

xPC Target™ Release Notes

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xPC Target™ Release Notes

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Summary by Version

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

Version (Release)	New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Latest Version V5.1 (R2011b)	Yes Details	Yes Summary	Bug Reports Includes fixes
V5.0 (R2011a)	Yes Details	Yes Summary	Bug Reports Includes fixes
V4.4 (R2010b)	Yes Details	Yes Summary	Bug Reports Includes fixes
V4.3 (R2010a)	Yes Details	Yes Summary	Bug Reports Includes fixes
V4.2.1 (R2009bSP1)	No	No	Bug Reports Includes fixes
V4.2 (R2009b)	Yes Details	Yes Summary	Bug Reports Includes fixes
V4.1 (R2009a)	Yes Details	Yes Summary	Bug Reports Includes fixes
V4.0 (R2008b)	Yes Details	Yes Summary	Bug Reports Includes fixes
V3.4 (R2008a)	Yes Details	Yes Summary	Bug Reports Includes fixes
V3.3 (R2007b)	Yes Details	Yes Summary	Bug Reports Includes fixes
V3.2 (R2007a)	Yes Details	Yes Summary	Bug Reports Includes fixes
V3.1 (R2006b)	Yes Details	Yes Summary	Bug Reports Includes fixes
V3.0 (R2006a+)	Yes Details	Yes Summary	Bug Reports Includes fixes

Version (Release)	New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
V2.9 (R2006a)	Yes Details	Yes Summary	Bug Reports Includes fixes
V2.8 (R14SP3)	Yes Details	Yes Summary	Bug Reports Includes fixes
V2.7.2 (R14SP2)	Yes Details	Yes Summary	Bug Reports Includes fixes
V2.7 (R14SP1+)	Yes Details	Yes Summary	Fixed Bugs
V2.6.1 (R14SP1)	Yes Details	Yes Summary	Fixed Bugs
V2.6 (R14+)	Yes Details	Yes Summary	Fixed Bugs
V2.5 (R14)	Yes Details	Yes Summary	Fixed Bugs Open Bugs
V2.0.3 (R13SP2)	No	No	No
V2 (R13)	Yes Details	Yes Summary	Fixed Bugs
V1.2 (R12.1)	Yes Details	Yes Summary	No bug fixes
V1.1 (R12)	Yes Details	Yes Summary	No bug fixes

Using Release Notes

Use release notes when upgrading to a newer version to learn about:

- New features
- Changes
- Potential impact on your existing files and practices

Review the release notes for other MathWorks® products required for this product (for example, MATLAB® or Simulink®). Determine if enhancements, bugs, or compatibility considerations in other products impact you.

If you are upgrading from a software version other than the most recent one, review the current release notes and all interim versions. For example, when you upgrade from V1.0 to V1.2, review the release notes for V1.1 and V1.2.

What Is in the Release Notes

New Features and Changes

- New functionality
- Changes to existing functionality

Version Compatibility Considerations

When a new feature or change introduces a reported incompatibility between versions, the **Compatibility Considerations** subsection explains the impact.

Compatibility issues reported after the product release appear under Bug Reports at the MathWorks Web site. Bug fixes can sometimes result in incompatibilities, so review the fixed bugs in Bug Reports for any compatibility impact.

Fixed Bugs and Known Problems

MathWorks offers a user-searchable Bug Reports database so you can view Bug Reports. The development team updates this database at release time and as more information becomes available. Bug Reports include provisions for any known workarounds or file replacements. Information is available for bugs existing in or fixed in Release 14SP2 or later. Information is not available for all bugs in earlier releases.

Access Bug Reports using your MathWorks Account.

Documentation on the MathWorks Web Site

Related documentation is available on mathworks.com for the latest release and for previous releases:

- Latest product documentation
- Archived documentation

Version 5.1 (R2011b) xPC Target

This table summarizes what's new in Version 5.1 (R2011b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes Summary	Bug Reports Includes fixes

-
- “Signal Upload Inside Reference Models in Simulink External Mode” on page 5
- “Hard Drive Bootdisk” on page 6
- “Multicore Support” on page 6
- “USB Support” on page 7
- “Board and Block Support” on page 8
- “TLC Option -axPCModelStackSizeKB Added to Adjust Stack Size” on page 9
- “xPC Target Compiler Support” on page 9
- “xPC Target Demos” on page 9

Signal Upload Inside Reference Models in Simulink External Mode

In Simulink External Mode, xPC Target supports uploading non-bus signal information from models referenced inside a top model. Uploading information from buses and virtual signals inside a reference model generates a warning.

Hard Drive Bootdisk

You can create an xPC Target “bootdisk” using CompactFlash and removable hard drives as well as floppy disk and CD-ROM. This disk boots the xPC Target kernel without requiring DOS, as with DOSLoader.

Multicore Support

Distributed Target Execution Using Multicore Processors

In addition to supporting preemptive rate monotonic scheduling for single-core processors, the xPC Target software supports distributing a target application built from a Simulink model as concurrent tasks across processors in a multicore machine.

Multicore Mode Target Execution Using Intel Core i5 and Intel Core i7 Processors

The xPC Target kernel supports distributing a target execution in multicore mode using the Intel® Core™ i5 and Intel Core i7 processors.

Legacy MPFPS Enabled by Environment Property

As part of its support for multiple processors, the xPC Target software uses the Advanced Configuration and Power Interface (ACPI) to discover ACPI-compliant hardware in the target computer and creates a MultiProcessor Floating Pointer Structure (MPFPS) representing it. If the hardware is not all ACPI compliant, you can use the following xPC Target environment property to access the legacy MPFPS in the computer BIOS:

```
setxpcenv('LegacyMultiCoreConfig', 'on')
```

Note To display the allowed values of xPC Target environment properties, type `setxpcenv` with no arguments. To display their current values, type `getxpcenv` with no arguments.

USB Support

Data Storage and Transfer Using USB Drives and Sticks

The xPC Target kernel supports data storage and transfer using 1 LUN (logical unit) USB drives, 2 LUN USB drives, and 4–LUN card readers.

Host-Target Communication Using USB Ethernet Adapters

The xPC Target kernel allow the host and target computers to communicate using USB Ethernet adapters. In xPC Target Explorer, do the following:

- Set TCP/IP target bus to USB.
- Set TCP/IP target driver to USBAX772, USBAX172, or Auto.

From the MATLAB command line, do the following:

- `setxpcenv('TcpIpTargetBusType','USB')`
- `setxpcenv('TcpIpTargetDriver','USBAX772')`, or
`setxpcenv('TcpIpTargetDriver','USBAX172')`, or
`setxpcenv('TcpIpTargetDriver','Auto')`

If you set the target driver to Auto, the software defaults the target driver to USBAX772, the driver most commonly needed.

Note To display the allowed values of xPC Target environment properties, type `setxpcenv` with no arguments. To display their current values, type `getxpcenv` with no arguments.

Board and Block Support

Triggering and Region of Interest Support in Camera Link Interface Standard Blocks

The xPC Target software supports multiple triggering modes and extracting a region of interest using the NEON BitFlow Image Input block. See “Acquiring Images from Camera Link®–Compliant Cameras”.

IsValid Output Port on From File Block

The From File IsValid port outputs 1 if the file read succeeds and 0 if it fails. Select the **Show IsValid port** check box on the From File Source Block Parameters dialog to make it visible in the model.

CAN Remote Frame Support

The xPC Target kernel supports the CAN protocol with remote frame transmission.

I/O Pin Mapping for National Instruments 6221/37 M-Series Board

xPC Target supports the default I/O pin map for the 37–pin variant of the NI 6221 M-Series board, as shown in the M-Series User Manual from National Instruments®.

Direct Frequency Measurement Using National Instruments PCI-6601 and PCI-6602 Boards

The xPC Target driver supports direct frequency measurement (pulse counting) using the capabilities of the NI PCI-6601 and PCI-6602 boards.

Speedgoat FPGA Support

The software supports the following additional Speedgoat boards and functionality:

- Speedgoat IO302 board
- A/D input port on Speedgoat IO325 board. HDL Workflow Advisor will automatically add the A/D input port calibration block to the model.

- Differential ports on Speedgoat IO303/IO325 board.
- Digital Clock Manager (DCM) configuration on Speedgoat FPGA boards.
- The xPC Target computer can synchronize target application execution to interrupts produced by all supported FPGA boards.

Compatibility Considerations. The Watcom 1.8 compiler cannot compile an IO325 model. Use a Microsoft® compiler instead.

TLC Option `-axPCModelStackSizeKB` Added to Adjust Stack Size

You can change the stack size of the real-time threads by setting a TLC option in the Configuration Parameters dialog, Code Generation node, section Build Process. For example, to set the stack size to 256 kBytes, type the following in the TLC option box:

```
-axPCModelStackSizeKB=256
```

xPC Target Compiler Support

The xPC Target compiler support has changed as follows:

- Added Intel Visual Fortran Composer XE 2011 on win32 and win64.
- Added Windows SDK 7.1 on win32 and win64.

Note To access Windows SDK 7.1, type `xpcsetCC('setup')` at the MATLAB prompt and select Microsoft Visual Studio 10.0.

- Removed Microsoft Visual Studio 2005 SP1 (8.0) on win32 and win64.

See Supported and Compatible Compilers for a complete list of supported compilers.

xPC Target Demos

This release contains the following new demos:

- **Concurrent Execution on xPC Target** — This demo demonstrates how to realize concurrent execution of a model on xPC Target™, illustrating the execution of each model thread using the xPC Target profiling tool.

Version 5.0 (R2011a) xPC Target

This table summarizes what's new in Version 5.0 (R2011a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes—Details labeled as Compatibility Considerations , below. See also Summary	Bug Reports Includes fixes

- “New Profiling Capability” on page 11
- “Support for FPGA Applications” on page 12
- “Support for Real-Time UDP Applications” on page 13
- “Support for Image Processing Applications” on page 13
- “xPC Target Demos” on page 14
- “Microsoft Windows 64-Bit Support” on page 15
- “I/O Driver Support” on page 15
- “Additional Ethernet Card Support ” on page 15
- “xPC Target Compiler Support Changes” on page 15
- “New Commands to Support Compiler Configuration” on page 16
- “Enhanced readxpcfile ” on page 16
- “Functions and Function Elements Being Removed” on page 16
- “xPC Target Product Now in Simulink Start, Help, and Demos Category” on page 17
- “xPC Target Upgrade Requirements” on page 18

New Profiling Capability

You can now profile an application running on a target PC. This capability enables you to determine:

- Whether your target PC is taking advantage of its multiple cores

- The execution sequence of the target application
- The task execution time (TET) of the target application for all rate groups

See “Multicore Processor Builds” in the *xPC Target User’s Guide*.

