WORKING WITH CLEARCASE IN HDL DESIGNER

Revision 1 (09/15/2005)

1. Introduction

This Application Note explains how to work with ClearCase from within HDL Designer™. It covers two main issues: How to set up your library mapping in HDL Designer, and how to revert to older versions of your design. It assumes that you have a working knowledge of version management principles, and also that your ClearCase environment (outside of HDL Designer) is properly set up. This includes installation of the ClearCase server and clients, as well as creation and configuration of a VOB (Versioned Object Base - the repository).

In addition, this app note uses examples from Windows platforms. The same principles apply to UNIX and Linux platforms, but the actual user interfaces may be slightly different.

For general information about version management, and why it is beneficial, both to a single user and to members of a design team, please refer to the application note entitled “Version Management and its application in the HDL Designer Series environment”.

Note that when working with ClearCase, the information that you see in the HDL Designer Explorer is actually a view directly into the repository (the ClearCase VOB). This is different from some of the other version management systems that HDL Designer interfaces with. For example, with RCS and CVS, the versioned data is stored in a repository, and you maintain a local copy of this data in your local workspace. With systems like these, the data you see in HDS is the data in your local workspace, not the data in the repository. In these cases for example, if you delete data in HDS, you are only deleting your local copy. The versions that have been checked in remain untouched in the repository. However, with ClearCase, since the data you see in HDS is actually the data in the repository, if you delete an object, that object is actually deleted from the repository.

2. Library Mapping

Since HDL Designer requires that all of your design data must reside in a library, you need to set up library mappings in HDS that point into your ClearCase repository. This involves three steps:

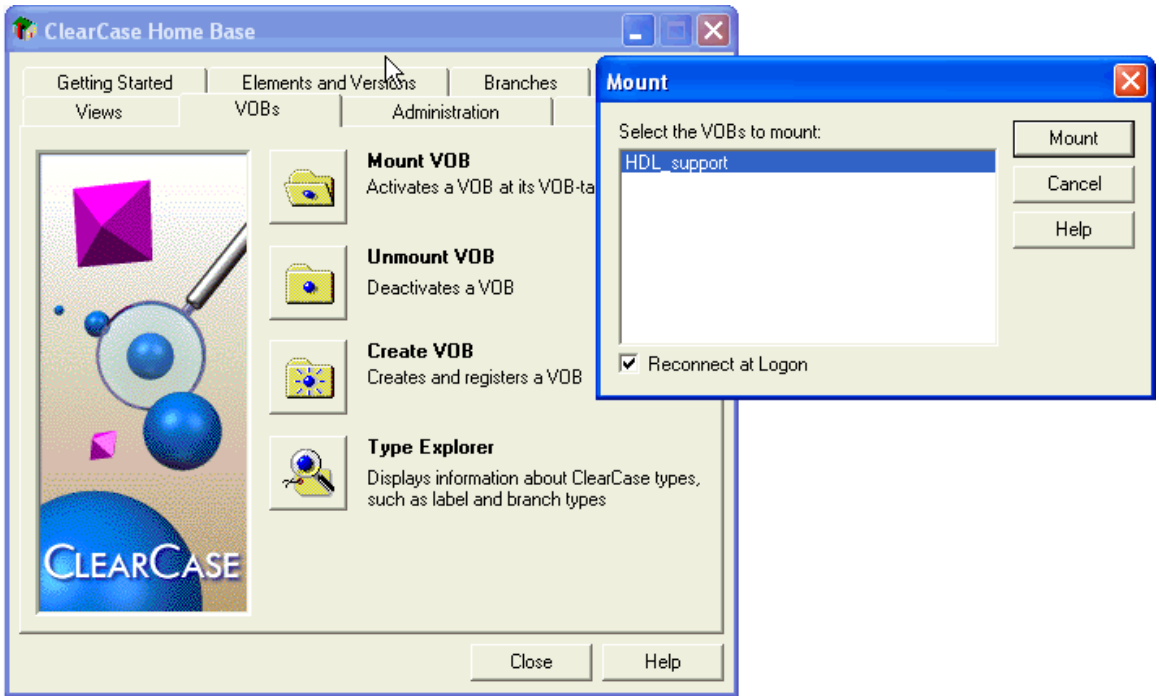
1. Mounting the VOB
2. Creating a view into the VOB
3. Creating a library mapping that uses the view location (so that HDS can see into the VOB)

