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Virtuoso Schematic Editor: Productivity Shortcuts

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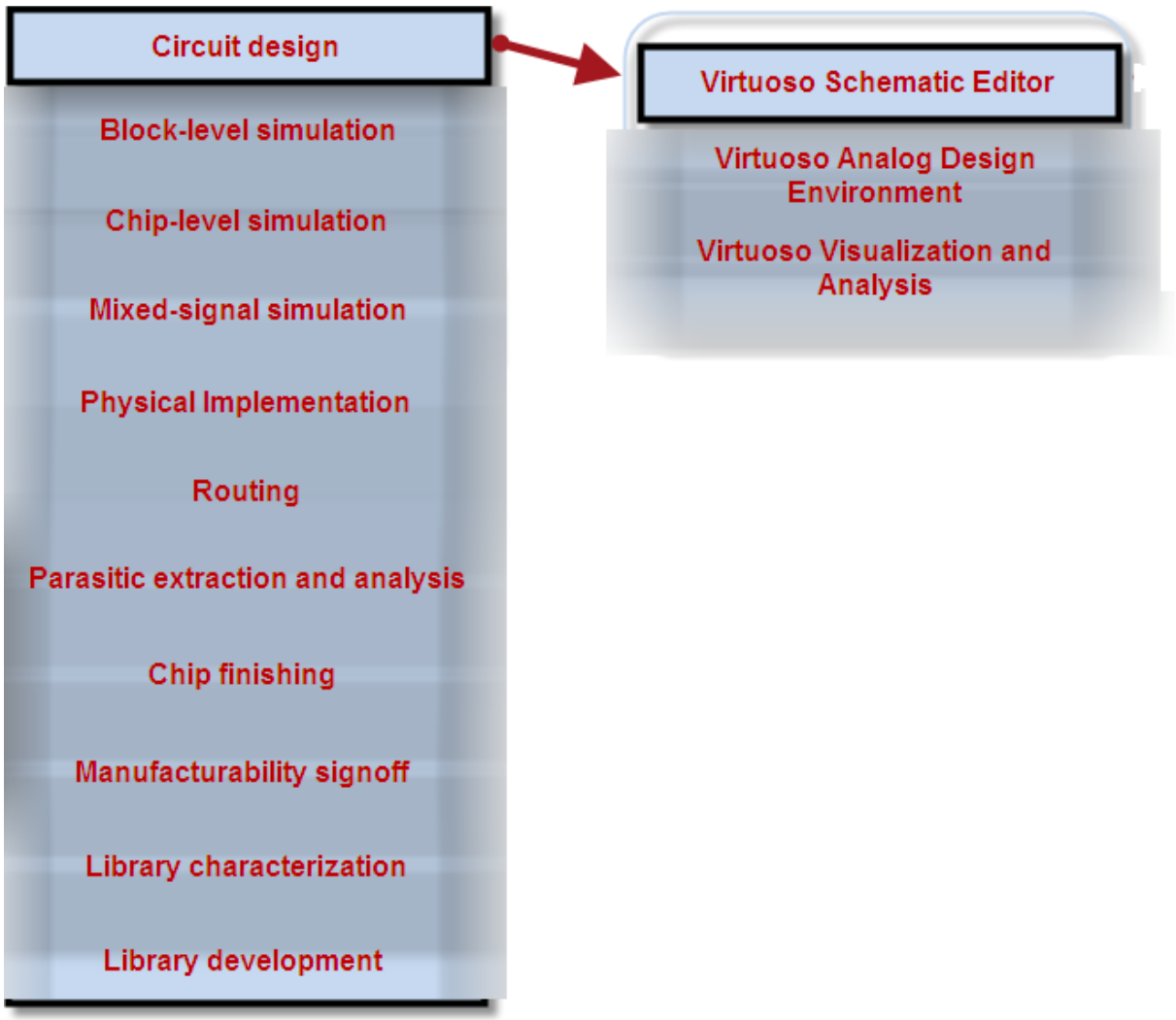
Contents

Shortcuts for Improving Productivity

This document describes shortcut methods to improve your productivity while creating or editing a schematic. These methods can be deployed for editing functionality in any of the available tiers of Virtuoso Schematic Editor (VSE), L or XL.

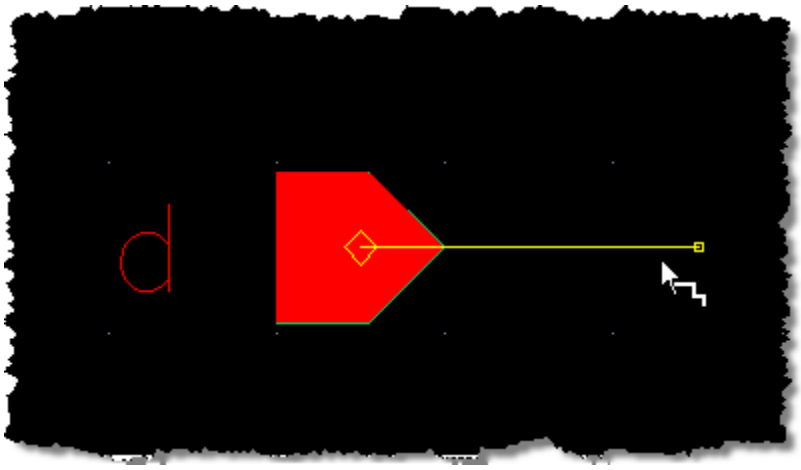
The following diagram shows how the shortcut methods of improving productivity while creating or editing a schematic fit in the overall Virtuoso Design Flow:



