RoweBots

Software Data Sheet

Unison 4 and Unison 5

for **Actel**®

SMARTFUSION™ **SoftConsole**

- Unison is an ultra tiny Linux and POSIX compatible RTOS. It is based on open standards offered by Linux and POSIX. If you want an open standards based RTOS or just a tiny, fast and deterministic RTOS, Unison is the perfect choice to minimize your total cost of ownership.

- Unison's nano-kernel architecture coupled with widely known and utilized Linux compatible applications programming interfaces makes development simple. Software reuse is maximized while training and finding trained people are minimized, accelerating development and reducing time to market.

- Unison is very easy to learn and use for developing device drivers.When compared to Linux, it is much faster. Unison uses six primitives to construct and develop drivers (or servers) with complete independence between drivers. Development of embedded device control has never been faster or easier!

- Unison offers near zero boot time and hard real-time performance. A major limitation of Linux for embedded systems is the slow boot time – Unison does this in milliseconds in the worst case. Deterministic interrupt service is measured in nanoseconds.

- Unison has both commercial and open source licenses to completely eliminate licensing risks. It works with processors with or without an MMU or MPU to speed your development while retaining control of your application source code.

Unison is currently available in two baseline versions depending on your requirements

Unison Architecture

Unison 4 and Unison 5 have identical architectures and users can seamlessly upgrade to later versions. All versions are fully compatible with each other as well as with POSIX and Linux.

The core Unison system is augmented by separately installed and initialized servers (or device drivers) in the nano-kernel architecture. By installing new services the capabilities of the system are increased. For example by installing and using a couple of lines of code to initialize the FAT compatible file system, FAT compatible file I/O is added for a device.
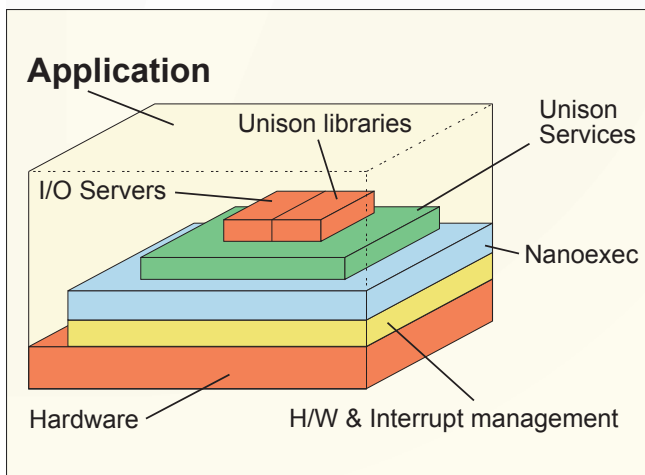
Unison Architecture

Unison 4 or Unison 5?

- Unison 4 is the **free version** of Unison, whereas Unison 5 is a **commercial version** available for purchase. While Unison 4 and Unison 5 are compatible, Unison 4 is a small subset of Unison 5.

- Users can start with **Unison 4** and add on other modules – such as documentation, source code and networking services – as purchased extras. Although intended for non-commercial use, Unison 4 carries a commercial-use license which is free for users who wish to implement small systems using community support.

- **Unison 5** comes complete with extensive documentation, source code and commercial-grade support.

- Unison 5 offers a broad set of features and add on modules which allow it to solve complex problems with ease. From web services to NAND flash file systems and wireless – Unison 5 has it all, off the shelf, and ready to solve your RTOS problems immediately.

- In addition to its standard modules which are all tested to exacting POSIX standards, Unison offers the ability to have other standard services for the price of a single license. If you need a standard service not yet provided by Unison 5, just ask. Rowebots' fully integrated modules often prove to be very inexpensive. Especially when compared to in-house development, testing and integration.

- Unison 5 also comes with consulting support. If you are looking for unique features, RoweBots will augment Unison to meet your precise needs. If your team needs training, RoweBots will bring your team up to speed quickly and easily.

Unison 4 and Unison 5 Comparison

Component		Unison 4	Unison 5
Tools	Datalogger		✓
	Timing Tool		✓
	Flash Downloader		✓
	Power On Self Test (POST)		✓
	RTOS Object Viewer	✓	✓
Kernel	pthread creation	✓	✓
	pthread attributes	limited	✓
	interrupt handling	limited	✓
	directory services	limited	✓
	semaphores	✓	✓
	mutex	✓	✓
	timers	limited	✓
	real-time clock	limited	✓
	rendezvous	✓	✓
	byte memory manager - malloc	✓	✓
	block memory manager		✓
	hardware floating point		consult factory
	message queues		✓
	pthread join		✓
	pthread cancel		✓
	barriers		✓
	condition variables		✓
	pthread utilization		✓
IOlib	file I/O	✓	✓
	socket I/O	✓	✓
	select		✓

Component		Unison 4	Unison 5
StdIO		✓	✓
Servers (or drivers)	ttyserver	limited	✓
	tcp/udp/ip	limited	✓
	fsys file server	✓	✓
	fat file server		✓
	flash file server		✓
	DCHP Client		✓
	DHCP Server		✓
	POSIX Shell - POSH		✓
	Network Real-Time Clock		✓
	Telnet		✓
	TFTP		✓
	PPP		✓
	NAT		✓
	Wireless - BT		✓
	Wireless - WiFi		✓
	Wireless - Zigbee		✓
	UPnP		consult factory
	Graphics		✓
	Motor Control		✓
	CAN		✓
	Power Management		✓
	USB embedded host		consult factory
	USB - HID/Mass storage		consult factory
	USB 3.0		consult factory
	USB OTG		consult factory
	HTTP		✓
	ADPCM		consult factory

Software Version	• Unison 4.1 • Unison 5.1

Supported Hosts	• Windows XP™ • Windows Vista™ • Windows System 7™

Availability	• Production • Q2, 2010

Supported Devices	• **ARM**
	  ▪ Cortex-M3
	  ▪ **Actel** ▪ SmartFusion

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