

# SKILLCAD Topical Guide

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## SKILLCAD Topical Guide

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## SKILLCAD Topical Guide

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### Viewing

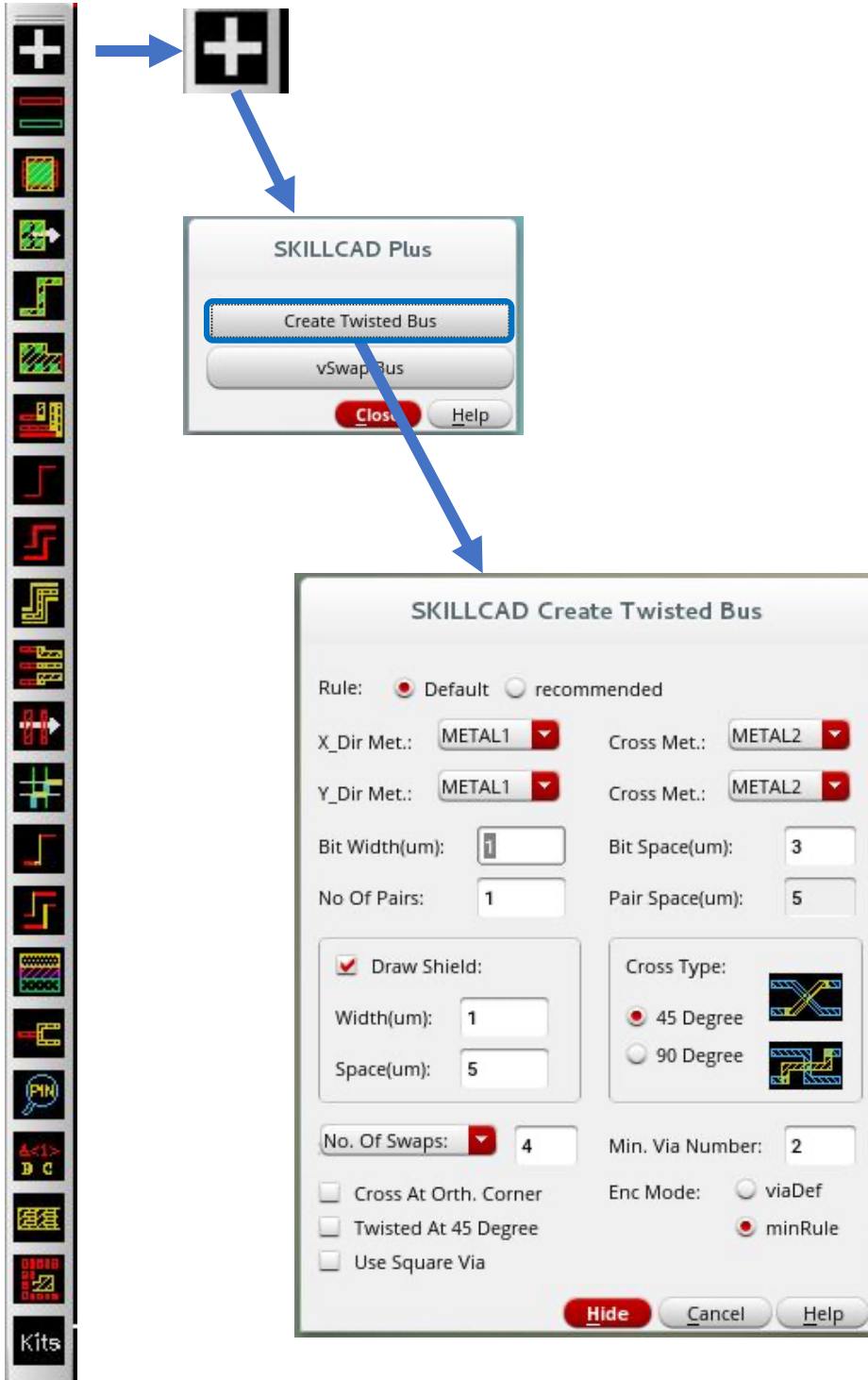
[Syncing the window views for two similar cells](#)

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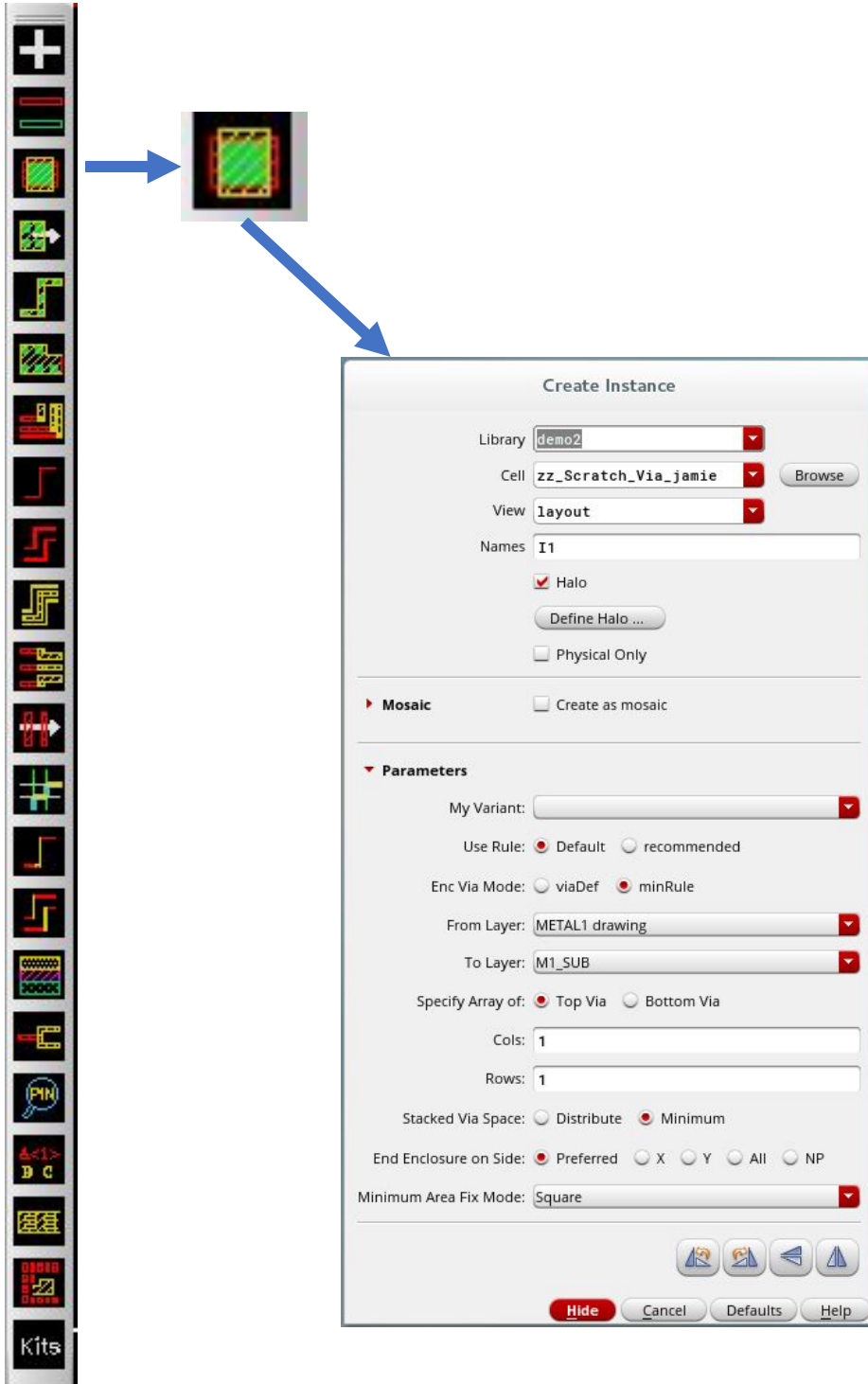
[Viewing circuit data, using layer lists to filter the layers \(Layer Handler\)](#)

