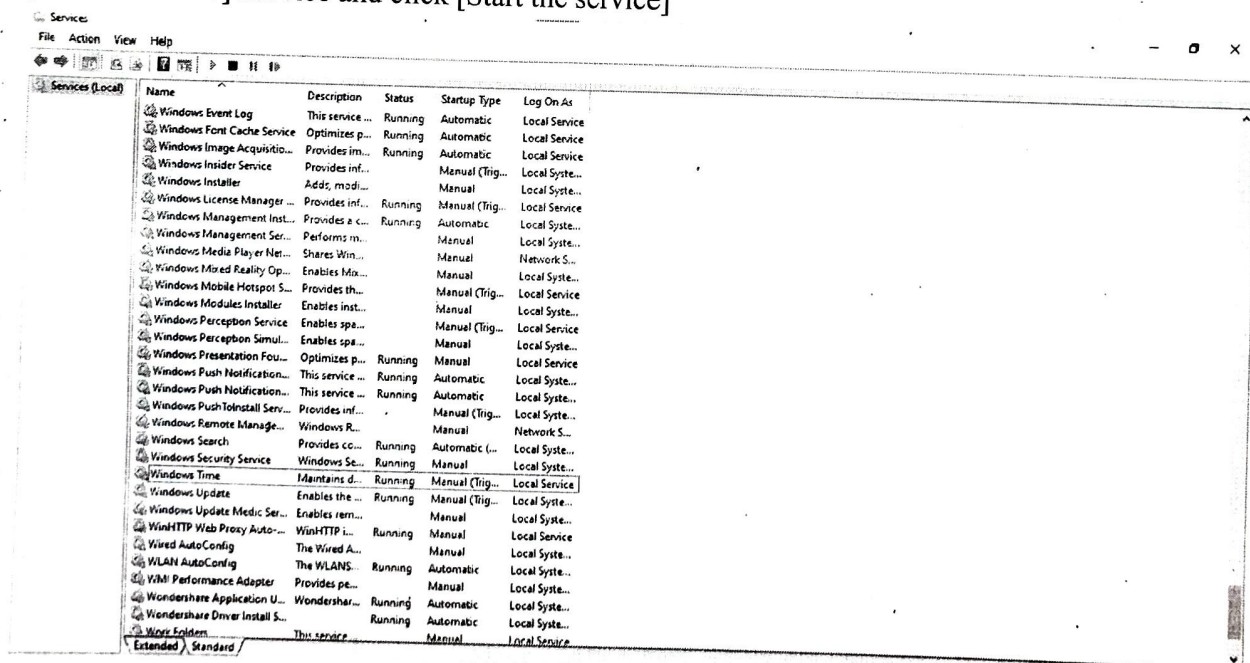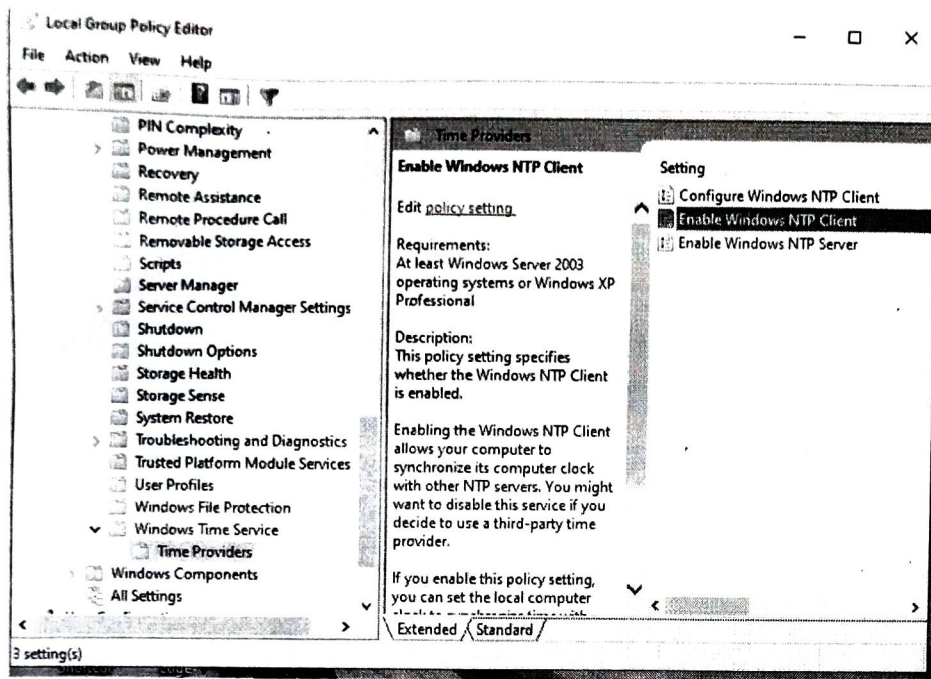
Click to open [Configure Windows NTP Client] on the right Pane.

Check a box [Enabled] which is upper-left and change values for your environment.