xPC Target Release Notes

Contents

Summary by Version

This table provides quick access to what's new in each version. For clarification, see "About Release Notes" on page 2.

Version (Release)	New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Latest Version V3.2 (R2007a)	Yes Details	Yes Summary	Bug Reports Includes fixes	Printable Release Notes: PDF Current product documentation
Latest Version V3.1 (R2006b)	Yes Details	Yes Summary	Bug Reports Includes fixes	Printable Release Notes: PDF Current product documentation
V3.0 (R2006a+)	Yes Details	Yes Summary	Bug Reports Includes fixes	No
V2.9 (R2006a)	Yes Details	Yes Summary	Bug Reports Includes fixes	No
V2.8 (R14SP3)	Yes Details	Yes Summary	Bug Reports Includes fixes	No
V2.7.2 (R14SP2)	Yes Details	Yes Summary	Bug Reports Includes fixes	No
V2.7 (R14SP1+)	Yes Details	Yes Summary	Fixed Bugs	No
V2.6.1 (R14SP1)	Yes Details	Yes Summary	Fixed Bugs	No
V2.6 (R14+)	Yes Details	Yes Summary	Fixed Bugs	No
V2.5 (R14)	Yes Details	Yes Summary	Fixed Bugs Open Bugs	No

Version (Release)	New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
V2.0.3 (R13SP2)	No	No	No	Printable Release Notes: PDF V2.0.3 product documentation
V2 (R13)	Yes Details	Yes Summary	Fixed Bugs	No
V1.2 (R12.1)	Yes Details	Yes Summary	No bug fixes	No
V1.1 (R12)	Yes Details	Yes Summary	No bug fixes	No

About Release Notes

Use release notes when upgrading to a newer version to learn about new features and changes, and the potential impact on your existing files and practices. Release notes are also beneficial if you use or support multiple versions.

If you are not upgrading from the most recent previous version, review release notes for all interim versions, not just for the version you are installing. For example, when upgrading from V1.0 to V1.2, review the New Features and Changes, Version Compatibility Considerations, and Bug Reports for V1.1 and V1.2.

New Features and Changes

These include

- New functionality

- Changes to existing functionality

- Changes to system requirements (complete system requirements for the current version are at the MathWorks Web site)

- Any version compatibility considerations associated with each new feature or change

Version Compatibility Considerations

When a new feature or change introduces a known incompatibility with the previous version, its description includes a **Compatibility Considerations** subsection that details the impact. For a list of all new features and changes that have compatibility impact, see the "Compatibility Summary for xPC Target" on page 63 in this document.

Compatibility issues that become known after the product has been released are added to Bug Reports at the MathWorks Web site. Because bug fixes can sometimes result in incompatibilities, also review fixed bugs in Bug Reports for any compatibility impact.

Fixed Bugs and Known Problems

MathWorks Bug Reports is a user-searchable database of known problems, workarounds, and fixes. The MathWorks updates the Bug Reports database as new problems and resolutions become known, so check it as needed for the latest information.

Access Bug Reports at the MathWorks Web site using your MathWorks Account. If you are not logged in to your MathWorks Account when you link to Bug Reports, you are prompted to log in or create an account. You then can view bug fixes and known problems for R14SP2 and more recent releases.

The Bug Reports database was introduced for R14SP2 and does not include information for prior releases. You can access a list of bug fixes made in prior versions via the links in the summary table.

Related Documentation at Web Site

Printable Release Notes (PDF). You can print release notes from the PDF version, located at the MathWorks Web site. The PDF version does not support links to other documents or to the Web site, such as to Bug Reports. Use the browser-based version of release notes for access to all information.

Product Documentation. At the MathWorks Web site, you can access complete product documentation for the current version and some previous versions, as noted in the summary table.

Version 3.2 (R2007a) xPC Target

This table summarizes what's new in Version 3.2 (R2007a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes Summary	Bug Reports Includes fixes	Printable Release Notes: PDF Current product documentation

New features and changes introduced in this version are

- "CANdb Blocks" on page 5

- "Selecting Signals Using Signal Labels Now Supported" on page 6

- "Directory Contents Display" on page 7

- "From xPC Target Block Now Accepts Cell Array of Signals" on page 7

- "Target Application Versions Now Checked" on page 7

- "Discrete States Logging Now Supported" on page 8

- "Microsoft Visual C/C++ 2005 Express Edition Compiler Now Supported" on page 8

- "Parallel Ports Now Supported" on page 8

- "I/O Driver Support" on page 8

- "Writing Device Drivers for xPC Target" on page 9

- "Recreate Target Boot Disk and Rebuild Applications" on page 9

CANdb Blocks

xPC Target now supports the encoding and decoding of messages specified via a CANdb file (see "Accessing CANdb DBC Format Databases from xPC Target" in the xPC Target I/O Reference documentation). The CANDBC library (available from within the CAN library) includes blocks for the decoding and formatting of these messages. The CAN library also includes a

CANDBC Translator block, which translates the CANdb message to one that xPC Target can write into the transmit FIFO with a FIFO mode Write block.

The new `xpccandbcfifo` model illustrates how to read the CANdb messages contained in *matlabroot*\toolbox\rtw\targets\xpc\xpcdemos\demo.dbc.

Selecting Signals Using Signal Labels Now Supported

xPC Target now supports the selection of signals using signal labels (see the **Signal name** parameter of the "Signal Properties Dialog Box" in the Simulink documentation) in addition to block paths. This is supported for target application objects, C and COM API, and xPC Target Explorer.

Target Application Object Methods

xPC Target has the following new target application object functions:

- `getsignallabel`
- `getsignalidsfromlabel`

API

xPC Target has the following new C API functions:

- `xPCGetSigIdxfromLabel`
- `xPCGetSigLabelWidth`
- `xPCGetSignalLabel`

xPC Target has the following new COM API functions:

- `xPCTarget.GetSignalidsfromLabel`
- `xPCTarget.GetSignalLabel`

xPC Target Explorer

xPC Target Explorer can now display signals by their label instead of by block path. You can view signals by their labels by right-clicking the Model Hierarchy node and selecting `View Only Labeled Signals`. To view signals by their block paths, right-click the Model Hierarchy node and select `View`

`All Signals`. Hovering over the signal label or block path displays the signal block path or signal label, respectively. For details, see "Signal Monitoring with xPC Target Explorer" in the xPC Target User's Guide documentation.

Directory Contents Display

xPC Target has new API functions and structures to display the contents of a directory.

The new C API structure is `dirStruct`. The new C API functions are:

- `xPCFSDirItems`
- `xPCFSDirStructSize`
- `xPCFSDirSize`

The new COM API structures are `FSDir` and `FSDiskInfo`. The new COM API functions are:

- `xPCFileSystem.DirList`
- `xPCFileSystem.GetDiskInfo`

From xPC Target Block Now Accepts Cell Array of Signals

The From xPC Target block now allows you to manually enter a cell array of signals (**Signal name** parameter) to read. Using a cell array of signal names, the From xPC Target block will output a vector of signal values. This can improve the performance of the application. In previous releases, this parameter accepted only one signal.

Target Application Versions Now Checked

You cannot download a target application that was built from a different version of xPC Target than the xPC Target kernel on the target PC. Attempts to download such a target application generates an error message on the target PC monitor:

```
Mismatch between model and kernel versions
```

In previous releases, downloading a mismatched target application causes the target PC to crash.

Discrete States Logging Now Supported

xPC Target now supports the logging and monitoring of discrete states in a model. In previous releases, you could not log and monitor discrete states (see "Signal Logging" in the xPC Target User's Guide documentation).

Microsoft Visual C/C++ 2005 Express Edition Compiler Now Supported

xPC Target now supports the Microsoft Visual C/C++ 2005 Express Edition compiler. See "Host PC Requirements" in the Getting Started with xPC Target documentation for details.

Note If you use Microsoft Visual C/C++ 2005 Express Edition, xPC Target does not support the generation of COM objects from the xPC Target model.

