

Rosetta Communicator™ for WorldBuilder and 3DS Max



**Version 1.0
User Guide**

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Introduction

The 3DS MAX/WorldBuilder Communicator (MAX-WB) revolutionizes importing and exporting between packages, by allowing 3DS MAX and WorldBuilder users to share scene data and utilize the strength of each package. The communicator supports joint rendering of 3D-packages with the fusion of images at the level of Z-buffers or A- buffers.

With MAX-WB, users no longer import and export objects in the traditional sense. Rather, they create a combined project file which shares camera paths, lighting, and shadows between both scenes. Each package renders part of the scene 'natively'. MAX-WB composites the rendered scenes together for the user, creating a single scene. All the objects are transferred and received with animation support.

The following items are shared communicated between scenes:

- Mesh objects (Mesh)
- Light sources (Light)
- Cameras (Camera)
- Other objects defined by a bounding box

System Requirements

These are the system requirements for MAX-WB.

Minimum:

Processor	Pentium II 400 MHz
Memory	256 Mb
Free hard disk space	1Mb
Operating system	Windows2000/WindowsXP

Recommended:

Processor	Pentium IV 1400 MHz
Memory	512Mb
Free hard disk space	17Mb
Operating system	Windows2000/WindowsXP

Note: *Both WorldBuilder Pro and 3DS MAX may have additional individual system requirements. Please refer to the appropriate user documentation for these applications.*

Installation

To install the MAX-WB Communicator you need to have 3DS MAX 4 or 3DS MAX 5 and WorldBuilder Pro 3.55 previously installed on the workstation.

The following files will be installed on the computer:

Comm30max4x.dlu	Plug-in for 3DS MAX 4
Comm30max5x.dlu	Plug-in for 3DS MAX 5
CommObject.bem	Plug-in for WB
CommServer.exe	Communication server
CommUI.exe	User interface of communication server
MAX-WB.pdf	Communicator manual
Ufo-teapot.max	3DS MAX demo project
Ufo-forest.awb	WB demo project

To install the software components of MAX-WB Communicator, run the program **CommMAXWB.exe** and follow the installation instructions.

First of all, you should type the User information and Serial number in the following dialog.

InstallShield Wizard

Customer Information
Please enter your information.

Please enter your name, company, and serial number
If you don't have serial number provided with your package, please contact Digital Element at contact@dig-element.com

User Name:

Company Name:

Serial Number:

InstallShield

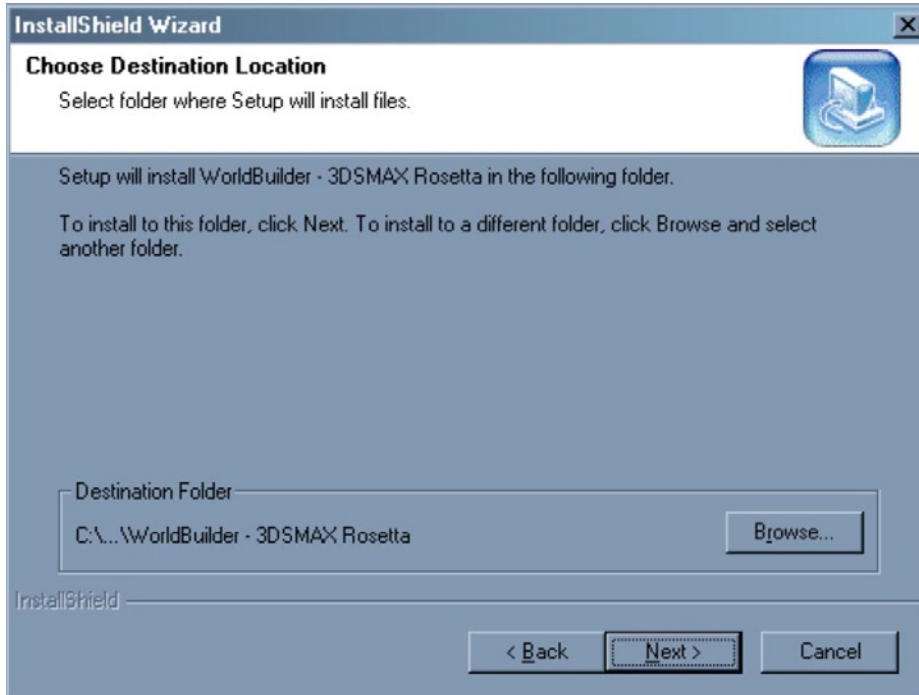
< Back Next > Cancel

ABOVE: "...you don't have a serial number ..."

