

Name - Yash Lakhtariya

Enrollment number - 21162101012

Branch - CBA Batch - 61

ITIM Practical 15

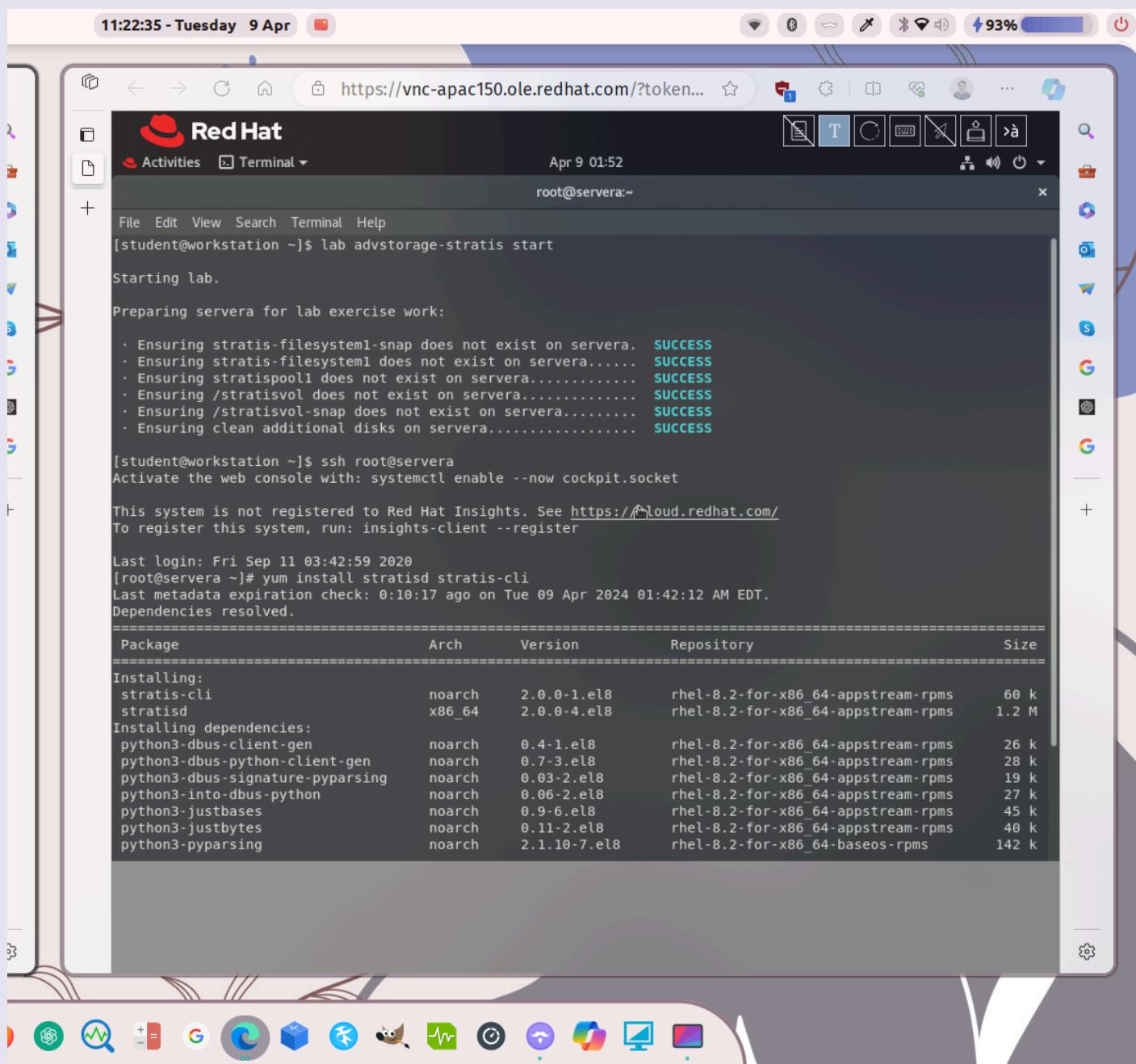
Question: Use stratis to create file systems from pools of storage provided by physical storage devices. So for that you need to perform the below mention tasks :

- Create a thin-provisioned file system using Stratis storage management solution.
- Verify that the Stratis volumes grow dynamically to support real-time data growth.
- Access data from the snapshot of a thin-provisioned file system.

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Screenshots and steps :

1. Login to servera root user using ssh and install stratisd and stratis-cli packages via yum package manager



The screenshot shows a Red Hat Linux desktop environment. A terminal window is open, displaying the following command history and output:

```
11:22:35 - Tuesday 9 Apr
https://vnc-apac150.ole.redhat.com/?token...
Activities Terminal Apr 9 01:52
root@servera:~+
File Edit View Search Terminal Help
[student@workstation ~]$ lab advstorage-stratis start
Starting lab.
Preparing servera for lab exercise work:
· Ensuring stratis-filesystem-snap does not exist on servera. SUCCESS
· Ensuring stratis-filesystem does not exist on servera..... SUCCESS
· Ensuring stratispool does not exist on servera..... SUCCESS
· Ensuring /stratisvol does not exist on servera..... SUCCESS
· Ensuring /stratisvol-snap does not exist on servera..... SUCCESS
· Ensuring clean additional disks on servera..... SUCCESS
[student@workstation ~]$ ssh root@servera
Activate the web console with: systemctl enable --now cockpit.socket
This system is not registered to Red Hat Insights. See https://cloud.redhat.com/
To register this system, run: insights-client --register
Last login: Fri Sep 11 03:42:59 2020
[root@servera ~]# yum install stratisd stratis-cli
Last metadata expiration check: 0:10:17 ago on Tue 09 Apr 2024 01:42:12 AM EDT.
Dependencies resolved.
=====
Package           Arch      Version       Repository      Size
=====
Installing:
stratis-cli        noarch   2.0.0-1.el8   rhel-8.2-for-x86_64-appstream-rpms  60 k
stratisd          x86_64   2.0.0-4.el8   rhel-8.2-for-x86_64-appstream-rpms 1.2 M
Installing dependencies:
python3-dbus-client-gen    noarch   0.4-1.el8    rhel-8.2-for-x86_64-appstream-rpms  26 k
python3-dbus-python-client-gen noarch   0.7-3.el8    rhel-8.2-for-x86_64-appstream-rpms  28 k
python3-dbus-signature-pyparsing noarch   0.03-2.el8   rhel-8.2-for-x86_64-appstream-rpms  19 k
python3-into-dbus-python    noarch   0.06-2.el8   rhel-8.2-for-x86_64-appstream-rpms  27 k
python3-justbases         noarch   0.9-6.el8    rhel-8.2-for-x86_64-appstream-rpms  45 k
python3-justbytes          noarch   0.11-2.el8   rhel-8.2-for-x86_64-appstream-rpms  40 k
python3-pyparsing          noarch   2.1.10-7.el8  rhel-8.2-for-x86_64-baseos-rpms 142 k
```

