

Development Tools for ARM-based MCUs

Select from the Best in Support

All of NXP's ARM microcontrollers are supported by a well-established – and rapidly growing – network of third-party tool suppliers. Customers have direct access to a wide set of options, from evaluation boards and emulators to compilers, debuggers, RTOSs, software stacks, and more. This document provides an overview of these exceptional support-tool offerings. For further information about NXP microcontrollers and their surrounding ecosystem, please visit www.nxp.com/microcontrollers.

Evaluation Boards, Starter Kits, and Single Board Computers (SBCs)

Evaluation boards and starter kits are an inexpensive way to experience the many features of NXP microcontrollers, software development tools, and sample applications. To help you start developing your application, some kits contain a JTAG unit for software debugging and device programming, along with a free evaluation version of the integrated development environment (IDE). Single-board computers (SBCs), also known as system-on-modules (SOMs), reduce your time to market and lower cost at every stage of design, from evaluation and prototyping to development and OEM deployment.

Supplier	Board	Supported Devices																				Populated Device	Comments										
		LPC175x	LPC176x	LPC210x	LPC211x	LPC212x	LPC219x	LPC213x	LPC214x	LPC215x	LPC221x	LPC222x	LPC229x	LPC236x	LPC237x	LPC238x	LPC242x	LPC245x	LPC246x	LPC247x	LPC288x			LPC291x	LPC292x	LPC293x	LH754xx	LH795xx	LH7A4xx	LPC313x	LPC314x	LPC315x	LPC318x
Code Red	RDB1768	●	●																													LPC1768	LPC1700-based evaluation board
Embedded Artists	EA-QSB-xxx			●	●	●	●	●	●																							various	QuickStart boards with headers
	EA-EDU-xxx			●				●	●																							various	Education boards with various add-on boards
	EA-OEM-xxx																	●	●	●								●				various	SOM OEM boards with or without base boards
Embest	LPCEB2000-x				●	●	●	●		●		●																				various	3 CPU module boards + expansion board
	LPCEB2300													●																		LPC2368	Evaluation board for LPC236x series
eSysTech	SOM eLPCxx			●	●	●		●	●		●	●	●																			various	3 System-On-Module boards (SOMs)
	eLPC			●	●	●		●	●		●	●	●																			various	Evaluation kits for the a.m. SOMs

Continued next page

Continued from previous page

Supplier	Board	Supported Devices																				Populated Device	Comments										
		LPC175x	LPC176x	LPC210x	LPC211x	LPC212x	LPC219x	LPC213x	LPC214x	LPC215x	LPC221x	LPC222x	LPC229x	LPC236x	LPC237x	LPC238x	LPC242x	LPC245x	LPC246x	LPC247x	LPC288x			LPC291x	LPC292x	LPC293x	LH754xx	LH795xx	LH7A4xx	LPC313x	LPC314x	LPC315x	LPC318x
FDI	57TS-LPCxxx																			●											●	various	Generic carrier board for CPU/LCD modules
	DIMM-LPCxxx																			●											●	various	CPU module boards for common carrier board
	IRD-LPCxxxx	●	●															●	●													various	ARM industrial reference-design board
	DB-xx-LPCxxxx			●																												various	USB-dongle derivative boards
	LCDDEMO										●																					LPC2158	LCD demo board for LPC215x
Garz & Fricke	AUCKLAND																									●						LH7A404	Credit-card-sized 32-bit processor module
GHI Electronics	USBizi														●												●					LPC238x	.NET Micro Framework Development System
	Embedded Master																		●	●												LPC24xx	OEM board with .NET Micro Framework
Hitex	LPC176x-Stick	●	●																													LPC176x	Boards in USB stick format; including HiTOP5 IDE / Tasking compiler(eval). Add-on COM boards are available with various connectors, LCD, etc.
	LPC24xx-Stick																	●	●	●												LPC24x8	
	LPC3250-Stick																													●	LPC3250		
	LPC29xx																					●	●	●								LPC29xx	Add-on kits for motor control also available
IAR	KSK-LPC17xx	●	●																													various	All boards come with a 32KB code-limited version of the IAR EWARM IDE / compiler. They're also available as kits with J-Link JTAG debugger
	KSK-LPC21xx			●	●	●		●	●																							various	
	KSK-LPC2378													●																		LPC2378	
	KSK-LPC24xx																	●	●	●												LPC24x8	
Ice Tech	LPCxxxx			●																	●										●	various	Nohau brand manufactured by Ice Technology
ImageCraft	iARM210x			●																												LPC210x	Available for LPC2103 and LPC2106
iSYSTEM	ITLPC2138							●																								LPC2138	On-board integrated iSYSTEM debugger
Keil / ARM	MCB17xx	●	●																													LPC17xx	All boards come with a 32KB code-limited eval version of the Keil μVision3 IDE / the ARM RealView compiler. They're also available as Starter Kits with ULINK2 or ULINK-ME JTAG debuggers
	MCB21xx			●	●	●		●	●																							LPC21xx	
	MCB23xx												●	●	●																	LPC23xx	
	MCB24xx																	●	●	●												LPC24xx	
	MCB29xx																					●	●									LPC29xx	

