

# Windows CE BSP Cloning Tips

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## **1 Introduction**

Every new Windows CE project requires a BSP to provide the platform on which the OS will run. Platform Builder 5.0 (PB5) provides different tools and wizards to make the initial setup of a new project easier, but one should be aware of issues that might appear during the course of using these tools. Best practices are usually good to follow. Let's take a look at the BSP Wizard.

When working with BSP's it is a good general rule of practice to clone the BSP of interest and develop with the cloned BSP. This keeps the original BSP in tact for reference and future cloning. It also gives an independent vehicle for customization, if in the course of development, it becomes either necessary to customize the BSP or if it makes sense to augment the BSP with custom drivers, applications, etc. An analogy can be drawn between creating a new class from a base class. Consider the original BSP to be the base class.

Although the wizard makes creating a new BSP simple, there are hidden issues that can arise if you miss a step or make a wrong turn. The next session discusses these gotchas, issues, and solutions to work around the trouble spots.

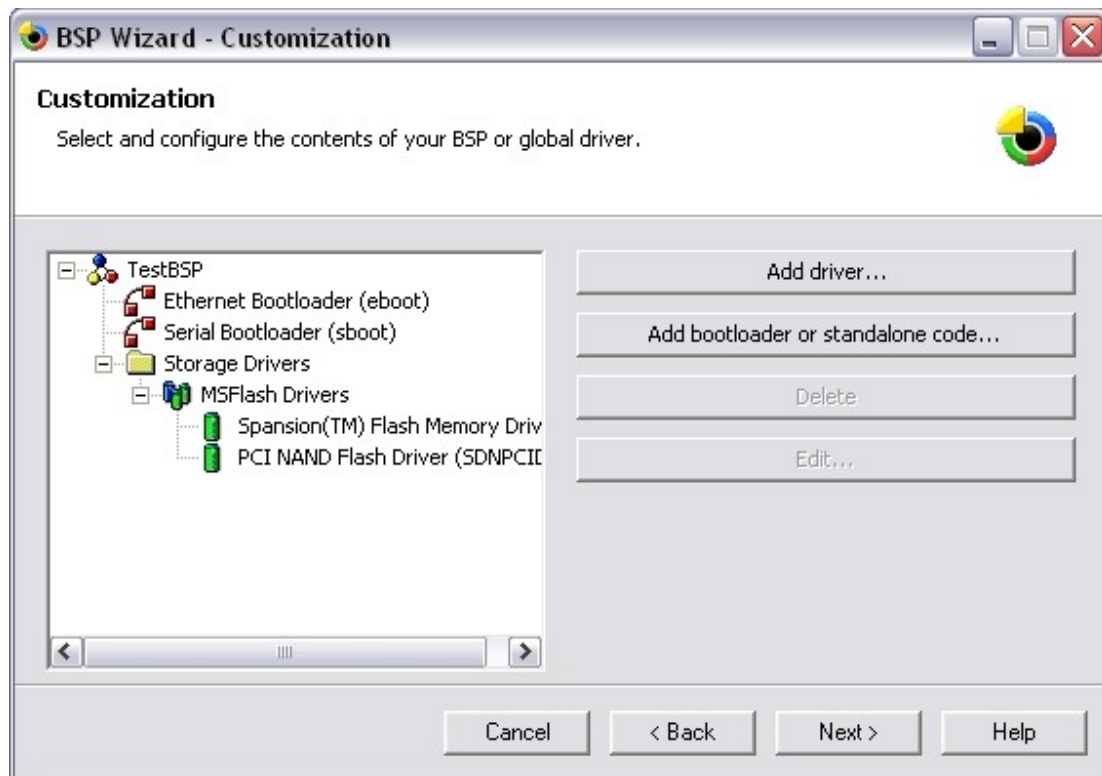
## **2 Cloning Tips and Issues**

### ***2.1 Folders and File Explorer***

The PB 5 wizards seem to have some quirks when it comes to creating new folders for new BSP's and platforms. Sometimes they create the folders just fine and complete the required task, but other times they seem to have a creative mind of their own and operations appear to be incomplete even though no errors were reported. It, therefore, is a good practice to create the root folders of new development trees when cloning BSP's and creating platforms. The obvious way to do this, of course, is to use Windows Explorer, but this generates yet another quirk. If the root folder which is the desired starting point for a clone of a BSP is created in Windows Explorer and Windows Explorer is left open during the cloning process, the cloning wizard will report a file access error when it goes to create the directory structure and files for the cloned BSP. Make sure that you close Windows Explorer after creating any root folders before running the BSP cloning wizard.