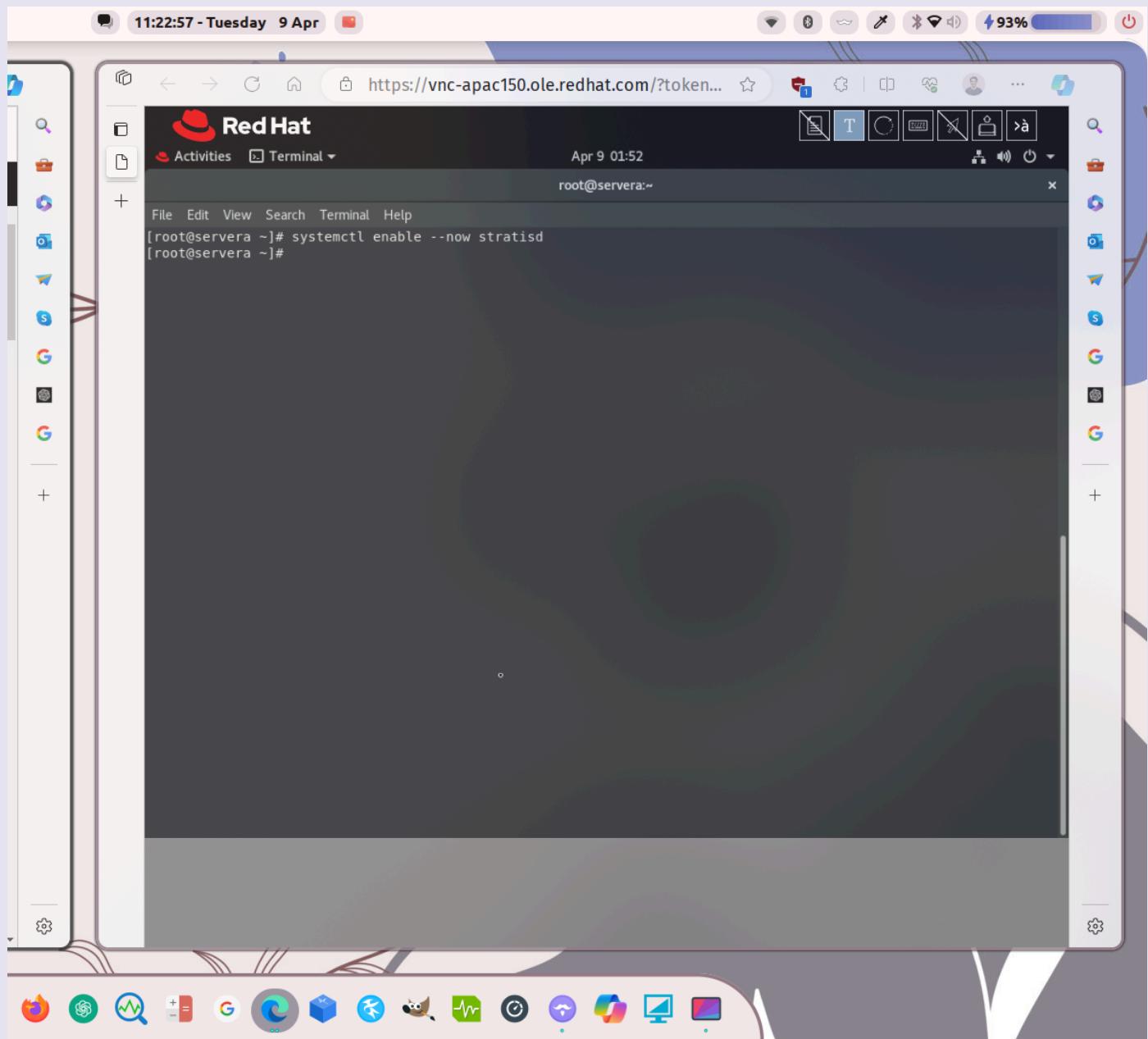
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2. Enable the stratis daemon service using systemctl and start using –now option



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3. Create new stratis pool and check via listing

The screenshot shows a Red Hat Linux desktop environment. A terminal window is open, displaying the following command-line session:

```
[root@servera ~]# systemctl enable --now stratisd
[root@servera ~]#
[root@servera ~]# stratis pool create pool1 /dev/vdb
[root@servera ~]#
[root@servera ~]# stratis pool list
Name          Total Physical
pool1  5 GiB / 37.63 MiB / 4.96 GiB
[root@servera ~]#
[root@servera ~]#
```

The terminal window has a dark background and light-colored text. The title bar shows the URL <https://vnc-apac150.ole.redhat.com/?token...>. The desktop interface includes a top bar with system icons like battery level (93%), signal strength, and a power button. A vertical dock on the right contains icons for various applications, and a bottom dock has icons for common desktop functions.

