



**Ganpat
University**

॥ विद्यया समाजोत्कर्षः ॥

**Institute of
Computer
Technology**

Name: Tushar Panchal

En.No: 21162101014

Sub: ITIM (IT Infrastructure & Management)

Branch: CBA

Batch:61

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.

» Steps : Below I provided steps to do this practical.

» **From workstation, open an SSH session to servera as student & Switch to the root user:**

```

Red Hat Activities Terminal Apr 15 21:44
root@servera:~ x
File Edit View Search Terminal Help
[student@workstation ~]$ lab advstorage-stratis start
Starting lab.
Preparing servera for lab exercise work:
· Ensuring stratis-filesystem1-snap does not exist on servera. SUCCESS
· Ensuring stratis-filesystem1 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 student@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: Tue Sep 1 08:19:05 2020 from 172.25.250.9
[student@servera ~]$ sudo -i
[sudo] password for student:
[root@servera ~]# 

```

Commands :

lab advstorage-stratis start

ssh student@servera

sudo -i

» **Install the stratisd and stratis-cli packages:**

```

Red Hat Activities Terminal Apr 15 21:46
root@servera:~ x
File Edit View Search Terminal Help
[root@servera ~]# yum install stratisd stratis-cli
Last metadata expiration check: 0:13:07 ago on Mon 15 Apr 2024 09:33:02 PM EDT.
Dependencies resolved.
=====
 Package           Arch   Version      Repository      Size
=====
Installing:
 stratisd          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
Transaction Summary
=====
Install 9 Packages

Total download size: 1.6 M
Installed size: 5.0 M
Is this ok [y/N]: y
Downloading Packages:
(1/9): python3-pyparsing-2.1.10-7.el8.noarch.rpm           24 MB/s | 142 kB     00:00
(2/9): python3-dbus-client-gen-0.4-1.el8.noarch.rpm        4.0 MB/s | 26 kB     00:00
(3/9): python3-dbus-python-client-gen-0.7-3.el8.noarch.rpm 4.0 MB/s | 28 kB     00:00

```

Commands :

yum install stratisd stratis-cli

» **Activate the stratisd service.**

```
[root@servera ~]# systemctl enable --now stratisd
```

Commands :

```
systemctl enable --now stratisd
```

» **Ensure that the stratispool1 Stratis pool exists with the block device /dev/vdb.**

-Create a Stratis pool named stratispool1.

-Verify the availability of stratispool1.

```
[root@servera ~]# stratis pool create stratispool1 /dev/vdb
[root@servera ~]# stratis pool list
Name          Total Physical
stratispool1  5 GiB / 37.63 MiB / 4.96 GiB
```

Commands :

```
stratis pool create stratispool1 /dev/vdb
```

```
stratis pool list
```

» **Expand the capacity of stratispool1 using the /dev/vdc block device.**

-Add the block device /dev/vdc to stratispool1.

-Verify the size of stratispool1.

-Verify the block devices that are currently members of stratispool1.

```
[root@servera ~]# stratis pool add-data stratispool1 /dev/vdc
[root@servera ~]# stratis pool list
Name          Total Physical
stratispool1  10 GiB / 41.63 MiB / 9.96 GiB
[root@servera ~]# stratis blockdev list stratispool1
Pool Name    Device Node  Physical Size  Tier
stratispool1  /dev/vdb      5 GiB   Data
stratispool1  /dev/vdc      5 GiB   Data
```