Continued next page

Continued from previous page

Supplier	Board	Supported Devices																												Populated Device	Comments			
		LPC175x	LPC176x	LPC210x	LPC211x	LPC212x	LPC219x	LPC213x	LPC214x	LPC215x	LPC221x	LPC222x	LPC229x	LPC236x	LPC237x	LPC238x	LPC242x	LPC245x	LPC246x	LPC247x	LPC288x	LPC291x	LPC292x	LPC293x	LH754xx	LH795xx	LH7A4xx	LPC313x	LPC314x			LPC315x	LPC318x	LPC32xx
LabTools	McBoard ARM7.1							●																								LPC2138	LPC2138-based evaluation platform	
	Starterkit NXP			●																												LPC2104	LPC2104-based starter kit	
LINPO	PS LPC_xxxx			●				●	●				●					●	●	●												various	Fengbao Electronics Technology Co, LTD.	
Logic PD	SDK-LH7xxxx																								●	●	●					LH7xxx	Development boards for BlueStreak devices	
NXP	IRD-LPCxxxx	●	●															●	●													various	LPCxxxx Industrial Reference Design (IRD)	
Oasis	Various				●	●			●	●		●		●				●	●	●													various	Oasis Technologies
Olimex	LPC-H2xxx			●	●	●		●	●		●		●								●												various	Compact-header prototype boards
	LPC-P2xxx			●	●	●		●	●					●																			various	Prototype boards
	LPC-MT-21xx			●				●																									various	Small boards with 16x2 LCD + 5 buttons
	LPC-E2xxx				●	●					●		●					●	●														various	Prototype boards with Ethernet interface
	LPC-2xxxSTK														●			●	●	●													various	Development boards for LPC23xx/24xx
PASAT	Various			●	●	●	●	●																									various	SBC DIP modules
PHYTEC	phyCORE-229x										●	●	●																				LPC229x	SBC + RDK for LPC22xx
	phyCORE-3180																														●	LPC3180	SBC + RDK for LPC3180	
	phyCORE-3250																															●	LPC3250	SBC + RDK for LPC32x0
Phyton	TB2-LPC21xx			●	●	●	●	●																									various	Simple target / header boards
Signum	EVB-LPC2138							●																									LPC2138	General-purpose evaluation board for LPC213x
SPJ	Mini-ARM-xxxx							●	●					●																			various	ARM-based evaluation boards
uCdragon	YL-LPCxxxx			●				●	●				●	●			●	●	●													●	various	ARM-based evaluation boards
ZLG	EasyARMxxxx			●	●	●	●	●	●		●	●	●																				various	Evaluation boards for LPC2100/LPC2200
	SmartARM2xxx													●				●	●														various	Development kits, including MiniARM SBCs
	MiniARM M2x													●				●	●														various	SBCs based on LPC237x / LPC2478
	TinyARM T23												●		●																		various	SBCs based on LPC236x / LPC2387 (100 pin)
Family		LPC1000		LPC2000																		LH7 / LH7A			LPC3000									
Core		Cortex-M3		ARM7TDMI												ARM968E			1)	2)	3)	ARM926EJ				1) ARM7TDMI 2) ARM720T 3) ARM922T								

Software Development Tool Chains (Including Associated JTAG Debuggers / Emulators)

Selecting the right software development tool chain can be as important as selecting the right microcontroller. NXP's microcontrollers are supported by a large number of software development tools. Integrated Development Environments (IDEs) provide you with a graphical project management interface for every step of your application development, including editing, compiling, and debugging your application code. For added flexibility, many IDEs work with a variety of JTAG debuggers, emulators, and compilers.

Supplier	Software Package	Integrated Development Environment (IDE)	Associated / Supported C/C++ Compiler(s)	Associated Debugger Software	Supported In-Circuit Debuggers, Emulators
Altium / TASKING	VX-toolset for ARM	TASKING EDE (Embedded Development Environment)	TASKING compiler	TASKING CrossView Pro	e.g. Hitex Tantino / Tanto, SEGGER J-Link
Amontec	Software Development Kit for ARM (sdk4arm)	Eclipse platform / Embedded Zylín plug-ins	GNU ARM GCC	GNU ARM GDB (+ Insight)	Amontec JTAGkey
ARM	RealView Development Suite (RVDS)	ARM Workbench IDE	ARM RealView compiler	ARM RealView Debugger	RealView ICE, RealView Trace, RealView Trace 2
Ashling	AsIDE for ARM	AsIDE (Ashling IDE)	GNU, also GHS, Keil/ARM, IAR and others	Ashling PathFinder Source Debugger	Ashling Opella
Code Red	Red Suite 2	Red Suite 2 IDE (Eclipse-based)	GNU w/ Code Red libraries	Red Suite Debugger including Red Trace functionality	Red Probe
CodeSourcery	Sourcery G++	Sourcery G++ IDE (Eclipse-based)	GNU ARM GCC	Sourcery G++ Debugger	many popular JTAG, BDM and USB debuggers as well as GDB Server
Computex	CSIDE	CSIDE IDE	Various	CSIDE Debugger	Computex PALMiCE debuggers and emulators
Embest	Embest IDE for ARM	Embest IDE	GNU, also ARM	Embest Debugger	Embest PowerICE / UNetICE
Express Logic	BenchX	BenchX IDE (Eclipse-based)	GNU	BenchX Debugger (GDB debugger engine)	BenchX Debug Probe
Green Hills Software	Green Hills Development Tools for ARM	MULTI	Green Hills optimizing compilers	Green Hills Debugger / TimeMachine	Green Hills Probe / SuperTrace Probe
Hitex Development Tools	HiTOP IDE/Debugger	HiTOP	GNU, also TASKING, Keil/ARM, IAR	Hitex HiTOP	Hitex Cortino for Cortex / Tantino / Tanto for ARM
IAR	Embedded Workbench for ARM (EWARM)	EWARM	IAR compiler	IAR C-SPY	IAR J-Link / J-Trace; other RDI-based JTAG debuggers
Ice Technology (Nohau brand)	Nohau EMUL-ARM	Nohau Seehau User Interface	GNU, supports various 3rd-party compilers	Nohau Seehau debugger	Nohau EMUL-ARM PC
ImageCraft	ICCV7	ImageCraft IDE	ICCV7	NoICE-ARM	Nohau, SEGGER, Lauterbach, Ashling, CrossWorks, etc.
iSYSTEM	winIDEA	winIDEA	GNU, also GHS, IAR, Keil/ARM, TASKING	iSYSTEM winIDEA	iSYSTEM iONE / iC3000
Keil / ARM	Microcontroller Development Kit (MDK-ARM)	µVision	ARM RealView, also GNU	Keil µVision Debugger	Keil ULINK2; also Signum, Hitex, iSYSTEM, etc.
Lauterbach	TRACE32	TRACE32 PowerView IDE	Supports all major ARM compilers	TRACE32 PowerView debugger, TRACE32-MON	TRACE-32 ICD, TRACE-32 PowerTrace, TRACE-32 ETB
Mentor Graphics	EDGE	EDGE IDE (Eclipse-based)	EDGE compiler	EDGE Debugger (Eclipse-based)	MAJIC JTAG Probe
National Instruments	LabVIEW for ARM	LabVIEW Graphical Programming solution	ARM RealView (via Keil uVision)	Keil µVision Debugger	Keil ULINK2; also Signum, Hitex, iSYSTEM, etc.
Oasis Technologies	Triton IDE	Triton IDE	GNU	Triton debugger	Odyssey Ethernet JTAG Debugger
Phyton	CodeMaster-ARM	CodeMaster-ARM IDE	Phyton CMC, also GNU	CodeMaster-ARM + OCD driver	JEM-ARM JTAG debugger
pls Development Tools	Universal Debug Engine (UDE)	Universal Debug Engine (UDE) IDE	Supports all available ARM compilers	Universal Debug Engine (UDE)	pls Universal Access Devices (UAD2compact, UAD2, UAD2+)
Raisonance	RIDE	RIDE (Raisonance IDE)	GNU	RIDE debugger	Raisonance RLink (Std / Pro)
Rowley Associates	CrossWorks for ARM	CrossStudio	GNU w/ Rowley libraries	CrossStudio debugger	Rowley CrossConnect for ARM; Segger J-Link; etc.
Signum Systems	Chameleon	Chameleon IDE	Supports all major ARM compilers	Signum Chameleon debugger	Signum JTAGjet / JTAGjet-Trace
SPJ Technologies	SCARM	SCARM IDE	SCARM C compiler, also GNU	SDB Debugger	SPJ Systems' JTAGs (SJT-S and SJT-U)
ZLG	TKStudio	TKStudio IDE	GNU, also ARM RealView	TK Studio Debugger	EasyJTAG-H, various others

