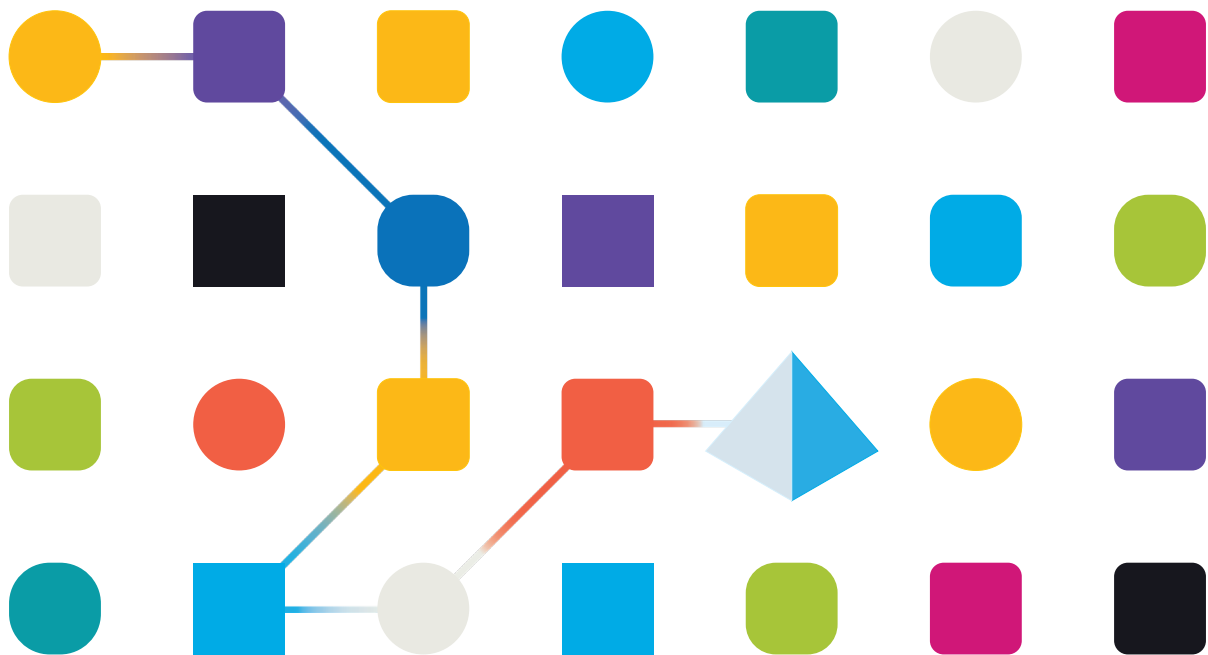




# Blue Prism Mainframe Guide

## Micro Focus RUMBA

Document Revision 1.0



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Blue Prism Limited, 2 Cinnamon Park, Crab Lane, Warrington, WA2 0XP, United Kingdom  
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# How to configure Micro Focus RUMBA

## Introduction

The Rumba emulator software has been through some different owners since its inception. Therefore, not all of the instructions in this document will be immediately applicable to all versions of the product. This document was written to primarily support the **Micro Focus Rumba v9.3** product.

## Releases

The following software versions were released:-

- **Wall Data** - v5.x (also known as RUMBA Office 95/NT) and v6.x (RUMBA 2000)
- **NetManage** – 7.x
- **Micro Focus** – v8.x – 9.3

## Session File extensions

The following types of file extensions were given to Session Profiles:-

- **.wda/.wdm** – mainframe sessions (v5/6)
- **.rsdm** – mainframe sessions (v7+)

Rumba allows for the creation of Session Profiles and Desktop Profiles in later versions. For an explanation of the differences, see this link:

[http://community.microfocus.com/microfocus/mainframe\\_solutions/rumba/w/knowledge\\_base/24812.difference-between-a-desktop-profile-and-a-session-profile.aspx](http://community.microfocus.com/microfocus/mainframe_solutions/rumba/w/knowledge_base/24812.difference-between-a-desktop-profile-and-a-session-profile.aspx)

## Concepts

Connecting to Rumba is a **two-stage process**, and without having both the Rumba emulator and the correct Session file loaded and connected, the presentation space will not be accessible to Blue Prism.

The concept is to create one Blue Prism Business Object which will run the Rumba executable as a Win32 object, and this will open the emulator's main window. Then, a second Blue Prism Business Object should be created which will specify a Mainframe type of application and this second object will be used to define and spy parts of the mainframe application for interaction by your Blue Prism processes.

The following guide works through these steps to give an example of how to set up the Rumba emulator to work with Blue Prism.

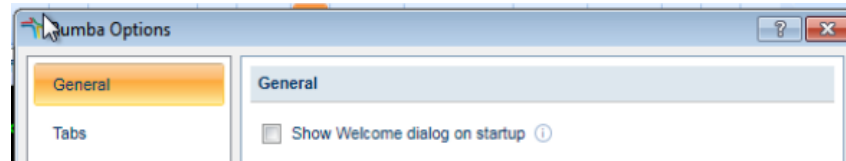
## Preparing RUMBA for use with Blue Prism

### Rumba Options

To begin with set up the general Rumba emulator options which will govern the behaviour of the emulator software. To do this, launch the **Micro Focus Rumba Desktop** icon to launch the emulator:



1. **Setting Auto Connect for saved sessions**
  - a. Open the **Connection** menu item and choose **Configure...**
  - b. Set the option to **Auto Connect**, then click OK to confirm this setting.
2. **Preventing the Welcome Screen from appearing**
  - a. Open the **Options** menu item and choose **Rumba Options**
  - b. Select the **General** tab, and uncheck the 'Show Welcome dialog on startup' option



## LAUNCH and ATTACH actions

When you're choosing a Mainframe application this choice is not the same. You don't specify in the App Modeller wizard whether you're going to connect to an already running mainframe/emulator. Therefore, the resulting buttons in Application Modeller will always say "Launch" (and "Terminate").

### Launch or Connect?

When the 'Launch' button is clicked the call being made to the mainframe API behind the scenes is using the API's "Connect" function.