In support of this new capability, the following configuration parameters are new in the **Configuration Parameters > Code Generation > xPC Target options** node:

- “Enable profiling”
- “Number of events (each uses 20 bytes)”

To help you build, download, and display the profile data, a script is available in `matlabroot\toolbox\rtw\targets\xpc\xpcdemos\profile_xpc_demo.m`. This script uses an example model, `matlabroot\toolbox\rtw\targets\xpc\xpcdemos\xpcprofdemo.mdl`.

Support for FPGA Applications

With the Simulink® HDL Coder™ software, you can now implement Simulink algorithms. You can also configure I/O functionality on select FPGA I/O boards that xPC Target supports. The HDL Workflow Advisor streamlines and automates the entire process.

The software supports the following Speedgoat FPGA boards:

- Speedgoat IO301
- Speedgoat IO303
- Speedgoat IO311
- Speedgoat IO313
- Speedgoat IO325

See “Speedgoat” in the *xPC Target I/O Reference* for information on the blocks the software uses to program and communicate with the FPGA boards.

For more information on how to use the HDL Workflow Advisor with xPC Target, see “Working with FPGAs ” in the *xPC Target User’s Guide*.

Support for Real-Time UDP Applications

The xPC Target software now supports real-time UDP applications with the following blocks:

- Network Configuration
- Receive
- Send

For more information, see “Real-Time UDP Communication Support” in the *xPC Target I/O Reference*.

The following core Internet Protocol (IP) blocks were also added to support the real-time UDP blocks. In general, you do not need to access these blocks directly.

- UDP Consume
- UDP Produce
- UDP Rx
- UDP Tx

For more information, see “IP Library for Real-Time UDP Communication Support” in the *xPC Target I/O Reference*.

Support for Image Processing Applications

The xPC Target software now supports images and video frames from the following devices:

Device	Description
USB webcams	Supported by the From USB Video Device and USB Video Device List blocks
Cameras that support the Automated Imaging Association’s Camera Link interface standard	Supported by the NEON BitFlow Image Input block

To support these capabilities, the Video Utilities library provides the following blocks:

- Image Receive
- Image Transmit
- Jpeg Compression
- Jpeg Decompression

For more information, see “Video Image Processing” and “BitFlow™” in the *xPC Target I/O Reference*.

xPC Target Demos

This release contains the following new demos:

- FPGA demos
 - Servo Control with the Speedgoat IO301 FPGA Board — Demonstrates programming and configuring the Speedgoat IO301 board with a simple PWM servo controller, hardware counter, and digital I/O.
 - Digital I/O with the Speedgoat IO303 FPGA Board — Demonstrates programming and configuring the Speedgoat IO303 board for digital I/O.
- xPC Target API for Microsoft .NET Framework demos
 - Simple Client Application with the .NET API — Demonstrates the use of the xPC Target API for Microsoft .NET Framework to create a client human machine interface (HMI) for your target application.
- Camera Link demos
 - Edge Detection with Camera Link and Bitflow Neon-CLB Frame Grabber — Demonstrates processing (Sobel edge detection) of video images captured with a Camera Link camera connected to the BitFlow Neon-CLB board.
 - Image Capture with Camera Link and Bitflow Neon-CLB Frame Grabber — Demonstrates a method to capture and view video images from a Camera Link camera attached to the BitFlow Neon-CLB board.

Microsoft Windows 64-Bit Support

The xPC Target software now supports Microsoft Windows® 64-bit systems from the MATLAB command line.

xPC Target Explorer does not run on 64-bit systems. It continues to run on 32-bit systems. You can install the 32-bit version of MATLAB products on your 64-bit system.

If you install the 64-bit version of MATLAB products on your 64-bit system, use the command-line interface to set up xPC Target systems (see “Configuring Environment for 64-Bit Systems” in the *xPC Target Getting Started Guide*).

I/O Driver Support

Threshold for Ethernet Library Buffer Block

The Buffer block in the xPC Target library for Ethernet now has a minimum threshold parameter so that you can specify when the block begins to output buffers.

Additional Ethernet Card Support

Support for a number of Ethernet cards has been added. For the most current list of supported cards, see xPC Target Supported Ethernet Chipsets.

xPC Target Compiler Support Changes

The xPC Target software now supports the following compilers:

- Microsoft® Visual Studio® 2010 (10.0) Professional and Express, 32-bit and 64-bit

Note The Express edition must be the most recent version of the compiler. If you have an earlier Express edition installed, uninstall it and install the latest version from the Microsoft site.

The xPC Target software no longer supports the Microsoft Visual Studio 2009 (9.0) Express compiler.

New Commands to Support Compiler Configuration

Use the `xpcgetCC` and `xpcsetCC` functions to configure the compiler. Use these commands instead of the `CCompiler` and `CompilerPath` properties. For more information, see “Functions and Function Elements Being Removed” on page 16.

Enhanced `readxpcfile`

The structure returned by the `readxpcfile` function contains a new field, `signalNames`. This field is a cell array of the signal names acquired by the file scope.

Functions and Function Elements Being Removed

Function or Function Element Name	What Happens When You Use the Function or Element?	Use This Instead	Compatibility Considerations
<code>set</code> (target application object) target scope <code>Mode</code> property	Still works	<code>DisplayMode</code>	Replace all existing instances of <code>Mode</code> with <code>DisplayMode</code> .
<code>set</code> (target application object) file scope <code>Mode</code> property	Still works	<code>WriteMode</code>	Replace all existing instances of <code>Mode</code> with <code>WriteMode</code> .

Function or Function Element Name	What Happens When You Use the Function or Element?	Use This Instead	Compatibility Considerations
xPC Target COM API	Still works	xPC Target API for Microsoft .NET Framework	Create custom applications using xPC Target API for Microsoft .NET Framework instead of xPC Target COM API. Existing custom application executables should continue to work on 32-bit host PCs.
CCompiler and CompilerPath	Still works. Warns.	xpcsetCC and xpcgetCC	Configure your compiler using the new functions.

xPC Target Product Now in Simulink Start, Help, and Demos Category

The Simulink category now contains the xPC Target software product.

Compatibility Considerations

This change impacts you in the following ways:

- Finding and viewing this product through the MATLAB Desktop **Start** button and in the Help browser **Contents** and **Demos** panes.
- Using the `demo` command to access the product demos.

xPC Target Upgrade Requirements

Compatibility Considerations

If you upgrade your xPC Target software from a previous version, you must recreate the target PC boot image and you must rebuild your xPC Target applications. See “Target Boot Method” in the *xPC Target Getting Started Guide*.

Version 4.4 (R2010b) xPC Target

This table summarizes what's new in Version 4.4 (R2010b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes—Details labeled as Compatibility Considerations , below. See also Summary	Bug Reports Includes fixes

- “xPC Target — A Complete Real-Time Testing Solution for Simulink” on page 19
- “Multicore Support for Multirate Models” on page 20
- “xPC Target Support for EtherCAT Networks” on page 21
- “Support for an XCP Client on a CAN Network” on page 21
- “Support for Parallel Model Reference Builds” on page 21
- “Compiling Model Reference Models with Open Watcom Compiler” on page 21
- “Improved Support for Stateflow Charts” on page 21
- “Support for BLAS Library” on page 22
- “I/O Driver Support” on page 22
- “Non-Inlined S-Functions in Referenced Models ” on page 22
- “xPC Target Upgrade Requirements” on page 23

xPC Target — A Complete Real-Time Testing Solution for Simulink

xPC Target Turnkey is a complete, fully assembled, real-time testing solution that combines the xPC Target software with a variety of high-performance real-time target machines and I/O modules. Your real-time target machine will be assembled based on your requirements and be ready to use when you receive it.

Multicore Support for Multirate Models

The xPC Target software now allows you to run multirate target applications on multiple cores on your target PC. You can use this capability if your target PC has a multicore processor and you want to take advantage of them for multirate models.

This is a model-level feature that you can access from the Simulink model editor. In the Simulink model editor, see the **Allow tasks to execute concurrently** check box in the **Simulation > Configuration Parameters > Code Generation > xPC Target options** node (“Allow tasks to execute concurrently”).

These models must use the Rate Transition block to transition between rates. If the model uses other blocks for rate transitions, you cannot build the model using this feature.

Compatibility Considerations

Support to take advantage of multicore processors was added in xPC Target version 4.2 (R2009b). That feature required you to select the **Multicore CPU support** check box in the xPC Target Explorer Settings node.

The new multirate feature takes advantage of the multicore processor feature to generate xPC Target code for multirate models. It requires you to select both the target PC **Multicore CPU support** check box in the xPC Target Explorer and the model **Allow tasks to execute concurrently** check box in the Simulink model editor configurations parameters.

However, if the following is true:

- You built and downloaded a model from an earlier release using just the **Multicore CPU support** check box.
- You now want to rebuild and download that same model using the **Allow tasks to execute concurrently**.

Be aware that the data results might numerically differ slightly between these releases, and might also numerically differ slightly from run to run. If you want the same results as from earlier releases, clear the model-specific **Allow tasks to execute concurrently** check box.

xPC Target Support for EtherCAT Networks

To support EtherCAT® networks (open and real-time Ethernet networks), the xPC Target library provides the blocks described in “Model-Based EtherCAT Communications Support” in the *xPC Target I/O Reference*.

Support for an XCP Client on a CAN Network

Blocks have been added to support the use of Universal Measurement and Calibration Protocol (XCP) clients on a CAN network. Use these blocks to take advantage of the XCP features, synchronous data stimulation (STIM), and synchronous data acquisition (DAQ). See “XCP Over CAN Support” in the *xPC Target I/O Reference*.