Parallel Ports Now Supported

xPC Target now supports the parallel ports of your target PC (see "Parallel Ports" in the xPC Target I/O Reference documentation). This feature also enables you to generate interrupts using parallel ports.

I/O Driver Support

xPC Target 3.2 has new driver blocks, including support for the following boards:

- Commtech Fastcom 422/2-PCI-335 board (see "xPC Target RS-232 and 422/485 Drivers (Composite)" in the xPC Target I/O Reference documentation)

- Measurement Computing PCI-DAS1002 and PCI-DAC6703 (see Measurement Computing PCI-DAS1002 and Measurement Computing PCI-DAC6703 in the xPC Target I/O Reference documentation)

- Quanser Q4 (see Quanser Q4 in the xPC Target I/O Reference documentation)

- National Instruments PCI-6528 (see National Instruments PCI-6528 in the xPC Target I/O Reference documentation)

Writing Device Drivers for xPC Target

xPC Target now enables you to write your own custom device drivers for xPC Target. This documentation is only available for download as a PDF file. See http://www.mathworks.com/products/xpctarget/ for details on how to access this file.

Recreate Target Boot Disk and Rebuild Applications

Compatibility Considerations

If you upgrade your xPC Target software from a previous version, you must recreate the target boot disk and you must rebuild your xPC Target applications.

Version 3.1 (R2006b) xPC Target

This table summarizes what's new in Version 3.1 (R2006b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes Summary	Bug Reports Includes fixes	Printable Release Notes: PDF Current product documentation

New features and changes introduced in this version are

- "Ethernet Chip Support" on page 10
- "xpctarget.targets Enhancement" on page 10
- "Simulink External Mode" on page 11
- "Microsoft Visual C/C++ Compiler Version 8.0" on page 11
- "I/O Driver Support" on page 11
- "Obsolete Driver Blocks" on page 11
- "xPC Target Demos" on page 11
- "Recreate Target Boot Disk and Rebuild Applications" on page 12

Ethernet Chip Support

In addition to the existing list of Ethernet chip families, xPC Target now also supports the Intel I8254X fast Gigabit Ethernet chip family.

xpctarget.targets Enhancement

The xpctarget.targets has a new property, FloppyDrive. This property allows you to set the 3.5-inch drive letter to the one designated by your target PC, for example a: or b:.

Simulink External Mode

The xPC Target Simulink external mode is now enabled by default. In previous releases, you needed to type the `xpcextmodeenable` command to access this feature.

Microsoft Visual C/C++ Compiler Version 8.0

xPC Target now supports Microsoft Visual C/C++ Professional Edition Version 8.0.

I/O Driver Support

xPC Target has new driver blocks to support the Texas Instruments DM642 EVM with Embedded Target for TI C6000 DSP. This enables you to build and download an xPC Target application to a target PC that contains a DM642 EVM board. This application can then communicate and exchange data with the DM642 EVM through an Embedded Target for TI C6000 DSP model that contains blocks that enable communication with xPC Target.

To access these blocks, type `xpctexasinstrumentslib` at the MATLAB Command Window.

Obsolete Driver Blocks

Compatibility Considerations

xPC Target has obsoleted the driver blocks for the Sensoray 626 board. You can still access these driver blocks by typing the command `xpcobsoletelib` at the MATLAB Command Window. Existing models that use these drivers will still work. However, their presence is not guaranteed for future releases. Do not use these driver blocks in new models.

xPC Target Demos

The xPC Target demo, Exchanging Data with the TI DM642 EVM (`TIdm642xPC`), has been added to the **xpcdemos** directory. With its Embedded Target for TI6000 DSP counterpart, Using the PCI Bus to Exchange Data with xPC (`c6000pcixpc`), this demo illustrates how xPC Target can exchange data with the DM642 EVM through an Embedded Target for TI C6000 DSP model.

Recreate Target Boot Disk and Rebuild Applications

Compatibility Considerations

If you upgrade your xPC Target software from a previous version, you must recreate the target boot disk and you must rebuild your xPC Target applications.

Version 3.0 (R2006a+) xPC Target

This table summarizes what's new in Version 3.0 (R2006a+):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes Summary	Bug Reports Includes fixes	No

New features and changes introduced in this version are

- "Ethernet Card Support" on page 13

- "Intel Visual Fortran 9.0 Support" on page 14

- "To/From Blocks and Target PCs" on page 14

- "xpctarget.fs Method Enhancements" on page 14

- "Numerical Formats for xPC Target Scope Blocks" on page 15

- "Simulink External Mode and Tuning Parameters" on page 15

- "xPC Target Explorer" on page 15

- "I/O Device Driver Support" on page 15

- "xPC Target Mouse" on page 18

- "xPC Target Demos" on page 18

- "Recreate Target Boot Disk and Rebuild Applications" on page 18

Ethernet Card Support

In addition to the existing list of Ethernet cards, xPC Target now also supports

- National Semiconductor DP83815

- 3Com 3C90x

> **Note** xPC Target does not support the 3C905-TX board (PCI device ID 0x9050).

- Realtek RTL8139D (tested and verified for Zonet ZEN3200 and AOpen AON-325)

Intel Visual Fortran 9.0 Support

xPC Target now supports the Intel Visual Fortran 9.0 compiler for the incorporation of Fortran code into Simulink® models. See "xPC Target and Fortran" in the xPC Target user's guide documentation for details.

To/From Blocks and Target PCs

The To/From xPC Target blocks now support multiple target PCs with the following additional parameters:

- **Use default target PC**

  Selecting this option directs the To xPC Target block to communicate to the default target PC.

- **Specify target name**

  If you deselect the **Use default target PC** check box, this field is displayed. Enter the name of the configured target PC.

Compatibility Considerations

In earlier releases, to run a model that contained From or To xPC Target blocks in a multiple target PC environment, you had to configure your model with the **Simulation > Configuration Parameters** menu (see "To xPC Target and From xPC Target Blocks" on page 46). You can now configure the blocks directly for this behavior; you no longer have to configure the model that contains these blocks.

xpctarget.fs Method Enhancements

The xpctarget.fs fopen method now supports the following operations:

Option	Description
`'a'`	Open the file for appending to the file.
`'r+'`	Open the file for reading and writing.
`'w+'`	Open the file for reading and writing.
`'a+'`	Open the file for reading and appending to the file.

Numerical Formats for xPC Target Scope Blocks

In previous releases, the format string for numerical format entries of scopes of type target had a limit of 100 characters for all the signals combined. You can now have 100 characters per signal in a format string (see "Entering Parameters for an xPC Target Scope Block" in the Getting Started with xPC Target documentation).

Simulink External Mode and Tuning Parameters

In previous releases, the act of tuning target application parameters in Simulink external mode displayed messages on the target PC monitor. These messages are no longer displayed when you tune parameters in Simulink external mode.

xPC Target Explorer

xPC Target Explorer has a new check box in the Settings node, **Target PC is a 386/486**. You must select this check box if your target PC has a 386 or 486 compatible processor. If your target PC has a Pentium or higher compatible processor, selecting this check box will slow the performance of your target PC.

I/O Device Driver Support

New Board Support

xPC Target 3.0 has new driver blocks, including support for the following boards:

- SBS

- SBS IP-UD-IHV-16I80
- SBS IP-UD-IHV-8I160
- SBS PCI-40B
- MPL PATI (PowerPC controlled Analog and Timing I/O Intelligence)
  - MPL PATI Digital Input
  - MPL PATI Digital Output
  - MPL PATI Incremental Encoder
  - MPL PATI Timebase Setup

Compatibility Considerations. The previous xPC Target release introduced the MPL PATI PWM measure and MPL PATI PWM generate blocks. The time base for these blocks was hard coded to 20 MHz.