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## SKILLCAD Plus, Create Twisted Bus



## SKILLCAD Create Via



The diagram illustrates the process of creating a via in SKILLCAD. It starts with a vertical toolbar on the left containing various layout tools. A blue arrow points from the 'Create Via' icon (a square with a green grid) to a preview window showing a 3D-like view of a via. A second blue arrow points from this preview to the 'Create Instance' dialog box.

**Create Instance**

Library:

Cell:

View:

Names:

Halo

Physical Only

**Mosaic**  Create as mosaic

**Parameters**

My Variant:

Use Rule:  Default  recommended

Enc Via Mode:  viaDef  minRule

From Layer:

To Layer:

Specify Array of:  Top Via  Bottom Via

Cols:

Rows:

Stacked Via Space:  Distribute  Minimum

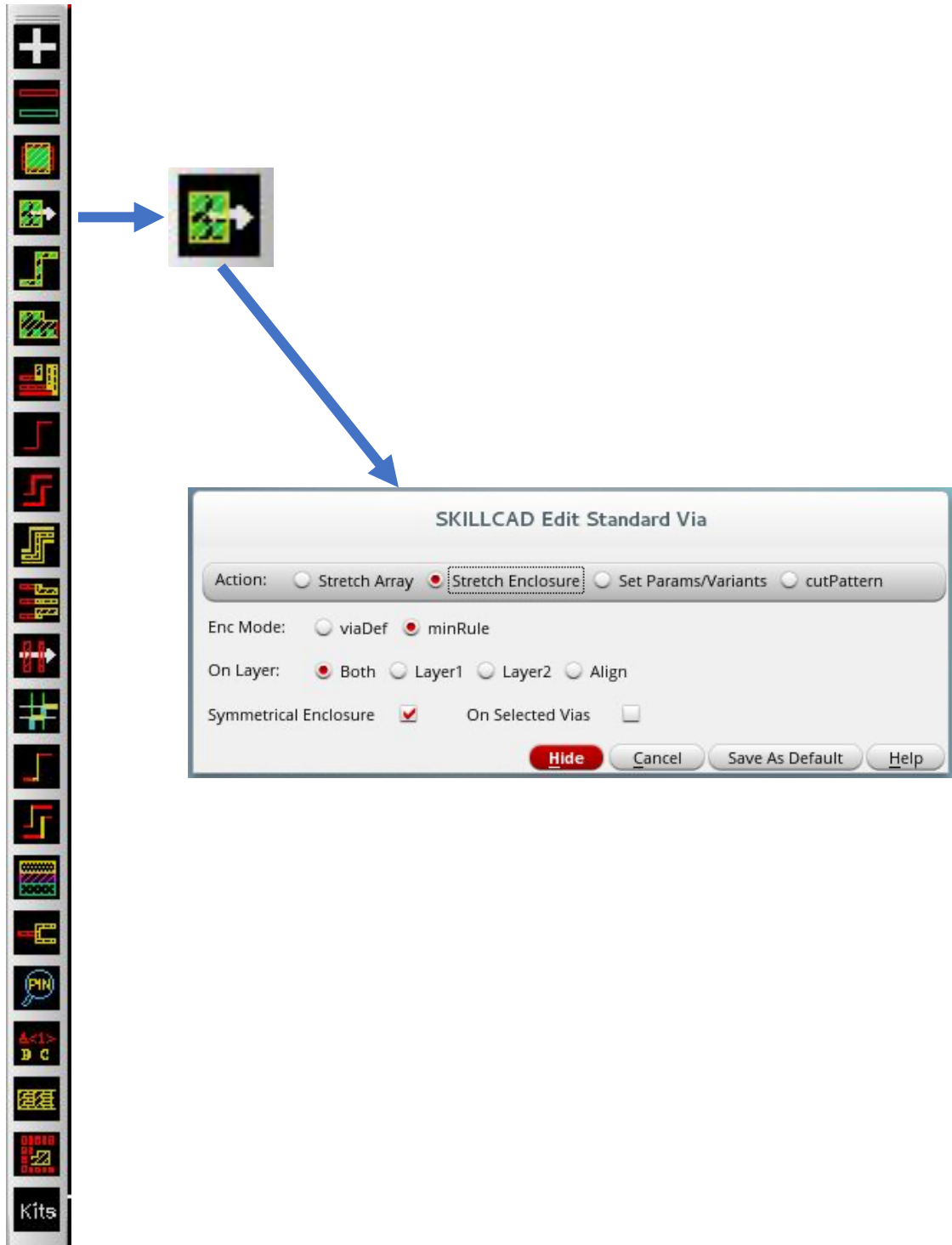
End Enclosure on Side:  Preferred  X  Y  All  NP

Minimum Area Fix Mode:

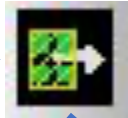
## SKILLCAD Edit Standard Via



## SKILLCAD Edit Standard Via, Stretch Enclosure



## SKILLCAD Edit Standard Via, Set Params/Variants



**SKILLCAD Edit Standard Via**

Action:  Stretch Array  Stretch Enclosure  **Set Params/Variants**  cutPattern

Enc Mode:  viaDef  minRule

My Variant Name:  Save Del

Reset Params To:

Via Columns:  +  Rows:  +

Via Width(um):  +  Height:  +

Via SpaceX(um):  +  SpaceY:  +

Symmetrical Enclosure

Layer1 Enc Left:  +  Right:  +

Layer1 Enc Top:  +  Bottom:  +

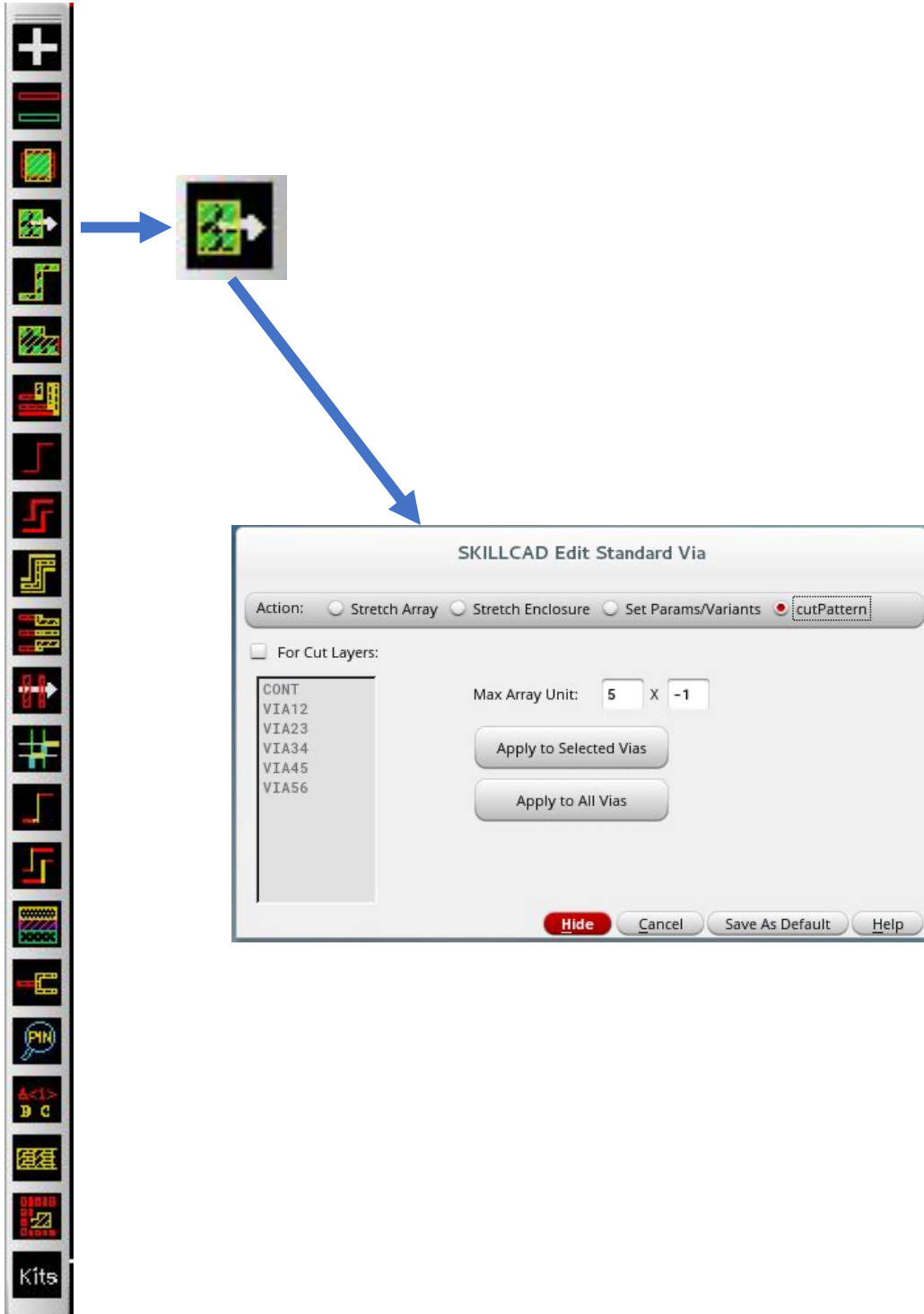
Layer2 Enc Left:  +  Right:  +

Layer2 Enc Top:  +  Bottom:  +

Imp1 Enc X:  +  Enc Y:  +

Imp2 Enc X:  +  Enc Y:  +

## SKILLCAD Edit Standard Via, Cut Patterns





## SKILLCAD Fill Via

The image shows the SKILLCAD Fill Via in Area dialog box with several callouts explaining its features:

- Fill all from and to layers, in a rectangular area.** (Points to the "Fill All 'From' and 'To' layer Overlaps Within a Rect Region" button)
- Fill metal overlaps, by clicking on overlap.** (Points to the "Fill Overlap By Click" button)
- Fill vias in a selected region.** (Points to the "Fill Selected Region(s)" button)
- Fill metal overlaps, by clicking on overlap; auto detect from and to layers.** (Points to the "\*\*\* Fill Overlap of Any Two Layers By Click \*\*\*" button)
- Fill metal overlaps, on same VXL net, within a rectangular region.** (Points to the "Fill Metal Overlaps of Same VXL Net Within a Rect Region" button)
- Draw a polygonal via array.** (Points to the "Draw Polygon Via" button)
- Draw a rectangular via array.** (Points to the "Draw Rect Via" button)

The dialog box itself contains the following settings and options:

- Use Rule:**  Default  recommended
- Enc Mode:**  viaDef  minRule **Space:**  Distribute  Minimum
- Align Metal Edge  Flat Via in Polygon  Group Via
- End Enclosure Side:**  Preferred  X  Y  All  NP
- Fix Min. Area:** Square  Ignore Invisible Layers
- Check same VXL net name when filling overlaps
- Outside **Layer:**  **By(um):** 0
- Commands Use "From" and "To" Layer Settings:**
  - From:** METAL1 drw **To:** M1\_SUB
  - Fill All "From" and "To" layer Overlaps Within a Rect Region
  - Fill Overlap By Click
  - Draw Polygon Via
  - Fill Selected Region(s)
  - Draw Rect Via
- Commands Auto-detect "From" and "To" Layers:**
  - \*\*\* Fill Overlap of Any Two Layers By Click \*\*\*
  - Fill Metal Overlaps of Same VXL Net Within a Rect Region
- Buttons:** Close, Save As Default, Help

## SKILLCAD Create Multi-Part Path (MPP)



**SKILLCAD Create MPP**

Use Rule:  Default  recommended

Enc Mode:  viaDef  minRule

From: METAL1 drw To: M1\_SUB

Specify:  Bottom Via  Bottom Layer  Top Via  Top Layer

Number of "CONT drawing":

"DIFF" Width(um):

Set Starting Enclosure(um):

Set Ending Enclosure(um):   Fix MinWidth

Via Space in Path Dir:  Distribute  Min  Specify:

Via Space in Width Dir:  Distribute  Min  Specify:

**Grow/Ring Options:**

Grow From: Boundary POLY1 drawing

Reference Edge of the Ring:  inner  center  outer

Grow By(um):   Grow To Rectangle

Save MPP as Cell Name(Prefix): Auto

Buttons: Grow From Selected Objects, Draw Multipart Path, Draw Polygon Ring, Draw Rect Ring, Change Selected MPPs, Reshape Selected MPP

Buttons: Close, Save As Default, Help

Creating an MPP.

Creating a ring around existing shapes, instances.

Changing selected MPPs.

Creating a ring, guarding.

