



# Аппаратная экосистема QNX: поддерживаемые процессорные платы и стартовые комплекты SWD TimeMaster

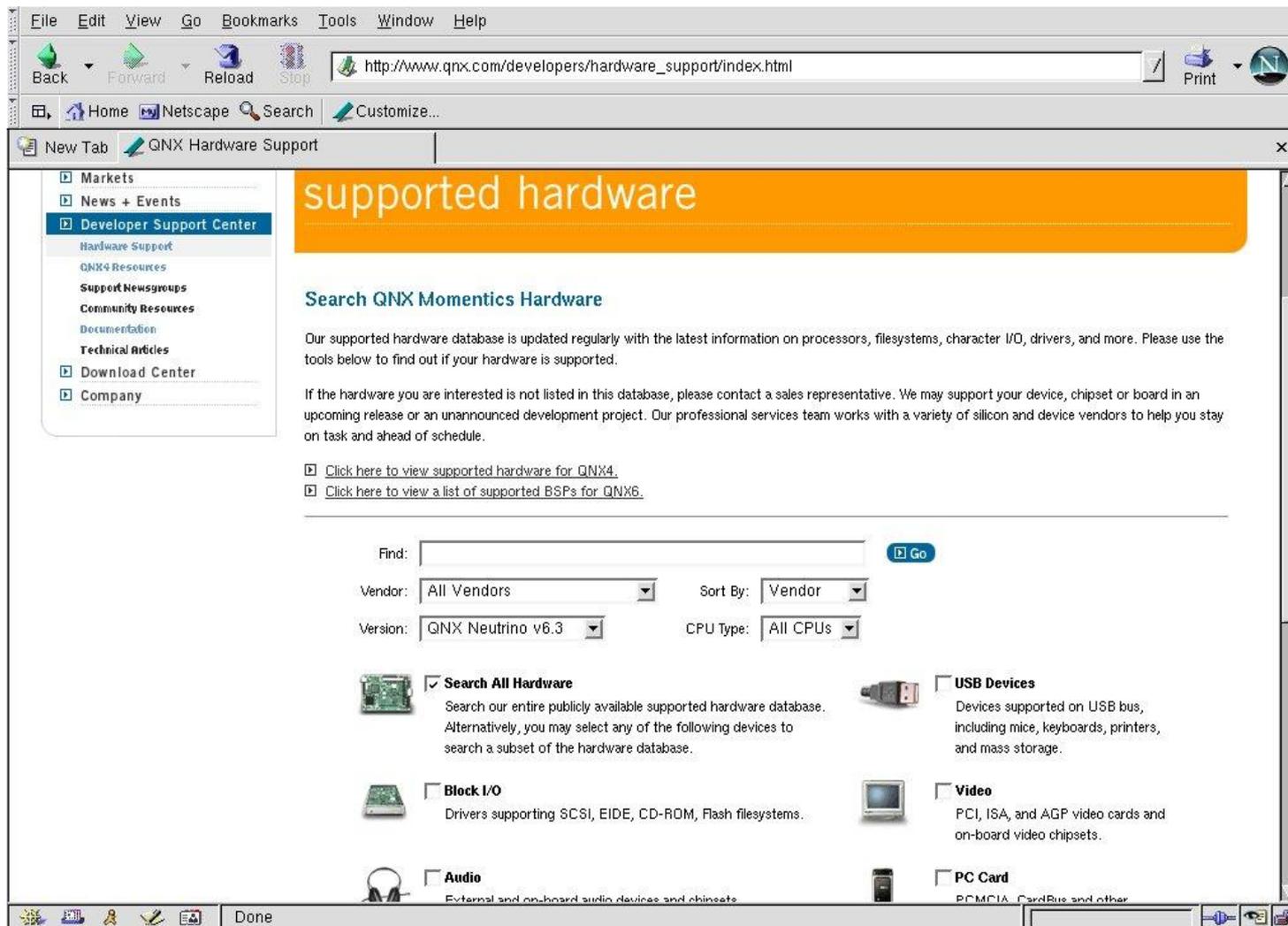
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SWD Software Ltd.  
Санкт-Петербург



# QNX поддерживает широкий спектр современного оборудования

## Стандартные драйвера:

- Блочных устройств, devb-.....
- Сетевые, devn-.....
- Видео, devg-.....
- Аудио, deva-ctrl-.....
- Символьных устройств, devc-.....
- Устройств ввода, devi-.....
- PCMCIA/CardBus, devp-.....
- USB, devu-.....