In xPC Target Version 3.0, you must use the new MPL PATI Timebase Setup block with these blocks to select the 20 MHz frequency for the time base. If you do not use the MPL PATI Timebase Setup block with the MPL PATI PWM measure or MPL PATI PWM generate blocks, the TCR1 time base defaults to 1.25 MHz.

Updated Driver Support
The drivers for the following blocks have been added or updated:

Manufacturer	Change
MPL	• The MPL PATI PWM generate block has been updated to support armed input.
National Instruments	The following blocks were added: • National Instruments PCI/PXI-6711 Pulse Generation • National Instruments PCI/PXI-6711 Pulse Width/Period Measurement • National Instruments PCI/PXI-6713 Pulse Generation • National Instruments PCI/PXI-6713 Pulse Width/Period Measurement • National Instruments PCI/PXI-6731 Pulse Generation • National Instruments PCI/PXI-6731 Pulse Width/Period Measurement • National Instruments PCI/PXI-6733 Pulse Generation • National Instruments PCI/PXI-6733 Pulse Width/Period Measurement

Utilities Library

The xPC Target library has a new sublibrary, Utilities. It contains blocks that provide generic functions. The following blocks were added to the Utilities sublibrary.

- Byte Packing

- Byte Unpacking

- Bit Packing

- Bit Unpacking

Miscellaneous Library

The following blocks were added to the Miscellaneous library. These blocks provide counter and delta blocks for the Pentium chip.

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- Pentium Time Stamp Counter

- Time Stamp Delta

xPC Target Mouse

Limitation

The mouse does not work on the target PC. Setting **Target mouse** to any setting on the xPC Target Explorer **Configuration > Appearance** node has no affect.

xPC Target Demos

The `VMIC5565.mdl` demo has been added to the `xpcdemos` directory. This demo illustrates sending and receiving data over the VMIC shared memory.

Recreate Target Boot Disk and Rebuild Applications

Compatibility Considerations

If you upgrade your xPC Target software from a previous version, you must recreate the target boot disk and you must rebuild your xPC Target applications.

Version 2.9 (R2006a) xPC Target

This table summarizes what's new in Version 2.9 (R2006a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes Summary	Bug Reports Includes fixes	No

New features and changes introduced in this version are

- "xPC Target Explorer" on page 19
- "xPC Target Options Pane" on page 20
- "Simulink External Mode" on page 20
- "MATLAB Compiler Support" on page 20
- "Open Watcom Compiler Support" on page 20
- "xPC Target C API" on page 20
- "Support for Model Referencing" on page 21
- "I/O Device Driver Support" on page 21
- "Recreate Target Boot Disk and Rebuild Applications" on page 22

xPC Target Explorer

xPC Target Explorer has the following enhancements:

- The ability to save an xPC Target application session, including scope and target PC settings, to a standard MATLAB MAT-file on the host PC (see "Saving and Reloading xPC Target Application Sessions" in the xPC Target user's guide documentation)

- The ability to copy (with drag and drop) a signal from one scope to another

- The ability to remember resized and relocated xPC Target Explorer windows

- Enhanced file system support manipulation

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xPC Target Options Pane

The xPC Target Options pane (see "xPC Target Options" in the Getting Started with xPC Target documentation) has a new check box, **Include model hierarchy on the target application**. Selecting this check box includes the model hierarchy as part of the target application.

Simulink External Mode

xPC Target support for Simulink external mode has the following enhancement and change:

- xPC Target now supports uploading real-time data to Simulink scopes when using Simulink external mode (see "Signal Tracing with Simulink External Mode" in the xPC Target user's guide documentation).

- xPC Target now supports Simulink external mode for all target PCs, not just the default one.

MATLAB Compiler Support

xPC Target now supports the MATLAB Compiler. You can generate redistributable, stand-alone xPC Target applications from your M-files with the MATLAB Compiler.

Open Watcom Compiler Support

xPC Target now supports Open Watcom C/C++ Version 1.3. It no longer supports Watcom compiler C/C++ Version 11.0.

xPC Target C API

To better support target PC file systems, the xPC Target C API has been enhanced:

- The diskinfo data structure was added. It contains information, such as FAT type and number of clusters, for target PC file system disks.

- The xPCFSDiskInfo function was added. It returns information, such as FAT type and number of clusters, for target PC file system disks.

Support for Model Referencing

If you download a target application to a target PC, and that target application was built from a model that contains referenced models, you can now tune the parameters of the top level of the model. The referenced models themselves must have Inline Parameters on, as in previous releases.

I/O Device Driver Support

New Board Support

xPC Target 2.9 has new driver blocks, including support for the following boards:

- Contec
  - PIO-32/32F(PCI)
  - PIO-32/32L(PCI)H
  - PI-64L(PCI)H
  - PO-64L(PCI)H
  - CNT32-8M(PCI)
- MPL PATI (PowerPC controlled Analog and Timing I/O Intelligence)

Updated Driver Support

The drivers for the following have been updated:

Manufacturer	Change
Diamond Systems	• The Diamond Prometheus driver has been updated to also support the Diamond Athena board. • The Emerald-MM block now lists the baud rates with an HS label to indicate the rate if the board contains the high-speed crystal option.

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Manufacturer	Change
National Instruments	The PCI-MIO-16XE-50 blocks have been renamed to PCI-6911E.
United Electronic Industries (UEI)	The PD2-MF and PDX1-MF 12-bit series blocks have been enhanced to support 3 MHz in addition to 1.25 MHz.

Utility Sublibraries

xPC Target has added the following utility sublibraries:

Sublibrary	Description
Digital Input/Utilities, Digital Output/Utilities	Contains the following new blocks: • Digital IO bit-packing — Constructs data frames for digital I/O blocks • Digital IO bit-unpacking — Extracts data frames for digital I/O blocks
Incremental Encoder/Utilities/Rollover	Contains the following new blocks: • Rollover Counter — Sample rollover counter block • Extended Counter — Sample extended counter block

Recreate Target Boot Disk and Rebuild Applications

Compatibility Considerations

If you upgrade your xPC Target software from a previous version, you must recreate the target boot disk and you must rebuild your xPC Target applications.

Version 2.8 (R14SP3) xPC Target

This table summarizes what's new in Version 2.8 (R14SP3):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes Summary	Bug Reports Includes fixes	No

New features and changes introduced in this version are

- "xPC Target Explorer" on page 23
- "Fixed-Point Support" on page 23
- "Target PC Environments" on page 24
- "New Supplied Ethernet Card" on page 24
- "I/O Device Driver Support" on page 24
- "Recreate Target Boot Disk and Rebuild Applications" on page 24

xPC Target Explorer

The xPC Target Explorer has the following enhancements:

- **Apply** and **Revert** buttons have been added to the bottom of many panes.

  - **Apply** — Click this button to apply changes.

  - **Revert** — Use the **Revert** button to retrieve old values.

- Target PC nodes now have a PCI Devices node. This lists all PCI devices detected on the target PC.

Fixed-Point Support

xPC Target now supports Simulink fixed-point data. This enables you to

- Monitor and log signals of fixed-point data types
- Tune parameters of fixed-point data types

Target PC Environments

This release now allows you to set up multiple target PCs from the command line. See the xPC Target user's documentation for details.

New Supplied Ethernet Card

xPC Target now ships with the Intel PRO/100 M card.

I/O Device Driver Support

xPC Target 2.8 has new driver blocks, including support for the following boards:

- Condor QPCI/PCI-1553 to support the MIL-STD-1553 military avionics databus protocol

- National Instruments

  - PCI/PXI-6731, PCI/PXI-6711

  - PCI/PXI-6733, PCI/PXI-6713

Compatibility Considerations

The xPC Target MIL-STD-1553 drivers have the following limitations:

- Condor PCI/QPCI-1553 RT Initialize block — You cannot change the values of the following parameters at run-time:

  - Initial status

  - Initial BIT word

  - Inhibit terminal flag

Recreate Target Boot Disk and Rebuild Applications

Compatibility Considerations

If you upgrade your xPC Target software from a previous version, you must recreate the target boot disk and you must rebuild your xPC Target applications.

