**IS264: Linux II**

Homework 2: Soyinka Chapter 9 (8th ed) 2022

Review the material in the ‘Core System Services’ chapter and then complete the questions below directly in this document. The material to be posted for the question would include (in most cases) a copy of the command you issue plus the system response; on situations where the system response is lengthy, only the first 10-12 lines are all that need to be copied into the document.

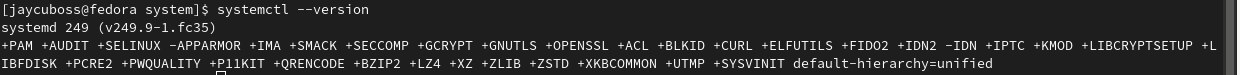
 1) What is the system and service manager on our version of Fedora? systemd

How can you verify that on your system? (show the command below).

You can see what version you are running:

[jaycuboss@fedora systemd]$ **systemctl --version**

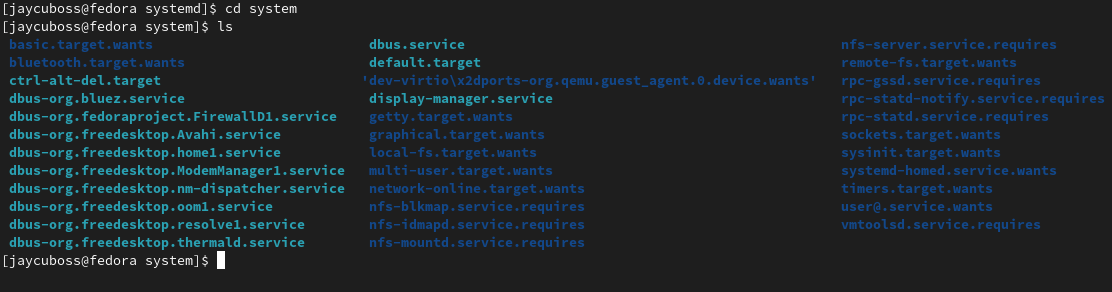
systemd 249 (v249.9-1.fc35)



You can view the contents of the directories systemd uses:

[jaycuboss@fedora systemd]$ **cd /etc/systemd/**

[jaycuboss@fedora systemd]$ **ls**



What version of Linux is running on fawad, and what is it’s system manager? (show commands below that answer the questions – with output included).

[jhaas40@fpfawad ~]$ uname -a

Linux fpfawad **3.10.0-1127.19.1.el7.x86\_64** #1 SMP Tue Aug 11 19:12:04 EDT 2020 x86\_64 x86\_64 x86\_64 GNU/Linux

 2) Investigate the units active on your system (units are described in the Soyinka chapter).  Copy and paste here the results of commands to show the units for target, mount, and socket types.  You only need to include the first 10 lines or so of each unit result.