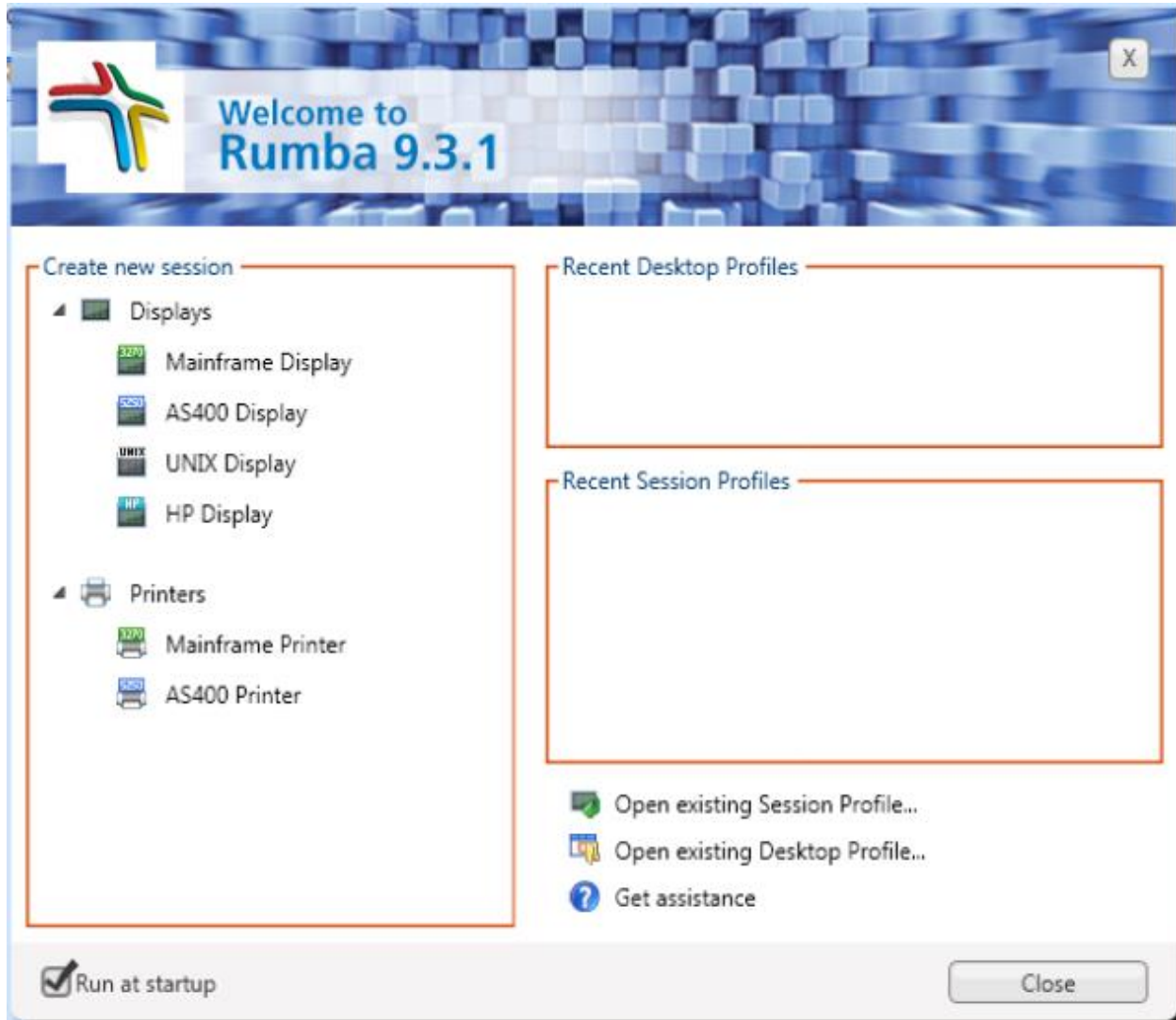
### Attaching to an existing session.

**Only (E)HLLAPI based terminal emulators allow attaching to an existing session.** Once a session identifier has been setup in both Blue Prism and the mainframe application (which is sometimes called a short name), you can attach to the existing session using an Attach action within a Navigate stage.

NOTE: Some emulators allow for a combined Launch and Attach function, so that when Blue Prism's Launch action is used then the emulator is started and the mainframe is already attached. You may need to experiment with how your particular emulator works in this regard.

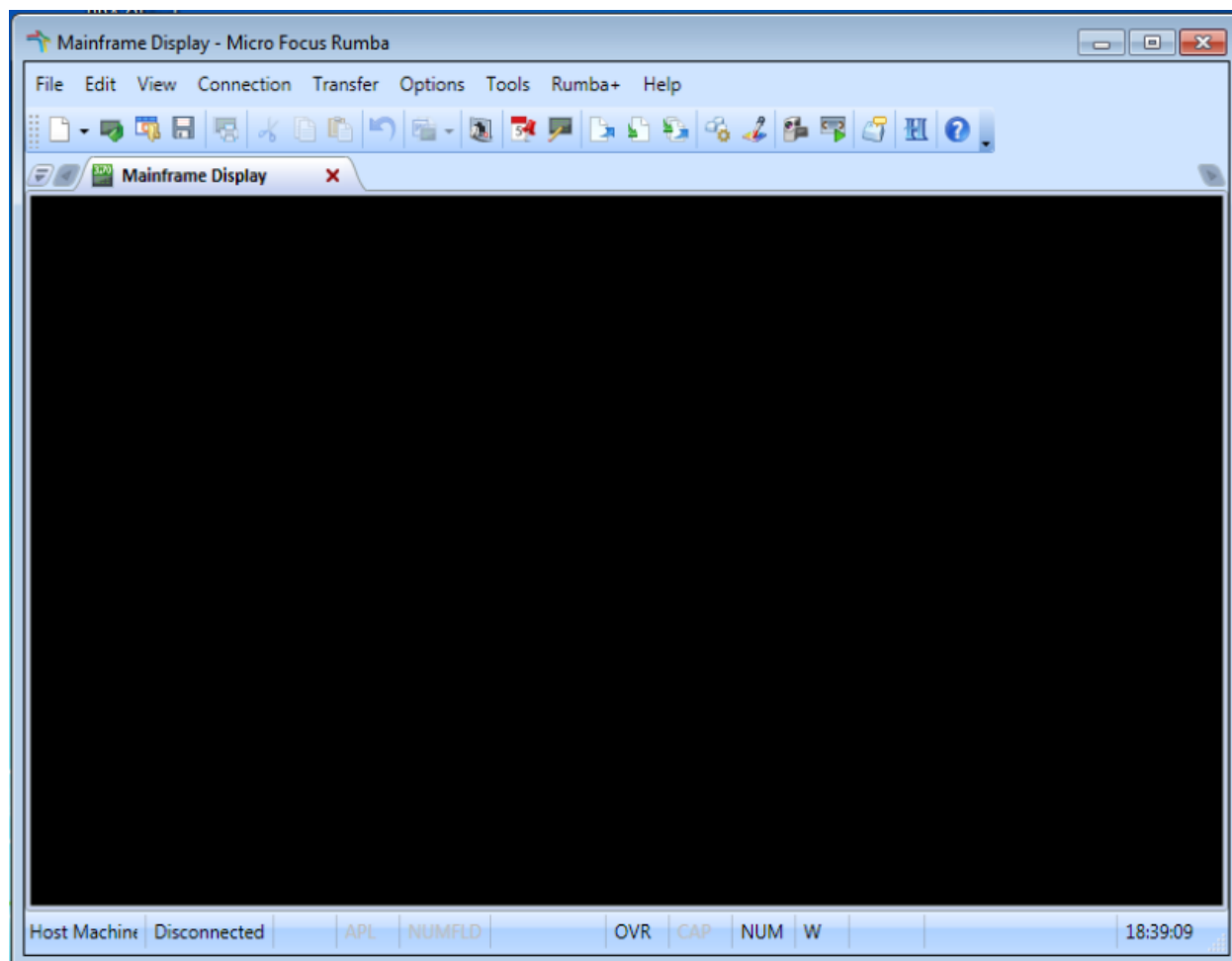
These are the recommended steps to setting up integration with Rumba with Blue Prism:

1. Launch the **Micro Focus Rumba Desktop** application from the Start Menu

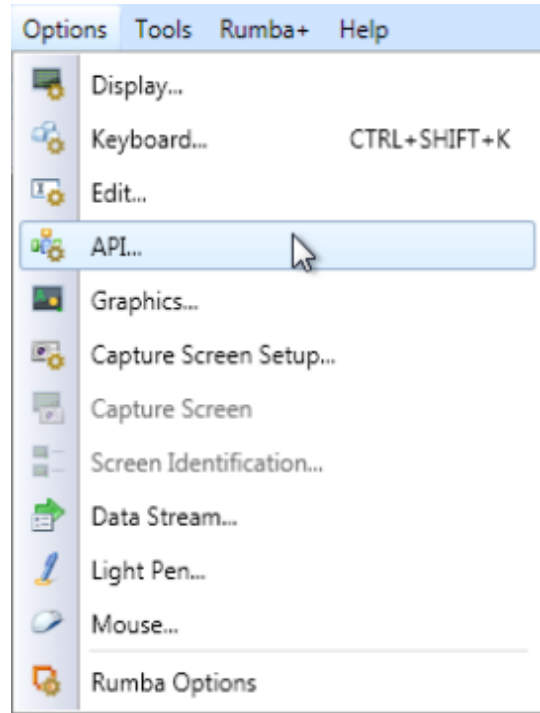


Uncheck the “**Run at startup**” option.

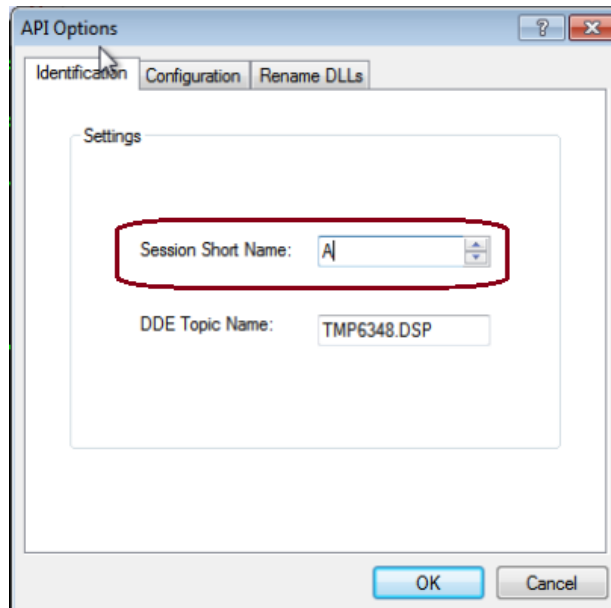
2. Open the appropriate ‘Display’ in a stand-alone Rumba instance (e.g. ‘Mainframe Display’)