Dedicated On-chip Flash Programming Solutions (Not Including JTAG Programmable Solutions)

The companies listed below offer various programming solutions, from simple single-site engineering programmers to manual multi-site gang programmers and automated programming systems. Please note that that the table only includes devices with on-chip Flash Memory. There are also also several JTAG debuggers and emulators that can be used to program the on-chip Flash of our LPC devices. Please refer to the corresponding table in this line card.

Supplier	Programming Software / Hardware	Supported Devices																				Comments	
		LPC175x	LPC176x	LPC210x	LPC211x	LPC212x	LPC219x	LPC213x	LPC214x	LPC215x	LPC221x	LPC229x	LPC236x	LPC237x	LPC238x	LPC245x	LPC246x	LPC247x	LPC288x	LPC291x	LPC292x		LPC293x
Advantech	LabTool series							•	•														Various programmers and sockets
Advin	SpeedPro series			•	•	•	•	•	•		•	•	•										Various programmers and sockets
BPM	Various programmers			•	•	•	•	•	•		•	•	•										Various programmers and sockets
Data I/O	Various programmers			•	•	•	•	•	•		•	•	•		•	•							Various programmers and sockets
Elnec	BeeHive / BeeProg			•	•	•	•	•	•		•	•	•	•	•		•	•					Various programmers and sockets
ESAcademy	FlashMagic ISP SW			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	N/A	N/A	N/A	N/A	ISP software (free for non-production)
Embest	Flash Programmer SW			•	•	•	•	•			•	•											Flash programming via JTAG
FDI	USB-ICP-LPC2K			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	N/A	N/A	N/A	N/A	In-System Programmer for LPC2xxx
Hi-Lo Systems	ALL-100 / AT3-300A			•	•	•		•	•		•	•											Various programmers and sockets
Leap	Leaper / SU / AH			•	•	•		•	•														Various programmers and sockets
Phyton	ChipProg series			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•				ChipProg-40, -48, G4, -ISP
pls	UDE MemTool			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Flash programming utility
Raisonance	RFlasher7	•	•	•		•		•	•				•	•		•							Requires RKit-ARM free download
SEGGER	Flasher ARM	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Flash programming via JTAG
SMH Technologies	FlashRunner for LPC			•	•	•	•	•	•		•	•	•	•	•		•	•					Standalone / LAN/RS-232 connections
System General	Txxx / Apxx series			•	•	•	•	•	•		•	•	•	•	•								Various programmers and sockets
Xeltek	SuperPro series			•	•	•	•	•	•		•	•	•	•	•		•	•					Various programmers and sockets
ZLG	SmartPRO / EasyPRO			•	•	•	•	•	•		•	•	•	•									Various programmers and sockets
Family		LPC1000		LPC2000																			
Core		Cortex-M3		ARM7TDMI														ARM968E					

JTAG Debuggers and Trace Emulators (most can also be used for on-chip Flash programming)

In-circuit emulators and JTAG debuggers are extremely valuable tools when it comes to software debugging and on-chip Flash programming. In addition, the vast majority of NXP’s microcontrollers allow instruction and/or data trace capabilities via the Single Wire Viewer (SWV, in the LPC1700 devices), the Embedded Trace Macrocell (ETM; in most LPC2000 devices), or the Embedded Trace Buffer (ETB; in the LPC3000 family).