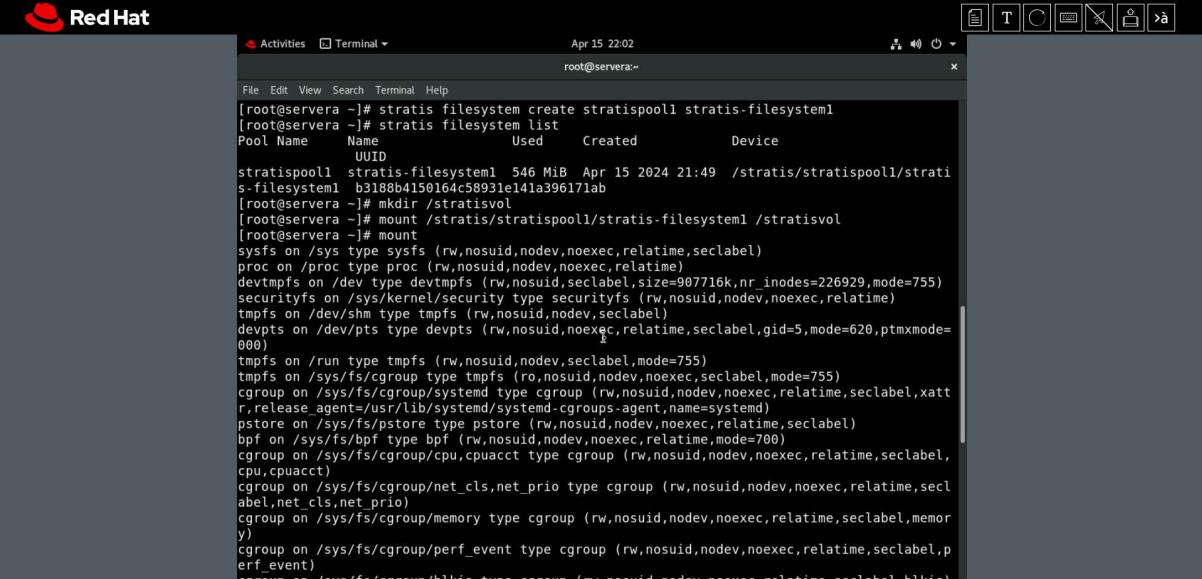
Commands :

```
stratis pool add-data stratispool1 /dev/vdc
```

```
stratis pool list
```

```
stratis blockdev list stratispool1
```

- » **Add a thin-provisioned file system named stratis-filesystem1 in the pool stratispool1. Mount the file system on /stratisvol. Create a file on the stratis-filesystem1 file system named file1 containing the text Hello World!.**
- Create the thin-provisioned file system stratis-filesystem1 on stratispool1.
 - Verify the availability of stratis-filesystem1.
 - Create a directory named /stratisvol.
 - Mount stratis-filesystem1 on /stratisvol.
 - Verify that the stratis-filesystem1 volume is mounted on /stratisvol
 - Create the text file /stratisvol/file1.



```
[root@servera ~]# stratis filesystem create stratispool1 stratis-filesystem1
[root@servera ~]# stratis filesystem list
Pool Name          Name           Used     Created      Device
                  UUID
stratispool1   stratis-filesystem1 546 MiB Apr 15 2024 21:49  /stratis/stratispool1/stratis-filesystem1
b3188b4150164c58931e141a396171ab
[root@servera ~]# mkdir /stratisvol
[root@servera ~]# mount /stratis/stratispool1/stratis-filesystem1 /stratisvol
[root@servera ~]# mount
sysfs on /proc 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)
pstree on /sys/fs/pstree type pstree (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/memory type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,memory)
cgroup on /sys/fs/cgroup/perf_event type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,perf_event)
cgroup on /sys/fs/cgroup/blkio type cgroup (rw,nosuid,nodev,noexec,relatime,seclabel,blkio)
```

71ab on /stratisvol type xfs (rw,relatime,seclabel,attr2,inode,quota)

```
[root@servera ~]# echo "Hello World!" > /stratisvol/file1
[root@servera ~]#
```

Commands :

```
stratis filesystem create stratispool1 stratis-filesystem1
stratis filesystem list
mkdir /stratisvol
mount /stratis/stratispool1/stratis-filesystem1 /stratisvol
mount
echo "Hello World!" > /stratisvol/file1
```

» **Verify that the thin-provisioned file system stratis-filesystem1 dynamically grows as the data on the file system grows.**

- View the current usage of stratis-filesystem1.
- Create a 2 GiB file on stratis-filesystem1 using dd command.
- Verify the usage of stratis-filesystem1.

```
[root@servera ~]# stratis filesystem list
Pool Name      Name      Used     Created      Device          UUID
stratispool1   stratis-filesystem1 546 MiB Apr 15 2024 21:49 /stratis/stratispool1/stratis-filesystem1 b3188b4150164c58931e141a396171ab
[root@servera ~]#
[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, 12.6939 s, 169 MB/s
[root@servera ~]#
[root@servera ~]# stratis filesystem list
Pool Name      Name      Used     Created      Device          UUID
stratispool1   stratis-filesystem1 2.53 GiB Apr 15 2024 21:49 /stratis/stratispool1/stratis-filesystem1 b3188b4150164c58931e141a396171ab
[root@servera ~]#
```