Support for Parallel Model Reference Builds

The xPC Target software now supports the ability to build models that contain referenced models in parallel when possible. This capability enables you to more quickly build and download xPC Target applications to the target PC. For more information, see “Reducing Build Time for Referenced Models” in the *Real-Time Workshop® User’s Guide*. This capability requires the Parallel Computing Toolbox™ product.

If you want to build models that contain referenced models on multiple remote PCs, you must also install the MATLAB® Distributed Computing Server™ product. See “Parallel Model Builds” in the *xPC Target Getting Started Guide*.

Compiling Model Reference Models with Open Watcom Compiler

The xPC Target software now supports the ability to build models that contain referenced models with the supported Open Watcom compiler.

Improved Support for Stateflow Charts

The xPC Target software now supports, with Simulink external mode, the ability to:

- Animate Stateflow® charts.

- Use Simulink floating scopes and the Signal & Scope Manager to display Stateflow states for which you have set test points.

For more information, see “Monitoring Stateflow States” in the *xPC Target User’s Guide*.

Support for BLAS Library

The xPC Target software now supports the Basic Linear Algebra Subprograms (BLAS) library. This library speeds up large matrices (16 x 16) operations in the target application. You do not need to do anything to access this capability.

Note Your model accesses this library if you build your model with a Microsoft Visual C/C++ compiler. If you build your model with the Open Watcom compiler, the xPC Target software does not use the BLAS library. Behavior remains as in previous releases.

I/O Driver Support

New Blocks for HUMUSOFT AD622 and MF624 Boards

Blocks have been added to support the HUMUSOFT® AD622 and MF624 boards. See “HUMUSOFT” in the *xPC Target I/O Reference* for more information.

Non-Inlined S-Functions in Referenced Models

The Real-Time Workshop product supports the building of models containing referenced models that have non-inlined S-functions. This capability is not supported when building models containing referenced models that have xPC Target I/O blocks and xPC Target scopes.

xPC Target Upgrade Requirements

Compatibility Considerations

If you upgrade your xPC Target software from a previous version, you must recreate the target PC boot image and you must rebuild your xPC Target applications. See “Target Boot Method” in the *xPC Target Getting Started Guide*.

Version 4.3 (R2010a) xPC Target

This table summarizes what's new in Version 4.3 (R2010a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes—Details labeled as Compatibility Considerations , below. See also Summary	Bug Reports Includes fixes

- “Updated Ethernet Rx Block” on page 24
- “Support for Bus-off Failure Recovery in CAN Systems” on page 25
- “Support for Diamond Systems Athena II Board” on page 25
- “New setxpcenv Property” on page 25
- “.NET API xPC Target Framework Updates” on page 25
- “New MPL PATI EEPROM Write Block” on page 26
- “xPC Target Demos” on page 26
- “Simulink SimState Support” on page 26
- “xPC Target Compiler Support Changes” on page 27
- “Multiple Ethernet Cards of the Same Type” on page 27
- “Recreate Target Boot Disk and Rebuild Applications” on page 28

Updated Ethernet Rx Block

The Ethernet Rx block has been updated to allow the filtering of Ethernet packets. This change enables to use multiple Ethernet Rx blocks with the same device ID. However, you must configure each block to filter a unique set of packets.

The block dialog box now contains the tabs **Rx** and **Filter**. **Rx** contains the original block parameters. **Filter** contains the filter characteristics you choose for the received Ethernet frames.

Support for Bus-off Failure Recovery in CAN Systems

The following CAN setup blocks have been updated to support the ability to recover from CAN bus failures.

- Softing CAN-AC2-PCI with SJA1000 Setup
- Softing CAN-AC2-104 with SJA1000 Setup
- Softing CAN-AC2-PCI with Philips SJA1000 FIFO Setup
- Softing CAN-AC2-104 with Philips SJA1000 FIFO Setup

Each block now has two additional parameters: **Show bus-off status output** and **Bus-off recovery**.

Support for Diamond Systems Athena II Board

The Diamond Systems Athena II board is now supported. Use the Prometheus/Athena blocks to access this board. For further information, see Diamond Prometheus, Athena, and Athena II in the *xPC Target I/O Reference*.

New setxpcenv Property

The target application setxpcenv function has a new property, `EthernetIndex`. Use this property to specify the index number of a particular Ethernet card. Otherwise, the software assumes that there is only one Ethernet card available, and uses the first Ethernet card found.

.NET API xPC Target Framework Updates

The .NET API xPC Target Framework has the following updates:

- `MinimumTet` and `MaximumTet` property added to the `xPCApplication` class
- `SaveParameterSet` and `LoadParameterSet` methods added to the `xPCParameters` class
- `TriggerSlope` property added to the `xPCScope` class

New MPL PATI EEPROM Write Block

The new MPL PATI EEPROM Write block writes MPL boot code on the EEPROM. Use this block before running a model that contains MPL blocks. See the xPC Target MPL PATI EEPROM Write block for more information.

xPC Target Demos

This release contains the following new and changed demos:

- The .NET API xPC Target Framework has a new demo, located in

```
matlabroot\toolbox\rtw\targets\xpc\api\xPCFrameworkSamples\FileSystemBrowser
```

This is a C# application project developed with the Microsoft Visual Studio 2008 IDE. It illustrates how to build a standalone Windows executable to connect to target PC and a host PC. See the `Readme.txt` file in the demo directory for instructions.

- The series of CAN I/O and CAN I/O FIFO demos using `CAN_MESSAGE` and standard data types have been reorganized:
 - CAN (CAN_MESSAGE Data Types) — Contains demos that use `CAN_MESSAGE` data types. Many of these demos are updated from previous releases to use `CAN_MESSAGE` data types instead of the standard data types. See “xPC Target CAN Library” in the *xPC Target I/O Reference*.
 - CAN Legacy (Standard Data Types) — Contains demos that use standard data types. These are the legacy demos from previous releases. See “xPC Target CAN FIFO Demonstrations for CAN-AC2-PCI and CAN-AC2-104 Boards” in the *xPC Target I/O Reference*.
- New Ethernet Rx block demo, Ethernet Rx Block Filtering.

Simulink SimState Support

The Simulink product supports the ability to save complete model simulation state (see “Saving and Restoring the Complete SimState” in the *Simulink Release Notes*). The xPC Target software now supports this behavior when simulating, on a host PC, a Simulink model that contains some xPC Target blocks. The software does not support this behavior when executing such a model on the target PC. If an xPC Target block does not support the SimState

behavior, the software generates a message. For example, you might get a message like the following:

```
Simulink is unable to access the simulation state...
```

To prevent warning or error messages from blocks that do not support the SimState behavior, clear the **Save complete SimState in final state** check box in the **Configuration Parameters Data Import/Export** node for your model. See “xPC Target Support and SimState” in the *xPC Target I/O Reference* for a list of blocks that do not support SimState behavior.

xPC Target Compiler Support Changes

The xPC Target software now supports the following compilers:

- Intel Visual Fortran 11.0 compiler
- Open Watcom 1.8

xPC Target software no longer supports the following compilers:

- Intel Visual Fortran 10.1 compiler
- Open Watcom 1.7
- Microsoft Visual Studio 7.1

Multiple Ethernet Cards of the Same Type

If your target PC has multiple Ethernet cards of the same type, your target PC might have communication issues. Situations that might cause these issues include:

- The presence of more than one Ethernet card on the target PC
- Updated xPC Target releases

Changes to the xPC Target kernel might cause these issues.

See “Are Multiple Ethernet Cards in the Target Computer Causing Communication Issues?” in the *xPC Target User’s Guide* for details on how to resolve this issue.

Compatibility Considerations

If you have an updated xPC Target releases, you might have this communication issue. See “Are Multiple Ethernet Cards in the Target Computer Causing Communication Issues?” in the *xPC Target User’s Guide* for details on how to resolve this issue.

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 PC boot image and you must rebuild your xPC Target applications. See “Target Boot Method” in the *xPC Target Getting Started Guide*.

Version 4.2.1 (R2009bSP1) xPC Target

This table summarizes what's new in Version 4.2.1 (R2009bSP1):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
No	No	Bug Reports Includes fixes

Version 4.2 (R2009b) xPC Target

This table summarizes what's new in Version 4.2 (R2009b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes—Details labeled as Compatibility Considerations , below. See also Summary	Bug Reports Includes fixes

- “Changed CAN Block Messaging” on page 30
- “CAN Message Warning Message No Longer Appears” on page 32
- “New .NET API xPC Target Framework Enables Users to Create Applications that Interface with a Target PC” on page 32
- “Enhanced UDP Send and Receive Block Allows Sending Variable Length Packets” on page 33
- “Enhanced J1939 Support for Address Claiming” on page 33
- “National Instruments PCI-6225 Support” on page 34
- “Enhanced File Scopes” on page 34
- “Support to Load Parameter Sets from Target PC File System” on page 34
- “New Property for Target Application Object set Method” on page 35
- “New xPC Target Support for Multicore Processors” on page 35
- “xPC Target Compiler Support” on page 36
- “xPC Target Demos” on page 36
- “Recreate Target Boot Disk and Rebuild Applications” on page 36

Changed CAN Block Messaging

You can use the new CAN Pack and CAN Unpack blocks that are available with your xPC Target license to perform message packing and message unpacking functions. Refer to the CAN Blocks Transition document for more information. These new blocks add the following functionality:

- Consolidate multiple blocks to handle basic and advanced pack and unpack functions, which include manually specified signals and CANdb file-specified signals.
- Improved compatibility with Vector Informatik CANdb files.

The message handling capability of the xPC Target CAN block library has changed. These blocks now use the CAN_MESSAGE data type. In previous releases, these blocks transferred data as 8 bytes in a double.

The Send and Receive blocks (including FIFO Write and Read blocks) for the Softing CAN-AC2-PCI with Philips SJA1000 CAN Controller and CAN-AC2-104 (PC/104) with Philips SJA1000 CAN Controller boards support the new message handling capability. The Send and Receive blocks for the Softing CAN-AC2 (ISA) with Philips PCA 82C200 CAN Controller and CAN-AC2 (ISA) with Intel 82527 CAN Controller support only the old message handling capability.