The screenshot shows a Netscape browser window with the address bar containing `http://www.qnx.com/developers/hardware_support/index.html`. The page title is "supported hardware". A left sidebar contains a navigation menu with items like "Markets", "News + Events", "Developer Support Center", "Hardware Support", "QNX4 Resources", "Support Newsgroups", "Community Resources", "Documentation", "Technical Articles", "Download Center", and "Company".

## supported hardware

### Search QNX Momentics Hardware

Our supported hardware database is updated regularly with the latest information on processors, filesystems, character I/O, drivers, and more. Please use the tools below to find out if your hardware is supported.

If the hardware you are interested is not listed in this database, please contact a sales representative. We may support your device, chipset or board in an upcoming release or an unannounced development project. Our professional services team works with a variety of silicon and device vendors to help you stay on task and ahead of schedule.

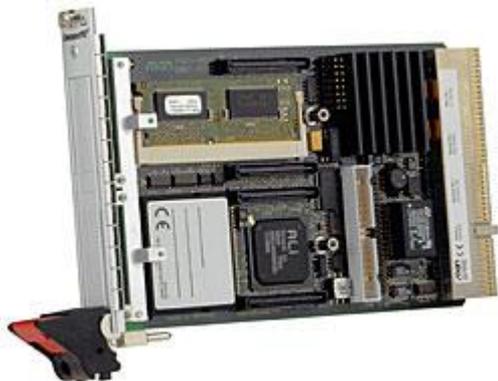
- [Click here to view supported hardware for QNX4.](#)
- [Click here to view a list of supported BSPs for QNX6.](#)

Find:

Vendor:  Sort By:

Version:  CPU Type:

<input checked="" type="checkbox"/> <b>Search All Hardware</b> Search our entire publicly available supported hardware database. Alternatively, you may select any of the following devices to search a subset of the hardware database.	<input type="checkbox"/> <b>USB Devices</b> Devices supported on USB bus, including mice, keyboards, printers, and mass storage.
<input type="checkbox"/> <b>Block I/O</b> Drivers supporting SCSI, EIDE, CD-ROM, Flash filesystems.	<input type="checkbox"/> <b>Video</b> PCI, ISA, and AGP video cards and on-board video chipsets.
<input type="checkbox"/> <b>Audio</b> External and on-board audio devices and chipsets.	<input type="checkbox"/> <b>PC Card</b> PCMCIA, CardBus and other.



## Board Support Package

- Документация
- Примеры реализации
- System Builder (IDE)
- Исходные тексты для startup-кода и драйверов интегрированных устройств
- Исполняемые файлы для поддерживаемых процессорных плат



# Board Support Packages, BSPs

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New Tab Board Support Packages

- Receive Operating System
- x86 Runtime Kit
- Development Tools
- Technology Development Kits
- Source Kits
- Board Support Packages
- Multimedia & GUI
- Browser Technology
- Java Environments
- Hardware Support
- Third-party Kits
- Services
- Partners
- Markets
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## BSPs for QNX Momentics development suite

The following Board Support Packages are currently available for the QNX<sup>®</sup> Momentics<sup>®</sup> development suite v6.2 and v6.3. For further information, please contact your [local QNX sales representative](#).