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4. To add another partition to it, use add-data option and extend the pool

The screenshot shows a Red Hat Linux desktop environment. A terminal window is open, displaying the following command-line session:

```
[root@servera ~]# stratis pool add-data pool1 /dev/vdc
[root@servera ~]#
[root@servera ~]# stratis pool list
Name          Total Physical
pool1  10 GiB / 41.63 MiB / 9.96 GiB
[root@servera ~]#
```

The terminal window has a dark background and light-colored text. The title bar reads "Red Hat" and "Activities Terminal". The desktop interface includes a dock at the bottom with various application icons.

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5. Using blockdev option, the block devices in pool can be listed

The screenshot shows a Red Hat Linux desktop environment. A terminal window is open, displaying the following command-line session:

```
[root@servera ~]# stratis pool add-data pool1 /dev/vdc
[root@servera ~]#
[root@servera ~]# stratis pool list
Name          Total Physical
pool1  10 GiB / 41.63 MiB / 9.96 GiB
[root@servera ~]#
[root@servera ~]# stratis blockdev list pool1
Pool Name Device Node  Physical Size Tier
pool1      /dev/vdb        5 GiB  Data
pool1      /dev/vdc        5 GiB  Data
[root@servera ~]#
[root@servera ~]#
```

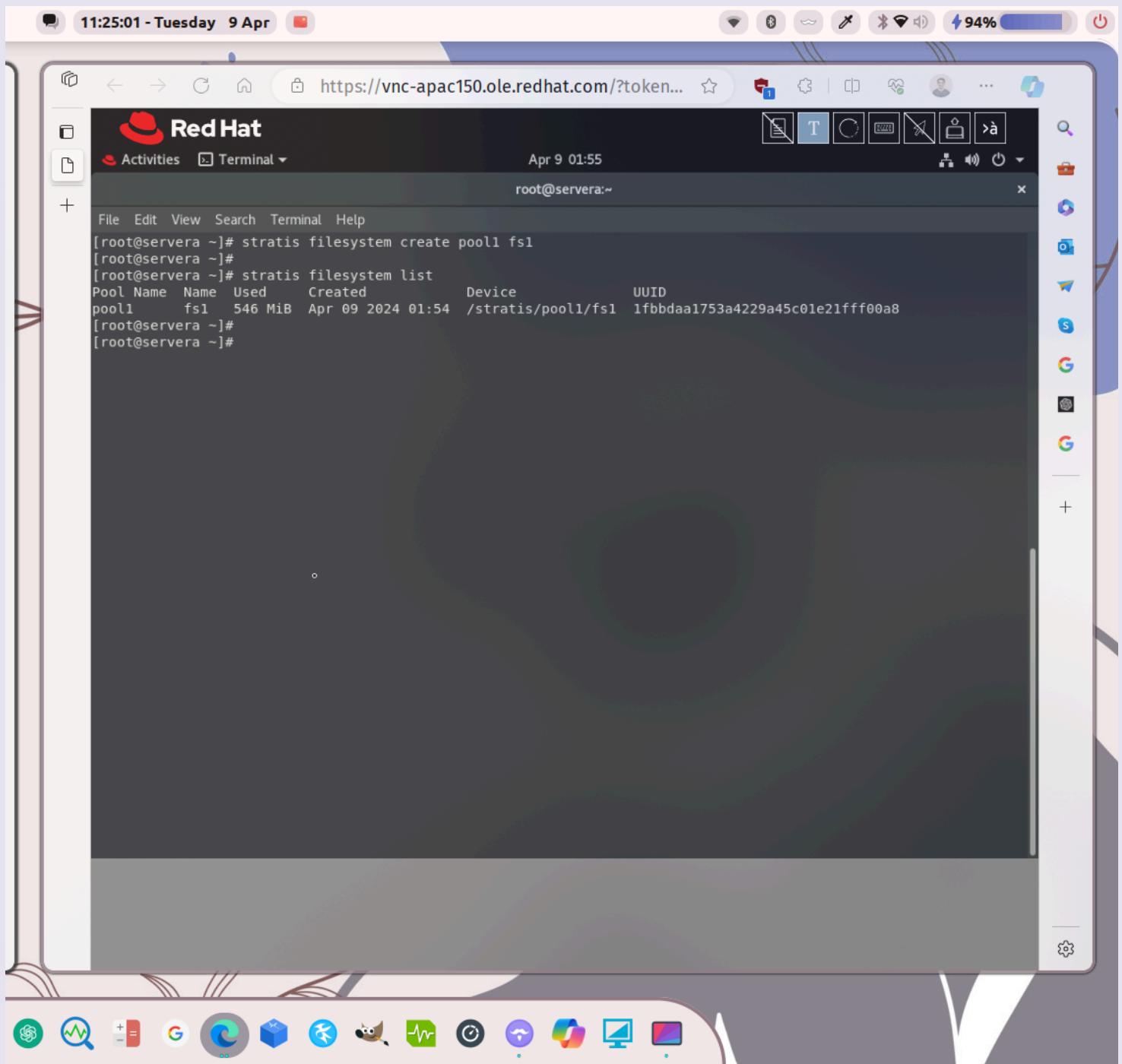
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6. Create and check the new filesystem of stratis