Compatibility Considerations

If you have models that use old CANDBC blocks from the xPC Target block library (available by typing `xpcobsolete1ib`), you will see an obsolescence warning message. (In the previous release, you saw this message when typing `xpc1ib`; this message now appears only when typing `xpcobsolete1ib`.) These models will continue to work as before. You should update your models to use the new CAN Pack and the CAN Unpack blocks available from the xPC Target block library, as the old CAN Message blocks might be removed from a future release of the xPC Target product.

For information on how you can identify obsolete blocks and transition to the new blocks, see [CAN Blocks Transition](#).

The following blocks have been moved to the xPC Target library of obsolete drivers:

- CAN Message Packing
- CAN Message Packing (CANdb)
- CAN Message Filter
- CAN Message Unpacking

- CAN Message Unpacking (CANdb)
- CANDBC Translator
- FIFO Mode CAN Message
- Object Mode CAN Message

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, they may not be supported in future releases. Do not use these driver blocks in new models. Instead, use the corresponding blocks contained in the CAN Message Handling blocks library.

CAN Message Warning Message No Longer Appears

In xPC Target Version 4.1 (R2009a), typing `xpc1ib` in the MATLAB Command Window caused a `CAN_MESSAGE` warning. This warning now appears only when you type `.xpcobsoletelib`.

New .NET API xPC Target Framework Enables Users to Create Applications that Interface with a Target PC

The xPC Target environment now provides a .NET API for the Microsoft .NET Framework. You can use this xPC Target API framework in any integrated development environment (IDE) that also supports the Microsoft .NET Framework environment. Use this API framework to create custom standalone applications (for example, Windows Forms applications running on a host PC that communicates with your target application running on a target PC). See “xPC Target API for Microsoft .NET Framework Functions” in the *xPC Target API Guide*.

To access the types available from the xPC Target environment, reference this namespace in your application:

```
using MathWorks.xPCTarget.FrameWork;
```

The primary object is `xPCTargetPC`.

Enhanced UDP Send and Receive Block Allows Sending Variable Length Packets

The UDP library has been enhanced to support variable length packets. The following blocks are updated:

- UDP Receive
- UDP Send

The default behavior of these blocks remains the same as before. Your existing UDP models will continue to work without modification.

Enhanced J1939 Support for Address Claiming

The J1939 library has been enhanced to support address claiming. See “SAE J1939” in the *xPC Target I/O Reference*.

The following block is new:

- J1939 Controller Application

The following blocks have changed to take into account the capabilities of the new J1939 Controller Application block:

- J1939 Protocol Stack — See the reference for the updated block parameters. The following parameters have been removed: **TX CAN Board**, **RX CAN Board**, **TX CAN Port**, **RX CAN Port**, **Transport Protocol Enabled**, **Transport Protocol Max Send (# of Fragments)**, **Transport Protocol Max Receive (# of Fragments)**.

The following parameters are new: **Max CAN Message Receive (Per Sample Time)**, **Max CAN Message Transmit (Per Sample Time)**, **Enable Transport Protocol**, **Maximum Concurrent Sessions**, **Enable Address Claiming**.

- J1939 Receive Message — See the reference for the updated block parameters. The following parameters have been removed: **J1939 Protocol Stack Id**, **Node Address (0–255)**.

The following parameter is new: **CA ID**.

- J1939 Transmit Message — See the reference for the updated block parameters. The following parameters have been removed: **J1939 Protocol Stack Id, Node Address (0–255)**.

The following parameter is new: **CA ID**.

Compatibility Considerations

If you have existing models that use the updated J1939 blocks, note that you must now add the J1939 Controller Application block to your model. You must then configure the J1939 Protocol Stack, J1939 Receive Message, and J1939 Transmit Message blocks to correctly reference the controller application.

National Instruments PCI-6225 Support

xPC Target 4.2 now supports National Instruments PCI-6225 as part of its support for the National Instruments M series data acquisition boards.

Enhanced File Scopes

xPC Target file scopes now support dynamic naming and multiple files. For further information, see:

- “Acquiring Signal Data into Multiple, Dynamically Named Files with File Scopes” in the *xPC Target User’s Guide*.
- See the `DynamicFileName`, `FileName`, and `MaxWriteFileSize` properties in the `set` method.
- See “Acquiring Signal Data into Multiple, Dynamically Named Files on the Target Computer” in the *xPC Target User’s Guide*.

Support to Load Parameter Sets from Target PC File System

The xPC Target software now enables you to load parameter sets from the target PC file system. The **Configuration Parameters** dialog box has the following changes for xPC Target models. In the **Application tunable parameter options** section of the **xPC Target options** node, the following parameters are new:

- **Load a parameter set from a file on the target file system**

- **File name**

See “xPC Target Options Node” in the *xPC Target Getting Started Guide*.

New Property for Target Application Object set Method

The target application set method has a new property, `CommunicationTimeout`. Use this property to increase the timeout value for the communication between the target and host PC.

New xPC Target Support for Multicore Processors

If your target PC has multicore processors, the xPC Target software can now take advantage of these processors for background tasks.

To enable this feature, do one of the following. By default, this feature is off.

- At the MATLAB Command Window, type:

```
setxpcenv('MulticoreSupport','on')
```

- In the xPC Target Explorer Settings node, select the **Multicore CPU support** check box.

If you use polling mode, enabling the multicore processor feature also removes the following restrictions. Other restrictions still apply. (See “Introducing Execution Modes” in the *xPC Target User’s Guide* for further details on these restrictions.)

- Host-target communication is now available during the execution of the target application.
- Target screen now updates during the execution of the target application.
- External interrupts are now allowed during the execution of the real-time model. This does not mean that you can trigger your model with an external interrupt.
- File scopes can now log data into a file on the target PC.

xPC Target Compiler Support

The xPC Target software now supports the Intel Visual Fortran 10.1 compiler.

The xPC Target software no longer supports the Intel Visual Fortran 9.1 compiler.

xPC Target Demos

This release contains the following new demos:

- UDP demos
 - Target to Host Transmission using UDP — Demonstrates how to use UDP blocks to send data from a target PC to a host PC.
 - Target to Target Transmission using UDP — Demonstrates how to use UDP blocks to send data between two target PCs.
- CAN I/O and CAN I/O FIFO demos using CAN_MESSAGE data type
 - CAN I/O - Simple Use Case (with CAN_MESSAGE) — Demonstrates simple CAN I/O communication using the Softing® CAN-AC2-PCI board.
 - CAN I/O FIFO Mode - Simple Use Case (with CAN_MESSAGE) — Demonstrates CAN I/O communication using the First In First Out (FIFO) mode of the Softing CAN-AC2-PCI board.
 - CAN I/O FIFO Mode - Simple Use Case (with CAN_MESSAGE and Function Call Output) — Demonstrates CAN I/O communication using the First In First Out (FIFO) mode of the Softing CAN-AC2-PCI board. The FIFO Read block uses a function call output format.

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 PC boot image and you must rebuild your xPC Target applications. See “Target Boot Method” in the *xPC Target Getting Started Guide*.

Version 4.1 (R2009a) xPC Target

This table summarizes what's new in Version 4.1 (R2009a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes—Details labeled as Compatibility Considerations , below. See also Summary	Bug Reports Includes fixes

New features and changes introduced in this version are

- “Target PC Boot CD/DVD Creation Tool” on page 37
- “New Function Summarizing Diagnostic Information for Target PC” on page 38
- “J1939 Library Enhanced to Support Transport Protocol” on page 38
- “Support for the GE Fanuc PCI-5565PIORC Shared/Reflective Memory Board” on page 39
- “Support for Counters and Incremental Encoders for National Instruments M Series Boards” on page 39
- “Enhanced Floating-Point Performance” on page 39
- “xPC Target Demos” on page 40
- “xPC Target Compiler Support” on page 40
- “CANdb Blocks” on page 40
- “Save complete SimState in final state Check Box” on page 41
- “Recreate Target Boot Disk and Rebuild Applications” on page 41

Target PC Boot CD/DVD Creation Tool

xPC Target Explorer now enables you to create a target PC boot CD or DVD directly from the CD boot image file. In the previous release, you needed to use third-party CD writing software to write ISO image files. See “Boot Target Computers from CD or DVD” in the *xPC Target Getting Started Guide*.

New Function Summarizing Diagnostic Information for Target PC

A new function, `getxpcinfo`, has been added to help you capture diagnostic information for your xPC Target configuration. This function stores this information in a text file. You can send this text file to MathWorks Technical Support if you encounter host PC/target PC configuration problems.

J1939 Library Enhanced to Support Transport Protocol

The J1939 library has been enhanced to support transport protocol. See “SAE J1939” in the *xPC Target I/O Reference*.

The following block is new:

- J1939 Protocol Stack

The following blocks and their names have been updated.

- J1939 Database (CANdb) Setup
- J1939 Message Trigger
- J1939 Receive Message
- J1939 Transmit Message

Compatibility Considerations

This release updates the following J1939 blocks. The previous versions of these blocks are available by typing the command `xpcobsolete1ib` in the MATLAB Command Window. If you have existing models that contain these blocks, they will continue to work. It is recommended that you update your models with the new blocks and use them going forward.

- J1939 Database (CANdb) Setup
- J1939 Message Trigger
- J1939 Receive Message
- J1939 Transmit Message

In addition, the following blocks are obsolete:

- J1939 Pack
- J1939 Unpack

The J1939 Receive Message and J1939 Transmit Message now contain the functionality from these blocks.

Support for the GE Fanuc PCI-5565PIORC Shared/Reflective Memory Board

Support for the GE Fanuc PCI-5565PIORC shared/reflective memory board has been added. See “GE® Fanuc Embedded Systems Shared Memory” in the *xPC Target I/O Reference*.