Family	Hardware Manufacturer	Processor	Board / BSP Name	BSP Supplier	6.2.X	6.3.x	
<b>PowerPC</b>	AMCC (IBM)	AMCC PPC405GP	PowerPC 405GP Evaluation Board ("Walnut")	QSS	X	X	
	AMCC (IBM)	AMCC PPC440GP	PowerPC 440GP Evaluation Board	QSS		X	
	Artesyn	PPC750	PM/PPC	QSS	X		
	Artesyn	PPC750FX	PM/PPC750F	QSS	X	X	
	Artesyn	PPC440GP	PM/PPC440	QSS		X	
	Artesyn	PPC750	Katana 750i	QSS		X	
	Embedded Planet	MPC823 MPC850	RFX-Lite Development Board	QSS	X		
	Embedded Planet	MPC8260	EP8260	QSS	X	X	
	Extreme Engineering Solutions	IBM 750GX	XCalibur 1002	<a href="#">X-ES</a>			X
			Xpedite 4000				
		MPC7447a	XCalibur 1200				
	Freescall	MPC8260	AD58260	QSS	X	X	
Freescall	MPC8266	AD58266	QSS	X			
Freescall	MPC823	F&DS800	QSS	X	X		



# Board Support Packages, BSPs

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## download center

6.3.x [Go Back](#)

Latest Commercial BSP Binaries for 6.3.x

Sort By: [Date](#) [Title](#) [File Type](#)

<a href="#">ARM/Xscale</a>	<a href="#">PPC</a>
<a href="#">MIPS</a>	<a href="#">SH4</a>

By Date

**Migrating QNX Momentics 6.3.0 Board Support Packages [BSPs] to QNX Momentics 6.3.0 SP1 and SP2 (119)** [Read More](#)  
Technical note describing how to migrate a 6.3.0 BSP to a 6.3.0 SP1 and SP2 environment. [Download Now](#)

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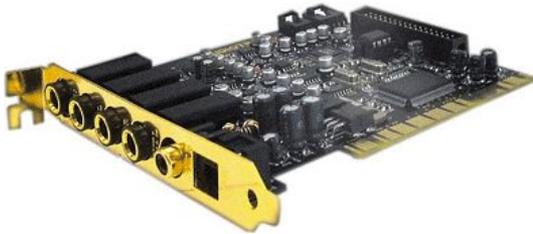
Done



## Driver Development Kit

- Документация
- Примеры с исходными текстами
- DDK Framework
- Аппаратно-независимый код вынесен в библиотеку
- Разрабатывается только специфичная для аппаратуры часть кода

# Driver Development Kits, DDKs



- Audio DDK
- Char DDK
- Graphics DDK
- Input DDK
- Network DDK
- USB DDK



# Driver Development Kits, DDKs

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This folder contains installable archives for QNX Momentics 6.3.x Driver Development Kits

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 <a href="#">Graphics Driver Development Kit</a>	 <a href="#">Input Driver Development Kit</a>
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## Ресурсный менеджер:

- Программа-сервер уровня пользователя
- Обслуживает определенный аппаратный или виртуальный ресурс
- Send/Receive/Reply

```
initialize the resource manager
register the name with the process manager
DO forever
  receive a message
  SWITCH on the type of message
    CASE _IO_CONNECT:
      call io_open handler
    ENDCASE
    CASE _IO_READ:
      call io_read handler
    ENDCASE
    CASE _IO_WRITE:
      call io_write handler
    ENDCASE
    . /* etc. handle all other messages */
    . /* that may occur, performing */
    . /* processing as appropriate */
  ENDSWITCH
ENDDO
```

- POSIX API
- Стандартный интерфейс клиент - ресурсный менеджер
- Стандартные утилиты (ls, cat, ...) могут работать с устройствами ресурсного менеджера



# Resource Manager Framework

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## Writing a Resource Manager

This chapter contains the following topics:

- [What is a resource manager?](#)
- [Components of a resource manager](#)
- [Simple examples of device resource managers](#)
- [Data carrying structures](#)
- [Handling the `IO\_READ` message](#)
- [Handling the `IO\_WRITE` message](#)
- [Methods of returning and replying](#)
- [Handling other read/write details](#)
- [Attribute handling](#)
- [Combine messages](#)
- [Extending Data Control Structures \(DCS\)](#)
- [Handling `devctl\(\)` messages](#)
- [Handling `ionotify\(\)` and `select\(\)`](#)
- [Handling private messages and pulses](#)
- [Handling `open\(\)`, `dup\(\)`, and `close\(\)` messages](#)
- [Handling client unblocking due to signals or timeouts](#)
- [Handling interrupts](#)
- [Multi-threaded resource managers](#)
- [Filesystem resource managers](#)
- [Message types](#)
- [resource manager data structures](#)

