**Configuring Time for Logging PC (Ubuntu 18.04 LTS Bionic Beaver)**

**Step 1:**

Check Current Time Zone Settings:

Use the timedatectl command to show the current time zone and time:

timedatectl

Local time: Wed 2019-08-14 10:45:30 SAST

Universal time: Wed 2019-08-14 08:45:30 UTC

RTC time: Wed 2019-08-14 08:45:29

Time zone: Africa/Johannesburg (SAST, +0200)

System clock synchronized: no

systemd-timesyncd.service active: yes

RTC in local TZ: no

If the Local Time is not set to UTC, it needs to be changed to UTC.

In order to change time zone on Ubuntu 18.04, we first need to obtain the correct name of the time zone we wish to change to. This is usually a CONTINENT/CITY pair but in the case of UTC, it is simply UTC.  
  
The timedatectl command comes again handy:

$ timedatectl list-timezones

The time zone list is quite extensive. Scroll page down and up with **PgDn** and **PgUp** key respectively.   
  
Alternatively, use grep command to narrow down your search. For example, the below command will list all Europe cities:

$ timedatectl list-timezones | grep -i europe

Europe/Amsterdam

Europe/Andorra

Europe/Astrakhan

Europe/Athens

Etc ……

**Step 2:**

Changing the Time Zone:

In order to change the Time Zone to UTC (or any other zone as per above), use timedatectl command to set a new time zone.

Change timezone to UTC:

$ sudo timedatectl set-timezone UTC

Change timezone to Europe/Bratislava:

$ sudo timedatectl set-timezone Europe/Bratislava

Confirm that the time zone has been changed successfully:

pumba@sansa:~$ timedatectl

Local time: Wed 2019-08-14 08:30:15 UTC

Universal time: Wed 2019-08-14 08:30:15 UTC

RTC time: Wed 2019-08-14 08:30:15

Time zone: UTC (UTC, +0000)

System clock synchronized: yes

systemd-timesyncd.service active: yes

RTC in local TZ: no

**Step 3:**

Setting up the NTP server:

First step is to install NTP server. Use the following [linux command](https://linuxconfig.org/linux-commands" \t "_blank) to install NTP server daemon on your Ubuntu 18.04 system:

$ sudo apt install ntp

Configure the NTP Server:

The NTP server comes pre-configured by default. However, we may want to switch to the NTP server pool close to our server location.  
  
Use your browser to navigate to [NTP Pool Project](http://www.pool.ntp.org/zone/@) and find the closest NTP server pool to your location. For example the following is the African NTP pool list:

0.africa.pool.ntp.org

1.africa.pool.ntp.org

2.africa.pool.ntp.org

3.africa.pool.ntp.org

In order to configure your NTP server with a new NTP server pool you should have at least one NTP server. The recommended amount is 3 - 4. In case you do not have enough NTP servers for your country, add the continent NTP servers to the list.   
  
Once you have the list, open the NTP server's main configuration file /etc/ntp.conf

$ sudo nano /etc/ntp.conf

Replace lines:

pool 0.ubuntu.pool.ntp.org iburst pool 1.ubuntu.pool.ntp.org iburst pool 2.ubuntu.pool.ntp.org iburst pool 3.ubuntu.pool.ntp.org iburst

With the following list of NTP pool server. For example we will now include Africa’s NTP server pool list:

pool 0.africa.pool.ntp.org iburst pool 1.africa.pool.ntp.org iburst pool 2.africa.pool.ntp.org iburst pool 3.africa.pool.ntp.org iburst

Save the file and restart your NTP server:

$ sudo service ntp restart

Check the NTP server status:

pumba@sansa:~$ sudo service ntp status

● ntp.service - Network Time Service

Loaded: loaded (/lib/systemd/system/ntp.service; enabled; vendor preset: enab

Active: active (running) since Wed 2019-08-14 08:57:03 UTC; 3s ago

Docs: man:ntpd(8)

Process: 7278 ExecStart=/usr/lib/ntp/ntp-systemd-wrapper (code=exited, status=

Main PID: 7293 (ntpd)

Tasks: 2 (limit: 4915)