Installation

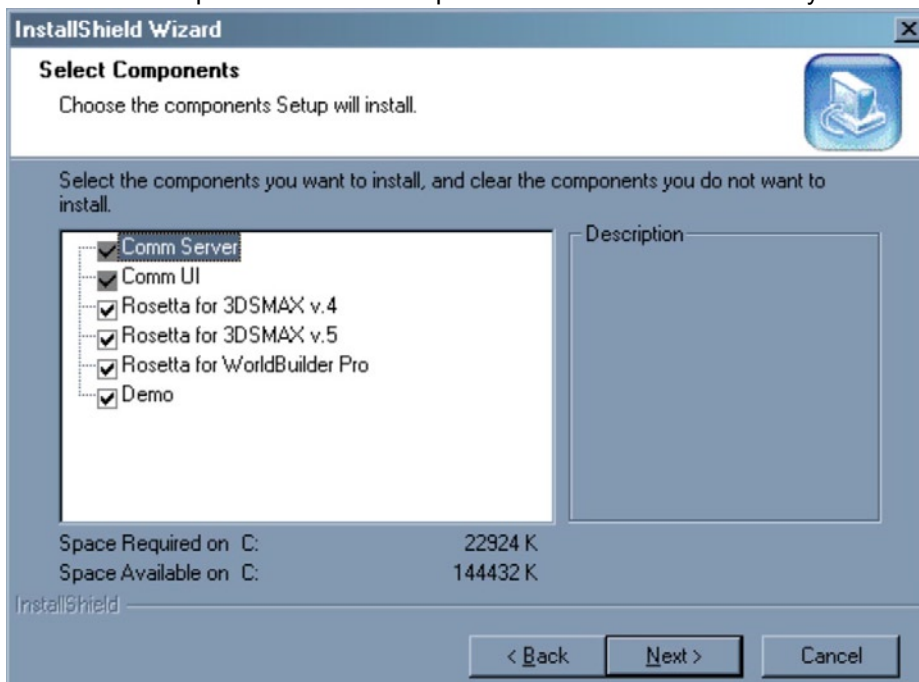
The installation program will install MAX-WB Communicator into the directory of your choice. The default directory is **Digital Element\WorldBuilder - 3DSMAX Rosetta** in the system Program Files folder (usually, it is **C:\Program Files\Digital Element\WorldBuilder - 3DSMAX Rosetta**)

You can choose a different destination location in the following dialog.



To continue click the 'Next>' button:

In the proposed list of components for installing MAX-WB Communicator select the desired components. All the components indicated are chosen by default.



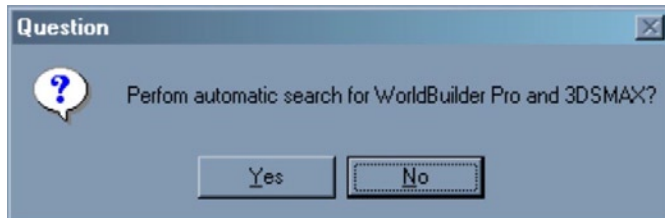
To continue click the 'Next>' button:

Max - WB Communicator

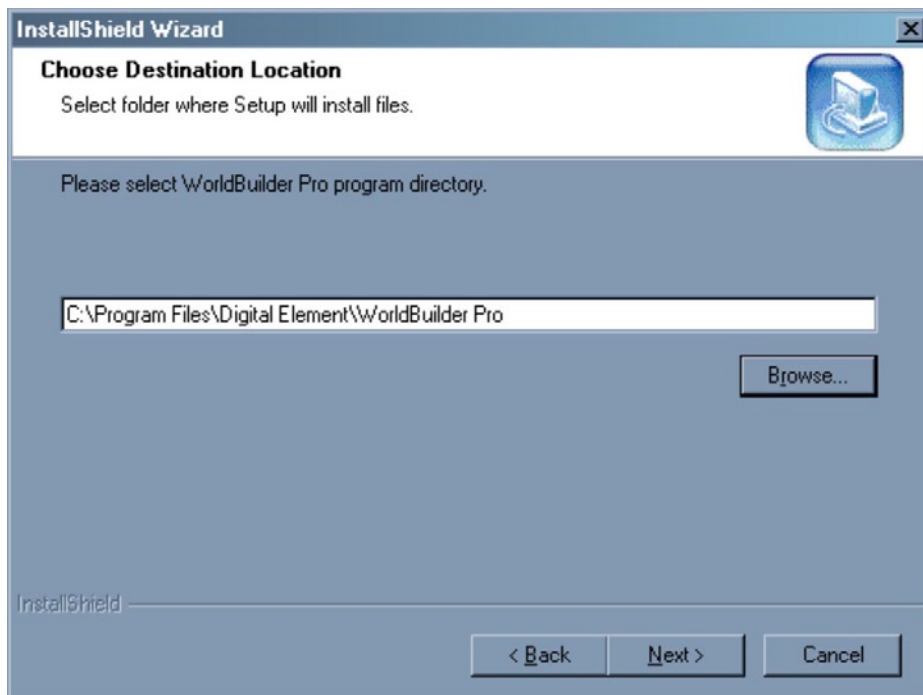
Installation

The program automatically prompts the finding of the path to the installed packages of WorldBuilder Pro 3.5, 3DS MAX v.4 or 3DS MAX v.5 if selected.

