

# docker issues with putting docker data directory in /dev/shm (tmpfs)

#wato

apt throws this error:

```
3.153 Preparing to unpack .../18-  
pandoc_2.17.1.1-2~deb12u1_amd64.deb ...  
3.153 Unpacking pandoc (2.17.1.1-2~deb12u1) ...  
3.651 dpkg: error processing archive /tmp/apt-dpkg-install-  
pHPGD/18-pandoc_2.17.1.1-2~deb12u1_amd64.deb (--unpack):  
3.651 unable to install new version of './usr/share/doc/  
pandoc': Invalid cross-device link
```

And exits with 100:

```
ERROR: failed to solve: process "/bin/sh -c if  
[ \"$USE_OLLAMA\" = \"true\" ]; then apt-get update &&  
apt-get install -y --no-install-recommends pandoc netcat-  
openbsd curl && apt-get install -y --no-install-recommends  
ffmpeg libsm6 libxext6 && apt-get install -y --no-install-  
recommends curl jq && curl -fsSL https://ollama.com/  
install.sh | sh && rm -rf /var/lib/apt/lists/*; else  
apt-get update && apt-get install -y --no-install-  
recommends pandoc netcat-openbsd curl jq && apt-get install  
-y --no-install-recommends ffmpeg libsm6 libxext6 && rm  
-rf /var/lib/apt/lists/*; fi" did not complete  
successfully: exit code: 100
```

The error is "Invalid cross-device link":

- Docker (overlay2 + rootless + tmpfs): <https://github.com/moby/moby/issues/44372>
- podman: <https://github.com/containers/podman/issues/13123>
- <https://bbs.archlinux.org/viewtopic.php?id=241866>

Minimal reproducible example, just install some package (pandoc works too)

```
docker run -it --rm ubuntu bash -c "apt update && apt install  
libyaml-0-2"
```

It turns out that overlay2 only supports "xfs with ftype=1, ext4" (<https://docs.docker.com/storage/storagedriver/select-storage-driver/#supported->

backing-file systems). It doesn't support tmpfs.

Solution: use the fuse-overlaysfs storage driver instead of the overlay2 storage driver (<https://github.com/moby/moby/issues/44372>).

To do this, add `storage-driver` key in `daemon.json`: <https://docs.docker.com/storage/storagedriver/overlayfs-driver/#configure-docker-with-the-overlay2-storage-driver>

```
{"storage-driver": "fuse-overlaysfs"}
```

Can check the current storage driver using `docker info`:

```
ben@thor-slurm1 ~/Projects/fuse-overlaysfs-experiments > docker info
```

```
Client: Docker Engine - Community
```

```
Version: 26.0.0
```

```
Context: default
```

```
Debug Mode: false
```

```
Plugins:
```

```
buildx: Docker Buildx (Docker Inc.)
```

```
Version: v0.14.0
```

```
Path: /usr/libexec/docker/cli-plugins/docker-buildx
```

```
compose: Docker Compose (Docker Inc.)
```

```
Version: v2.25.0
```

```
Path: /usr/libexec/docker/cli-plugins/docker-compose
```

```
Server:
```

```
Containers: 0
```

```
Running: 0
```

```
Paused: 0
```

```
Stopped: 0
```

```
Images: 1
```

```
Server Version: 26.0.0
```

```
Storage Driver: fuse-overlaysfs
```

```
Logging Driver: json-file
```

```
Cgroup Driver: none
```

```
Cgroup Version: 2
```

```
Plugins:
```

```
Volume: local
```

```
Network: bridge host ipvlan macvlan null overlay
```

```
Log: awslogs fluentd gcplogs gelf journald json-file local
```

```
splunk syslog
```

```
Swarm: inactive
```

```
Runtimes: io.containerd.runc.v2 nvidia runc
```

```
Default Runtime: nvidia
```

Init Binary: docker-init  
containerd version: ae07eda36dd25f8a1b98dfbf587313b99c0190bb  
runc version: v1.1.12-0-g51d5e94  
init version: de40ad0  
Security Options:  
  seccomp  
    Profile: builtin  
  rootless  
  cgroupns  
Kernel Version: 5.15.0-101-generic  
Operating System: Ubuntu 22.04.4 LTS  
OSType: linux  
Architecture: x86\_64  
CPUs: 16  
Total Memory: 188.7GiB  
Name: thor-slurm1  
ID: 823699ee-0c57-48f7-ba5f-0e03ca96a98d  
Docker Root Dir: /dev/shm/docker  
Debug Mode: false  
Experimental: false  
Insecure Registries:  
  localhost:32000  
  10.0.1.1:32000  
  cr-ramfs.cluster.watonomous.ca  
  docker-registry.cluster.watonomous.ca  
  127.0.0.0/8  
Live Restore Enabled: true

WARNING: Running in rootless-mode without cgroups. Systemd is required to enable cgroups in rootless-mode.

When using overlay2 with tmpfs:

Client: Docker Engine - Community  
Version: 26.0.0  
Context: default  
Debug Mode: false  
Plugins:  
  buildx: Docker Buildx (Docker Inc.)  
    Version: v0.14.0  
    Path: /usr/libexec/docker/cli-plugins/docker-buildx  
  compose: Docker Compose (Docker Inc.)  
    Version: v2.25.0  
    Path: /usr/libexec/docker/cli-plugins/docker-compose

Server:  
Containers: 0  
  Running: 0  
  Paused: 0  
  Stopped: 0  
Images: 0  
Server Version: 26.0.0  
Storage Driver: overlay2  
  Backing Filesystem: tmpfs  
  Supports d\_type: true  
  Using metacopy: false  
  Native Overlay Diff: false  
  userxattr: true  
Logging Driver: json-file  
Cgroup Driver: none  
Cgroup Version: 2  
Plugins:  
  Volume: local  
  Network: bridge host ipvlan macvlan null overlay  
  Log: awslogs fluentd gcplogs gelf journald json-file local  
splunk syslog  
Swarm: inactive  
Runtimes: io.containerd.runc.v2 nvidia runc  
Default Runtime: nvidia  
Init Binary: docker-init  
containerd version: ae07eda36dd25f8a1b98dfbf587313b99c0190bb  
runc version: v1.1.12-0-g51d5e94  
init version: de40ad0  
Security Options:  
  seccomp  
  Profile: builtin  
  rootless  
  cgroupns  
Kernel Version: 5.15.0-101-generic  
Operating System: Ubuntu 22.04.4 LTS  
OSType: linux  
Architecture: x86\_64  
CPUs: 16  
Total Memory: 188.7GiB  
Name: thor-slurm1  
ID: 0c221d27-95e4-4bb5-a225-d834a57f84e3  
Docker Root Dir: /dev/shm/docker  
Debug Mode: false

Experimental: false  
Insecure Registries:  
docker-registry.cluster.watonomous.ca  
localhost:32000  
10.0.1.1:32000  
cr-ramfs.cluster.watonomous.ca  
127.0.0.0/8  
Live Restore Enabled: true

WARNING: Running in rootless-mode without cgroups. Systemd is required to enable cgroups in rootless-mode.