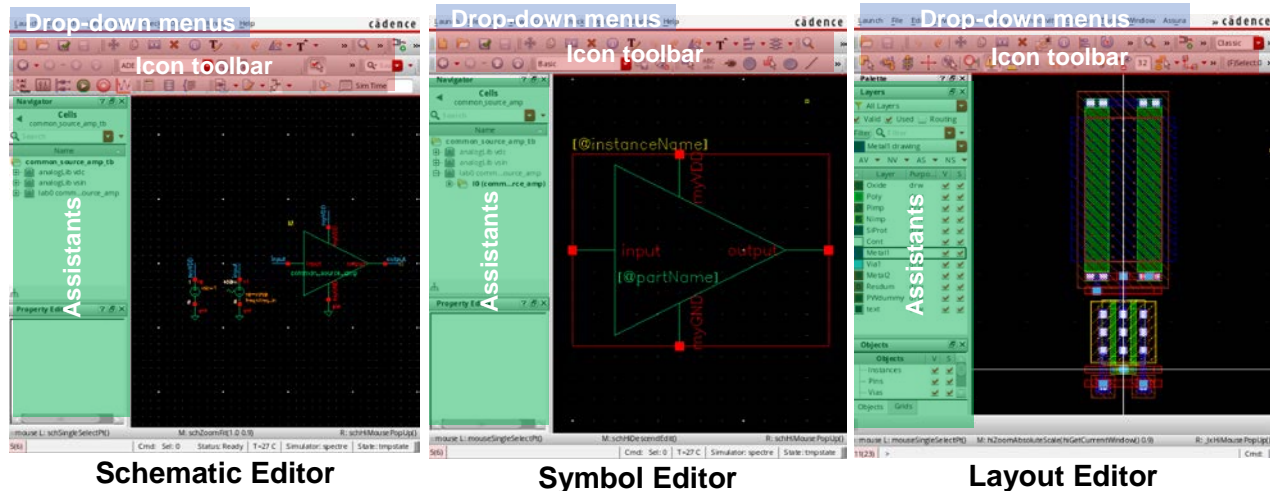


Introduction

Cadence Virtuoso is a powerful design tool, but navigating its many features can be difficult. Many shortcuts exist, but that doesn't really help you unless you are aware of them. The purpose of this handout is to provide a quick summary of some of the most useful features and commands in the schematic, symbol, and layout editors of Cadence Virtuoso. Here is a picture of each editor – they are all structured the same way:





For the most part, any command is accessible via the top set of drop-down menus. Quick access to many common commands is provided through the icon toolbar directly under those. Even quicker access is provided through a set of hot keys (bindkeys) that automatically trigger an action. The Window drop-down menu allows you to choose which icons are present in the toolbar (go to Window → Toolbars), or to add more advanced tools to the left and right of the editor (go to Window → Assistants).













While many commands are similar between each editor, they are (unfortunately) not always triggered by the same set of default hot keys, or even the same drop-down menu selection. On the next few pages, we provide tables summarizing which hot keys, icons, and drop-down menu selections can be used to trigger some of the most common commands. Many of these commands can also be found in the drop-down menu that appears after right-clicking an object. **Note that pressing F3 while a command is enabled gives you a more detailed set of options for each command. To disable a command, hit the ESC key.**









Virtuoso preferences – hot keys, default display settings, etc. – can also be configured using the .cdsinit file in your Cadence run directory and the .cdsenv file in your home directory. We will not cover how to modify these files here, but if you would like to customize something specific, there is a good chance someone online has tried something similar. (Some sample .cdsinit customizations are given [here](#).)

Summarized Virtuoso features**WORKING WITH OTHER INSTANCES**




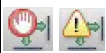
Function	Hot key	Icon	Toolbar access	Relevant editor
Place a schematic or layout instance (or layout mosaic)	i		Create → Instance	Schematic, Layout
Edit properties of selected object	q		Edit → Properties → Objects	Schematic, Symbol
			Edit → Basic → Properties	Layout
Add Property Editor assistant to sidebar (useful for editing properties of multiple selected objects simultaneously)	-	-	Window → Assistants → Property Editor	Schematic, Layout, Symbol
Descend into design of selected instance	Read-only: e Edit: Shift+e	-	Edit → Hierarchy → Descend Edit/Read	Schematic
	In-place: x Descend: Shift+x			Layout
Return to previous level of hierarchy	Ctrl + e	-	Edit → Hierarchy → Return	Schematic
	Shift + b			Layout
Display hierarchy of current design	Shift + t	-	Edit → Hierarchy → Print Tree	Schematic
			Edit → Hierarchy → Tree	Layout