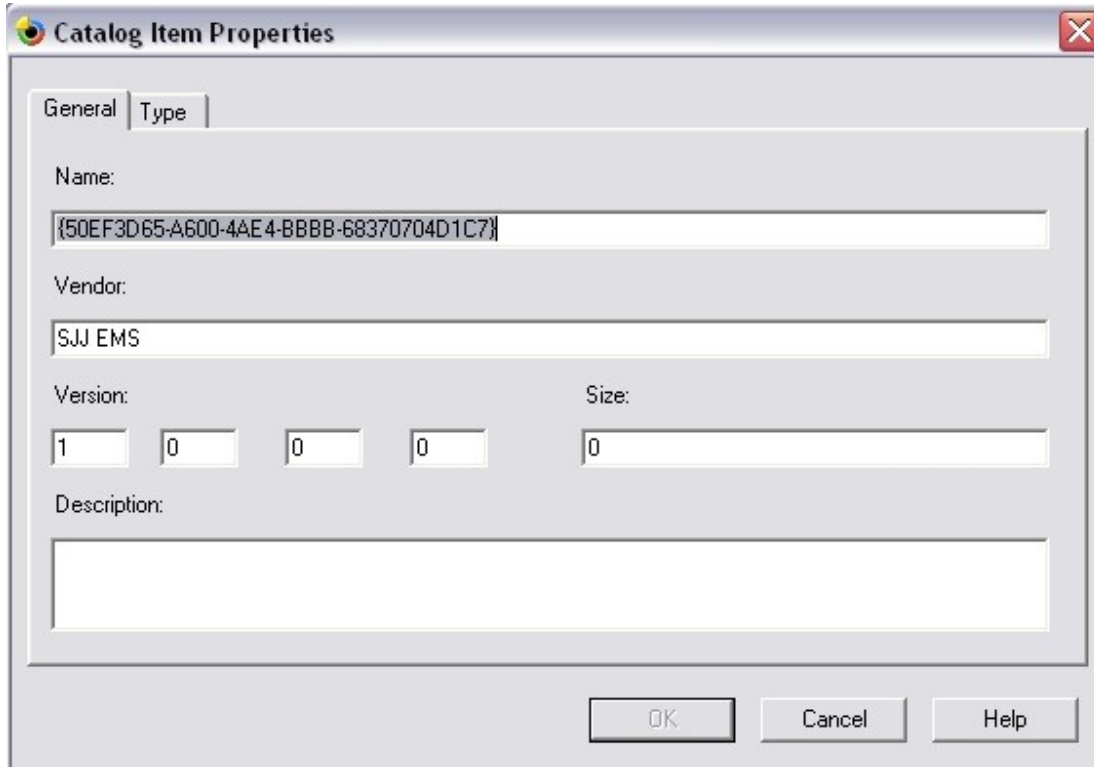
## **2.2 The cloning process and cancelled operations**

Care should be taken when going through the cloning process. The wizard is neither clean nor forgiving. One area that can cause problems is the last step of the cloning process. The wizard presents you with two option buttons for customization of the cloned BSP.



It is here that you can add custom boot loader code or additional drivers to the cloned BSP if you have them available. One should only click on this option if there is customization to do.

Often I am curious and travel all these links just to see what options are available and then *cancel* them to leave things unchanged. Just click the cancel button; no harm no foul, right? Not so with the cloning wizard. For instance, if you click on the add boot loader option, the first dialog that is presented is one to identify the new component and the ID fields are prefilled in with a new GUID:



The screenshot shows a dialog box titled "Catalog Item Properties" with a close button (X) in the top right corner. It has two tabs: "General" (selected) and "Type".