Support for Counters and Incremental Encoders for National Instruments M Series Boards

Pulse generation, pulse width measurement, and incremental encoder blocks have been added for the following National Instruments boards:

- National Instruments PCI-6221
- National Instruments PCI-6229
- National Instruments PCI-6251
- National Instruments PCI-6259
- National Instruments PCI-6280
- National Instruments PCI-6281
- National Instruments PCI-6289

Enhanced Floating-Point Performance

The SSE2 (Intel Streaming SIMD Extensions 2) is now supported. It provides enhanced performance for floating-point operations.

xPC Target Demos

This release contains the following new demos:

- Distributed Closed-Loop Control with GE Fanuc Embedded Systems PCI-5565 Boards — Demonstrates closed-loop control using two xPC Target models communicating over shared memory.
- J1939 I/O Using Transport Protocol — Demonstrates the transmission and reception of J1939 data through a loopback connection of two CAN ports in a single target PC.
- Audio Tone Control Using General Standards Boards — Demonstrates tone control audio processing using General Standards I/O boards.

xPC Target Compiler Support

The xPC Target software now supports the Microsoft Visual Studio C/C++ 2008 SP1 and Express Edition compilers.

The xPC Target software no longer supports the Microsoft Visual Studio C/C++ 2005 Express Edition compiler.

Compatibility Considerations

For a complete list of the xPC Target supported and compatible compilers, see:

http://www.mathworks.com/support/compilers/current_release/

CANdb Blocks

The CANdb message block documentation, accessible by clicking the **Help** button on a block, has the string **Obsolete** in the reference page titles. This string indicates that the blocks might be removed from a future release.

For this release, you can continue to use the CANdb blocks as usual. In addition, existing models will continue to work as expected.

If you type `xpc1ib` in the MATLAB Command Window, the following message appears. This string indicates that the CAN Message blocks might be removed from a future release. xPC Target users can ignore this warning and continue to use the CANdb blocks as usual.

Warning: The CAN Message blocks are obsolete and may be removed from the product at a future date. If your model uses these blocks, refer to the CAN blocks transition page and update your model accordingly.

Save complete SimState in final state Check Box

The Simulink product now supports the ability to save complete model simulation state (see “Saving and Restoring the Complete SimState” in the *Simulink Release Notes*). This capability is not supported when simulating a Simulink model that contains xPC Target blocks. Doing so might generate warning or error messages. To prevent these messages, clear the **Save complete SimState in final state** check box in the **Configuration Parameters Data Import/Export** node for your 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. See “Booting Target Computers from Removable Boot Drives” in the *xPC Target Getting Started Guide*.

Version 4.0 (R2008b) xPC Target

This table summarizes what's new in Version 4.0 (R2008b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes—Details labeled as Compatibility Considerations , below. See also Summary	Bug Reports Includes fixes

New features and changes introduced in this version are

- “Enhanced Support for Booting Target PCs Within Dedicated Network” on page 43
- “Support for Booting from CDs” on page 43
- “Changes to xpcbootdisk Function” on page 43
- “Configuration Parameter Dialog Box Update” on page 44
- “Automatic IRQ Selection” on page 44
- “CPU Overload Management” on page 44
- “Enhanced Scopes” on page 44
- “Exporting Data from Scopes of Type File to MATLAB Workspace” on page 45
- “Support for Model-Based Ethernet Communications” on page 45
- “Enhancements to xPC Target C API” on page 45
- “Support for Serial ATA (SATA) Drives ” on page 45
- “I/O Driver Support” on page 46
- “Changes to xPC Target Library” on page 46
- “Target PC Monitor Update” on page 46
- “xPC Target Demos” on page 46
- “Compilers” on page 47

- “Functions, Properties, and Arguments Being Removed” on page 47
- “Recreate Target Boot Disk and Rebuild Applications” on page 48

Enhanced Support for Booting Target PCs Within Dedicated Network

The ability to boot target PCs within dedicated networks has been enhanced in this release. These enhancements include:

- Full integration into the xPC Target Explorer environment.
- Multitarget support in a dedicated network environment with network booting.

In the previous release, you manually started the network boot server process, and the capability was limited to one target PC within the dedicated network group. In this release, the xPC Target Explorer environment now fully integrates this feature and supports multiple target PCs.

See “Booting Target Computers Within a Dedicated Network” in the “Installation and Configuration” chapter of the *xPC Target Getting Started Guide*. You can continue to use the manual procedure as described in xPC Target Version 3.4, or use the method integrated into xPC Target Explorer.

Support for Booting from CDs

The xPC Target software now supports target boot CDs. See “Booting Target Computers from CD or DVD” in the “Installation and Configuration” chapter of the *xPC Target Getting Started Guide*.

Changes to xpcbootdisk Function

The xpcbootdisk function has been updated to allow for the creation of CD boot images. As a result, this function can now create 3.5-inch boot disks, CD boot images, and DOSLoader files. In previous releases, this function could create 3.5-inch boot disks and DOSLoader files.

Configuration Parameter Dialog Box Update

The **Configuration Parameters** dialog box has the following change for xPC Target models. In the **Execution options** section of the **xPC Target options** node, the **PCI slot/ISA base address** parameter has been changed to **PCI slot (-1: autosearch) or ISA base address**. Its purpose and use remains the same.

Automatic IRQ Selection

The **Configuration Parameters** dialog box has the following change for xPC Target models. In the **Execution options** section of the **xPC Target options** node, the **Real-time interrupt source** parameter now has an **Auto (PCI only)** option. This option enables the xPC Target software to automatically determine and use the IRQ number that the BIOS assigned. In previous releases, you had to manually choose an IRQ number for the real-time interrupt source. See “xPC Target Options Node” in the “Oscillator Tutorial” chapter of the *xPC Target Getting Started Guide*.

CPU Overload Management

The xPC Target software now supports the management of CPU overloads. See “Allow CPU Overloads” in the *xPC Target User’s Guide*.

Enhanced Scopes

The following enhancements have been made for scopes.

- Number of scopes of type host is now infinite.
- Number of signals that scopes of type host and file can log is now infinite.

Note, the number of allowed scopes of type target and the number of signals that scopes of type target can log remain 10. The number of scopes of type file remains eight.

Exporting Data from Scopes of Type File to MATLAB Workspace

From xPC Target Explorer, you can now export data from target PC files to the MATLAB workspace. In previous releases, you had to use the file system objects to transfer data from the target PC to the host PC.

Support for Model-Based Ethernet Communications

Support for model-based Ethernet communications. See “Model-Based Ethernet Communications Support” in the *xPC Target I/O Reference*.

Enhancements to xPC Target C API

The following enhancements have been made to the xPC Target C API:

- xPC Target C API can be invoked by multiple threads at the same time.
- The following functions and structures are new:
 - fileinfo
 - xPCGetNumScopes
 - xPCScGetNumSignals
 - xPCGetScopeList
 - xPCScGetSignalList
 - xPCGetSessionTime
 - xPCFSFileInfo

See “Functions, Properties, and Arguments Being Removed” on page 47 for additional notes.

Support for Serial ATA (SATA) Drives

Target PCs with serial ATA (SATA) drives are now supported. In previous releases, only IDE or parallel ATA (PATA) drives were supported. Your target PC must have a PATA or SATA drive to log data to the target PC file system. See “Logging Signal Data with Target Computer Files and File Systems” in the *xPC Target User’s Guide*.

I/O Driver Support

Support for the following National Instruments M series data acquisition boards. See “National Instruments” in the *xPC Target I/O Reference*.

- National Instruments PCI-6221
- National Instruments PCI-6229
- National Instruments PCI-6251
- National Instruments PCI-6259
- National Instruments PCI-6280
- National Instruments PCI-6281
- National Instruments PCI-6289

Changes to xPC Target Library

When you double-click the xPC Target Driver Demos block, the Demos tab in the MATLAB Help Navigator now opens, displaying the xPC Target demos. In previous releases, double-clicking this block opened a sublibrary that displayed a list of xPC Target driver demos.

Target PC Monitor Update

The target PC monitor display has been updated to reflect the PCI bus and slot number of the Ethernet card in the target PC used for host PC-target PC communications. In previous releases, the display showed the memory base address and IRQ of the Ethernet card.

xPC Target Demos

This release contains the following new demos:

- Data Logging With a File Scope — Illustrates data logging to scopes of type file.
- Real-Time Transmit and Receive over Ethernet — Demonstrates how to perform real-time communications over the Ethernet protocol.
- Filtering on MAC Address — Demonstrates how to filter Ethernet packets based on MAC addresses.

- Filtering on EtherType — Demonstrates how to filter Ethernet packets based on EtherTypes.
- IO Test with Diamond Systems MM-32-AT Board — Demonstrates a simple analog and digital I/O loopback test using the Diamond Systems MM-32-AT (PC/104) board.
- IO Test with General Standards PMC-ADADIO Board — Demonstrates a simple analog I/O loopback test using the General Standards PMC-ADADIO board.
- IO Test with National Instruments PCI-6070E Board — Demonstrates a simple analog and digital I/O loopback test using the National Instruments PCI-6070E (E Series) board.
- IO Test with National Instruments PCI-6289 Board — Demonstrates a simple analog and digital I/O loopback test using the National Instruments PCI-6289 (M Series) board.
- Master/Slave Synchronization with the GE Fanuc Embedded Systems PCI-5565 — Demonstrates how to synchronize two xPC Target models with shared memory interrupts.

Compilers

The xPC Target product now supports the following additional compilers:

- Microsoft Visual C/C++ compiler Version 9.0
- Open Watcom C/C++ compiler Version 1.7

Compatibility Considerations

The xPC Target product no longer supports the Open Watcom C/C++ compiler Version 1.3.

Functions, Properties, and Arguments Being Removed

The following changes affect the xPC Target C API.

Function Name	What Happens When you use Function	Use This Instead	Compatibility Considerations
xPCGetScopes	Still runs	xPCGetScopeList	The xPCGetScopes function continues to run. However, use xPCGetScopeList instead.
xPCScGetSignals	Still runs	xPCScGetSignalList	The xPCScGetSignals function continues to run. However, use xPCScGetSignalList instead.

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. See “Booting Target Computers from Removable Boot Drives” in *xPC Target Getting Started Guide*.