DRAWING COMMANDS

Function	Hot key	Icon	Toolbar access	Relevant editor
Undo / Redo	u / Shift + u		Edit → Undo/Redo	Schematic, Symbol, Layout
Check and save design	Shift + x		File → Check and Save	Schematic, Symbol
Delete selected objects	Delete		Edit → Delete	Schematic, Symbol, Layout
Copy selected objects	c		Edit → Copy	Schematic, Symbol, Layout
Draw a wire	w		Create → Wire (narrow)	Schematic
Draw a path	p		Create → Wiring → Wire	Layout
Draw a line	-		Create → Shape → Line	Symbol
Add a pin	p		Create → Pin	Schematic, Symbol
	-			Layout
Add a label	l		Create → Wire Name	Schematic
			Create → Label	Symbol, Layout
Move instance, keeping wire connections	m		Edit → Stretch	Schematic, Symbol
Stretch shape	s			Layout
Move instance only (not maintaining wire connections)	Shift + m		Edit → Move	Schematic, Symbol
	m			Layout
Rotate object (hot keys apply to objects being moved; icon or menu applies to selected objects)	r		Edit → Rotate	Schematic, Symbol
	Shift + o		Edit → Rotate → (select option)	Layout
Mirror object	Shift + r		Edit → Rotate (press F3 for menu to mirror)	Schematic, Symbol
	Ctrl + j		Edit → Flip → (select option)	Layout

Add labeled wire stubs to selected instance	Spacebar	-	Create → Wire Stubs and Names	Schematic
Align selected group of objects (use menu or drop-down on icon to select alignment type)	-		Edit → Align → (select option)	Schematic, Symbol
			Edit → Advanced → Align	Layout
Open 'Create Via' window	o		Create → Via	Layout
Create bus (many parallel paths)	Ctrl + Shift + x		Create → Wiring → Bus	Layout
Draw a ruler	k	-	Tools → Create Measurement	Layout
Clear all rulers	Shift + k	-	Tools → Clear All Measurements	Layout
Toggle between Full / Partial select mode (controls what happens when you click and drag a selection box over a shape)	-	 (click to toggle)	Options → Selection → (Choose 'Partial' / 'Full' from drop-down)	Layout
Toggle between grouping / ungrouping vias stacked together	-		Options → Selection → (Select / deselect 'Via Stack')	Layout
Toggle between orthogonal / diagonal / any angle snap modes	-		Options → Display Options → (modify Snap Modes)	Layout
Chop rectangle out of selected polygon	Shift + c	-	Edit → Basic → Chop	Layout
Group / ungroup selected layout objects	-		Create → Group / Edit → Group → Ungroup	Layout
Toggle gravity (snaps cursor to edges, centers of shapes)	g	-	Options → Editor → (Select / deselect 'Gravity On')	Layout

DISPLAY CONFIGURATION

Function	Hot key	Icon	Toolbar access	Relevant editor
Zoom to fit everything in visible area	f		View → Zoom to fit	Schematic, Layout, Symbol
Zoom in	[or scroll		View → Zoom in	Schematic, Symbol
	Ctrl + z or scroll			Layout
Zoom out] or scroll		View → Zoom out	Schematic, Symbol
	Shift + z or scroll			Layout
Draw box to specify zoom area	z or right click and drag	-	View → Zoom to area	Schematic, Symbol, Layout
Open 'Display Options' window (change snap settings, layout hierarchy visibility)	o	-	Options → Display	Schematic, Symbol
	e			Layout
Open 'Display Editor' window (toggle display defaults, gravity)	Shift + o	-	Options → Editor	Schematic, Symbol
	Shift + e			Layout
Toggle visibility of certain instance text labels	-	-	View → Hide/Show Instance Labels, Notes, etc.	Schematic, Symbol
Toggle visibility, selectability of certain drawing layers	-	-	'V' (visible) or 'S' (selectable) checkbox in Layers Panel of Palette Assistant	Layout
Automatic design rule checking (enforce / notify)	-		Options → DRD Edit → (Check 'Enforce' or 'Notify')	Layout