**[jaycuboss@fedora ~]$ systemctl list-units --type=target**

UNIT LOAD ACTIVE SUB DESCRIPTION

basic.target loaded active active Basic System

cryptsetup.target loaded active active Local Encrypted Volumes

getty.target loaded active active Login Prompts

graphical.target loaded active active Graphical Interface

local-fs-pre.target loaded active active Preparation for Local File Systems

local-fs.target loaded active active Local File Systems

multi-user.target loaded active active Multi-User System

network-online.target loaded active active Network is Online

network-pre.target loaded active active Preparation for Network

network.target loaded active active Network

nfs-client.target loaded active active NFS client services

nss-lookup.target loaded active active Host and Network Name Lookups

nss-user-lookup.target loaded active active User and Group Name Lookups

paths.target loaded active active Path Units

**[jaycuboss@fedora ~]$ systemctl list-units --type=mount**

UNIT LOAD ACTIVE SUB DESCRIPTION

-.mount loaded active mounted Root Mount

boot.mount loaded active mounted /boot

dev-hugepages.mount loaded active mounted Huge Pages File System

dev-mqueue.mount loaded active mounted POSIX Message Queue File System

home.mount loaded active mounted /home

run-user-1000-gvfs.mount loaded active mounted /run/user/1000/gvfs

run-user-1000.mount loaded active mounted /run/user/1000

sys-fs-fuse-connections.mount loaded active mounted FUSE Control File System

sys-kernel-config.mount loaded active mounted Kernel Configuration File System

sys-kernel-debug.mount loaded active mounted Kernel Debug File System

sys-kernel-tracing.mount loaded active mounted Kernel Trace File System

tmp.mount loaded active mounted Temporary Directory /tmp

var-lib-nfs-rpc\_pipefs.mount loaded active mounted RPC Pipe File System

**[jaycuboss@fedora ~]$ systemctl list-units --type=socket**

UNIT LOAD ACTIVE SUB DESCRIPTION

avahi-daemon.socket loaded active running Avahi mDNS/DNS-SD Stack Activation Socket

cups.socket loaded active running CUPS Scheduler

dbus.socket loaded active running D-Bus System Message Bus Socket

dm-event.socket loaded active listening Device-mapper event daemon FIFOs

iscsid.socket loaded active listening Open-iSCSI iscsid Socket

iscsiuio.socket loaded active listening Open-iSCSI iscsiuio Socket

lvm2-lvmpolld.socket loaded active listening LVM2 poll daemon socket

multipathd.socket loaded active listening multipathd control socket

pcscd.socket loaded active running PC/SC Smart Card Daemon Activation Socket

sssd-kcm.socket loaded active running SSSD Kerberos Cache Manager responder socket

systemd-coredump.socket loaded active listening Process Core Dump Socket

systemd-initctl.socket loaded active listening initctl Compatibility Named Pipe

systemd-journald-audit.socket loaded active running Journal Audit Socket

systemd-journald-dev-log.socket loaded active running Journal Socket (/dev/log)

systemd-journald.socket loaded active running Journal Socket

3) Indicate the commands to turn off and then disable the Fedora firewall service, as well as the command to temporarily disable SE Linux (during a log-on session). Issue all these commands on your system. What commands should you then issue to verify that all steps were successful? (copy in the results of the verification commands to this document)

[root@fedora network-scripts]# **systemctl stop firewalld**

[root@fedora network-scripts]# **systemctl disable firewalld**

[root@fedora network-scripts]# **systemctl status firewalld**

○ firewalld.service - firewalld - dynamic firewall daemon

Loaded: loaded (/usr/lib/systemd/system/firewalld.service; disabled; vendor preset: enabled)

Active: inactive (dead)

Docs: man:firewalld(1)

[root@fedora network-scripts]# **setenforce 0**

[root@fedora network-scripts]# **getenforce**

Permissive  
  
4) Install xinetd as discussed in the text and perform the echo service example in the text.

[jhaas40@fedora Downloads]$ sudo rpm -i xinetd\*.rpm

[sudo] password for jhaas40:

warning: xinetd-2.3.15-34.fc33.x86\_64.rpm: Header V4 RSA/SHA256 Signature, key ID 9570ff31: NOKEY

package xinetd-2:2.3.15-34.fc33.x86\_64 is already installed

Issue the command "telnet localhost 7" prior to completing work on the Echo service; copy and paste the screen response here to show the result.

[root@fedora Downloads]# telnet localhost 7

bash: telnet: command not found...

Install package 'telnet' to provide command 'telnet'? [N/y] y

[root@fedora Downloads]# telnet localhost 7

Trying ::1...

telnet: connect to address ::1: Connection refused

Trying 127.0.0.1...

telnet: connect to address 127.0.0.1: Connection refused

Then complete the echo-stream service steps as discussed in the text and show the result of the "telnet localhost 7" command (copy and paste the system response). (Note that the way to terminate the process once in telnet is to type ctrl-] and then type the command 'quit')

[root@fedora Downloads]# cd /etc/xinetd.d/

[root@fedora xinetd.d]# ls

chargen-dgram chargen-stream daytime-dgram daytime-stream discard-dgram discard-stream echo-dgram echo-stream tcpmux-server time-dgram time-stream

[root@fedora xinetd.d]# vi echo-stream

[root@fedora xinetd.d]# systemctl restart xinetd

[root@fedora xinetd.d]# telnet localhost 7

Trying ::1...