Commands :

```
stratis filesystem list
dd if=/dev/urandom of=/stratisvol/file2 bs=1M count=2048
stratis filesystem list
```

» **Create a snapshot of stratis-filesystem1 named stratis-filesystem1-snap. The snapshot will provide you with access to any file that is deleted from stratis-filesystem1.**

- View the current usage of stratis-filesystem1.
- Create a 2 GiB file on stratis-filesystem1 using dd command.
- Verify the usage of stratis-filesystem1.
- Create a snapshot of stratis-filesystem1.
- Verify the availability of the snapshot .
- Remove the /stratisvol/file1 file.
- Create the directory /stratisvol-snap.
- Mount the stratis-filesystem1-snap snapshot on /stratisvol-snap.

- Confirm that you can still access the file you deleted from stratis-filesystem1.

```
[root@servera ~]# stratis filesystem snapshot stratispool1 stratis-filesystem1 stratis-filesystem1-snap
[root@servera ~]# stratis filesystem list
Pool Name      Name          Used     Created      Device
              UUID
stratispool1  stratis-filesystem1    2.53 GiB Apr 15 2024 21:49 /stratis/stratispool1/
stratis-filesystem1  b3188b4150164c58931e141a396171ab
stratispool1  stratis-filesystem1-snap  2.53 GiB Apr 15 2024 22:11 /stratis/stratispool1/
stratis-filesystem1-snap  825cf13262364565a92e628dc8836aa5
[root@servera ~]# rm /stratisvol/file1
rm: remove regular file '/stratisvol/file1'? y
[root@servera ~]#
[root@servera ~]# mkdir /stratisvol-snap
[root@servera ~]# mount /stratis/stratispool1/stratis-filesystem1-snap /stratisvol-snap
[root@servera ~]#
[root@servera ~]# cat /stratisvol-snap/file1
Hello World!
[root@servera ~]#
```

Commands :

```
stratis filesystem snapshot stratispool1 stratis-filesystem1 stratis-filesystem1-snap
stratis filesystem list
rm /stratisvol/file1
mkdir /stratisvol-snap
mount /stratis/stratispool1/stratis-filesystem1-snap /stratisvol-snap
cat /stratisvol-snap/file1
```

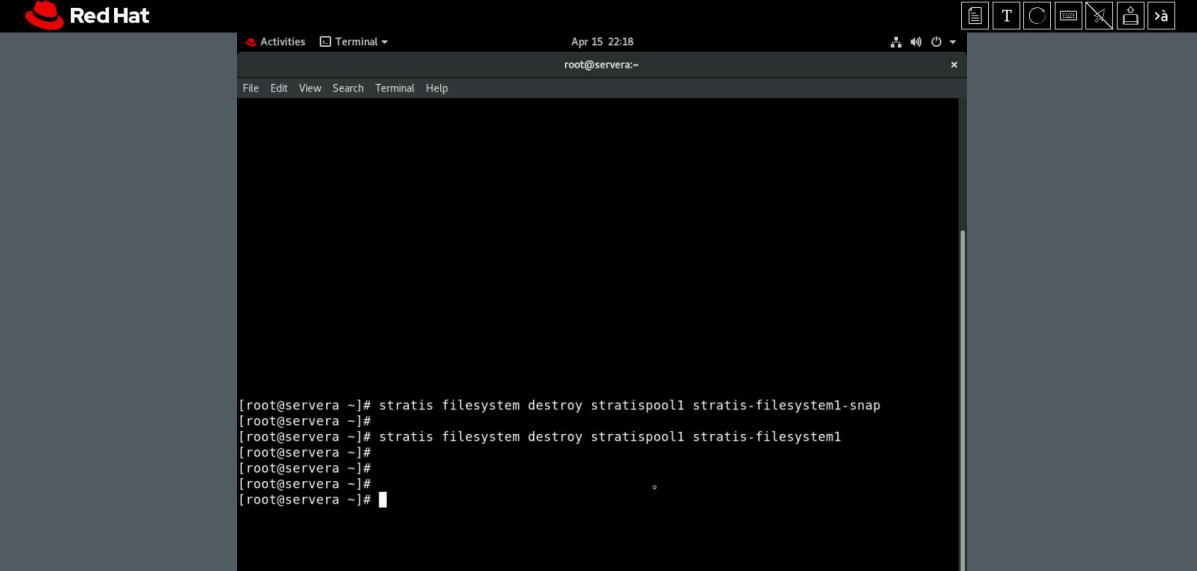
» Unmount /stratisvol and /stratisvol-snap.

```
[root@servera ~]# umount /stratisvol-snap
[root@servera ~]# umount /stratisvol
[root@servera ~]#
```

