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]
```

qemu-8.2.1

qemu is a full virtualization solution for Linux on x86 hardware containing virtualization extensions (Intel VT or AMD-V).

```
[*] Virtualization --->
[VIRTUALIZATION]
  <*/M>   Kernel-based Virtual Machine (KVM) support
[KVM]
  # Enable the option for your CPU:
  < /*/M>   KVM for Intel (and compatible) processors support
[KVM_INTEL]
  < /*/M>   KVM for AMD processors support
[KVM_AMD]
[*] Networking support --->
[NET]
  Networking options --->
    <*/M> 802.1d Ethernet Bridging
[BRIDGE]

Device Drivers --->
  [*] Network device support --->
[NETDEVICES]
    [*]   Network core driver support
[NET_CORE]
    <*/M>   Universal TUN/TAP device driver support
[TUN]
```

keyutils-1.6.3

Keyutils is a set of utilities for managing the key retention facility in the kernel, which can be used by filesystems, block devices and more to gain and retain the authorization and encryption keys required to perform secure operations.

```
Security options --->
```

```
  [*] Enable access key retention support
[KEYS]
  [*]   Large payload keys
[BIG_KEYS]
  [*]   Diffie-Hellman operations on retained keys
[KEY_DH_OPERATIONS]

-*- Cryptographic API --->
[CRYPTO]
  Public-key cryptography --->
    <*/M> RSA (Rivest-Shamir-Adleman)
[CRYPTO_RSA]
  [*] Asymmetric (public-key cryptographic) key type --->
[ASYMMETRIC_KEY_TYPE]
    <*> Asymmetric public-key crypto algorithm subtype
                                              ...
[ASYMMETRIC_PUBLIC_KEY_SUBTYPE]
    # If not built into the kernel, [SYSTEM_TRUSTED_KEYRING] won't show up;
    # building as a module won't work:
    <*>   X.509 certificate parser
[X509_CERTIFICATE_PARSER]
  Certificates for signature checking --->
    [*] Provide system-wide ring of trusted keys
[SYSTEM_TRUSTED_KEYRING]
    [*]   Provide a keyring to which extra trustable keys may be added
                                                ...
[SECONDARY_TRUSTED_KEYRING]
    [*] Provide system-wide ring of blacklisted keys
[SYSTEM_BLACKLIST_KEYRING]

Library routines --->
  Crypto library routines --->
    # If not built into the kernel, [BIG_KEYS] won't show up;
    # building as a module won't work:
    <*> ChaCha20-Poly1305 AEAD support (8-byte nonce library version)
                                               ...
[CRYPTO_LIB_CHACHA20POLY1305]
```

libusb-1.0.27

The libusb package contains a library used by some applications for USB device access.

```
Device Drivers --->
  [*] USB support --->
[USB_SUPPORT]
    <*/M>   Support for Host-side USB
[USB]
```

```
    [*]     PCI based USB host interface
[USB_PCI]
    # These are most common USB controller drivers for PC-like systems.
    # For modern systems often [USB_XHCI_HCD] is the only one needed
    # even if the system has USB 2.0 ports:
    < /*/M> xHCI HCD (USB 3.0) support
[USB_XHCI_HCD]
    < /*/M> EHCI HCD (USB 2.0) support
[USB_EHCI_HCD]
    < /*/M> OHCI HCD (USB 1.1) support
[USB_OHCI_HCD]
```

lsof-4.99.0

The lsof package is useful to LiSt Open Files for a given running application or process.

```
General setup --->
  [*] POSIX Message Queues
[POSIX_MQUEUE]
```

autofs-5.1.9

Autofs controls the operation of the automount daemons. The automount daemons automatically mount filesystems when they are accessed and unmount them after a period of inactivity. This is done based on a set of pre-configured maps.

```
File systems --->
  <*/M> Kernel automounter support (supports v3, v4 and v5)
[AUTOFS_FS]
File systems --->
  [*] Network File Systems --->
[NETWORK_FILESYSTEMS]
    <*/M> NFS client support
[NFS_FS]
    <*/M> SMB3 and CIFS support (advanced network filesystem)
[CIFS]
```

BlueZ-5.72

The BlueZ package contains the Bluetooth protocol stack for Linux.

