

Neso-LT – Release Notes

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1 Device description

OS Version/Milestone	1.4.0
Release Date	28.08.2012
Windows CE version	Windows CE 6.0 R3 (Professional and Core)
QFE version	Up to 05/2010
Supported Hardware	V1.0 and V1.1
Minimum BIOS version	V1.13r2556
Released by	Bernd Mierzowski
Common information	.NET Compact Framework 3.5 support

2 Change history

2.1 Changes from version 1.3.0 to 1.4.0

- Added buzzer support (#78).
- Extended buzzer api with a function to determine the duty cycle (#78).
- Fixed a display rotation bug. The display may be rotated from landscape format to portrait format and vice versa dynamically. Note that if your display is already in portrait format after a system reset and you want to rotate to landscape again, a reset is required to make the changes operative(#67).
- Changed the rotation direction: The display will now be rotated counter clockwise as it will in RedBoot(#67).
- Fixed an EEPROM detection problem(#77).
- Added NFC: ONFI support(#69).
- Fixed a display initialization bug(#71).

2.2 Changes from version 1.2.0 to 1.3.0

- FTDI driver added.
- Improved the can documentation in the CAN_Api.h file.

2.3 Changes from version 1.1.0 to 1.2.0

- Added the CUPID pinnacle cirque touch support.
- Bug fix: RS485 no longer cuts the last 31 byte of a transmission frame in half duplex mode.
- The RS485 serial port (COM3) can be configured to RTS toggle via registry now. Refer to software manual for further documentation.
- Bug fix: CAN driver can be closed and opened again.
- Bug fix: CanTransmitMessage no longer blocks when cable unconnected.
- Bug fix: CAN baud rates 500 and 1000 kbit/s possible.
- Bug fix: Return correct error codes from CAN driver.
- Documentation of CAN API was reviewed, completed and corrected.
- Bug fix: Default baud rate corrected to the value described in documentation.
- Added timeout setting for CanTransmitMessage. Refer to API header (CAN_Api.h) for further documentation.
- Added filter setting for CanReceiveMessage. Refer to API header (CAN_Api.h) functions CanGetInfoMessageFilter and CanSetInfoMessageFilter for further documentation.
- CAN Feature: The receiving message queue length can be set with a fix length now. Refer to API header (CAN_Api.h) for further documentation.
- Bug fix: The backlight can be configured now via toolbox.exe or via an advanced backlight dialog in the settings GUI.
- Bug fix: Corrected bad block marking on erase. The FlashDisk will be correctly mounted even if bad blocks are in this area.

2.4 Changes from version 1.0.0 to 1.1.0

- Added Audio driver.
- Added S/PDIF support.
- Added ShowVersion tool.
- Bug fix: Fixed the USB-CAN influences. Both, CAN and USB are able to work at the same time now.

- Bug fix: Fixed RS232/RS485 baud-rate settings > 115k from .NETCF Applications.
- Bug fix: Fixed erasing of the flash-disk partition. New code checks for bad block detection. Now bad-blocks are skipped instead of just erasing and thus potentially unmarking them.
- Bug fix: Fixed 30min clock-jump problem in TIMESVC.

3 Known restrictions in current version

- If the USB mouse is inserted and the backlight is turning off due a power event, the device may turn on the display.
- The suspend mode does not work.
- The USB device is only working on every second connection.
- The USB OTG host doesn't work after the OTG port has been used in device mode.
- Setting the system time and local time on the device sometimes fails due to a bug in the RTC driver.
- Missing drivers / planned for future versions:
 - GPT drivers (General Purpose Timer)
 - Capacitive Touch
 - Digital I/O
 - SPI

Features list

3.1 Garz & Fricke tools

For detailed information about the tools and its usage see the G&F software documentation.