3. Go to the **Options** → **API...** menu item

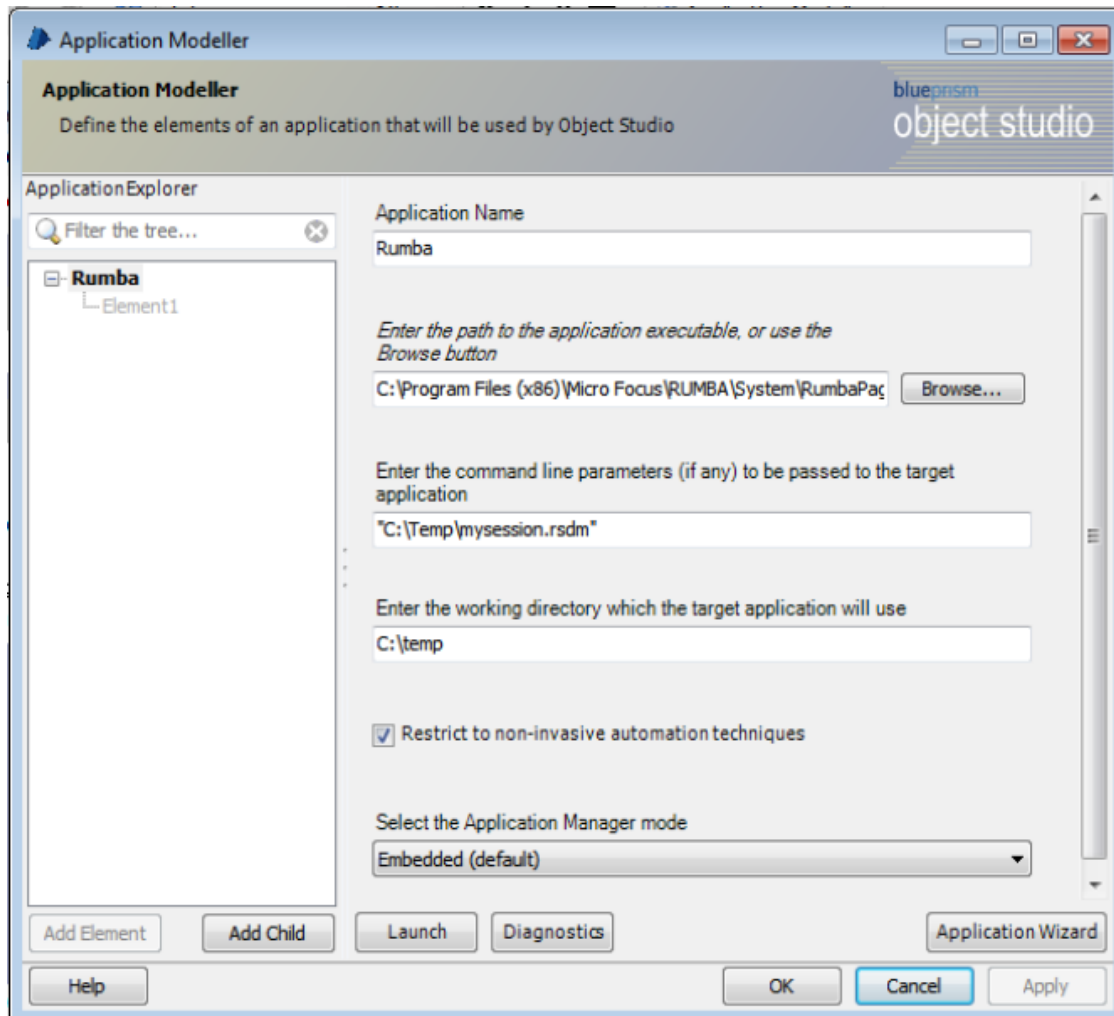


4. In the **Options** → **API** → **Identification** tab set the **Session Short Name** to be a letter such as "A", "B", or whatever you choose. This will be used later as the "**Session Identifier**".



5. In the **Options** → **API** → **Configuration** tab ensure that the following selections are checked:
  - Generate PS Update on all keystrokes
  - Classic HLLAPI data structure
6. Open the **Connection** menu item and choose **Configure...**

7. Set the option to **Auto Connect**, then click OK to confirm this setting.
8. Click **File → Save Session Profile As...** to save the current session profile to a file (e.g. to a .wda or .rsdm file)
9. In Blue Prism create a new Business Object. In the Application Modeller Wizard choose the **Windows Application** type.
10. Set the Object to launch the Rumba emulator from an executable file by browsing to the executable:
  - For early versions of Rumba this may be **Rumbawfs.exe**
  - From v9 of Rumba the executable will be **RumbaPage.exe**
11. For the command line parameters supply the path to the session file e.g. "/S mysession.wda" or "/S mysession.rsdm" or "%appdata%\Local\Micro Focus\Rumba\MFrame\mysession.rsdm"



**NOTE:** The screenshot above is an example. It is **not necessary** to specify "C:\Temp" as the working directory. The Working Directory does not always need to be specified unless Blue Prism cannot locate the Rumba files it needs, then specifying a Working Directory as the location of the Rumba system directory may help. It is more important that the **Application Manager mode** is set to correctly reflect the target application's "bitness" (i.e. 32-bit or 64-bit).



Test the Launch of the application to see whether the session loads properly:

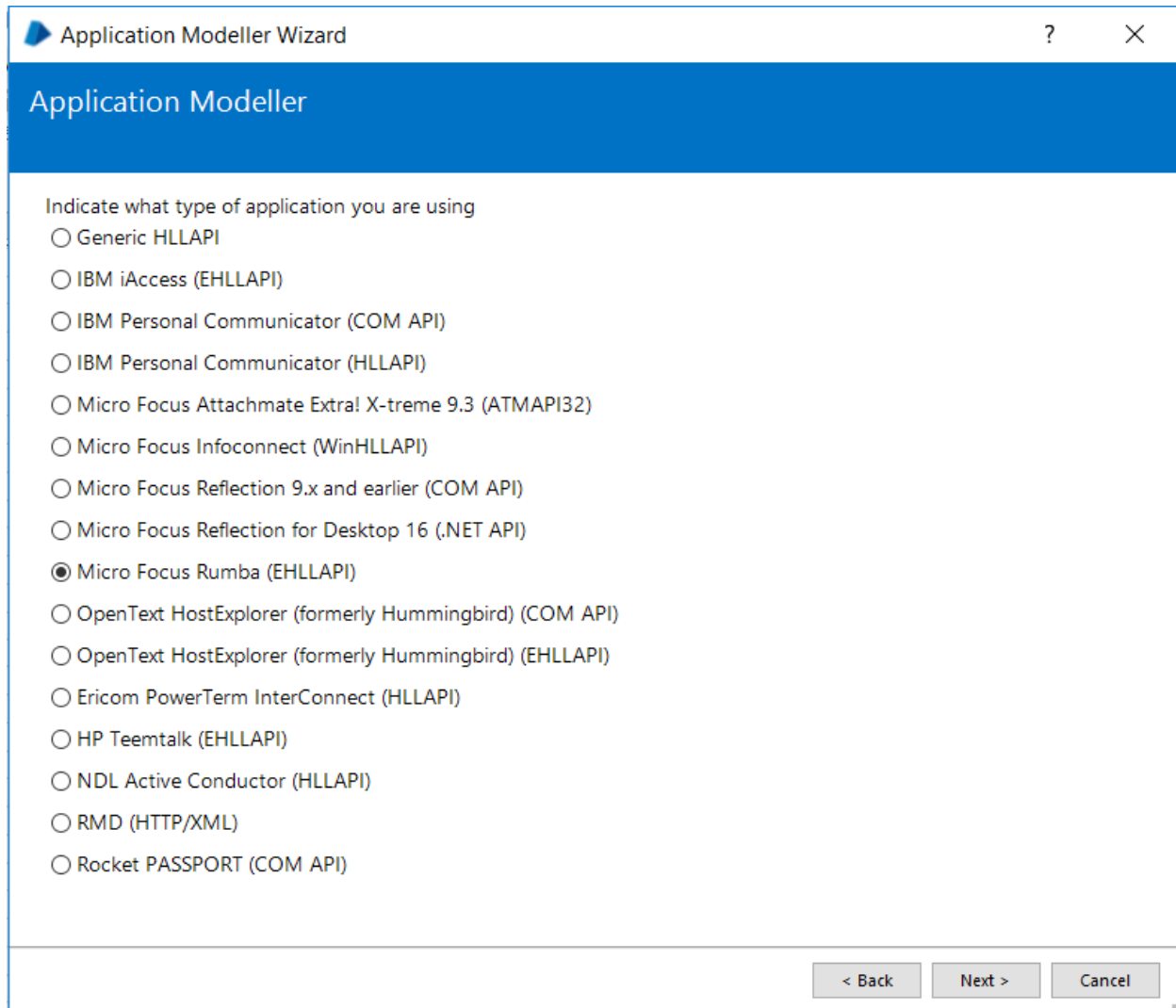
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TracePlayer - Micro Focus Rumba
File Edit View Connection Transfer Options Tools Rumba+ Help
TracePlayer
Centre:MAIN-^16;28Hchoose one (S,N,U,I,A)
login: u-^H-^2J-^1;27H -^2;27H1ST METROPOLITAN UNIVERS
ITY-^3;28HLEARNING CENTRE CATALOGUE-^4;41H-^5;41H-^6;36H MAIN MENU
Y > Choose Main, Media, Serials or Theses Catalogue
G > General Keyword Search
N > Name Search (People, Organizations, Conferences)
T > Title Search
S > Name and Title Search
D > Subject Search
O > Other Searches-^14;40H
H > History of searches done this session
V > VIEW your circulation record
A > DISCONNECT-^20;40H -^21;4HThe recommended WEB version of catalo
gue is at http://catalogue.shu.ac.uk-^22;41H-^23;41H-^1;60HLearning Centre:MAIN-
^19;22Hchoose one (Y,G,N,T,S,D,O,H,V,A) -^711->
-^H-^2J-^1;27H -^2;27H1ST METROPOLITAN UNIVERSITY-^3;2
8HLEARNING CENTRE CATALOGUE-^4;41H-^5;41H-^6;40H -^7;31H Other Searches Menu-^8;
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S > Subject Number (Dewey)
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U > URL
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**NOTE:** It is essential that at this point in the process there is a **valid mainframe session running**. The default RUMBA sample mainframe session is not a valid session, and so if an attempt is made to connect to this sample session the error “**Invalid presentation space**” will be shown.