```
General setup --->
  # If it is disabled, [TIMERFD] and [EVENTFD] will be hidden and
  # enabled implicitly.  We DO NOT recommend to enable [EXPERT]
```

```
  # unless you are really an expert user:
  [ /*] Configure standard kernel features (expert users) --->
[EXPERT]
    [*] Enable timerfd() system call
[TIMERFD]
    [*] Enable eventfd() system call
[EVENTFD]

[*] Networking support --->
[NET]
  <*/M> Bluetooth subsystem support --->
[BT]
    [*]   Bluetooth Classic (BR/EDR) features
[BT_BREDR]
    <*/M>   RFCOMM protocol support
[BT_RFCOMM]
    [*]       RFCOMM TTY support
[BT_RFCOMM_TTY]
    <*/M>   BNEP protocol support
[BT_BNEP]
    [*]       Multicast filter support
[BT_BNEP_MC_FILTER]
    [*]       Protocol filter support
[BT_BNEP_PROTO_FILTER]
    <*/M>   HIDP protocol support
[BT_HIDP]
    Bluetooth device drivers --->
      # Select the appropriate drivers for your bluetooth hardware.
      # There are more vendor-specific drivers not listed here:
      < /*/M> HCI USB driver
[BT_HCIBTUSB]
      < /*/M> HCI SDIO driver
[BT_HCIBTSDIO]
      < /*/M> HCI UART driver
[BT_HCIUART]
  <*/M> RF switch subsystem support --->
[RFKILL]

-*- Cryptographic API --->
[CRYPTO]
  Crypto core or helper --->
    <*/M> Userspace cryptographic algorithm configuration
[CRYPTO_USER]
  Block ciphers --->
    <*/M> AES (Advanced Encryption Standard)
[CRYPTO_AES]
  AEAD (authenticated encryption with associated data) ciphers --->
    <*/M> CCM (Counter with Cipher Block Chaining-MAC)
[CRYPTO_CCM]
  Hashes, digests, and MACs --->
```

```
    <*/M> CMAC (Cipher-based MAC)
[CRYPTO_CMAC]
  Userspace interface --->
    <*/M> Hash algorithms
[CRYPTO_USER_API_HASH]
    <*/M> Symmetric key cipher algorithms
[CRYPTO_USER_API_SKCIPHER]
    <*/M> AEAD cipher algorithms
[CRYPTO_USER_API_AEAD]
```

Bubblewrap-0.8.0

Bubblewrap is a setuid implementation of user namespaces, or sandboxing, that provides access to a subset of kernel user namespace features. Bubblewrap allows user owned processes to run in an isolated environment with limited access to the underlying filesystem.

```
General setup --->
  -*- Namespaces support --->
[NAMESPACES]
    [*] User namespace
[USER_NS]
```

GPM-1.20.7

The GPM (General Purpose Mouse daemon) package contains a mouse server for the console and xterm. It not only provides cut and paste support generally, but its library component is used by various software such as Links to provide mouse support to the application. It is useful on desktops, especially if following (Beyond) Linux From Scratch instructions; it's often much easier (and less error prone) to cut and paste between two console windows than to type everything by hand!

```
Device Drivers --->
  Input device support --->
    -*-   Generic input layer (needed for keyboard, mouse, ...)
[INPUT]
    <*/M>   Mouse interface
[INPUT_MOUSEDEV]
```

Lm-sensors-3-6-0

The lm_sensors package provides userspace support for the hardware monitoring drivers in the Linux kernel. This is useful for monitoring the temperature of the CPU and adjusting the performance of some hardware (such as cooling fans).

```
Power management and ACPI options --->
```

```
  [*] ACPI (Advanced Configuration and Power Interface) Support --->
[ACPI]
    < /*/M> Battery
[ACPI_BATTERY]
    < /*/M> Thermal Zone
[ACPI_THERMAL]

Device Drivers --->
  NVME Support --->
    < /*> NVM Express block device
[BLK_DEV_NVME]
    # Set [HWMON] to <*> (not <M>!) or it will not show up:
    [ /*] NVMe hardware monitoring
[NVME_HWMON]
  <*/M> Hardware Monitoring support --->
[HWMON]
    < /*/M> AMD Athlon64/FX or Opteron temperature sensor
[SENSORS_K8TEMP]
    < /*/M> AMD Family 10h+ temperature sensor
[SENSORS_K10TEMP]
    < /*/M> AMD Family 15h processor power
[SENSORS_FAM15H_POWER]
    < /*/M> Intel Core/Core2/Atom temperature sensor
[SENSORS_CORETEMP]
```

pm-utils-1.4.1

The Power Management Utilities provide simple shell command line tools to suspend and hibernate the computer. They can be used to run user supplied scripts on suspend and resume.