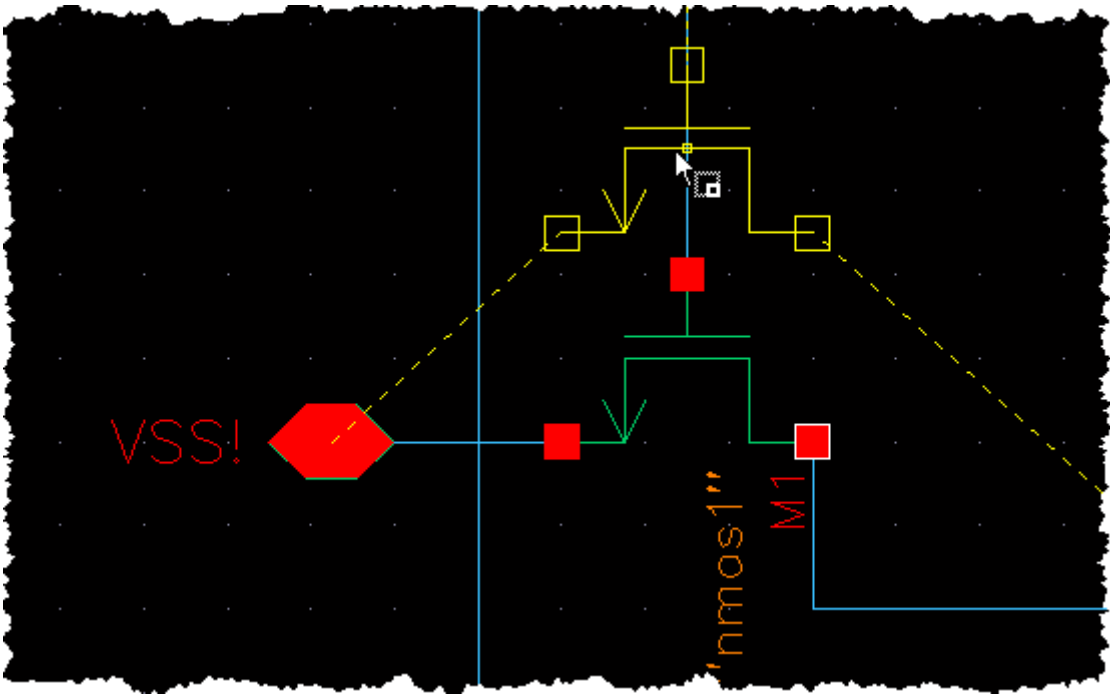
Editing Canvas

Creating Schematic Using Mouse Drag

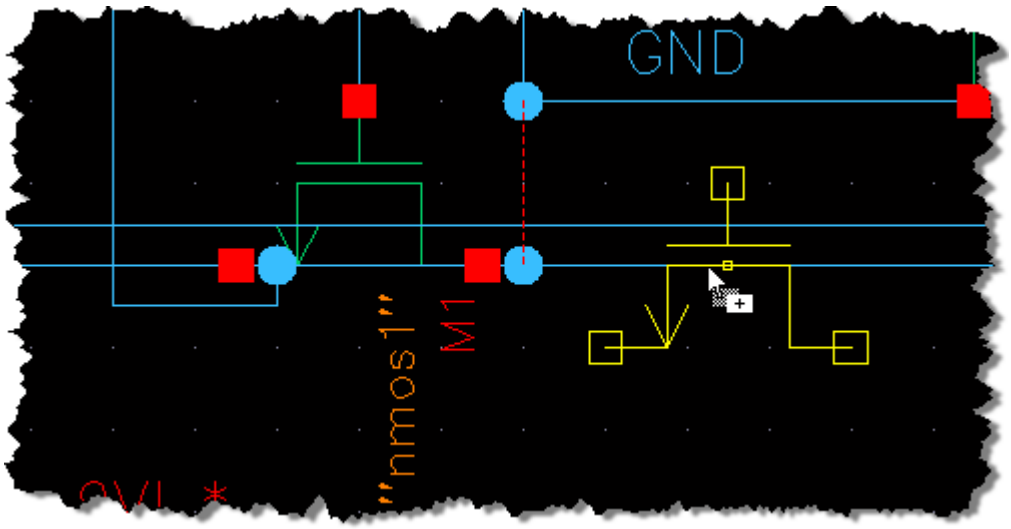
- Use `shift + mouse drag` to create a wire from a pin.



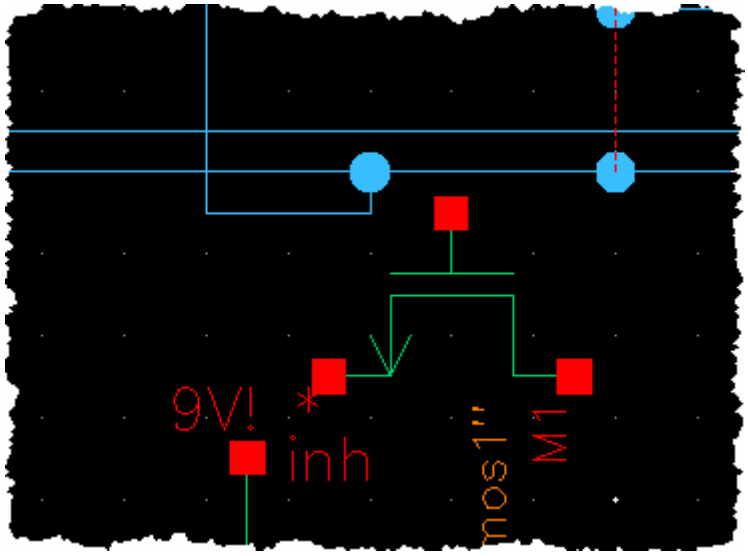
- Use `mouse drag` to stretch the instance or wire.



- Use `Shift + mouse drag` to copy the instance or wire.

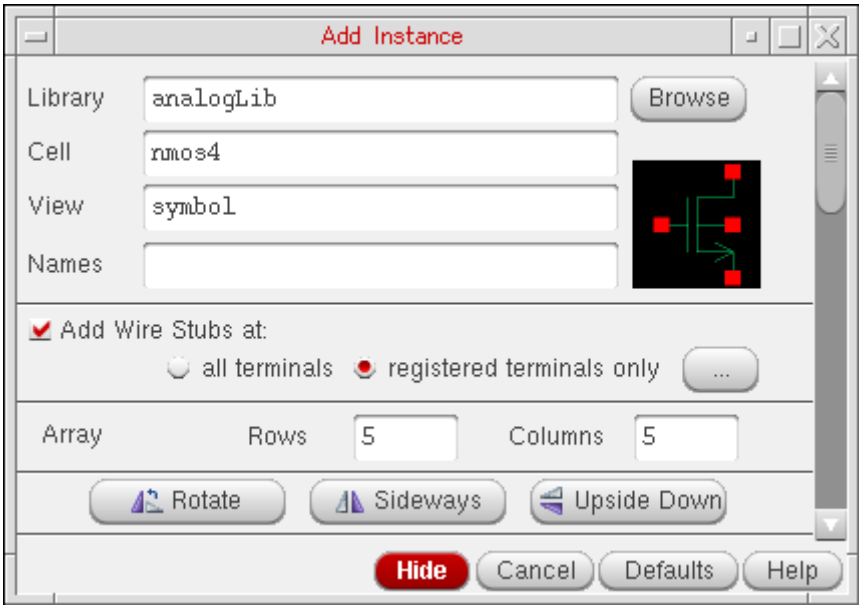


- Use `Ctrl + mouse drag` to move the instance or wire.