- Once the session has been launched, **create a new Business Object** and in the Application Modeller Wizard choose the **Mainframe Application** type, and selecting “**Micro Focus Rumba (EHLAPI)**” from the list of emulators.



Application Modeller Wizard

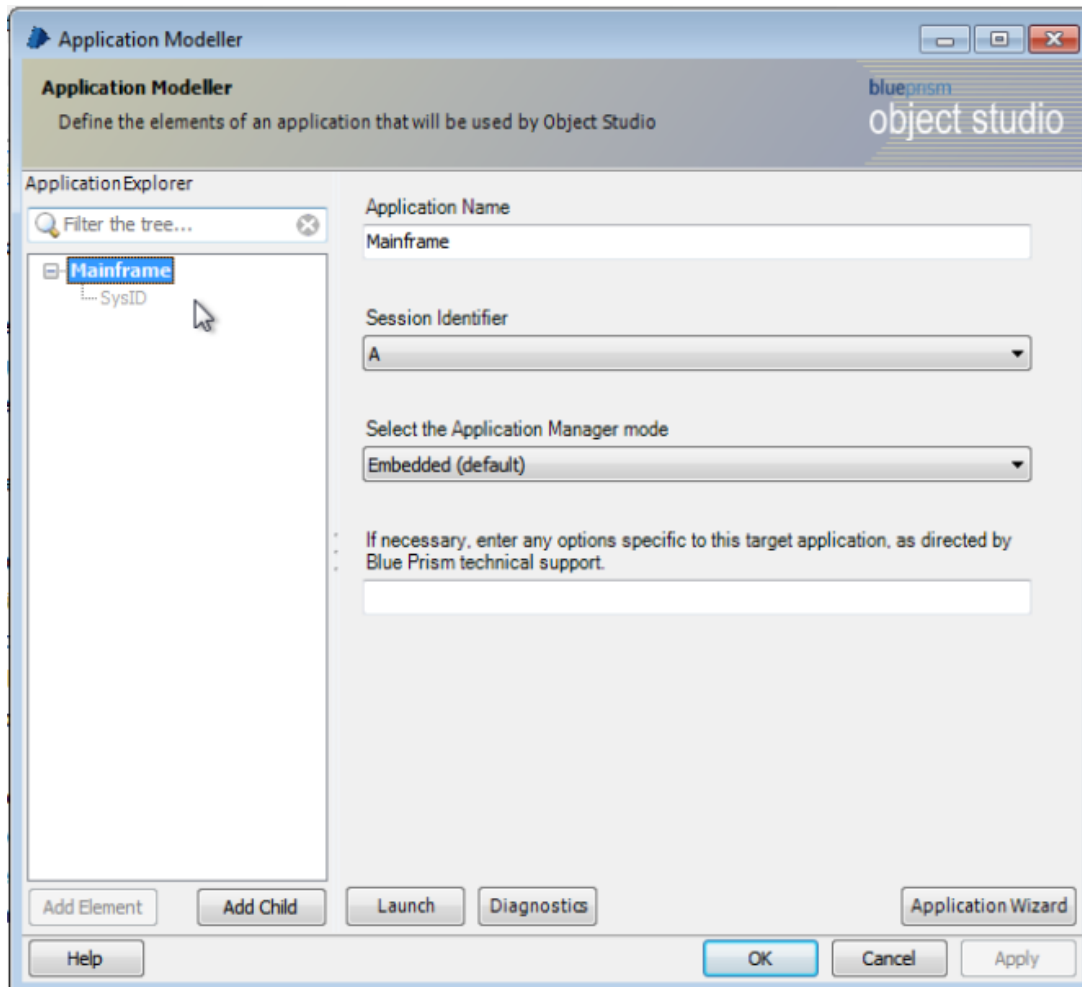
### Application Modeller

Indicate what type of application you are using

- ☐ Generic HLLAPI
- ☐ IBM iAccess (EHLLAPI)
- ☐ IBM Personal Communicator (COM API)
- ☐ IBM Personal Communicator (HLLAPI)
- ☐ Micro Focus Attachmate Extra! X-treme 9.3 (ATMAPI32)
- ☐ Micro Focus Infoconnect (WinHLLAPI)
- ☐ Micro Focus Reflection 9.x and earlier (COM API)
- ☐ Micro Focus Reflection for Desktop 16 (.NET API)
- ☒ Micro Focus Rumba (EHLLAPI)
- ☐ OpenText HostExplorer (formerly Hummingbird) (COM API)
- ☐ OpenText HostExplorer (formerly Hummingbird) (EHLLAPI)
- ☐ Ericom PowerTerm InterConnect (HLLAPI)
- ☐ HP Teemtalk (EHLLAPI)
- ☐ NDL Active Conductor (HLLAPI)
- ☐ RMD (HTTP/XML)
- ☐ Rocket PASSPORT (COM API)

< Back   Next >   Cancel

13. Set the mainframe object to attach to the **running session**, using the Rumba emulator session and specifying the **session identifier** you set within the Rumba application's API settings (see 4 where is was called the *Session Short Name*).