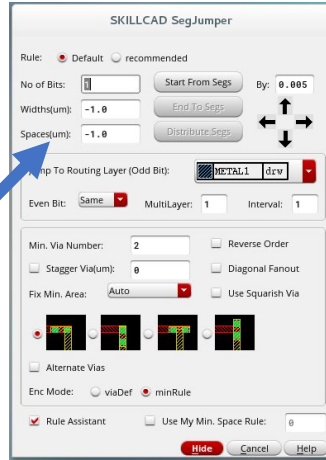
Reshaping an MPP/ring.

[PDF Doc](#)

[PowerPoint Doc](#)

[Video](#)

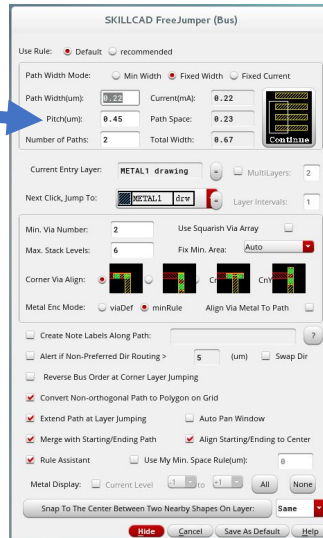
# SKILLCAD Creating a Metal Bus, (3 Ways)



[PDF Doc](#)

[PowerPoint Doc](#)

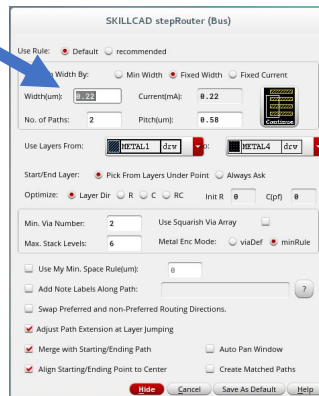
[Video](#)



[PDF Doc](#)

[Word Doc](#)

[Video](#)

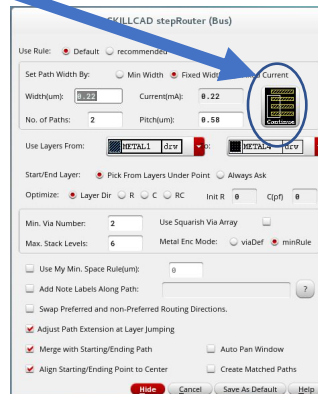
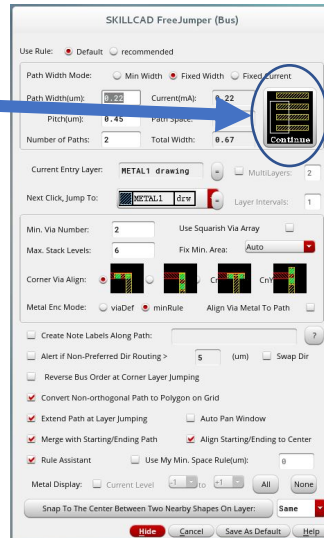
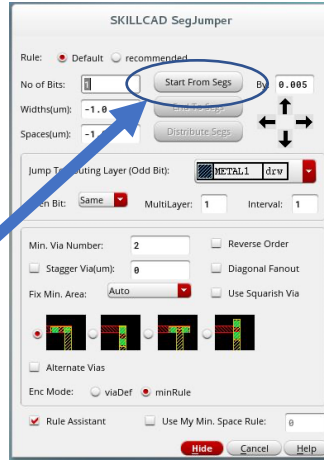


[PDF Doc](#)

[Word Doc](#)

[Video](#)

## SKILLCAD Continuing a Metal Bus, (3 Ways)



[PDF Doc](#)

[PowerPoint Doc](#)

[Video](#)

[PDF Doc](#)

[Word Doc](#)

[Video](#)

[PDF Doc](#)

[Word Doc](#)

[Video](#)

## SKILLCAD Creating a Metal Path/Path Segment, (3 Ways)

The image illustrates three methods for creating a metal path in SKILLCAD. A vertical toolbar on the left contains various routing tools. Three blue arrows point from specific tools in the toolbar to three dialog boxes on the right:

- SKILLCAD SegJumper**: This dialog is used for creating a segment between two points. It includes settings for Rule (Default/recommended), No of Bits, Widths(um), and Jump: (um). It also features options for Jump To Routing Layer (Odd Bit), Even Bit, MultiLayer, Interval, Min. Via Number, Stagger Via(um), Fix Min. Area, and Enc Mode (viaDef/minRule). A Rule Assistant checkbox is also present.
- SKILLCAD FreeJumper (Path)**: This dialog is used for creating a path segment. It includes settings for Use Rule (Default/recommended), Width Mode (Min Width/Fixed Width/Fixed Current), As Starting Path, Current Entry Layer, Next Click, Jump To, Min. Via Number, Max. Stack Levels, Corner Via Align, Metal Enc. Mode, Create Note Labels Along Path, Alert if Non-Preferred Dir Routing, Extend Path at Layer Jumping, Merge with Starting/Ending Path, Probe The Drawing Net, Rule Assistant, and Metal Display. A Snap To The Center Between Two Nearby Shapes On Layer checkbox is also included.
- SKILLCAD stepRouter (Path)**: This dialog is used for creating a stepped path. It includes settings for Use Rule (Default/recommended), Set Path Width By, As Starting Path, Use Layers From, Start/End Layer, Optimize (Layer Dir, R, C, RC, Init R, Cpp), Min. Via Number, Max. Stack Levels, Metal Enc. Mode, Use My Min. Space Rule(um), Add Note Labels Along Path, Swap Preferred and non-Preferred Routing Directions, Adjust Path Extension at Layer Jumping, Merge with Starting/Ending Path, Align Starting/Ending Point to Center, and Create Matched Paths.

[PDF Doc](#)

[PowerPoint Doc](#)

[Video](#)

[PDF Doc](#)

[Word Doc](#)

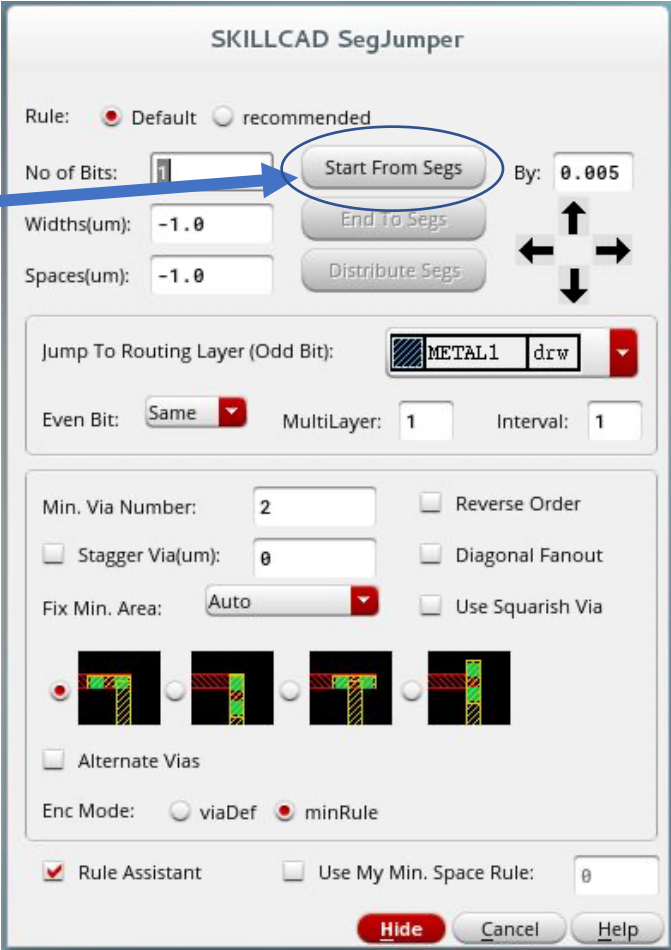
[Video](#)