Connected to localhost.

Escape character is '^]'.

Hello Jacob

Hello Jacob

hiya

hiya

yo

yo

b

b

abc

abc

def

def

ghi

ghi

jkl

jkl

^

^

^]

telnet> quit

Connection closed.

   
5) Examining system startup messages (syslog) in versions prior to Fedora 20 was based on a utility called rsyslog.  However, current Fedora versions no longer have rsyslog installed by default, and instead use a utility called journalctl.   To compare the two utility processes, do the following:  
  
      a) after a reboot, run the "journalctl" and "journalctl -f" commands and copy 10 lines from each into the document

[jhaas40@fedora ~]$ **journalctl**

Jan 24 12:24:53 fedora kernel: microcode: microcode updated early to revision 0x28, date = 2019-11-12

Jan 24 12:24:53 fedora kernel: Linux version 5.14.10-300.fc35.x86\_64 (mockbuild@bkernel01.iad2.fedoraproject.org) (gcc >

Jan 24 12:24:53 fedora kernel: Command line: BOOT\_IMAGE=(hd0,msdos1)/vmlinuz-5.14.10-300.fc35.x86\_64 root=/dev/mapper/f>

Jan 24 12:24:53 fedora kernel: x86/fpu: Supporting XSAVE feature 0x001: 'x87 floating point registers'

Jan 24 12:24:53 fedora kernel: x86/fpu: Supporting XSAVE feature 0x002: 'SSE registers'

Jan 24 12:24:53 fedora kernel: x86/fpu: Supporting XSAVE feature 0x004: 'AVX registers'

Jan 24 12:24:53 fedora kernel: x86/fpu: xstate\_offset[2]: 576, xstate\_sizes[2]: 256

Jan 24 12:24:53 fedora kernel: x86/fpu: Enabled xstate features 0x7, context size is 832 bytes, using 'standard' format.

Jan 24 12:24:53 fedora kernel: signal: max sigframe size: 1776

Jan 24 12:24:53 fedora kernel: BIOS-provided physical RAM map:

[jhaas40@fedora ~]$ **journalctl -f**

Mar 07 18:05:48 fedora soffice.bin[3171]: invalid cast from 'GtkBox' to 'GtkMenuShell'

Mar 07 18:06:00 fedora systemd[1]: systemd-hostnamed.service: Deactivated successfully.

Mar 07 18:06:00 fedora audit[1]: SERVICE\_STOP pid=1 uid=0 auid=4294967295 ses=4294967295 subj=system\_u:system\_r:init\_t:s0 msg='unit=systemd-hostnamed comm="systemd" exe="/usr/lib/systemd/systemd" hostname=? addr=? terminal=? res=success'

Mar 07 18:06:00 fedora audit: BPF prog-id=0 op=UNLOAD

Mar 07 18:06:00 fedora audit: BPF prog-id=0 op=UNLOAD

Mar 07 18:06:06 fedora systemd[1]: virtqemud.service: Deactivated successfully.

Mar 07 18:06:06 fedora audit[1]: SERVICE\_STOP pid=1 uid=0 auid=4294967295 ses=4294967295 subj=system\_u:system\_r:init\_t:s0 msg='unit=virtqemud comm="systemd" exe="/usr/lib/systemd/systemd" hostname=? addr=? terminal=? res=success'

Mar 07 18:06:45 fedora systemd[1559]: Starting Mark boot as successful...

Mar 07 18:06:45 fedora systemd[1559]: Finished Mark boot as successful.