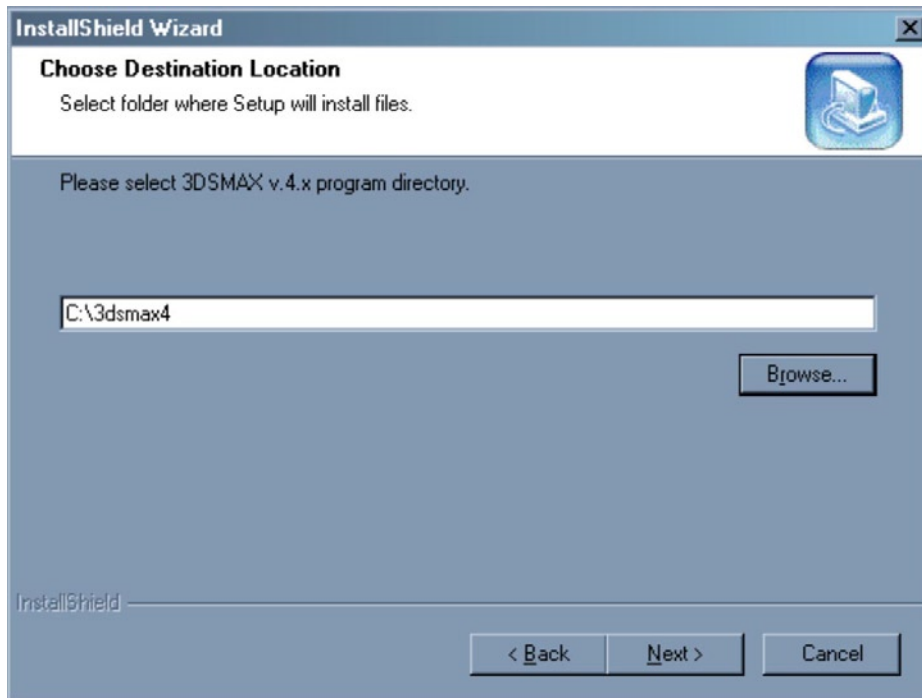
In case you agree click the **'Yes'** button. If you click the **'No'** button, the program will prompt you to manually select the path to the packages:



If you select the automatic alternative, click the **'Next>'** button in the window below. Alternatively, indicate the path manually for each of the selected plug-ins.



Installation



The installation wizard will then copy the following:

- The file of WB plug-in **CommObject.bem** into the **WorldBuilder Pro** directory (for example: **C:\Program Files\Digital Element\World Builder Pro**)
- The file of 3DS MAX v.4 plug-in **Comm30max4x.dlu** into the **3DSMAX plug-ins** directory (for example **C:\3dsmax4\Plugins**)
- The file of 3DS MAX v.4 plug-in **Comm30max5x.dlu** into the **3DSMAX plug-ins** directory (for example **C:\3dsmax5\Plugins**)
- The file of communication server **CommServer.exe** is placed into **Digital Element-Strela** in the system Common Files directory (for example **C:\Program Files\Common Files\Digital Element-Strela**)
- The file of communication server **CommUI.exe** is placed into the **Windows** system directory and is automatically recorded in the operating system.
- Demo files and Help files into **WorldBuilder - 3DSMAX Rosetta** directory (for example **C:\Program Files\Digital Element\WorldBuilder - 3DSMAX Rosetta**)

To finish the general installation click the '**Finish**' button.

At any stage of the installation you may

- Move one step backward with the '**<Back**' button,
- Abort the installation with the '**Cancel**' button.

Installing the MAX Plug-In

Procedure

The first installation of the MAX plug-in in the package of 3DS MAX is made manually.

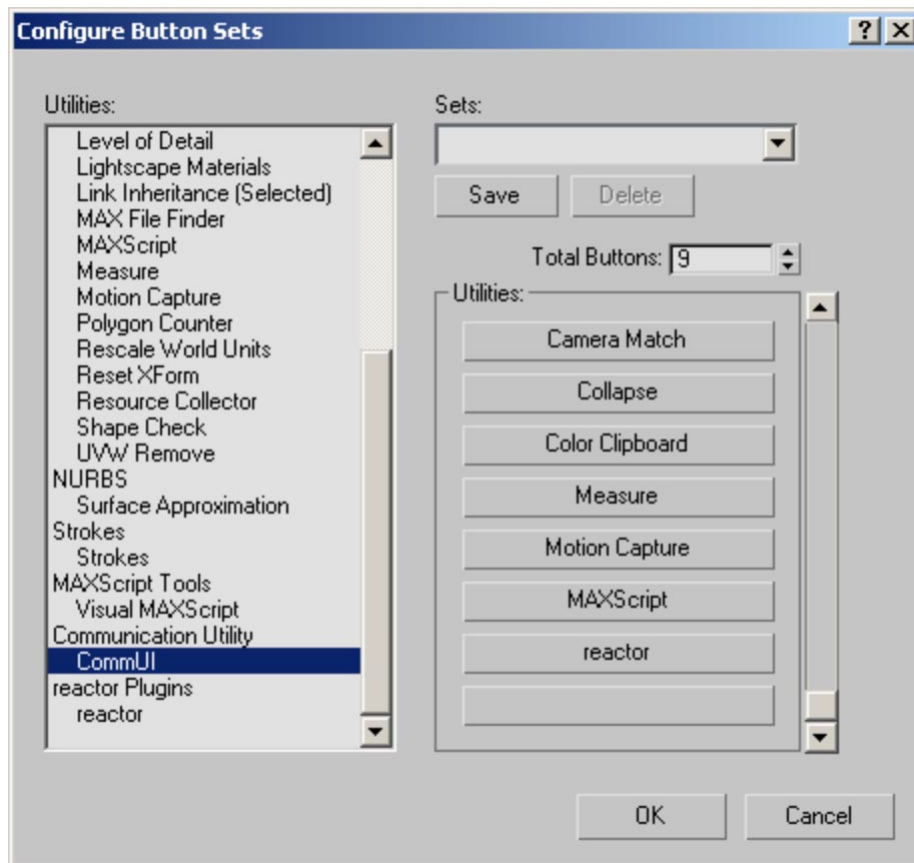
1. Go to **Utilities** panel .



