Virtual Reality Toolbox Release Notes

Contents

Summary by Version

This table provides quick access to what's new in each version. For clarification, see "About Release Notes" on page 1.

Version (Release)	New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Latest Version V4.3 (R2006a)	Yes Details	Yes Summary	Bug Reports at Web site	Printable Release Notes: PDF V4.3 product documentation
V4.2.1 (R14SP3)	No	No	Bug Reports at Web site	No
V4.2 (R14SP2+)	Yes Details	No	Known problems	No
V4.1 (R14SP2)	Yes Details	No	Fixed bugs	No
V4.0.1 (R14SP1)	No	Yes Summary	Fixed bugs	No
V4.0 (R14)	Yes Details	No	Fixed bugs	No
V3.1 (R13SP1)	Yes Details	No	Known problems	No
V3.0 (R13)	Yes Details	Yes Summary	No bug fixes	No

About Release Notes

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

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

New Features and Changes

These include

- New functionality

- Changes to existing functionality

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

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

Version Compatibility Considerations

When a new feature or change introduces a known incompatibility between versions, its description includes a **Compatibility Considerations** subsection that details the impact. For a list of all new features and changes that have compatibility impact, see the "Compatibility Summary for Virtual Reality Toolbox" on page 28.

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

Fixed Bugs and Known Problems

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

Access Bug Reports at the MathWorks Web site using your MathWorks Account. If you are not logged in to your MathWorks Account when you link

to Bug Reports, you are prompted to log in or create an account. You then can view bug fixes and known problems for R14SP2 and more recent releases.

Related Documentation at Web Site

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

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

Version 4.3 (R2006a) Virtual Reality Toolbox

This table summarizes what's new in V4.3 (R2006a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	No	Bug Reports at Web site	Printable Release Notes: PDF V4.3 product documentation

New features and changes introduced in this version are described here:

New Utilities Library

A new library `Utilities` is added to the Virtual Reality block library `vrlib`. This library contains the blocks `Rotation Matrix to VRML Rotation`, `Viewpoint Direction to VRML Orientation`, `Rotation between 2 Vectors`, `Normalize Vector`, and `Cross Product`. See "Blocks – By Category" for details.

VR Animation Playback Controls

A new `vrplay` GUI is added, which allows playback control of VRML animation files

Version 4.2.1 (R14SP3) Virtual Reality Toolbox

This table summarizes what's new in V4.2.1 (R14SP3):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
No	No	Bug Reports at Web site	No

Version 4.2 (R14SP2+) Virtual Reality Toolbox

This table summarizes what's new in V4.2 (R14SP2+):

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

New features and changes introduced in this version are described here:

Virtual Reality Toolbox Support of MATLAB Compiler

The Virtual Reality Toolbox now supports the MATLAB Compiler. With this capability, you can use the MATLAB Compiler to take M-files as input and generate redistributable, stand-alone applications that include Virtual Reality Toolbox functionality, including the Virtual Reality Toolbox viewer. The Virtual Reality Toolbox does not support the MATLAB Compiler for the HP-UX platform.

Virtual Reality Toolbox Viewer

The following changes were made to the viewer:

- The Virtual Reality Toolbox viewer **Recording** menu has changed to support frame captures in addition to animation recording.

- The Virtual Reality Toolbox toolbar now has a camera icon that you can click to capture a frame of the current virtual scene.

Virtual Reality Toolbox Preferences Dialog

The Virtual Reality Toolbox preferences dialog, available through the MATLAB® desktop **File -> Preferences** dialog, has been updated as follows:

- The **Virtual Reality Figure** pane is now organized by tabs.

- The Virtual Reality Toolbox preferences dialog now provides frame capture preferences. These are available through the **Frame Capture** tab of the **Virtual Reality Figure** pane.

vrsetpref and vrgetpref Changes

The `vrfigure` `set` and `get` functions now include the following properties to support frame capturing:

- `CaptureFileFormat`
- `CaptureFileName`

Space Mouse Block Enhancement

The Magellan Space Mouse block now allows you to specify upper and lower position coordinate limits for the mouse. The following parameters were added:

- **Limit position** — Determines whether you can limit the upper and lower positions of the mouse.
- **Lower position limit** — Position coordinates for the lower limit of the mouse.
- **Upper position limit** — Position coordinates for the upper limit of the mouse.