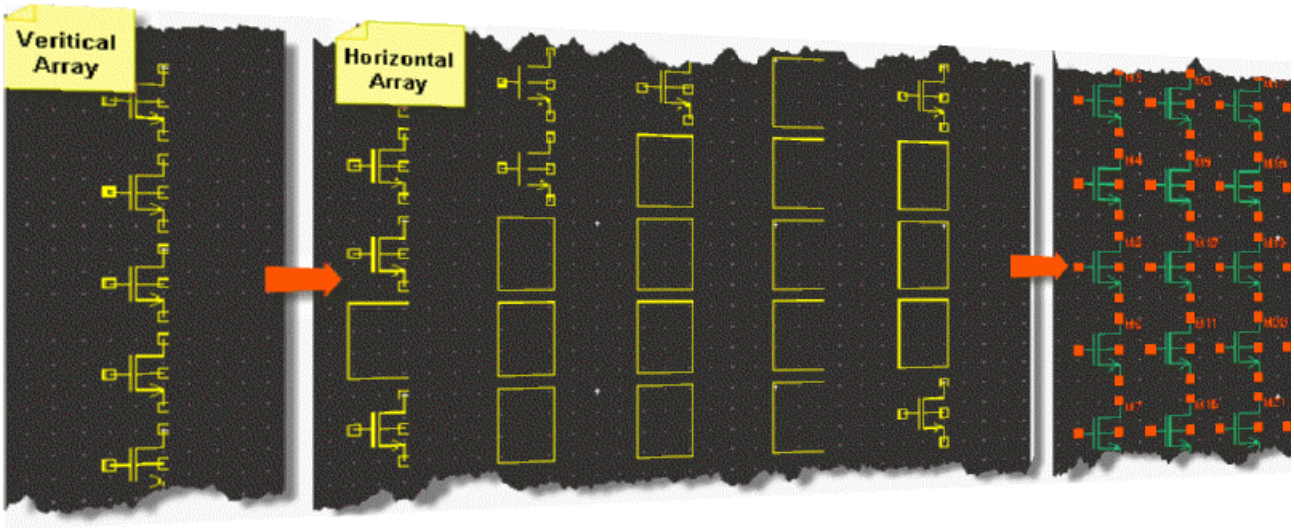


Adding Arrays of Instances

1. In the *Add Instance* form, specify the array size in the *Rows* and *Columns* fields.

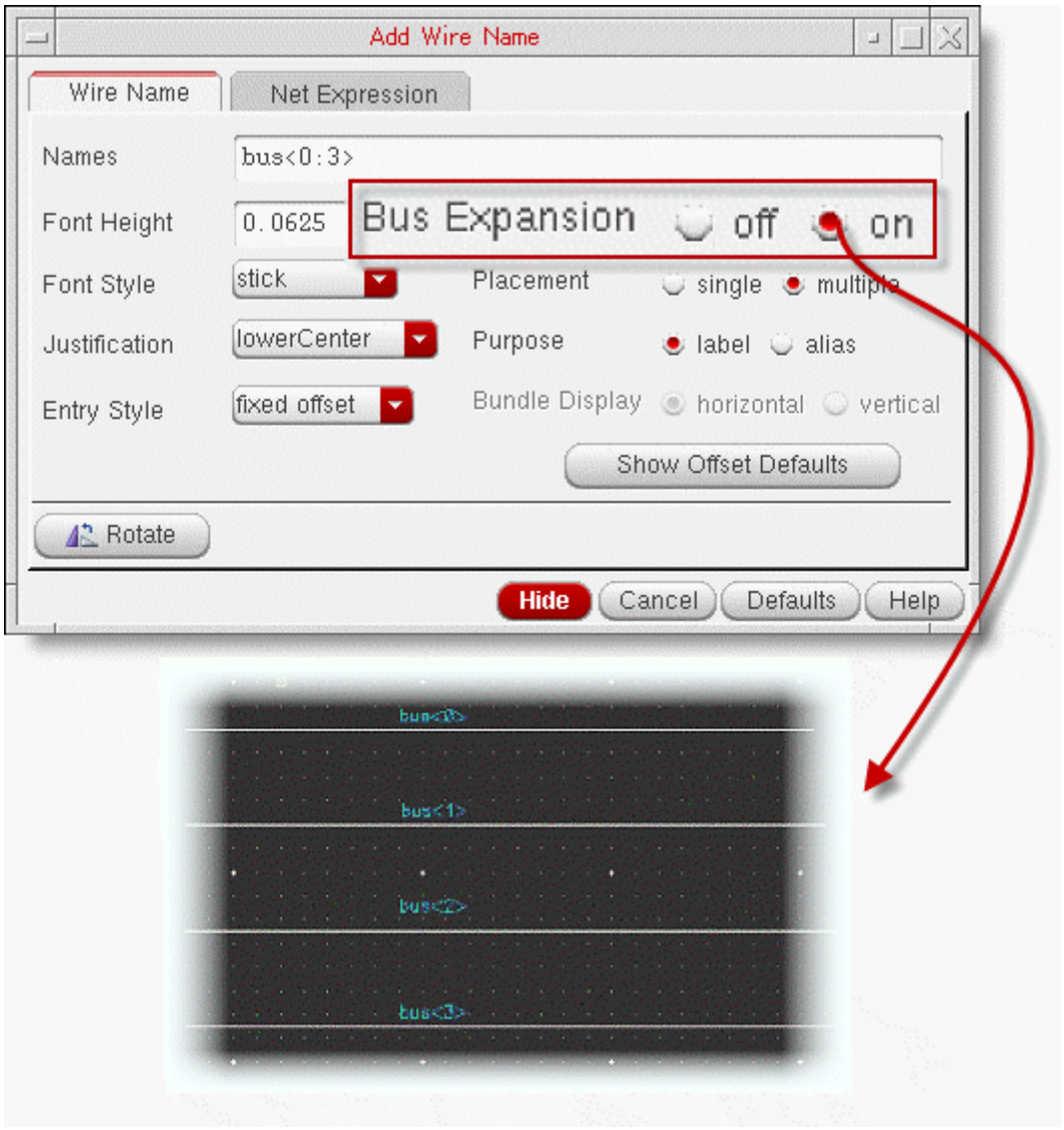


2. Place the first instance on the schematic canvas and the vertical part of the array appears.
3. Then, place an instance horizontally and the horizontal part of the array appears.



Creating Wire Labels

In the *Add Wire Name* form, enable *Bus Expansion* to automatically create a wire label with the expanded bus name and connect the bus name to the wire.

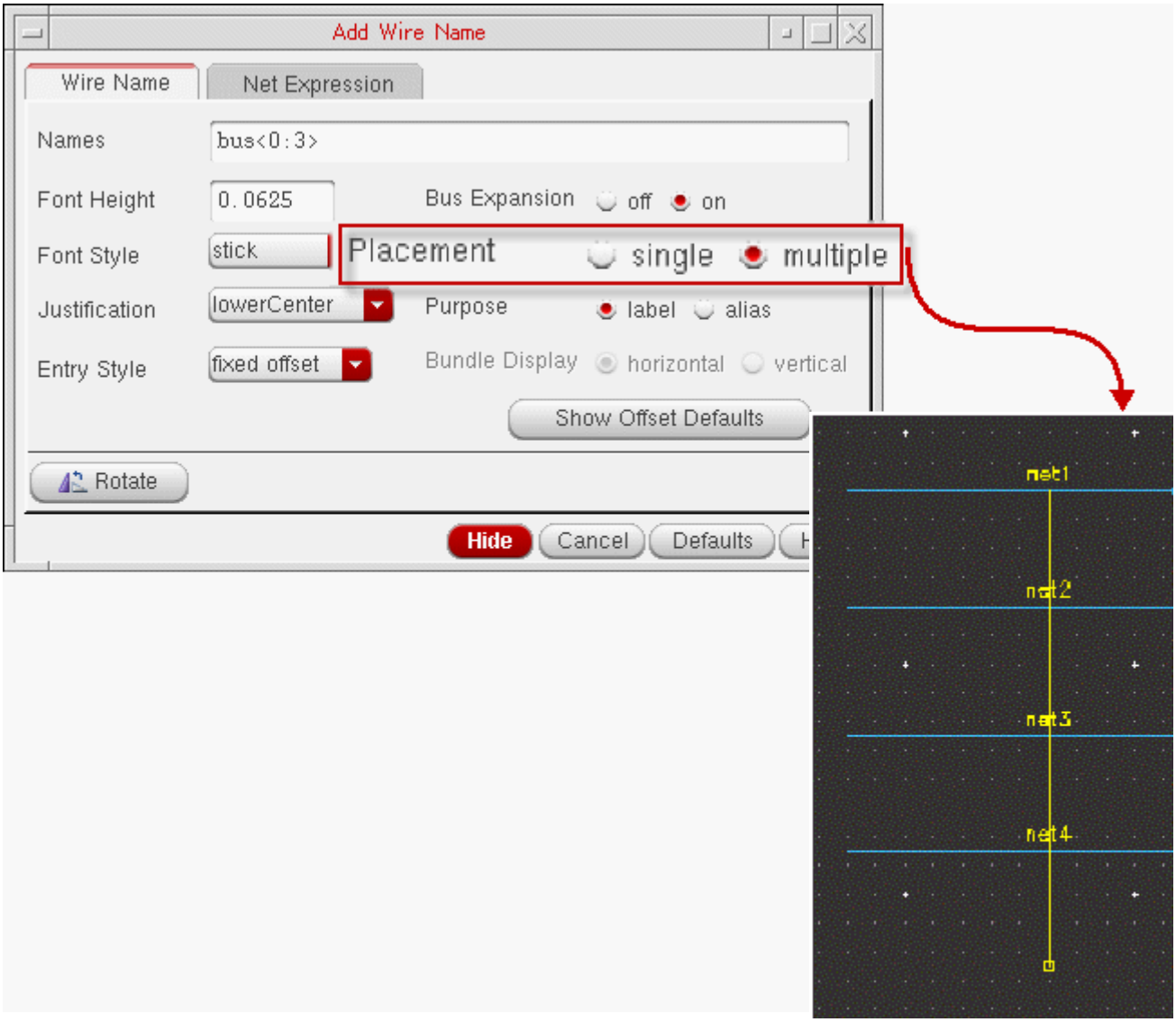


Labeling Multiple Wires

To label multiple wires simultaneously, perform the following steps:

1. Add names of the wires in the Names text field of the *Add Wire Name* form.
2. Click *multiple* to define the *Placement* option.