Version 2.7.2 (R14SP2) xPC Target

This table summarizes what's new in Version 2.7.2 (R14SP2):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes Summary	Bug Reports Includes fixes	No

New features and changes introduced in this version are

- "xPC Target Explorer" on page 25
- "I/O Device Driver Support" on page 25
- "Recreate Target Boot Disk and Rebuild Applications" on page 26

xPC Target Explorer

xPC Target Explorer has been enhanced and now fully supports the following:

- Inlined parameters
- Monitoring of test-pointed Stateflow® states

I/O Device Driver Support

xPC Target 2.7.2 has new driver blocks, including support for the following board:

Manufacturer	Board
National Instruments	PXI-6052E

The drivers for the following boards have been updated:

Manufacturer	Board
Contec	Contec DA12-16(PCI)
Measurement Computing	CIO-DAS16JR/16

Recreate Target Boot Disk and Rebuild Applications

Compatibility Considerations

If you upgrade your xPC Target software from a previous version, you must recreate the target boot disk and you must rebuild your xPC Target applications.

Version 2.7 (R14SP1+) xPC Target

This table summarizes what's new in Version 2.7 (R14SP1+):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes Summary	Fixed Bugs	No

New features and changes introduced in this version are

- "xPC Target Explorer" on page 27
- "Default Target PC" on page 28
- "To/From Blocks and Default Target PCs" on page 28
- "Stateflow® State Test Points" on page 29
- "xPC Target COM API" on page 29
- "I/O Device Driver Support" on page 30
- "xPC Target Demos" on page 30
- "Recreate Target Boot Disk and Rebuild Applications" on page 31

xPC Target Explorer

xPC Target Explorer has been enhanced and now fully supports the following:

- Scopes of type file
- Access to target PC file systems
- Ability to export and import target PC environments
- Designating a default target PC
- Ability to view PCI device information

See the Getting Started with xPC Target and User's Guide documentation for details on xPC Target Explorer.

Compatibility Considerations

The following tools are obsolete and have been removed from xPC Target:

- xpcrctool

- xpcsetup

- xpcscope

- xpctgscope

Use xPC Target Explorer to perform the same activities.

Default Target PC

This release of xPC Target introduces the concept of a default target PC and multiple target PCs to help you work with xPC Target Explorer, command-line interface objects, and the build process. External mode is supported only with the default target PC. See the xPC Target Getting Started documentation for details.

To/From Blocks and Default Target PCs

In previous releases, you could build models that contained From/To xPC Target blocks without setting the Real-Time Workshop® parameter **RTW system** target file to xpctarget.tlc. To accommodate the use of multiple target PCs, you now must perform the following to run a model that contains From/To xPC Target blocks:

- Configure the Real-Time Workshop parameter **RTW system** target file for the model. Set this value to xpctarget.tlc. You access this dialog from the Simulink model **Simulation > Configuration Parameters** menu.

- Specify the correct target PC environment on the **xPC Target options** node of the Real-Time Workshop parameters dialog. In particular, either select **Use default target PC** or enter the target name of the target PC to which you want to connect. If you have only one target PC, the model uses the default target PC and you do not need to perform this configuration.

Compatibility Considerations

To use existing models with these blocks, you must set the Real-Time Workshop parameter **RTW system** target file to xpctarget.tlc before running them. Note that the xpcsliface command behavior does not change.

Stateflow® State Test Points

xPC Target now supports the monitoring of test-pointed Stateflow states. This is available only through the MATLAB® command-line interface. It is not yet supported by xPC Target Explorer or xPC Target Scope blocks.

xPC Target COM API

To support target PC file systems, the xPC Target COM API has been enhanced to support a new object, xPCFileSystem. To support this object, the following methods were added:

- CD
- CloseFile
- GetFileSize
- Init
- MKDIR
- OpenFile
- PWD
- ReadFile
- RemoveFile
- RMDIR
- ScGetFileName
- ScGetWriteMode
- ScGetWriteSize
- ScSetFileName
- ScSetWriteMode

- `ScSetWriteSize`

- `WriteFile`

I/O Device Driver Support

xPC Target 2.7 has new driver blocks, including support for the following boards:

Manufacturer	Board
National Instruments	PCI/PXI-6602
Adlink	6208A
Commtech	Fastcom 422/2-PCI
UEI	PD2-DIO-64 series, PDL-DIO-64 series, PDXI-DIO-64 series
Quatech	DSCP-200/300

The drivers for the following boards have been updated:

Manufacturer	Boards
General Standards	ADADIO
Measurement Computing	PCI-DAS1602/12 D/A
Sensoray	626

In addition, the RS-232 sublibrary has changed:

- FIFO read and write blocks have been added to support all RS-232 sublibrary composite drivers.

xPC Target Demos

The following demos have been added to the xpcdemos directory:

- udphost.mdl

- udphostpost.mdl

- udpsendreceiveA.mdl

- `udpsendreceiveB.mdl`

- `udptarget.mdl`

- `udpxpctargetsteam.m`

- `xpcserialasciisplit.mdl`

- `xpcserialasciitest.mdl`

- `xpcserialbinarysplit.mdl`

- `xpcserialbinarytest.mdl`

Recreate Target Boot Disk and Rebuild Applications

Compatibility Considerations

If you upgrade your xPC Target software from a previous version, you must recreate the target boot disk and you must rebuild your xPC Target applications.

Version 2.6.1 (R14SP1) xPC Target

This table summarizes what's new in Version 2.6.1 (R14SP1):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes Summary	Fixed Bugs	No

New features and changes introduced in this version are

- "xPC Target Explorer" on page 32
- "File Systems and Multiple Targets" on page 33
- "xPC Target Support for Vector CANape (Beta)" on page 33
- "Changed Source Dialog Box Behavior" on page 33
- "Dials & Gauges Blockset" on page 34
- "Watcom C/C++ Version 10.6 Compiler" on page 34
- "Recreate Target Boot Disk and Rebuild Applications" on page 34

xPC Target Explorer

This release includes the first officially supported version of the xPC Target Explorer. It is a graphical user interface for xPC Target. It provides a single point of contact for almost all xPC Target interactions, including

- Configure the host PC for xPC Target
- Add and configure target PCs for xPC Target
- Create boot disks for particular target PCs
- Connect the target PCs for your xPC Target system to the host PC
- Download a prebuilt target application, .dlm, to a target PC
- Build a target application for a specific target PC
- Start and stop the application that has been downloaded to the target

- Add scopes of type host, target, and file to the downloaded target application

- Monitor signals

- Add and remove signals to the xPC Target scopes

- Start and stop scopes

- Adjust parameter values for the signals while the target application is running

The xPC Target Explorer GUI runs on your xPC Target host machine.

Use xPC Target Explorer to perform xPC Target activities. This tool encompasses the functionality of xpcsetup, xpcrctool, xpcscope, and xpctgscope. Note that in a future release, xpcrctool, xpcscope, and xpctgscope will be obsoleted.

See the Getting Started with xPC Target and User's Guide documentation for details on xPC Target Explorer.

File Systems and Multiple Targets

The xPC Target file system and FTP feature now support the concept of multiple targets. You can now specify which target PC to work with when using the file system or file object. In support of this, the xpctarget.fs and xpctarget.ftp constructors have changed to support an interface similar to that used by the xpctarget.xpc constructor.

xPC Target Support for Vector CANape (Beta)

xPC Target now enables your target application data to be accessed by a Vector CANape system, Version 5.00.20 and 5.00.30. See the Vector CANape chapter in the xPC Target I/O Reference for further details.

This release is a Beta version of this support. The MathWorks encourages you to use this new feature and provide feedback.

Changed Source Dialog Box Behavior

The behavior of source block dialog boxes has changed.

Compatibility Considerations

The behavior of source block dialog boxes has changed as follows.

