

## Manual Creation of RescueBRU Server RAID Set

There may be occasions when a RescueBRU Server needs to be created using hardware on which it has not been tested. Sometimes, the automatic drive detection and RAID set creation process may fail. In those instances, the RAID set may be created manually. The following steps describe how to do that.

1. Decide what the configuration of the RAID set should be. This will be dependent on the number of drives, the desired capacity of the RAID set, and the degree of fault tolerance desired. If you only have a single drive, RAID-0 is your only option. With two drives, you can choose RAID-0, which will give you the maximum capacity and no fault tolerance, or RAID-1, which will give you fault tolerance, but only the capacity of one drive. With three or more drives, you can choose RAID-0 which will give you maximum capacity and no fault tolerance, RAID-1 which will give you the capacity of a single drive with fault tolerance, or RAID-5, which will give you the sum of the capacities of all the drives minus the capacity of one drive, in addition to fault tolerance.

2. Determine which drives present in the system you would like to use for the RAID set. Be aware that not everything detected by RescueBRU may be a usable drive. For example, SD card or CF card slots that don't contain media may still show up as a block device. Open a terminal and run the command:

```
ls -l /dev/sd? /dev/nvme?n?
```

To see what drives are available. For the purpose of this procedure, we will assume that that you have six drives, /dev/sdb, /dev/sdc, /dev/sdd, /dev/sde, /dev/sdf, and /dev/sdg.

3. Remove any partitions or old RAID metadata from the drives you'll be using. Run the command:

```
for rdrive in sdb sdc sdd sde sdf sdg; do
sgdisk -Z /dev/$rdrive
dd if=/dev/zero of=/dev/$rdrive bs=1024k count=2000
dd if=/dev/zero of=/dev/$rdrive bs=512 count=2048 seek=$((`blockdev \
--getsz /dev/$rdrive` -2048))
done
```

4. Create a single GPT partition using the entire drive for each drive. Run the command:

```
for rdrive in sdb sdc sdd sde sdf sdg; do
parted -s $rdrive mklabel gpt
parted -s $rdrive mkpart primary ext2 0% 100%
parted -s $rdrive set 1 raid on
sleep 2
partprobe $rdrive
done
```

5. Create the RAID set.

For a RAID-0 using a single drive:

```
mdadm --create /dev/md0 --level=0 --force -raid-devices=1 \ /dev/sdb1
```

For a RAID-0 using two drives:

```
mdadm --create /dev/md0 --level=0 -raid-devices=2 \  
/dev/sdb1 /dev/sdc1
```

For a RAID-1 using two drives:

```
mdadm --create /dev/md0 --level=1 -raid-devices=2 \  
/dev/sdb1 /dev/sdc1
```

For a RAID-5 using all six drives:

```
mdadm --create /dev/md0 --level=5 -raid-devices=6 \  
/dev/sdb1 /dev/sdc1 /dev/sdd1 /dev/sde1 /dev/sdf1 /dev/sdg1
```

6. Set the stripe cache size:

```
echo "32768" > /sys/block/md0/md/stripe_cache_size
```

7. Create the filesystem.

For RAID-0 or RAID-1:

```
mkfs.ext4 -b 4096 -m .1 /dev/md0
```

For six disk RAID-5:

```
mkfs.ext4 -b 4096 -m .1 \  
-E stride=128,stripe-width=$((128*(6-1))) /dev/md0
```

NOTE: This example assumes the use of six drives. If using a different number, like 4 drives, replace the "6-1" in the above command with "4-1".

8. After performing these steps, restart the server before attempting to perform backups.

END OF PROCEDURE