Prod Workbench down -502 error Documentation

Problem Statement

> *The main launcher page becames unresponsive and throws 502 error but we can use /health-check and /admin path. This confirms the problem is not with the service and ingress. Users can't able to log in to the Workbench launcher*

Core observations

- rworkspaces process did't start for users so the socket file is not getting created.
- The 502 error is shown to users after exactly 45 seconds after hitting the url.
- Okta succeeds and Workbench pod logs show the successfull authnetication of user but there is no response coming back to user.
-

Observation 1

The error obtained from container logs when the issue occurs:

> [rserver] ERROR Error connecting to session for /workspaces/?
> resumeSession=38b41d71&projectId=ae4bfcfc78a31 (sramesh:272808) in 45.2s error: system error 2
> (No such file or directory) [host: posit-workbench.aws-exelixis.com, uri: /workspaces/?
> resumeSession=38b41d71&projectId=ae4bfcfc78a31, path: /var/run/rstudio-server/rstudio-
> rsession/sramesh-ds/3c286bd3/3c286bd3, user-id: 549069055]; OCCURRED AT void
> rstudio::core::http::LocalStreamAsyncClient::handleConnect(const rstudio_boost::system::error_code&)
> src/cpp/server/session/ServerSessionProxy.cpp:125; LOGGED FROM: void rstudio::server::session_proxy::
> {anonymous}::handleContentError(rstudio_boost::shared_ptrrstudio::core::http::AsyncConnection, const

> rstudio::core::r_util::SessionContext&, const rstudio::core::Error&)
>
> src/cpp/server/session/ServerSessionProxy.cpp:610

Debugging the pod , Found that server-data-dir uses /var/run and stores all the data in rstudio-server folder.

```
root@prod-ent-posit-workbench-rstudio-workbench-5458d9cf67-hx5xq:/# cd /run
root@prod-ent-posit-workbench-rstudio-workbench-5458d9cf67-hx5xq:/run# ll
total 12
drwxr-xr-x. 1 root           root            143 Jan 27 08:14 ./
drwxr-xr-x. 1 root           root            110 Jan 27 07:12 ../
drwxrwxrwt. 1 root           root             28 Jun  9  2025 lock/
drwxr-xr-x. 2 root           root              6 Jun  9  2025 log/
drwxr-xr-x. 2 root           root              6 May 30  2025 mount/
drwxrwxrwt. 1 rstudio-server rstudio-server   77 Jan 27 08:14 rstudio-server/
-rw-r--r--. 1 root           root              4 Jan 27 08:14 rstudio-server.pid
drwxr-xr-x. 4 root           root             52 Jan 27 07:12 secrets/
drwxr-xr-x. 2 root           root              6 Jun  9  2025 sendsigs.omit.d/
lrwxrwxrwx. 1 root           root              8 Jun  9  2025 shm -> /dev/shm/
-rw-------. 1 root           root              3 Jan 27 07:12 sssd.pid
drwx--x--x. 2 root           root              6 Jun  9  2025 sudo/
-rw-r--r--. 1 root           root              3 Jan 27 07:12 supervisord.pid
srwx------. 1 root           root              0 Jan 27 07:12 supervisor.sock=
drwxr-xr-x. 1 root           root            128 Jun  9  2025 systemd/
drwxr-xr-x. 2 root           root              6 Jun  9  2025 user/
root@prod-ent-posit-workbench-rstudio-workbench-5458d9cf67-hx5xq:/run# cd rstudio-server
root@prod-ent-posit-workbench-rstudio-workbench-5458d9cf67-hx5xq:/run/rstudio-server# ll
total 4
drwxrwxrwt. 1 rstudio-server rstudio-server   77 Jan 27 08:14 ./
```