Tool name	Description	Supported
Autocopy	This tool provides an automatic on boot copy mechanism for specific files.	Yes
Autostart	This service is started after the OS has booted and executes specific applications.	Yes
FTP	File Transfer Protocol.	Yes
Telnet	Supports remote access via Ethernet.	Yes
DisableSerialConsole	Disable/Enable RedBoot functionality via terminal console.	Yes
Reset	Resetting the system.	Yes
SaveReg	Saving the user registry.	Yes
EraseRegistry	Erasing the user registry.	Yes
EraseFlash	Erasing the flash partition.	Yes
ShowVersion	Display current versions and driver information.	Yes
Disp	Supports display rotation.	Yes
DisableBootScript	Disables the execution of the “RedBoot” bootscript.	Yes
COM-Tool	Windows CE application for testing the serial interface.	No
pEEPROM	Supports reading and writing of eeprom information.	Yes
Fis	The fis.exe command line tool offers almost the same functionalities as the correspondent fis tool in RedBoot. See also the RedBoot User Manual.	Yes
Xconfig	Supporting import of an xml configuration file. See also the RedBoot User Manual.	Yes
Toolbox	A command line tool with several useful functions for Windows CE devices.	Yes
Regedit	A graphical user interface registry editor.	No
Touhc	This tool offers the possibility to start the touch calibration manually.	Yes

3.2 Audio

Feature	Description	Supported
G&F API support		N/A
Play audio stream		Yes
Record audio stream		Not tested

Test Environment

Manually test with a G&F application.

Known Restrictions

None

3.3 PWM Backlight

Feature	Description	Supported
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G&F API support		N/A
Stepwise backlight configuration	The backlight has a granularity of 256 luminance steps.	Yes

Test Environment

- Manually with Toolbox.exe (see the Toolbox –h for more information)
- Manually with the advanced backlight option in the Display settings dialog (GUI)

Known Restrictions

None

3.4 CAN

Feature	Description	Supported
G&F API support	CAN_Api.h / CAN_API.lib	Yes
Transmit message		Yes
Receive message		Yes
Support extended messages	An extended CAN message has a 29-bit identifier instead of an 11-bit identifier.	Yes
Configure CAN bus driver power supply	On some platforms the CAN bus driver can be powered off.	Not tested
Baud rates [kBit/s]: 20, 50, 100, 125, 250 , 500, 1000		Yes
Baud rates [kBit/s]: 10		No

Test Environment

- Manually test of driver behaviour.
- Long term test with maximum load.
 - Test application: G&F application
 - Duration: ~10 hours
 - Baud rate: 1000 kBit/s
 - Messages type: Extended
 - Receiving message queue length: dynamic
 - Functions: Sending/Receiving

Known Restrictions

Baud rate of 10kBit/s is not supported.

3.5 Micro SD HC memory card

Feature	Description	Supported
G&F API support		N/A
Write operation		Yes
Read operation		Yes
Automatic mounting		Yes

Test Environment

Manually test with 4 GB micro SD HC cards from Transcend.

Known Restrictions

None

3.6 USB Host

Feature	Description	Supported
G&F API support	-	N/A
Write operation		Yes
Read operation		Yes
Automatic mounting of USB devices		Yes
Support USB 2.0		Yes

Test Environment

Manually test with 4 GB USB sticks from Cruzor and devices like an USB mouse.

Known Restrictions

If the USB mouse is inserted the device sometimes turn on the display if the backlight is turned off.

3.7 USB OTG Host

Feature	Description	Supported
G&F API support	-	N/A
Write operation		Yes
Read operation		Yes
Automatic mounting of USB devices		Yes
Support USB 2.0		Yes

Test Environment

Manually test with 4 GB USB sticks from Cruzor via USB OTG host adapter.

Known Restrictions

The USB OTG host doesn't work after the OTG port has been used in device mode.

3.8 USB OTG Device

Feature	Description	Supported
G&F API support		N/A
Automatic device detection by windows device manager		Yes
Automatic device detection via ActiveSync	The device will be detected automatically with active sync installed on connected PC.	No
Support synchronisation via ActiveSync		No
Support ActiveSync for debugging in visual studio.		Not tested

Test Environment

Connected the device with the PC and checked the device pin with a G&F test application.

Known Restrictions

The USB device is only working on every second connection.

An error message from PC side occurs while connecting via ActiveSync.

3.9 FEC Fast Ethernet Controller

Feature	Description	Supported
G&F API support		N/A
Support 10 Mbit/s Network		Yes
Support 100 Mbit/s Network		Yes
TCP/IP v4 stack		Yes
TCP/IP v6 stack		Yes

Test Environment

Implicitly

Known Restrictions

None

3.10 Matrix Keyboard

Feature	Description	Supported
G&F API support		N/A
Configurable keyboard layout		Not tested
GUI support for keyboard layout		No
Support HW buttons	Some platforms support HW buttons	No

Test Environment

-

Known Restrictions

None

3.11 NAND Flash Disk

The flash disk is a persistent memory of the system. It holds partition data like BIOS and OS.