## What is a resource manager?

This chapter assumes that you're familiar with message passing. If you're not, see the [Neutrino Microkernel](#) chapter in the *System Architecture* book as well as the [MsgSend\(\)](#), [MsgReceive\(\)](#), and [MsgReply\(\)](#) series of calls in the *Library Reference*.



- **EIDE (HDD, CDROM, CompactFlash) devb-eide**
  - Intel
  - VIA
  - AMD
  - SiS
  - Cyrix
- **SCSI (HDD, CDROM)**
  - Adaptec `devb-ahaX, X=2,4,7,8`  
`devb-adpu320`
  - AMD `devb-amd`
  - BusLogic/Mylex `devb-btmm`
  - NCR/Symbios `devb-ncr8`
- **RAID, OS-independent**
  - <http://www.infortrend.com>
  - <http://www.accusys.com.tw>
  - <http://www.promise.com>



- Ethernet, 10/100/1000 Mbit/s
  - UTP (various)
  - Wireless (802.11b/g – Orinoco, Prism, Broadcom)
  - Fiber Optic (Corman Technologies Inc.)
- Наиболее популярные чипсеты:
  - RTL-8139A/B/C devn-rtl
  - Intel 8255x/82562 devn-speedo
  - Intel 8254x devn-i82544
  - Broadcom 570x devn-tigon3
  - 3COM, семейство чипов 3C905 devn-el900
  - VIA Tech. VT86C100/A devn-via-rhine



- Наиболее популярные адаптеры
  - ATI (Radeon xxxx)                      devg-radeon
  - Intel (i830/845/855/865)                devg-i830
  - nVidia (TNT, TNT2, GeForce2/4)      devg-tnt
  - Matrox (G400/G450/G550)            devg-matroxg
  - C&T (CT6555x, CT690xx)            devg-chips
- Multimonitor placement (ATI Radeon, Matrox G450/550)
- devg-vesabios
- devg-vesatweak
  - [http://projects.qnxzone.com/project/showfiles.php?group\\_id=7](http://projects.qnxzone.com/project/showfiles.php?group_id=7)



## Адаптеры последовательных устройств

- Есть драйвера последовательных устройств для разных процессорных платформ
- Для 8250-compatible UART используется драйвер `devc-ser8250`
- Мультипортовые адаптеры
  - Connect Tech Inc. (BlueHeat/PCI, BlueHeat/Net, Xtreme/104 )
  - Moxa Technologies (ISA, PCI, PC/104)
  - Advantech (ISA, PCI, PC/104)
  - Sealevel Systems (ISA, PCI, PC/104, PCMCIA)
- Character DDK



- Контроллеры
  - UHCI (USB 1.1)                      devu-uhci
  - OHCI (USB 1.1)                      devu-ohci
  - EHCI (USB 2.0)                      devu-ehci
- Поддерживаемые классы устройств USB
  - USB Mouse                      devu-mouse
  - USB Keyboard                      devu-kbd
  - USB Printer                      devu-prn
  - USB Network                      devn-xxxx
  - USB Mass Storage                      devb-umass
- USB DDK



- Популярныe и недорогие
  - Conexant/BrookTree BT848/878/879
    - <http://ai.pjwstk.edu.pl/~newchief/qnx/btlib>
    - <http://argo.lira.dist.unige.it/cbeltran/welcome.htm>
- High Performance
  - ARVOO Products, Picasso framegrabbers (monochrome, color, digital)
    - <http://www.arvoo.com>
  - Matrox Genesis Native Library (QNX 4, QNX 6)



- United Electronic Industries
  - PowerDAQ SDK for QNX 4, QNX 6
    - <http://www.ueidaq.com>
    - <http://www.ueidaq.com/products/software/qnx/pd-qnx/>
- Resource Manager Framework
- Заказная разработка
  - Подробная техническая документация
  - Техническое задание

