xTOOLS

xTIMEcomposer DESIGN TOOLS SUITE

Our comprehensive development tools suite provides everything you need to write, debug and test applications based on xCORE multicore microcontrollers. The full xTIMEcomposer™ tool set includes unique capabilities such as the xSCOPE logic analyzer and XMOS Timing Analyzer, that let you get the best performance from the deterministic xCORE architecture. With our libraries of software peripherals and application notes with executable code samples, it's easy to deliver xCORE applications.

INDUSTRY LEADING DESIGN TOOLS

xCORE multicore microcontrollers are programmed using the xTIMEcomposer tools and high level languages ANSI C and C++. Simple multicore extensions to C make it easy to exploit concurrency and parallelism, define data flows and timed events, and manage memory safely. With xTIMEcomposer and these multicore extensions, you can quickly harness the powerful features of xCORE multicore microcontrollers.

If you want to know exactly what's happening inside the processor and analyze the behavior of the real-time code running on a device, our unique xSCOPE software analyzer will collect data from a running application or display it via a real-time scope view, using minimal appllication overhead.

Our cycle accurate simulator provides a wealth of information about your application. With many trace options, VCD output and loopback support, you can quickly model your xCORE system in software.

Wherever you have critical timing requirements, you can use our XTA static timing analyzer to ensure that all your real-time specifications are met without the need for complex and time-consuming dynamic test suites.

We also provide board utilities for both your development and manufacturing environment. During development, you load programs from a host PC over JTAG using our xTAG debug adapter. During manufacturing you can program your image securely into FLASH. The security features of xCORE let you enable a secure bootloader to ensure program and device authenticity.

xTIMEcomposer is available in two editions: xTIMEcomposer Community, which includes our latest software development and is free to download to all users; xTIMEcomposer Enterprise for developers who want a verified industrial standard tool chain with industry leading levels of support and service level agreement.

- **Eclipse graphical environment**
  – Plus command line option
- **LLVM C and C++ compilers**
  – Multicore extensions for C
- **xDEBUG**
  – GDB multicore debugger
- **xSIM**
  – Cycle accurate simulator
- **xSCOPE**
  – In-circuit instrumenation
  – Real-time logic analyzer
- **XTA**
  – Static timing analysis
- **Software libraries, appnotes**
  – Drag-and-drop peripherals
  – Executable application notes
- **Multiple platform support**
  – Windows | OS-X | Linux
- **Enterprise/Community editions**
  – Tools support for everyone

xTIMEcomposer Studio provides a complete software development environment running on Windows, MacOSX and Linux platforms. Based on Eclipse, the IDE will be familiar to any embedded programmer, providing ease of use and high productivity. We've also added a navigation bar so you can quickly switch between common tasks like editing, analysis, debug, trace and help.