Mar 07 18:07:25 fedora chronyd[915]: Selected source 23.92.64.226 (2.fedora.pool.ntp.org)

      b) reinstall rsyslog and follow the text instructions regarding the change to the rsyslog.conf file to direct Kernel messages to a file called /var/log/kernmessages.  Reboot your system and copy/paste the top 10 lines of the new kernmessages file to your assignment document (see Soyinka for details).  
[jhaas40@fedora log]$ sudo head -n 10 kernmessages

Mar 7 18:33:42 fedora kernel: rfkill: input handler enabled

Mar 7 18:33:44 fedora kernel: kauditd\_printk\_skb: 118 callbacks suppressed

Mar 7 18:33:44 fedora kernel: audit: type=1305 audit(1646699624.405:330): op=set audit\_pid=0 old=836 auid=4294967295 ses=4294967295 subj=system\_u:system\_r:auditd\_t:s0 res=1

Mar 7 18:33:44 fedora kernel: audit: type=1131 audit(1646699624.406:331): pid=1 uid=0 auid=4294967295 ses=4294967295 subj=system\_u:system\_r:init\_t:s0 msg='unit=auditd comm="systemd" exe="/usr/lib/systemd/systemd" hostname=? addr=? terminal=? res=success'

Mar 7 18:33:44 fedora kernel: audit: type=1131 audit(1646699624.406:332): pid=1 uid=0 auid=4294967295 ses=4294967295 subj=system\_u:system\_r:init\_t:s0 msg='unit=systemd-tmpfiles-setup comm="systemd" exe="/usr/lib/systemd/systemd" hostname=? addr=? terminal=? res=success'

Mar 7 18:33:44 fedora kernel: audit: type=1131 audit(1646699624.407:333): pid=1 uid=0 auid=4294967295 ses=4294967295 subj=system\_u:system\_r:init\_t:s0 msg='unit=import-state comm="systemd" exe="/usr/lib/systemd/systemd" hostname=? addr=? terminal=? res=success'

Mar 7 18:33:44 fedora kernel: audit: type=1131 audit(1646699624.419:334): pid=1 uid=0 auid=4294967295 ses=4294967295 subj=system\_u:system\_r:init\_t:s0 msg='unit=systemd-fsck@dev-disk-by\x2duuid-282e0edc\x2d111e\x2d4a65\x2d9570\x2daa08632d1314 comm="systemd" exe="/usr/lib/systemd/systemd" hostname=? addr=? terminal=? res=success'

Mar 7 18:33:44 fedora kernel: zram0: detected capacity change from 16777216 to 0

Mar 7 18:33:44 fedora kernel: audit: type=1131 audit(1646699624.438:335): pid=1 uid=0 auid=4294967295 ses=4294967295 subj=system\_u:system\_r:init\_t:s0 msg='unit=systemd-zram-setup@zram0 comm="systemd" exe="/usr/lib/systemd/systemd" hostname=? addr=? terminal=? res=success'

Mar 7 18:33:44 fedora kernel: audit: type=1131 audit(1646699624.488:336): pid=1 uid=0 auid=4294967295 ses=4294967295 subj=system\_u:system\_r:init\_t:s0 msg='unit=systemd-fsck@dev-mapper-fedora\_is264\x2dhome comm="systemd" exe="/usr/lib/systemd/systemd" hostname=? addr=? terminal=? res=success'

      c) use your results from step b to build a grep of the journalctl output to try to locate the same information in the journal as you had from rsyslog.  Copy/paste the results here.

[jhaas40@fedora log]$ **sudo cat kernmessages | grep microcode**

[sudo] password for jhaas40:

Mar 7 12:33:54 fedora kernel: microcode: microcode updated early to revision 0x28, date = 2019-11-12

Mar 7 12:33:54 fedora kernel: microcode: sig=0x306c3, pf=0x2, revision=0x28

Mar 7 12:33:54 fedora kernel: microcode: Microcode Update Driver: v2.2.

[jhaas40@fedora log]$ **sudo cat kernmessages | grep BOOT\_IMAGE**

Mar 7 12:33:54 fedora kernel: Command line: BOOT\_IMAGE=(hd0,msdos1)/vmlinuz-5.16.11-200.fc35.x86\_64 root=/dev/mapper/fedora\_is264-root ro resume=/dev/mapper/fedora\_is264-swap rd.lvm.lv=fedora\_is264/root rd.lvm.lv=fedora\_is264/swap rhgb quiet

Mar 7 12:33:54 fedora kernel: Kernel command line: BOOT\_IMAGE=(hd0,msdos1)/vmlinuz-5.16.11-200.fc35.x86\_64 root=/dev/mapper/fedora\_is264-root ro resume=/dev/mapper/fedora\_is264-swap rd.lvm.lv=fedora\_is264/root rd.lvm.lv=fedora\_is264/swap rhgb quiet

Mar 7 12:33:54 fedora kernel: Unknown kernel command line parameters "rhgb BOOT\_IMAGE=(hd0,msdos1)/vmlinuz-5.16.11-200.fc35.x86\_64", will be passed to user space.