Version 3.4 (R2008a) xPC Target

This table summarizes what's new in Version 3.4 (R2008a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes—Details labeled as Compatibility Considerations , below. See also Summary	Bug Reports Includes fixes

New features and changes introduced in this version are

- “xPC Target Now Supports Booting Target PCs Within a Dedicated Network” on page 50
- “xPC Target Explorer Enhancements” on page 50
- “Changes in xPC Target Configuration Parameters” on page 50
- “xPC Target Software Support for Vector CANape TCP Layer” on page 51
- “xPC Target Now Supports Multidimensional Signals and Parameters” on page 51
- “xPC Target Driver Authoring Tool” on page 51
- “Changes to Simulink External Mode” on page 51
- “Arbitrarily Sized Target Application (DLM) Files” on page 52
- “getxpcpci Function Has New verbose Option” on page 52
- “Intel Visual Fortran 9.1 Support” on page 52
- “xPC Target Product Does Not Support Open Watcom 1.7” on page 53
- “xPC Target Mouse” on page 53
- “I/O Blocks” on page 53
- “xPC Target Demos” on page 54
- “xPC Target Device Drivers Guide” on page 55
- “Recreate Target Boot Disk and Rebuild Applications” on page 55

- ““What’s This?” Context-Sensitive Help Available for Simulink Configuration Parameters Dialog” on page 55

xPC Target Now Supports Booting Target PCs Within a Dedicated Network

You can now boot a target PC from a host PC within a dedicated network. In previous releases, you could only boot a target PC with a target boot disk. See “Target Boot Method” in the *xPC Target Getting Started Guide*.

Associated with this feature, the `xpcnetboot` function was added. This function creates the xPC Target kernel to boot target PC over dedicated network.

xPC Target Explorer Enhancements

xPC Target Explorer has the following enhancements:

- You can now drag a prebuilt target application, DLM, to a target PC icon. If a connection does not already exist, xPC Target Explorer prompts you to create a connection to that target PC. See “Downloading and Running Target Applications on a Target PC” in the *xPC Target Getting Started Guide*.
- You can now start xPC Target Explorer from the Simulink model window (**Tools > Code Generation > xPC Target Explorer**).
- If a scope does not exist, you can now drag a signal to a Host Scope, Target Scope, or File Scope icon to create a scope of that type in xPC Target Explorer. See “Adding Signals to Scopes” in the *xPC Target User’s Guide*.
- You can now change the refresh rate of xPC Target Explorer. See “Menus, Toolbars, and Shortcut Keys” in the *xPC Target Getting Started Guide*.
- The xPC Target Explorer PCI Devices node now displays the subsystem vendor and device IDs. In previous releases, this node displayed only system vendor and device IDs.

Changes in xPC Target Configuration Parameters

The following are changes to the xPC Target options pane of the Simulink Configuration Parameters dialog box.

- New check box, **Use default communication timeout**, and a new associated text entry field, **Specify the communication timeout in seconds**. See “xPC Target Options Node” in the *xPC Target Getting Started Guide*.
- New IRQ options 3 and 4 available for the **Real-time interrupt source** parameter.

xPC Target Software Support for Vector CANape TCP Layer

The interface between the xPC Target software and Vector CANape® software has been enhanced to support the Vector CANape TCP communication layer. This enhancement enables xPC Target to acquire signal data at the base sample rate of the model. If you have existing models that use earlier Vector CANape solutions, they should continue to be valid. See “Vector CANape Support” in the *xPC Target User’s Guide*.

xPC Target Now Supports Multidimensional Signals and Parameters

xPC Target now supports the logging and monitoring of multidimensional signals and the tuning of multidimensional parameters. In previous releases, the xPC Target software ignored multidimensional signals and parameters. If a target application contains a multidimensional signal or parameter:

The xPC Target Explorer Model Hierarchy now displays signals and parameters in column-major format. See “Signals and Parameters” in the *xPC Target User’s Guide*.

xPC Target Driver Authoring Tool

The xPC Target Driver Authoring Tool has been added to help with the creation of custom xPC Target device drivers. See “Using the xPC Target Driver Authoring Tool” in the *xPC Target Device Drivers Guide*.

Changes to Simulink External Mode

The following limitations no longer apply to Simulink external mode:

- You can now add scopes of type host to the system. In previous releases, you could add scopes of only type target or file to the system when updating data to Simulink external mode.
- xPC Target can now upload data to more than 10 Simulink scopes. In previous releases, xPC Target could upload up to 10 Simulink scopes.
- Each Simulink scope can now upload more than the first 10 input signals from the target PC. In previous releases, each Simulink scope could upload only the first 10 input signals from the target PC.

Arbitrarily Sized Target Application (DLM) Files

Arbitrarily-sized target application (DLM) files can now be loaded in BootFloppy and DOSLoader modes. These modes ignore the MaxModelSize setting.

For StandAlone mode, you still must specify the target application size.

getxpcpci Function Has New verbose Option

The `getxpcpci` function has a new `verbose` option. This option includes the base address register information in the PCI device display. This information is useful if you want to use a PCI-based parallel port.

Intel Visual Fortran 9.1 Support

The xPC Target product now supports the Intel Visual Fortran 9.1 compiler for the incorporation of Fortran code into Simulink models. See “Incorporating Fortran Code into Target Application” in the *xPC Target User’s Guide* for details.

Compatibility Considerations

The xPC Target product no longer supports the Intel Visual Fortran 9.0 and Compaq® Visual Fortran Compiler Version 6.5 or later compilers.

xPC Target Product Does Not Support Open Watcom 1.7

xPC Target product does not support Open Watcom 1.7. Open Watcom 1.3 continues to be supported.

xPC Target Mouse

The xPC Target software no longer supports the use of a mouse on the target PC. The **Target mouse** field has been removed from the xPC Target Explorer **Appearance Component** pane.

I/O Blocks

Updated Condor Engineering ARINC blocks

The block mask and documentation have been updated for the following Condor Engineering ARINC blocks:

- Condor Encode ARINC 429 Words for Send
- Condor Decode ARINC 429 Words from Receive

Compatibility Considerations. If you have existing models that contain these blocks, you should reevaluate the configuration parameters with regard to the way the blocks work with binary data.

New ASCII Decode Block for Serial Communication

The ASCII Decode V2 block has been added to the RS232 library to provide improved performance over the ASCII Decode block. The original ASCII Decode block will continue to be available.

Changes to the RS232 Library

The xPC Target RS232 library has been reorganized as follows:

- The drivers in `Conventional drivers (Obsolete)` have been moved to the `Obsolete` category.

- The drivers in V1.0 compatible have been moved to the Obsolete V 1.0 category.

Obsolete I/O Blocks

Compatibility Considerations. xPC Target has obsoleted the counter blocks for the following boards. The xPC Target block library continues to support the noncounter blocks for these boards.

- Diamond Quartz-MM-5
- Diamond Quartz-MM-10
- Measurement Computing CIO-CTR05
- Measurement Computing PCI-CTR05
- National Instruments PC-TIO-10
- Real Time Devices DM6804

You can still access these driver blocks by typing the command `xpcobsolete1ib` at the MATLAB Command Window. Existing models that use these drivers will still work. However, they may not be supported in future releases. Do not use these driver blocks in new models. Instead, consider the following alternative boards:

- National Instruments PCI-6601
- National Instruments PCI/PXI-6602
- MPL PATI

xPC Target Demos

The following demos were updated in this release to use parallel ports, instead of Measurement Computing PCI-CTR05 boards, as interrupt sources.

- `xpcasynctrans`
- `xpcasynbuffer`

The following demos were updated in this release to improve clarity:

- xpcserialbaseboardbinarysplit
- xpcserialbaseboardbinarytest
- xpcserialbinarysplit
- xpcserialbinarytest

xPC Target Device Drivers Guide

The *xPC Target Device Drivers Guide* is now part of the xPC Target documentation set in the MATLAB Help browser.

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. See “Booting Target Computers from Removable Boot Drives” in *xPC Target Getting Started Guide*.

“What’s This?” Context-Sensitive Help Available for Simulink Configuration Parameters Dialog

R2008a introduces “What’s This?” context-sensitive help for parameters that appear in the Simulink Configuration Parameters dialog. This feature provides quick access to a detailed description of the parameters, saving you the time it would take to find the information in the Help browser.

To use the “What’s This?” help, do the following:

- 1 Place your cursor over the label of a parameter.
- 2 Right-click. A **What’s This?** context menu appears.

For example, the following figure shows the **What’s This?** context menu appearing after a right-click on the **Start time** parameter in the **Solver** pane.



- 3 Click **What's This?** A context-sensitive help window appears showing a description of the parameter.

Version 3.3 (R2007b) xPC Target

This table summarizes what's new in Version 3.3 (R2007b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes—Details labeled as Compatibility Considerations , below. See also Summary	Bug Reports Includes fixes

New features and changes introduced in this version are

- “J1939 Support” on page 57
- “Shared Interrupts” on page 58
- “I/O Driver Support” on page 58
- “Communication Timeout Applies to all xPC Target API Functions” on page 58
- “Support for Working with Referenced Model Signals” on page 58
- “DOSLoader Mode” on page 58
- “CANdb Enhancements” on page 59
- “xPC Target Demos ” on page 59
- “Link and Target Products Regrouped in New Start, Help, and Demos Category” on page 59
- “Recreate Target Boot Disk and Rebuild Applications” on page 60

J1939 Support

To support SAE J1939, an automotive CAN protocol, xPC Target provides the blocks described in “SAE J1939” in the *xPC Target I/O Reference*.

Shared Interrupts

xPC Target now supports shared interrupts to allow multiple boards to have the same interrupt numbers. See “xPC Target Options Node” in *xPC Target Getting Started Guide*.

I/O Driver Support

xPC Target 3.3 has new driver blocks, including support for the following boards:

- General Standards 24DSI12 (see General Standards 24DSI12 Analog Input)
- General Standards PMC66-16AO16 (see General Standards 16AO16 Analog Output)

Both are described in the *xPC Target I/O Reference*.

Communication Timeout Applies to all xPC Target API Functions

The communication timeout of the `xPCSetLoadTimeOut` and `xPCGetLoadTimeOut` functions now apply to all communications between the target PC and the host PC. In previous releases, the communication timeout applied only to the initialization and loading of applications.

Support for Working with Referenced Model Signals

xPC Target now supports the monitoring and logging of signals from referenced models. See “Monitoring Signals from Referenced Models” in the *xPC Target User’s Guide*.