And it's not just about the tools. The Library Browser provides the best way to add verified software peripherals to your project. Application notes and "How-to" examples, which include executable code samples, are all listed in the Examples perspective. The Developer Column displays reference documentation for software.
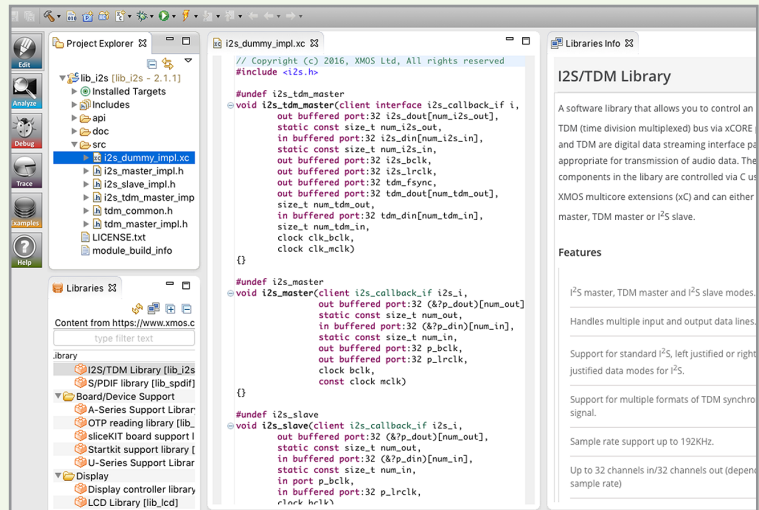
SOFTWARE LIBRARIES AND APPLICATION NOTES
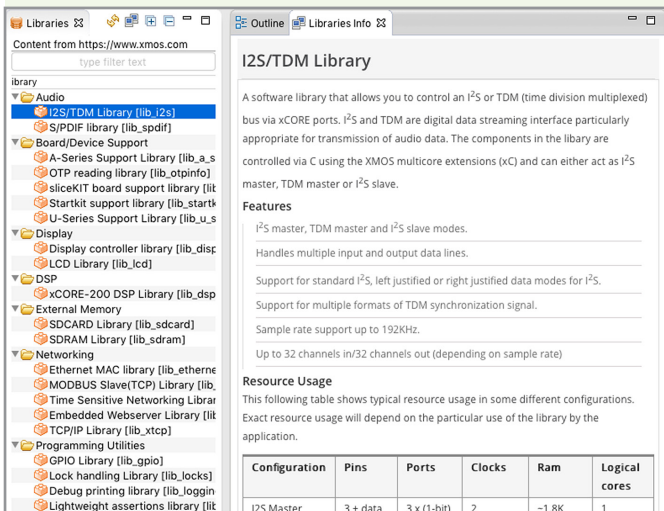
Our library of software peripherals is key to the configurable features of xCORE, allowing you to define the exact combination of peripherals and processor blocks you require.

Use the Library Browser to browse our verified software components, which include interfaces such as USB, Ethernet and serial ports. Related documentation for each library is displayed in the Developer Column including example resource usage.

Application notes are listed in the Examples window and detail how to use the xCORE Software Libraries, complete essential tasks on xCORE devices and use the xTIMEcomposer tools, including xSCOPE and XTA. Many application notes include verified executable code samples that you can drag into your projects.

xCORE SIMULATOR

Our cycle-accurate (xSIM) simulator models your whole xCORE system including: packages, nodes, tiles, cores, resources, links, ports and memory. The simulator can also connect external components to the pins/links to construct testbenches or model an entire system using loopback configuration, user-defined plugins and user-defined test benches.

xSIM includes many tracing options and a VCD (value change dump) trace mechanism that links output to code sources and outputs a file for offline analysis within xTIMEcomposer Studio or third party tools. If you need even more information, xSIM provides a trace plugin interface which can be used to write custom trace file formats.
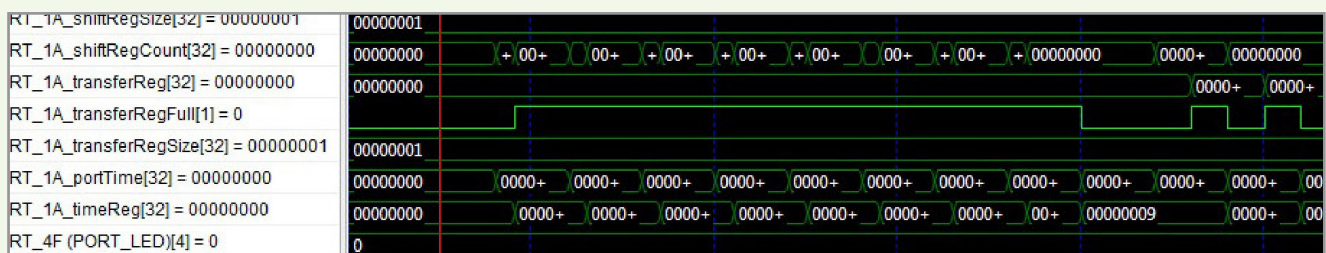
TIMING ANALYSIS AND XTA

xCORE devices are uniquely low latency and timing deterministic. This makes them ideal for hard real-time programming.

The XMOS Timing Analyzer (XTA) verifies whether timing will be met. XTA analyzes your application binary and reports the worst and best case timing paths through your code. It is a formal tool, offering 100% coverage of your code without the need for a test bench.