The error from above suggest the folder is not available in the path. The folder contains rstudio server directory which contains the socket files needed to run and another directory rstudio-rsessions in which users directory is created when log in and temporary data is stored in that.

```
root@prod-ent-posit-workbench-rstudio-workbench-5458d9cf67-hx5xq:/run# cd rstudio-server
root@prod-ent-posit-workbench-rstudio-workbench-5458d9cf67-hx5xq:/run/rstudio-server# ll
total 4
drwxrwxrwt. 1 rstudio-server rstudio-server   77 Jan 27 08:14 ./
drwxr-xr-x. 1 root           root            143 Jan 27 08:14 ../
-rw-r--r--. 1 root           rstudio-server    5 Jan 27 08:14 rserver-http.pid
drwxrwxrwt. 1 rstudio-server rstudio-server  146 Jan 27 17:17 rstudio-rserver/
drwxrwxrwt. 1 rstudio-server rstudio-server  194 Jan 27 17:17 rstudio-rsession/
root@prod-ent-posit-workbench-rstudio-workbench-5458d9cf67-hx5xq:/run/rstudio-server# cd rstudio-rsession/
root@prod-ent-posit-workbench-rstudio-workbench-5458d9cf67-hx5xq:/run/rstudio-server/rstudio-rsession# ll
total 0
drwxrwxrwt. 1 rstudio-server rstudio-server  194 Jan 27 17:17 ./
drwxrwxrwt. 1 rstudio-server rstudio-server   77 Jan 27 08:14 ../
drwxr-xr-x. 3 rstudio-server rstudio-server   22 Jan 27 15:17 dberel-ds/
drwxr-xr-x. 3 rstudio-server rstudio-server   22 Jan 27 15:48 jcallaway-ds/
drwxr-xr-x. 3 rstudio-server rstudio-server   22 Jan 27 17:17 jman-ds/
drwxr-xr-x. 3 rstudio-server rstudio-server   22 Jan 27 12:29 kramachandir-ds/
drwxr-xr-x. 3 rstudio-server rstudio-server   22 Jan 27 13:25 ppatadiya-ds/
drwxr-xr-x. 3 rstudio-server rstudio-server   22 Jan 27 14:41 rvasquez-ds/
drwxr-xr-x. 3 rstudio-server rstudio-server   22 Jan 27 17:02 schen-ds/
drwxr-xr-x. 3 rstudio-server rstudio-server   22 Jan 27 14:46 slewis-ds/
drwxr-xr-x. 3 rstudio-server rstudio-server   22 Jan 27 07:12 sramesh-ds/
drwxr-xr-x. 3 rstudio-server rstudio-server   22 Jan 27 15:12 ykondapavulu-ds/
root@prod-ent-posit-workbench-rstudio-workbench-5458d9cf67-hx5xq:/run/rstudio-server/rstudio-rsession# cd kramachandir-ds/
root@prod-ent-posit-workbench-rstudio-workbench-5458d9cf67-hx5xq:/run/rstudio-server/rstudio-rsession/kramachandir-ds# ll
total 0
drwxr-xr-x. 3 rstudio-server rstudio-server   22 Jan 27 12:29 ./
drwxrwxrwt. 1 rstudio-server rstudio-server  194 Jan 27 17:17 ../
drwxrwxrwt. 2 rstudio-server rstudio-server    6 Jan 27 12:35 3c286bd3/
root@prod-ent-posit-workbench-rstudio-workbench-5458d9cf67-hx5xq:/run/rstudio-server/rstudio-rsession/kramachandir-ds# cd 3c286bd3/
```

When Playing with permissions, Changing permissions to 750 in main rstudio-server dir replicates the issue. From the documentation:

Configuring the run-time data directory 🔗

Posit Workbench needs to write several temporary files while running to function properly. The directory at which these files is written can be set by the `server-data-dir` configuration option by modifying `/etc/rstudio/rserver.conf` like so:

```
server-data-dir=/var/run/rstudio-server
```

The data directory defaults to `/var/run/rstudio-server` but you can change it to any directory. The specified location must be readable by any users of Posit Workbench.

the users need permission to access the folders. Somewhere deep in the pod, either the resources are getting killed or there happening a permission issue which resultsin main page not loading.