Commands :

```
umount /stratisvol-snap
umount /stratisvol
```

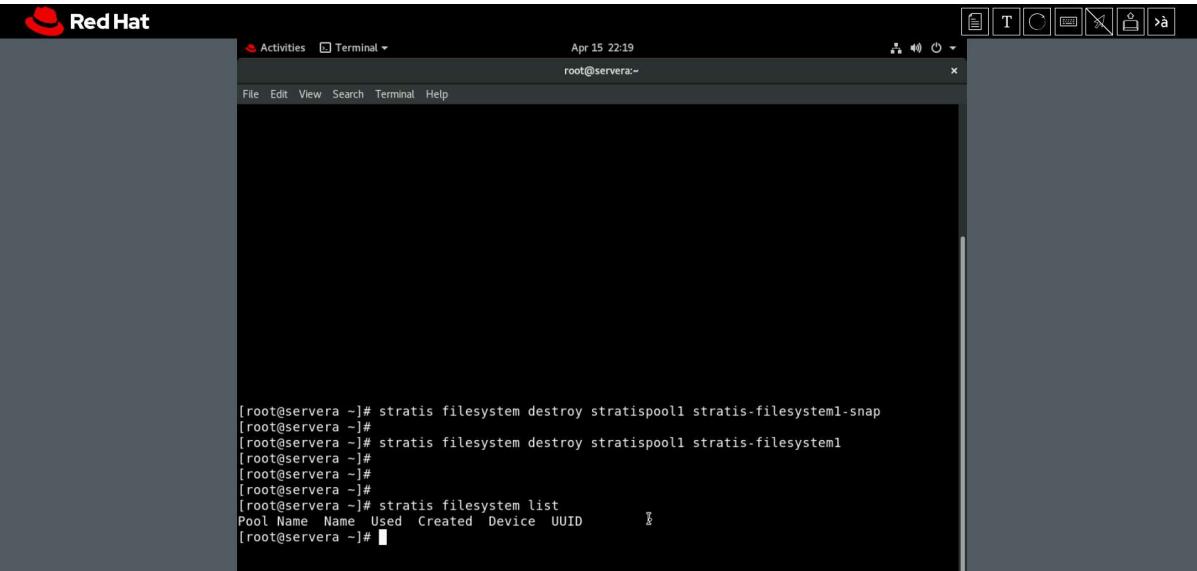
- » **Remove the thin-provisioned file system stratis-filesystem1 and its snapshot stratis-filesystem1-snap from the system.**
- Destroy stratis-filesystem1-snap.
 - Destroy stratis-filesystem1.



```
[root@servera ~]# stratis filesystem destroy stratispool1 stratis-filesystem1-snap
[root@servera ~]#
[root@servera ~]# stratis filesystem destroy stratispool1 stratis-filesystem1
[root@servera ~]#
[root@servera ~]#
[root@servera ~]# stratis filesystem list
Pool Name Name Used Created Device UUID
[root@servera ~]#
```

Commands :

stratis filesystem destroy stratispool1 stratis-filesystem1-snap
stratis filesystem destroy stratispool1 stratis-filesystem1



```
[root@servera ~]# stratis filesystem destroy stratispool1 stratis-filesystem1-snap
[root@servera ~]#
[root@servera ~]# stratis filesystem destroy stratispool1 stratis-filesystem1
[root@servera ~]#
[root@servera ~]#
[root@servera ~]# stratis filesystem list
Pool Name Name Used Created Device UUID
[root@servera ~]#
```

To check if the Stratis filesystem and its snapshot have been destroyed successfully.

stratis filesystem list