By understanding the worst-case timing through your code, you not only enhance performance: you can also eliminate the need to over-specify processing power and hence create leaner, more efficient systems.
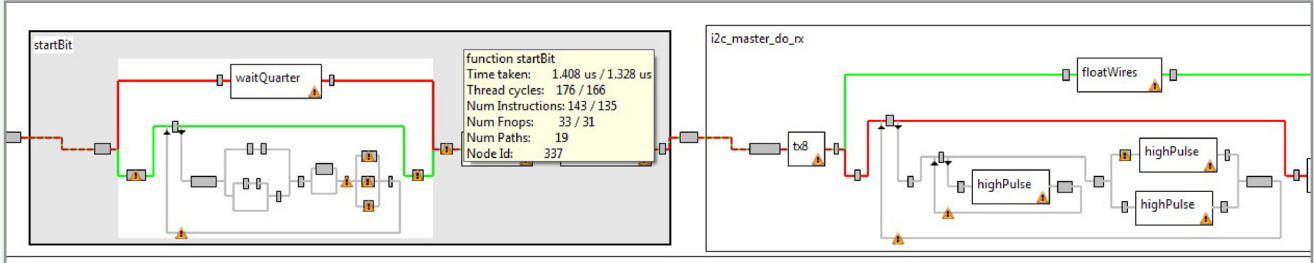
xSCOPE LOGIC ANALYZER AND REAL-TIME SCOPE

The xSCOPE library provides in-circuit instrumentation of user-specified data probes. Once connected, xSCOPE behaves like a traditional oscilloscope or logic analyzer, with only a small overhead to the operation of your application.

xSCOPE provides time base control, multiple input channels, scales and triggers. Each probe outputs the user data, the formatting, a core ID and a 10ns time stamp. Data can be output to a file for offline analysis or viewed in real-time via xTIMEcomposer Studio.
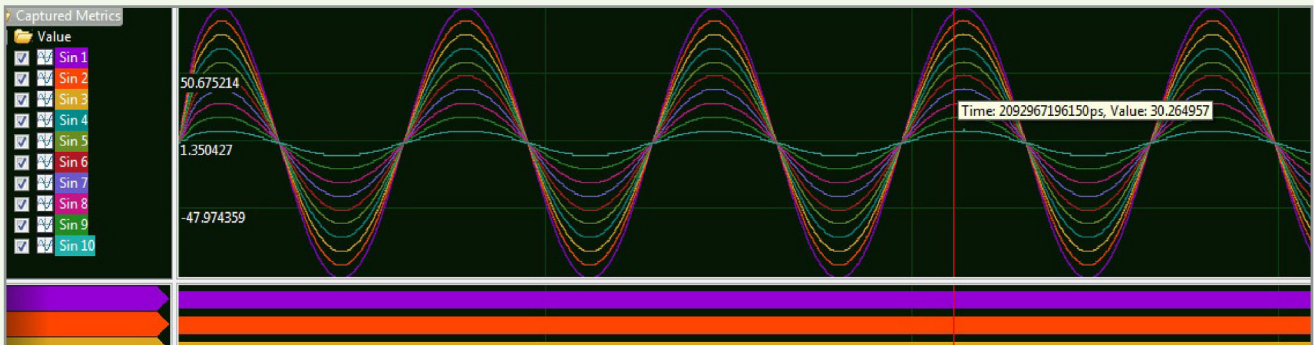

HARDWARE AND BOARD UTILITIES

When you're ready to test your code on hardware such as our voice/audio platforms or sliceKIT, xTIMEcomposer provides all the software tools you need including: xFLASH for programming flash devices on your board; and xBURN for creating secure images to burn into the OTP memory of xCORE devices.

You can build secure systems with multiple boot images, providing different product configurations using a single development platform.