Lastly checked, when the workbench crashed on today(27/01), while checking the path, Found that, a file is missing from the locations it needs to be.

```
drwxr-xr-x. 3 rstudio-server rstudio-server  22 Jan 27 17:02 schen-ds/
drwxr-xr-x. 3 rstudio-server rstudio-server  22 Jan 27 14:46 slewis-ds/
drwxr-xr-x. 3 rstudio-server rstudio-server  22 Jan 27 07:12 sramesh-ds/
drwxr-xr-x. 3 rstudio-server rstudio-server  22 Jan 27 15:12 ykondapavulu-ds/
root@prod-ent-posit-workbench-rstudio-workbench-5458d9cf67-hx5xq:/run/rstudio-server/rstudio-rsession# cd kramachandir-ds/
root@prod-ent-posit-workbench-rstudio-workbench-5458d9cf67-hx5xq:/run/rstudio-server/rstudio-rsession/kramachandir-ds# ll
total 0
drwxr-xr-x. 3 rstudio-server rstudio-server  22 Jan 27 12:29 ./
drwxrwxrwt. 1 rstudio-server rstudio-server 194 Jan 27 17:17 ../
drwxrwxrwt. 2 rstudio-server rstudio-server   6 Jan 27 12:35 3c286bd3/
root@prod-ent-posit-workbench-rstudio-workbench-5458d9cf67-hx5xq:/run/rstudio-server/rstudio-rsession/kramachandir-ds# cd 3c286bd3/
root@prod-ent-posit-workbench-rstudio-workbench-5458d9cf67-hx5xq:/run/rstudio-server/rstudio-rsession/kramachandir-ds/3c286bd3# ll
total 0
drwxrwxrwt. 2 rstudio-server rstudio-server   6 Jan 27 12:35 ./
drwxr-xr-x. 3 rstudio-server rstudio-server  22 Jan 27 12:29 ../
root@prod-ent-posit-workbench-rstudio-workbench-5458d9cf67-hx5xq:/run/rstudio-server/rstudio-rsession/kramachandir-ds/3c286bd3# rstudio-server active-sessions
Active sessions result:
{
    "sessions": [
        {
            "username": "jcallaway",
            "sessionId": "12b98d01897341fe4e9a1",
            "type": "rstudio-pro",
            "pid": -1,
```

This may confirm that the files are getting pruned somehow, so rsession hung up in mid.

Observation 2

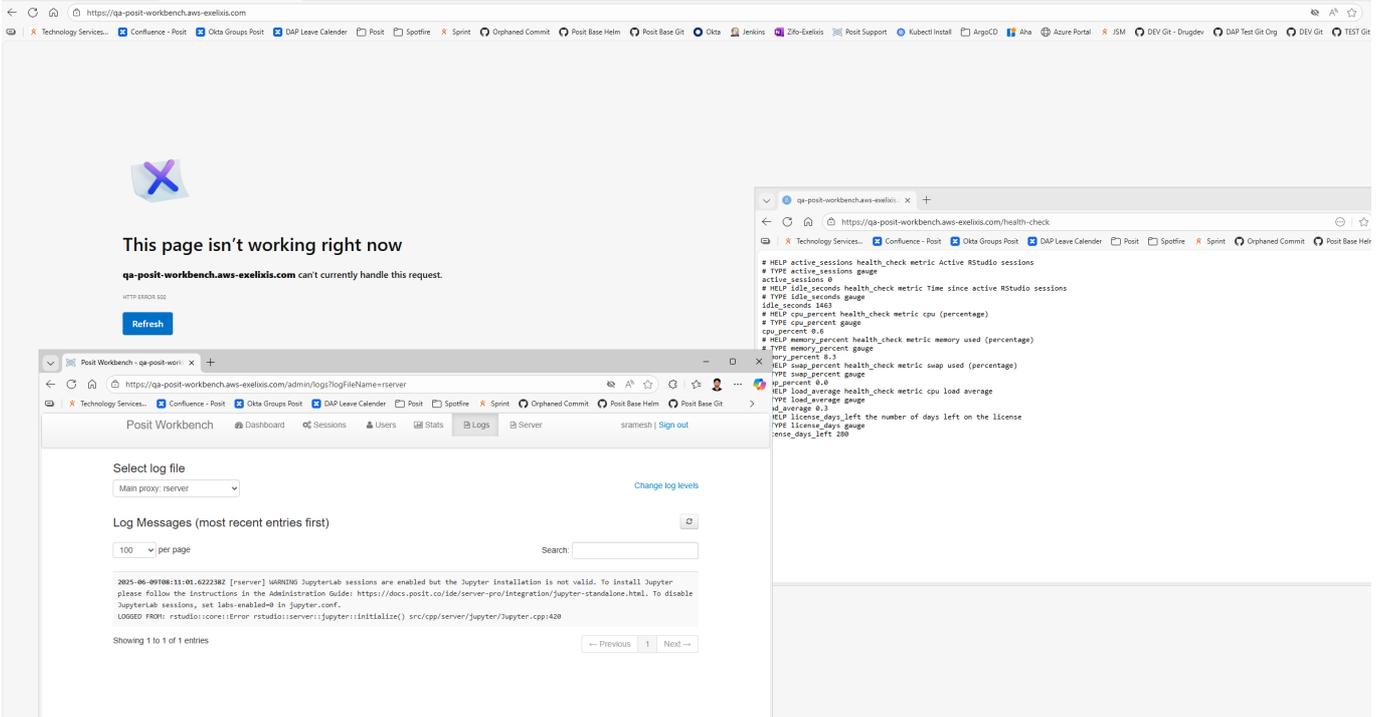Replicated 502 error by this steps:

```
mv /usr/lib/rstudio-server/bin/rworkspaces /usr/lib/rstudio-server/bin/rworkspaces-bak

or

mv /usr/lib/rstudio-server/bin/rserver-launcher /usr/lib/rstudio-server/bin/rserver-launcher-bak
```