Supplier	JTAG debuggers / Trace Emulators	Supported Devices											Comments
		LPC17xx	LPC21xx	LPC22xx	LPC23xx	LPC24xx	LPC28xx	LPC29xx	LH754xx	LH795xx	LH7A4xx	LPC3xxx	
Abatron	BDIxx000		•	•	•	•	•	•	•	•	•	•	BDI1000, BDI2000, BDI3000
Amontec	JTAGkey	•	•	•	•	•	•	•	•	•	•	•	Generic USB JTAG cable interface
Arium	HS-1000S	•	•	•	•	•	•	•	•	•	•	•	Run control with trace
	GT-1000D	•	•	•	•	•	•	•	•	•	•	•	Run control with deep trace
	LC-500	•	•	•	•	•	•	•	•	•	•	•	Run control
ARM	RealView ICE	•	•	•	•	•	•	•	•	•	•	•	
	RealView Trace 2	•	•	•	•	•	•	•	•	•	•	•	
Ashling	Opella	•	•	•	•	•	•	•	•	•	•	•	
Brendes	BICEPS		•	•	•	•	•	•	•	•			Real-Time-Trace or JTAG Emulator
Code Red	Red Probe	•	•	•	•	•	•	•	•	•	•	•	
Computex	PALMiCE2(H)		•	•	•	•	•	•	•	•	•	•	
Embest	Embest PowerICE	•	•	•	•	•	•	•	•	•	•	•	parallel-JTAG Emulator for ARM
	UNetICE	•	•	•	•	•	•	•	•	•	•	•	high-speed JTAG emulator (via USB)
Green Hills	Probe	•	•	•	•	•	•	•	•	•	•	•	
	SuperTrace Probe	•	•	•	•	•	•	•	•	•	•	•	
Hitex	Cortino	•											JTAG debug interface for Cortex™-M3
	Tantino	•	•	•	•	•	•	•	•	•	•	•	USB-to-JTAG debug interface for ARM
	Tanto	•	•	•	•	•	•	•	•	•	•	•	trace capture module available
IAR	IAR J-Link	•	•	•	•	•	•	•	•	•	•	•	
	IAR J-Trace	•	•	•	•	•	•	•	•	•	•	•	
Ice Tech	Nohau EMUL-ARM PC	•	•	•	•	•	•	•	•	•	•	•	Trace Module available
iSYSTEM	iC3000	•	•	•	•	•	•	•	•	•	•	•	JTAG Debugger
	iC3000 + iTRACE	•	•	•	•	•	•	•	•	•	•	•	ETM Trace

Continued next page

Continued from previous page

Supplier	JTAG debuggers / Trace Emulators	Supported Devices											Comments
		LPC17xx	LPC21xx	LPC22xx	LPC23xx	LPC24xx	LPC28xx	LPC29xx	LH754xx	LH795xx	LH7A4xx	LPC3xxx	
Keil / ARM	ULINK2	•	•	•	•	•	•	•	•	•	•	•	Trace via serial wire viewer for M3
	ULINK-ME	•	•	•	•	•	•	•	•	•	•	•	Trace via serial wire viewer for M3
	ULINK-PRO	•	•	•	•	•	•	•	•	•	•	•	Supports SWV and 4 -bit ETM trace
Lauterbach	TRACE32-ICD		•	•	•	•	•	•	•	•	•	•	JTAG debugger
	TRACE32-PowerTrace		•	•	•	•	•	•					JTAG w/Trace
	TRACE32-ETB											•	JTAG w/ETB Trace
Oasis	Odyssey	•	•	•	•	•	•	•	•	•	•	•	Ethernet JTAG Debugger
Olimex	ARM-JTAG	•	•	•	•	•	•	•	•	•	•	•	Parallel port JTAG dongle interface
Phyton	JEM-ARM		•	•	•	•	•						
pls	UAD2compact	•	•	•	•	•	•	•	•	•	•	•	JTAG debugger
	UAD2, UAD2+	•	•	•	•	•	•	•	•	•	•	•	JTAG debuggers
	UDE ETM/ETB Trace		•	•	•	•						•	ETM / ETB Trace debugger
Raisonance	RLink-Std	•	•			•							Debug up to 32 KB in RAM or Flash
	RLink-Pro	•	•			•							Unlimited debugging, programming
Rowley	CrossConnect for ARM	•	•	•	•	•	•	•	•	•	•	•	
SEGGER	J-Link ARM	•	•	•	•	•	•	•	•	•	•	•	
	J-Link ARM Pro	•	•	•	•	•	•	•	•	•	•	•	
	J-Trace	•	•	•	•	•	•	•	•	•	•	•	J-Trace for ARM, J-Trace for Cortex M3
Signum	JTAGjet	•	•	•	•	•	•	•	•	•	•	•	Uses Hi-Speed USB interface
	JTAGjet-Trace	•	•	•	•	•	•	•	•	•	•	•	Uses Hi-Speed USB interface
uCdragon	ARMstep-U / -P		•	•	•	•	•	•	•	•	•	•	
Yokogawa	'advice' series	•	•	•	•	•	•	•	•	•	•	•	works with microVIEW-PLUS debugger
ZLG	EasyJTAG-H	•	•	•	•	•	•	•	•	•	•	•	
Family		¹⁾	LPC2000						LH7 / LH7A			²⁾	¹⁾ LPC1000 ²⁾ LPC3000
Core		M3	ARM7TDMI					³⁾	⁴⁾	⁵⁾	⁶⁾	⁷⁾	³⁾ ARM968 ⁴⁾ ARM7TDMI ⁵⁾ ARM720T ⁶⁾ ARM922T ⁷⁾ ARM926EJ

Operating Systems (RTOS / OS)

Operating systems use specialized scheduling algorithms to let the software developer produce deterministic behavior in the final system. NXP’s 3rd party tool vendors offer a range of operating systems, from small real-time kernels for deeply embedded systems to large, complex operating systems like Linux and Windows CE.