```
Power management and ACPI options --->
  [*] Suspend to RAM and standby
[SUSPEND]
  [*] Hibernation (aka 'suspend to disk')
[HIBERNATION]
```

Power-profiles-daemon-0.20

The Power-profiles-daemon package provides a program that allows modification of the system power/behavior state. This is used on many laptops and can be used by a Desktop Environment to activate power saving or performance CPU governors through dbus.

```
Power management and ACPI options --->
  CPU Frequency scaling --->
    -*-   CPU Frequency scaling
```

```
[CPU_FREQ]
    -*-     'performance' governor
[CPU_FREQ_GOV_PERFORMANCE]
    <*/M>   'powersave' governor
[CPU_FREQ_GOV_POWERSAVE]
    # Select if CPU is Intel:
    [ /*]   Intel P state control
[X86_INTEL_PSTATE]
    # Select if CPU is AMD:
    [ /*]   AMD Processor P-State driver
[X86_AMD_PSTATE]

Device Drivers --->
  # Some drivers under this submenu provide "platform profile" support
  # and power-profiles-daemon can take advantage from platform profiles;
  # select a driver if suitable for your platform:
  [ /*] X86 Platform Specific Device Drivers --->
[X86_PLATFORM_DEVICES]
```

UPower-1.90.2

The UPower package provides an interface for enumerating power devices, listening to device events and querying history and statistics. Any application or service on the system can access the org.freedesktop.UPower service via the system message bus.

```
General setup --->
  -*- Namespaces support --->
[NAMESPACES]
    [*] User namespace
[USER_NS]
```

Network Bridge

```
Networking support: Y
  Networking options:
    802.1d Ethernet Bridging: M or Y
```

cifs-utils-7.0

The cifs-utils package provides a means for mounting SMB/CIFS shares on a Linux system.

```
File systems --->
  [*] Network File Systems --->
```

```
[NETWORK_FILESYSTEMS]
    <*/M> SMB3 and CIFS support (advanced network filesystem)
[CIFS]
```

NFS-Utils-2.6.4

The NFS Utilities package contains the userspace server and client tools necessary to use the kernel's NFS abilities. NFS is a protocol that allows sharing file systems over the network.

```
File systems --->
  [*] Network File Systems --->
[NETWORK_FILESYSTEMS]
    <*/M> NFS client support
[NFS_FS]
    <*/M> NFS server support
[NFSD]
```

Configuring the Linux Kernel for Wireless

Before using any userspace tools for connecting to a wireless AP, the Linux kernel must be configured to drive the wireless NIC properly.

```
[*] Networking support --->
[NET]
  [*] Wireless --->
[WIRELESS]
    <*/M>   cfg80211 - wireless configuration API
[CFG80211]
    < /*/M> Generic IEEE 802.11 Networking Stack (mac80211)
[MAC80211]

Device Drivers --->
  [*] Network device support --->
[NETDEVICES]
    [*] Wireless LAN --->
[WLAN]
```

Wireless Tools-29

The Wireless Extension (WE) is a generic API in the Linux kernel allowing a driver to expose configuration and statistics specific to common Wireless LANs to userspace. A single set of tools can support all the variations of Wireless LANs, regardless of their type, as long as the driver supports Wireless Extensions. WE parameters may also be changed on the fly without restarting the driver (or

Linux).

```
[*] Networking support --->
[NET]
  [*] Wireless --->
[WIRELESS]
    <*/M> cfg80211 - wireless configuration API
[CFG80211]
    [*]     cfg80211 wireless extensions compatibility
[CFG80211_WEXT]
```

wpa_supplicant-2.10

WPA Supplicant is a Wi-Fi Protected Access (WPA) client and IEEE 802.1X supplicant. It implements WPA key negotiation with a WPA Authenticator and Extensible Authentication Protocol (EAP) authentication with an Authentication Server. In addition, it controls the roaming and IEEE 802.11 authentication/association of the wireless LAN driver. This is useful for connecting to a password protected wireless access point.