Click on the **Configure Button Sets** button.



2. In the pop-up dialog window, increase **Total Buttons** by one. The unassigned button will appear.



3. In the **Utilities** list select **Communication Utility** --> **CommUI**. Drag and drop it onto the unassigned button.

Installing the MAX Plug-In

4. Press OK. Now the CommUI button will appear in the Utilities panel.

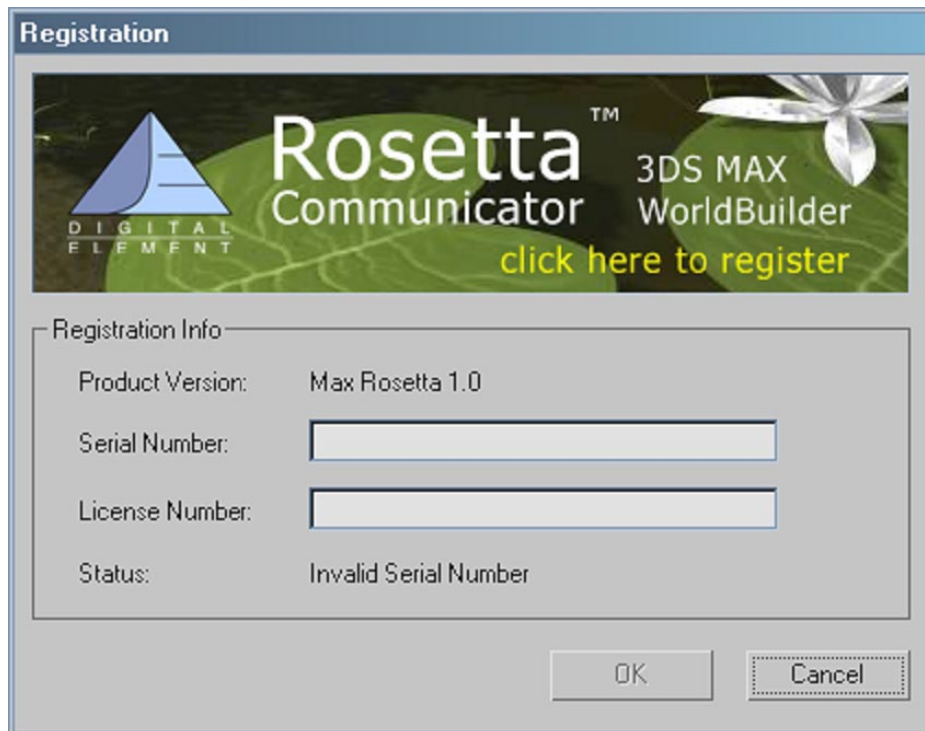


Registration

To complete the installation you will need to register WB-MAX Rosetta.

Please follow these steps.

1. Start 3DSMAX.
2. Open the CommUI Communication Utility dialog from the Utility Tab
3. Press the Go button. Registration dialog appears.



4. Click the link on the picture for online registration.

As a result of online registration, you will receive an e-mail with registration instructions.

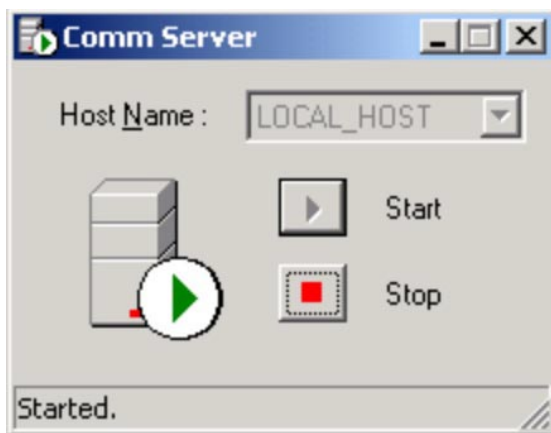
Loading the Communications Server

The communication server (**CommServer.exe**) represents a separate communicator component placed on one of computers in a network or on the local computer. The communication server facilitates interaction between the remaining components of the Communicator and controls the interaction. All other communicator components interact with the server using sockets based on the TCP/ IP protocol.

This is the Control dialog for the Communications Server:



Off mode



On mode

The communication server may be turned either on or off. To switch between the modes use the **Start** and **Stop** buttons.

For the server to operate, you'll need to specify the **Host Name** parameter:

When on a network with the network rendering, select the network name of the host server from the list of computers visible on the network. When working on a local computer without network rendering, you should select LOCAL_ HOST.

Connecting the Communication Server

In the **Utilities** panel,



press **CommUI**.