Version 4.1 (R14SP2) Virtual Reality Toolbox

This table summarizes what's new in V4.1 (R14SP2):

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

New features and changes introduced in this version are described here:

Virtual Reality Toolbox Stand-Alone Viewer

The Virtual Reality Toolbox now includes Orbisnap. This is a free, optional, and multiplatform stand-alone VRML viewer that does not require you to have either MATLAB or the Virtual Reality Toolbox. You can use Orbisnap to

- View prerecorded WRL animation files

- Remotely view, from a client machine, a virtual world loaded in a current session of the Virtual Reality Toolbox

- View and navigate, but not simulate, a VRML world or scene

Virtual Reality Toolbox Viewer

The Virtual Reality Toolbox viewer now allows you to interactively set the vrfigure maximum texture size through the **Rendering** menu.

Version 4.0.1 (R14SP1) Virtual Reality Toolbox

This table summarizes what's new in V4.0.1 (R14SP1):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
No	Yes—Details labeled as **Compatibility Considerations**, below. See also Summary.	Fixed bugs	No

VR Source block

The VR Source block has been removed from the Virtual Reality Toolbox.

Compatibility Considerations

If you had models that made use of this block, you will need to remove any references to it before your model will simulate using this release.

Version 4.0 (R14) Virtual Reality Toolbox

This table summarizes what's new in V4.0 (R14):

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

New features and changes introduced in this version are:

- "Improved Overall Performance" on page 11
- "Tracing and Offline Animation Files" on page 11
- "Improved Virtual Reality Toolbox Viewer" on page 12
- "Double-Clicking VR Sink Blocks Behavior Changed" on page 13
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Improved Overall Performance

Infrastructure changes have improved the overall performance of Virtual Reality Toolbox.

Tracing and Offline Animation Files

Virtual Reality Toolbox enables you to record animations of virtual scenes that are controlled by Simulink® or MATLAB. You can then later play back these animations offline (in other words, independent of MATLAB, Simulink, or Virtual Reality Toolbox). You can save animation data in the following formats:

- 3-D VRML — Virtual Reality Toolbox traces object movements and saves that data into a VRML file using VRML97 timers and position/orientation interpolators. During the simulation, Virtual Reality Toolbox creates interpolators and saves key and interpolation data values for all the controlled movable objects in the scene. After the simulation is stopped, Virtual Reality Toolbox saves the entire original VRML scene with the added timers/interpolators into a user-specified VRML file.

  You can then view these files with the Virtual Reality Toolbox viewer. 3-D VRML files typically use much less disk space than Audio Video Interleave (AVI) files. If you make any navigation movements in the Virtual Reality Toolbox viewer while recording the animation, Virtual Reality Toolbox does not save any of these movements.

- 2-D AVI — Virtual Reality Toolbox traces object movements and writes animation data into an Audio Video Interleave (AVI) file using the Virtual Reality Toolbox `vrfigure/capture` method and the MATLAB `avifile` function. Because `avifile` can record the exact 2-D snapshot of each figure window, the recorded 2-D animation reflects exactly what you see in the viewer window. It includes any navigation movements you make during the recording.

This functionality has been integrated into the Virtual Reality Toolbox viewer.

You can also save animation data through the MATLAB interface. This functionality has been integrated into the `vrworld` and `vrfigure` methods. See "MATLAB Interface" in the Virtual Reality Toolbox User's Guide documentation for procedures on how to save animation data.

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Notes when working with animation data:

- If you distribute the resulting VRML animation file, be sure to also distribute all the inlined object and texture files referenced in the original VRML world file.

- While recording 2-D AVI animation data, always ensure that the Virtual Reality Toolbox viewer is the topmost window and fully visible. Graphics acceleration limitations might prevent the proper recording of 2-D animation otherwise.