[PDF Doc](#)

[Word Doc](#)

[Video](#)

## SKILLCAD Continuing a Metal Path/Path Segment



The image shows the SKILLCAD SegJumper dialog box, which is used for continuing a metal path or path segment. The dialog is titled "SKILLCAD SegJumper" and contains several configuration options:

- Rule:**  Default  recommended
- No of Bits:**  (A blue arrow points from this field to the "Start From Segs" button.)
- Widths(um):**
- Spaces(um):**
- By:**  (A blue arrow points from the "Start From Segs" button to this field.)
- Buttons:** "Start From Segs" (circled in blue), "End To Segs", and "Distribute Segs".
- Jump To Routing Layer (Odd Bit):**   (dropdown)
- Even Bit:**  (dropdown)
- MultiLayer:**  **Interval:**
- Min. Via Number:**   Reverse Order
- Stagger Via(um):   Diagonal Fanout
- Fix Min. Area:**  (dropdown)  Use Squarish Via
- Via Style:** Four icons showing different via styles. The first icon is selected with a radio button.
- Alternate Vias
- Enc Mode:**  viaDef  minRule
- Rule Assistant  Use My Min. Space Rule:
- Buttons:** "Hide", "Cancel", "Help"

On the left side of the image, there is a vertical toolbar with various icons. A blue arrow points from the "Start From Segs" button in the dialog to a small thumbnail image of a circuit board layout, which in turn has a blue arrow pointing to the "Start From Segs" button.



## SKILLCAD SegJumper, Various Functions



- Distributing bus metals.
- Alternating bus metal layers.
- Staggering in-line vias.
- Reversing bus routing order at via corners.
- Fan out/in of bus routes.
- Alternating via directions at bus via corners.

**SKILLCAD SegJumper**

Rule:  Default  recommended

No of Bits:  Start From Segs By:

Widths(um):  End To Segs

Spaces(um):  Distribute Segs

Jump To Routing Layer (Odd Bit):

Even Bit:  MultiLayer:  Interval:

Min. Via Number:   Reverse Order

Stagger Via(um):   Diagonal Fanout

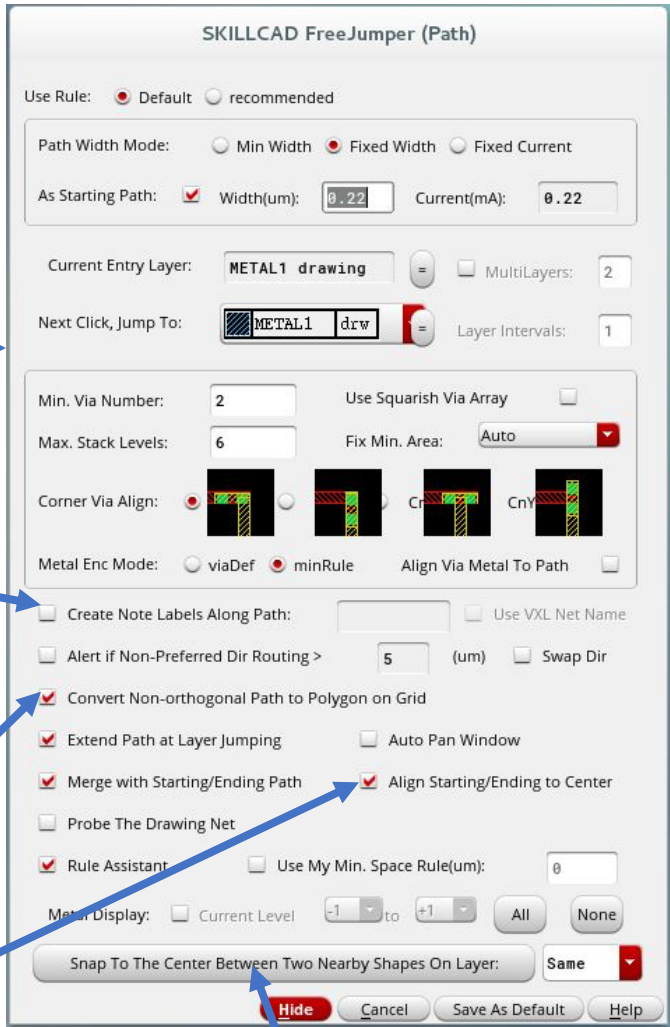
Fix Min. Area:   Use Squarish Via

Alternate Vias

Enc Mode:  viaDef  minRule

Rule Assistant  Use My Min. Space Rule:

## SKILLCAD Path/Path Segments, Various Functions



Creating labels along the path.

Convert a non-orthogonal path to a polygon, on grid.

Align the starting and ending path to the center of the existing metal.

Snap path/path segment to the center, between two existing shapes.



## SKILLCAD Step Router Path/Path Segments, Various Functions



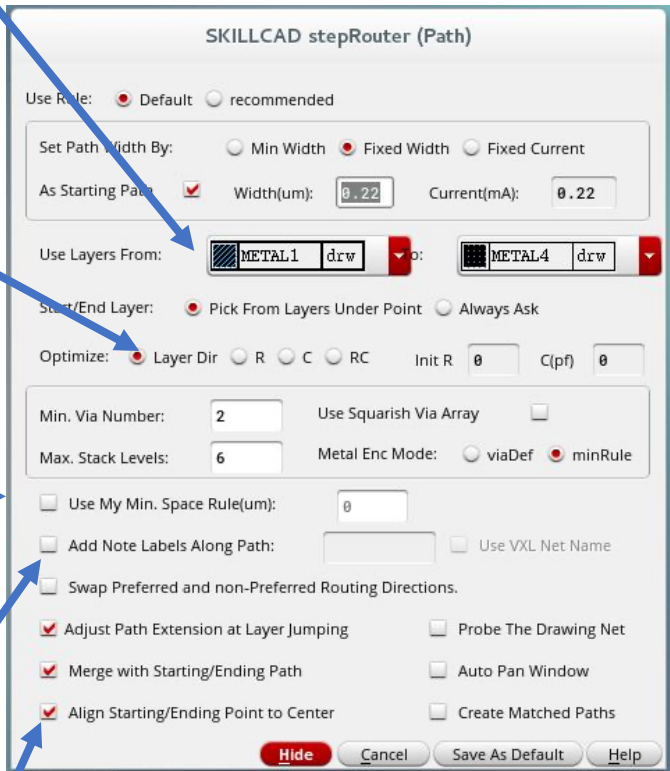
Creating a path/path segment that automatically vias over/under existing metal layers.