DOSLoader Mode

You no longer need xPC Target Embedded Option™ to use DOSLoader Mode. See “DOS Loader Boot Method” and “Embedded Target Boot Method” in the *xPC Target User’s Guide*.

Compatibility Considerations

In previous releases, xPC TargetBox®, which uses xPC Target software, was able to use StandAlone Mode without xPC Target Embedded Option. Starting with this release, this is no longer possible. xPC TargetBox users must have xPC Target Embedded Option to use StandAlone Mode.

CANdb Enhancements

The FIFO Mode CAN Message and Object Mode CAN Message blocks capture the data received by the xPC Target CAN receive blocks for translation into CANdb format (see “Accessing CANdb DBC Format Databases from the xPC Target Environment” in the *xPC Target I/O Reference*).

xPC Target Demos

This release contains the following new demos:

- `xpccandb` — Illustrates how to access CANdb DBC format databases from xPC Target.
- `j1939example` — Illustrates how to access use the J1939 blocks from xPC Target.

Link and Target Products Regrouped in New Start, Help, and Demos Category

A new product category, Links and Targets, now contains all MathWorks software products that link, target, or cosimulate code.

Compatibility Considerations

This change impacts you in the following ways:

- Finding and viewing these products through the MATLAB Desktop **Start** button and in the Help browser **Contents** and **Demos** panes.
- Using the `demo` command to access the product demos.

For more about this new product category, see “Demos and Help Browser Contents Now Include New Category for Links and Targets”, in the *MATLAB Release Notes*.

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. See “Booting Target Computers from Removable Boot Drives” in *xPC Target Getting Started Guide*.

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
Yes Details below	Yes Summary	Bug Reports Includes fixes

New features and changes introduced in this version are

- “CANdb Blocks” on page 61
- “Selecting Signals Using Signal Labels Now Supported” on page 62
- “Folder Contents Display” on page 63
- “From xPC Target Block Now Accepts Cell Array of Signals” on page 63
- “Target Application Versions Now Checked” on page 63
- “Discrete States Logging Now Supported” on page 64
- “Microsoft® Visual C++ 2005 Express Edition Compiler Now Supported” on page 64
- “Parallel Ports Now Supported” on page 64
- “I/O Driver Support” on page 64
- “Writing Device Drivers for xPC Target” on page 65
- “Recreate Target Boot Disk and Rebuild Applications” on page 65

CANdb Blocks

xPC Target now supports the encoding and decoding of messages specified via a CANdb file (see “Accessing CANdb DBC Format Databases from the xPC Target Environment” in the *xPC Target I/O Reference*). 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*.

Folder Contents Display

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

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).

Microsoft Visual C++ 2005 Express Edition Compiler Now Supported

xPC Target now supports the Microsoft® Visual C++® 2005 Express Edition compiler. See “Host Computer Requirements” in the *xPC Target Getting Started Guide* for details.

Note If you use Microsoft Visual 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*). 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*)
- Measurement Computing™ PCI-DAS1002 and PCI-DAC6703 (see Measurement Computing PCI-DAS1002 and Measurement Computing PCI-DAC6703 in the *xPC Target I/O Reference*)
- Quanser Q4 (see Quanser Q4 in the *xPC Target I/O Reference*)
- National Instruments PCI-6528 (see National Instruments PCI-6528 in the *xPC Target I/O Reference*)

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
Yes Details below	Yes Summary	Bug Reports Includes fixes

New features and changes introduced in this version are

- “Ethernet Chip Support” on page 66
- “xpctarget.targets Enhancement” on page 66
- “Simulink External Mode” on page 66
- “Microsoft® Visual C++ Compiler Version 8.0” on page 67
- “I/O Driver Support” on page 67
- “Obsolete Driver Blocks” on page 67
- “xPC Target Demos” on page 67
- “Recreate Target Boot Disk and Rebuild Applications” on page 68

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++ Compiler Version 8.0

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

I/O Driver Support

xPC Target has new driver blocks to support the Texas Instruments™ DM642 EVM with Target for TI C6000™. 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 Target for TI C6000 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, they may not be supported in 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 (TI`dm642xpc`), has been added to the **xpcdemos** folder. With its Target for TI C6000 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 Target for TI C6000 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
Yes Details below	Yes Summary	Bug Reports Includes fixes

New features and changes introduced in this version are

- “Ethernet Card Support” on page 69
- “Intel Visual Fortran 9.0 Support” on page 70
- “To/From Blocks and Target PCs” on page 70
- “xpctarget.fs Method Enhancements” on page 70
- “Numerical Formats for xPC Target Scope Blocks” on page 71
- “Simulink External Mode and Tuning Parameters” on page 71
- “xPC Target Explorer” on page 71
- “I/O Device Driver Support” on page 71
- “xPC Target Mouse” on page 73
- “xPC Target Demos” on page 74
- “Recreate Target Boot Disk and Rebuild Applications” on page 74

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 RTL8139, RTL8139C, RTL8139C+ (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 “Incorporating Fortran Code into Target Application” in the *xPC Target User’s Guide* 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 102). 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.

Option Description	
'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 *xPC Target Getting Started Guide*).

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 higher version of the Pentium chip or 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	<ul style="list-style-type: none"> • The MPL PATI PWM generate block has been updated to support armed input.
National Instruments	<p>The following blocks were added:</p> <ul style="list-style-type: none"> • 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

Manufacturer	Change
	<ul style="list-style-type: none"> • 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.

- 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 folder. 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
Yes Details below	Yes Summary	Bug Reports Includes fixes

New features and changes introduced in this version are

- “xPC Target Explorer” on page 75
- “xPC Target Options Pane” on page 76
- “Simulink External Mode” on page 76
- “MATLAB Compiler Support” on page 76
- “Open Watcom Compiler Support” on page 76
- “xPC Target C API” on page 76
- “Support for Model Referencing” on page 77
- “I/O Device Driver Support” on page 77
- “Recreate Target Boot Disk and Rebuild Applications” on page 78

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*)
- 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

xPC Target Options Pane

The xPC Target Options pane (see “xPC Target Options Node” in the *xPC Target Getting Started Guide*) 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*).
- 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. With this capability, you can use the MATLAB Compiler to take M-files as input and generate redistributable, standalone applications that include xPC Target functionality.

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(PCD)H
 - PI-64L(PCI)H
 - PO-64L(PCD)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	<ul style="list-style-type: none"> • The Diamond Prometheus driver has been updated to also support the Diamond Athena board.

Manufacturer	Change
	<ul style="list-style-type: none"> 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.
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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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
Yes Details below	Yes Summary	Bug Reports Includes fixes

New features and changes introduced in this version are

- “xPC Target Explorer” on page 79
- “Fixed-Point Support” on page 79
- “Target PC Environments” on page 80
- “New Supplied Ethernet Card” on page 80
- “I/O Device Driver Support” on page 80
- “Recreate Target Boot Disk and Rebuild Applications” on page 80

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 “Working with Target PC Environments” in the *xPC Target User’s Guide* 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
Yes Details below	Yes Summary	Bug Reports Includes fixes

New features and changes introduced in this version are

- “xPC Target Explorer” on page 81
- “I/O Device Driver Support” on page 81
- “Recreate Target Boot Disk and Rebuild Applications” on page 82

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
Yes Details below	Yes Summary	Fixed Bugs

New features and changes introduced in this version are

- “xPC Target Explorer” on page 83
- “Default Target PC” on page 84
- “To/From Blocks and Default Target PCs” on page 84
- “Stateflow State Test Points” on page 85
- “xPC Target COM API” on page 85
- “I/O Device Driver Support” on page 86
- “xPC Target Demos” on page 86
- “Recreate Target Boot Disk and Rebuild Applications” on page 87

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 *xPC Target Getting Started Guide* and the *xPC Target User's Guide* for details on xPC Target Explorer.

Compatibility Considerations

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

- `xpcrcctool`
- `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 Guide* 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 folder:

- 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
Yes Details below	Yes Summary	Fixed Bugs

New features and changes introduced in this version are

- “xPC Target Explorer” on page 88
- “File Systems and Multiple Targets” on page 89
- “xPC Target Support for Vector CANape (Beta)” on page 89
- “Changed Source Dialog Box Behavior” on page 89
- “Dials & Gauges Blockset” on page 90
- “Watcom C/C++ Version 10.6 Compiler” on page 90
- “Recreate Target Boot Disk and Rebuild Applications” on page 90

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`, `xpcrcctool`, `xpcscope`, and `xpctgscope`. Note that in a future release, `xpcrcctool`, `xpcscope`, and `xpctgscope` will be obsoleted.

See the *xPC Target Getting Started Guide* and the *xPC Target User's Guide* 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 Support” chapter in the *xPC Target User's Guide* for further details.

This release is a Beta version of this support. 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 change.

- 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* 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
Yes Details below	Yes Summary	Fixed Bugs

New features and changes introduced in this version are

- “xPC Target Explorer (Beta)” on page 91
- “Real-Time Workshop® Embedded Coder Support” on page 92
- “CAN Library Link Change” on page 92
- “xPCGetSignals API Function” on page 92
- “I/O Device Driver Support” on page 93
- “xPC Target Support for Vector CANape (Beta)” on page 93
- “Recreate Target Boot Disk and Rebuild Applications” on page 94

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.

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. MathWorks encourages you to use this new interface and provide feedback.

See the *xPC Target Getting Started Guide* and *xPC Target User's Guide* 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 Engineering (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 Engineering 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 Support” chapter in the *xPC Target User’s Guide* 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
Yes Details below	Yes Summary	Fixed Bugs Open Bugs

New features and changes introduced in this version are

- “xPC Target Explorer (Beta)” on page 96
- “Multiple Targets” on page 97
- “Real-Time Data Acquisition to Files on Target PC” on page 97
- “Numeric Precision in Host/Target Communications” on page 98
- “C and COM API” on page 98
- “Support for Model Referencing” on page 99
- “Run-Time Parameters” on page 99
- “Inlined Parameters” on page 100
- “Configuration Parameters xPC Target Options Dialog” on page 100
- “RS-232, RS-422, and RS-485 Add-on Board Drivers” on page 100
- “Number of Available UDP Blocks Increase” on page 100
- “xPC Target Methods and Parameters” on page 100
- “xPC Target Scopes” on page 101
- “To xPC Target and From xPC Target Blocks” on page 102
- “xPC Target From File Block” on page 102
- “I/O Device Driver Support” on page 102
- “Recreate Target Boot Disk and Rebuild Applications” on page 106

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. MathWorks encourages you to use this new interface and provide feedback.