- kill any rworkspaces/rserver-launcher process in top using "kill " command.

Result

Observation 3

- The rserver-launcher process (child process) is created and present as zombie process with pid 2012
- The main process(rserer-launcher) is running with the process id 1555

> top

```
root@dev-ent-posit-workbench-rstudio-workbench-8686d9c84c-dw2xx:/# top
top - 12:52:57 up 36 days,  1:34,  0 users,  load average: 0.21, 0.28, 0.39
Tasks:  23 total,   1 running,  21 sleeping,   0 stopped,   1 zombie
%Cpu(s):  0.3 us,  0.1 sy,  0.0 ni, 99.5 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :  64270.4 total,   3727.1 free,   5553.5 used,  54989.7 buff/cache
MiB Swap:      0.0 total,      0.0 free,      0.0 used.  57983.1 avail Mem

   PID USER       PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
  1246 rstudio+   20   0  901328  34780  24760 S   0.3   0.1   9:07.25 rserver
  6306 root       20   0   10352   3908   3304 R   0.3   0.0   0:00.02 top
     1 root       20   0    7376   3664   3352 S   0.0   0.0   0:00.03 startup.sh
    22 root       20   0   37480  28436  10660 S   0.0   0.0   1:15.45 supervisord
    23 root       20   0    7376   3684   3416 S   0.0   0.0   0:00.00 bash
    24 rstudio+   20   0  661904  14872  12412 S   0.0   0.0   2:22.27 rstudio-launche
    25 root       20   0    7508   3736   3408 S   0.0   0.0   0:00.01 startup.sh
  1134 root       20   0   34744  13620  11312 S   0.0   0.0   0:00.34 sssd
  1146 root       20   0  125228  68812  35152 S   0.0   0.1   0:10.55 sssd_be
  1165 root       20   0   90456  53876  48956 S   0.0   0.1   0:02.78 sssd_nss
  1166 root       20   0   73136  29840  17116 S   0.0   0.0   0:01.55 sssd_pam
  1210 rstudio+   20   0 3350984  96808  19804 S   0.0   0.1   1:36.52 rstudio-kuberne
  1547 rstudio+   20   0   25148   6648   5888 S   0.0   0.0   2:04.84 rserver-admin
  1552 rstudio+   20   0   97852   9844   8816 S   0.0   0.0   2:27.80 rserver-monitor
  1554 root       20   0    9328   6044   5200 S   0.0   0.0   0:00.68 rserver-http
  1555 rstudio+   20   0   49720  11740  10556 S   0.0   0.0   0:03.48 rserver-launche
  1556 rstudio+   20   0 1460060  12572   8776 S   0.0   0.0   0:13.02 rserver-saml
  1557 rstudio+   20   0   26292   6396   4340 S   0.0   0.0   0:19.15 rserver-http
  1559 root       20   0    2892    996    908 S   0.0   0.0   0:00.00 sh
  1561 root       20   0   52392   8960   7992 S   0.0   0.0   0:01.95 rrdtool
  1573 root       20   0    7740   4392   3728 S   0.0   0.0   0:00.01 bash
  2012 root       20   0       0      0      0 Z   0.0   0.0   0:00.00 rserver-launche
  6263 root       20   0    7744   4428   3752 S   0.0   0.0   0:00.01 bash
```

