LISTING SYSTEM SERVICES

Let's look at the services that are installed in the machine. In order to do this, we will use the systemctl command (ctl stands for "control").

If you run systemctl, with no parameters, it will list all services that are known to their system. The columns shown are: the name of the file that defines the service, whether they are loaded or not, whether they are active or inactive, what their state is (running, exited, failed) and finally, the long name for the service. You can scroll this list using the PageUp and PageDown keys on your keyboard, and use 'q' to quit.

If you are interested in seeing only the services that are running, you can use the following command:

```
sudo systemctl --state=running
```

This will show a shorter list, although it will still include quite a number of services. Again, you can scroll with PageUp and PageDown and use 'q' to quit.

STOPPING AND STARTING SERVICES

Alright, now that we've listed the services let's practice stopping and starting some of them. The first service that we are going to stop is the rsyslog service. This service is in charge of writing content to the log files, as in /var/log/syslog, /var/log/kern.log, /var/log/auth.log and others. Processes that generate output will send that output to the rsyslog service and the service will write it to the corresponding log files depending on how the system was configured.

Let's first start by checking the status of the service. We do this by using the service command with the status action:

```
sudo service rsyslog status
```

Output:

```
● rsyslog.service - System Logging Service
   Loaded: loaded (/lib/systemd/system/rsyslog.service; enabled; vendor preset: enabled)
   Active: active (running) since Sat 2018-08-11 15:47:10 UTC; 16min ago
     Docs: man:rsyslogd(8)
           http://www.rsyslog.com/doc/
 Main PID: 579 (rsyslogd)
    Tasks: 4 (limit: 4915)
   CGroup: /system.slice/rsyslog.service
           └─579 /usr/sbin/rsyslogd -n

Aug 11 15:47:10 linux-instance systemd[1]: Starting System Logging Service...
Aug 11 15:47:10 linux-instance liblogging-stdlog[579]:  [origin software="rsyslogd" swVersion="8.24.0" x-pid="579"
x-info="http://www.rsyslog.com"] start
Aug 11 15:47:10 linux-instance systemd[1]: Started System Logging Service.
```

This is showing us a lot of information about the service: it's loaded (which means that the OS has the information about the service in memory), it's enabled (which means that it will start automatically on boot), it's active and running. It also tells us where to find some documentation about the service and more. Finally, it shows us the last log lines that this service generated.

We can see this service in action by using the logger command:

```
logger This is a test log entry
```

The logger command will send the text to the rsyslog service and the service will then write it into /var/log/syslog. We can check that this is the case by looking at the last lines in /var/log/syslog.

sudo tail -1 /var/log/syslog

Output:

```
gcpstaging21031_student@linux-instance:~$ tail -1 /var/log/syslog
Aug 11 16:06:05 linux-instance gcpstaging21031_student: This is a test log entry
gcpstaging21031_student@linux-instance:~$
```

Let's now go ahead and stop the rsyslog service:

sudo service rsyslog stop

We need to execute the command with sudo, because while all users can query the status of services, only users with administrator rights can stop or start services.

We get no output from the command. This is a common behavior for many Linux commands. When you ask the system to do something, many commands will just perform the action without generating any output unless there's an error.

To see the current state, we can query the status of the service again:

sudo service rsyslog status

Output:

```
gcpstaging21306_student@linux-instance:~$ sudo service rsyslog status
● rsyslog.service – System Logging Service
   Loaded: loaded (/lib/systemd/system/rsyslog.service; enabled; vendor preset: enabled)
   Active: inactive (dead) since Fri 2018-08-17 16:08:06 UTC; 5s ago
     Docs: man:rsyslogd(8)
           http://www.rsyslog.com/doc/
 Main PID: 1171 (code=exited, status=0/SUCCESS)

Aug 17 16:04:11 linux-instance systemd[1]: Starting System Logging Service...
Aug 17 16:04:12 linux-instance systemd[1]: Started System Logging Service.
Aug 17 16:08:06 linux-instance systemd[1]: Stopping System Logging Service...
Aug 17 16:08:06 linux-instance systemd[1]: Stopped System Logging Service.
Aug 17 16:08:06 linux-instance systemd[1]: Stopped System Logging Service.
gcpstaging21306_student@linux-instance:~$
```

