

# OE6 Packages

## System Essentials:

- **Standard minimal headless server image with package management:** This is the base operating system that provides core functionality for a server without a graphical user interface (GUI). Package management allows for installing, updating, and removing software. Common options include Opkg (used in OpenWrt).
- **Coreutils v9.0 with full command line:** A set of essential command-line utilities for file manipulation, process management, and more. Version 9.0 indicates the software version.
- **systemd[1]:** A system and service manager responsible for booting the system, managing processes, and running services. Note 1 indicates some products might default to sysvinit for performance reasons. You may need to choose between systemd and sysvinit.
- **avahi:** Enables zero-configuration networking, allowing devices to discover each other on a local network without manual configuration.
- **bash-completion:** Provides auto-completion suggestions for commands and arguments in the Bash shell.

## Security and User Management:

- **User management with sudoers:** Allows creation and management of user accounts, along with granting specific users administrative privileges (sudo) through the sudoers file.

## Development and Debugging:

- **Python3 v3.10.13:** A popular high-level programming language often used for scripting and application development. Version 3.10.13 specifies the software version.
- **Opkg (ipk package manager):** The specific package manager used in this system to manage ipk packages (similar to deb packages in Debian-based systems).
- **gdbserver:** A debugger server that allows for remote debugging of applications.
- **htop:** A text-based process viewer for monitoring system resources and running processes.
- **sshpass:** A tool for providing passwords for SSH connections without user interaction (use with caution due to security concerns).
- **ldd:** Lists the shared libraries required by an executable program.
- **inotify-tools:** Tools for monitoring file system events (creation, deletion, modifications).

## Hardware Testing:

- **picocom:** A serial port terminal emulator for communicating with serial devices.
- **i2c-tools:** Tools for accessing and managing I2C (Inter-Integrated Circuit) communication buses.
- **spitools:** Tools for accessing and managing SPI (Serial Peripheral Interface) communication buses.
- **can-utils:** Tools for accessing and managing CAN (Controller Area Network) buses.
- **libgpiod-tools:** Tools for interacting with general-purpose input/output (GPIO) pins.
- **alsa-utils:** Utilities for configuring and managing the Advanced Linux Sound Architecture (ALSA) audio subsystem.

## Performance Tools:

- **iperf3:** A tool for measuring network performance (bandwidth, latency).
- **sysbench:** A versatile tool for benchmarking system performance (CPU, memory, I/O).
- **pwm-tools:** Tools for controlling Pulse Width Modulation (PWM) signals used to control devices like LEDs or motors.

## (IIOT) Industrial Internet of Things Utilities

- **UUT-server:** A server utilizing protobuf messages to run designed tests and return pass/fail statistics/logs. See GIT note for details.
- **libmodbus:** A library for Modbus communication protocol, commonly used in industrial automation.
- **ser2net:** A tool for creating a virtual network server from a serial port.
- **libsocketcan:** A library for accessing and managing CAN (Controller Area Network) buses from user-space applications.
- **boost:** A collection of C++ libraries for various development tasks.
- **json-c:** A library for working with JSON data format in C programs.
- **mosquitto:** An open-source MQTT (Message Queuing Telemetry Transport) message broker for IoT applications.
- **paho-mqtt-c:** A C client library for interacting with MQTT message brokers.
- **micropython (unix port):** A port of the MicroPython programming language for running Python code on microcontrollers.

### Network Utilities:

- **connman (or NetworkManager):** Network connection management tools.
- **modemmanager:** Manages communication with cellular modems.

### Web Servers:

- **apache-websocket:** Enables WebSocket support for Apache web server.
- **apache2:** A popular open-source web server software.
- **nginx:** Another popular high-performance web server.
- **sthttpd:** A small, lightweight web server.

### Web Application Tools:

- **phpmyadmin:** A web-based administration tool for managing MySQL databases.
- **spawn-fcgi:** A FastCGI process spawner for executing CGI (Common Gateway Interface) programs.
- **fcgi:** The FastCGI protocol itself, which enables efficient communication between web servers and applications.
- **fcgiwrap:** A tool for wrapping CGI programs as FastCGI applications.

### System Administration and Monitoring:

- **cockpit (depends on systemd):** A web-based graphical interface for system administration tasks, reliant on systemd for functionality.
- **webmin:** A web-based administration tool for managing various system services and configurations.

### Databases:

- **influxdb:** A time series database optimized for storing and analyzing time-stamped data.
- **mariadb:** A popular open-source relational database management system (similar to MySQL).
- **sqlite:** A self-contained, lightweight relational database engine.
- **sqlite3:** Likely the command-line interface for interacting with sqlite databases.

### File Sharing:

- **tftp-hpa:** Trivial File Transfer Protocol (TFTP) server implementation with additional features.
- **tftp-hpa-server:** The server component of tftp-hpa for providing TFTP file transfer services.
- **nfs-utils:** Tools for implementing the Network File System (NFS) protocol for sharing file systems over a network.
- **nfs-utils-client:** The client component of nfs-utils for mounting remote NFS file systems.

### Mail Servers:

- **postfix:** A popular open-source mail transfer agent (MTA) for handling email delivery.
- **msmtp:** A simple command-line mail sending tool.

### Routing and Firewalling:

- **dnsmasq:** A lightweight DNS server, DHCP server, and TFTP server often used in small networks.
- **nftables:** A next-generation firewall framework for packet filtering and traffic control.
- **iptables:** The classic firewall tool for packet filtering and traffic control (potentially being replaced by nftables).
- **firewalld:** A dynamic firewall management tool built on top of iptables or nftables.

### Timekeeping:

- **tzdata:** Core package containing timezone data.  
*tzdata- (various regions):\** Additional packages providing timezone data for specific regions (e.g., africa, americas, asia, etc.).

### Other Software:

- **Qt5 or Qt6 installations:** Cross-platform application development frameworks for creating graphical user interfaces (GUI).
- **X11 Desktop (XFCE or Sato):** Windowing systems and desktop environments for providing a graphical user interface.
- **Wayland Weston Desktop:** A next-generation display server protocol for running graphical applications.
- **Chromium x11 or wayland kiosk:** A web browser designed for kiosk mode, potentially using either X11 or Wayland for display.

### **Additional Resources:**

- **All ipk packages:** Information on all available ipk packages for the system.
- **Machine specific SDK installers via Yocto's Extensible SDK:** Software development kits (SDK) for specific machines using Yocto Project's Extensible SDK.
- **All licensing information available for packages:** Licensing information for all packages available

### **Distribution source for EMAC OE 6 can be found at:**

<https://git.emacinc.com/OE/emacs-oe/-/tree/kirkstone>

EMAC OE 6.0, codename spike

Openembedded Linux Distribution based on Poky 4.0 (codename kirkstone)

- Supported machines with Prebuilt images tested as of April 2024:
  - IPAC-9X25
  - SoM-9X25
  - SoM-A5D35\*
  - SoM-A5D36\*
    - SoM-A5D36M\*
    - SoM-A5D36P\*
  - SoM-IMX6M
  - SoM-IMX6U
  - SoM-3354M
  - SoM-5728M
  - PCM-9375
  - SoM-2569
  - PPC-IMX8MM
  - EBOX-IMX8MM
  - PPC-IMX8MM
  - Generic x86
  - Generic x86-i586
  - Generic x86-64
  - Intel Core2-32
  - Intel Corei7-64