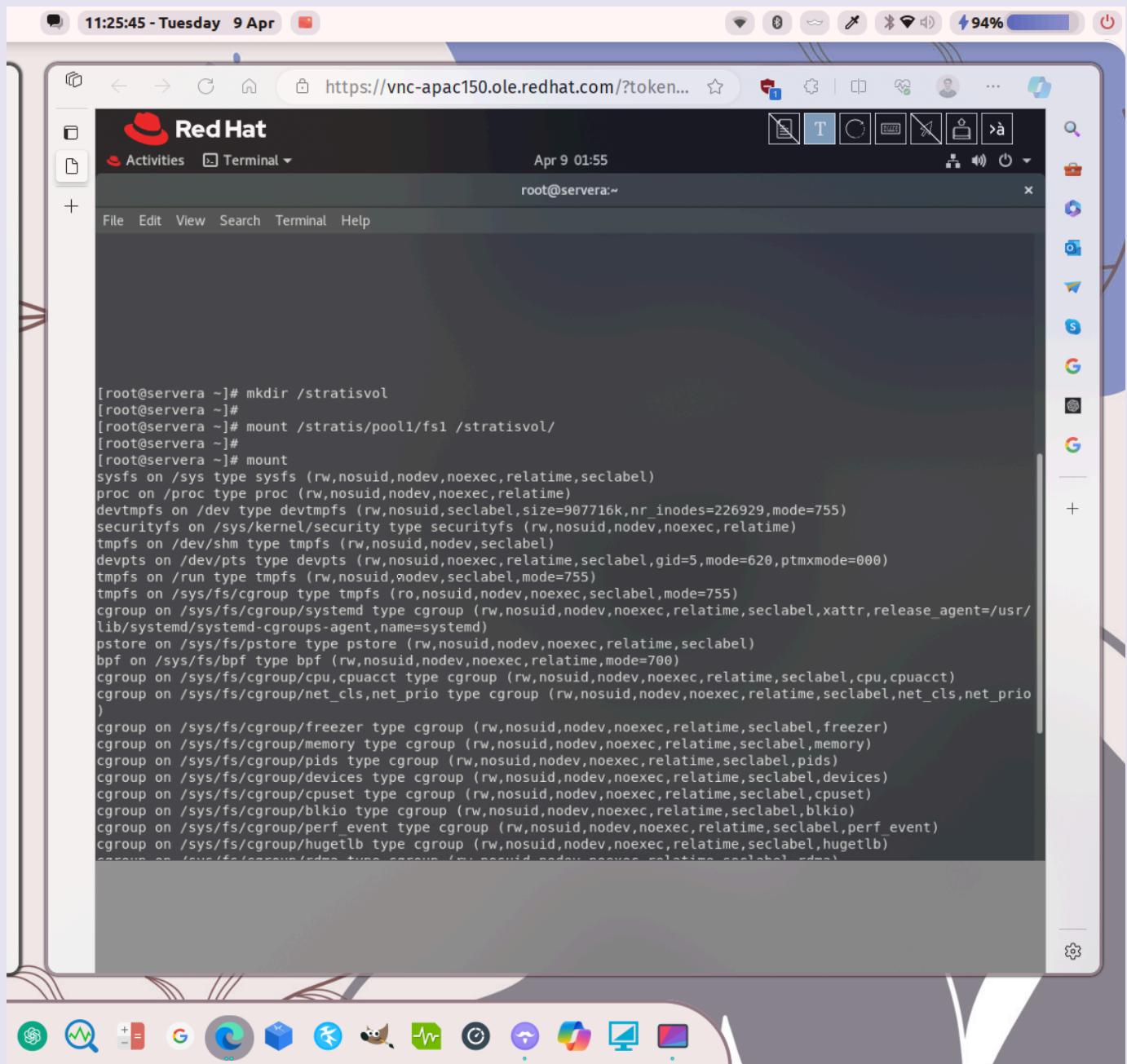
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7. Create the new directory and mount there, the stratis filesystem we created



The screenshot shows a Red Hat Linux desktop environment. A terminal window is open, displaying the following command history:

```
[root@servera ~]# mkdir /stratisvol
[root@servera ~]#
[root@servera ~]# mount /stratis/pool1/fs1 /stratisvol/
[root@servera ~]#
[root@servera ~]# mount
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,relatime,seclabel)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
devtmpfs on /dev type devtmpfs (rw,nosuid,seclabel,size=907716k,nr_inodes=226929,mode=755)
securityfs on /sys/kernel/security type securityfs (rw,nosuid,nodev,noexec,relatime)
tmpfs on /dev/shm type tmpfs (rw,nosuid,nodev,seclabel)
devpts on /dev/pts type devpts (rw,nosuid,noexec,relatime,seclabel,gid=5,mode=620,ptmxmode=000)
tmpfs on /run type tmpfs (rw,nosuid,nodev,seclabel,mode=755)
tmpfs on /sys/fs/cgroup type tmpfs (ro,nosuid,nodev,noexec,seclabel,mode=755)
cgroup on /sys/fs/cgroup/systemd type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,xattr,release_agent=/usr/lib/systemd/systemd-cgroups-agent,name=systemd)
psstore on /sys/fs/psstore type psstore (rw,nosuid,nodev,noexec,relatime,seclabel)
bpf on /sys/fs/bpf type bpf (rw,nosuid,nodev,noexec,relatime,mode=700)
cgroup on /sys/fs/cgroup/cpu,cpuacct type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,cpu,cpuacct)
cgroup on /sys/fs/cgroup/net_cls,net_prio type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,net_cls,net_prio)
cgroup on /sys/fs/cgroup/freezer type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,freezer)
cgroup on /sys/fs/cgroup/memory type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,memory)
cgroup on /sys/fs/cgroup/pids type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,pids)
cgroup on /sys/fs/cgroup/devices type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,devices)
cgroup on /sys/fs/cgroup/cpuset type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,cpuset)
cgroup on /sys/fs/cgroup/blkio type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,blkio)
cgroup on /sys/fs/cgroup/perf_event type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,perf_event)
cgroup on /sys/fs/cgroup/hugetlb type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,hugetlb)
cgroup on /sys/fs/cgroup/edac type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,edac)
```

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8. Create a text file there in the created directory

The screenshot shows a Red Hat Linux desktop environment. A terminal window is open, displaying the following command and its output:

```
[root@servera ~]# echo "Hello World!" > /stratisvol/file1
[root@servera ~]#
[root@servera ~]# stratis filesystem list
Pool Name      Name    Used     Created      Device        UUID
pool1          fs1    546 MiB  Apr 09 2024 01:54  /stratis/pool1/fs1  1fbdbaa1753a4229a45c01e21ffff00a8
[root@servera ~]#
```

The terminal window has a dark background and light-colored text. The title bar says "Red Hat". The desktop interface includes a dock at the bottom with various icons and a vertical panel on the left containing icons for different applications like a file manager, terminal, and system settings.