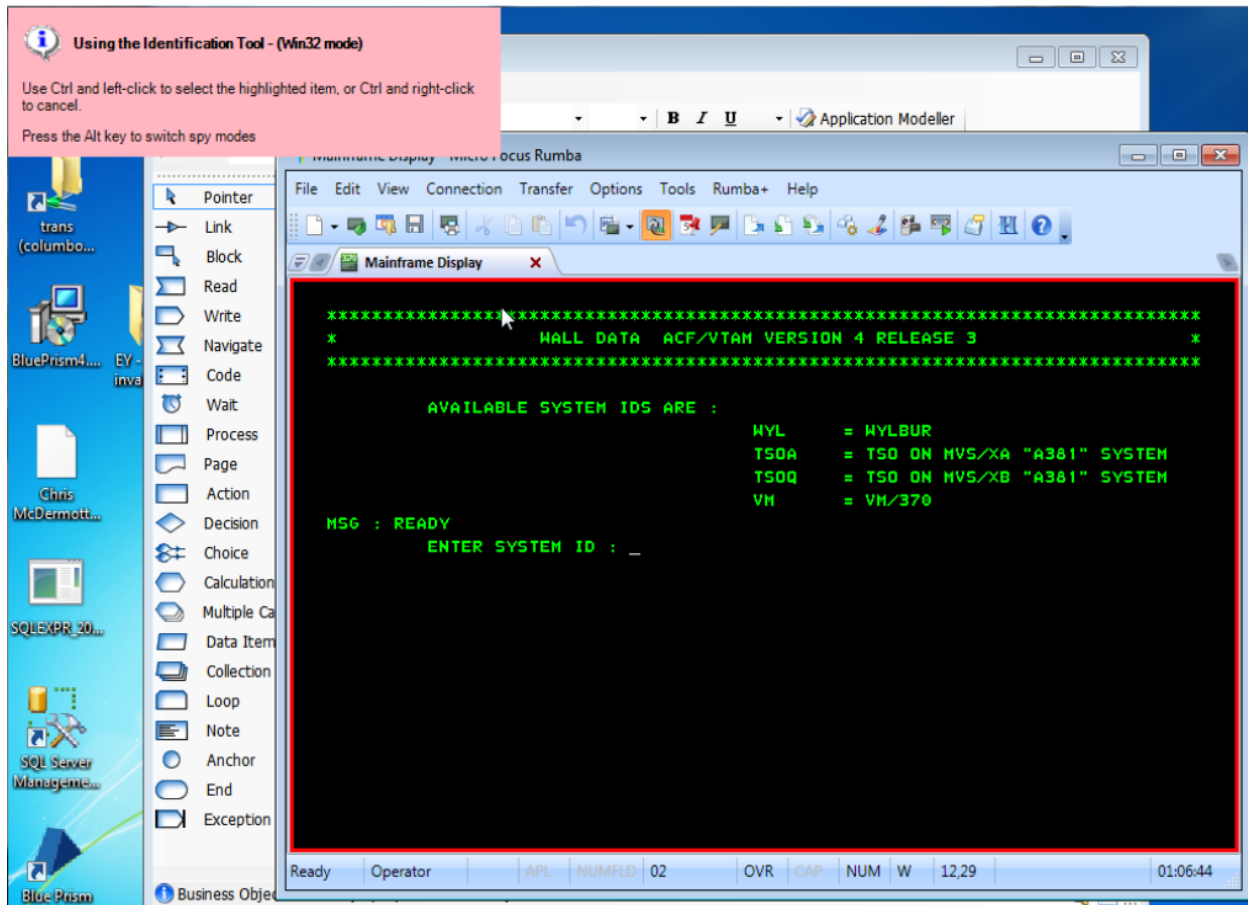
14. Click the **Launch** button in the second Blue Prism object's Application Modeller in order to connect to the running Rumba session.

### Enabling the Spy Grid

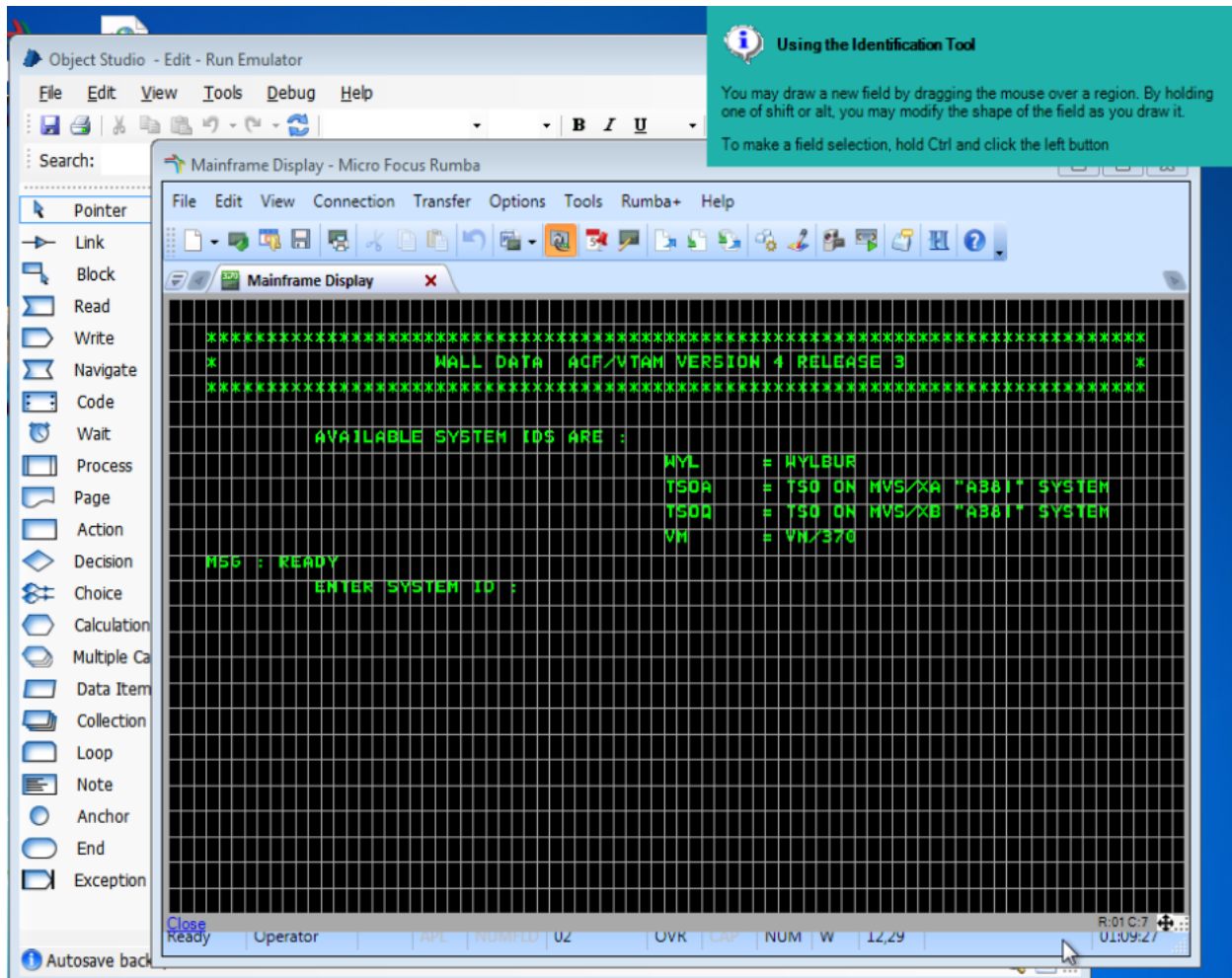
Once you have this working, in order to get the Grid working correctly, you may need to ensure that the option '**Classic HLLAPI data structure**' is enabled within Rumba's API options.