- PCI-устройства

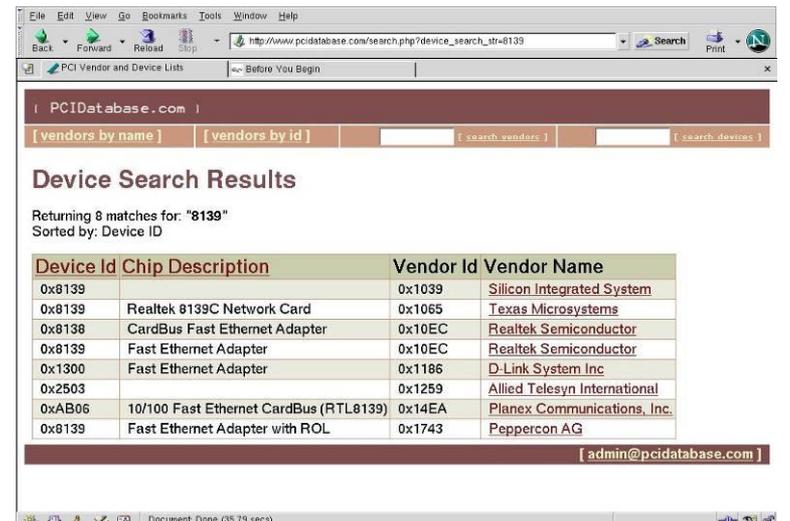
- Утилита pci, 'pci -vvv'

- <http://www.pcidatabase.com>

- <http://pciids.sourceforge.net>

```

Class = Network (Ethernet)
Vendor ID = 10ec, Realtek Semiconductor
Device ID = 8139h, RT8139A/B/C Fast Ethernet Adapter
PCI index = 0h
Class Codes = 020000h
Revision ID = 10h
Bus number = 0
Device number = 9
Function num = 0
Status Reg = 280h
Command Reg = 7h
I/O space access enabled
Memory space access enabled
Bus Master enabled
Special Cycle operations ignored
Memory Write and Invalidate disabled
Palette Snooping disabled
Parity Checking disabled
Data/Address stepping disabled
SERR# driver disabled
Fast back-to-back transactions to different agents disabled
Header type = 0h Single-function
BIST = 0h Build-in-self-test not supported
Latency Timer = 20h
    
```



PCIDatabase.com

[ vendors by name ] [ vendors by id ] [ search\_vendors ] [ search\_devices ]

### Device Search Results

Returning 8 matches for: "8139"  
Sorted by: Device ID

Device Id	Chip Description	Vendor Id	Vendor Name
0x8139		0x1039	Silicon Integrated System
0x8139	Realtek 8139C Network Card	0x1065	Texas Microsystems
0x8138	CardBus Fast Ethernet Adapter	0x10EC	Realtek Semiconductor
0x8139	Fast Ethernet Adapter	0x10EC	Realtek Semiconductor
0x1300	Fast Ethernet Adapter	0x1186	D-Link System Inc
0x2503		0x1259	Allied Telesyn International
0xAB06	10/100 Fast Ethernet CardBus (RTL8139)	0x14EA	Planex Communications, Inc.
0x8139	Fast Ethernet Adapter with ROL	0x1743	Peppercon AG

[ admin@pcidatabase.com ]