Supplier	Operating Systems (RTOS / OS)	Supported Devices																								Comments								
		LPC175x	LPC176x	LPC210x	LPC211x	LPC212x	LPC219x	LPC213x	LPC214x	LPC215x	LPC221x	LPC222x	LPC229x	LPC236x	LPC237x	LPC238x	LPC242x	LPC245x	LPC246x	LPC247x	LPC288x	LPC291x	LPC292x	LPC293x	LH754xx		LH795xx	LH7A4xx	LPC313x	LPC314x	LPC315x	LPC318x	LPC32xx	
Adeneo Embedded	Windows CE																										•				•	•	Free binary eval versions available	
	Linux																		•	•											•	•	for LPC24xx: uCLinux	
	.NET MicroFramework																				•										•		-	
BSQUARE	Windows CE																										•						Free binary eval versions available	
CMX	CMX-RTX	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					•						•		-	
	CMX-TINY+	•	•	•	•	•	•	•	•	•	•	•																				-		
eCosCentric	eCos			•				•	•		•		•			•			•														Combined with eCosPro IDE	
ENEA	OSE																										•						-	
eSysTech	X Real-Time Kernel			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•													-	
Express Logic	ThreadX	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-	
FreeRTOS.org	FreeRTOS	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•									Runs on any ARM7, ARM9, Cortex-M3	
GHI	.NET MicroFramework															•			•	•												USBizi and EmbeddedMaster products		
Green Hills	Integrity																		•							•						Call GHS regarding BSP availability		
	μ-velOSity	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	runs on any ARM7 or ARM9 core	
AR	PowerPac RTOS			•				•	•					•	•				•	•	•										•	•	-	
InterNiche	NicheTask	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-	
Keil / ARM	RTX		•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•				•	•	•	•			•	•	-	
Mentor Graphics	Nucleus OS					•																									•	Easily ported to other NXP controllers		
Micrium	μC/OS-II			•		•		•	•			•		•				•	•	•						•	•	•				•	•	-
Micro Digital	smxARM							•	•	•	•	•	•	•	•	•		•	•	•	•				•	•	•				•	•	-	
NXP	Windows CE																															•	FREE WinCE 6.0 BSP from NXP	
	Linux for LPC32x0																															•	FREE Linux 2.6.27.8 BSP from NXP	
	Linux for LPC31xx																											•	•	•			FREE Linux 2.6.28.2 BSP from NXP	
	Linux for LH7/LH7A																									•	•						FREE Linux 2.6.16 BSP from NXP	
Pumpkin	Salvo RTOS	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Instruction-set architecture	
Quadros	RTXC Quadros	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					•	•	•	•	•	Highly customizable and reliable RTOS	
SEGGER	embOS	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-	
Wind River	VxWorks																														•	•	-	
WITTENSTEIN	OpenRTOS	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•										Commercial licensing for FreeRTOS	
Family		LPC1000	LPC2000																			LH7 / LH7A			LPC3000									
Core		Cortex-M3	ARM7TDMI																			ARM968E			1)	2)	3)	ARM926EJ			1) ARM7TDMI 2) ARM720T 3) ARM922T			

TCP/IP (Ethernet) Stacks

Ethernet is the most widely-installed Local Area Network (LAN) technology in the world. Using Ethernet in embedded applications enables high-bandwidth data transfer and, in particular, lets the system connect to the Internet without using a computer. That opens up a number of possibilities, including the ability to report status to a web page or receive instructions remotely. TCP/IP stacks enable quick configuration of the required Ethernet network options and minimize your time to market. There are more than 20 NXP ARM MCUs with built-in Ethernet, covering ARM7, ARM9, and the new Cortex-M3. NXP uses essentially the same implementation across all three different ARM cores, so designers can save time and resources by reusing their Ethernet functions across multiple platforms. Please note that the table below only includes devices with an on-chip 10/100 Ethernet MAC peripheral. Many of the TCP/IP stacks listed here also run on LPC / LH devices that don't have an on-chip Ethernet peripheral (by using an external Ethernet MAC).

Supplier	TCP/IP Stacks	Supported Devices										Comments
		LPC175x	LPC176x	LPC236x	LPC237x	LPC238x	LPC245x	LPC246x	LPC247x	LH795xx	LPC32xx	
CMX	CMX-TCP/IP			•	•	•	•	•	•	•		-
	CMX-MicroNet	•	•	•	•	•	•	•	•			-
Express Logic	NetX	•	•	•	•	•	•	•	•	•	•	-
	NetX Duo	•	•	•	•	•	•	•	•	•	•	-
Green Hills	GHNet	•	•	•	•	•	•	•	•	•	•	-
IAR	PowerPac TCP/IP			•	•			•	•			-
InterNiche	NicheLite	•	•	•	•	•	•	•	•	•	•	-
	NicheStack			•	•	•	•	•	•		•	Many additional plugins available
Keil / ARM	RL-TCPnet			•	•	•	•	•	•		•	Part of RL-ARM
Mentor Graphics	Nucleus Ethernet										•	Easily ported to other NXP controllers
Micrium	μC/TCP-IP				•			•	•	•	•	-
Micro Digital	smxNS			•	•	•	•	•	•		•	-
NXP	NicheLite for LPC / LH	•	•	•	•	•	•	•	•	•		Free LPC/LH-specific NicheLite
OnChip	OT-NET			•	•	•	•	•	•			UDP,TCP,DHCP,DNS,ICMP,ARP
Quadros	RTXC Quadnet	•	•	•	•	•	•	•	•		•	Full-featured TCP/IP v4/6 solution
	RTXC Quark			•	•	•	•	•	•			Small footprint TCP/IPv4 solution
SEGGER	embOS/IP	•	•		•	•	•	•	•		•	-
SEVENSTAX	TCP/IP Stack	•	•		•		•	•		•	•	TCP, UDP, IP, ICMP, IGMP, NTP
Family		LPC1000		LPC2000						LH	¹⁾	¹⁾ LPC3000
Core		Cortex-M3		ARM7TDMI						²⁾	³⁾	²⁾ ARM720T ³⁾ ARM926EJ

