

Medallion Software Technology

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Table of contents

1	Techsol's Software Technology Platform.....	2
1.1	Medallion Linux.....	2
1.2	Medallion Software Technology.....	2
1.3	Techsol's Medallion Software Frequently Asked Questions.....	3
1.3.1	What software is shipped with Medallion CPU modules?.....	3
2	Techsol's toolchain.....	3
3	Software Licensing.....	4

1 Techsol's Software Technology Platform

1.1 Medallion Linux

Techsol products all ship with the Linux Operating System (OS).

Whether you buy a standard CPU module, or get a custom design engineered for you, you get to leverage dozens of man-years of SW engineering.

And that SW has all been developed, tested, and proven on our Medallion HW platform.

1.2 Medallion Software Technology

We call this integrated HW and SW system the "Medallion System".

A partial list of "**Medallion System**" **Advantages** include:

- Reduced Time-to-Market
- Reduced non-recurring engineering costs
- Very low recurring engineering costs
- No run time software license required
- Easy to customize and upgrade
- Proven, reliable technology

See "[What are the advantages of using Medallion CPU Modules?](#)" for a more detailed list.

In addition, you get piles of **Free Bundled Software**, including:

- Techsol's robust, developer-friendly Boot-Loader stack to speed development and simplify upgrades
- Embedded Linux OS with customized drivers (with source)
- [Linux Development Tools \(with source\)](#)
- GDB Debugger
- Small-footprint Flash-based OS
- Root file system with BusyBox
- TCP/IP Stack plus development utilities
- Linux file security
- FTP for remote updates
- Device drivers for standard peripherals
- Piles of GUIs to choose from!
- [PyGTK](#) for writing GTK+ GUI programs in Python
- QtEmbedded GUI from Trolltech
- USB Host support for Mass Storage, input devices, cameras, WiFi, etc.
- USB Device (Gadget) support for IP over USB
- Cellular support for GSM/GPRS, and CDMA-1X

Plus, you can select from these (cost extra) Options:

- a [JVM \(Java Virtual Machine\)](#)
- FancyPants GUI from Fluffy Spider Technologies

1.3 Techsol's Medallion Software Frequently Asked Questions

If you cannot find an answer on this page, please e-mail <support@techsol.ca>.

1.3.1 What software is shipped with Medallion CPU modules?

We normally ship units with Linux preinstalled in the DiskOnChip (DOC) or NAND flash. The following table describes our SW architecture:

Item	Location
Low-level boot loader	NOR flash (boot block)
Smart boot with monitor program	NOR flash block
Configuration info	NOR flash block
Linux kernel loader	NOR flash blocks
Customer's runtime, Linux image	NAND flash/DOC (compressed in a read-only file system)
Root file system, drivers, apps, data	One or more UBIFS (formerly JFFS2) file systems in NAND flash/DOC
Optional, additional data	One or more UBIFS (formerly JFFS2) file systems in NAND flash

Our minimum flash configuration is 2 MB. It contains our proprietary boot loader/debugger and configuration info. It allows the unit to be recovered in case a program accidentally deletes the OS from the NAND flash/DOC. The initial boot loader uses the serial port as a console.

2 Techsol's toolchain

Techsol's **toolchain** is based on [BitBake](#) and [OpenEmbedded](#).

[BitBake](#) is a simple tool for the **execution of tasks**. It is derived from [Portage](#), which is the **package management system** used by the [Gentoo Linux distribution](#). It is most commonly used to build **packages**, and is used as the basis of the [OpenEmbedded project](#). — [BitBake project summary](#)

OpenEmbedded is a collection of **metadata** used in combination with **BitBake**.

OpenEmbedded consists of **BitBake recipes** (.bb files).

A **BitBake recipe**, which is equivalent to an **ebuild** file in **Portage**, is a text file containing **instructions** for **building** a software package from its **source distribution**. Both Portage and BitBake *automatically* resolve build and runtime **dependencies**. This enables the user to build a desired package without having to *manually* locate, obtain, and build all of the package's dependencies, the dependencies's dependencies, and so on; both Portage and BitBake do all this work *automatically*.

Techsol's toolchain can be used inside the **host environment** (alongside the host's **native build tools**) or inside a **chroot environment**.

A **chroot environment** is a **self-contained** environment used on a Linux PC for **cross-building** for Medallion **targets**.

chroot means **change root directory**: to build **distributions** (file system images) for a Medallion computer or build applications or **packages** for **Medallion Linux**, a **developer** uses a **shell (command-line interface)** on a Linux PC to change the **root directory** to Techsol's OpenEmbedded chroot environment. This helps **isolate** the **build environment** from the **host environment**, to **reduce problems** caused by different PC Linux distributions, **software configurations** and **versions**, etc.

3 Software Licensing

We do not charge licenses for Techsol's SW or tools on products we build. However, IBM charges for their JVM, so anything with Java support has a license (starting at 20 USD in low volume, dropping to 3 USD or less in high volumes) If someone wants to build products from our design then we can license it to you and we are flexible on terms. We have licensed to low-volume customers (military-medical equipment) and high-volume customers (Verifone uses our platform for some of their credit card payment terminals); every situation is unique.