Feature	Description	Supported
G&F API support		N/A
Read operations		Yes
Write operations		Yes

Test Environment

Manually with fis.exe

Known Restrictions

None

3.12 Serial interface

Feature	Description	Supported
G&F API support		N/A
Write operations		Yes
Read operations		Yes
Support hardware handshaking	Only on COM1	Not tested
Support software handshaking		Not tested
Support RS485 mode	Only on COM3	Yes

Test Environment

- Serial interfaces were tested manually.
- Manually RS485 tests in half duplex and full duplex with ping pong transmission.

Known Restrictions

None

3.13 I²C

Feature	Description	Supported
G&F API support		Yes
Internal bus	Only internal usage	Yes
External bus		Not tested

Test Environment

-

Known Restrictions

None

3.14 Battery backed up RTC

Feature	Description	Supported
G&F API support		N/A
Update clock periodically	The clock will be updated by a time service if the device is connected to a DHCP server.	Yes

Test Environment

Manually test with G&F Application.

Known Restrictions

Setting the system time and local time on the device sometimes fails due to a bug in the RTC driver.

3.15 EEPROM

The EEPROM is a persistent memory which can be used by the user to store data permanently.

Feature	Description	Supported
G&F API support	EepromApi.h / EepromApi.lib	Yes
Read eeprom area	The eeprom is divided into user areas.	Yes
Write eeprom area		Yes
Support extended area writing		Not tested
Delete areas		Not tested

Test Environment

Manually test with G&F application (peeprom.exe).

Known Restrictions

None

3.16 GF Versioning

All drivers or tools register to the kernel on each boot as information element with its svn number and its build date. The Garz & Fricke Versioning driver allows amongst others retrieving this information on run time.

Feature	Description	Supported
G&F API support	ShowVersionApi.h / ShowVersionApi.lib GFVersionApi.h / GFVersionApi.lib	Yes
Announcement to the kernel	Supporting driver/tools announcement to the kernel on boot.	Yes
Query version information from element		Yes
Creating new information element		Yes
Support a graphical user interface for ShowVersion		No

Test Environment

Manually test.

Known Restrictions

None

3.17 GF Versioning

All drivers or tools register to the kernel on each boot as information element with its svn number and its build date. The Garz & Fricke Versioning driver allows amongst others retrieving this information on run time.

Feature	Description	Supported
G&F API support	ShowVersionApi.h / ShowVersionApi.lib GFVersionApi.h / GFVersionApi.lib	Yes
Announcement to the kernel	Supporting driver/tools announcement to the kernel on boot.	Yes
Query version information from element		Yes
Creating new information element		Yes
Support a graphical user interface for ShowVersion		No

Test Environment

Manually test.

Known Restrictions

None

3.18 FTDI

The initial virtual port for the FTDI driver is COM10. If a multi-port USB to serial adapter is connected the virtual ports COM11, COM12,.. will be also created by the driver.

The initial port number may be changed by the following registry key:

HKEY_LOCAL_MACHINE\Drivers\USB\ClientDrivers\FTDI_DEVICE\ InitialIndex

It is deprecated to use a port number smaller than 10 to prevent COM port conflicts with other G&F drivers.

G&F API support	ShowVersionApi.h / ShowVersionApi.lib	Yes
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	GFVersionApi.h / GFVersionApi.lib	
Support multi-port USB to serial adapter.		Yes
Baud rates: 2400, 4800, 9600, 14400, 19200, 38400, 57600, 115200, 230400, 460800		Yes

Test Environment

We tested a 4 port adapter with integrated FTDI chips connected to a developer machine. Manually send and receive tests on with G&F application (serlive.exe).

Known Restrictions

None.

