

# Лабораторная работа №12

Администрирование сетевых подсистем

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- Приобретение практических навыков по управлению системным временем и настройке синхронизации времени.

## Выполнение лабораторной работы

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## Настройка параметров времени

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```
[aamishina@server.aamishina.net ~]$ timedatectl
    Local time: Sun 2024-10-27 14:26:50 UTC
    Universal time: Sun 2024-10-27 14:26:50 UTC
        RTC time: Sun 2024-10-27 14:26:50
    Time zone: UTC (UTC, +0000)
System clock synchronized: yes
        NTP service: active
      RTC in local TZ: no
[aamishina@server.aamishina.net ~]$ date
Sun Oct 27 02:27:38 PM UTC 2024
[aamishina@server.aamishina.net ~]$ sudo -i
[sudo] password for aamishina:
[root@server.aamishina.net ~]# hwclock
2024-10-27 14:28:35.272036+00:00
[root@server.aamishina.net ~]#
```

Рис. 1: Параметры настройки даты и времени, текущее системное время и аппаратное время на server

```
[aamishina@client.aamishina.net ~]$ timedatectl
    Local time: Sun 2024-10-27 14:27:25 UTC
    Universal time: Sun 2024-10-27 14:27:25 UTC
        RTC time: Sun 2024-10-27 14:27:26
    Time zone: UTC (UTC, +0000)
System clock synchronized: yes
        NTP service: active
    RTC in local TZ: no
[aamishina@client.aamishina.net ~]$ date
Sun Oct 27 02:27:57 PM UTC 2024
[aamishina@client.aamishina.net ~]$ hwclock
hwclock: Cannot access the Hardware Clock via any known method.
hwclock: Use the --verbose option to see the details of our search for an access method.
[aamishina@client.aamishina.net ~]$ sudo -i
[sudo] password for aamishina:
[root@client.aamishina.net ~]# hwclock
2024-10-27 14:28:22.191931+00:00
```

Рис. 2: Параметры настройки даты и времени, текущее системное время и аппаратное время на client

## Управление синхронизацией времени

---

```
[root@server.aamishina.net ~]# dnf -y install chrony
Rocky Linux 9 - BaseOS                               395 B/s | 4.1 kB    00:10
Rocky Linux 9 - AppStream                             7.8 kB/s | 4.5 kB    00:00
Rocky Linux 9 - Extras                               6.1 kB/s | 2.9 kB    00:00
Package chrony-4.5-1.el9.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@server.aamishina.net ~]# chronyc sources
MS Name/IP address         Stratum Poll Reach LastRx Last sample
=====
^? 95.154.97.27             2  7  110  206  -12ms[ -12ms] +/- 169ms
^* gordon.made.ru           2  6  377  105  +1095us[+1776us] +/- 16ms
^~ roswell.systems          2  7  141   39  -2817us[-2817us] +/- 72ms
^~ tms04.deltatelesystems.ru 1  6  177   35   +84us[ +84us] +/- 19ms
[root@server.aamishina.net ~]#
```

Рис. 3: Просмотр источников времени на сервере

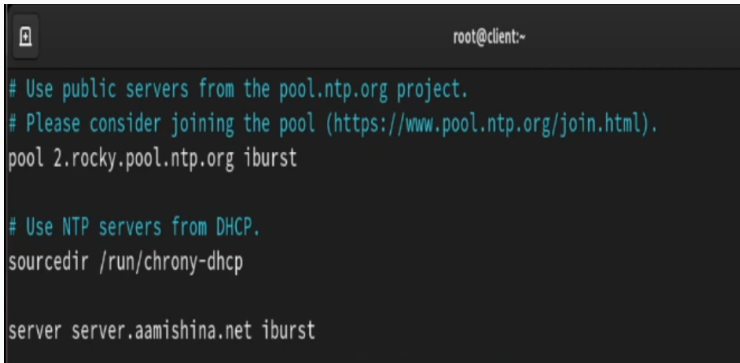