- The pid 1555 starts the process 2012 (which is a zombie process)

```
root@dev-ent-posit-workbench-rstudio-workbench-8686d9c84c-dw2xx:/var/lib/rstudio-server/monitor# ps -eo pid,ppid,stat,comm | grep "Z"
  2012   1555 Z    rserver-launche <defunct>
root@dev-ent-posit-workbench-rstudio-workbench-8686d9c84c-dw2xx:/var/lib/rstudio-server/monitor# ps -eo pid,ppid,stat,comm | grep "1555"
  1555   1246 SLl  rserver-launche
  2012   1555 Z    rserver-launche <defunct>
root@dev-ent-posit-workbench-rstudio-workbench-8686d9c84c-dw2xx:/var/lib/rstudio-server/monitor# ps -o pid,ppid,stat,cmd -p 1555,2012
  PID    PPID STAT CMD
  1555   1246 SLl  /usr/lib/rstudio-server/bin/rserver-launcher --server-user rstudio-server --server-project-sharing 1 --server-shared-storage-path /var
lib/rstudio-server/shared-storage --pam-sessions-enab
  2012   1555 Z    [rserver-launche] <defunct>
root@dev-ent-posit-workbench-rstudio-workbench-8686d9c84c-dw2xx:/var/lib/rstudio-server/monitor# ls /var/lib/rstudio-server/shared-storage
```

- The time period that the zombie process is created is 6 hours after the main process is created.

```
  2012   1555 Z    [rserver-launche] <defunct> Tue Feb 24 18:36:00 2026
root@dev-ent-posit-workbench-rstudio-workbench-8686d9c84c-dw2xx:/# ps -o pid,ppid,stat,cmd,lstart -p 1555,2012,1246,25
  PID    PPID STAT CMD                          STARTED
   25     22 S    /bin/bash /usr/local/bin/st Tue Feb 24 12:03:58 2026
  1246     25 SLl  /usr/lib/rstudio-server/bin Tue Feb 24 12:04:06 2026
  1555   1246 SLl  /usr/lib/rstudio-server/bin Tue Feb 24 12:04:14 2026
  2012   1555 Z    [rserver-launche] <defunct> Tue Feb 24 18:36:00 2026
root@dev-ent-posit-workbench-rstudio-workbench-8686d9c84c-dw2xx:/# ls /var/run/
```

The output from the command : pstree

```
-rw-rw-rw- 1 root      root         0 Feb 24 12:04 session-server-rpc.socket
root@dev-ent-posit-workbench-rstudio-workbench-8686d9c84c-dw2xx:/# pstree
startup.sh─┬─supervisord─┬─bash
           │             ├─rstudio-launche─┬─rstudio-kuberne───24*[{rstudio-kuberne}]
           │             │                 └─9*[{rstudio-launche}]
           │             ├─sssd─┬─sssd_be
           │             │      ├─sssd_nss
           │             │      └─sssd_pam
           │             └─startup.sh───rserver─┬─rserver-admin───{rserver-admin}
           │                                    ├─rserver-http───rserver-http
           │                                    ├─rserver-launche─┬─rserver-launche
           │                                    │                 └─{rserver-launche}
           │                                    ├─rserver-monitor─┬─sh───rrdtool
           │                                    │                 └─{rserver-monitor}
           │                                    ├─rserver-saml───10*[{rserver-saml}]
           │                                    └─9*[{rserver}]
root@dev-ent-posit-workbench-rstudio-workbench-8686d9c84c-dw2xx:/# pstree -help
pstree: invalid option -- 'e'
```

> The output from: pstree -pst

- From the analysis,it is found that the process pid rserver-launche(1555) creates two process rserver-launche(2012),{rserver-launche}(1566)

What could have caused the rserver-launcher process to be a zombie process?