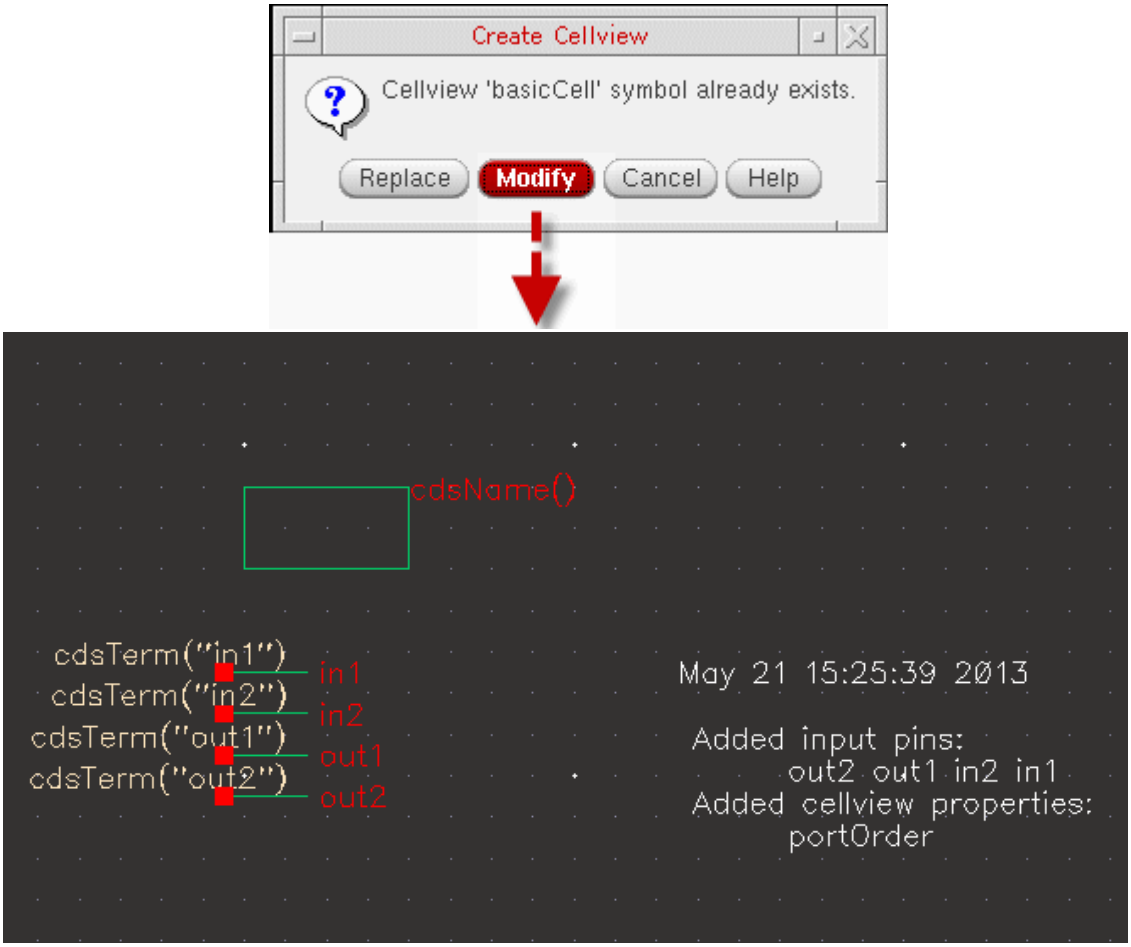
3. Click the first wire and drag the mouse over the other wires.



Note: If you enable *Bus Expansion* and set *multiple* for the Placement options, it names each bus bit as well as allows you to drag the mouse over the wires to name them.

Annotating Differences in Symbol Views

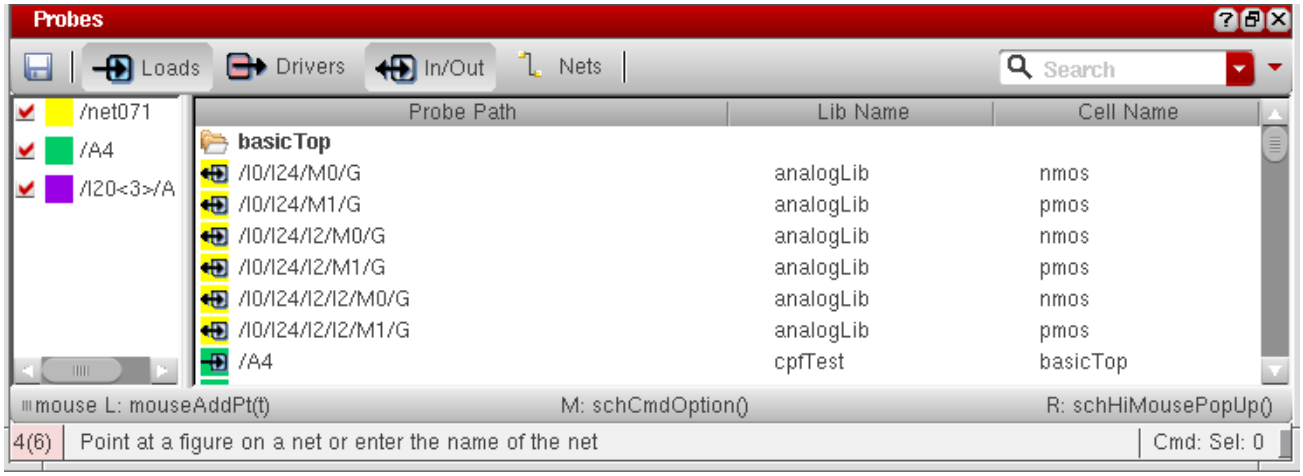
If you modify a symbol view, the changes from the last save are annotated on the schematic.



Using Probes Assistant

- Use the assistant to trace the probed nets on the design canvas.
- Use the assistant options to view the probed path and the library:cell information of the probes.
- Apply cross-selection from and to the assistant, where selecting a probed net in the assistant causes the same probed net to be highlighted both in the design and in the Navigator Assistant.

- Use the assistant to save the probe paths to a file.



Video

- For a short video overview of some of the canvas editing methods, view Shortcuts Methods for Improving Productivity (Editing Canvas).
- View Identifying Net Connections to see how to use the Probes Assistant to identify connections that exist for a net and to save probe path information to a CSV file.

Customizing

Using Auto Save Option

Auto save option is available in Virtuoso for saving the schematics and other types of cellview. You can turn on the Auto Save mode in any of the following ways:

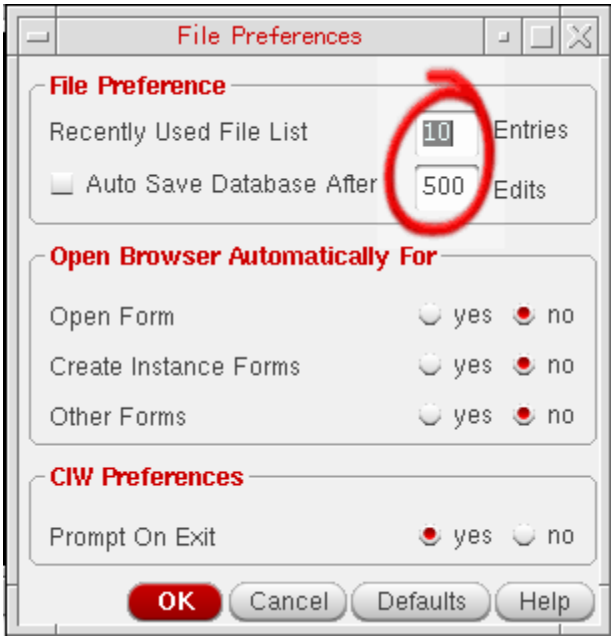
Set `dbSetAutoSave(t)` in .cdsinit or CIW. `t` refers to the auto save interval, and it is specified in terms of the number of database modifications since last auto save rather than a time duration.

Choose *File Preferences* from the *Options* menu in the CIW. Select the *Auto Save Database After* option in the *File Preferences* form. You can define the auto save interval in the *...Edits* text field.

Examples

- By default, if you define the automatic save option, the data is saved automatically after every 500 database edit actions.

  ```
  dbSetAutoSave(t)
  ```



- You can set the automatic save option so that data is saved automatically after every 100 database edit actions.

```
dbSetAutoSave(t 100)
```

- Turn off the automatic save option.

```
dbSetAutoSave(nil)
```

Controlling Default Settings for Descending

The following variable can be set in the .cdsinit file to ensure that descending into an instance always opens in a new tab, current tab, or new window.