The following steps explain how to do this:

Mounting the VOB

When your ClearCase administrator sets up your ClearCase environment, one of these setup tasks is to create a VOB. The actual VOB location will be somewhere on your network. However, as a user you do not need to know its exact location. Instead, you need to mount the VOB on your workstation, and then create a view in ClearCase that will look into the VOB.

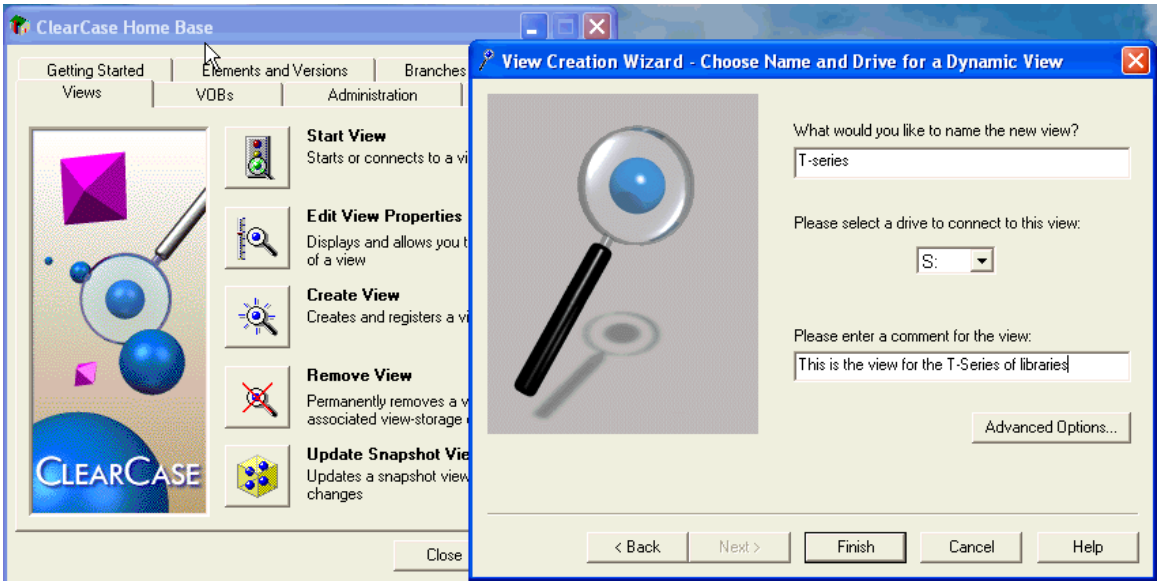
For example, suppose your ClearCase administrator creates a VOB called HDL_support. To mount this VOB, you can invoke the ClearCase Home Base utility, select the VOBs tab, select Mount VOB, and then choose HDL_support from the list of available VOBs. For example:



Creating a View Into the VOB

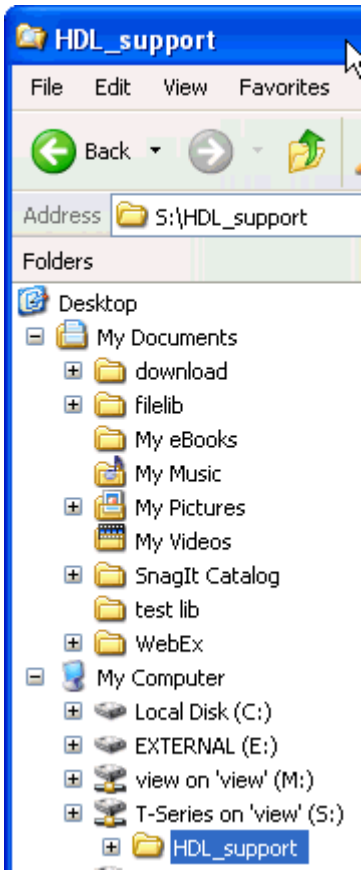
In ClearCase Home Base, select the View tab, select Create View, and then follow the View Creation Wizard. The wizard gives you the option of creating either a snapshot view or a dynamic view. Normally you will create a dynamic view, so that you will see the latest data in the repository. However, HDS also supports Snapshot views if you desire.

When creating a snapshot view, the wizard prompts you for the location to store the snapshot data on your system. However, when creating a dynamic view, the wizard asks you to give the view a name, and to specify a drive letter to connect to the view. For example:



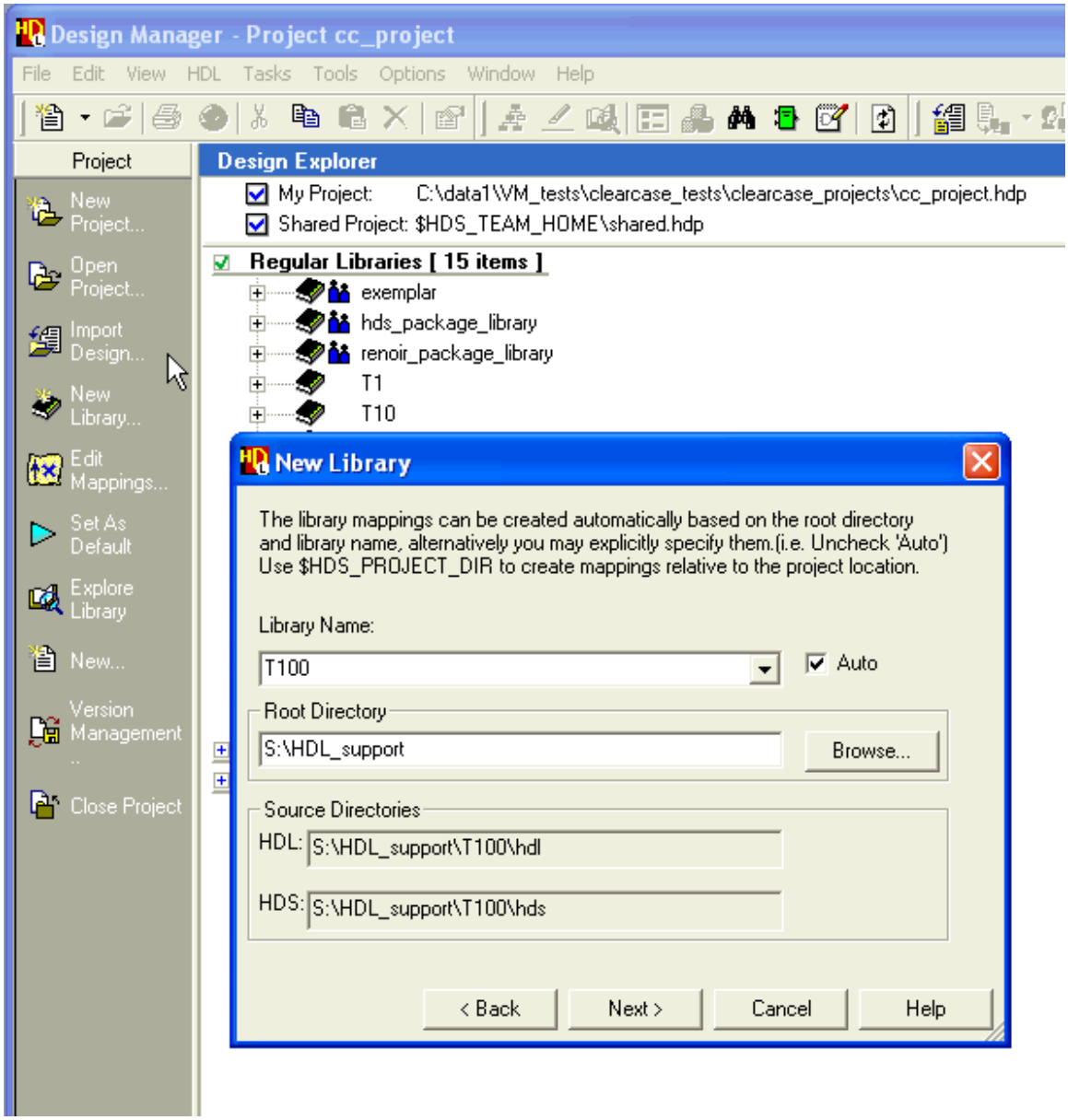
You will use this drive letter when mapping your design library in HDS.