- USB-устройства
  - Утилита pci, 'pci -vvv'
  - Утилита usb

```
Class = Serial Bus (Universal Serial Bus)
Vendor ID = e11h, Compaq Computer Corp.
Device ID = a0f8h, USB Open Host Controller
PCI index = 0h
Class Codes = 0c0310h
Revision ID = 6h
Bus number = 0
Device number = 19
Function num = 0
Status Reg = 280h
Command Reg = 7h
I/O space access enabled
Memory space access enabled
Bus Master enabled
Special Cycle operations ignored
Memory Write and Invalidate disabled
Palette Snooping disabled
Parity Checking disabled
Data/Address stepping disabled
SERR# driver disabled
Fast back-to-back transactions to different agents disabled
Header type = 0h Single-function
BIST = 0h Build-in-self-test not supported
Latency Timer = 20h
```

```
# usb
USB (OHCI) v1.10, v1.01 DDK
Device Address : 1
Vendor : 0x067b (Prolific Technology Inc.)
Product : 0x0000
Class : 0x00 (Independant per interface)

# usb -v
USB (OHCI) v1.10, v1.01 DDK
Control, Interrupt, Bulk, Isoch, Low speed, High speed
Device Address : 1
Vendor : 0x067b (Prolific Technology Inc.)
Product : 0x0000
Device Release : r0.00
Class : 0x00 (Independant per interface)
Max PacketSize0 : 8
Configurations : 1
Configuration : 1
Attributes : 0xa0 (Bus-powered, Remote-wakeup)
Max Power : 100 mA
```



# Диагностика системы

- Утилита pidin
- Утилита spin

```
[root@qnx include]# pidin info
CPU:X86 Processors:1 FreeMem:44Mb/79Mb BootTime:Nov 17 11:30:31 UTC 2003
Processor1: 686 Pentium Pro Stepping 9 199MHz FPU
[root@qnx include]# pidin net
ND Node CPU Processors FreeMem BootTime
0 qnx X86 1 44Mb/79Mb Nov 17 11:30:31 UTC 2003
[root@qnx include]# pidin irq
pid tid name
1 1 6/boot/sys/procnto
0 0x80000000 0 --- @0xf0027c82:0x0
1 1 0x00000000 0 --- @0xf002772b:0x0
1 2 6/boot/sys/procnto
1 3 6/boot/sys/procnto
1 4 6/boot/sys/procnto
1 5 6/boot/sys/procnto
1 6 6/boot/sys/procnto
1 7 6/boot/sys/procnto
1 8 6/boot/sys/procnto
1 9 6/boot/sys/procnto
1 10 6/boot/sys/procnto
1 11 6/boot/sys/procnto
1 12 6/boot/sys/procnto
1 13 6/boot/sys/procnto
1 14 6/boot/sys/procnto
2 1 sbin/tinit
3 1 proc/boot/slogger
12292 1 sbin/mqueue
5 1 proc/boot/pci-bios
6 1 roc/boot/devb-eide
6 2 roc/boot/devb-eide
2 0xe 0 TP- =PULSE 0x40000002:21 0x2:0
6 3 roc/boot/devb-eide
3 0xf 0 TP- =PULSE 0x40000005:21 0x2:0
6 4 roc/boot/devb-eide
6 5 roc/boot/devb-eide
6 6 roc/boot/devb-eide
6 7 roc/boot/devb-eide
6 8 roc/boot/devb-eide
7 1 roc/boot/devb-aha4
4 0xb 0 TP- =PULSE 0x40000002:21 0x2:0xb8207a62
```

```
total 34
4 ./
8 ../
1 audio
1 block
4 isa-types
1 net
1 par-class
1 pccard-types
1 pccard-vendors
4 pci-class
3 pci-vendors
5 pnpbios-types
[root@qnx include]# pidin -p io-net mem
pid tid name prio STATE code data stack
77843 1 sbin/io-net 10o SIGWAITINFO 60K 604K 8192(516K)*
77843 2 sbin/io-net 9o RECEIVE 60K 604K 4096(68K)
77843 3 sbin/io-net 10o RECEIVE 60K 604K 4096(68K)
77843 4 sbin/io-net 10o RECEIVE 60K 604K 4096(68K)
77843 5 sbin/io-net 10o RECEIVE 60K 604K 4096(68K)
77843 6 sbin/io-net 10o RECEIVE 60K 604K 4096(132K)
77843 7 sbin/io-net 21r RECEIVE 60K 604K 4096(132K)
77843 8 sbin/io-net 10o RECEIVE 60K 604K 4096(132K)
77843 10 sbin/io-net 21r CONDVAR 60K 604K 4096(132K)
ldqnx.so.2 @b0300000 312K 16K
npm-tcpij.so @b8200000 236K 56K
devn-rtl.so @b8249000 48K 4096
npm-qnet.so @b8256000 136K 8192
[root@qnx include]#
```

```
Load Avr: 13.61% [ qnx:x86pc ] Time: 11/17/03 12:30:11 UTC
Mem Free: 56.39% [R: 44m/79m S: N/A] Uptime: 00/00/00 00:59:40
Net en0: 0.00% [Tx: 207 b/s Rx: 66 b/s] Cycle: 1000 msec
```

