

Release Notes for SKILLCAD

http://skillcad.com/download_tool.html

New for release v4.3B1

- **New Functions**

- 1) **Color By Select** – This is a new tool in the QuickColor tool group. Color the selected group of metals and vias.

New for release v4.3B

- **New Functions**

New tools in the LASA (Layout Automation Suite Advanced) module

- 1) **DotConnector** – Used to route device arrays by a single click on the device source or drain. The tool finds all the sources or drains in the device row that are on the same net and connects them up with appropriate vias, and according to the information on the nearest WSP track pattern or the nearest routing grid (if not in a WSP region).
- 2) **LineConnector** – Similar to the dot connector, but the desired range of connections are specified by drawing a line across the sources and drains.

Note: The previous two commands, DotConnector and LineConnector, are especially useful in routing device arrays. They can also be used in digital routing and at any time when there is connectivity on the devices and metals, and the connections can be made with straight-line routing.

- 3) **QuickColor** – This is a collection of coloring tools that can be used in the Cadence coloring environment, or with custom, in-house coloring schemes. In all tools both the metal and the connected via stack are colored. The tools in this group are:
 - Color By Click** – click on an individual metal or via and the metal and coloring metal is added to the metal and via.
 - Color By Line** – draw a line across a metal bus or group or shapes and coloring will be added.
 - Color By Search** – search for uncolored shapes and/or vias and color them while stepping through the results.
 - Color By WSP** – adds coloring to all routing shapes in a WSP region.

These are all new applications in the LASA (Advanced Node) add-on module. This module does not require additional settings in the SKILLCAD rule file. The tools in the

new module can be used as soon as the new SKILLCAD version is installed, and the new license is activated.

- **Enhancements and Bug Fixes**

- 1) **Bus Adjust, Bus Move, Bus Stretch, etc.** – an issue was fixed where, if you had an instance (cell) created that contained only metals and vias, the tools would recognize this instance as a via cell and move it with the metals.

New for release v4.3A

- **New Functions**

- 1) **Edit Note** – (In “Label Functions”) A new function to edit multi-line labels (notes). In a previous release the multi-line editing was in the Quick Note function. Now it has been enhanced and is its own function.
- 2) **Zoom To Coord** – (In “Kits”) A new function to zoom to coordinates input in the CIW, or to a point in the layout window designated by a mouse click.

- **Enhancements and Bug Fixes**

- 1) **Shield River Router** – (In “V-Editor”) This has been improved for tandem and parallel shield routing.
- 2) **CMOS Xview** – (On the “SKILLCAD” pull-down menu) This has been improved for the FinFet process with poly and diffusion local interconnect layers.
- 3) **Pin Placer/Browser** – (In “Pin Functions”) Improved functionality. Now when the label orientation is set to “As is”, the command will keep the label’s relative location in the pin fig, after snapping the pin to the prBoundary. Also the “Place On Selected Shapes/Insts” has been improved to place pins on rectangular shapes.
- 4) **Rename Pin** – (In “Pin Functions”) Fixed a bug that occurred in replacing the prefix of pin names. The function has also been improved to update the pin name when the original pin name is the same as the terminal name.
- 5) **SegJumper** – This has been improved to use the default width/space settings for different rule categories, defined in the SKILLCAD setup file.
- 6) **Promote Pin** – (in “Pin Functions”) This has been improved to handle pins with no specified access direction property.
- 7) **Setup (User Interface)** – An improvement to the metal layer rule setup. Now the default “Copy From” metal layer will be the metal layer, one layer below the current metal layer, instead of always defaulting to “Metal 1” (first metal).
- 8) **Routing / via related commands, in general** – fixed a bug to avoid an infinite loop situation, when calculating the via parameters.

- 9) **MPP Ring and Fill Via** – These have been improved to handle different contact settings in the Rule Categories, defined in the Setup file. Also improved the form to display the field labels better in IC6.1.8.
- 10) **Draw Slot Path and Convert To Slot Path** – Improvements to the grid snapping, while keeping 45-degree edges.

New for release v4.2S

- **New Functions**

- 1) **Quick Note** – New function to create and edit multi-line notes. Originally the multi-line note creation was part of the Pin Functions->Quick Label(Pin) program. Since editing multi-line notes was being added, it was decided to make this a new function called Quick Note under the Label Functions. This Quick Note function replaces the Quick Label(Pin) function in the Label Functions.
- 2) **V-Editor, Multi-Layer Overlay** – This function creates multiple overlays of metal on existing metal routes or buses. The appropriate via stacks are added to connect the new metal overlays to the existing metals.