```
cat > wpa_supplicant/.config << "EOF"
CONFIG_BACKEND=file
CONFIG_CTRL_IFACE=y
CONFIG_DEBUG_FILE=y
CONFIG_DEBUG_SYSLOG=y
CONFIG_DEBUG_SYSLOG_FACILITY=LOG_DAEMON
CONFIG_DRIVER_NL80211=y
CONFIG_DRIVER_WEXT=y
CONFIG_DRIVER_WIRED=y
CONFIG_EAP_GTC=y
CONFIG_EAP_LEAP=y
CONFIG_EAP_MD5=y
CONFIG_EAP_MSCHAPV2=y
CONFIG_EAP_OTP=y
CONFIG_EAP_PEAP=y
CONFIG_EAP_TLS=y
CONFIG_EAP_TTLS=y
CONFIG_IEEE8021X_EAPOL=y
CONFIG_IPV6=y
CONFIG_LIBNL32=y
CONFIG_PEERKEY=y
CONFIG_PKCS12=y
CONFIG_READLINE=y
CONFIG_SMARTCARD=y
CONFIG_WPS=y
CFLAGS += -I/usr/include/libnl3
EOF
```

```
cat >> wpa_supplicant/.config << "EOF"
```

```
CONFIG_CTRL_IFACE_DBUS=y
CONFIG_CTRL_IFACE_DBUS_NEW=y
CONFIG_CTRL_IFACE_DBUS_INTRO=y
EOF
```

NetworkManager-1.44.2

NetworkManager is a set of co-operative tools that make networking simple and straightforward. Whether you use WiFi, wired, 3G, or Bluetooth, NetworkManager allows you to quickly move from one network to another: Once a network has been configured and joined once, it can be detected and re-joined automatically the next time it's available.

```
[*] Networking support --->
[NET]
  Networking options --->
    [*]   TCP/IP networking
[INET]
    <*/M>   IP: tunneling
[NET_IPIP]
    <*/M>   IP: GRE demultiplexer
[NET_IPGRE_DEMUX]
    <*/M>   IP: GRE tunnels over IP
[NET_IPGRE]
    <*>     The IPv6 protocol --->
[IPV6]
      <*/M>   IPv6: IPv6-in-IPv4 tunnel (SIT driver)
[IPV6_SIT]
      <*/M>   IPv6: GRE tunnel
[IPV6_GRE]
      [*]     IPv6: Multiple Routing Tables
[IPV6_MULTIPLE_TABLES]
    [*]     MPTCP: Multipath TCP
[MPTCP]
    [*]       MPTCP: IPv6 support for Multipath TCP
[MPTCP_IPV6]
    <*/M> 802.1Q/802.1ad VLAN Support
[VLAN_8021Q]
    [*]   QoS and/or fair queueing --->
[NET_SCHED]
      <*> Stochastic Fairness Queueing (SFQ)
[NET_SCH_SFQ]
      <*> Token Bucket Filter (TBF)
[NET_SCH_TBF]
      <*> Fair Queue Controlled Delay AQM (FQ_CODEL)
[NET_SCH_FQ_CODEL]
      <*> Ingress/classifier-action Qdisc
[NET_SCH_INGRESS]
```

```
Device Drivers --->
  [*] Network device support --->
[NETDEVICES]
    [*]   Network core driver support
[NET_CORE]
    <*/M>   Bonding driver support
[BONDING]
    <*/M>   Dummy net driver support
[DUMMY]
    <*/M>   Ethernet team driver support --->
[NET_TEAM]
    <*/M>   MAC-VLAN support
[MACVLAN]
    <*/M>     MAC-VLAN based tap driver
[MACVTAP]
    <*/M>   IP-VLAN support
[IPVLAN]
    <*/M>   Virtual eXtensible Local Area Network (VXLAN)
[VXLAN]
    <*/M>   Virtual ethernet pair device
[VETH]
    <*/M>   Virtual Routing and Forwarding (Lite)
[NET_VRF]
```

Wireshark-4.2.3

The Wireshark package contains a network protocol analyzer, also known as a “sniffer”. This is useful for analyzing data captured “off the wire” from a live network connection, or data read from a capture file.

Wireshark provides both a graphical and a TTY-mode front-end for examining captured network packets from over 500 protocols, as well as the capability to read capture files from many other popular network analyzers.

```
[*] Networking support --->
[NET]
  Networking options --->
    <*/M> Packet socket
[PACKET]
```

libnl-3.9.0

The libnl suite is a collection of libraries providing APIs to netlink protocol based Linux kernel interfaces.