No	PID	Name/TID	Prio	#Thr	CPU%	ThrCPU%	Memory	#FD	ThreadIP
1	1	procnto		10	98.39		4450k	31	
		1	READY	0f		99.80			f000efb0
		4	RUNNING	9r		0.10			f000efb2
2	1024011	spin		1	1.50		112k	10	
3	77843	io-net		9	0.10		816k	6	
4	9	fs-pkg		6	0.10		1540k	3	
5	45068	devc-pty		1	0.00		140k	3	
6	737307	rlogind		1	0.00		80k	6	
7	6	devb-eide		8	0.00		12m	6	
8	139282	random		3	0.00		388k	3	
9	2	tinit		1	0.00		44k	0	
10	3	slogger		1	0.00		84k	3	
11	5	pci-bios		1	0.00		36k	3	
12	7	devb-aha4		6	0.00		10m	5	
				74			34m	138	

```
Mode: [C]pu-[r]am-[e]lf Order: [n]ame-[U]-[m]emory-[h]eap-[f]ds More: /
```



- Утилита nicinfo
- Утилита pin
- Утилита sloginfo

```
➤ # pin config
; socket 2
[device]
manufacturer = "3Com Corporation"
product = "3C589D"
info1 = "TP/BNC LAN Card Ver. 2a"
info2 = "000002"
regbase = 0x10000
config = 0x01, 0x0600, irq any, io any+16 (width=16)
config = 0x03, 0x0600, irq any, io any+16 (width=16)
register = 0, 0x40, 0x40 ; level mode interrupts
# pin cis
Socket : 2 - Function : 0
Device : Null
Attribute Device : EEPROM 8k
Manufacturer ID : 0x101 0x589
PC Card function : Network LAN Adapter
POST : 0x0
Card tuple version : 4.01
Manufacturer : 3Com Corporation
Name of Product : 3C589D
Add'n'l info (lot #) : TP/BNC LAN Card Ver. 2a
Add'n'l info (programming): 000002
Configuration base/st : 0x10000 0-subtuples
Configuration Index : 0x1 Default
Interface : I/O
Feature : 0x1d
Timing Info : Wait Busy
IO Space : Bus16 Bus8 0x0-0xF(4 lines)
IRQ Description : Level 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Configuration Index : 0x3 Last
Feature : 0x1
Attribute memory JEDEC : 0x0000
Checksum addr, len, val : 0xff88 129 0x00
# pin
Sock Func Type Flags PID Base Size IRQ
1 Empty MF None
1 Empty MF None
2 0 Network C-I-X 73741 0x200 16 7
2 Empty MF None
```

```
➤ [ivm@qnx ivm]$ /usr/sbin/nicinfo
RealTek 8139 Ethernet Controller
Physical Node ID ..... 00E04C E9B8B7
Current Physical Node ID ..... 00E04C E9B8B7
Media Rate ..... 100.00 Mb/s full-duplex UTP
MTU ..... 1514
Lan ..... 0
I/O Port Range ..... 0xE000 -> 0xE0FF
Hardware Interrupt ..... 0x9
Promiscuous ..... Disabled
Multicast ..... Enabled

Total Packets Txd OK ..... 1554
Total Packets Txd Bad ..... 0
Total Packets Rxd OK ..... 2489
Total Rx Errors ..... 0

Total Bytes Txd ..... 221016
Total Bytes Rxd ..... 200541

Tx Collision Errors ..... 0
Tx Collisions Errors (aborted) ... 0
Carrier Sense Lost on Tx ..... 0
```

```
➤ [ivm@qnx ivm]$ sloginfo
Time Sev Major Minor Args
Nov 17 11:30:32 2 19 0 eide_identify_devices: Intel 82371SB vid 8086,
did 7010, class 10180 rev 0, busno 0, dfunc 9
Nov 17 11:30:32 2 19 0 eide_identify_devices: cmd_addr 1f0, cntl_addr
3f4, irq e, chnl 0, udma -1, mdma 2, sdma 0, pio 4
Nov 17 11:30:32 2 19 0 eide_display_devices: QUANTUM FIREBALL tid 0, c
able 40, max udma 0, cur udma 2, max mdma 2, cur mdma 2, max sdma 0, cur sdma 2,
pio 4, mblk 16
Nov 17 11:30:32 2 19 0 eide_identify_devices: Intel 82371SB vid 8086,
did 7010, class 10180 rev 0, busno 0, dfunc 9
Nov 17 11:30:32 2 19 0 eide_identify_devices: cmd_addr 170, cntl_addr
374, irq f, chnl 1, udma -1, mdma 2, sdma 0, pio 4
Nov 17 11:30:32 2 19 0 eide_display_devices: CRD-8482B tid 0, c
able 40, max udma -1, cur udma -1, max mdma 2, cur mdma 2, max sdma 0, cur sdma
2, pio 4, mblk 0
Nov 17 11:30:32 2 19 0 eide_init_devices: QUANTUM FIREBALL path 0, tid
0, udma -1, mdma 2, sdma 0, pio 4, mblk 16
Nov 17 11:30:32 2 19 0 eide_init_devices: CRD-8482B path 1, tid
0, udma -1, mdma 2, sdma 0, pio 4, mblk 0
Nov 17 11:30:32 2 5 0 scsi_interpret_sense: path=0, target=0, lun=0,
cam_status=c4, scsi_status=2
Nov 17 11:30:32 2 5 0 scsi_interpret_sense: error=70, sense=5, asc=2
4, ascq=0
```