See the *xPC Target User's Guide* 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 'TCP/IP'). See the *xPC Target User's Guide* 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 Guide*: Targets and Scopes in the MATLAB Interface; Signals and Parameters; Working with Target PC Files and File Systems; and Function Reference.
- *xPC Target Getting Started Guide*: "Oscillator Tutorial".
- *xPC Target API Guide*: 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 standalone GUI applications with the xPC Target C or COM API. See the *xPC Target API Guide* 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` folder. These demos illustrate how to use the xPC Target COM API to create custom standalone GUI applications.

- `VBNET\SigsAndParamsDemo\Demo.sln` — Contains all the Microsoft® 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 Microsoft 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.
- `tc1tk` — 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 *Simulink® Coder™ Release Notes* for further information. When using model referencing with xPC Target, note the following **Configuration Parameter** setting requirements:

- In the Real-Time Workshop node, set the **RTW system target file** parameter for both the top and referenced models to **xpctarget.tlc**.
- In the Solver node, use matching **Solver** settings for both the top and referenced models.

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* for details:

- saveparamset
- loadparamset

In conjunction, the following API functions enable the same feature. See the *xPC Target API Guide* 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* 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* 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 effect. 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, they may not be supported in 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 obsoleted versions of these drivers may not be supported in 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
No	No	No

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
Yes Details below	Yes Summary.	Fixed Bugs

New features and changes introduced in this version are

- “xPC Target API” on page 108
- “Enhanced Data Logging and Tracing” on page 109
- “New Host PC GUI” on page 109
- “Additional I/O Support” on page 109
- “Additional Async Events Support” on page 110
- “Fortran Support” on page 110
- “Polling Mode” on page 110
- “RS-232 Binary Drivers” on page 110
- “From/To xPC Target Blocks” on page 110
- “Data Logging/Scope Data Upload Is Faster” on page 111
- “Scope Data Is Uploadable When State Is Interrupted” on page 111
- “Support For I82559ER-Based Ethernet Cards” on page 111
- “Scope Data/Data Logging Buffers Accessible Through WWW Interface” on page 111
- “Scope ID Autoincrement” on page 111
- “Recreate Target Boot Disk and Rebuild Applications” on page 111

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 <http://www.xpctarget.com> 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

xpcrcctool (Remote Ccontrol 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 Instruments 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 as an interrupt source for generating an asynchronous event.

Fortran Support

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

Check <http://www.xpctarget.com> 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
Yes Details below	Yes Summary	No bug fixes

New features and changes introduced in this version are

- “C API” on page 112
- “UDP Driver Support” on page 112
- “Asynchronous Event (Interrupt) Support” on page 113
- “CAN FIFO Support” on page 113
- “100 Mbit/Second Ethernet Support” on page 113
- “Fixed-Point Kernel Support” on page 113
- “Increased Data Upload Speed” on page 113
- “I/O Device Driver Support” on page 114
- “Recreate Target Boot Disk and Rebuild Applications” on page 114

C API

A beta version of the xPC Target C API is available from <http://www.xpctarget.com>.

Use the C API to create standalone graphical user interfaces (GUIs) or console applications to interact with a real-time target application. xPC Target includes examples for Microsoft Visual C++ and Microsoft 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 <http://www.xpctarget.com> 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 <http://www.xpctarget.com> 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
Yes Details below	Yes Summary	No bug fixes

New features and changes introduced in this version are

- “xPC Target and xPC Target Embedded Option” on page 115
- “Web Browser Interface” on page 116
- “Target PC Command-Line Interface” on page 116
- “MATLAB Command-Line Interface” on page 116
- “Signal Monitoring” on page 117
- “I/O Device Driver Support” on page 117
- “Recreate Target Boot Disk and Rebuild Applications” on page 117

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 license from MathWorks.

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 then use your host computer with Real-Time Workshop 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 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 standalone 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 standalone 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 Software

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 V5.1 (R2011b)	See the Compatibility Considerations subheading for each of these new features or changes: <ul style="list-style-type: none"> • “Speedgoat FPGA Support” on page 8
V5.0 (R2011a)	See the Compatibility Considerations subheading for each of these new features or changes: <ul style="list-style-type: none"> • “Functions and Function Elements Being Removed” on page 16 • “xPC Target Product Now in Simulink Start, Help, and Demos Category” on page 17 • “xPC Target Upgrade Requirements” on page 18

Version (Release)	New Features and Changes with Version Compatibility Impact
V4.4 (R2010b)	<p>See the Compatibility Considerations subheading for each of these new features or changes:</p> <ul style="list-style-type: none"> • “Multicore Support for Multirate Models” on page 20 • “xPC Target Upgrade Requirements” on page 23
V4.3 (R2010a)	<p>See the Compatibility Considerations subheading for each of these new features or changes:</p> <ul style="list-style-type: none"> • “Multiple Ethernet Cards of the Same Type” on page 27 • “Recreate Target Boot Disk and Rebuild Applications” on page 28
V4.2.1 (R2009bSP1)	None
V4.2 (R2009b)	<p>See the Compatibility Considerations subheading for each of these new features or changes:</p> <ul style="list-style-type: none"> • “Changed CAN Block Messaging” on page 30 • “Enhanced J1939 Support for Address Claiming” on page 33 • “Recreate Target Boot Disk and Rebuild Applications” on page 36

Version (Release)	New Features and Changes with Version Compatibility Impact
V4.1 (R2009a)	<p>See the Compatibility Considerations subheading for each of these new features or changes:</p> <ul style="list-style-type: none">• “J1939 Library Enhanced to Support Transport Protocol” on page 38• “xPC Target Compiler Support” on page 40• “Recreate Target Boot Disk and Rebuild Applications” on page 41
V4.0 (R2008b)	<p>See the Compatibility Considerations subheading for each of these new features or changes:</p> <ul style="list-style-type: none">• “Compilers” on page 47• “Recreate Target Boot Disk and Rebuild Applications” on page 48
V3.4 (R2008a)	<p>See the Compatibility Considerations subheading for each of these new features or changes:</p> <ul style="list-style-type: none">• “Arbitrarily Sized Target Application (DLM) Files” on page 52• “Updated Condor Engineering ARINC blocks” on page 53• “Obsolete I/O Blocks” on page 54• “Recreate Target Boot Disk and Rebuild Applications” on page 55

Version (Release)	New Features and Changes with Version Compatibility Impact
V3.3 (R2007b)	<p>See the Compatibility Considerations subheading for each of these new features or changes:</p> <ul style="list-style-type: none">• “DOSLoader Mode” on page 58• “Recreate Target Boot Disk and Rebuild Applications” on page 60• “Link and Target Products Regrouped in New Start, Help, and Demos Category” on page 59
V3.2 (R2007a)	<p>See the Compatibility Considerations subheading for each of these new features or changes:</p> <ul style="list-style-type: none">• “Recreate Target Boot Disk and Rebuild Applications” on page 65
V3.1 (R2006b)	<p>See the Compatibility Considerations subheading for each of these new features or changes:</p> <ul style="list-style-type: none">• “I/O Driver Support” on page 67• “Recreate Target Boot Disk and Rebuild Applications” on page 68

Version (Release)	New Features and Changes with Version Compatibility Impact
V3.0 (R2006a+)	<p>See the Compatibility Considerations subheading for each of these new features or changes:</p> <ul style="list-style-type: none">• “To/From Blocks and Target PCs” on page 70• “I/O Device Driver Support” on page 71• “Recreate Target Boot Disk and Rebuild Applications” on page 74
V2.9 (R2006a)	<p>See the Compatibility Considerations subheading for each of these new features or changes:</p> <ul style="list-style-type: none">• “Recreate Target Boot Disk and Rebuild Applications” on page 78
V2.8 (R14SP3)	<p>See the Compatibility Considerations subheading for each of these new features or changes:</p> <ul style="list-style-type: none">• “I/O Device Driver Support” on page 80• “Recreate Target Boot Disk and Rebuild Applications” on page 80

Version (Release)	New Features and Changes with Version Compatibility Impact
V2.7 (R14SP2)	<p>See the Compatibility Considerations subheading for each of these new features or changes:</p> <ul style="list-style-type: none"> • “xPC Target Explorer” on page 83 • “To/From Blocks and Default Target PCs” on page 84 • “Recreate Target Boot Disk and Rebuild Applications” on page 87
V2.6.1 (R14SP1)	<p>See the Compatibility Considerations subheading for each of these new features or changes:</p> <ul style="list-style-type: none"> • “Watcom C/C++ Version 10.6 Compiler” on page 90 • “Changed Source Dialog Box Behavior” on page 89 • “Recreate Target Boot Disk and Rebuild Applications” on page 90
V2.6 (R14+)	<p>See the Compatibility Considerations subheading for each of these new features or changes:</p> <ul style="list-style-type: none"> • “Real-Time Workshop® Embedded Coder Support” on page 92 • “I/O Device Driver Support” on page 93 • “Recreate Target Boot Disk and Rebuild Applications” on page 94

Version (Release)	New Features and Changes with Version Compatibility Impact
V2.5 (R14)	<p>See the Compatibility Considerations subheading for each of these new features or changes:</p> <ul style="list-style-type: none">• “Support for Model Referencing” on page 99• “I/O Device Driver Support” on page 102• “Recreate Target Boot Disk and Rebuild Applications” on page 106
V2.0 (R13)	<p>See the Compatibility Considerations subheading for this new feature or change:</p> <ul style="list-style-type: none">• “Recreate Target Boot Disk and Rebuild Applications” on page 111
V1.2 (R12.1)	<p>See the Compatibility Considerations subheading for this new feature or change:</p> <ul style="list-style-type: none">• “Recreate Target Boot Disk and Rebuild Applications” on page 114
V1.1 (R12)	<p>See the Compatibility Considerations subheading for this new feature or change:</p> <ul style="list-style-type: none">• “Recreate Target Boot Disk and Rebuild Applications” on page 117