Creating a path/path segment that automatically optimizes for layer direction, R, C, and RC.



Add labels along path/path segment.

Aligning the starting/ending points of the path/path segment to the center of existing metals.



## SKILLCAD Step Router Path/Path Segments, Matched Paths

**SKILLCAD stepRouter (Path)**

Use Rule:  Default  recommended

Set Path Width By:  Min Width  Fixed Width  Fixed Current

As Starting Path  Width(um): 0.22 Current(mA): 0.22

Use Layers From: METAL1 drw TO METAL4 drw

Start/End Layer:  Pick From Layers Under Point  Always Ask

Optimize:  Layer Dir  R  C  RC Init R 0 C(pf) 0

Min. Via Number: 2 Use Squarish Via Array   
Max. Stack Levels: 6 Metal Enc Mode:  viaDef  minRule

Use My Min. Space Rule(um): 0  
 Add Note Labels Along Path:  Use VXL Net Name  
 Swap Preferred and non-Preferred Routing Directions.

Adjust Path Extension at Layer Jumping  Probe The Drawing Net  
 Merge with Starting/Ending Path  Auto Pan Window  
 Align Starting/Ending Point to Center  Create Matched Paths

\*R0\* matched paths starting points: [Sel...]  
\*MY\* matched paths starting points: [Sel...]  
\*MX\* matched paths starting points: [Sel...]  
\*R90\* matched paths starting points: [Sel...]  
\*R180\* matched paths starting points: [Sel...]  
\*R270\* matched paths starting points: [Sel...]  
\*MYR90\* matched paths starting points: [Sel...]  
\*MXR90\* matched paths starting points: [Sel...]

[Hide] [Cancel] [Save As Default] [Help]

Creating matched paths/path segments.

# SKILLCAD Step Router Bus, Various Functions



Creating a bus that automatically vias over/under existing metal layers.

Creating a bus that automatically optimizes for layer direction, R, C, and RC.

Add labels along the bus routes.

Aligning the starting/ending points of the bus to the center of existing metals.

**SKILLCAD stepRouter (Bus)**

Use Rule:  Default  recommended

Set Path Width By:  Min Width  Fixed Width  Fixed Current

Width(um): 0.22 Current(mA): 0.22

No. of Paths: 2 Pitch(um): 0.58

Use Layers From: METAL1 drw to METAL4 drw

Start/End Layer:  Pick From Layers Under Point  Always Ask

Optimize:  Layer Dir  R  C  RC Init R 0 C(pf) 0

Min. Via Number: 2 Use Squarish Via Array

Max. Stack Levels: 6 Metal Enc Mode:  viaDef  minRule

Use My Min. Space Rule(um): 0

Add Note Labels Along Path: ?

Swap Preferred and non-Preferred Routing Directions.

Adjust Path Extension at Layer Jumping

Merge with Starting/Ending Path  Auto Pan Window

Align Starting/Ending Point to Center  Create Matched Paths

Hide Cancel Save As Default Help

## SKILLCAD Step Router Bus, Matched Bus




Creating matched bus routes.

**SKILLCAD stepRouter (Bus)**

Use Rule:  Default  recommended

Set Path Width By:  Min Width  Fixed Width  Fixed Current

Width(um): 0.22 Current(mA): 0.22 

No. of Paths: 2 Pitch(um): 0.58

Use Layers From: METAL1 drw to METAL4 drw

Start/End Layer:  Pick From Layers Under Point  Always Ask

Optimize:  Layer Dir  R  C  RC Init R 0 C(pf) 0

Min. Via Number: 2 Use Squarish Via Array

Max. Stack Levels: 6 Metal Enc Mode:  viaDef  minRule

Use My Min. Space Rule(um): 0

Add Note Labels Along Path: ?

Swap Preferred and non-Preferred Routing Directions.

Adjust Path Extension at Layer Jumping

Merge with Starting/Ending Path  Auto Pan Window

Align Starting/Ending Point to Center  Create Matched Paths

\*R0\* matched paths starting points: [ ] Sel...

\*MY\* matched paths starting points: [ ] Sel...

\*M\* matched paths starting points: [ ] Sel...

\*R90\* matched paths starting points: [ ] Sel...

\*R180\* matched paths starting points: [ ] Sel...

\*R270\* matched paths starting points: [ ] Sel...

\*MYR90\* matched paths starting points: [ ] Sel...

\*MXR90\* matched paths starting points: [ ] Sel...

**Hide** Cancel Save As Default Help

## SKILLCAD Advanced Fill

**SKILLCAD UniFill Form**

Template: [ ] [Save] [Load]

Fill Dummy shape of Layer: **Select Layer...**

For the Coverage of Layer: **Select Layer...**

Ignore Coverage: Min(%): 20 Max(%): 80

Filling Pattern Defined By:  Rectangle  Cell

With Fixed:  Width  Height  Width & Height

W(um): 2 Max W: 20 Space X(um): 0

H(um): 2 Max H: 20 Space Y(um): 0

Space to Existing Figs: 0  Exact Space

Keepout Layer/Area: [ ] [...]

[Add] [Del]

[Add Above Run Set] [Del Selected Run Set]

Run Sets:

Fill Region:  [Report Coverage]

Cell Boundary Box Down Size By(um): 0

Box: [ ] [...]

Under Layer: **Select Layer...**

Selected Regions

Area to Calculate Coverage: Grow Fill-Region by 0

Use Tile Mode Square Tile Size(um): 20

Excluding Layer Purposes: [ ]

Create Exclusion on Layer Purpose: [ ]

Save to Lib: demo2 Cell: [ ]

Create Matched Fill  Place At 0:0

[OK] [Cancel] [Defaults] [Apply] [Help]

**SKILLCAD Fill Dummy**

[Advanced Fill] [Simple Fill] [Check Density] [Close] [Help]

Creating dummy fill.

Creating dummy fill, using a fill cell.

Creating dummy fill run sets.

Creating dummy fill in a defined area.