```
[root@client.aamishina.net ~]# chronyc sources
MS Name/IP address          Stratum Poll Reach LastRx Last sample
=====
^* gordon.made.ru            2   6   377   60  +246us[ +900us] +/- 17ms
^~ tms04.deltatelesystems.ru 1   6   177   32 -1584us[-1584us] +/- 21ms
^~ roswell.systems           2   6   337   66  -14ms[ -15ms] +/- 80ms
^? ground.corbina.net        2   9   100  271 -4965us[-5719us] +/- 52ms
[root@client.aamishina.net ~]#
```

Рис. 4: Просмотр источников времени на клиенте

```
# 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  
:w
```

Рис. 5: Файл /etc/chrony.conf.

A terminal window with a dark background and light text. The title bar at the top shows a window icon on the left and the text 'root@client:~' on the right. The terminal content consists of several lines of text, some in green (comments) and some in white (commands).

```
root@client:~  
# Use public servers from the pool.ntp.org project.  
# Please consider joining the pool (https://www.pool.ntp.org/join.html).  
pool 2.rocky.pool.ntp.org iburst  
  
# Use NTP servers from DHCP.  
sourcedir /run/chrony-dhcp  
  
server server.aamishina.net iburst
```

Рис. 6: Файл /etc/chrony.conf. Настройка сервера в качестве сервера синхронизации времени

```
[root@client.aamishina.net ~]# chronyc sources
MS Name/IP address         Stratum Poll Reach LastRx Last sample
=====
^? ptr.thrushcat.net.ru      2  8 100  570 +2320us[+2939us] +/- 316ms
^~ 195.19.212.36             2  6 377  17  -3247us[-3247us] +/-  72ms
^+ gordon.made.ru           2  6 343  182  +13us[ +63us] +/-  20ms
^~ tms04.deltatelesystems.ru 1  6 377  19  -9476us[-9476us] +/-  34ms
^+ mail.aamishina.net        3  6 377  18  -1531us[-1531us] +/-  27ms

[root@client.aamishina.net ~]# chronyc tracking
Reference ID    : B9281F5F (gordon.made.ru)
Stratum         : 3
Ref time (UTC)  : Sun Oct 27 14:39:53 2024
System time     : 0.000047674 seconds fast of NTP time      ^
Last offset     : +0.000049598 seconds
RMS offset      : 0.002152225 seconds
Frequency       : 503.316 ppm fast
Residual freq   : +0.057 ppm
Skew            : 11.244 ppm
Root delay      : 0.026686637 seconds
Root dispersion : 0.009826654 seconds
Update interval : 258.1 seconds
Leap status     : Normal

[root@client.aamishina.net ~]#
```

Рис. 7: Просмотр источников времени на клиенте

```
[root@server.aamishina.net ~]# chronyc sources

```

MS Name/IP address	Stratum	Poll	Reach	LastRx	Last sample
=====					
* tms04.deltatelesystems.ru	1	6	77	39	-95ms[ -96ms] +/- 114ms
? ntp1.doorhan.ru	2	6	201	30	-5141us[-5141us] +/- 12ms
+ 195.19.212.36	2	6	77	39	-176ms[ -180ms] +/- 247ms