- For the creation of animation files, timing is an important issue. When you create animation files that are controlled from Simulink, the timing properties that control when the recording is started and stopped, and when each data snapshot (3-D) or animation frame (2-D) is saved, are related to the Simulink time. To better capture the scene dynamics, you might want to change the **Sample time** parameter of the VR Sink block parameter.

  When you create animation files that are controlled from MATLAB, you need to programmatically advance the time in the virtual scene.

Improved Virtual Reality Toolbox Viewer

The Virtual Reality Toolbox viewer has been completely updated and improved. In addition to the original Navigation Panel at the bottom of the window, the Virtual Reality Toolbox viewer now has a menu bar and associated toolbar. These additional areas allow you to perform a number of operations on the loaded virtual world, including

- Start the V-Realm Builder editor

- Perform navigation and rendering operations

- Work with, add, and remove viewpoints

- Start and stop model simulation

- Edit VR block parameters

- Record animations of the model simulation. You can later play back the animation files without Virtual Reality Toolbox or other MATLAB product.

In addition, Virtual Reality Toolbox has been enhanced for better VRML 97 compatibility, including:

- Proper handling of PROTO nodes

- Improved VRMLScript processing

- Improved texture rendering, allowing for resolution to the hardware limit of your video card

- Improved rendering of transparent images

In addition, the Virtual Reality Toolbox viewer keyboard navigation has changed.

Double-Clicking VR Sink Blocks Behavior Changed

The behavior of a VR Sink block when you double-click it has changed as follows:

1 The first time you add a VR Sink block to a model, double-clicking that block displays the block parameter dialog for that block.

2 After configuration is complete and you make an association with a virtual world, double-clicking the VR Sink block displays the Virtual Reality Toolbox viewer for that model.

To display the block parameter dialog for the VR Sink block in the Virtual Reality Toolbox viewer, select the **Simulation** menu, then **Block Parameters**.

Extended Support of Data Types

Virtual Reality Toolbox now supports a number of MATLAB data types. In earlier releases, Virtual Reality Toolbox only supported a data type of double. Virtual Reality Toolbox provides an interface between the MATLAB and Simulink environment and VRML scenes. With this interface, you can set and get the VRML scene node field values. The setfield and getfield vrnode methods have been updated to work with these new data types.

Improved Timing Control

The time in virtual scenes advances independently of MATLAB and Simulink interfaces. As a result, if you define dynamic actions directly in the VRML world, these actions cannot interact appropriately with object actions

controlled by Virtual Reality Toolbox through MATLAB or Simulink. To compensate for this, Virtual Reality Toolbox now provides two `vrworld` properties, `Time` and `TimeSource`. The `Time` property contains the current time in the virtual world. The `TimeSource` property defines the source of the time for the virtual world. The `TimeSource` property can take the following values:

- `'external'` — This is the default value. This property value specifies that an external source controls the time in a virtual world (in other words, all Virtual Reality Toolbox viewer windows). This external source can be either from Simulink, using the simulation time, or from MATLAB, using the `vrworld` method `set(w,'Time',time_value)`. The `'external'` property value eliminates the unpredictable interferences between Simulink and internal virtual world time and ambiguities in interpreting the time in the virtual world.

- `'freerun'` — This property value specifies that the time in virtual worlds advances independently based on the system timer. You can still set the time from which the virtual world clock starts advancing with the `vrworld` method `set(w,'Time',time_value)`.

HP-UX Platform Support

The Virtual Reality Toolbox is now supported on Hewlett-Packard UNIX (HP-UX) 11.00.

New vrfigure Object Functions

The `vrfigure` object has two new methods:

- `vrgcf` — Gets the handle for a currently active virtual reality figure. It is most useful to query and set virtual reality figure properties.

- `vrgcbf` — Gets the current callback virtual reality figure.

Joystick Input and Magellan Space Mouse Block Updates

When you place the Joystick Input and Magellan Space Mouse blocks in disabled subsystems, these blocks no longer require that actual hardware be connected to the computer for the model to run. This allows you to create

models with alternative user interfaces, switchable according to the actual hardware configuration.

New and Updated Demos

New and updated demos in Release 14 are listed in the table below. You can open the demos by entering the corresponding model names in the MATLAB Command Window.