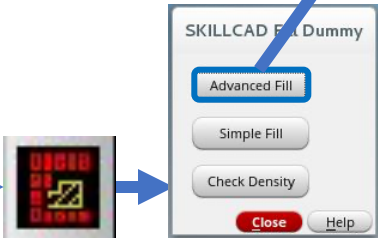
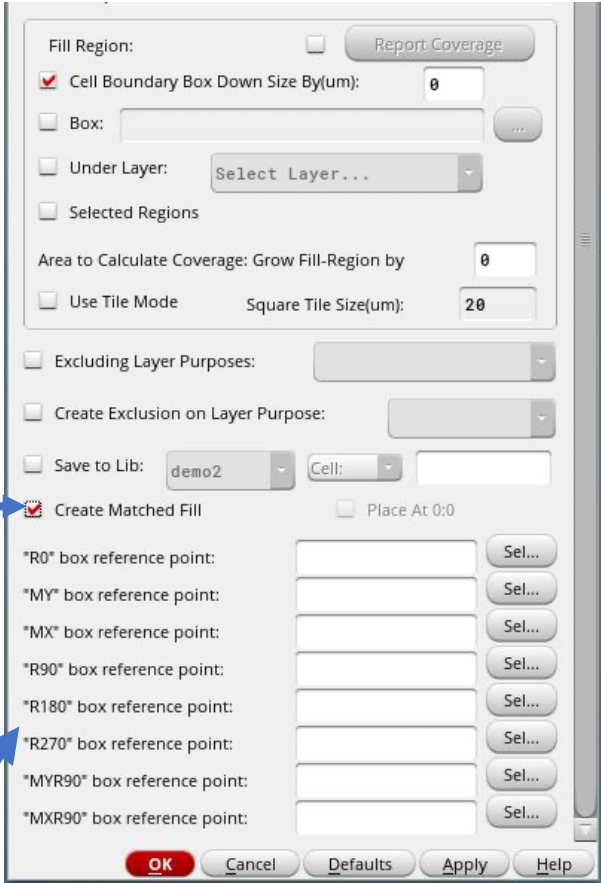
Creating dummy fill under a specified layer.

Creating dummy fill in a selected region.

## SKILLCAD Advanced Fill, Matched Fill

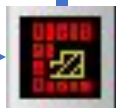
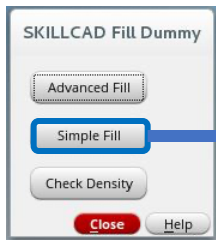


Creating matched fill.





## SKILLCAD Simple Fill



SKILLCAD Fill Area

Template:  ... Save Load

Pre-set Layer Purpose: **drawing**  Save As Cell

<input type="checkbox"/> <input type="checkbox"/> Fill Layers	Width(um)	Height	SpaceX	SpaceY	Distribute
<input type="checkbox"/> CONT drawing	0.22	<input type="checkbox"/> 0.22	0.25	<input type="checkbox"/> 0.25	<input type="checkbox"/>
<input type="checkbox"/> VIA12 drawing	0.26	<input type="checkbox"/> 0.26	0.26	<input type="checkbox"/> 0.26	<input type="checkbox"/>
<input type="checkbox"/> VIA23 drawing	0.26	<input type="checkbox"/> 0.26	0.26	<input type="checkbox"/> 0.26	<input type="checkbox"/>
<input type="checkbox"/> VIA34 drawing	0.26	<input type="checkbox"/> 0.26	0.26	<input type="checkbox"/> 0.26	<input type="checkbox"/>
<input type="checkbox"/> VIA45 drawing	0.26	<input type="checkbox"/> 0.26	0.26	<input type="checkbox"/> 0.26	<input type="checkbox"/>
<input type="checkbox"/> VIA56 drawing	0.36	<input type="checkbox"/> 0.36	0.35	<input type="checkbox"/> 0.35	<input type="checkbox"/>
<input type="checkbox"/> DIFF drawing	1	<input type="checkbox"/> 1	0.6	<input type="checkbox"/> 0.6	<input type="checkbox"/>
<input type="checkbox"/> POLY1 drawing	0.18	<input type="checkbox"/> 0.18	0.25	<input type="checkbox"/> 0.25	<input type="checkbox"/>
<input type="checkbox"/> METAL1 drawing	0.22	<input type="checkbox"/> 0.22	0.23	<input type="checkbox"/> 0.23	<input type="checkbox"/>
<input type="checkbox"/> METAL2 drawing	0.22	<input type="checkbox"/> 0.22	0.23	<input type="checkbox"/> 0.23	<input type="checkbox"/>
<input type="checkbox"/> METAL3 drawing	0.28	<input type="checkbox"/> 0.28	0.28	<input type="checkbox"/> 0.28	<input type="checkbox"/>
<input type="checkbox"/> METAL4 drawing	0.28	<input type="checkbox"/> 0.28	0.28	<input type="checkbox"/> 0.28	<input type="checkbox"/>
<input type="checkbox"/> METAL5 drawing	0.28	<input type="checkbox"/> 0.28	0.28	<input type="checkbox"/> 0.28	<input type="checkbox"/>
<input type="checkbox"/> METAL6 drawing	0.28	<input type="checkbox"/> 0.28	0.28	<input type="checkbox"/> 0.28	<input type="checkbox"/>

Fill in Selected Objects    Fill in a Rect Region    Fill in a Polygon Region

Close Help

## SKILLCAD Layer Density Check

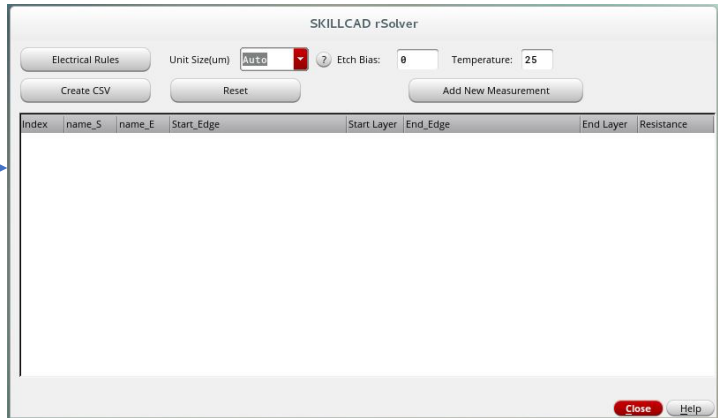
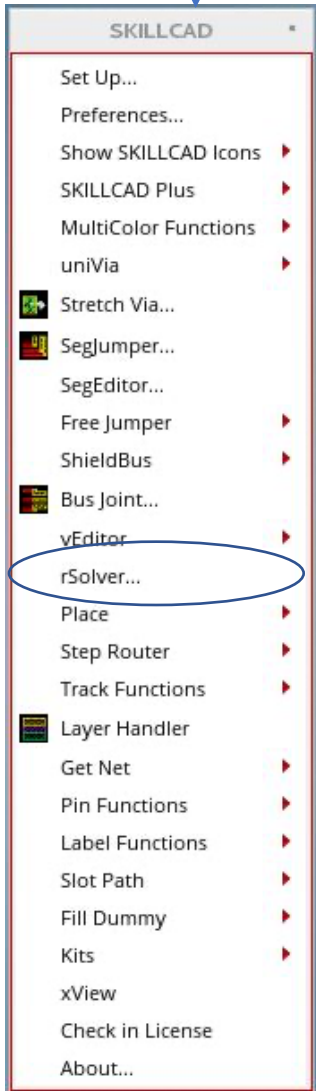
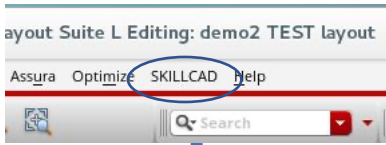
The diagram illustrates the SKILLCAD Layer Density Check process. On the left is a vertical toolbar with various layout tools. A 'Kits' button at the bottom of the toolbar points to a small window showing a circuit board layout with a red density check region. This window points to the 'SKILLCAD Fill Dummy' dialog box, which has buttons for 'Advanced Fill', 'Simple Fill', and 'Check Density'. An arrow points from 'Check Density' to the main 'SKILLCAD Layer Density Check' dialog box.