After creating the view, you can see the view in a Windows Explorer. For example:



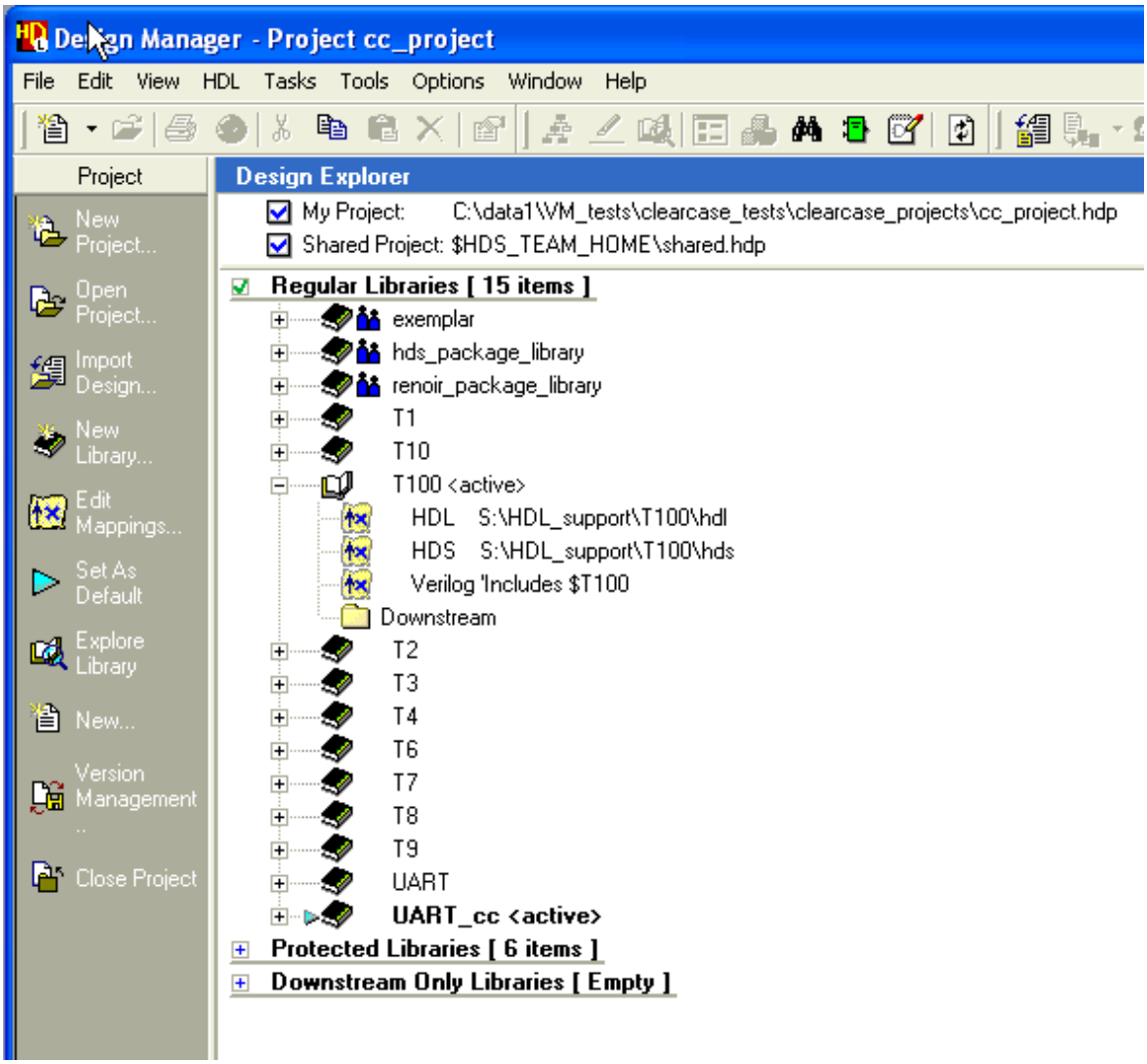
Creating the Library Mapping

In HDL Designer, enter the Project Manager (by selecting the Project tab), choose New Library from the shortcut bar, and follow the New Library wizard to create the library mapping. Select Regular library as the type, and then on the New Library page type in the library name, and the root directory. The root directory pathname will be composed of the drive letter that you used when creating the view, plus the VOB name. For example:



Note: HDS automatically fills in the source directory pathnames based on the library name and root directory you have specified. Hit Next and continue to the end of the wizard. You can fill in the Downstream location for the library if desired. However, this is not required for version management, and HDS will automatically fill in a default location when you perform a downstream operation, so you do not have to specify this location now.

After creating the library mapping, you will be able to see the mapping in the Project Manager. For example:



Populating Your Design Libraries

After mapping the library, you can populate the library either by creating new design data in it (as in any other regular library), or by copying design data into it. If you copy graphical data in from an existing HDS library, you should use the Copy and Paste Special commands in HDS. In this case, working in the HDS Design Explorer, simply select the top of the design hierarchy that you wish to copy (from an existing library), click the RMB, and choose the Copy command. Then open the library that you just created, select the library name, and choose Paste Special from the RMB popup menu. Alternatively you can copy and paste the entire contents of a library by selecting the library name in the Design Explorer, and then choosing Copy Contents and Paste Special from the RMB popup menus. If the design is all text, you can also copy it using the above methods, or you can manually copy it into the hdl directory, outside of HDS, using file system commands.

For more information about these copy/paste operations, please refer to the section entitled "Copying Objects" in the HDL Designer Series User Manual.

3. Reverting to Previous Versions of Your Design (Branching)

When working with a version control system, if you want to revert back to an earlier version of a design, you generally need to create a branch. Then you can either work on the branch line, or the main line. HDS currently does not allow you to merge a branch line back into a main line, which is why after creating a branch you choose whether to work on the main line or the branch line.

NOTE: *Concerning merging in HDL Designer:*

If the design is purely text, then theoretically you could, at any point, merge the branch back into the main line. However, if the design is graphical, then you cannot merge a branch back into the main line, because the data in the graphical files is not sequential. Consequently, changes can occur throughout the graphical files, which makes it infeasible to merge them. Since HDS designs can contain a mixture of text and graphics, HDS does not allow you to do the merge operation.

Creating a Branch in ClearCase

With ClearCase, the view of the design data that you see is controlled by the ClearCase config spec. Since in HDS you are looking at the ClearCase view, the config spec also controls what you see in the HDS Design Explorer. In addition to controlling the view of the data, the config spec also controls the way that data is managed in the repository (for example, whether a branch is created). So the key to creating a branch is providing the correct config spec.