USB Stacks (USB Device, USB Host, and USB OTG)

Fast, reliable, easy-to-use, and able to draw power without a separate AC connection, the Universal Serial Bus (USB) is the world's most popular serial connection technology. Today, it appears in embedded applications of all kinds. NXP leads the market in USB-equipped ARM MCUs, with more than 50 options for ARM7, ARM9, and Cortex-M3 technologies. The USB stacks listed below enable rapid integration of USB into your embedded system and significantly reduce your time to market. Please note that the table only includes devices with an on-chip USB Device, Host, and/or OTG peripheral.

Supplier	USB Stacks	Supported Devices																		Comments			
		LPC175x	LPC176x	LPC214x	LPC215x	LPC236x	LPC237x	LPC238x	LPC242x	LPC245x	LPC246x	LPC247x	LPC288x	LPC292x	LPC293x	LH795xx	LH7A4xx	LPC313x	LPC314x		LPC315x	LPC318x	LPC32xx
CMX	CMX-USB Device	•	•	•	•	•	•	•	•	•	•	•										•	USB Device stack
	CMX-USB Host	•	•					•	•	•	•	•										•	USB Host stack
	CMX-USB OTG	•	•						•	•	•	•											USB On-the-Go stack
Express Logic	USBX Device	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	USB Device Stack
	USBX Host	•	•			•		•	•	•	•	•		•	•		•	•	•	•	•	•	USB Host / OTG stack
HCC Embedded	EUSBD	•	•	•	•	•	•	•	•	•	•	•	•	•	•			•	•	•	•	•	Device stack w/ many class drivers
	EUSBH	•	•			•		•	•	•	•	•			•			•	•	•	•	•	Host stack w/ many class drivers
	EUSB-OTG	•	•			•		•	•	•	•	•		•	•			•	•	•	•	•	USB OTG stack
IAR	PowerPac USB			•	•	•	•			•	•										•		USB Device Stack
Jungo	USBware Device Stack					•	•	•	•	•	•	•											USB 1.1/2.0 Device Stack
	USBware Host Stack								•	•	•	•											USB 1.1/2.0 Host Stack
	USBware OTG Stack								•	•	•	•											USB On-The-Go Stack
Keil / ARM	RL-USB			•	•	•	•	•	•	•	•	•											USB Device stack; part of RL-ARM
Mentor Graphics	Nucleus-USB																					•	Device/Host/OTG
Micrium	μC/USB Device			•	•	•	•	•	•	•	•	•	•			•	•	•	•	•	•	•	USB Device stack
	μC/USB Host										•	•					•				•	•	USB Host stack
	μC/OTG										•	•									•	•	USB On-the-Go stack
Micro Digital	smxUSBD			•	•	•	•	•	•	•	•	•					•				•	•	USB Device stack
	smxUSBH							•	•	•	•	•					•				•	•	USB Host stack
	smxUSBO							•	•	•	•	•									•	•	USB On-the-Go stack
NXP	USBHostLite for LPC								•	•	•	•											Free USB Host Stack w/ MSC driver
OnChip	OT-USB (Device)			•	•	•	•	•	•	•	•	•	•									•	Supports MSC,CDC,HID and Audio
	OT-USB (Host)					•		•	•	•	•	•										•	Supports MSC,CDC,HID and Audio
Quadros	RTXCusb Device	•	•	•	•	•	•	•	•	•	•	•	•	•	•			•	•	•	•	•	Embedded USB Device stack
	RTXCusb Host	•	•			•		•	•	•	•	•			•			•	•	•	•	•	Embedded USB Host stack
	RTXCusb OTG	•	•			•		•	•	•	•	•		•	•			•	•	•	•	•	Embedded OTG stack
SEGGER	emUSB	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	USB Device Stack
SourceForge	lpcusb (free)			•	•																		Free open-source USB Device Stack
Thesycon	USB Device Stack	•	•			•	•	•	•	•	•	•									•		CDC, HID, Raw Bulk
	USB Host Stack	•	•					•	•	•	•	•									•		Mass Storage, CDC, HID
	Generic USBIO Driver	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•			•	•	Windows 2000/XP/Vista and CE
	USB CDC/ACM Driver	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•			•	•	Windows 2000/XP/Vista and CE
Family		LPC1000		LPC2000												LH/LH7		LPC3000					
Core		Cortex-M3		ARM7TDMI										ARM968		¹⁾	²⁾	ARM926EJ				¹⁾ ARM720T ²⁾ ARM926EJ	

Graphics Libraries / Graphical User Interfaces (GUIs)

Liquid Crystal Displays (LCDs), especially those with color and touchscreen capabilities, make embedded systems much easier to use. As a result, they have become commonplace across the consumer, medical, industrial, recreational, communication, and automotive sectors. In recent years, the external LCD interface has moved onto the MCU itself, providing engineers with integrated options that reduce cost, shrink the design, increase reliability, and shorten time-to-market. Most of the software tools listed below are designed to provide graphical user interfaces (GUIs) for any application that operates with a graphical LCD. Please note that the table only includes devices with an on-chip LCD graphics controller. Many of the software tools listed here also run on NXP devices that don't have an on-chip LCD graphics controller (by using an external LCD controller).