We see that the service is now stopped. We can also see what the command logged to /var/log/syslog when finishing:

sudo tail -5 /var/log/syslog

Output:

```
gcpstaging21306_student@linux-instance:~$ tail -5 /var/log/syslog
Aug 17 16:05:57 linux-instance systemd[7020]: Reached target Default.
Aug 17 16:05:57 linux-instance systemd[7020]: Startup finished in 170ms.
Aug 17 16:05:57 linux-instance systemd[1]: Started User Manager for UID 1001.
Aug 17 16:07:54 linux-instance gcpstaging21306_student: This is a test log entry
Aug 17 16:08:06 linux-instance rsyslogd: [origin software="rsyslogd" swVersion="8.16.0" x-pid="1171" x-info="ht
tp://www.rsyslog.com"] exiting on signal 15.
gcpstaging21306_student@linux-instance:~$
```

In the last line, we see that the rsyslog service has exited and is no longer running.

We can try sending text with our logger command again:

logger This is another test log entry

And then check that the contents of /var/log/syslog:

Output:

```
gcpstaging21306_student@linux-instance:~$ tail /var/log/syslog
Aug 17 16:05:57 linux-instance systemd[1]: Started Session 1 of user gcpstaging21306_student.
Aug 17 16:05:57 linux-instance systemd[7020]: Reached target Timers.
Aug 17 16:05:57 linux-instance systemd[7020]: Reached target Paths.
Aug 17 16:05:57 linux-instance systemd[7020]: Reached target Sockets.
Aug 17 16:05:57 linux-instance systemd[7020]: Reached target Basic System.
Aug 17 16:05:57 linux-instance systemd[7020]: Reached target Default.
Aug 17 16:05:57 linux-instance systemd[7020]: Startup finished in 170ms.
Aug 17 16:05:57 linux-instance systemd[1]: Started User Manager for UID 1001.
Aug 17 16:07:54 linux-instance gcpstaging21306_student: This is a test log entry
Aug 17 16:08:06 linux-instance rsyslogd: [origin software="rsyslogd" swVersion="8.16.0" x-pid="1171" x-info="ht
tp://www.rsyslog.com"] exiting on signal 15.
gcpstaging21306_student@linux-instance:~$
```

We can see that nothing was logged, because rsyslog wasn't running. Let's start it back up:

sudo service rsyslog start

Again, no output, this is expected. We can check the status:

sudo service rsyslog status

Output:

```
gcpstaging21041_student@linux-instance:~$ sudo service rsyslog status
● rsyslog.service - System Logging Service
   Loaded: loaded (/lib/systemd/system/rsyslog.service; enabled; vendor preset: enabled)
   Active: active (running) since Sat 2018-08-11 23:24:10 UTC; 16s ago
     Docs: man:rsyslogd(8)
           http://www.rsyslog.com/doc/
 Main PID: 6723 (rsyslogd)
    Tasks: 4 (limit: 4915)
   CGroup: /system.slice/rsyslog.service
           └─6723 /usr/sbin/rsyslogd -n

Aug 11 23:24:09 linux-instance systemd[1]: Starting System Logging Service...
Aug 11 23:24:09 linux-instance liblogging-stdlog[6723]:  [origin software="rsyslogd" swVersion="8.24.0"
x-pid="6723" x-info="http://www.rsyslog.com"] start
Aug 11 23:24:10 linux-instance systemd[1]: Started System Logging Service.
gcpstaging21041_student@linux-instance:~$
```

And see that it's running again. Let's try our logger command one more time:

logger This is another test log entry

And then check that the contents of /var/log/syslog:

sudo tail /var/log/syslog

Output:

```
gcpstaging21041_student@linux-instance:~$ tail -5 /var/log/syslog
Aug 11 23:24:10 linux-instance systemd[1]: Listening on Syslog Socket.
Aug 11 23:24:10 linux-instance systemd[1]: Starting System Logging Service...
Aug 11 23:24:09 linux-instance liblogging-stdlog:  [origin software="rsyslogd" swVersion="8.24.0" x-pid=
"6723" x-info="http://www.rsyslog.com"] start
Aug 11 23:24:10 linux-instance systemd[1]: Started System Logging Service.
Aug 11 23:25:08 linux-instance gcpstaging21041_student: This is another test log entry
gcpstaging21041_student@linux-instance:~$
```