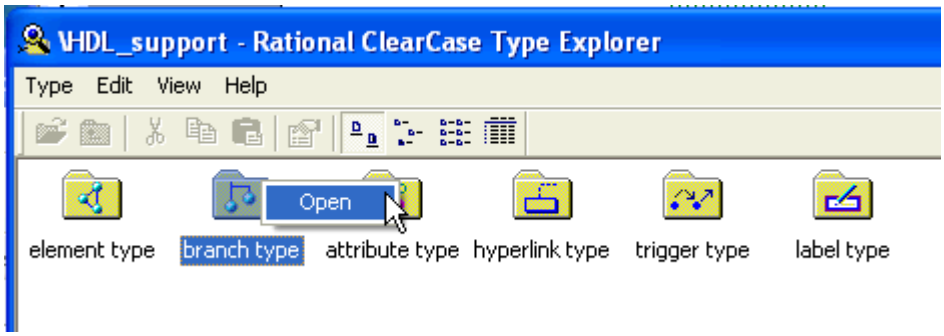
The general steps to create a branch are as follows:

1. When you are ready to create the branch, check in the whole design with a label. (For this example the label will be label_V3.) Alternatively, if the design is already checked in, you can use the Label command in HDS to attach a label to the design.

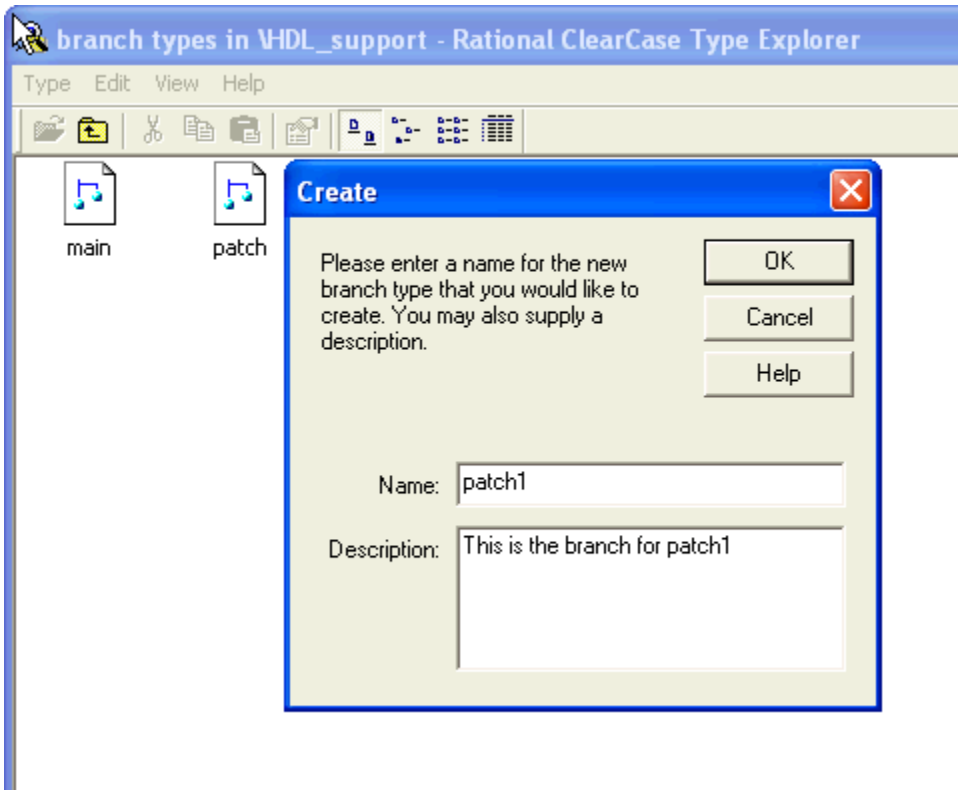
NOTE: *If you have not previously checked any hdl files into the repository, you will get the following message when HDS creates the label:*

Error: HDL Directory Y:/HDL_support/T7/hdl doesn't exist in repository so it is being created