Connect your development system to the target board using the xTAG debug adapter and then use the Run and Flash Configurations in xTIMEcomposer to load the software onto the hardware.
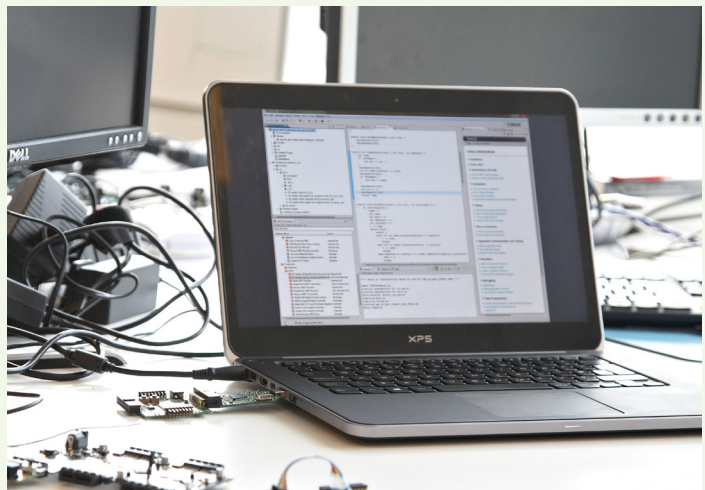
xTAG DEBUG ADAPTERS

The xTAG provides a high speed, low latency bridge between USB on the host and fast JTAG connection (up to 10Mbps) on the target. The debug stub is executed on the adapter itself, ensuring lightning quick debug functions, such as single stepping.

In addition to the debug capability, UART and xCONNECT ports are supported, providing communication with the xCORE during run time. These ports are the key to the xSCOPE tool, which can capture application data capture at up to 1.25 MSPS.
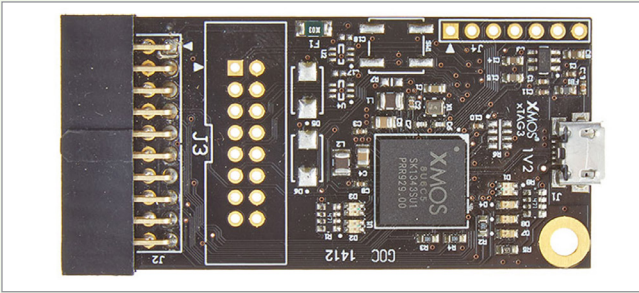
Our entry-level xTAG provides full debug capabilities and support for the xSCOPE tool. It is included in most of our development kits.

We also provide the xTAG-PRO, which adds an analog scope and dynamic power monitoring to all the features of the xTAG. You can use the xTIMEcomposer tools to monitor the xCORE device power consumption and your application behavior using the xSCOPE library and simulator; as well as verifying timing requirements using the XMOS Timing Analyzer.

xTIMEcomposer EDITIONS

The xTIMEcomposer Community tools are free to download for all registered users. Support for general enquiries or hardware/software bugs is provided by XMOS, as well as the XCore Community at http://www.xcore.com.

If you require access to full technical support via our secure, confidential ticketing system, you can upgrade to xTIMEcomposer Enterprise, which includes a service level support agreement. xTIMEcomposer Enterprise also comes with a free xTAG-PRO.

	xTIMEcomposer COMMUNITY	xTIMEcomposer ENTERPRISE (trial)	xTIMEcomposer ENTERPRISE
FEATURES	Latest xTIMEcomposer beta release	Latest xTIMEcomposer verified release	Latest xTIMEcomposer verified release
SUPPORT	xCORE Community General enquiries Report a bug	30 days access to ticketing system with responsive support channel	Full access to ticketing system with highly responsive one-to-one support channel
SOFTWARE	Free production components Reference designs and licensed software on request	All components, reference designs and licensed software	All components, reference designs and licensed software
DEBUGGER	xTAG and xTAG-PRO	xTAG and xTAG-PRO	xTAG and xTAG-PRO License includes an xTAG-PRO

ORDERING INFORMATION

EDITION	REGISTRATION	PART #	PRICE
xTIMEcomposer Community Edition	Download development tools: www.xmos.com/xtimecomposer		Free
xTIMEcomposer Enterprise Trial License	Request trial license from XMOS: www.xmos.com/contact/enquiries		Free
xTIMEcomposer Enterprise License	Contact local distributor: www.xmos.com/contact/distributors	XT-XTEE	$4,995 per year site license