Embedded Linux course - Flash storage and filesystems

Total des points 4/10

✗ What's the name of the kernel subsystem handling flash memory? * 0/1

flash ✗

Bonnes réponses

MTD

mtd

Memory Technology Devices

Memory Technology Device

Commentaire

The correct answer is "MTD", meaning Memory Technology Devices. The subsystem supports flash, but also ROM and RAM chips (which are not used as directly addressable RAM).

✗ Does Linux store flash partition information in the first erase blocks? * 0/1

- (●) True ✗
- ( ) False

Bonne réponse

- (●) False

Commentaire

Wrong. Linux developers don't trust flash storage to contain critical information such as partition information. If it's stored in a flash sector that becomes bad, there will be no way to recover such information. The first blocks may be guaranteed to be more robust, but that's not enough.

That's why Linux offers to store such information in the Device Tree, in kernel code (when no DT), or in the kernel command line.

✓ What's 0x1000000 in MiB? * 1/1

- ( ) 1 MB
- ( ) 8 MB
- (●) 16 MB ✓

Commentaire

Correct.
It may help to remember that 0x100000 (with 5 zeroes) is 1 MiB.

✓ Flash partitions have to be a multiple of: * 1/1

- ○ The page write size
- ◉ The erase block size ✓

Commentaire

Correct.
Each partition must start and finish at erase block boundaries.
Otherwise, it wouldn't be possible to erase the contents of a partition without erasing neighboring partitions too.

✓ U-Boot reuses the Linux syntax for defining flash partitions * 1/1

- ◉ True ✓
- ○ False

Commentaire

Correct.
U-Boot does reuses the same syntax as Linux to define MTD partitions. This allows to share the same definitions between the two, avoiding issues because mismatches.

✗ What's the name of the Linux user-space tools for handling flash storage? * 0/1

gnu ✗

Bonnes réponses

mdtutils

mtd-utils

Commentaire

The right answer is "mtd-utils".
It contains tools to erase flash, write flash, create or format filesystems, to work with UBI...

✗ When you have multiple JFFS2 partitions, does wear leveling happen * 0/1

○ On each partition separately?

◉ On the whole flash storage with JFFS2 partitions? ✗

Bonne réponse

◉ On each partition separately?

Commentaire

Wrong.
Wear leveling can only be implemented in each MTD partition.
That's why using UBI volumes instead of multiple MTD partitions allows to have global instead of local wear levelling, operating in the whole MTD partition used for UBI.

✗ Can I directly mount a SquashFS filesystem on a static (read-only) UBI volume containing a SquashFS image? * 0/1

- (●) Yes ✗
- ( ) No

Bonne réponse

- (●) No

Commentaire

Wrong.
SquashFS is a block filesystem, it can only be used on a block device.
You may use the "ubiblock" driver to emulate a read-only block device on top of a UBI volume, but that's not direct.

✓ Do you need to run mkfs.ubifs to use ubifs on a newly created volume? * 1/1

- ( ) Yes
- (●) No ✓

Commentaire

Correct.
mkfs.ubifs is a command to create a UBIFS filesystem image, that's it.
A UBIFS filesystem is automatically created when you first try to mount UBIFS on a newly created UBI volume.

✗ Can U-Boot read a kernel binary from a UBI volume? * 0/1

- ○ Yes
- ◉ No ✗

Bonne réponse

- ◉ Yes

Commentaire

Wrong.
That's what we did in the flash lab. Since U-Boot supports UBI, we no longer have to store the kernel and DTB in separate MTD partitions.
Here's the command to use:
ubi readvol <addr> <volname>