- **Enhancements and Bug Fixes**

- 1) **SegJumper** - Will now use the layer selected in the LSW as the default starting layer for beginning a route.
- 2) **SegJumper** – Improvements to use the default values from the Rule Category in SKILLCAD setup rule file when “-1” is set in the minimum width and minimum spacing fields.
- 3) **Sometimes the text labels for the fields in forms is not visible** – This problem is related to the Cadence version and possibly the font type and size. This has been adjusted again based on Cadence version IC6.1.7 and IC6.1.8.
- 4) **BusJumper** – if minimum metal spacing rules are violated due to the bus construction, a pop-up window will give a warning message.
- 5) **Fill Via and MPP/Ring** – when via/contact definitions were added which did not exist in the default rule categories, the new definitions would not appear as a selection in the “From” and “To” display fields. This has been fixed to update the via/contacts when changing the rule categories.
- 6) **GUI issue where field descriptor texts do not display properly** – This issue is related to the Cadence version. This has been adjusted many times and is adjusted again based on IC6.1.7.
- 7) **Pin Placer/Browser** - "Place On Selected Shapes/Insts" only places the pins on Paths or Path Segments not Polygons. Pins will also now be placed on polygons.
- 8) **Layer Handler** – Added the ability to turn on visibility and selectability with one click.
- 9) **V-Editor, Bus Grow** – Now handles path segments with different widths correctly. The corners are filled in correctly.

- 10) **MPP/Ring** – A new button was added, “Set Selected MPPs All Choppable”, to enable the diffusion layers to be chopped. This feature is only supported in IC6.
- 11) **Fill Via** – Improved to handle shapes with up to 3900 vertices.
- 12) **Rename Pin/Label** – This has been improved to be able to change pin names (not just the bus bracket types).
- 13) **SegJumper** – In the Distribute Segs function, a pop-up message has been added to warn if the available space is less than the minimum space needed for the metals and spacings.
- 14) **Quick Label(Pin)** – If the metal width was on a “.005” grid, the pin was placed off grid. This has been improved to place the labels on grid. Also, if the metal width is on an odd multiple of the grid, the pin will be one grid smaller than the shape width.
- 15) **Expand Pin to Shape** – Improved to keep the original label size if the default is specified (i.e., -1).
- 16) **Race Track** – A problem using 1000 as the dbUnit (not correct for 7nm environment), was fixed.
- 17) **Via Wall Shield** – Enhanced to handle multiple layers, with the option to connect multiple layers by vias, for the signal paths.
- 18) **V-Editor, Round Corner** – Improvements for the “Customize” Corner Type, to allow the specification of the radius for both the inner and outer corners.
- 19) **GetNet, Extract Net, Hilight Net** – When using Assura to Extract or Hilight a net, a new button displays on the form called “Modify avParameters”, which allows the user to add customized avParameters for the Assura run. This was added to allow users to modify the .rsf file to avoid disk space problems when extracting or highlighting large nets.
- 20) **Kits, Sync Window View** – The name of this function has been changed to “Sync Layout View” on the Kits menu, since a similar command for schematics called “Sync Schematic View” was added to the Kits menu after the original “Sync Window View” command. This better reflects what each of the commands do. No changes were made to the command itself.
- 21) **Pin Placer/Browser** – When the “Auto” option is set, the tool gets the orientation of the pins from the lower level of hierarchy.
- 22) **V-Editor, Comb Router** – If the source/drain contacts have been previously covered and connected by metals using the Comb Router tool, and then you draw another selection line across these contacts, the odd/even numbering of the contacts is incorrect. This has been fixed.
- 23) **Density Check** – By default, now only the density of the drawing metals. Also, now the user can input the desired layer to check, instead of having to search a long list of layers.
- 24) **Pin Functions, Promote Pins** – User can now add the pin access direction property on the pins.
- 25) **Icon Bar, Pull-down Menu commands** – The Icon bar commands and the pull-down menu commands are now the same. All commands are now available for selection on both the Icon Bar and the Pull-down Menu.

New for release v4.2R

- **New Functions**

- 1) New Search interface for ICLA commands.
- 2) Option to add SKILLCAD pulldown into schematic window (**Kits, Sync Schematic View**)

To enable the “SKILLCAD” menu in the schematic view, the following global variable has to be defined in .cdsinit **before loading SKILLCAD:**

```
when( getShellEnvVar("SKILLCAD_PATH")&&isReadable(strcat( getShellEnvVar("SKILLCAD_PATH") "/source/skillcad.il"))
      _createSkillcadSchematicMenu = t
      load( strcat( getShellEnvVar("SKILLCAD_PATH") "/source/skillcad.il"))
);when
```

- **Enhancements and bug fixes**

- 1) **rSolver command** - fixed a bug where rSolver would not take the starting and ending line for the measurement.
- 2) **Pins, Pin Placer/Browser** - Justification of label after placing pins. Before: label origin is 1 grid inside of prBoundary. Now: Label origin is exactly on prBoundary
- 3) **V-Editor, Bus Connect** – Clone groups are now handled correctly.
- 4) **Advanced Fill** - Enhancement request. Flat shapes will be saved as figGroups
- 5) **Kits, Xor Background View** – Command will now compare label string.

New for release v4.2Q

- **New Functions**

- 1) **Search SKILLCAD commands**, is a tool to search for SKILLCAD commands in the Virtuoso environment. The commands can be searched by command name and keywords. Once the desired command is found, the command can be launched directly from the tool.