Fields in the "General" tab:

- Name: {50EF3D65-A600-4AE4-BBBB-68370704D1C7}
- Vendor: SJJ EMS
- Version: 1 0 0 0
- Size: 0
- Description: (empty text area)

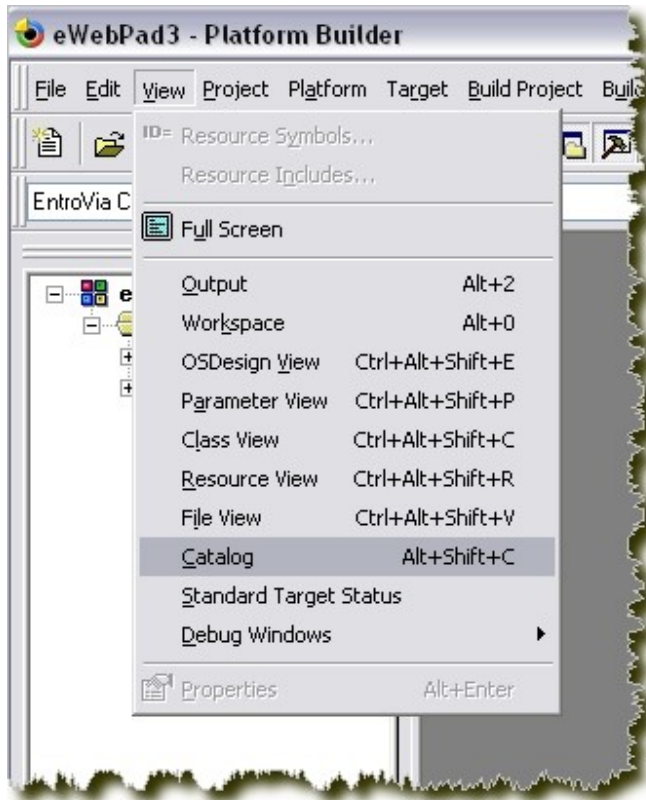
Buttons at the bottom: OK, Cancel, Help.

When you cancel out of that screen, the wizard doesn't just return you to where you were. It adds a new component at the root with the GUID as the ID and no other information. In 2.4 *How to Find and Correct Importation Errors*, we will examine how this creates an error in the CEC file, how to detect the error, and how to deal with it. For now, let's continue with the discussion of the cloning process.

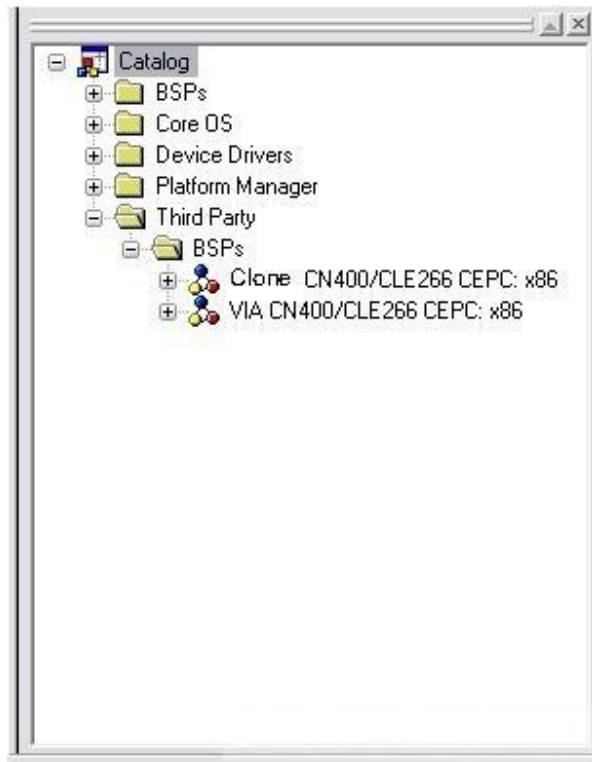
Then when you finish the cloning, the cloned BSP fails to import into the catalog, because the catalog manager cannot resolve the new component that was added despite your cancel operation (more on importing to the catalog, later). Therefore, be very careful about what you click on and watch carefully to see if you are getting anything you don't really want. The best policy is to click on only those things you really want. If you are not sure, you can wander the options, and then clean everything out, after you know what you want, and start again fresh.