To see the Spy grid you need to be working within the Rumba **Mainframe type object** that you created.

1. If the Business Object Application Manager screen shows a **Launch** button, then click it to provide a connection to the currently running Rumba mainframe session.
2. Select a new Element and click on the **Identify** button. This will put the application into a Win32 Spy Mode



3. Select the internal mainframe window and press CTRL+left mouse click to spy this element.
4. A grid will appear showing the dimensions of the screen, and now the correct area of the screen can be selected to define a region for interacting with.



**NOTE:** This spy grid **can be re-sized** to fit the dimensions of your terminal screen.

By default both Rumba and Blue Prism will expect a screen of 80 columns and 24 rows (24x80). If your screen is a different size then simply use the grab handles at the edges of the spy grid to change the layout.

## Older versions of RUMBA

The advice given above relates to the later versions of Rumba, but if you are running previous versions (e.g. Wall Data's RUMBA 2000) then the following advice is more applicable to that version:-

- Open a mainframe Session in a stand-alone Rumba instance
- Set API option: Set the session Short Name to "A", "B" or whatever you choose.
- Tick API options to Convert OEM, Generate PS, Classic Hllapi
- Use Save As to save session as a file: eg. PAS.WDA/WDM
- Create a windows business object which launches the Rumba emulator executable as a Win32 application, supplying the session file as an input parameter. eg. executable "C:\Program Files\WallData\AS400\Rumbawsf.exe" with command line parameters "/S PAS.WDA"

Once launched, create another mainframe business object to attach to the running session, using the Rumba emulator session and specifying the session identifier you set when in the API option of the Rumba emulator.

## Troubleshooting Errors

### No Spy Grid is displayed

After setting up the two Business Objects to work with the emulator and the mainframe session you attempt to spy the elements within the session but cannot get the expected grid to appear which would allow you to select a specific area of the screen.

In order to display the spying grid Blue Prism needs to initially use the Win32 spy mode within the Mainframe type Business Object. The mainframe screen should be selected (red rectangle). Once selected the expected grid will appear with instructions about making selections.

See [Enabling the Spy Grid](#).

### INVALID PRESENTATION SPACE errors

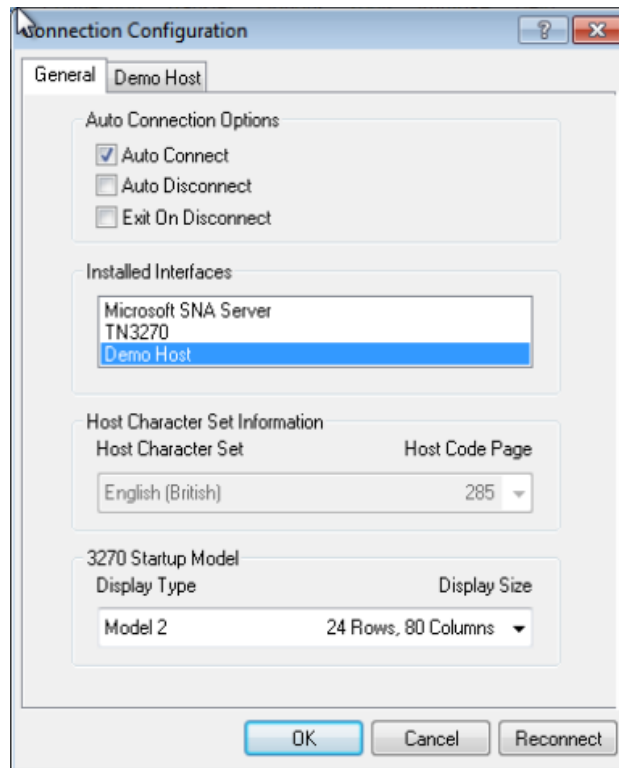
The Rumba emulator can be one of the more complicated emulators to integrate with. A typical error when trying to attach to this mainframe emulator is:

**"Invalid presentation space"**

There can be a number of situation in which this error can be presented, and the other information in the details of the error message can lead to the identification of the cause in many cases.

The presentation space is the emulator **session** connected to a mainframe application. The emulator can be configured to have multiple session, and each one is identified by a unique **Session Short Name** (which Blue Prism calls a Session Identifier).

If the emulator is not running, or it is not connected to a valid session, then the "presentation space" is blank, and therefore invalid. This can usually be resolved by using the emulator's **Connect** function (in the case of Rumba, this is in the **Connection** menu). This can be set to **automatically connect** when a Session Profile loads:



Once connected, the session can be saved to file, and then used as a parameter to be called by Blue Prism when launching and attaching to a mainframe type of Business Object. If the session file cannot be found then Blue Prism will also register the 'Invalid presentation space' error.