- **Enhancements and bug fixes**

- 1) In the **FillVia command**, a bug was fixed where the via pattern would extend past the actual overlap area of the metals to be connected.

- 2) **Align InstPins (merged Align Inst Pin to neighbor and Align Inst Pin to top)**, in Pin Functions, has been fixed to now:
 - a. Handle pin labels correctly
 - b. Will require the Editing Instance in Edit Mode
 - c. Improved the way to determine the relative position between the editing Instance and reference Instance
- 3) Recompiled the context to be backward compatible in IC5 64-bit mode.
- 4) The **GetNet command**, in Net Functions, has been improved so that it can now recognize metal cut patterns, and break up the net correctly.
- 5) The **Xor Background View**, in Kits, has been improved to recognize and report layers that are only found in one of the views. It also now uses two colors to show whether the missing/extra shape is in the current cellview or in the background view.
- 6) The **CMOS XView command** has been improved to allow poly contact and diffusion contact in different layers.
- 7) Fixed a bug in the **StepRouter command** to handle equivalent layers correctly.
- 8) The **River Router command**, in V-Editor, has been improved.

New for releases v4.2A – v4.2P

- **New Functions**

- 2) **Cross Sectional View (CXVIEW)** for OLED process. Draw a line through the area to view, and a cross-sectional representation of that area will be generated.
- 3) **Cross Sectional View (CMOS_XVIEW)** for CMOS process. Draw a line through the area to view, and a cross-sectional representation of that area will be generated.
- 4) **“Layer Generation”** on the SkillCad Kits menu, is a function to generate new shapes based on the interaction of two selected objects.
- 5) **“Sync Schematic View”**, on the Kits menu, is similar to the existing “Sync Window View” and is in the SkillCad Kits menu. This new function enables a designer pull up two versions of the same schematic (such as a previous version of a schematic and the current version of the schematic) and zoom to the same point in both schematics for comparison purposes.
- 6) **“Replace Part of Layer”**, on the SkillCad Kits menu, enables a designer to replace or change the layer, of the part of the shape or path, that is over another area (such as a cell boundary). As an example, if a metal shape or path crosses over a lower-level circuit block, the part of the metal that is within the boundary of the cell block can be changed to a different layer.

- 7) **“XOR Background View”**, on the Kits menu, enables the designer to run a Layout vs. Layout comparison between the current cell view and the cellview being used as background view. The function also compares labels and provide an interface to allow the designer to browse the differences between the two views.
- 8) **“Move Pin to Pad Center”** on the SKILLCAAD Pin Functions menu, enables a designer to quickly move pins that have already been placed on pads, to the centers of the pads.
- 9) **“River router Adjustor”**, on the V-Editor menu, enables a designer to adjust the length/resistance of the metal routings created by the River Router function.
- 10) **“Shield River Route”**, on the V-Editor menu, enables a user to shield the routing created by the River Router function.
- 11) **“rAdjustor”**, on the V-Editor menu, enables a designer to adjust the length/resistance on a segment of a metal route.
- 12) **“Fill Track”**, on the Track Functions menu, creates dummy fill on the routing tracks.

- **Enhancements and bug fixes**

- 1) SkillCad is now compatible with Cadence IC6.1.8 and IC18
- 2) In Density Check, an option has been added to check the density of the result of a Boolean operation between two, or multiple layers.
- 3) Fixed an off-grid issue occurring when the layout grid < 0.001 in advanced nodes.
- 4) In the Mesh Bus function, an option was added to use keys 1, 2, 3... to change routing layers. This is similar to the way the other metal routing functions operate.
- 5) In the Line Distance function an option was added to check distances between all neighboring edges. For example, if a line is drawn across a bus of metal routes, all the metal widths and spaces of the metals included by the line will be measured and displayed. There is also a new option to check distances of PrBoundary Edges.
- 6) The metal enclosure of vias has been improved for difference cutClass in advanced nodes.
- 7) In the Nano Track Router function, an option has been added that will allow a designer to assign net names on the routing metals.
- 8) In Via Wall Shield, the distance between the routing metal and the shielding metals would sometimes change from the distance specified in the form, to a different value. This has been fixed.
- 9) There was a problem when setting up minimum metal overlaps of vias. This problem has been fixed.
- 10) In the RAdjust function, there was a problem when the squiggles were created in the horizontal plane, in a tight space. Sometimes the squiggles would merge with sections of the metal line. This issue has been fixed.

- 11) An enhancement In the Extract Net function allows the designer to select multiple nets. These nets are then displayed as a list, in a window in the form. The designer can then select the nets to be extracted, from this list of nets.
- 12) An enhancement to the User Interface in the User Preferences form, enables a user to customize the Pop-up menu they see, when the SKILLCAD is selected from the Cadence tool bar. There is a new button in the User Preferences form, in the Tool Bar customization area, called "Customize Pop-up Menu". When this is selected, a form pops up that allows the user to select the commands that will appear on the pop-up menu that appears when SKILLCAD is selected.