```
General setup --->
```

```
  -*- Namespaces support --->
[NAMESPACES]
    [*] User namespace
[USER_NS]
    [*] Network namespace
[NET_NS]

[*] Networking support --->
[NET]
  Networking options --->
    [*]   TCP/IP networking
[INET]
    [*]     IP: advanced router
[IP_ADVANCED_ROUTER]
    [*]       IP: policy routing
[IP_MULTIPLE_TABLES]
    <*/M>   IP: tunneling
[NET_IPIP]
    <*/M>   IP: GRE demultiplexer
[NET_IPGRE_DEMUX]
    <*/M>   IP: GRE tunnels over IP
[NET_IPGRE]
    <*/M>   Virtual (secure) IP: tunneling
[NET_IPVTI]
    <*>     The IPv6 protocol --->
[IPV6]
      <*/M>   IPv6: IPv6-in-IPv4 tunnel (SIT driver)
[IPV6_SIT]
      <*/M>   IPv6: IP-in-IPv6 tunnel (RFC2473)
[IPV6_TUNNEL]
      [*]     IPv6: Multiple Routing Tables
[IPV6_MULTIPLE_TABLES]
    [*]   Network packet filtering framework (Netfilter) --->
[NETFILTER]
      Core Netfilter Configuration --->
        <*/M> Netfilter nf_tables support
[NF_TABLES]
        [*]     Netfilter nf_tables netdev tables support
[NF_TABLES_NETDEV]
        {*/M}   Netfilter packet duplication support
[NF_DUP_NETDEV]
        <*/M>   Netfilter nf_tables netdev packet forwarding support
                                                              ...
[NFT_FWD_NETDEV]
    <*/M> 802.1d Ethernet Bridging
[BRIDGE]
    <*/M> 802.1Q/802.1ad VLAN Support
[VLAN_8021Q]
    -*-   L3 Master device support
[NET_L3_MASTER_DEV]
```

```
Device Drivers --->
  [*] Network device support --->
[NETDEVICES]
    [*]   Network core driver support
[NET_CORE]
    <*/M>   Bonding driver support
[BONDING]
    <*/M>   Dummy net driver support
[DUMMY]
    <*/M>   Intermediate Functional Block support
[IFB]
    <*/M>   MAC-VLAN support
[MACVLAN]
    <*/M>     MAC-VLAN based tap driver
[MACVTAP]
    <*/M>   IP-VLAN support
[IPVLAN]
    <*/M>   Virtual eXtensible Local Area Network (VXLAN)
[VXLAN]
    <*/M>   IEEE 802.1AE MAC-level encryption (MACsec)
[MACSEC]
    <*/M>   Virtual ethernet pair device
[VETH]
    <*/M>   Virtual Routing and Forwarding (Lite)
[NET_VRF]
```

Kea 2.4.1 DHCP Server

The ISC Kea package contains the server programs for DHCP. It is the successor of the old ISC DHCP server which is end-of-life since December 2022.

```
[*] Networking support --->
[NET]
  Networking options --->
    <*/M> Packet socket
[PACKET]
    [*]   TCP/IP networking
[INET]
    <*>     The IPv6 protocol --->
[IPV6]
```

Mesa-24.0.1

Mesa is an OpenGL compatible 3D graphics library.

```
Device Drivers --->
```

```
  Graphics support --->
    <*/M>   Direct Rendering Manager (XFree86 4.1.0 and higher DRI support)
--->
                                                                          ...
[DRM]
    # For r300 or r600:
    < /*/M> ATI Radeon
[DRM_RADEON]
    # For radeonsi:
    < /*/M> AMD GPU
[DRM_AMDGPU]
    [*]       Enable amdgpu support for SI parts
[DRM_AMDGPU_SI]
    [*]       Enable amdgpu support for CIK parts
[DRM_AMDGPU_CIK]
      Display Engine Configuration --->
      [*]   AMD DC - Enable new display engine
[DRM_AMD_DC]
    # For nouveau:
    < /*/M> Nouveau (NVIDIA) cards
[DRM_NOUVEAU]
    # For i915, crocus, or iris:
    < /*/M> Intel 8xx/9xx/G3x/G4x/HD Graphics
[DRM_I915]
    # For swrast:
    < /*/M> Virtual GEM provider
[DRM_VGEM]
    # For svga:
    < /*/M> DRM driver for VMware Virtual GPU
[DRM_VMWGFX]
```

Xorg-Server-21.1.11

The Xorg Server is the core of the X Window system.