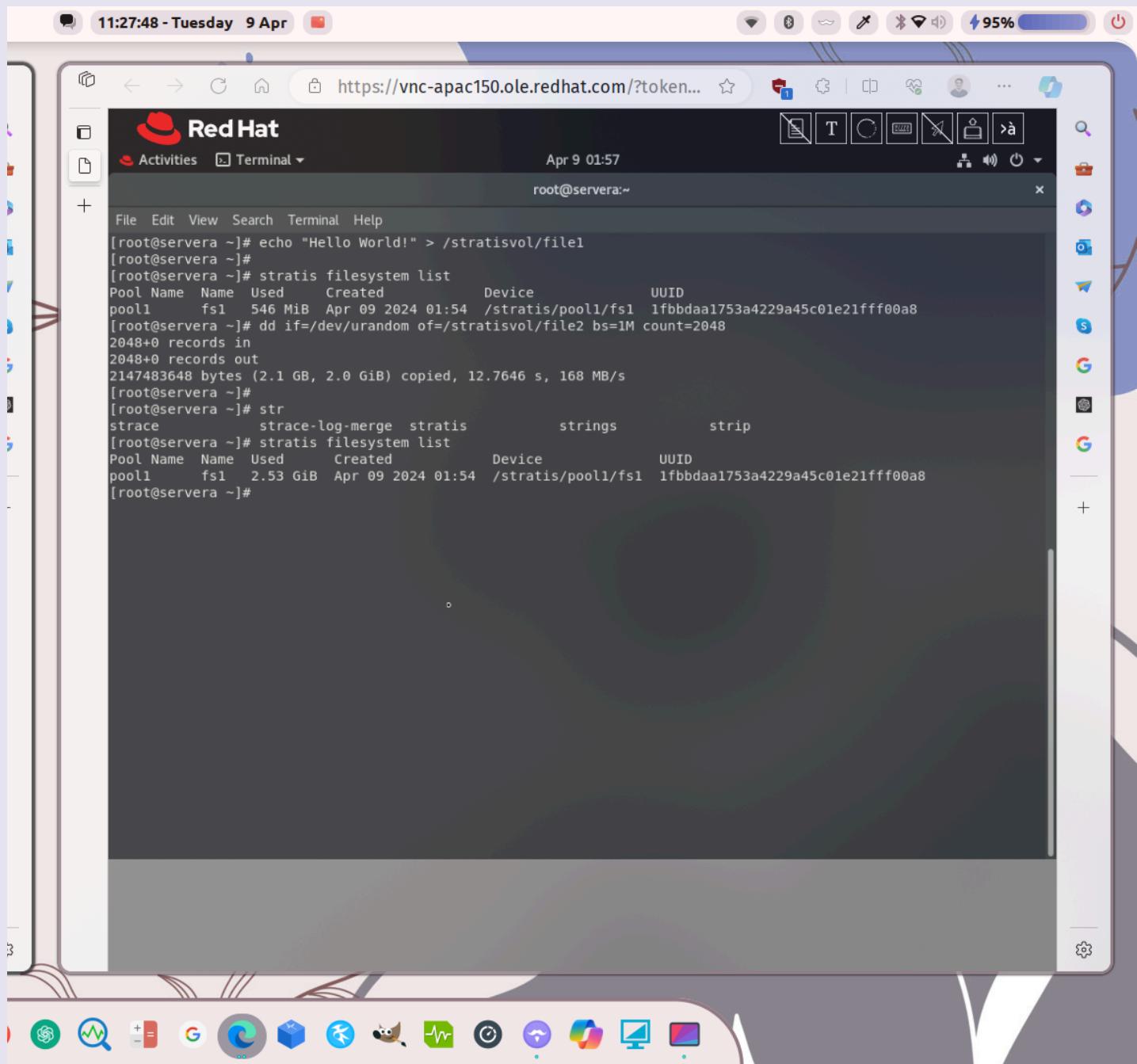
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9. Create a 2GB file using dd command in that directory



The screenshot shows a Red Hat Linux desktop environment. A terminal window is open, displaying the following command and its execution:

```
[root@servera ~]# echo "Hello World!" > /stratisvol/file1
[root@servera ~]#
[root@servera ~]# stratis filesystem list
Pool Name      Name      Used      Created      Device          UUID
pool1          fs1       546 MiB   Apr 09 2024 01:54  /stratis/pool1/fs1  1fbbdaa1753a4229a45c01e21ffff00a8
[root@servera ~]# dd if=/dev/urandom of=/stratisvol/file2 bs=1M count=2048
2048+0 records in
2048+0 records out
2147483648 bytes (2.1 GB, 2.0 GiB) copied, 12.7646 s, 168 MB/s
[root@servera ~]#
[root@servera ~]# str
strace      strace-log-merge  stratis      strings      strip
[root@servera ~]# stratis filesystem list
Pool Name      Name      Used      Created      Device          UUID
pool1          fs1       2.53 GiB  Apr 09 2024 01:54  /stratis/pool1/fs1  1fbbdaa1753a4229a45c01e21ffff00a8
[root@servera ~]#
```