- Opening a dialog box for a source block causes Simulink to pause. While Simulink is paused, you can edit the parameter values. You must close the dialog box to have the changes take effect and allow Simulink to continue.

  In particular, hardware input blocks in the xPC Target library (blocks that acquire data from hardware) are affected by this changed.

- The xPC Target Explorer no longer supports changing tunable source block parameters while a simulation is running. You will find all such parameter fields disabled while a simulation is running.

Dials & Gauges Blockset

References to the Dials & Gauges Blockset have been removed from the xPC Target documentation. As a result, the xPC Target documentation no longer describes the use of the Dials & Gauges Blockset. In particular, the "Graphical User Interfaces" chapter of the xPC Target User's Guide documentation no longer describes this blockset.

Additionally, relevant xPC Target demos now use only the Gauges Blockset.

Watcom C/C++ Version 10.6 Compiler

Compatibility Considerations

xPC Target no longer supports the Watcom C/C++ Version 10.6 compiler. xPC Target only supports Watcom C/C++ Version 11.0 and Microsoft compilers.

Recreate Target Boot Disk and Rebuild Applications

Compatibility Considerations

If you upgrade your xPC Target software from a previous version, you must recreate the target boot disk and you must rebuild your xPC Target applications.

Version 2.6 (R14+) xPC Target

This table summarizes what's new in Version 2.6 (R14+):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes Summary	Fixed Bugs	No

New features and changes introduced in this version are

- "xPC Target Explorer (Beta)" on page 35
- "Real-Time Workshop® Embedded Coder Support" on page 36
- "CAN Library Link Change" on page 36
- "xPCGetSignals API Function" on page 36
- "I/O Device Driver Support" on page 37
- "xPC Target Support for Vector CANape (Beta)" on page 37
- "Recreate Target Boot Disk and Rebuild Applications" on page 38

xPC Target Explorer (Beta)

This release includes a Beta version of the xPC Target Explorer. It is a graphical user interface for xPC Target. It provides a single point of contact for almost all xPC Target interactions, including

- Configure the host PC for xPC Target
- Add and configure target PCs for xPC Target
- Create boot disks for particular target PCs
- Connect the target PCs for your xPC Target system to the host PC
- Download a prebuilt target application, .dlm, to a target PC
- Build a target application for a specific target PC
- Start and stop the application that has been downloaded to the target

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- Add scopes of type host, target, and file to the downloaded target application

- Add and remove signals to the xPC Target scopes

- Start and stop scopes

- Adjust parameter values for the signals while the target application is running

The xPC Target Explorer GUI runs on your xPC Target host machine.

Use xPC Target Explorer to perform xPC Target activities. This tool encompasses the functionality of both `xpcsetup` and `xpcrctool`. This is the Beta release of the xPC Target Explorer. The MathWorks encourages you to use this new interface and provide feedback.

See the Getting Started with xPC Target and User's Guide documentation for details on xPC Target Explorer.

Real-Time Workshop® Embedded Coder Support

xPC Target now supports the Real-Time Workshop Embedded Coder. This feature requires the Real-Time Workshop Embedded Coder.

Compatibility Considerations

xPC Target only supports Real-Time Workshop Embedded Coder for Microsoft compilers. It does not support Real-Time Workshop Embedded Coder for Watcom compilers.

CAN Library Link Change

The mechanism used to link the external CAN libraries has changed. It is no longer necessary to select a CAN library via a list in `xpcsetup` or `xpcexplr` to be able to use CAN blocks in a model. Instead the link is set up automatically. xPC Target will ignore user-defined settings.

xPCGetSignals API Function

The `xPCGetSignals` API function can now return the values of a vector of up to 1000 signals as fast as it can acquire them. This was previously limited to 10 signals.

I/O Device Driver Support

xPC Target 2.6 has new driver blocks, including support for the following boards:

- Condor (for the aerospace industry)
  - CEI-520, CEI-520A

    Contact your MathWorks representative if you are interested in support for the boards CEI-620, CEI-820, and CEI-820TX.
- Contec
  - ADI12-16
- National Instruments
  - PCI-6601 Armed Pulse Generation
  - PCI/PXI-6602 Armed Pulse Generation
- Sensoray
  - Sensoray626

The following drivers have been updated:

- Measurement Computing PCI-CTR05
- Sensoray 526 Encoder Input block
- Diamond Systems MM-32-AT Frame Analog Input block

Compatibility Considerations

You cannot use the Watcom compiler for models that contain Condor blocks. Use a Microsoft compiler instead.

xPC Target Support for Vector CANape (Beta)

xPC Target now enables your target application data to be accessed by a Vector CANape system, Version 5.00.20 and 5.00.30. See the Vector CANape chapter in the xPC Target I/O Reference for further details.

Recreate Target Boot Disk and Rebuild Applications

Compatibility Considerations

If you upgrade your xPC Target software from a previous version, you must recreate the target boot disk and you must rebuild your xPC Target applications.

Version 2.5 (R14) xPC Target

This table summarizes what's new in Version 2.5 (R14):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes Summary	Fixed Bugs Open Bugs	No

New features and changes introduced in this version are

- "xPC Target Explorer (Beta)" on page 40

- "Multiple Targets" on page 41

- "Real-Time Data Acquisition to Files on Target PC" on page 41

- "Numeric Precision in Host/Target Communications" on page 42

- "C and COM API" on page 42

- "Support for Model Referencing" on page 43

- "Run-Time Parameters" on page 43

- "Inlined Parameters" on page 44

- "Configuration Parameters xPC Target Options Dialog" on page 44

- "RS-232, RS-422, and RS-485 Add-on Board Drivers" on page 44

- "Number of Available UDP Blocks Increase" on page 44

- "xPC Target Methods and Parameters" on page 44

- "xPC Target Scopes" on page 45

- "To xPC Target and From xPC Target Blocks" on page 46

- "xPC Target From File Block" on page 46

- "I/O Device Driver Support" on page 46

- "Recreate Target Boot Disk and Rebuild Applications" on page 50

xPC Target Explorer (Beta)

This release includes a Beta version of the xPC Target Explorer. It is a graphical user interface for xPC Target. It provides a single point of contact for almost all xPC Target interactions, including

- Configure the host PC for xPC Target
- Add and configure target PCs for xPC Target
- Create boot disks for particular target PCs
- Connect the target PCs for your xPC Target system to the host PC
- Download a prebuilt target application, .dlm, to a target PC
- Build a target application for a specific target PC
- Start and stop the application that has been downloaded to the target
- Add scopes of type host, target, and file to the downloaded target application
- Add and remove signals to the xPC Target scopes
- Start and stop scopes
- Adjust parameter values for the signals while the target application is running

The xPC Target Explorer GUI runs on your xPC Target host machine.

You can use xPC Target Explorer or your usual xPC Target interfaces to perform xPC Target activities. This is the Beta release of the xPC Target Explorer. The MathWorks encourages you to use this new interface and provide feedback.

See the xPC Target User's Guide documentation for details on xPC Target Explorer.

Registering Active X Controls

Associated with the xPC Target Explorer is a new script, xpc_register_ocx. If you are running MATLAB remotely (accessing MATLAB over the network), run this script to register Active X controls before you start xPC Target Explorer.

Multiple Targets

xPC Target now supports concurrent use of more than one target from a single host. In conjunction with this, the xpc method has been updated to accept the different communication types (`'RS232'` or `'TCPIP'`). See the xPC Target User's Guide documentation for details.

Real-Time Data Acquisition to Files on Target PC

xPC Target supports a new scope type of `file`. This new scope type enables you to acquire signal data in real time and store it to a file on the target PC. Using the new file objects and methods, you can then retrieve the file data to the host to plot or otherwise analyze the signal data. You do not need to have a target application loaded on the target PC before accessing the target PC file system.

To support this new capability, xPC Target now also provides

- A file system on the target PC

- FTP and file system objects that enable you to work with files on the target PC file system

- Basic file transfer methods

- Basic file system methods

- File system API

This functionality is limited to file systems of type FAT-12, FAT-16, or FAT-32.