### **2.3 The Cloning Process and the Catalog**

When cloning a BSP, the final operation is to import the new, cloned BSP into the catalog. It should appear in the "Third Party\BSPs" location in the catalog tree. If the Catalog window is not showing in Platform Builder, from the dropdown select <View><Catalog>:



The following shows the Platform Builder Catalog window with a Via BSP that has been installed and a clone that has been created from the original Via BSP:



If there are any errors during the import operation when using the cloning wizard, no error dialogs will be presented. The only indication you will have that an error occurred is that the new BSP will not show up in the catalog tree. If this happens, open the catalog manager and check the components and verify that the new, cloned BSP's CEC file does not show up in the list. If at the end of the cloning process the new CEC file was created but not imported into the catalog, use the catalog manager and try to import the new CEC file manually. This should provoke one or more error dialogs responsible for the CEC file failing to port, which were suppressed by the cloning wizard. Identify and fix the errors that were indicated by the dialogs. Each time that corrections are made, clean the clone directory tree and rerun the cloning process using, as it were, a blank slate. This may require multiple iterations, so don't despair if the first round does not solve all of the problems.

### **2.4 How to Find and Correct Importation Errors**

Let's examine the steps to take if the cloning of a BSP does not result in a successful importation into the catalog. Obviously, the first indication of this is that after completing the cloning process with the BSP Wizard, the Wizard exits, the catalog appears to refresh, but the new, cloned BSP does not show up in the Catalog under "\Third Party\BSPs"

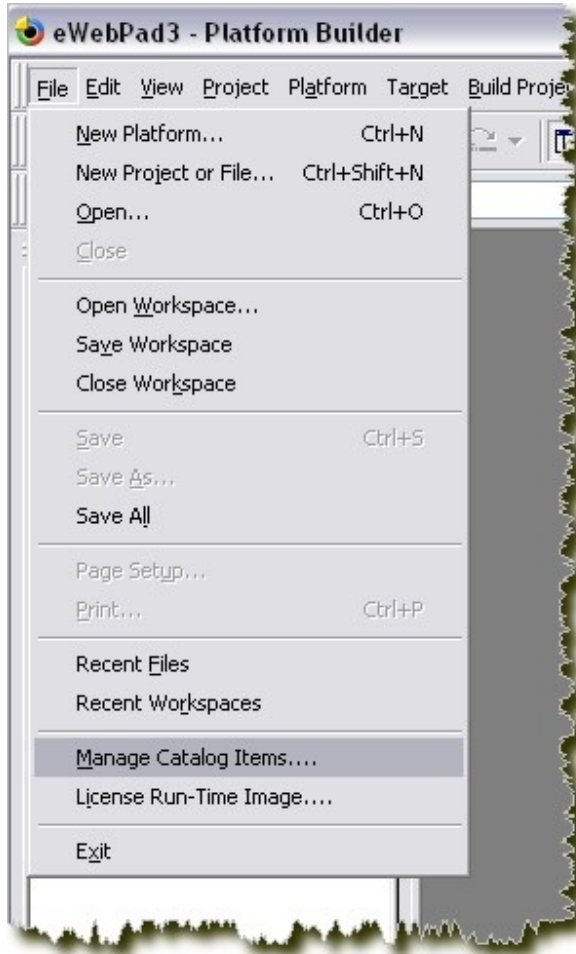
The first thing to verify is that the CEC file for the new BSP was created. Go to the folder that you told the BSP Wizard to use to store the new CEC file and verify that it was created. If it was not, repeat the cloning process and double-check each step. If the CEC file is present, then the Catalog should be checked and a manual import of the BSP attempted.