# Инициатива SWD TimeMaster

**NEW!**



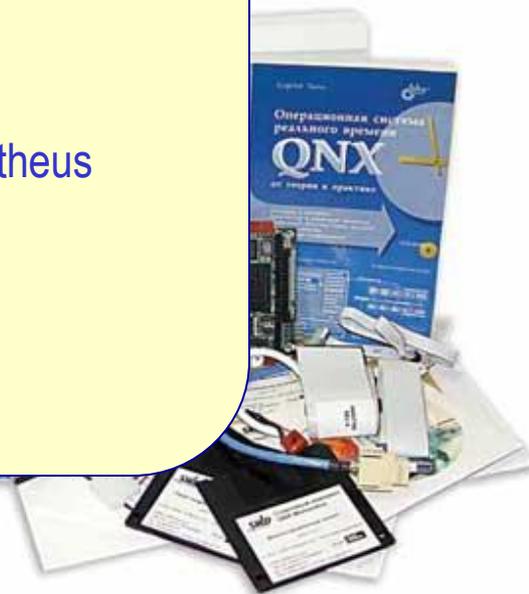
- ✓ Сокращение сроков разработки проекта
  - все необходимое в одной коробке
  - ОС QNX уже предустановлена

## Поддерживаемые процессорные платы:

- ✓ Fastwel CPU686
- ✓ Fastwel CPU686E
- ✓ Lippert CoolFox II
- ✓ Diamond Systems Prometheus
- ✓ Ampro CoreModule 4xx
- ✓ Intel IXDP425
- ✓ Intel IXDP2800
- ✓ Kontron PCIBoard PXA255

- ✓ Доступны через SWD дилерскую сеть компаний
  - есть 30-дневная гарантия
  - бесплатная техническая поддержка, в т.ч. для демо-версий

и на русском





- Заказные разработки



- Обучение - “Разработка драйверов для ОСРВ QNX Neutrino”, “Разработка программного обеспечения реального времени для ОС QNX 4.25”



# Спасибо!



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