See the following chapters of the xPC Target documentation:

- xPC Target User's documentation: Targets and Scopes in the MATLAB Interface; Signals and Parameters; Working with Target PC Files and File Systems; and Function Reference.

- Getting Started with xPC Target documentation: "Basic Tutorial".

- xPC Target API Guide documentation: API Function and Method Reference.

Numeric Precision in Host/Target Communications

To improve numeric precision, the format of xPC Target host PC to target PC messaging has been converted to binary mode. This implies the transfer of the full binary image of data values during xPC Target interactions such as signal monitoring and parameter tuning.

C and COM API

You no longer need to purchase xPC Target Embedded Option to create stand-alone GUI applications with the xPC Target C or COM API. See the xPC Target API Guide documentation for reference pages for the C and COM API functions and methods.

To deploy a GUI application to other host PC systems that do not have your licensed copy of xPC Target, you need the xPC Target Embedded Option. If you do not have the xPC Target Embedded Option and would like to deploy your GUI application, contact your MathWorks representative.

In support of this new feature, xPC Target provides the following new demos in the C:*matlabroot*\toolbox\rtw\targets\xpc\api directory. These demos illustrate how to use the xPC Target COM API to create custom stand-alone GUI applications.

- VBNET\SigsAndParamsDemo\Demo.sln — Contains all the Visual Basic .NET files to run the windows form application. This demo is a functional application that you can use as a template to create your own custom GUIs.

- VisualBasic\Models\sf_car_xpc — Contains all the relevant files for the sf_car_xpc demo, including the Visual Basic project files and the model file (sf_car_xpc.mdl) and DLM file (sf_car_xpc.dlm) for which the demo is written.

- tcltk — Contains Tcl/Tk demo scripts that illustrate how to directly access xPC Target COM API functions through a command-line interpreter like Tcl/Tk.

COM API GetParam Syntax Change

The GetParam method now returns the correct size of elements returned. In earlier versions, this method required you to provide an element size.

Support for Model Referencing

xPC Target now supports the new Model block from Simulink. This block allows one model to include another model as if it were a block. This feature, called model reference, works by generating code for included models that the parent model executes from a binary library file. See the Real-Time Workshop Release Notes for further information. When using model referencing with xPC Target, note the following **Configuration Parameter** parameter setting requirements:

- In the Real-Time Workshop node, ensure that the **RTW system target file** parameter for both the top and referenced models is **xpctarget.tlc**.

- In the Solver node, ensure that the **Solver** settings for both the top and referenced models match.

Compatibility Considerations

If you download a target application to a target PC, and that target application was built from a model that contains referenced models, you cannot tune the parameters on any of the models. This is a limitation of Real-Time Workshop.

Run-Time Parameters

xPC Target provides the following target object methods to enable you to save run-time parameters for your target application. These parameters are those you would like to save for reuse, such as those for parameter tuning. See the xPC Target User's Guide documentation for details:

- `saveparamset`

- `loadparamset`

In conjunction, the following API functions enable the same feature. See the xPC Target API Guide documentation for details:

- `xPCSaveParamSet`

- `xPCLoadParamSet`

Inlined Parameters

xPC Target now supports the use of inlined parameters from Real-Time Workshop.

Configuration Parameters xPC Target Options Dialog

In previous releases, the Simulink model **Configuration Parameters** dialog contained the xPC Target options in two panes. The xPC Target options are now contained in one pane, available as a node in the Real-Time Workshop tree. The functionality of the dialog is otherwise identical.

RS-232, RS-422, and RS-485 Add-on Board Drivers

New drivers have been added for serial communication support:

- RS-232 — QSC-100 and ESC-100 PCI boards from Quatech

- RS-422, RS-485 — QSC-200/300 boards from Quatech

- RS-232, RS-422, RS-485 — Emerald-MM and Emerald-MM-8 PC/104 boards from Diamond Systems. These boards provide 4 and 8 serial ports, respectively. These boards are jumper-configurable for the protocols.

xPC Target provides a set of functionally similar drivers for these boards. See Serial Communication of the xPC Target I/O Reference documentation for a description of the new driver blocks.

Number of Available UDP Blocks Increase

The number of available UDP blocks per model has been increased. You can now have up to 32 UDP blocks in any given model (any combination of Send and Receive blocks).

xPC Target Methods and Parameters

The following enhancements have been made to xPC Target methods and parameters:

- Parameters are no longer target object properties. You can no longer use the `setparamid` function to set parameter IDs, nor can you use the `set` or

get function to get or set parameter values. For example, commands like the following no longer work:

```
tg.P1 tg.P1=5
```

Instead, use the new methods, getparam and setparam.

- Signals are no longer target object properties. You can no longer use the get function to get signal values. For example, a command like the following no longer works:

```
tg.S1
```

Instead, use the new method, getsignal.

- After setting new parameters with setparam, you can now revert values back to preceding ones with the parIndexVec structure.

- The target method, xpc, now allows you to establish communication with multiple target PCs.

These changes require you to update any xPC Target scripts or M-files that refer to these methods, parameters, or properties. Your existing scripts and M-files will no longer run on xPC Target otherwise.

See the xPC Target User's Guide documentation for details.

xPC Target Scopes

The following enhancements have been made to xPC Target scopes:

- xPC Target now supports 10 scopes of each scope type for a maximum of 30 scopes. In prior releases, xPC Target supported a total of 10 scopes.

- Scopes created by xPC Target Scope blocks now acquire data according to Simulink sample time rules. In previous releases, scopes created by xPC Target Scope blocks acquired data at the base sample rate of the model, regardless of the sample time of their input signal. This includes non-regular execution, such as if the scope is in an enabled or triggered subsystem. Note that scopes created dynamically (from the MATLAB Command Window or the API) behave as before, sampling at the base rate, irrespective of the sample time of their signals.

To xPC Target and From xPC Target Blocks

The behavior when you double-click the To xPC Target and From xPC Target blocks has changed. If you double-click a To xPC Target or From xPC Target block that has been properly configured, the target parameter or signal that the block refers to is highlighted. If the To xPC Target or From xPC Target block has not yet been configured, double-clicking the block has no affect. In previous releases, double-clicking on these blocks displayed the **Block Parameters** dialog for the block.

To edit the block parameters for the To xPC Target or From xPC Target blocks, right-click on the block and select **Mask parameters**.

xPC Target From File Block

xPC Target has a new block, From File. This block reads data from a file on the target PC hard disk and distributes that data in chunks every sample time. As the xPC Target kernel on the target PC reads the file data, it writes that data into a software buffer whose size is user-defined.

I/O Device Driver Support

xPC Target 2.5 has new driver blocks, including support for the following boards:

- Adlink
  - PCI-8133
- Contec
  - CNT24-4D
- Diamond
  - Garnet-MM
  - Diamond-MM-16
  - Diamond-32-AT Frame A/D
  - Emerald-MM
  - Emerald-MM-8
  - Onyx-MM-DIO

- Prometheus
- National Instruments
  - PXI-6071E
  - PCI-6601
  - PCI-6602
  - PCI/PXI-6711
  - PCI/PXI-6713
- North Atlantic Industries
  - PCI-76CS1
  - PCI-76CL1
  - PCI-76LD1
  - 73SD3
- Quanser
  - Q8
- Quatech
  - QSC-100
  - ESC-100
  - QSC-200/300
- Real Time Devices
  - DM6816
- Sensoray
  - Sensoray526
- VMIC
  - VMIC VMICPCI-5565 (previously released as part of the xPC Target Release 2.0.2 library update)

Some xPC Target 2.5 driver blocks have been updated, including

- The SBS and Systran shared memory blocks have been updated to better coincide with the VMIC shared memory blocks.

- All Diamond-MM blocks have been renamed to MM. If you have existing models with blocks named Diamond-MM, replace those blocks with the renamed equivalents.