The installation of the *MAX-WB Communicator* and MAX plug-in results in the dialog box for setting the parameters of the session of connection of the MAX plug-in to the communication server:



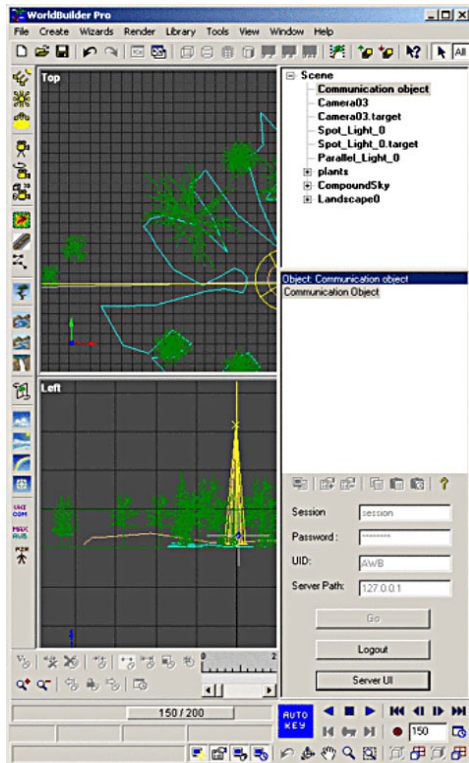
Parameter Input Fields and Buttons

Session	Since the server can support a large number of workstations and sessions (projects) running simultaneously, users need to enter a unique name for each project. Workstations accessing identical session names operate jointly. A given workstation does not see workstations that participate in other projects (with different session identifiers). When the plug-in is connected to the server, the availability of a session with a given name is checked. If such a session is not present, then it is created with specified parameters. The default session name is «session». At the beginning of the operation the input field is accessible. If the connection is a success, then it becomes inaccessible.
Password	Prevents an unintentional connection to a session. If while connecting to the server, the session specified by a user is already available, then the passwords coincidence is checked, and if they coincide in their turn, the connecting continues; otherwise the error message appears. The default password is «password». At the beginning of the operation the input field is accessible. If the connection is a success, then it becomes inaccessible.
UID	“ Package Name ” Within a session, each connected package has its unique name specified by the user. With this name the server identifies the objects, which are transferred through it. The check for the uniqueness of a package name takes place immediately after checking the session name and password. In the case of a duplicate package name, the user receives a message about the non-uniqueness of the package name. At the beginning of the operation the input field is accessible. If the connection is a success, then it becomes inaccessible.
Server path	“ Network Path ” The communication server may be placed on any given machine within a network. A user may specify the computer where the server is placed. At the beginning of the operation the input field is accessible. If the connection is a success, then it becomes inaccessible.
Go	When pressed, the workstation attempts to connect to the server with the specified parameters. At the beginning of the operation the button is clickable. If the connection is a success, then it becomes inaccessible.
Logout	Disconnects the workstation from the server. At the beginning of the operation the button is inaccessible. If the connection is a success, then it becomes clickable.
User Interface	Brings up the server user interface. At the beginning of the operation the button is inaccessible. If the connection is a success, it becomes clickable. On successful connections to the communication server, you may call the server user interface UI and proceed to manipulating with the scene objects.

Loading the WB Plug-In

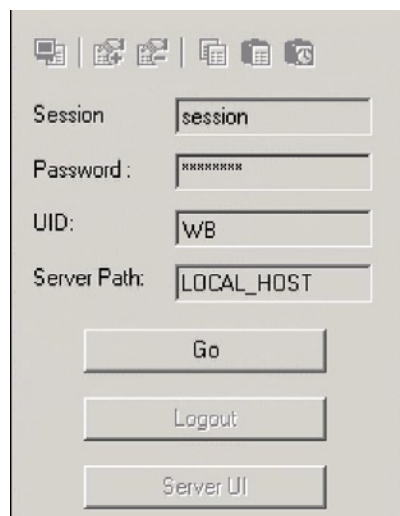
Procedure

1. Load the package WorldBuilder Pro 3.55.
2. Click this button on the left vertical functional panel in the main WorldBuilder interface.



The WB plug-in in the WorldBuilder Pro 3.55 package will load.

The user interface of WB communicator plug-in will open, providing access to WB's dialog box for setting Communication Server session connection parameters.



Connecting WB Plug-In to Comm Server

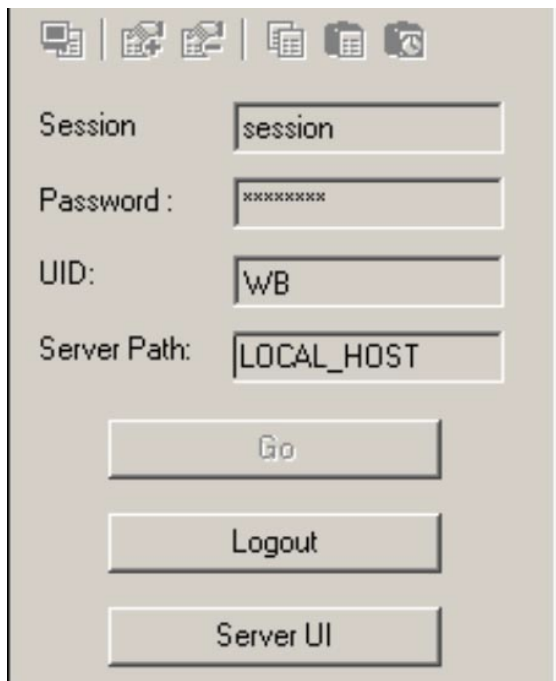
The loading of the WB plug-in opens the dialog box for setting the parameters of the connection session with the WB plug-in and the communication server

- With the input fields: **Session** («session name»), **Password** («password»), **UID** («package name»), **Server path** («network path»)
- With the buttons **Go** («Go»), **Logout** («Logout»), **Server UI** («User Interface»).