Title	Model Name
Portal Crane with Joystick Control	vrcrane_joystick
Portal Crane with Predefined Trajectory	vrcrane_traj
Heat Transfer Visualization with 2-D Animation	vrheat_anim
Vehicle Dynamics Visualization	vr_octavia

Virtual Reality Toolbox Simulink Blocks Updates

The Simulink block library for the Virtual Reality Toolbox has the following block updates:

- VR Sink blocks now accept all meaningful data types as input. It converts these data types to natural VRML types as necessary. These data types include logical values, many types of signed and unsigned integers, singles, and doubles.

- VR Source blocks now output signals of data types corresponding to the natural VRML data types of the associated fields. These data types include logical values, many types of signed and unsigned integers, singles, and doubles.

- Space Mouse Input blocks now support USB devices (such as the SpaceBall input device), and the SpaceTraveler motion controller.

- Joystick Input blocks now support force-feedback devices such as force-feedback joysticks, steering wheels, and haptic devices. To use this functionality, you must install Microsoft DirectX Version 8.0 or later.

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VR Sink and VR Source Block Source File

The behavior of the VR Sink and VR Source block Source file text field has changed as follows:

- Browsing to a file enters that filename in the text field, with a path relative to the Simulink model location. For example, if the VRML file resides in `<Simulink model location>\vrml\vrbounce.wrl`, the filename that appears in the text field is `vrml\vrbounce.wrl`.

- If a model has a VRML file associated with it, Virtual Reality Toolbox searches the path associated with that file. If Virtual Reality Toolbox does not find the file on this path, it then searches for the filename using the MATLAB path value.

- If you enter an absolute and fully qualified path for the VRML file, Virtual Reality Toolbox searches just that path for the file.

MATLAB Interface Updates

Associated with the support of extended data types, the MATLAB interface `vrsetpref` and `vrgetpref` functions now set and get the following new preferences in addition to earlier preferences.

Preferences Changes

Virtual Reality Toolbox lets you specify preference settings so that you can define the default behavior of Virtual Reality Toolbox. The preferences functionality has the following changes:

- The ability to set Virtual Reality Toolbox preferences has moved from the VR Sink/Source blocks to the standard MATLAB preference system accessible through the MATLAB main window **File -> Preferences** menu item.

  For this release, you can set only the preferences for **HttpPort**, **VrPort**, **Editor**, and **TransportBuffer** preferences using the MATLAB **Preferences** menu. To get or set the full set of preferences, use the functions `vrgetpref` and `vrsetpref`.

- The following preferences have been added to the Virtual Reality Toolbox. For preferences that begin with the string `DefaultFigure` or

DefaultWorld, these values are the default values for the corresponding
vrfigure or vrworld property.

Preference	Description
DataTypeBool	Specifies the handling of the VRML Bool data type for vrnode/setfield and vrnode/getfield. Valid values are 'logical' and 'char'. If set to 'logical', the VRML Bool data type is returned as a logical value. If set to 'char', the Bool data type is returned 'on' or 'off'. Default is 'logical'.
DataTypeInt32	Specifies handling of the VRML Int32 data type for vrnode/setfield and vrnode/getfield. Valid values are 'int32' and 'double'. If set to 'int32', the VRML Int32 data type is returned as int32. If set to 'double', the Int32 is returned as 'double'. Default is 'double'.
DataTypeFloat	Specifies the handling of the VRML float data type for vrnode/setfield and vrnode/getfield. Valid values are 'single' and 'double'. If set to 'single', the VRML Float and Color data types are returned as 'single'. If set to 'double', the Float and Color data types are returned as 'double'. Default is 'double'.
DefaultFigureAnti Aliasing	Determines whether antialiasing is used by default for new vrfigure objects. Valid values are 'off' and 'on'.

