

# Kernel Configuration

## From BLFS

### Use Linux Control Group to Limit the Resource Usage

```

General setup --->
  [*] Control Group support --->
[CGROUPS]
  [*] Memory controller
[MEMCG]
  [*] Cpuset controller
[CPUSETS]

```

### Include Firmware Blobs in the Kernel Image

```

Device Drivers --->
  Generic Driver Options --->
    Firmware loader --->
      <*>                               Firmware loading facility
[FW_LOADER]
  (xx/aa.bin xx/bb.bin)   Build named firmware blobs into the kernel
binary
                                                                    ...
[EXTRA_FIRMWARE]
  (/lib/firmware)         Firmware blobs root directory
                                                                    ...
[EXTRA_FIRMWARE_DIR]

```

```

echo CONFIG_EXTRA_FIRMWARE='''${( cd /lib/firmware; echo amdgpu/* )}''' >>
.config
make oldconfig

```

### cryptsetup-2.7.0

cryptsetup is used to set up transparent encryption of block devices using the kernel crypto API.

```

Device Drivers --->
  [*] Multiple devices driver support (RAID and LVM) --->
[MD]

```

```
<*/M> Device mapper support
[BLK_DEV_DM]
<*/M> Crypt target support
[DM_CRYPT]

-*- Cryptographic API --->
[CRYPTO]
  Block ciphers --->
    <*/M> AES (Advanced Encryption Standard)
[CRYPTO_AES]
  # For tests:
    <*/M> Twofish
[CRYPTO_TWOFISH]
  Length-preserving ciphers and modes --->
    <*/M> XTS (XOR Encrypt XOR with ciphertext stealing)
[CRYPTO_XTS]
  Hashes, digests, and MACs --->
    <*/M> SHA-224 and SHA-256
[CRYPTO_SHA256]
  Userspace interface --->
    <*/M> Symmetric key cipher algorithms
[CRYPTO_USER_API_SKCIPHER]
```

## iptables-1.8.10

iptables is a userspace command line program used to configure the Linux 2.4 and later kernel packet filtering ruleset.

```
[*] Networking support --->
[NET]
  Networking options --->
    [*] Network packet filtering framework (Netfilter) --->
[NETFILTER]
  [*] Advanced netfilter configuration
[NETFILTER_ADVANCED]
  Core Netfilter Configuration --->
    <*/M> Netfilter connection tracking support
[NF_CONNTRACK]
    <*/M> Netfilter Xtables support (required for ip_tables)
    ...
[NETFILTER_XTABLES]
    <*/M> LOG target support
[NETFILTER_XT_TARGET_LOG]
  IP: Netfilter Configuration --->
    <*/M> IP tables support (required for filtering/masq/NAT)
    ...
[IP_NF_IPTABLES]
```

## btrfs-progs-6.7.1

The btrfs-progs package contains administration and debugging tools for the B-tree file system (btrfs).

```
File systems --->
  <*/M> Btrfs filesystem support
[BTRFS_FS]
```

## dosfstools-4.2

The dosfstools package contains various utilities for use with the FAT family of file systems.

```
File systems --->
  DOS/FAT/EXFAT/NT Filesystems --->
    < */M> MSDOS fs support
[MSDOS_FS]
    <*/M> VFAT (Windows-95) fs support
[VFAT_FS]
```

## Fuse-3.16.2

FUSE (Filesystem in Userspace) is a simple interface for userspace programs to export a virtual filesystem to the Linux kernel. Fuse also aims to provide a secure method for non privileged users to create and mount their own filesystem implementations.

```
File systems --->
  <*/M> FUSE (Filesystem in Userspace) support
[FUSE_FS]
  <*/M> Character device in Userspace support
[CUSE]
```

## jfsutils-1.1.15

The jfsutils package contains administration and debugging tools for the jfs file system.

```
File systems --->
  <*/M> JFS filesystem support
[JFS_FS]
```