- `envSetVal("schematic" "descendCanvasType" 'string "new tab")`
- `envSetVal("schematic" "descendCanvasType" 'string "current tab")`
- `envSetVal("schematic" "descendCanvasType" 'string "new window")`

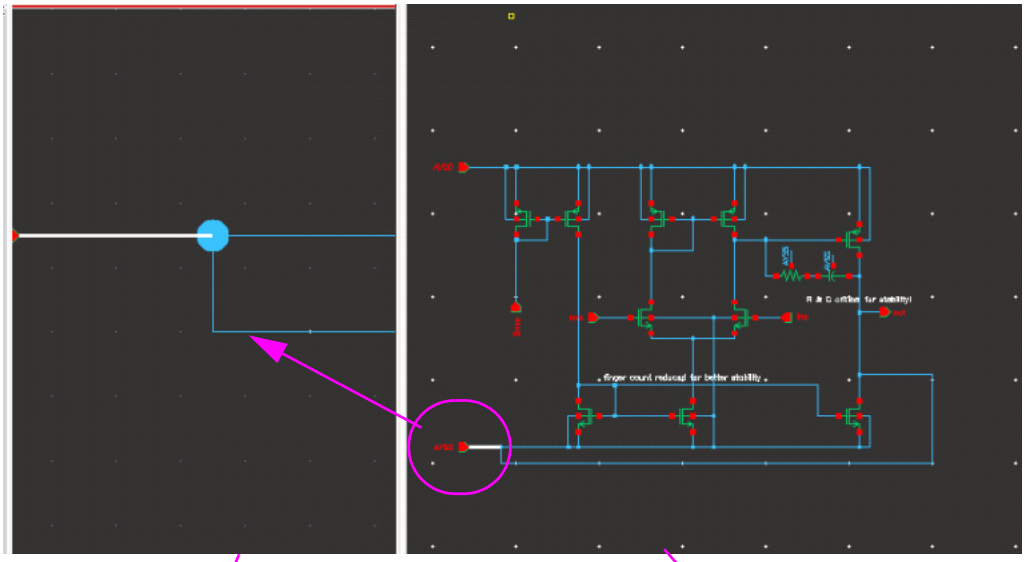
Viewing a Cell in Two Windows Simultaneously

To view a cell in two windows, with different zoom and pan settings, simultaneously, click *Window -> Copy Window*. As a result,

- A copy of the current cellview opens in a new window.
- The copy has the same title as the original.
- Any change made in either of the windows affects both windows.

Note: Commands initiated in one window are also active in the other window. For example, when you click *Create* -> *Wire*, you can create wires in any of the windows. You can also start adding the wire in one window, and finish the task in the other window.

You can work in a specific area of the cellview and view the entire cellview in another parallel window.



Same point on different windows

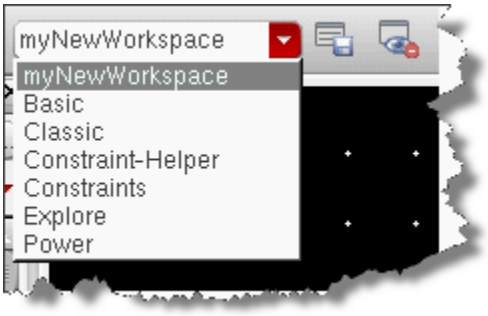
Finish adding wire

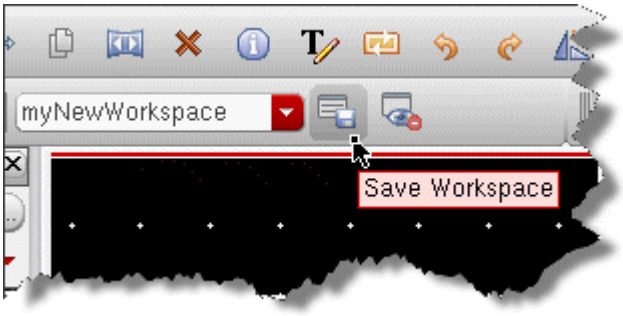
Customizing Workspace

Customize workspace to show your preferred assistants and toolbars.

1. Create your own cockpit with the combination of assistants and toolbars.
2. Click *Window->Workspaces->Save As...* or click  to save your workspace.

Your saved workspace will be available in the Workspace Configuration drop down.



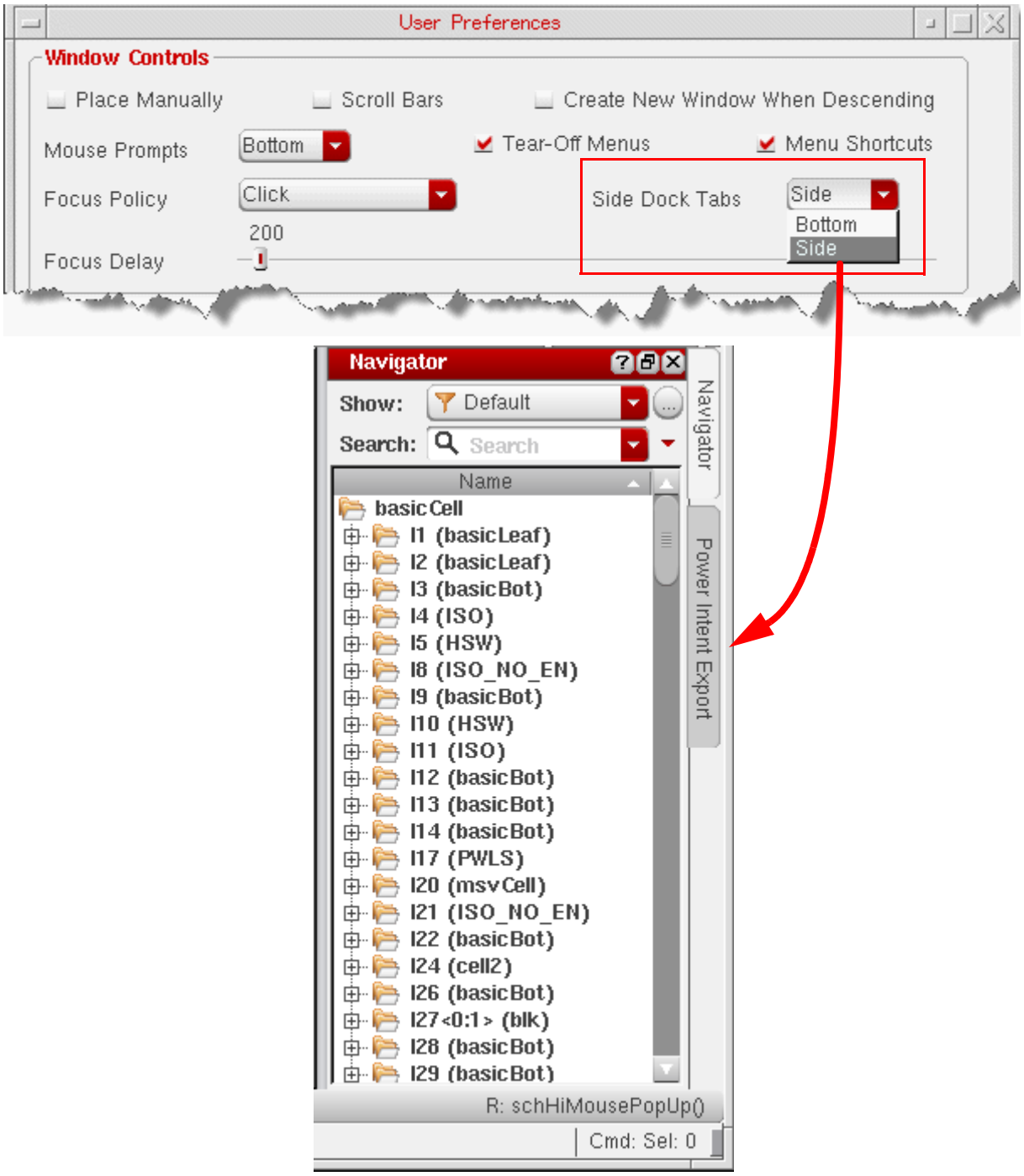


Positioning CIW User Preferences – Docked Window Tab

In CIW, click *Options->User Preferences* to open the *User Preferences* form.