```
[root@server.aamishina.net ~]# chronyc tracking
Reference ID    : 5BD15E0A (ntp1.doorhan.ru)
Stratum        : 3
Ref time (UTC) : Sun Oct 27 14:41:52 2024
System time    : 0.000804222 seconds slow of NTP time
Last offset    : -0.000441975 seconds
RMS offset     : 0.004507623 seconds
Frequency      : 502.667 ppm fast
Residual freq  : -0.062 ppm
Skew           : 10.948 ppm
Root delay     : 0.027637947 seconds
Root dispersion: 0.013799727 seconds
Update interval: 64.0 seconds
Leap status    : Normal
[root@server.aamishina.net ~]#
```

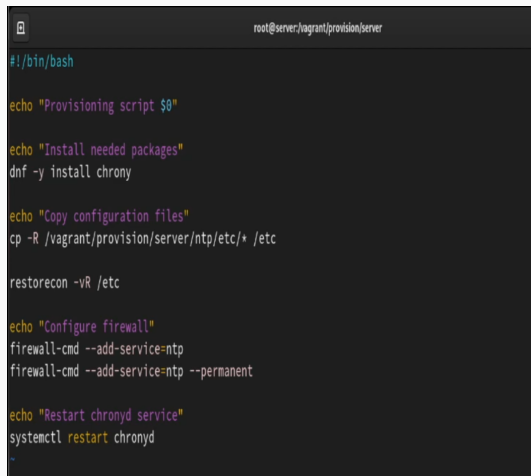
Рис. 8: Просмотр источников времени на сервере

Внесение изменений в настройки  
внутреннего окружения  
виртуальных машины

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```
[root@server.aamishina.net ~]# cd /vagrant/provision/server
[root@server.aamishina.net server]# mkdir -p /vagrant/provision/server/ntp/etc
[root@server.aamishina.net server]# cp -R /etc/chrony.conf /vagrant/provision/server/ntp/etc/
[root@server.aamishina.net server]# cd /vagrant/provision/server
[root@server.aamishina.net server]# touch ntp.sh
[root@server.aamishina.net server]# chmod +x ntp.sh
[root@server.aamishina.net server]# vim ntp.sh
```

Рис. 9: Создание окружения для внесения изменений в настройки окружающей среды



```
root@server:/vagrant/provision/server

#!/bin/bash

echo "Provisioning script $0"

echo "Install needed packages"
dnf -y install chrony

echo "Copy configuration files"
cp -R /vagrant/provision/server/ntp/etc/* /etc

restorecon -vR /etc

echo "Configure firewall"
firewall-cmd --add-service=ntp
firewall-cmd --add-service=ntp --permanent

echo "Restart chronyd service"
systemctl restart chronyd

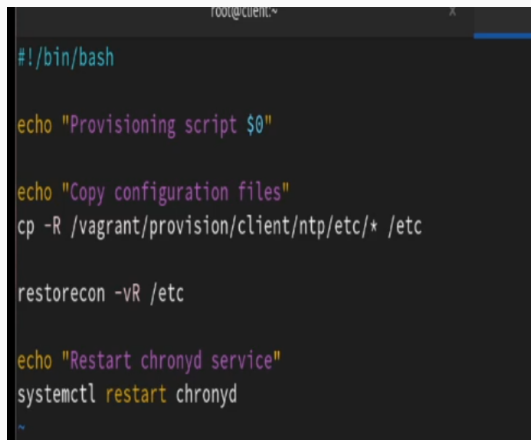
~
```

Рис. 10: Скрипт файла /vagrant/provision/server/ntp.sh



```
[root@client.aamishina.net ~]# cd /vagrant/provision/client/  
[root@client.aamishina.net client]# mkdir -p /vagrant/provision/client/ntp/etc  
[root@client.aamishina.net client]# cp -R /etc/chrony.conf /vagrant/provision/client/ntp/etc/  
[root@client.aamishina.net client]# cd /vagrant/provision/client/  
[root@client.aamishina.net client]# touch ntp.sh  
[root@client.aamishina.net client]# chmod +x ntp.sh  
[root@client.aamishina.net client]# vim ntp.sh
```

Рис. 11: Создание окружения для внесения изменений в настройки окружающей среды

A terminal window with a dark background and light-colored text. The window title is 'root@client:~'. The prompt is '#!/bin/bash'. The script contains several echo statements and system commands. The text is as follows:

```
#!/bin/bash

echo "Provisioning script $0"

echo "Copy configuration files"
cp -R /vagrant/provision/client/ntp/etc/* /etc

restorecon -vR /etc

echo "Restart chronyd service"
systemctl restart chronyd
```

Рис. 12: Скрипт файла /vagrant/provision/client/ntp.sh

- В результате выполнения данной работы были приобретены практические навыки по управлению системным временем и настройке синхронизации времени.