4 Windows Embedded CE Run-Time License Assessment

4.1 Included Features

4.1.1 Windows Embedded CE 6.0 Professional Run-Time License

Windows Media Player	SYSGEN_CEPLAYER
Windows Media Player OCX	SYSGEN_DSHOW_WMP
Internet Explorer 6.0 for Windows Embedded CE - Standard Components	SYSGEN_IE
Internet Explorer 6.0 Sample Browser	SYSGEN_IESAMPLE
Internet Options Control Panel	SYSGEN_INETCPL
Internet Explorer HTML/DHTML API	SYSGEN_MSHTML
MSHTML Data Binding	SYSGEN_MSHTML_DBIND
Internet Explorer Browser Control Host	SYSGEN_SHDOCVW
WMA and MP3 Streaming	SYSGEN_STREAMAUDIO
Streaming Media Playback	SYSGEN_STREAMAV
Gesture Support for Win32 Controls	SYSGEN_GESTUREANIMATION
Adobe Flash Lite ActiveX Control	SYSGEN_IE_FLASHLITE
Internet Explorer 6.0 Tiling Engine	SYSGEN_IE_TILEENGINE
Windows Media Player OCX 7	SYSGEN_MEDIAAPPS_WMPOCX
Gesture Animation Support	SYSGEN_PHYSICSENGINE
Single-Touch Gesture Recognition	SYSGEN_TOUCHGESTURE
Silverlight for Windows Embedded	SYSGEN_XAML_RUNTIME

4.1.2 Windows Embedded CE 6.0 Core Run-Time License

ActiveSync	SYSGEN_AS_BASE
File Sync	SYSGEN_AS_FILE
Active Template Library (ATL)	SYSGEN_ATL
Waveform Audio	SYSGEN_AUDIO
Authentication Services (SSPI)	SYSGEN_AUTH
NTLM	SYSGEN_AUTH_NTLM
Schannel (SSL/TLS)	SYSGEN_AUTH_SCHANNEL
AutoDial	SYSGEN_AUTORAS
Battery Driver	SYSGEN_BATTERY
Binary Rom Image File System	SYSGEN_BINFS
File Cache Manager	SYSGEN_CACHEFILT
Windows Embedded CE Driver Development Kit Support Library	SYSGEN_CEDDK
Certificates (CryptoAPI 2.0)	SYSGEN_CERTS
Command Processor	SYSGEN_CMD
Common Control	SYSGEN_COMMCTRL
Common Dialog Support	SYSGEN_COMMDLG

Network User Interface	SYSGEN_CONNMC
Console Window	SYSGEN_CONSOLE
National Language Support (NLS)	SYSGEN_CORELOC
Standard String Functions - ASCII (corestra)	SYSGEN_CORESTRA
C++ Runtime Support for Exception Handling and Runtime Type Information	SYSGEN_CPP_EH_AND_RTTI
Credential Manager	SYSGEN_CREDMAN
Cryptography Services (CryptoAPI 1.0) with High Encryption Provider	SYSGEN_CRYPTO
Control Panel Applets	SYSGEN_CTLPNL
Mouse	SYSGEN_CURSOR
DCOM	SYSGEN_DCOM
DirectDraw	SYSGEN_DDRAW
Device Manager	SYSGEN_DEVICE
Display Support	SYSGEN_DISPLAY
DirectShow Core	SYSGEN_DSHOW
ACM Wrapper Filter	SYSGEN_DSHOW_ACMWRAP
DirectShow Display	SYSGEN_DSHOW_DISPLAY
DMO Wrapper Filter	SYSGEN_DSHOW_DMO
DirectShow Error Messages	SYSGEN_DSHOW_ERRORS
Video/Image Compression Manager	SYSGEN_DSHOW_ICM
IMA ADPCM Audio Codec	SYSGEN_DSHOW_IMAADPCM
MP3 Codec	SYSGEN_DSHOW_MP3
MPEG-1 Layer 1 and 2 Audio Codec	SYSGEN_DSHOW_MPEGA
MPEG-1 Parser/Splitter	SYSGEN_DSHOW_MPEGSPLITTER
MPEG-1 Video Codec	SYSGEN_DSHOW_MPEGV
MS ADPCM Audio Codec	SYSGEN_DSHOW_MSADPCM
G.711 Audio Codec	SYSGEN_DSHOW_MSG711
GSM 6.10 Audio Codec	SYSGEN_DSHOW_MSGSM610
MS RLE Video Codec	SYSGEN_DSHOW_MSRLE
DirectShow Video Renderer	SYSGEN_DSHOW_VIDREND
Wave/AIFF/au/snd File Parser	SYSGEN_DSHOW_WAV
Waveform Audio Renderer	SYSGEN_DSHOW_WAVEOUT
WMA Codec	SYSGEN_DSHOW_WMA
WMA Voice Codec	SYSGEN_DSHOW_WMA_VOICE
WMAPro over S/PDIF Packetizer	SYSGEN_DSHOW_WMASPDTXDMO
Windows Media Technologies	SYSGEN_DSHOW_WMT
ASX v1 and M3U File Support	SYSGEN_DSHOW_WMT_ASXV1
ASX v2 File Support	SYSGEN_DSHOW_WMT_ASXV2
ASX v3 File Support	SYSGEN_DSHOW_WMT_ASXV3
Windows Media Streaming over HTTP	SYSGEN_DSHOW_WMT_HTTP
Windows Media Streaming from Local Storage	SYSGEN_DSHOW_WMT_LOCAL