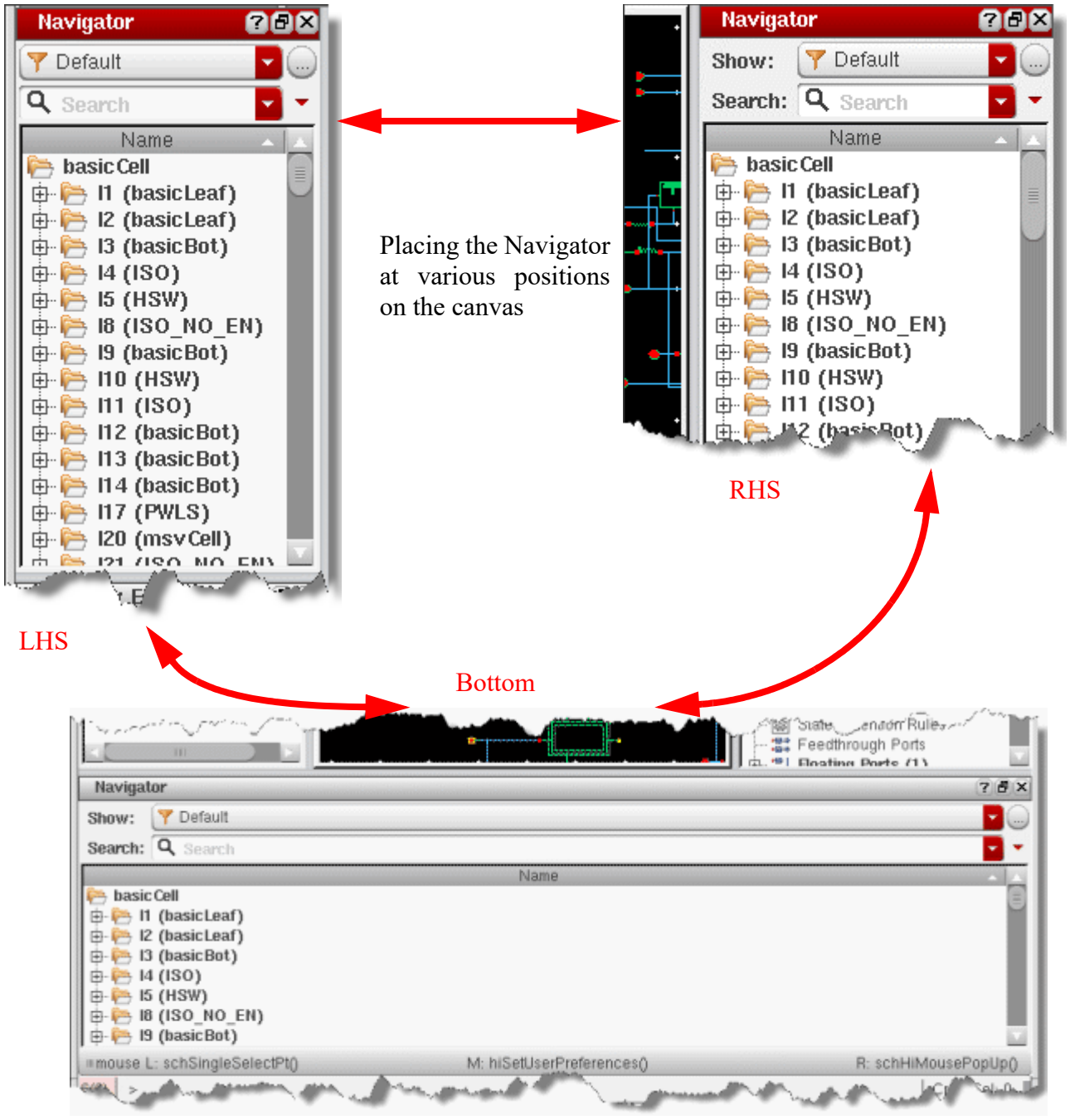
- Only affects docked windows on left and right sides of the canvas

- Useful for docked windows with long names



Placing Assistants in Schematic Editor

- Tab various assistants together by dragging them on top of each other.
- Move the assistant around the canvas and place on the top/bottom/left/right.
- Continue to press `Ctrl` while moving the assistants around the canvas.



Video

For a short video overview of the use of some of the customization methods, see Shortcuts Methods for Improving Productivity (Customization).

Setting Colors and Backgrounds

Customizing Canvas Color

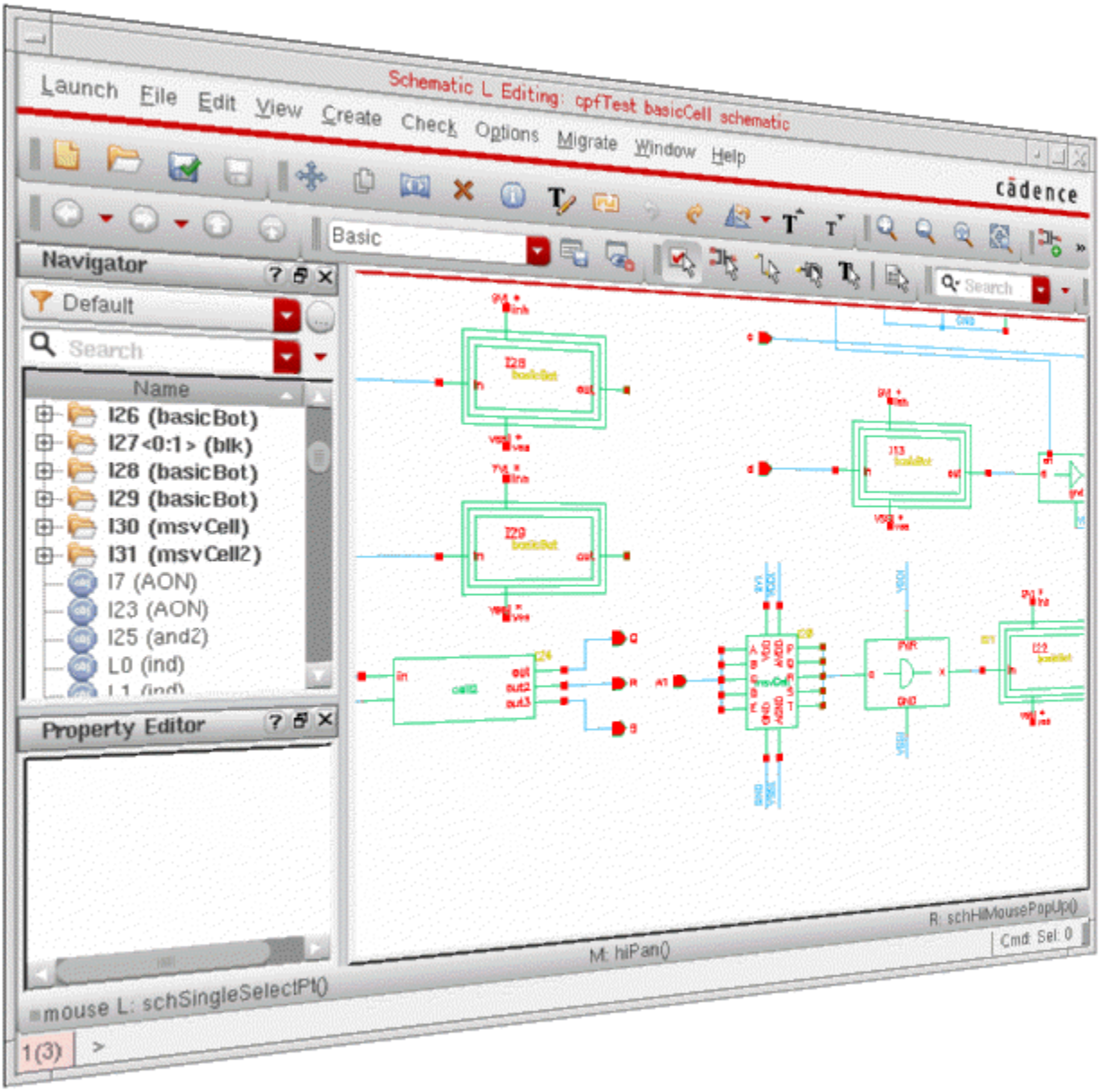
The canvas color can be customized using the following environment variable.

```
ui defaultEditorBackgroundColor string "color"
```

The `defaultEditorBackgroundColor` environment variable lets you change the background color of the canvas or the editor window. You can reset the background color (*`color`*) by specifying either the color name (such as `"black"` or `"red"`) or its hexadecimal value (such as `"#dcdcdc"` for light gray or `"#cce8c3"` for light green).