- Diamond-MM A/D,D/A, DI, and DO blocks have parameter changes.

- The General Standards PCM-ADADIO block has been updated.

- Support for the following National Instruments boards has been enhanced:
  - PCI-6023E
  - PCI-6024E
  - PCI-6025E
  - PCI-6031E
  - PCI-6052E
  - PCI-6071E
  - PCI-MIO-16E-1
  - PCI-MIO-16E-4
  - PCI-MIO-16XE-10
  - PCI-6040E
  - PXI-6070E

- Support for the following UEI boards has been enhanced:
  - PD2-MF
  - PD2-MFS
  - PDXI-MF
  - PDXI-MFS
  - PD2-AO

- The following National Instruments drivers have been renamed:
  - PCI-MIO-16E-10, renamed to PCI-6030E
  - PCI-MIO-16E-4, renamed to PCI-PCI-6040E

- PCI-MIO-16E-1, renamed to PCI-6070E

- The CIO-QUAD02, CIO-QUAD04, and PCI-QUAD04 Incremental Encoders now have a **Filter prescale factor**, which helps eliminate high frequency noise.

- The Softing board drivers have been updated.

Obsolete Device Drivers

Compatibility Considerations. xPC Target has obsoleted the drivers for the following manufacturers:

- Burr-Brown

- Gespac

You can still access these driver blocks by typing the command xpcobsoletelib at the MATLAB Command Window. Existing models that use these drivers will still work. However, their presence is not guaranteed for future releases. Do not use these driver blocks in new models.

In addition, in the xPC Target library (xpclib), there are new versions of the following Measurement Computing Incremental Encoder drivers. Use the new version of these drivers.

- CIO-QUAD02

- CIO-QUAD04

- PCI-QUAD04

To access the previous versions of these drivers, use the xpcobsoletelib command. The presence of the obsoleted versions of these drivers is not guaranteed for future releases.

Recreate Target Boot Disk and Rebuild Applications

Compatibility Considerations

If you upgrade your xPC Target software from a previous version, you must recreate the target boot disk and you must rebuild your xPC Target applications.

Version 2.0.3 (R13SP2)

This table summarizes what's new in Version 2.0.3 (R13SP2):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
No	No	No	Printable Release Notes: PDF V2.0.3 product documentation

Version 2 (R13) xPC Target

This table summarizes what's new in Version 2 (R13):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes Summary.	Fixed Bugs	No

New features and changes introduced in this version are

- "xPC Target API" on page 53

- "Enhanced Data Logging and Tracing" on page 53

- "New Host PC GUI" on page 53

- "Additional I/O Support" on page 54

- "Additional Async Events Support" on page 54

- "Fortran Support" on page 54

- "Polling Mode" on page 54

- "RS-232 Binary Drivers" on page 54

- "From/To xPC Target Blocks" on page 55

- "Data Logging/Scope Data Upload Is Faster" on page 55

- "Scope Data Is Uploadable When State Is Interrupted" on page 55

- "Support For I82559ER-Based Ethernet Cards" on page 55

- "Scope Data/Data Logging Buffers Accessible Through WWW Interface" on page 55

- "Scope ID Autoincrement" on page 55

- "Recreate Target Boot Disk and Rebuild Applications" on page 56

xPC Target API

The xPC Target API is an open environment designed for a Windows operating system. It provides all of the information and accessibility you need to integrate with various development tools. You can use these development tools to develop and program a GUI application that connects with an xPC Target application.

The xPC Target API is distributed in two different libraries:

- **xpcapi.dll** — DLL written in C with the necessary functions for your GUI application to link to at run time rather than link to statically at compile time.

- **xpcapiCOM.dll** — Component Object Model DLL consisting of COM objects. You use these COM objects with your GUI application to control a target application.

A generated model specific COM DLL allows you to easy access preselected parameters and signals in your target application.

Check the xPC Target Product News Page at for updated documentation on this feature.

Enhanced Data Logging and Tracing

You can now upload continuous data, without missing samples, while the target application is running. Use two or more host scopes with the new scope property `sc.TriggerSample`.

New Host PC GUI

`xpcrctool` (**R**emote **C**control **Tool**) is a graphical user interface (GUI) running on the host PC. This GUI allows you to remotely connect from MATLAB on a host PC to a target application on a target PC, tune parameters, trace signals, and log data.

This GUI includes a new signal viewer for adding and removing signals from an xPC Target Scope.

Additional I/O Support

The following I/O support has been added:

- Standard IP modules

- CONTEC boards and drivers

- Increased NI board support

- National counter boards

- UEI drivers

- SBS shared memory

Additional Async Events Support

xPC Target now supports the Real Time Devices DM6804 board. You can use the board an interrupt source for generating an asynchronous event.

Fortran Support

xPC Target now supports Fortran for using S-functions in Simulink.

Check the xPC Target Product News Page at for updated documentation on this feature.

Polling Mode

A new execution mode (Polling Mode) has been introduced in the xPC Target kernel that enables smaller execution times. You should not use this mode unless absolutely necessary, because it will cause you to lose all host-target communication during model execution. Consequently, parameter tuning, signal monitoring, etc., capabilities are lost in this mode.

RS-232 Binary Drivers

New drivers have been added for RS-232 I/O that enable you to send and receive arbitrary binary data.

From/To xPC Target Blocks

It is now possible to automatically generate From xPC Target blocks and To xPC Target blocks from an existing Simulink model representing your xPC Target application. This is done by tagging the blocks you want to use the From/To xPC Target blocks with.

Data Logging/Scope Data Upload Is Faster

Uploading logged data or data from an xPC Target scope (of type host) is now faster than it was in xPC Target 1.2.

Scope Data Is Uploadable When State Is Interrupted

If an xPC Target scope of type host is interrupted before it can acquire a whole buffer of data, it is now possible to upload the data it has acquired. The uploaded data will still be of the entire buffer size; the last few samples where the data was not acquired will be set to zero.

Support For I82559ER-Based Ethernet Cards

Some (mostly in embedded form factors) PCs have Ethernet controllers based on the I82559ER Ethernet controller from Intel. These controllers are now supported.

Scope Data/Data Logging Buffers Accessible Through WWW Interface

Data from xPC Target scopes of type host are uploadable through the WWW interface, as well as the data logged (states, outputs, TET) during application execution. This data is in Comma Separated Variable (CSV) format, which can be read by most spreadsheet programs and also by MATLAB.

Scope ID Autoincrement

xPC Target scopes have to have a unique identifier. This identifier had to be entered manually in case you had two or more xPC Target scope blocks. This has been changed so that the scope ID is automatically incremented to an appropriate value.

Recreate Target Boot Disk and Rebuild Applications

Compatibility Considerations

If you upgrade your xPC Target software from a previous version, you must recreate the target boot disk and you must rebuild your xPC Target applications.

Version 1.2 (R12.1) xPC Target

This table summarizes what's new in Version 1.2 (R12.1):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes Summary	No bug fixes	No

New features and changes introduced in this version are

- "C API" on page 57

- "UDP Driver Support" on page 58

- "Asynchronous Event (Interrupt) Support" on page 58

- "CAN FIFO Support" on page 58

- "100 Mbit/Second Ethernet Support" on page 58

- "Fixed-Point Kernel Support" on page 58

- "Increased Data Upload Speed" on page 59

- "I/O Device Driver Support" on page 59

- "Recreate Target Boot Disk and Rebuild Applications" on page 59

C API

A beta version of the xPC Target C API is
available from the Product News page at
http://www.mathworks.com/support/product/XP/productnews/productnews.html.

Use the C API to create stand-alone graphical user interfaces (GUIs) or
console applications to interact with a real-time target application. xPC
Target includes examples for Visual C/C++ and Visual BASIC.

UDP Driver Support

Communicate with another computer using User Datagram Protocol (UDP) packets. Add UDP driver blocks to your Simulink model and configure them for sending and receiving messages from another system.