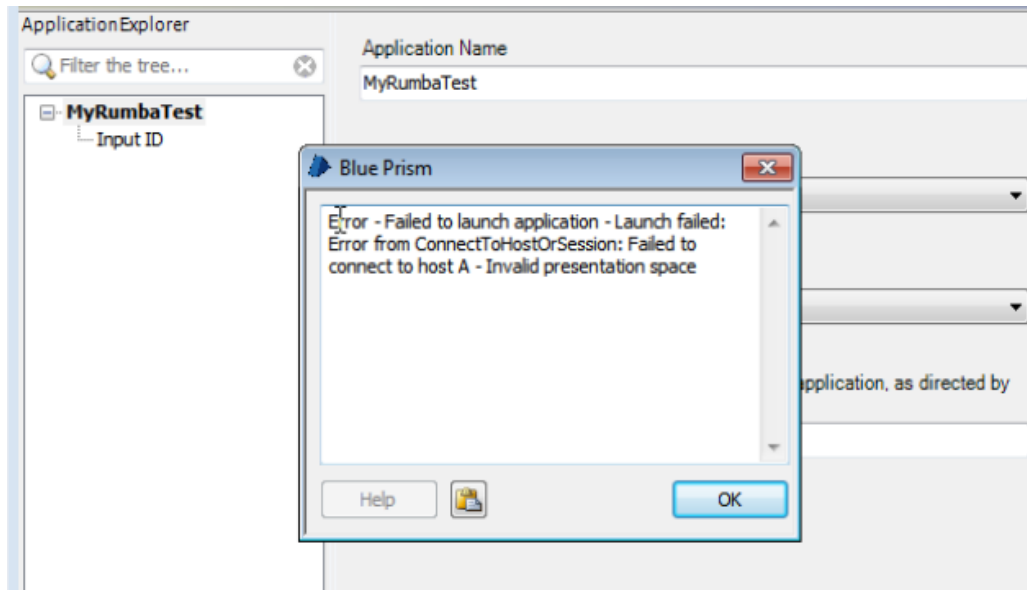
### 'Launch Failed: Invalid Presentation Space' when spying new elements

When attempting to spy new elements within a mainframe session you may get this error message if the application has been closed. It cannot be re-launched from the Mainframe type Business Object.

Instead, you must go back to launch the application from the Win32 Business Object, leave this open, then launch the Mainframe type Business Object and Launch the application there too (the Launch is actually just doing an Attach at this stage). Then you will be able to spy elements again.

"Failed to connect to host [x]: Invalid presentation space" when connecting to a mainframe session





The “Host” needs to be a valid mainframe session. The error occurs with the “Failed to connect to host [x]” message when the mainframe session is not valid. This can happen if you are using a test session that has not been set up to connect to an actual running mainframe.

The WinHLLAPI interface is being called at this point, and is therefore reliant upon finding the WHLLAPI.DLL file. One way to ensure that it can be found by Blue Prism is to copy the Blue Prism software into the installation directory where the WHLLAPI.DLL file is located. More suggestions can be found in the section [Helping Blue Prism find the Rumba API files](#).

### Could not connect Host or Session: Invalid Presentation Space

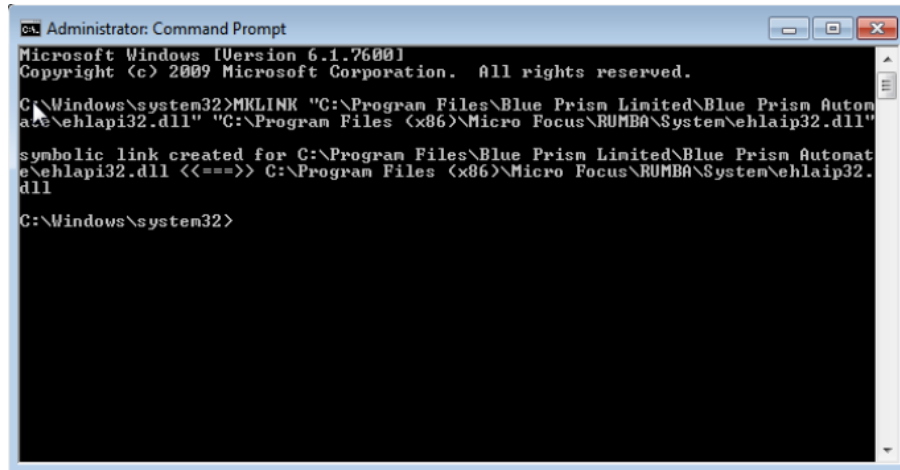
This is usually caused by the terminal emulator not being accessible, either because it has been disconnected or it is not a running process (i.e. in the case of RUMBA this is the ‘RumbaPage.exe’ process).

Check to see that the Rumba emulator is running and working.

### Helping Blue Prism find the Rumba API files

Depending on the environment and/or the version of Rumba you are working with, you may additionally need to try one or more of the options below to get this to work. We have listed the solutions in order according to the amount of change required:

- When setting up the Windows (Win32) Business Object to launch the emulator, set the **Working Directory** as the location of the EHLAPI32.DLL and WHLLAPI.DLL files for Rumba.
- Or, put the path to the folder containing the Rumba EHLAPI32.DLL and WHLLAPI.DLL files in the local machine’s system **PATH environment variable**.
- Or, use MKLINK command to create a link to the required DLL files in the Blue Prism directory
  - E.g. mklink “C:\Program Files\Blue Prism Limited\Blue prism Automate\ehlap32.dll” “C:\Program Files (x86)\Micro Focus\RUMBA\System\ehlap32.dll”
  - This would create a link between the “ehlap32.dll” file stored in the Rumba directory and represent it in the Blue Prism installation directory. The same would need to be done for the “WHLLAPI.DLL” file as well.



```

Administrator: Command Prompt
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Windows\system32>MKLINK "C:\Program Files\Blue Prism Limited\Blue Prism Automate\ehlap32.dll" "C:\Program Files (x86)\Micro Focus\RUMBA\System\ehlaip32.dll"
symbolic link created for C:\Program Files\Blue Prism Limited\Blue Prism Automate\ehlap32.dll <==> C:\Program Files (x86)\Micro Focus\RUMBA\System\ehlaip32.dll

C:\Windows\system32>
  
```

- Or – **the most frequently successful solution** is to **copy the contents of the Blue Prism installation folder** into the **Rumba SYSTEM** folder.
  - This folder must contain the two essential DLL files - EHLAPI32.DLL and WHLLAPI.DLL.
  - **Blue Prism (Automate.exe)** must be run from the Rumba System directory.

Another option is to use the “**Generic HLLAPI**” mainframe type instead of the Rumba specific type. Generic HLLAPI requires a few additional parameters:-

- a) The file path to the WHLLAPI and EHLAPI32 DLL files
- b) The interface name to connect to

The list of interface names that could be used by mainframe emulators is listed below:-

- “hllapi”
- “WinHLLAPI”