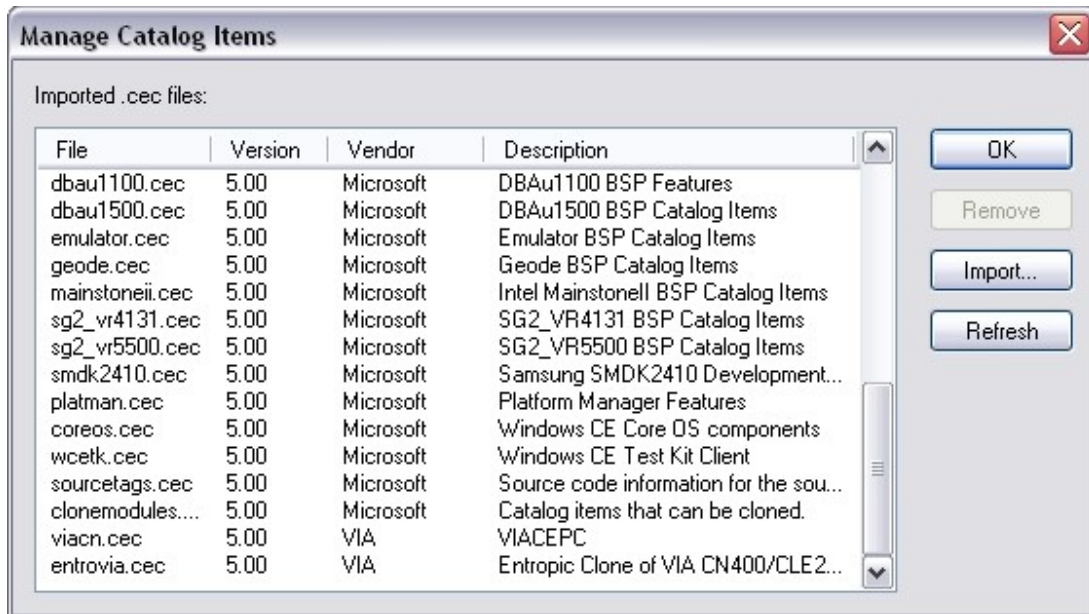
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To check the catalog, from the Platform Builder dropdown select *<File><Manage Catalog Items>* as shown:



The following “Manage Catalog Items” dialog will be displayed:



Scroll the window and verify that the CEC file does not appear in the list. Now try to import it manually. In the “Manage Catalog Items” dialog, click the “import...” button. Navigate to the cloned BSP CEC file and open it. If you had browsed the selections for importing into the cloned BSP while running the BSP Wizard, you would see the following error:

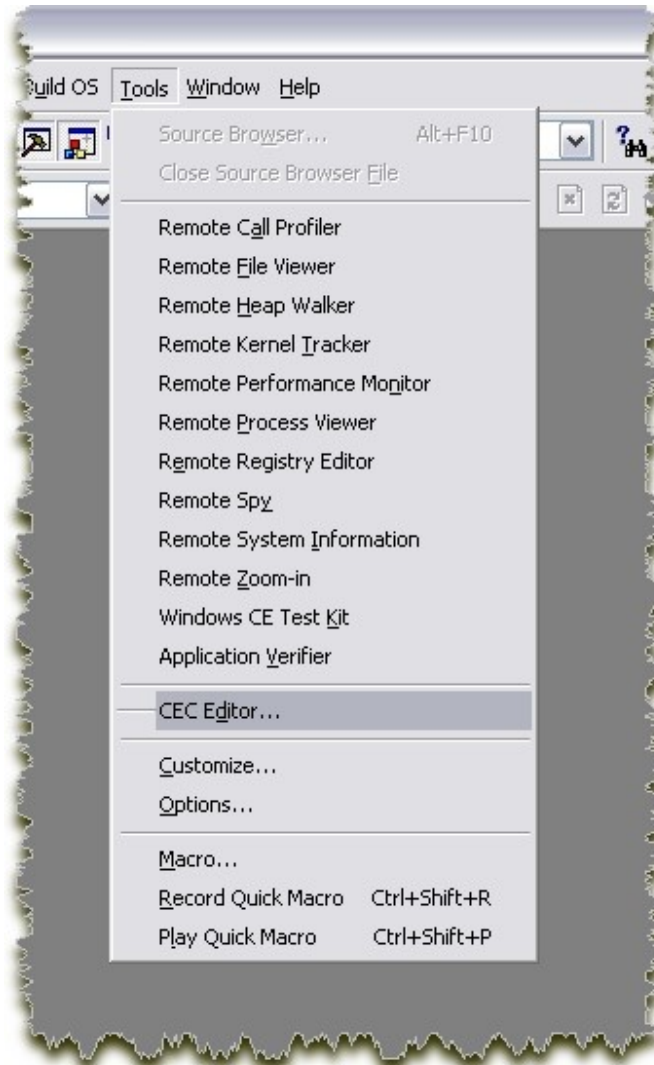


The GUID that is being displayed was added when you browsed the selection options and “canceled”. The error dialog that you receive when you try a manual import was suppressed when running inside the BSP Wizard. Clearly, this is the error that kept the cloned BSP from being imported into the Catalog.

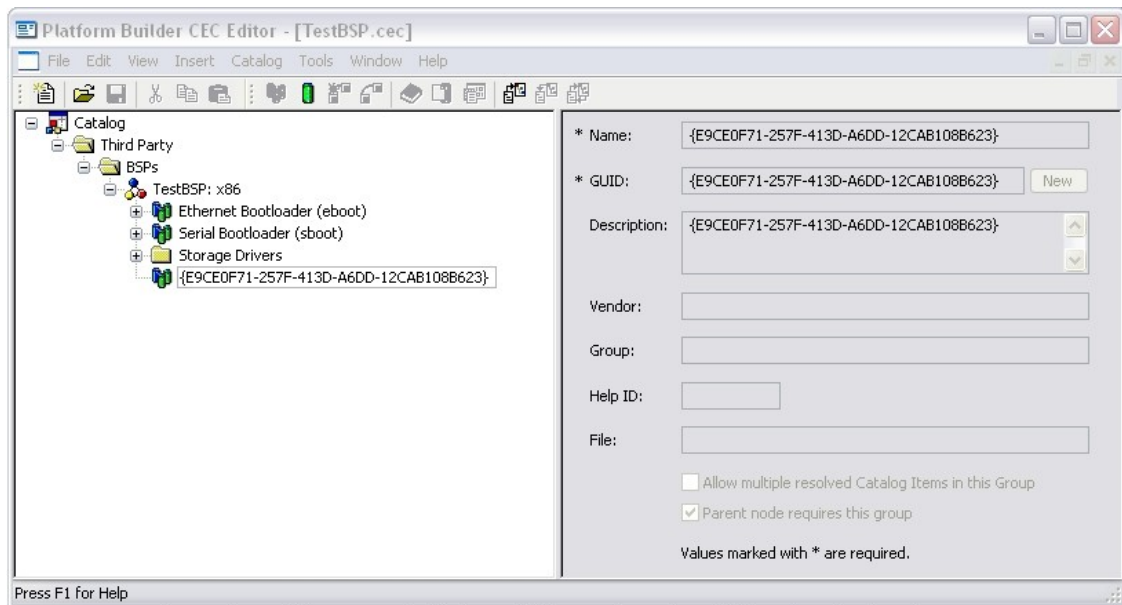
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To inspect the error, we need to view the CEC file with the CEC Editor. Close the “Manage Catalog Items” dialog and open the CEC Editor. From the Platform Builder dropdown select <Tools><CEC Editor...>:



From the dropdown in the CEC Editor select *<File><Open>* and open the cloned BSP CEC file. Expand the tree and you will see something like this:



Notice the selected object that has a GUID as an ID and the information pane only has the GUID as name and description and nothing else? This is what the browsing and cancel operation in the BSP Wizard created. It is incomplete, so the importer had no clue what to do with it. At this point you could delete this object, but the safest thing would be to delete the CEC file and run the BSP Wizard, again, avoiding any browse and cancel operations.

### 2.5 Conclusion

Although the PB5 wizards provide the means to easily setup your project, care should be taken when working with these wizards. Working with the wizards can be a lot like getting 3 wishes from a genie. You must be very careful how you formulate those wishes, or you may not get what you intend. After you have used PB5 for a little while, the best overall solution is to plan the project ahead of time so as to avoid many of these pitfalls.