> warpx.io

WaRP - Wearable Reference Platform

Yocto Linux - Enlarge root partition

To limit the OS image file size the partitions included are not using all of the eMMC disk space. Partitioning and formatting utilities are included to add and format additional partitions.

Review the space in use using the **d**isk **f**ree utility 'df':

```
root@warp:~# df -h
Filesystem    Size  Used Avail Use% Mounted on
/dev/root     1.9G  977M  808M  55% /
devtmpfs       88M     0   88M   0% /dev
tmpfs          40K     0   40K   0% /mnt/.psplash
tmpfs         248M  132K  248M   1% /run
tmpfs         248M   76K  248M   1% /var/volatile
```

Above we observe that root has currently ~2.0GB space allocated.

Let's Identify the device that will be modified using mount:

```
root@warp:~# mount
/dev/mmcblk1p2 on / type ext4 (rw,relatime,data=ordered)
devtmpfs on /dev type devtmpfs (rw,relatime,size=89372k,nr_inodes=22343,mode=755)
proc on /proc type proc (rw,relatime)
tmpfs on /mnt/.psplash type tmpfs (rw,relatime,size=40k)
sysfs on /sys type sysfs (rw,relatime)
debugfs on /sys/kernel/debug type debugfs (rw,relatime)
tmpfs on /run type tmpfs (rw,nosuid,nodev,mode=755)
tmpfs on /var/volatile type tmpfs (rw,relatime)
devpts on /dev/pts type devpts (rw,relatime,gid=5,mode=620)
```

Above we see the device and its partition which is mounted to the root directory '/'.
/dev/mmcblk1p2 is the partition that we want to resize.

The following is an example of how to enlarge the mmcblk1p2 partition to use all the eMMC disk space.
Warning: this is a very precise operation. A mistake *could* render your device unusable.

```
root@warp:~# fdisk -u /dev/mmcblk1

Welcome to fdisk (util-linux 2.27.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.


Command (m for help): p
Disk /dev/mmcblk1: 3.7 GiB, 3909091328 bytes, 7634944 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
```

> warpx.io

```
Disklabel type: dos
Disk identifier: 0x2c12356e

Device          Boot Start      End Sectors   Size Id Type
/dev/mmcblk1p1        8192    24575    16384    8M  c W95 FAT32 (LBA)
/dev/mmcblk1p2       24576  4325375  4300800   2.1G 83 Linux


Command (m for help): d
Partition number (1,2, default 2): 2

Partition 2 has been deleted.

Command (m for help): n
Partition type
   p   primary (1 primary, 0 extended, 3 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (2-4, default 2): 2
First sector (2048-7634943, default 2048): 24576
Last sector, +sectors or +size{K,M,G,T,P} (24576-7634943, default 7634943): 7634943

Created a new partition 2 of type 'Linux' and of size 3.6 GiB.

Command (m for help): p
Disk /dev/mmcblk1: 3.7 GiB, 3909091328 bytes, 7634944 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x2c12356e

Device          Boot Start      End Sectors   Size Id Type
/dev/mmcblk1p1        8192    24575    16384    8M  c W95 FAT32 (LBA)
/dev/mmcblk1p2       24576  7634943  7610368   3.6G 83 Linux

Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Re-reading the partition table failed.: Device or resource busy

The kernel still uses the old table. The new table will be used at the next reboot.
```

Then, after reboot of the board run:

```
root@warp:~# resize2fs /dev/mmcblk1p2

resize2fs 1.43-WIP (18-May-2015)
Filesystem at /dev/mmcblk1p2 is mEXT4-fs (mmcblk1p2): resizing filesystem from 537600
to 951296 blocks
ounted on /; on-line resizing required
```

> warpx.io

```
old_desc_blocks = 1, new_desc_blocks = 1
EXT4-fs (mmcblk1p2): resized filesystem to 951296
The filesystem on /dev/mmcblk1p2 is now 951296 (4k) blocks long.

root@warp:~# df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root       3.4G  978M  2.3G  31% /
devtmpfs         88M     0   88M   0% /dev
tmpfs            40K     0   40K   0% /mnt/.psplash
tmpfs           248M  132K  248M   1% /run
tmpfs           248M   68K  248M   1% /var/volatile
root@warp:~#
```

The root partition is now resized.