Preference	Description
`DefaultFigureDeleteFcn`	Specifies the default callback invoked when closing a `vrfigure` object.
`DefaultFigureLighting`	Specifies whether the lights are rendered by default for new `vrfigure` objects. Valid values are `'off'` and `'on'`.
`DefaultFigureMax TextureSize`	Specifies the default maximum pixel size of a texture used in rendering new `vrfigure` objects. Valid values are `'auto'` and 32 <= x <= video card limit, where x is a power of 2.
`DefaultFigureRecord2D CompressMethod`	Specifies the default compression method for creating 2-D animation files for new `vrfigure` objects. Valid values are `''`, `'auto'`, `'lossless'`, and `'codec_code'`.
`DefaultFigureRecord2D CompressQuality`	Specifies the default quality of 2-D animation file compression for new `vrfigure` objects. Valid values are 0-100.
`DefaultFigureRecord2D FileName`	Specifies the default 2-D offline animation file name for new `vrfigure` objects.
`DefaultFigureStatusBar`	Specifies whether the status bar appears by default at the bottom of the Virtual Reality Toolbox viewer for new `vrfigure` objects. Valid values are `'off'` and `'on'`.
`DefaultFigure Transparency`	Specifies whether or not transparency information is taken into account when rendering for new `vrfigure` objects. Valid values are `'off'` and `'on'`.

Preference	Description
DefaultFigureWireframe	Specifies whether objects are drawn as solids or wireframes by default for new vrfigure objects. Valid values are 'off' and 'on'.
DefaultWorldRecord3D FileName	Specifies the default 3-D animation file name for new vrworld objects.
DefaultWorldRecordMode	Specifies the default animation recording mode for new vrworld objects. Valid values are 'manual' and 'scheduled'.
DefaultWorldRecord Interval	Specifies the default start and stop times for scheduled animation recording for new vrworld objects. Valid value is a vector of two doubles.
DefaultWorldRemoteView	Specifies whether the virtual world is enabled by default for remote viewing for new vrworld objects. Valid values are 'off' and 'on'.
DefaultWorldTimeSource	Specifies the default source of the time for new vrworld objects. Valid values are 'external' and 'freerun'.
TransportTimeout	Amount of time VR server waits for a reply from the client. If there is no response from the client, VR server disconnects from the client.

vrworld Object Property Updates

Associated with the support of animation files, the vrworld object now supports the following new properties:

Property	Description
Record3D	Enables 3D animation recording. Read/write.
Record3DFileName	3D animation file name. The string can contain tokens that are replaced by the corresponding information when the animation recording takes place. Read/write.
Recording	Animation recording toggle. This property acts as the master recording switch. Read/write.
RecordMode	Animation recording mode. Read/write.
RecordInterval	Start and stop times for scheduled animation recording. Corresponds to the virtual world object Time property. Read/write.
Time	Current time in the virtual world. Read/write.
TimeSource	The source of the time for the virtual world. If set to 'external', time in the scene is controlled from MATLAB (by setting the Time property) or Simulink (simulation time), if set to 'freerun', time in the scene advances independently based on the system timer. Read/write.

vrfigure Object Property Updates

The vrfigure object now supports the following new properties:

Property	Description
MaxTextureSize	Sets the maximum pixel size of a texture used in rendering vrfigure objects. The smaller the size, the faster the texture can render. Increasing this value improves image quality but decreases performance. A value of 'auto' sets the maximum possible pixel size. If the value you enter is unsuitable, a warning might trigger. Virtual Reality Toolbox then automatically adjusts the property to the next smaller suitable value. Read/write.

Property	Description
NavMode	Specifies navigation mode. Read/write.
NavSpeed	Specifies navigation speed. Read/write.
NavZones	Toggles navigation zones on/off. Read/write.
Record2D	Enables 2-D offline animation file recording. Read/write.
Record2DCompress Method	Specifies the compression method for creating 2-D animation files. The codec_code must be registered in the system. See the MATLAB function documentation for avifile. Read/write.
Record2DCompress Quality	Specifies the quality of 2-D animation file compression. Read/write.
Record2DFileName	Specifies the 2-D offline animation file name. The string can contain tokens that are replaced by the corresponding information when the animation recording takes place. Read/write.
StatusBar	Toggles the status bar at the bottom of the Virtual Reality Toolbox viewer. Read/write.
Toolbar	Toggles the toolbar on the Virtual Reality Toolbox viewer. Read/write.