```
Device Drivers --->
  Graphics support --->
    <*/M>   Direct Rendering Manager (XFree86 4.1.0 and higher DRI support)
--->
                                                                          ...
[DRM]
    < /*/M> DRM driver for VMware Virtual GPU
[DRM_VMWGFX]
    < /*/M> DRM Support for bochs dispi vga interface (qemu stdvga)
[DRM_BOCHS]
    < /*/M> Virtual Box Graphics Card
[DRM_VBOXVIDEO]
```

```
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]
    <*> Simple framebuffer driver
[DRM_SIMPLEDRM]
```

Xorg Input Drivers

The Xorg Input Drivers page contains the instructions for building Xorg input drivers that are necessary in order for Xorg Server to respond user inputs.

```
Device Drivers --->
  Input device support --->
    -*-   Generic input layer (needed for keyboard, mouse, ...)
[INPUT]
    <*/M>   Event interface
[INPUT_EVDEV]

Device Drivers --->
  Input device support --->
    -*- Generic input layer (needed for keyboard, mouse, ...)
[INPUT]
    [*]   Miscellaneous devices --->
[INPUT_MISC]
      <*/M>   User level driver support
[INPUT_UINPUT]

Device Drivers --->
  [*] HID bus support --->
[HID_SUPPORT]
    {*/M} HID bus core support
[HID]
      Special HID drivers --->
      <*/M>   Wacom Intuos/Graphire tablet support (USB)
[HID_WACOM]
    USB HID support --->
      <*/M> USB HID transport layer
[USB_HID]
  [*] USB support --->
[USB_SUPPORT]
    <*/M> Support for Host-side USB
[USB]
```

QtWebEngine-5.15.17

QtWebEngine integrates chromium's web capabilities into Qt. It ships with its own copy of ninja which it uses for the build if it cannot find a system copy, and various copies of libraries from ffmpeg, icu, libvpx, and zlib (including libminizip) which have been forked by the chromium developers.

```
General setup --->
  -*- Namespaces support --->
[NAMESPACES]
    # Enable or disable *both* of them:
    [ /*] User namespace
[USER_NS]
    [ /*] PID Namespaces
[PID_NS]
```

Rox-Filer-2.11

rox-filer is a fast, lightweight, gtk2 file manager.

```
File systems --->
  [*] Dnotify support
[DNOTIFY]
```

alsa-lib-1.2.11

The ALSA Library package contains the ALSA library used by programs (including ALSA Utilities) requiring access to the ALSA sound interface.

```
Device Drivers --->
  <*/M> Sound card support --->
[SOUND]
    # Select settings and drivers appropriate for your hardware
    # in the submenu:
    <*/M> Advanced Linux Sound Architecture --->
[SND]
```

intel-media-23.4.3

The intel-media package provides a VA API driver for Intel GPUs that are provided with Broadwell CPUs and higher. This includes support for a variety of codecs.

```
Device Drivers --->
```

```
  Graphics support --->
    <*/M> Direct Rendering Manager (XFree86 4.1.0 and higher DRI support) --
->
                                                                          ...
[DRM]
    <*/M> Intel 8xx/9xx/G3x/G4x/HD Graphics
[DRM_I915]
```

intel-vaapi-driver-2.4.1

The intel-vaapi-driver package contains a VA API driver for Intel GPUs that are provided with Haswell CPUs and earlier.

```
Device Drivers --->
  Graphics support --->
    <*/M> Direct Rendering Manager (XFree86 4.1.0 and higher DRI support) --
->
                                                                          ...
[DRM]
    <*/M> Intel 8xx/9xx/G3x/G4x/HD Graphics
[DRM_I915]
```

Cups-2.4.7

The Common Unix Printing System (CUPS) is a print spooler and associated utilities. It is based on the “Internet Printing Protocol” and provides printing services to most PostScript and raster printers.

```
Device Drivers --->
  [*] USB support --->
[USB_SUPPORT]
    <*/M> USB Printer support
[USB_PRINTER]

Device Drivers --->
  <*/M> Parallel port support --->
[PARPORT]
    <*/M> PC-style hardware
[PARPORT_PC]
  Character devices --->
    <*/M> Parallel printer support
[PRINTER]
```

Gutenprint-5.3.4

The Gutenprint (formerly Gimp-Print) package contains high quality drivers for many brands and models of printers for use with Cups-2.4.7 and the GIMP-2.0. See a list of supported printers at https://gutenprint.sourceforge.net/p_Supported_Printers.php.

```
Device Drivers --->
  [*] USB support --->
[USB_SUPPORT]
    <*/M> USB Printer support
[USB_PRINTER]
```