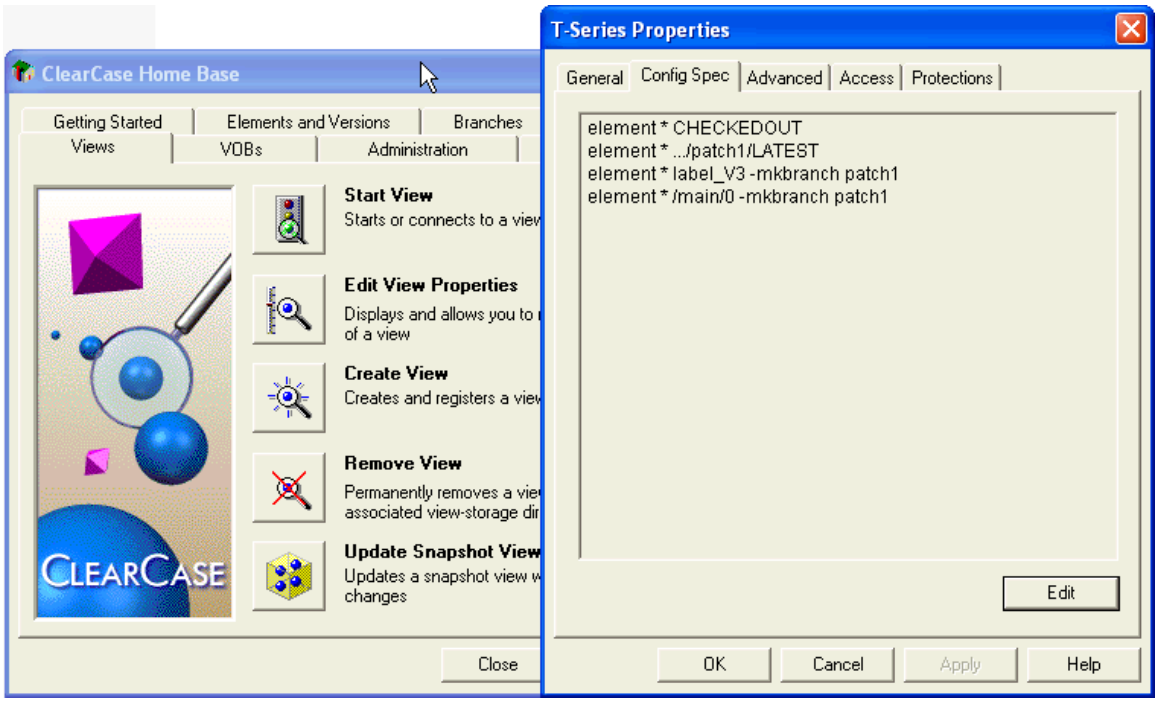
You can disregard this error. This only occurs if no HDL has been checked in at the time you apply the label. If you have previously checked in some HDL, this message does not appear. This should not occur in HDS 2005.2 and later versions.



2. Open the ClearCase Type Explorer, select the VOB, and create a branch type. To do this, select the "branch type" folder icon:and choose Open from the RMB popup. Then choose "Type > Create" from the pulldown menu and provide a name. This will be the name of the branch. In this example the branch type will be patch1. For example:



3. In Home Base, create a new view and then choose Edit View Properties. Select the new view name, then choose the Config Spec tab and set up the config spec so that it will create a branch the next time you check data in, and also so that it will allow you to see the data that is checked in on the branch. For example, following is a config spec that will do this for our example:



Explanation of this config spec:

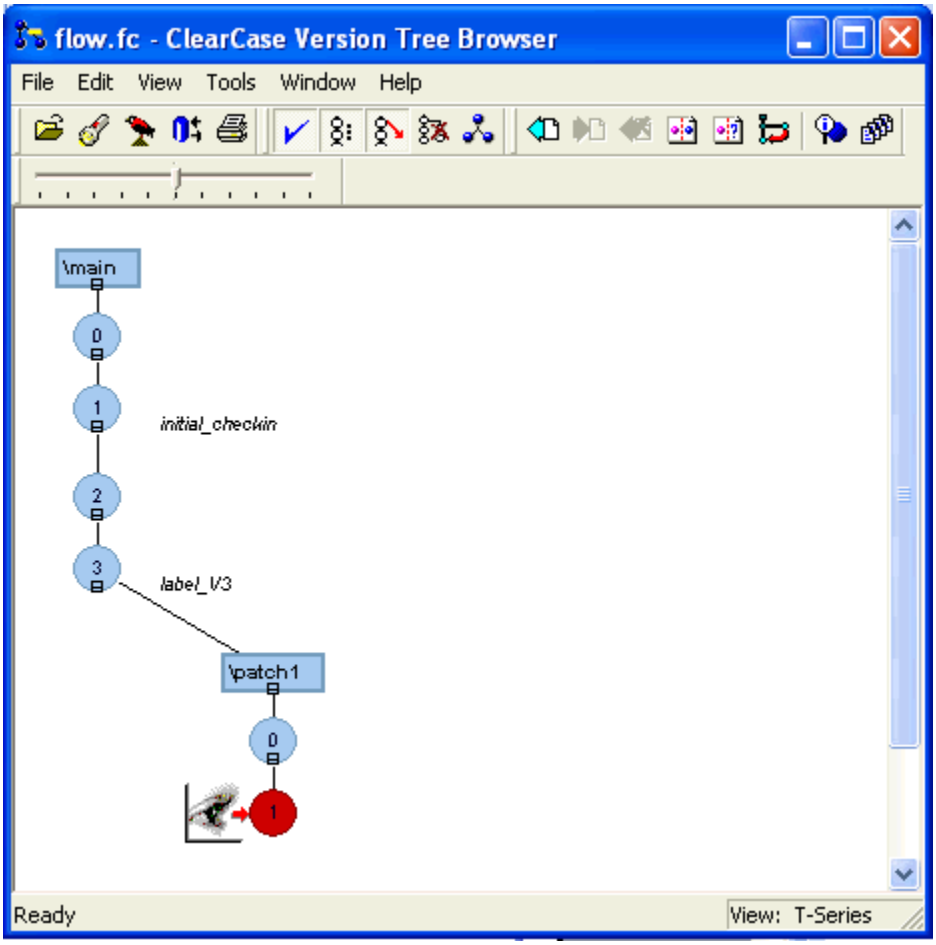
- Line 1 shows the latest version of everything that is checked out.
- Line 2 shows the latest version of everything in the branch called "patch1".
- Line 3 does two things:

  (a) selects the version labeled label_V3, and

  (b) when anything with the version labeled label_V3 is checked out, the patch1 branch is created.
- Line 4 specifies that whenever you create a new element, it will be created in the branch called patch1.

4. Restart HDS. After applying the above config spec, and restarting HDS, you will only see the data that is labeled as label_V3, or that is checked in on the patch1 branch.

Following is what this looks like for one of our example files in the ClearCase Version Tree Browser:



At this point, when working in this view, you can check data in and out, and when checked in, everything goes into the patch1 branch.

If you decide to revert back to another older version at any point, you should follow the above steps, creating a new label, a new branch, and a new view. We recommend that you do not modify the config spec for a view in order to work on a different branch, but instead you should create a new view, with its own unique config spec for each branch.

4. Summary

The key points to remember are the steps for mapping to your ClearCase VOB in HDL Designer, and how to revert to older versions. To map to a VOB in HDS, you first need to mount the VOB and create a view in ClearCase, and then create the library mapping in HDS. To revert to an older version, you first need to check the design in with a label in HDS. Then in ClearCase you need to create a branch, and specify the proper config spec.

5. Conclusion

This application note has highlighted the ease with which you can work with ClearCase from within HDL Designer. You should now be able to set up your library mapping in HDL Designer, and easily to revert to older versions of your design.

For additional information about the HDL Designer Series, please visit http://www.hdldesigner.com, or send email to hdldesigner info@mentor.com