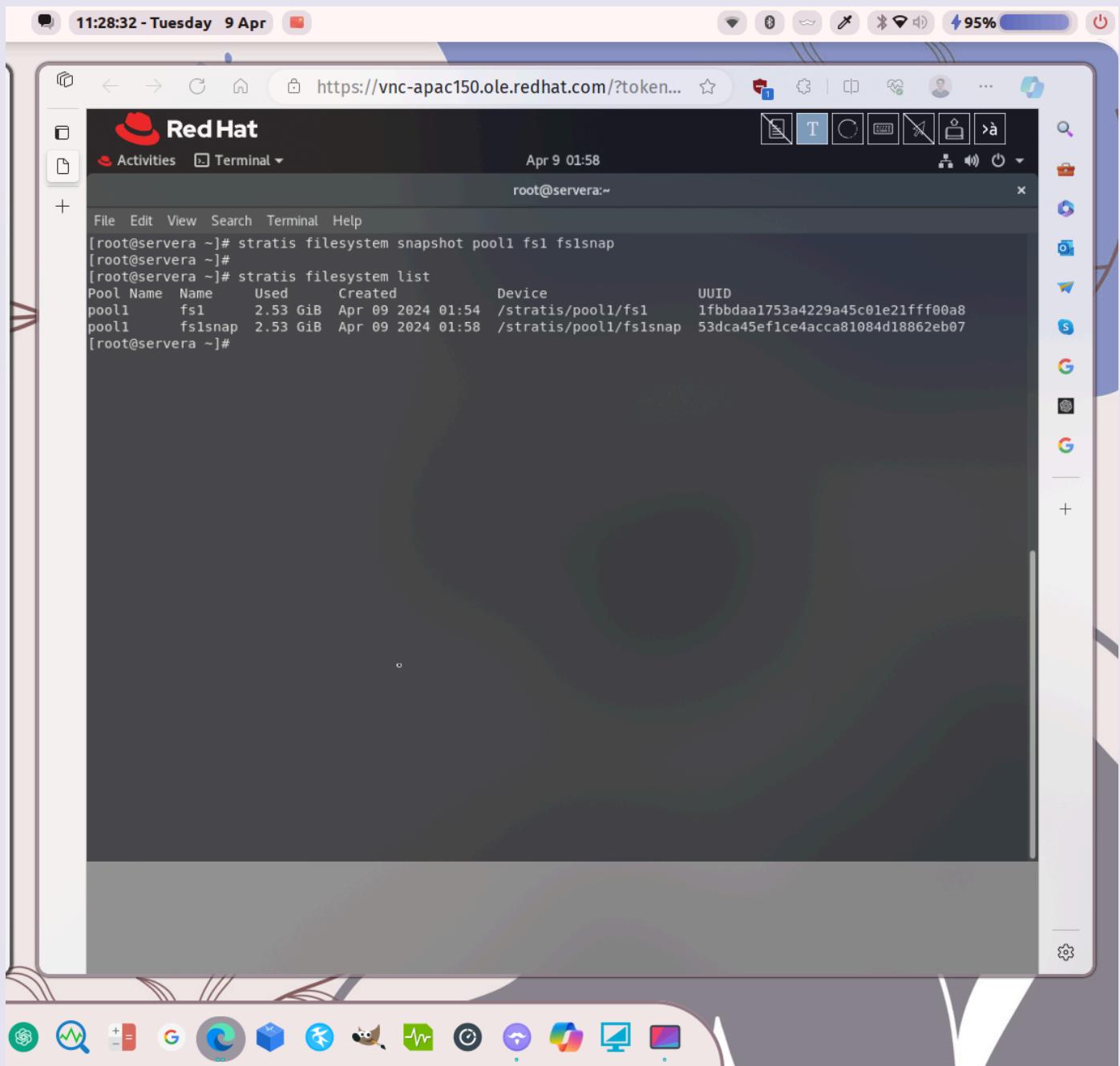
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10. Create a snapshot of the pool's filesystem and check if it exists via listing



The screenshot shows a Red Hat Linux desktop environment. A terminal window is open, displaying the following command-line session:

```
[root@servera ~]# stratis filesystem snapshot pool1 fs1 fs1snap
[root@servera ~]#
[root@servera ~]# stratis filesystem list
Pool Name    Name      Used      Created        Device          UUID
pool1        fs1       2.53 GiB  Apr 09 2024 01:54  /stratis/pool1/fs1   1fbdbdaa1753a4229a45c01e21ffff00a8
pool1        fs1snap   2.53 GiB  Apr 09 2024 01:58  /stratis/pool1/fs1snap  53dca45ef1ce4acca81084d18862eb07
[root@servera ~]#
```

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11. For demonstration purpose of use of snapshot, remove the text file we created

```
11:28:58 - Tuesday 9 Apr  https://vnc-apac150.ole.redhat.com/?token...  95%
Red Hat Activities Terminal  Apr 9 01:58
root@servera:~#
File Edit View Search Terminal Help
[root@servera ~]# stratis filesystem snapshot pool1 fs1 fs1snap
[root@servera ~]#
[root@servera ~]# stratis filesystem list
Pool Name  Name  Used  Created  Device  UUID
pool1    fs1    2.53 GiB  Apr 09 2024 01:54  /stratis/pool1/fs1    1fbdbaa1753a4229a45c01e21fff00a8
pool1    fs1snap  2.53 GiB  Apr 09 2024 01:58  /stratis/pool1/fs1snap  53dca45ef1ce4acca81084d18862eb07
[root@servera ~]#
[root@servera ~]# rm /stratisvol/file1
rm: remove regular file '/stratisvol/file1'? y
[root@servera ~]#
[root@servera ~]#
```