CGroup: /system.slice/ntp.service

└─7293 /usr/sbin/ntpd -p /var/run/ntpd.pid -g -u 112:116

Aug 14 08:57:03 sansa ntpd[7293]: Listen normally on 2 lo 127.0.0.1:123

Aug 14 08:57:03 sansa ntpd[7293]: Listen normally on 3 eno1 10.160.21.4:123

Aug 14 08:57:03 sansa ntpd[7293]: Listen normally on 4 lo [::1]:123

Aug 14 08:57:03 sansa ntpd[7293]: Listen normally on 5 eno1 [fe80::ae1f:6bff:fe4

Aug 14 08:57:03 sansa ntpd[7293]: Listening on routing socket on fd #22 for inte

Aug 14 08:57:04 sansa ntpd[7293]: Soliciting pool server 196.49.6.67

Aug 14 08:57:05 sansa ntpd[7293]: Soliciting pool server 45.222.43.250

Aug 14 08:57:06 sansa ntpd[7293]: Soliciting pool server 41.79.80.34

Aug 14 08:57:06 sansa ntpd[7293]: Soliciting pool server 197.82.150.123

Aug 14 08:57:06 sansa ntpd[7293]: Soliciting pool server 41.78.128.17

**Step 4:**

Setting up an NTP client. (you do not need to set up the client for the machine that you installed the server on as the ntp service will run anyway):

Before starting, you will need to setup /etc/hosts file. So, your NTP server can be resolved via hostname.

To do so, open the/etc/hosts file:

$ sudo nano /etc/hosts

Add the following lines:

$ 10.160.21.4 ntp-server-host

Replace the IP address with the IP of your NTP server (the one we installed in the precious chapter). Save and close the file.

Next, install NTP and ntpdate with the following command:

$ *sudo apt-get install ntpdate ntp -y*

Now, manually check the time synchronization with your NTP server with the following command:

$ *sudo ntpdate ntp-server-host*

If everything is fine, you should see the following output:

$ 5 Oct 20:48:49 ntpdate[6067]: adjust time server ntp-server-host offset 0.049526 sec

Next, you will need to disable the default Ubuntu systemd's timesyncd service. You can do this with the following command:

$ *sudo timedatectl set-ntp off*

Now, edit /etc/ntp.conffile and set your own configured NTP server as preferred NTP server for the time synchronization.

$ *sudo nano /etc/ntp.conf*

Add the following lines:

$ server ntp-server-host prefer iburst

Save the file and restart your NTP server to apply the changes:

$ sudo service ntp restart

Finally, use the ***ntpq*** command to list the NTP time synchronization queue:

$ ntpq -p

You should see that ntp-server-host is selected as the current time synchronization source:

pumba@sansa:~$ ntpq -p

remote refid st t when poll reach delay offset jitter

==============================================================================

0.africa.pool.n .POOL. 16 p - 64 0 0.000 0.000 0.000

1.africa.pool.n .POOL. 16 p - 64 0 0.000 0.000 0.000

2.africa.pool.n .POOL. 16 p - 64 0 0.000 0.000 0.000

3.africa.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

#ntp2.inx.net.za 238.72.153.243 2 u 51 128 377 785.710 -144.15 126.741

+jhb-ntp.mweb.co 197.80.68.123 3 u 38 128 277 922.725 -199.51 196.331

#178.62.115.212 85.199.214.101 2 u 114 128 377 695.006 -142.76 185.374

+ntp1.inx.net.za 238.72.153.243 2 u 240 128 176 325.700 64.302 318.412

+chilipepper.can 145.238.203.14 2 u 54 128 377 244.382 139.708 272.638

\*pugot.canonical 17.253.34.125 2 u 109 128 377 241.565 81.960 205.307

+ntp.marwan.ma 96.180.207.109 2 u 110 128 177 352.343 146.777 394.141

+golem.canonical 17.253.34.125 2 u 122 128 377 549.845 -51.656 236.097

+ntp4.inx.net.za 196.21.187.2 2 u 187 128 376 285.501 109.223 345.386

+ns5.btc.bw 66.220.9.122 2 u 73 128 377 235.971 93.791 313.199

+ns.bitco.co.za 41.78.128.17 3 u 30 128 177 446.457 33.539 339.535

+wagter.saasta.a 146.64.58.41 2 u 107 128 377 95.534 175.358 469.551