Mar 7 12:33:54 fedora kernel: BOOT\_IMAGE=(hd0,msdos1)/vmlinuz-5.16.11-200.fc35.x86\_64

[jhaas40@fedora log]$ **sudo cat kernmessages | grep XSAVE**

Mar 7 12:33:54 fedora kernel: x86/fpu: Supporting XSAVE feature 0x001: 'x87 floating point registers'

Mar 7 12:33:54 fedora kernel: x86/fpu: Supporting XSAVE feature 0x002: 'SSE registers'

Mar 7 12:33:54 fedora kernel: x86/fpu: Supporting XSAVE feature 0x004: 'AVX registers'

6) After reviewing the information in the crontab section of the text, install the ‘cronie’ package on your Fedora system and then edit your user's crontab file (not the root user’s file). Have it send 3 pings to yahoo.com every 2 minutes; have the result of the pings \*add\* to a file called yahooping in your user home directory.  Below, show the command you added to crontab and include a copy of your yahooping file after at least 2 cycles (i.e., 4 minutes).  
 **Chapter 9 – read through crontab material and follow these instructions**  
Important: after you have accomplished the crontab step, please \*remove\* your crontab entry so that it does not continue to ping!

**Command added to crontab: \*/2 \* \* \* \* ping -c 3 yahoo.com >> ~/yahooping**

[jhaas40@fedora ~]$ more yahooping

PING yahoo.com (74.6.143.26) 56(84) bytes of data.

64 bytes from media-router-fp74.prod.media.vip.bf1.yahoo.com (74.6.143.26): icmp\_seq=1 ttl=45 time=33.3 ms

64 bytes from media-router-fp74.prod.media.vip.bf1.yahoo.com (74.6.143.26): icmp\_seq=2 ttl=45 time=33.3 ms

64 bytes from media-router-fp74.prod.media.vip.bf1.yahoo.com (74.6.143.26): icmp\_seq=3 ttl=45 time=33.5 ms

--- yahoo.com ping statistics ---

3 packets transmitted, 3 received, 0% packet loss, time 2004ms

rtt min/avg/max/mdev = 33.293/33.369/33.467/0.072 ms

PING yahoo.com (74.6.231.20) 56(84) bytes of data.

64 bytes from media-router-fp73.prod.media.vip.ne1.yahoo.com (74.6.231.20): icmp\_seq=1 ttl=47 time=33.8 ms

64 bytes from media-router-fp73.prod.media.vip.ne1.yahoo.com (74.6.231.20): icmp\_seq=2 ttl=47 time=31.7 ms

64 bytes from media-router-fp73.prod.media.vip.ne1.yahoo.com (74.6.231.20): icmp\_seq=3 ttl=47 time=33.8 ms

--- yahoo.com ping statistics ---

3 packets transmitted, 3 received, 0% packet loss, time 2003ms

rtt min/avg/max/mdev = 31.738/33.134/33.839/0.987 ms

PING yahoo.com (98.137.11.164) 56(84) bytes of data.

64 bytes from media-router-fp73.prod.media.vip.gq1.yahoo.com (98.137.11.164): icmp\_seq=1 ttl=46 time=69.6 ms

64 bytes from media-router-fp73.prod.media.vip.gq1.yahoo.com (98.137.11.164): icmp\_seq=2 ttl=46 time=69.7 ms

64 bytes from media-router-fp73.prod.media.vip.gq1.yahoo.com (98.137.11.164): icmp\_seq=3 ttl=46 time=69.7 ms

--- yahoo.com ping statistics ---

3 packets transmitted, 3 received, 0% packet loss, time 2003ms

rtt min/avg/max/mdev = 69.551/69.665/69.749/0.083 ms

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