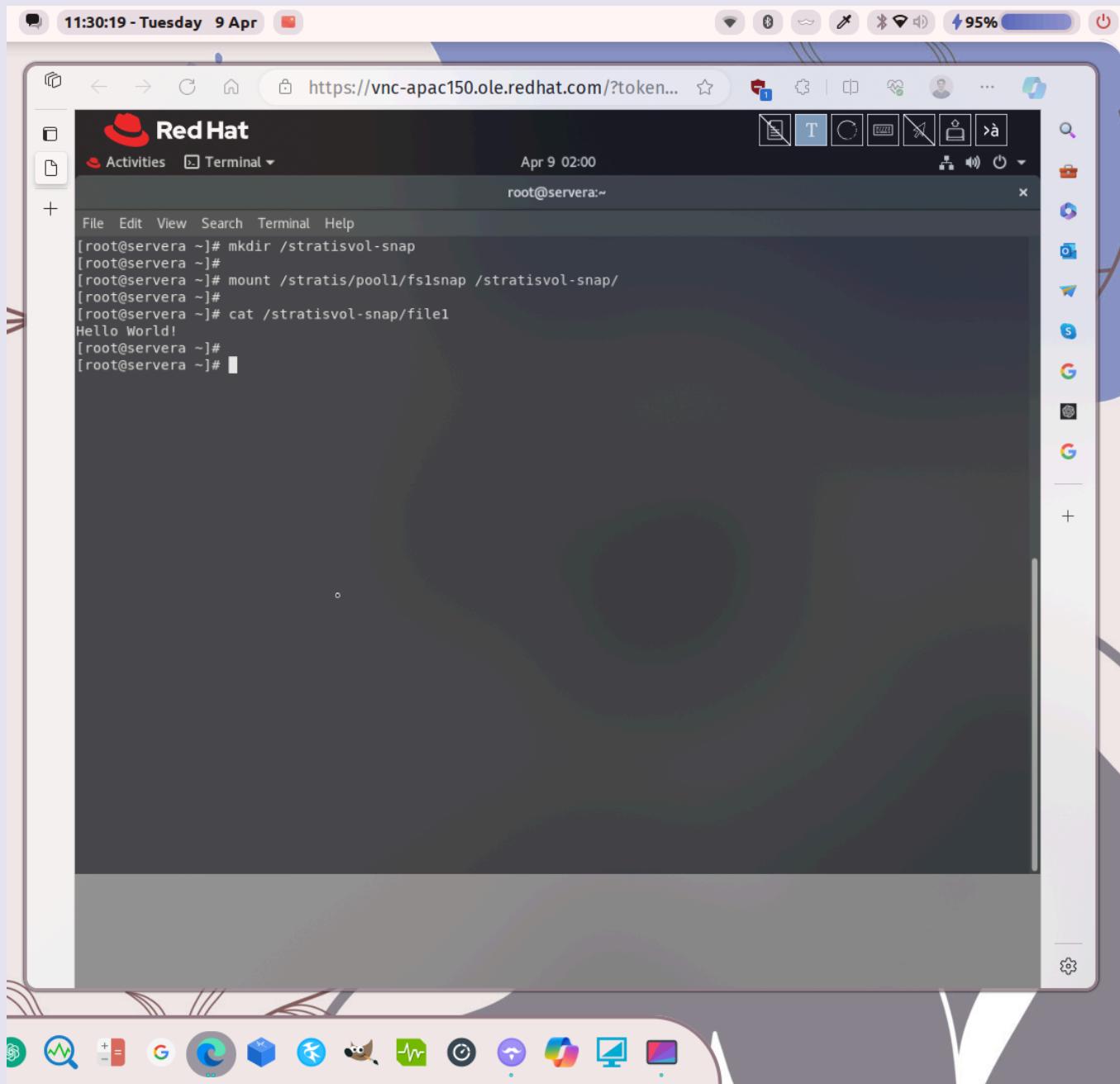
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12. For using the snapshot, mount it on some new directory and check, the text file we deleted from original filesystem exists here



The screenshot shows a Red Hat Linux desktop environment. A terminal window is open, displaying the following command-line session:

```
[root@servera ~]# mkdir /stratisvol-snap
[root@servera ~]#
[root@servera ~]# mount /stratis/pool1/fs1snap /stratisvol-snap/
[root@servera ~]#
[root@servera ~]# cat /stratisvol-snap/file1
Hello World!
[root@servera ~]#
[root@servera ~]#
```

The desktop interface includes a top bar with system status icons (date, battery level, signal strength), a dock at the bottom with various application icons, and a vertical panel on the right containing a search bar and a list of application icons.

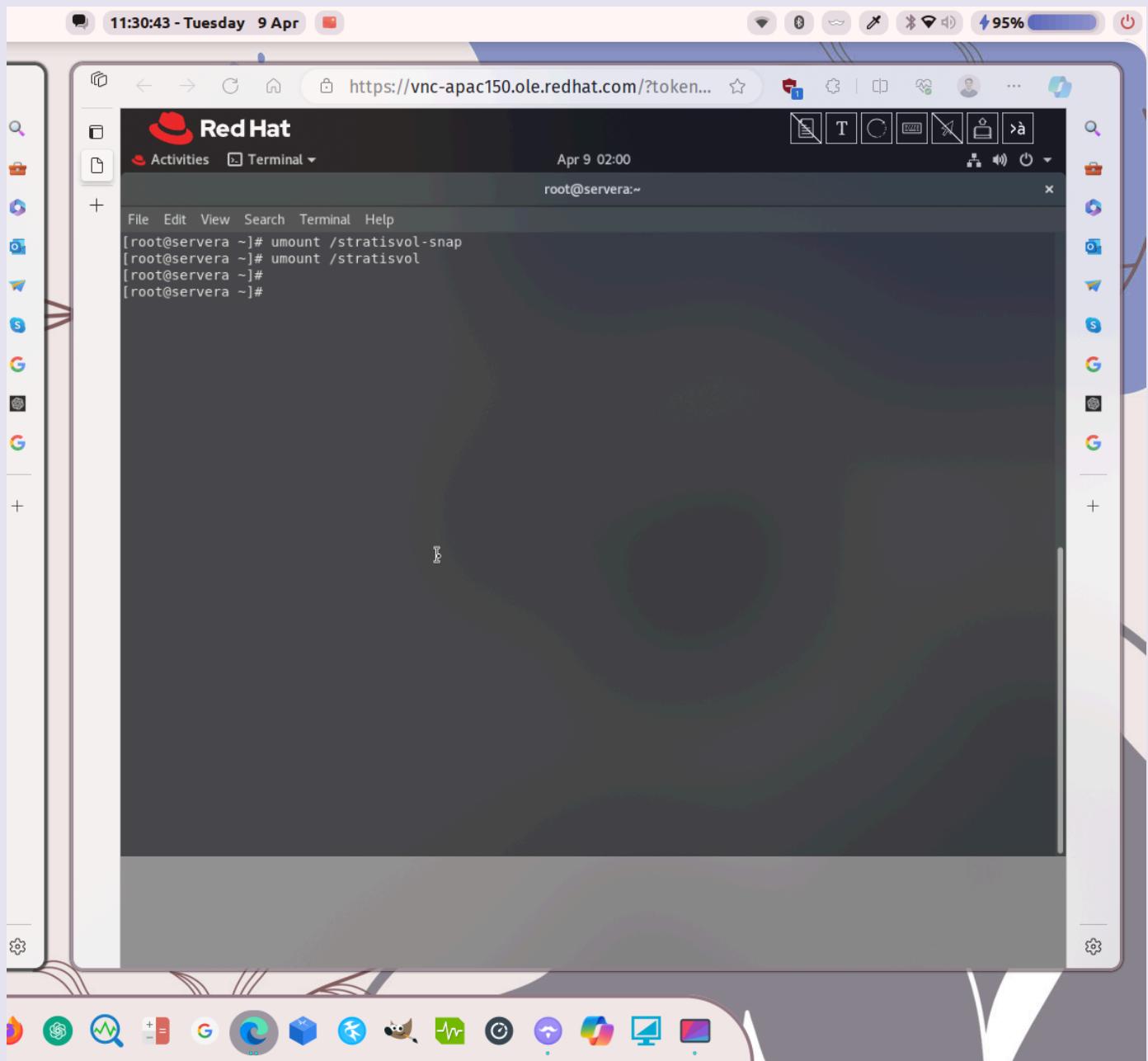
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13. Unmount both the original and snapshot filesystems from directories