Windows Media Streaming over MMS	SYSGEN_DSHOW_WMT_MMS
Windows Media Multicast and Multi-Bit Rate	SYSGEN_DSHOW_WMT_MULTI
NSC File Support	SYSGEN_DSHOW_WMT_NSC
WMV/MPEG-4 Video Codec	SYSGEN_DSHOW_WMV
EDB Database Engine	SYSGEN_EDB
USB Remote NDIS Class Driver	SYSGEN_ETH_USB_HOST
Wired Local Area Network (802.3, 802.5)	SYSGEN_ETHERNET
System Event Log	SYSGEN_EVENTLOG
exFAT File System	SYSGEN_EXFAT
FAT File System	SYSGEN_FATFS
Fiber API	SYSGEN_FIBER
Flash MDD	SYSGEN_FLASHMDD
FormatMessage API	SYSGEN_FMTMSG
Courier New (Subset 1_30)	SYSGEN_FONTS_COUR_1_30
Tahoma (Subset 1_07)	SYSGEN_FONTS_TAHOMA_1_07
Wingding	SYSGEN_FONTS_WINGDING
CEDB Database Engine	SYSGEN_FSDBASE
System Password	SYSGEN_FSPASSWORD
RAM and ROM File System	SYSGEN_FSRAMROM
Hive-based Registry	SYSGEN_FSREGHIVE
Bit-based	SYSGEN_FSREPLBIT
FTP Server	SYSGEN_FTPD
Full C Runtime	SYSGEN_FULL_CRT
Alphablend API (GDI version)	SYSGEN_GDI_ALPHABLEND
Gradient Fill Support	SYSGEN_GRADFILL
JScript 5.6	SYSGEN_IE_JSCRIPT
XML MIME Viewer	SYSGEN_IE_MSXML_MIMEVIEWER
VBScript 5.6	SYSGEN_IE_VBSCRIPT
Still Image Codec Support (Encode and Decode)	SYSGEN_IMAGING
BMP Decoder	SYSGEN_IMAGING_BMP_DECODE
BMP Encoder	SYSGEN_IMAGING_BMP_ENCODE
GIF Decoder	SYSGEN_IMAGING_GIF_DECODE
GIF Encoder	SYSGEN_IMAGING_GIF_ENCODE
ICO Decoder	SYSGEN_IMAGING_ICO_DECODE
JPG Decoder	SYSGEN_IMAGING_JPG_DECODE
JPG Encoder	SYSGEN_IMAGING_JPG_ENCODE
PNG Decoder	SYSGEN_IMAGING_PNG_DECODE
PNG Encoder	SYSGEN_IMAGING_PNG_ENCODE
TIFF Decoder	SYSGEN_IMAGING_TIFF_DECODE
TIFF Encoder	SYSGEN_IMAGING_TIFF_ENCODE
Input Method Manager (IMM)	SYSGEN_IMM
IP Helper API	SYSGEN_IPHLPAPI