The functionality of the input fields and the buttons is similar to the description for 3DS MAX plug-in, except that there is no button *Delete temp files*.

To connect the WB plug-in to the communication server click the button **Go** («Go»).

The Dialog box will be changed to the following:



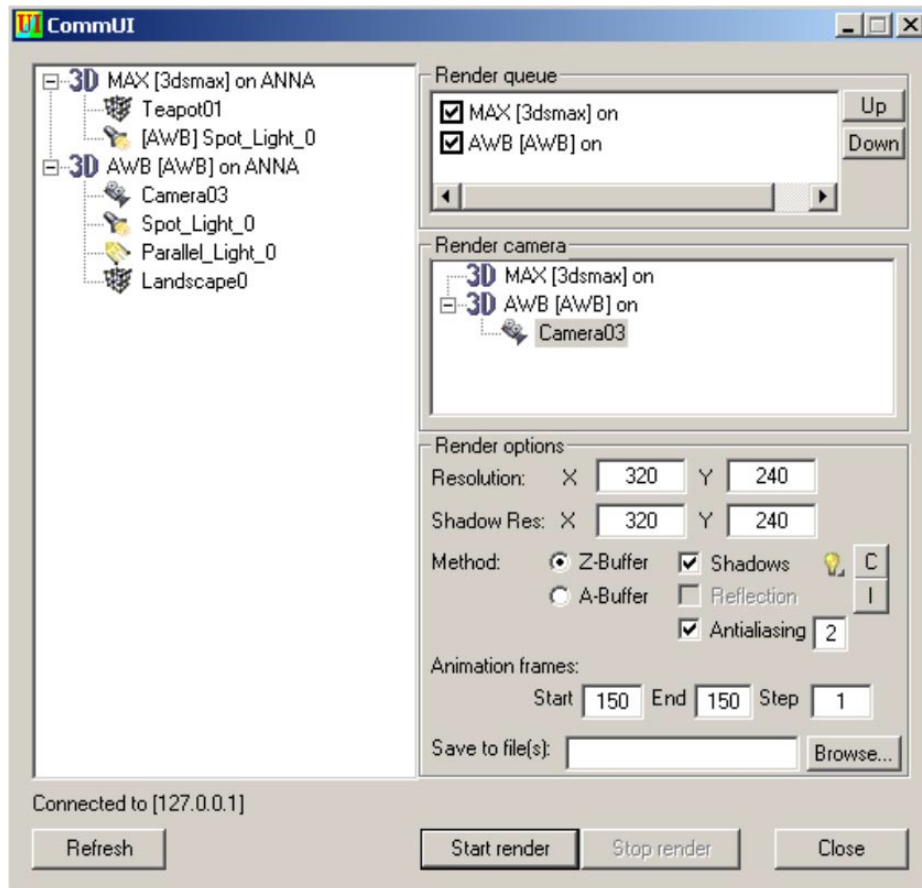
The screenshot shows a dialog box with a title bar containing icons for window management. The dialog box has the following fields and buttons:

- Session:** Input field containing the text "session".
- Password:** Input field containing "xxxxxxxx".
- UID:** Input field containing "WB".
- Server Path:** Input field containing "LOCAL_HOST".
- Buttons:** Three buttons are located below the input fields: "Go", "Logout", and "Server UI".

Comm Server Interface Window

The user interface window of the communication server is divided functionally into the two parts:

- **Scene objects.** A left panel for manipulating with scene objects.
- **Render panels.** Panels for setting parameters and starting joint rendering.



Joint Rendering

Joint rendering matches the rendered scene objects between the packages during the rendering process by sharing cameras, light sources, etc. of the respective packages. MAXWB composites the results of scene objects' renderings in each package. In other words, MAXWB merges the Z-buffers and/or A-buffers of the packages.

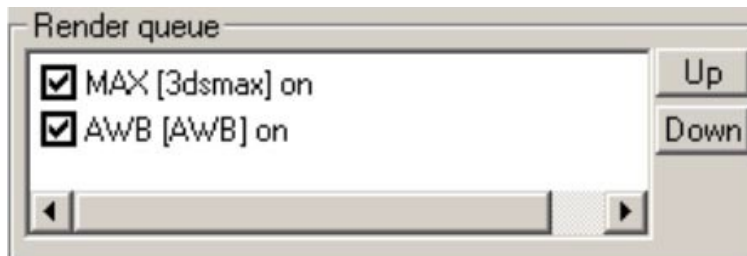
If the rendering was absent in one of the packages, then the result of joint rendering is the rendering of that package in which the rendering took place. If rendering took place in both packages, then the result will be the combination of the two renderings.