Version 3.1 (R13SP1) Virtual Reality Toolbox

This table summarizes what's new in V3.1 (SP1):

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

New features and changes introduced in this version are described here:

Cross-Platform Support

The Virtual Reality Toolbox is now supported on the Mac OS X platform.

Improved Rendering

The overall rendering of virtual worlds for the Virtual Reality Toolbox is improved.

Known Problems

Microsoft Internet Explorer 6.0

Microsoft Internet Explorer 6.0 might incorrectly interpret system Java library paths, preventing Virtual Reality Toolbox components (such as the Virtual Reality Toolbox Viewer) from running. Netscape users do not experience this problem.

If you are using Internet Explorer 6.0, you should manually edit the Java library path for Microsoft Internet Explorer 6.0. Alternatively, you can also use Microsoft Internet 5.5 with the Virtual Reality Toolbox.

Editing the Java Library Path

To manually edit the Java library path for Microsoft Internet Explorer 6.0:

1 Run the `regedit` command.

2 Go to

   `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\JavaVM`

A list of value names and their values appears.

3 Replace each instance of `%systemroot%` with the system root path. For example

   `C:\WINNT`

4 Restart the computer.

Patch Required for MATLAB Running Mac OS X 10.2

The Virtual Reality Toolbox requires MATLAB running Mac OS X 10.2.

To install the Virtual Reality Toolbox on Mac OS X, you must first install a patch available from The MathWorks. To get the patch, go to `ftp://ftp.mathworks.com/pub/tech-support/solutions/s33053`. Refer to this location for any updates. Refer to `http://www.mathworks.com/support` for updated instructions. The instructions for this patch are below.

You should download this patch if you match one of these scenarios:

- You want to install MATLAB Release 13 on a Mac OS X 10.2 system that does not currently have MATLAB installed.
- You want to update an installation of MATLAB that was installed on a system with Mac OS X 10.1.x, but has subsequently been updated to Mac OS X 10.2.
- You want to update an installation of MATLAB that is installed on a system with Mac OS X 10.1.x.
- You already updated MATLAB installed on a system with Mac OS X 10.1.x, as in scenario III above, and have subsequently updated to Mac OS X 10.2.

Depending on which scenario you choose, please follow the directions below.

The first step is to download the MathWorks Jaguar Updater disk image from `ftp://ftp.mathworks.com/pub/tech-support/solutions/s33053`. This file is named `MathWorks_Jaguar_Updater.dmg`. Place this file on your desktop. Double-click the file to start the `Disk Copy` utility, which will mount the disk image as a virtual disk named **MathWorks_Jaguar_Updater**. You will use this **MathWorks_Jaguar_Updater** virtual disk in the following installations.

Next, locate your scenario and follow the steps listed for that scenario.

Scenario I. You want to install MATLAB Release 13 on a Mac OS X 10.2 system that does not currently have MATLAB installed.

1 Insert the MATLAB Release 13 install CD titled **CD 1 of 3** into your CD drive.

2 Wait a few moments for Mac OS X to mount the CD. When the **MathWorks_R13_1** volume appears on your desktop, you can proceed.

3 Double-click on the **Install for Mac OS X** icon in the **MathWorks_Jaguar_Updater** virtual disk.

4 Follow the instructions presented by the installer.

5 After the installer finishes, drag the **MathWorks_R13_1** volume to the trash to eject the CD, and repeat steps 1 through 4 with CD 2 of 3 and CD 3 of 3.

Scenario II. You want to update an installation of MATLAB that was installed on a system with Mac OS X 10.1.x, but has subsequently been updated to Mac OS X 10.2.

1 Double-click on the **XFree86_4.2.0.1-10.2** icon in the **MathWorks_Jaguar_Updater** virtual disk.

2 Follow the instructions presented by the XFree86 updater. Accept any default values presented.

3 Double-click on the **MATLABR13_Jaguar_patch** icon in the **MathWorks_Jaguar_Updater** virtual disk.

4 Follow the instructions presented by the MATLAB updater. When asked to choose the folder where MATLAB is installed click **Next** unless MATLAB is not installed the default location (`/Applications/MATLAB6p5`). If MATLAB is not installed in the default location, click the **Choose...** button and navigate to the folder where you installed MATLAB.