Supplier	Graphics Libraries / GUIs	Supported Devices					Comments
		LPC247x	LH754xx	LH795xx	LH7A4xx	LPC32xx	
Green Hills	Graphics / LCD library					•	Call GHS regarding driver availability
Mentor Graphics	Nucleus LCD					•	Easily ported to other NXP controllers
	Inflexion Engine			•	•	•	3D Touch Screen & Menuing UI Engine
	UI Designer			•	•	•	Drag & Drop Toolkit with Previewer
Micrium	µC/GUI	•		•	•	•	-
Mobiclip	Mobiclip Video Codec			•	•	•	Mobiclip used to be Actimagine
Swell Software	PEG Pro			•		•	-
	PEG+	•	•	•	•	•	-
	C/PEG	•	•	•	•	•	-
NXP	SWIM (AN10815)	•				•	Free, simple graphics library from NXP
SEGGER	emWIN	•	•	•	•	•	-
	Family	¹⁾	LH7 / LH7A		²⁾	¹⁾ LPC2000 ²⁾ LPC3000	
	Core	³⁾	⁴⁾	⁵⁾	⁶⁾	³⁾ ARM7TDMI ⁴⁾ ARM720T ⁵⁾ ARM922T ⁶⁾ ARM926EJ	

CAN Drivers

The Control Area Network (CAN) bus is widely used in vehicles to connect the engine control unit (ECU) with the transmission. It can also be used, on a different bus, to connect the door locks, climate control, seat control, and so on. Due to the low cost of integrated CAN controllers, the CAN bus is also being used as a fieldbus in general automation environments. Many of NXP's ARM-based MCUs are equipped with on-chip CAN modules. The drivers listed below make it easy to get a CAN bus up and running. Please note that the table only includes devices with one or more on-chip CAN peripherals.

Supplier	CAN Drivers	Supported Devices														Comments
		LPC175x	LPC176x	LPC212x	LPC219x	LPC229x	LPC236x	LPC237x	LPC238x	LPC245x	LPC246x	LPC247x	LPC291x	LPC292x	LPC293x	
CMX	CMX-CANopen			•	•	•	•	•	•	•	•					-
eCosCentric	eCosPro-CAN					•			•		•					CANopen support also available
Keil / ARM	RL-CAN			•	•		•	•	•			•	•	•		Part of RL-ARM
Mentor Graphics	Nucleus CAN			•												Easily ported to other NXP controllers
NXP	AppNote AN10674			•	•	•	•	•	•	•	•	•	•	•	•	LPC2000 CAN driver w/ FullCAN mode
Quadros	CANopenRT	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Real-time CANopen stack
	Family	LPC1000		LPC2000										LH	-	
	Core	Cortex-M3		ARM7TDMI						ARM968E				¹⁾	¹⁾ ARM7TDMI	

File Systems

A file system is a method for storing and organizing files, and the data they contain, to make it easy to find and access information. Embedded file systems typically use data storage devices such as SD/MMC cards, USB Mass Storage devices, or NAND / NOR Flash memories.

Supplier	File Systems	Supported Devices																										Comments				
		LPC175x	LPC176x	LPC210x	LPC211x	LPC212x	LPC219x	LPC213x	LPC214x	LPC215x	LPC221x	LPC222x	LPC229x	LPC236x	LPC237x	LPC238x	LPC242x	LPC245x	LPC246x	LPC247x	LPC288x	LPC291x	LPC292x	LPC293x	LH754xx	LH795xx	LH7A4xx		LPC313x	LPC314x	LPC315x	LPC318x
CMX	CMX-FFS	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Options: TINY, FAT, SAFE-FAT, THIN
Express Logic	FileX	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-
Green Hills	Various	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-
HCC Embedded	Various	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•				•			•	•	Many options and drivers available
IAR	PowerPac File System			•				•	•					•	•				•	•										•	•	-
Keil / ARM	RL-Flash			•	•	•	•	•	•	•				•	•	•	•	•	•	•											•	Part of RL-ARM
Mentor Graphics	Nucleus File					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	FAT 32 File System
Micrium	µC/FS			•		•		•	•					•					•	•	•				•	•	•	•		•	•	-
Micro Digital	smxFS	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	SD/MMC driver on LPC23/24/31/32xx
	smxFFS	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	NAND ctrl driver on LPC3180/32x0
OnChip	OT-FILE													•	•	•	•	•	•											•	Supports SD/MMC/USB	
Quadros	RTXCflashfile	•	•	•	•	•	•	•	•	•	•		•	•	•	•		•	•	•	•	•	•				•	•	•	•	•	Fail-safe NAND and NOR file systems
SEGGER	emFile	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Family		LPC1000	LPC2000																			LH7 / LH7A			LPC3000							
Core		Cortex-M3	ARM7TDMI													ARM968E			¹⁾	²⁾	³⁾	ARM926EJ				¹⁾ ARM7TDMI ²⁾ ARM720T ³⁾ ARM922T						

Free Driver Libraries, Board Support Packages (BSPs), and Code Bundles for NXP's ARM-based Microcontrollers

These free tools, supplied by NXP, are a great starting point for your application development.

To access these valuable software resources please visit www.nxp.com/microcontrollers and look for the software support documents.