In order to correctly construct objects' shadows in the combined scene, light sources need to be exchanged between packages and, depending on the package, to adjust the parameters responsible for shadow formation (for example, in WorldBuilder for the necessary light source the parameter **Shadow** needs to be set to **ON**).

For joint rendering of the scene objects from different packages there are three panels for setting the parameters in the window of the Communication Server user interface:

- **Render Queue** - Queue of package rendering.
- **Render Camera** - Camera selection.
- **Render Options** - Setting of the rendering parameters.

Render Queue



The list of package names is displayed in a panel. Each title string includes a flag. The package, the title string of which includes a flag performs rendering.

If flags are set on all of the packages in the list, the order of the rendering will follow the order in the list.

The order of the packages within the list may be changed with the **Up** and **Down** buttons at the right side of the panel.

Joint Rendering

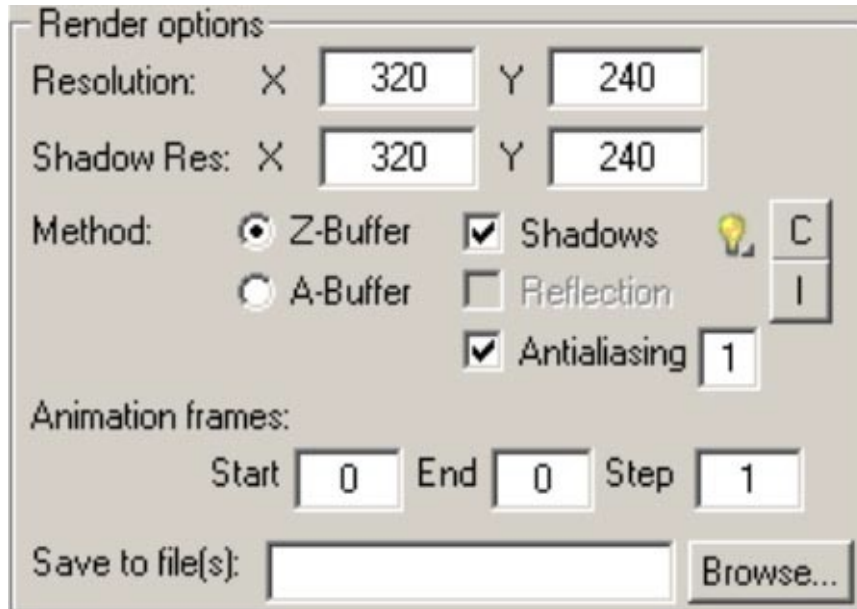
Render Camera



On the panel a user may select a camera of one package, from which rendering will be performed. The string with a camera name (indicated with a mouse) will be color marked.

Joint Rendering

Render Options



Before proceeding to joint rendering, a user may set the following rendering parameters on the Options panel:

Resolution	Changes the resolution of the resulting image.
Shadow Res	To adjust the resolution value for shadow masks. The default resolution value for shadow masks is equal to the resolution value for the resulting image. Clicking on the checkbox enables this feature.
Method	Chooses a compositing method (<i>Z-buffer</i> or <i>A-buffer</i>).
Shadows	Determines whether shadows will be processed.
Antialiasing	Set a flag and specify the required rate of smoothing (an integer number from 1 to 7, we recommend – 3). The given anti-aliasing coefficient has no effect on the dimension of shadow masks.
Animation frames	Change the initial and final animation frame and step if any provided.
Save to file(s)	Saves the resulting image into the chosen file.

Joint Rendering

If **Shadows** have been selected, light sources will have to be shared. To set the light sources required for shadow creation, click the Shadows button. The list of light sources of both packages will be displayed. In the displayed list set the flags at the required sources:



Procedure

1. Change the required parameters on the render's panels.
2. Click the **Start Render** button at the bottom of the panel to begin the joint render. The rendering time will vary depending on the complexity of the scenes, the power and number of stations, and the quality of the rendering.
3. Clicking the **Stop Render** button will stop the joint rendering.

Example

The following figures illustrates examples of separate renderings of the initial scenes in packages 3D Max and WorldBuilder:



Image obtained in 3D Max

Joint Rendering

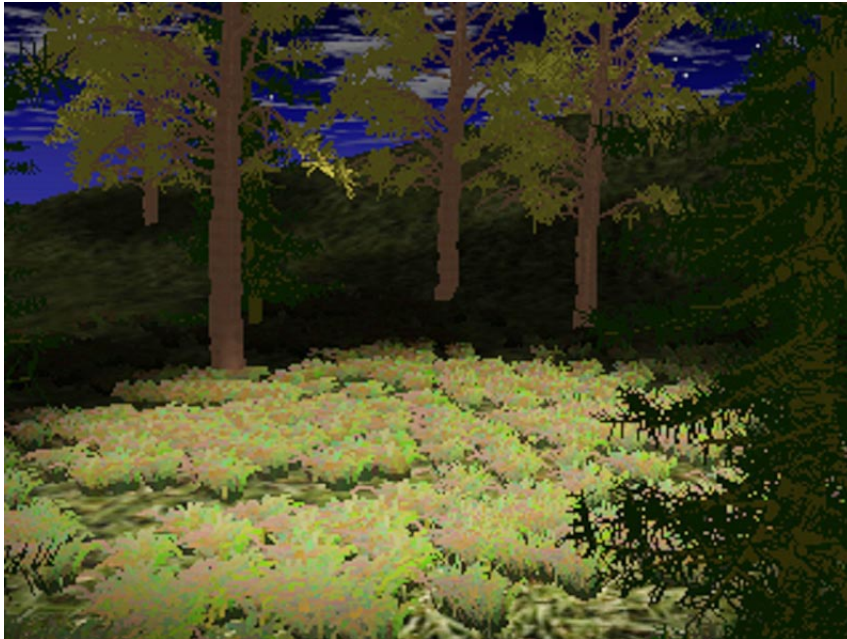


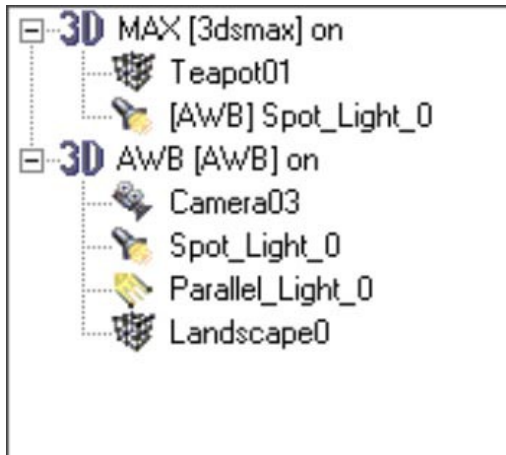
Image obtained in WorldBuilder



Image obtained by joint rendering, and the merging of two Z-buffers

Manipulations with Scene Objects

In the left part of the user interface window of the communication server “CommUI” there is an object lists for each package.



The lists are organized similar to hierarchical trees. Any object may act as a parent and have children (slaves). The number of children levels are not limited. The hierarchical structure provides control when manipulating objects of two different packages.

The following manipulations may be done with objects:

- Transferring objects
- Deleting objects
- Modifying objects

If you click with the right button into the list box of packages objects a popup menu is displayed providing commands for manipulations with objects, synchronization and updating objects lists.

Manipulations with Scene Objects

Transferring objects

1. Select the object from the Object Tree of one of the two packages by clicking the **left mouse button**.
2. Hold the button and drag the object to the required level of the Object Tree of the other package.
3. Release the mouse button. The object will be copied into the list of the second package.

Simultaneous transfer of several objects

Transfer procedure is similar to that described above:

- Several objects are selected with **Ctrl - left click**.
- A parent object is transferred with all of its children.

When being transferred the object is assigned a name, which is formed according to the following principle:

“[“ package name (UID field in plug-in interface) “]”
+
space (_)
+
original name of the object in a package.

When transferring polygonal objects into 3DS MAX from WorldBuilder the names, which are assigned to the objects, differ with an underlining symbol (_) instead of a space.

```
Example:¶  
If a polygonal object with the name "Landscape()" is  
transferred from WorldBuilder package with UID «wb» ¶  
the object name will be formed:¶  
«[wb]_Landscape()» □
```

Objects may be transferred with the commands from the popup menu.

Note: Before transferring objects between the 3D packages, be sure to equalize their unit measurement systems. In other words, if you are using metric units in 3DS Max, make sure you are also using metric units in WorldBuilder.

Manipulations with Scene Objects

Deleting objects

To delete one or more objects from a scene, mark the objects with the mouse and press the **Delete** key.

If a scene object is deleted in a package itself, then to update the object list click the **Refresh** button in the bottom left corner of the **user interface window** in the communication server “**CommUI**”.

Objects may be deleted from the **popup menu**.

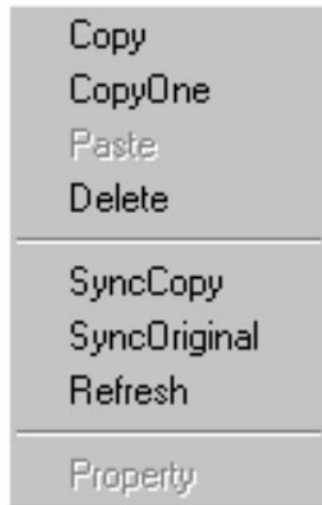
Modifying dimensions

When an object has been transferred, it may be necessary to modify its dimensions. To do this one may:

- Use the appropriate tools of the package, into which it (the object) was transferred.
- Modify beforehand the location of the object and its scale before it is transferred into another package.

Manipulations with Scene Objects

Popup menu



Copy	The command copies a selected object or several selected objects into the buffer. If you select a parent object, all its children are copied.
CopyOne	The command copies a selected object into the buffer. If you select several objects without children simultaneously, they are all copied. If you select a parent object, its children are not copied.
Paste	The command pastes information from the buffer into the specified place in the list.
Delete	The command deletes the selected objects from the list. If you select a parent object, all its children are deleted as well.
SyncCopy	The command updates the object copies in other packages.
SyncOriginal	The command updates the original.
Refresh	The command updates the objects lists under any changes of scene in the package.

Note: When some animated objects are transferred from one package into another, one should remember that in different packages a different number of frames and different numbers of the startup frame are specified by default, therefore one should trace carefully the installation of these parameters in the packages, with which communication is performed. Otherwise the animation of the scene objects may be distorted.

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