Scenario III. You want to update an installation of MATLAB that is installed on a system with Mac OS X 10.1.x.

1 Double-click on the **MATLABR13_Jaguar_patch** icon in the **MathWorks_Jaguar_Updater** virtual disk.

2 Follow the instructions presented by the MATLAB updater. When asked to choose the folder where MATLAB is installed click **Next** unless MATLAB is not installed the default location (`/Applications/MATLAB6p5`). If this is the case, then click the **Choose...** button and navigate to the folder where you installed MATLAB.

Scenario IV. You already updated a MATLAB installed on a system with Mac OS X 10.1.x, as in scenario III above, and have subsequently updated to Mac OS X 10.2.

1 Double-click on the **XFree86_4.2.0.1-10.2** icon in the **MathWorks_Jaguar_Updater** virtual disk.

2 Follow the instructions presented by the XFree86 updater. Accept any default values presented.

Version 3.0 (R13) Virtual Reality Toolbox

This table summarizes what's new in V3.0 (R13):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes—Details labeled as **Compatibility Considerations**, below. See also Summary.	No bug fixes	No

New features and changes introduced in this version are described here:

Cross-Platform Support

The Virtual Reality Toolbox 3.0 is supported on both PC and UNIX platforms.

Virtual Reality Toolbox Viewer

The Virtual Reality Toolbox 3.0 now contains a VRML viewer. You can use this viewer on all supported operating systems. With the Virtual Reality Toolbox viewer, you can move between predefined viewpoints in a virtual scene. You can also control the navigation method, speed, and rendering of the virtual world. From the MATLAB interface, you can control the Virtual Reality Toolbox viewer better than other VRML-enabled Web browsers.

Improved Performance

The communication between the Virtual Reality Toolbox and VRML-enabled Web browsers is improved. You are now able to perform such tasks as controlling multiple objects in a virtual scene or setting multiple field values faster than before.

Improved MATLAB Interface

It is now easier to access and manipulate virtual world objects from the MATLAB command line. You can use dot notation to change object properties.

Also, multiple field values are transferred between MATLAB and the Virtual Reality server in a form consistent with their VRML representation.

Customized V-Realm Object Libraries

Compatibility Considerations

If you are on a PC platform and you created your own object libraries in V-Realm while using the Virtual Reality Toolbox 2.0, deleting MATLAB deletes these custom libraries. You need to save these libraries before uninstalling the older version of MATLAB:

1 Save the contents of the `<MATLAB root>\toolbox\vr\vrealm` directory to another location on your system.

2 Uninstall the older version of MATLAB.

3 Install MATLAB 6.5 (Release 13).

4 Install V-Realm using the command

```
vrinstall -install editor
```

5 Save the files from your old `vrealm` directory into the new `vrealm` directory.

MATLAB 6.5 should have the same directory structure as your previous version of MATLAB. If the directory structure is not identical, search your system for `vrbuild2.ini`. Edit the relative paths within this file to reflect the directory structure of MATLAB 6.5.

After you have moved your files into the new `vrealm` directory and customized your `vrbuild2.ini` file, do not reinstall the V-Realm editor. The command

```
vrinstall -install editor
```

replaces the existing `vrbuild2.ini` file with the default template file.

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Compatibility Summary for Virtual Reality Toolbox

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 in the description of the new feature or change.

Version (Release)	New Features and Changes with Version Compatibility Impact
Latest Version V4.3 (R2006a)	None
V4.2.1 (R14SP3)	None
V4.2 (R14SP2+)	None
V4.1 (R14SP2)	None
V4.0.1 (R14SP1)	See the **Compatibility Considerations** subheading for this change: • "VR Source block" on page 9
V4.0 (R14)	None
V3.1 (R13SP1)	None
V3.0 (R13)	See the **Compatibility Considerations** subheading for this change: • "Customized V-Realm Object Libraries" on page 27