The default is `black`.

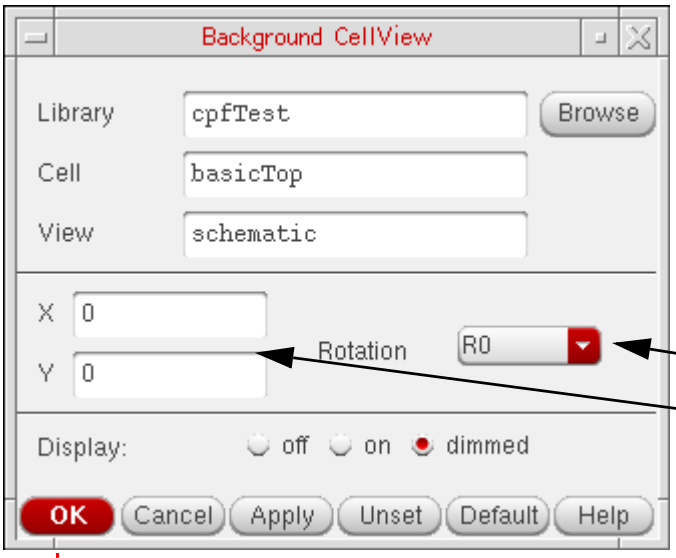
1. You can choose other colors too by specifying the hex value.



Setting Cellview as Background

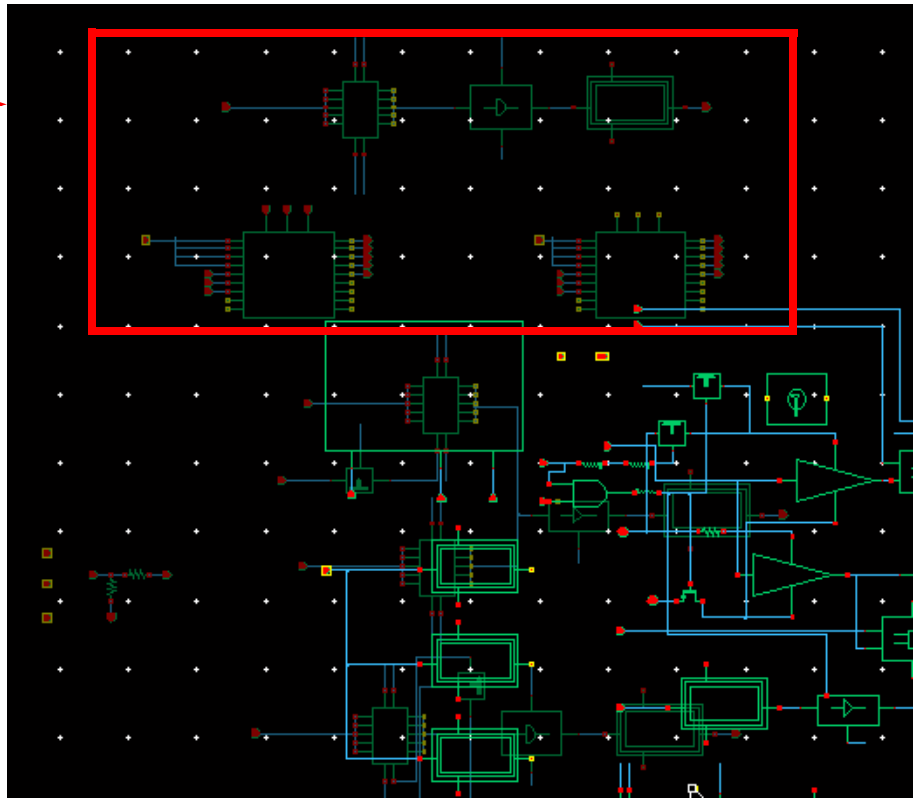
Use the following function to specify the library/cell/view for the background.

```
geBackgroundCellView()
```



Coordinates, rotation and display options can be set

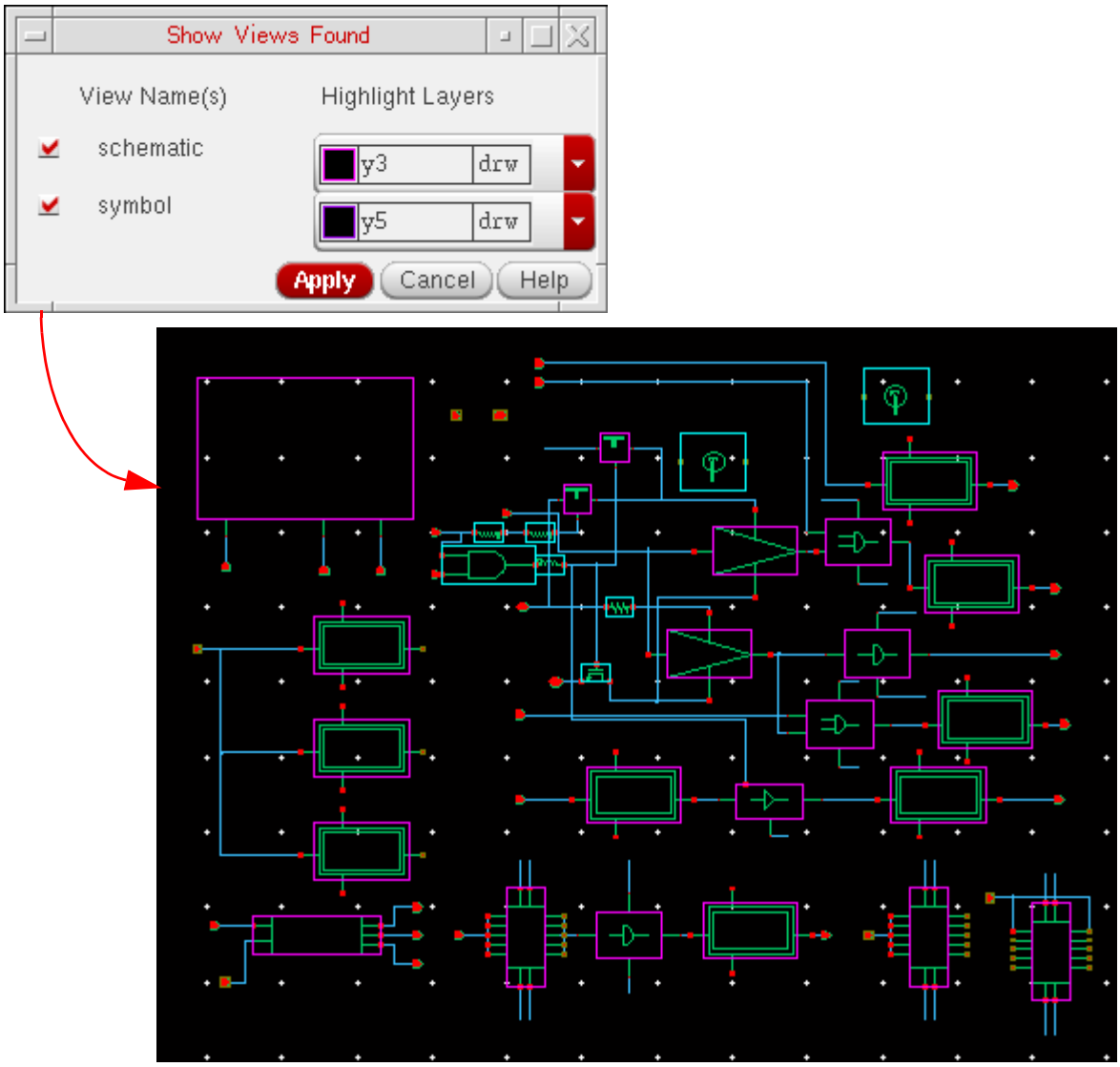
Notice the dimmed schematic underneath



Highlighting Views in Different Colors

To highlight various views in different colors,

1. Start Hierarchy Editor.
2. Choose *Hierarchy-Editor -> Show Views Found*.
3. In the *Show Views Found* form, highlight all views (such as schematic, extracted, spectre, and so on) in different colors on the schematic.