Supplier	Free Driver Libraries and Code Bundles	Supported Devices																				Comments											
		LPC175x	LPC176x	LPC210x	LPC211x	LPC212x	LPC219x	LPC213x	LPC214x	LPC215x	LPC221x	LPC222x	LPC229x	LPC236x	LPC237x	LPC238x	LPC242x	LPC245x	LPC246x	LPC247x	LPC288x		LPC291x	LPC292x	LPC293x	LH754xx	LH795xx	LH7A4xx	LPC313x	LPC314x	LPC315x	LPC318x	LPC32xx
NXP	LPC313x CDL																											●					LPC313x Common Driver Library
	LPC32x0 CDL																														●	LPC32x0 Common Driver Library	
NXP	LPC1700 library	●	●																														CMSIS compliant code library for LPC17xx (July 2009)
	LPC1700 Code Bundle	●	●																														LPC1700 Code Bundle (CMSIS compliant) (July 2009)
	LPC213x/214x							●	●	●																							LPC213x/LPC214x Code Bundle
	LPC2300/2400													●	●	●	●	●	●	●													LPC23xx/LPC24xx Code Bundle
	LPC2800																				●												LPC288x Code Bundle
	LPC2900																					●	●	●									LPC2900 Example Software Package
	LPC3180																														●		LPC3180 Code Bundle
NXP	LH754xx/SDK75401																								●								LH754xx Board Support Package (BSP)
	LH79520/SDK79520																									●							LH79520 Board Support Package (BSP)
	LH7952x/SDK79524																									●							LH79524/5 Board Support Package (BSP)
	LH7A400/SDK7A400																										●						LH7A400 Board Support Package (BSP)
	LH7A400/SDK7A404																											●					
NXP	Windows CE																															●	Free WinCE 6.0 BSP from NXP
	Linux for LPC32x0																															●	Free Linux 2.6.27.8 BSP from NXP
	Linux for LPC31xx																											●	●	●			Free Linux 2.6.28.2 BSP from NXP
	Linux for LH7/LH7A																									●	●						Free Linux 2.6.16 BSP from NXP
NXP	NicheLite for LPC	●	●											●	●	●		●	●	●													Free LPC-specific TCP/IP stack
	NicheLite for LH7																									●							Free LH7-specific TCP/IP stack
NXP	USBHostLite for LPC																●	●	●	●													Free USB Host Stack spell out with MSC driver
NXP	CAN driver (AN10674)					●	●						●	●	●	●	●	●	●	●		●	●	●									LPC2000 CAN driver spell out with FullCAN mode
NXP	SWIM (AN10815)																			●												●	Free, simple graphics library from NXP
Family		LPC1000	LPC2000																		LH7 / LH7A			LPC3000				-					
Core		Cortex-M3	ARM7TDMI										ARM968E			1) 2) 3)			ARM926EJ				1) ARM7TDMI 2) ARM720T 3) ARM922T										

Overview of Third-party Tool Support for NXP’s ARM-based Microcontrollers

Tool Supplier (In Alphabetical Order)	Web Site	Development Tool Categories														NXP ARM-related Training Classes
		Evaluation Boards	IDE *	C/C++ Compiler **	Debugging Software **	JTAG Debuggers / Trace Emulators	Flash Programming HW / SW	OS / RTOS	TCP/IP Stacks	USB Stacks	CAN Drivers	Graphics Libraries, LCD Drivers, GUIs	File Systems	Java Application Development SW	Software Encryption Libraries	
Abatron	www.abatron.ch					•	•									
Adeneo Embedded	www.adeneo-embedded.com							•								
Advantech	www.aec.com.tw						•									
Advin	www.advin.com						•									
Altium / TASKING	www.tasking.com		•	•	•											
Amontec	www.amontec.com		•	•	•	•	•									
Arium	www.arium.com				•	•	•									
ARM	www.arm.com		•	•	•	•	•									
Ashling	www.ashling.com		•	•	•	•	•									
BPM Microsystems	www.bpmmicro.com						•									
Brendes Datentechnik	www.brendes.de					•	•									
BSQUARE	www.bsquare.com							•								
CMX Systems	www.cmx.com							•	•	•	•		•			
Code Red Technologies	www.code-red-tech.com	•	•	•	•	•	•									
CodeSourcery	www.codesourcery.com		•	•	•											
Computex	www.computex.co.jp		•		•	•	•									
Data I/O	www.data-io.com						•									
Doulos	www.doulos.com															•
eCosCentric	www.ecoscentric.com		•	•	•			•			•					
Eltec	www.eltec.sk						•									
Embedded Artists	www.embeddedartists.com	•														
Embedded Systems Academy	www.esacademy.com						•									•
Embest	www.embedinfo.com	•	•	•	•	•	•									
ENEA	www.enea.com							•								
eSysTech	www.esystech.com.br	•						•								•
Express Logic	www.expresslogic.com							•	•	•			•			
FreeRTOS.org	www.freertos.org							•								
Future Designs, Inc (FDI)	www.teamfdi.com	•					•									
Garz & Fricke	www.garz-fricke.de	•														
GHI electronics	www.ghielectronics.com	•						•								
Green Hills Software	www.ghs.com		•	•	•	•		•								
HCC-Embedded	www.hcc-embedded.com									•			•			
Hi-Lo Systems	www.hilosystems.com.tw						•									
Hitex Development Tools	www.hitex.com	•	•	•	•	•	•									•
IAR Systems	www.iar.com	•	•	•	•	•	•	•	•	•			•			
Ice Technology (Nohau brand)	www.icetech.com	•	•	•	•	•	•									
ImageCraft	www.imagecraft.com	•	•	•	•		•									
InterNiche	www.iniche.com							•	•							•
IS2T	www.is2t.com													•		

Continued next page

Need devices, support, or development tools?

For a list of sales offices and distributors near you, please visit www.nxp.com/profile/sales/index.html

For general support, please visit www.nxp.com/microcontrollers

For tools, evaluation boards, and development support, please visit www.standardics.nxp.com/support/tools/microcontrollers/

www.nxp.com

founded by

PHILIPS

© 2009 NXP B.V.

All rights reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent- or other industrial or intellectual property rights.

Date of release: June 2009

Document order number: 9397 750 16739

Printed in the Netherlands