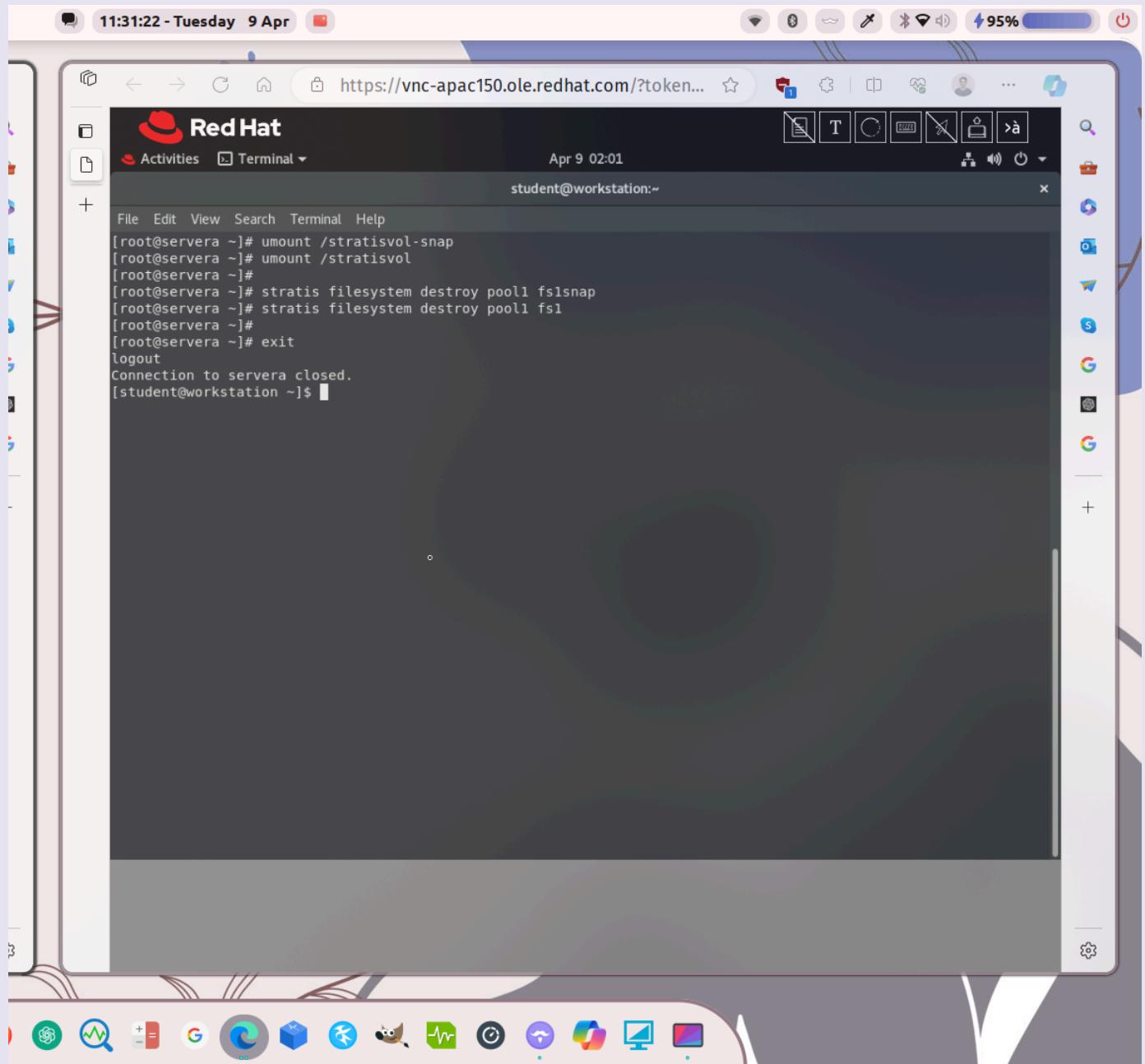
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14. Delete both the filesystems via destroy option



The screenshot shows a Red Hat Linux desktop environment. A terminal window is open, displaying the following command history:

```
[root@servera ~]# umount /stratisvol-snap
[root@servera ~]# umount /stratisvol
[root@servera ~]#
[root@servera ~]# stratis filesystem destroy pool1 fs1snap
[root@servera ~]# stratis filesystem destroy pool1 fs1
[root@servera ~]#
[root@servera ~]# exit
logout
Connection to servera closed.
[student@workstation ~]$
```