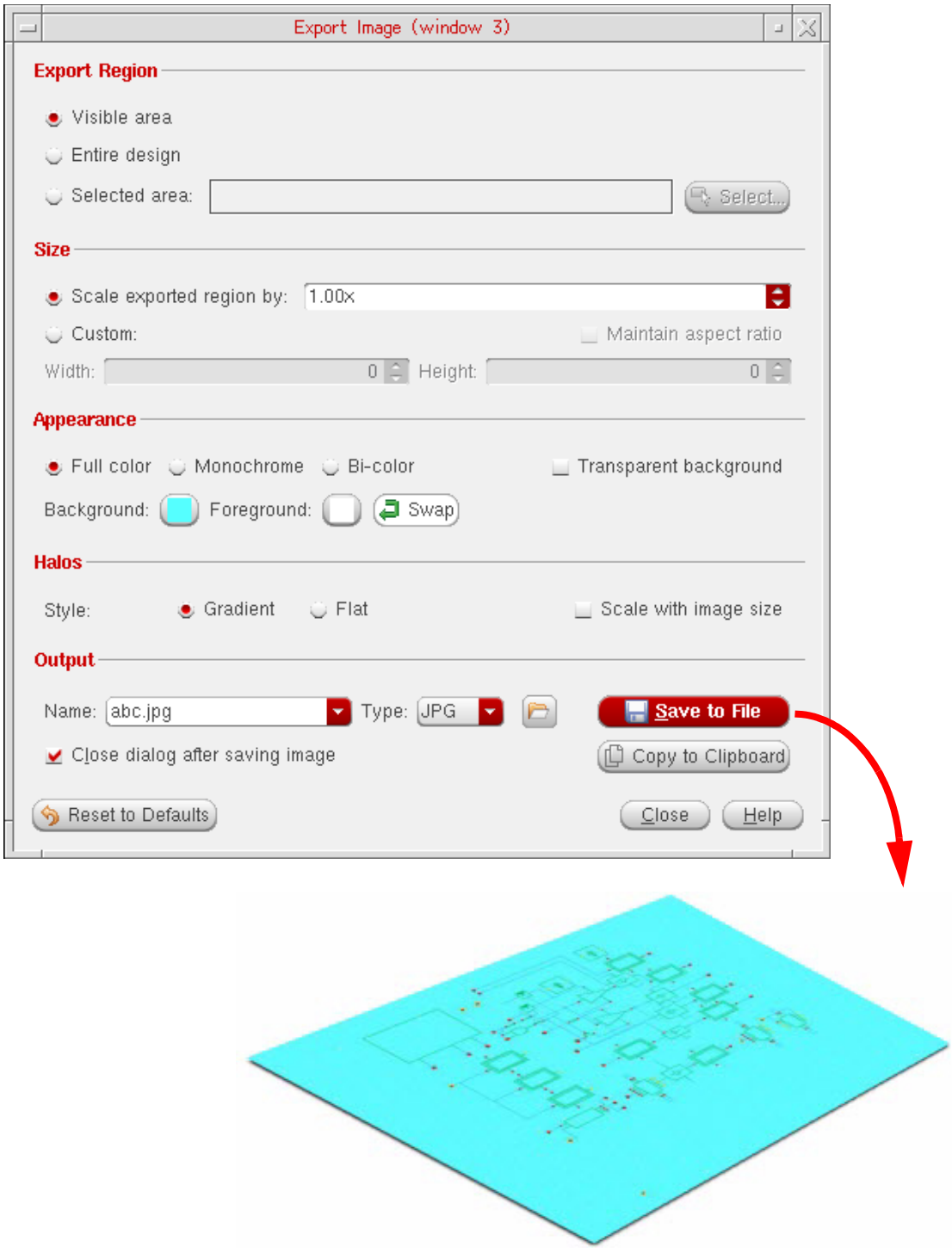


Exporting Images with Colored Backgrounds

To export images with colored backgrounds, do the following:

1. In the schematic editor, choose *File->Export Image*.
2. In the *Export Image* window, choose Foreground color in the *Appearance* group box.

3. Click *Save to File*.



Video

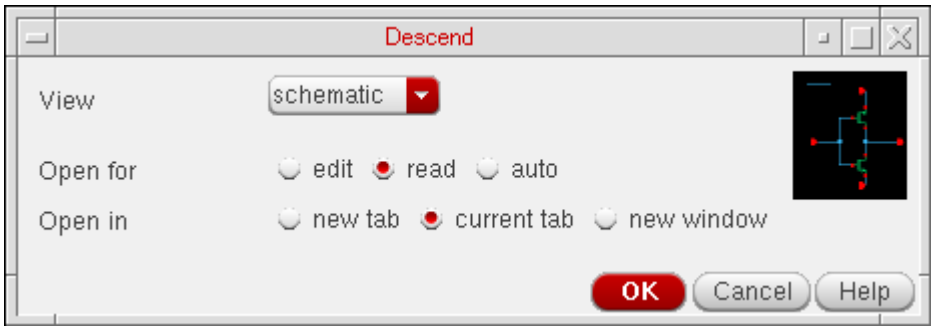
For a short video overview of the use of some of the setting colors and background methods, see Shortcuts Methods for Improving Productivity (Setting Colors and Backgrounds).

Using Bindkeys

Descending Using Bindkeys

To descend into a block, you can use the following bindkeys:

- '`E`' – For viewing the block
- '`Shift + E`' – For editing the block
- '`Ctrl + E`' – For returning to the top-level block



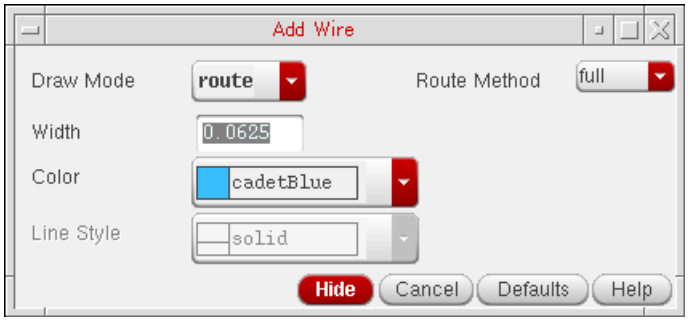
Zooming/Panning Using Bindkeys

Bindkey	Action
`Z`	Zoom to area
`Ctrl + Z`	Zoom out of area
`Shift + Z`	Go to previous view
`Ctrl + Shift + Z`	Go to next view
`Mouse Scroll Wheel`	Pan up and down
`Shift + Mouse Scroll Wheel`	Pan left and right
`Ctrl + Mouse Scroll Wheel`	Zoom in and out

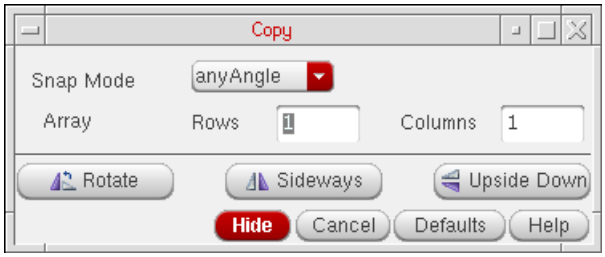
Launching Options Form Using Bindkeys

When running any of the following commands, press `F3` to bring up the *Options* form for that command.

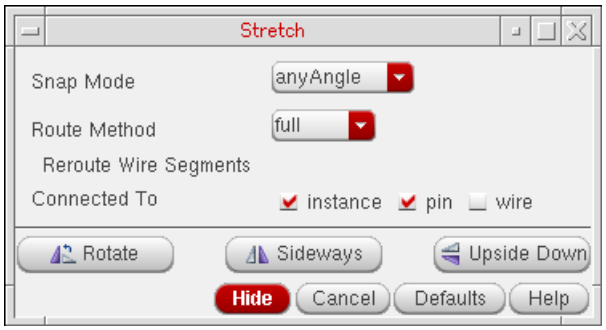
Add Wire



Copy



Stretch



Move

Route Flight Line

Next Step

For more information about creating schematics, see Creating Schematics in *Virtuoso Schematic Editor User Guide*.