The UDP driver blocks are not included on the R12.1 CD. Check the Product News page at http://www.mathworks.com/support/product/XP/productnews/productnews.html for the drivers when they become available.

Asynchronous Event (Interrupt) Support

Create subsystems that execute asynchronously when an event (interrupt) occurs.

These subsystems can communicate and be part of a larger model that executes with a monotonic step size.

We expect to further enhance the Asynchronous Event drivers currently available on the R12.1 CD. Check the Product News page at http://www.mathworks.com/support/product/XP/productnews/productnews.html for the enhanced version.

CAN FIFO Support

Use CAN FIFO model I/O drivers to either monitor an entire CAN network, or to minimize driver latency for certain applications.

100 Mbit/Second Ethernet Support

Use 10 or 100 megabit/second communication between the host and target computers for downloading real-time application and uploading signal data. The communication uses the TCP/IP protocol with an Ethernet card in both the host and target computers.

Fixed-Point Kernel Support

The xPC Target kernel runs on PCs (CPUs) that do not have a hardware floating-point unit. If needed, xPC Target uses a software floating-point emulator.

Increased Data Upload Speed

Upload log data about five times faster or better. Upload scope data about three times faster.

I/O Device Driver Support

xPC Target 1.2 includes new device drivers blocks:

- New blocks to support additional I/O boards

- Blocks to support a GPIB field bus using a National Instruments GPIB controller and an RS232 connection to the target PC

- Blocks to support CAN and CAN FIFO networks

Recreate Target Boot Disk and Rebuild Applications

Compatibility Considerations

If you upgrade your xPC Target software from a previous version, you must recreate the target boot disk and you must rebuild your xPC Target applications.

Version 1.1 (R12) xPC Target

This table summarizes what's new in Version 1.1 (R12):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes Summary	No bug fixes	No

New features and changes introduced in this version are

- "xPC Target and xPC Target Embedded Option" on page 60
- "Web Browser Interface" on page 61
- "Target PC Command-Line Interface" on page 61
- "MATLAB Command-Line Interface" on page 61
- "Signal Monitoring" on page 62
- "I/O Device Driver Support" on page 62
- "Recreate Target Boot Disk and Rebuild Applications" on page 62

xPC Target and xPC Target Embedded Option

The xPC Target and xPC Target Embedded Option products were introduced as MathWorks products in Release 11.1.

Note xPC Target 1.1 extends the functionality of the Real-Time Workshop. The xPC Target Embedded Option 1.1 in turn extends the functionality of the xPC Target and requires an additional licence from The MathWorks.

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xPC Target

xPC Target is a host-target PC solution for prototyping, testing, and deploying real-time systems. It is an environment where the host and target computers are different computers.

In this environment you use your desktop PC as a host computer with MATLAB, Simulink, and Stateflow (optional) to create models using Simulink blocks and Stateflow diagrams. After creating a model, you can run simulations in nonreal-time.

You can than use your host computer with Real-Time Workshop, Stateflow Coder (optional) and a C compiler to create executable code. After creating the executable code, you can run your target application in real time on a second PC compatible system.

xPC Target Embedded Option
The xPC Target Embedded Option requires an additional license from The MathWorks.

This option allows you to boot the target PC from a device other than a floppy disk drive such as a hard disk drive or flash memory. It also allows you to create stand-alone applications on the target PC independent from the host PC.

Web Browser Interface
If the target PC is connected to a network, you can use a Web browser to interact with the target application from any computer connected to a network. Currently, this feature is limited to one browser connection at a time. xPC Target supports Netscape Navigator 4.5, Microsoft Internet Explorer 4.0 and later versions.

Target PC Command-Line Interface
You can interact with the xPC Target environment through the target PC command window. Enter most of the xPC Target commands in the command window on the target PC. This interface is useful with stand-alone applications that are not connected to your host PC.

MATLAB Command-Line Interface
The behavior for the commands `getparamid` and `getsignalid` has been changed. The default behavior is to return the parameter or signal name (P0,

P1 . . . or S0, S1, . . .), and you can also return the parameter or signal index (0, 1, 2 . . .) by setting an argument flag.

The behavior for the command `getsignalid` in xPC Target 1.1 is different from xPC Target 1.0 and may break scripts that use this command. The default behavior for the command `getsignalid` with Version 1.0 was to return the signal index.

Signal Monitoring

This is the process for acquiring signal data without time information. The advantage of this process is that there is minimal CPU overhead for collecting the data.

I/O Device Driver Support

xPC Target 1.1 includes new device drivers blocks:

- New blocks to support additional I/O boards

- Blocks to support a GPIB fieldbus using a National Instruments GPIB controller and an RS232 connection to the target PC

Recreate Target Boot Disk and Rebuild Applications

Compatibility Considerations

If you upgrade your xPC Target software from a previous version, you must recreate the target boot disk and you must rebuild your xPC Target applications.

Compatibility Summary for xPC Target

This table summarizes new features and changes that might cause incompatibilities when you upgrade from an earlier version, or when you use files on multiple versions. Details are provided with the description of the new feature or change.

Version (Release)	New Features and Changes with Version Compatibility Impact
Latest Version V3.2 (R2007a)	See the **Compatibility Considerations** subheading for each of these new features or changes: • "Recreate Target Boot Disk and Rebuild Applications" on page 9
Latest Version V3.1 (R2006b)	See the **Compatibility Considerations** subheading for each of these new features or changes: • "I/O Driver Support" on page 11 • "Recreate Target Boot Disk and Rebuild Applications" on page 12
V3.0 (R2006a+)	See the **Compatibility Considerations** subheading for each of these new features or changes: • "To/From Blocks and Target PCs" on page 14 • "I/O Device Driver Support" on page 15 • "Recreate Target Boot Disk and Rebuild Applications" on page 18

Version (Release)	New Features and Changes with Version Compatibility Impact
V2.9 (R2006a)	See the **Compatibility Considerations** subheading for each of these new features or changes: • "Recreate Target Boot Disk and Rebuild Applications" on page 22
V2.8 (R14SP3)	See the **Compatibility Considerations** subheading for each of these new features or changes: • "I/O Device Driver Support" on page 24 • "Recreate Target Boot Disk and Rebuild Applications" on page 24
V2.7 (R14SP2)	See the **Compatibility Considerations** subheading for each of these new features or changes: • "xPC Target Explorer" on page 27 • "To/From Blocks and Default Target PCs" on page 28 • "Recreate Target Boot Disk and Rebuild Applications" on page 31

Version (Release)	New Features and Changes with Version Compatibility Impact
V2.6.1 (R14SP1)	See the **Compatibility Considerations** subheading for each of these new features or changes: • "Watcom C/C++ Version 10.6 Compiler" on page 34 • "Changed Source Dialog Box Behavior" on page 33 • "Recreate Target Boot Disk and Rebuild Applications" on page 34
V2.6 (R14+)	See the **Compatibility Considerations** subheading for each of these new features or changes: • "Real-Time Workshop® Embedded Coder Support" on page 36 • "I/O Device Driver Support" on page 37 • "Recreate Target Boot Disk and Rebuild Applications" on page 38
V2.5 (R14)	See the **Compatibility Considerations** subheading for each of these new features or changes: • "Support for Model Referencing" on page 43 • "I/O Device Driver Support" on page 46 • "Recreate Target Boot Disk and Rebuild Applications" on page 50

Version (Release)	New Features and Changes with Version Compatibility Impact
V2.0 (R13)	See the **Compatibility Considerations** subheading for this new feature or change: • "Recreate Target Boot Disk and Rebuild Applications" on page 56
V1.2 (R12.1)	See the **Compatibility Considerations** subheading for this new feature or change: • "Recreate Target Boot Disk and Rebuild Applications" on page 59
V1.1 (R12)	See the **Compatibility Considerations** subheading for this new feature or change: • "Recreate Target Boot Disk and Rebuild Applications" on page 62