WMA and MP3 Local Playback	SYSGEN_LOCALAUDIO
Minimal GDI Configuration	SYSGEN_MINGDI
Minimal GWES Configuration	SYSGEN_MINGWES
Minimal COM (No OLE Support)	SYSGEN_MINICOM
Minimal Input Configuration	SYSGEN_MININPUT
Minimal Window Manager Configuration	SYSGEN_MINWMGR
Internet Explorer Multiple-Language Base API	SYSGEN_MLANG
Standard Modem Support for Dial Up Networking	SYSGEN_MODEM
Message Queue - Point-to-Point	SYSGEN_MSGQUEUE
SIP for Small Screens	SYSGEN_MSIM
Partition Driver	SYSGEN_MSPART
XML Data Islands	SYSGEN_MSXML_DATA_ISLANDS
XML Core Services and Document Object Model (DOM)	SYSGEN_MSXML_DOM
XML Error Strings	SYSGEN_MSXML_ERROR_STRINGS
XML HTTP	SYSGEN_MSXML_HTTP
XML Minimal Parser	SYSGEN_MSXML_MINI
XML SAX	SYSGEN_MSXML_SAX
XML Query Languages (XQL)	SYSGEN_MSXML_XQL
XML Stylesheet Language Transformations (XSLT)	SYSGEN_MSXML_XSLT
Multilingual User Interface (MUI)	SYSGEN_MULTUI
Network Driver Architecture (NDIS)	SYSGEN_NDIS
NDIS User-mode I/O Protocol Driver	SYSGEN_NDISUIO
Network Utilities (IpConfig, Ping, Route)	SYSGEN_NETUTILS
Compression	SYSGEN_NKCOMPR
Memory Mapped Files	SYSGEN_NKMAPFILE
UI based Notification	SYSGEN_NOTIFY
COM	SYSGEN_OLE
Power Management (Full)	SYSGEN_PM
Dial Up Networking (RAS/PPP)	SYSGEN_PPP
Windows Networking API/Redirector (SMB/CIFS)	SYSGEN_REDIR
Release Directory File System	SYSGEN_RELFS
Serial Port Support	SYSGEN_SERDEV
Core Server Support	SYSGEN_SERVICES
Target Control Support (Shell.exe)	SYSGEN_SHELL
Software-based Input Panel Driver	SYSGEN_SOFTKB
Standard Shell	SYSGEN_STANDARDSH
Standard I/O (STDIO)	SYSGEN_STDIO
Standard I/O ASCII (STDIOA)	SYSGEN_STDIOA
Storage Manager	SYSGEN_STOREMGR
Storage Manager Control Panel Applet	SYSGEN_STOREMGR_CPL

String Safe Utility Functions	SYSGEN_STRSAFE
Telephony API (TAPI 2.0)	SYSGEN_TAPI
TCP/IP	SYSGEN_TCPIP
TCP/IPv6 Support	SYSGEN_TCPIP6
Telnet Server	SYSGEN_TELNETD
Transaction-Safe FAT File System (TFAT)	SYSGEN_TFAT
SNTP Automatic Updates and Server Synchronization	SYSGEN_TIMESVC_API
SNTP Client with DST	SYSGEN_TIMESVC_DST
SNTP Server	SYSGEN_TIMESVC_SNTP
Toolhelp API	SYSGEN_TOOLHELP
Touch Screen (Stylus)	SYSGEN_TOUCH
UI Proxy for Kernel-Mode Drivers	SYSGEN_UIPROXY
Unimodem support	SYSGEN_UNIMODEM
URL Moniker Services	SYSGEN_URLMON
USB Host Support	SYSGEN_USB
USB Human Input Device (HID) Class Driver	SYSGEN_USB_HID
USB HID Keyboard and Mouse	SYSGEN_USB_HID_CLIENTS
USB HID Keyboard Only	SYSGEN_USB_HID_KEYBOARD
USB HID Mouse Only	SYSGEN_USB_HID_MOUSE
USB Printer Class Driver	SYSGEN_USB_PRINTER
USB Storage Class Driver	SYSGEN_USB_STORAGE
USB Function Driver	SYSGEN_USBFN
Report Upload Client	SYSGEN_WATSON_CLIENT
Report Upload Client User Interface	SYSGEN_WATSON_CLIENT_UI
Error Reporting Control Panel	SYSGEN_WATSON_CTLPNL
Error Report Generator	SYSGEN_WATSON_DMPGEN
Error Report Transfer Driver	SYSGEN_WATSON_XFER
CAB File Installer/Uninstaller	SYSGEN_WCELOAD
Windows Internet Services	SYSGEN_WININET
Winsock Support	SYSGEN_WINSOCK