## LVM2-2.03.23

The LVM2 package is a set of tools that manage logical partitions. It allows spanning of file systems across multiple physical disks and disk partitions and provides for dynamic growing or shrinking of logical partitions, mirroring and low storage footprint snapshots.

```
Device Drivers --->
  [*] Block devices --->
  [BLK_DEV]
    <*/M> RAM block device support
  [BLK_DEV_RAM]
  [*] Multiple devices driver support (RAID and LVM) --->
  [MD]
    <*/M> Device mapper support
  [BLK_DEV_DM]
    <*/M> Crypt target support
  [DM_CRYPT]
    <*/M> Snapshot target
  [DM_SNAPSHOT]
    <*/M> Thin provisioning target
  [DM_THIN_PROVISIONING]
    <*/M> Cache target (EXPERIMENTAL)
  [DM_CACHE]
    <*/M> Mirror target
  [DM_MIRROR]
    <*/M> Zero target
  [DM_ZERO]
    <*/M> I/O delaying target
  [DM_DELAY]

Kernel hacking --->
  Generic Kernel Debugging Instruments --->
    [*] Magic SysRq key
  [MAGIC_SYSRQ]
```

## mdadm-4.2

The mdadm package contains administration tools for software RAID.

```
Device Drivers --->
  [*] Multiple devices driver support (RAID and LVM) --->
  [MD]
    <*/M> RAID support
  [BLK_DEV_MD]
    [*] Autodetect RAID arrays during kernel boot
  [MD_AUTODETECT]
    # Only the RAID types desired are required:
```

```
< /*/M> RAID-0 (striping) mode
[MD_RAID0]
< /*/M> RAID-1 (mirroring) mode
[MD_RAID1]
< /*/M> RAID-10 (mirrored striping) mode
[MD_RAID10]
< /*/M> RAID-4/RAID-5/RAID-6 mode
[MD_RAID456]
```

## NTFS3 (ntfs-3g-2022.10.3)

Kernel NTFS3

```
File systems --->
  DOS/FAT/EXFAT/NT Filesystems --->
    <*/M> NTFS Read-Write file system support
[NTFS3_FS]
```

ntfs-3g

The Ntfs-3g package contains a stable, read-write open source driver for NTFS partitions. NTFS partitions are used by most Microsoft operating systems. Ntfs-3g allows you to mount NTFS partitions in read-write mode from your Linux system. It uses the FUSE kernel module to be able to implement NTFS support in userspace. The package also contains various utilities useful for manipulating NTFS partitions.

```
File systems --->
  <*/M> FUSE (Filesystem in Userspace) support
[FUSE_FS]
```

## parted-3.6

The Parted package is a disk partitioning and partition resizing tool.

```
Device Drivers --->
  SCSI device support --->
    [*] SCSI low-level drivers --->
[SCSI_LOWLEVEL]
  <M> SCSI debugging host and device simulator
[SCSI_DEBUG]
```

## xfsprogs-6.6.0

The xfsprogs package contains administration and debugging tools for the XFS file system.

```
File systems --->
  <*/M> XFS filesystem support
[XFS_FS]
```

## Using GRUB to Set Up the Boot Process with UEFI

### Turn Off Secure Boot

BLFS does not have the essential packages to support Secure Boot. To set up the boot process with GRUB and UEFI in BLFS, Secure Boot must be turned off from the configuration interface of the firmware. Read the documentation provided by the manufacturer of your system to find out how.

```
Processor type and features --->
  [*] EFI runtime service support
[EFI]
  [*]   EFI stub support
[EFI_STUB]

-*- Enable the block layer --->
[BLOCK]
  Partition Types --->
    [ /*] Advanced partition selection
[PARTITION_ADVANCED]
    [*]   EFI GUID Partition support
[EFI_PARTITION]

Device Drivers --->
  Firmware Drivers --->
    [*] Mark VGA/VBE/EFI FB as generic system framebuffer
[SYSFB_SIMPLEFB]
  Graphics support --->
    <*> Direct Rendering Manager (XFree86 4.1.0 and higher DRI support) --->
                                                    ...
[DRM]
  [*] Enable legacy fbdev support for your modesetting driver
                                                    ...
[DRM_FBDEV_EMULATION]
  <*> Simple framebuffer driver
[DRM_SIMPLEDRM]
  Console display driver support --->
    [*] Framebuffer Console support
[FRAMEBUFFER_CONSOLE]

File systems --->
  DOS/FAT/EXFAT/NT Filesystems --->
    <*/M> VFAT (Windows-95) fs support
```

```
[VFAT_FS]
  Pseudo filesystems --->
    <*/M> EFI Variable filesystem
[EFIVAR_FS]
  -* Native language support --->
[NLS]
  <*/M> Codepage 437 (United States, Canada)
[NLS_CODEPAGE_437]
  <*/M> NLS ISO 8859-1 (Latin 1; Western European Languages)
[NLS_ISO8859_1]
```

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Last update: **2024/04/15 17:00**