The main dialog box, titled 'SKILLCAD Layer Density Check', has the following elements:

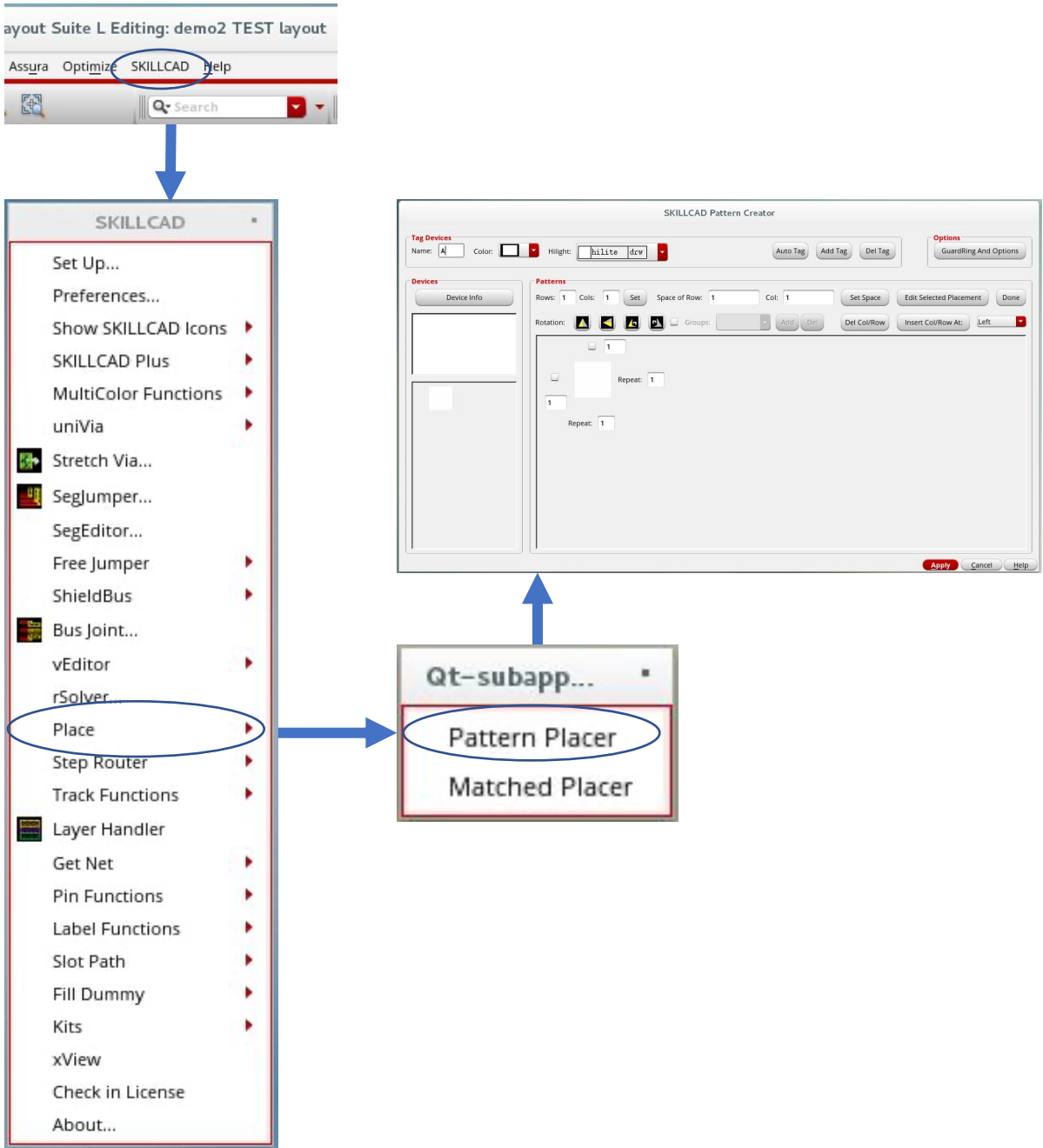
- For:** Radio buttons for 'Layer' (selected) and 'LPP'.
- Layers For Density Check:** A list box containing '1TDMY', 'BC1', 'BC2', 'BJTDUMMY', 'BLBRC2', 'BPI', 'BPLY', 'BTC', 'C1', and 'C2'. It includes 'Add' and 'Del' buttons.
- Window Size(um):** A text field with '100' and a 'Step:' dropdown menu set to 'Same As Tile'.
- Region Selection Buttons:** 'Rectangle Region', 'Polygon Region', 'Selected Region', and 'Coord Region'.
  - An arrow points from the text 'Density checking in a polygonal region.' to the 'Polygon Region' button.
  - An arrow points from the text 'Density checking in a rectangular region.' to the 'Rectangle Region' button.
  - An arrow points from the text 'Density checking in a selected region.' to the 'Selected Region' button.
  - An arrow points from the text 'Density checking in a region defined by coordinates.' to the 'Coord Region' button.
- Input Field:** A text field labeled 'x1:y1 x2:y2...' for coordinate-based selection.
- Other Buttons:** 'Clear Report', 'Close', and 'Help'.



## SKILLCAD rSolver



## SKILLCAD Pattern Placer



## SKILLCAD Quick Label

Re-Create labels for selected pins.

SKILLCAD Label Functions

- Quick Label(Pin)
- Rename Pin/Label
- Create Inst Label
- Create Voltage Label
- Mask Label(Letter)
- Close Help

SKILLCAD quickLabel

netNames Note

Height: -1 Font: stick Orientation: Auto

Layer: Auto Justification: Auto

Create Rect Pin Also  Float Pin Pin W(um): Auto H: Auto

Align to Metal Shape: Auto  as Text Display

Re-Create Labels for All (Selected) Pins (and Keep Pin Shape/Layer/Position)

Pick netNames from Schematic

Lib: demo2 Cell: TEST View: schematic

Pins Only  Exclude Defaults

Filter:

Expand all busNames

Mode: Single Line All

No. of labels for a group: 2

Label dx: 0 dy: 0

Group dx: 0 dy: 0

Use VXL Net Name

Input Labels:

Interleaf Bus Labels

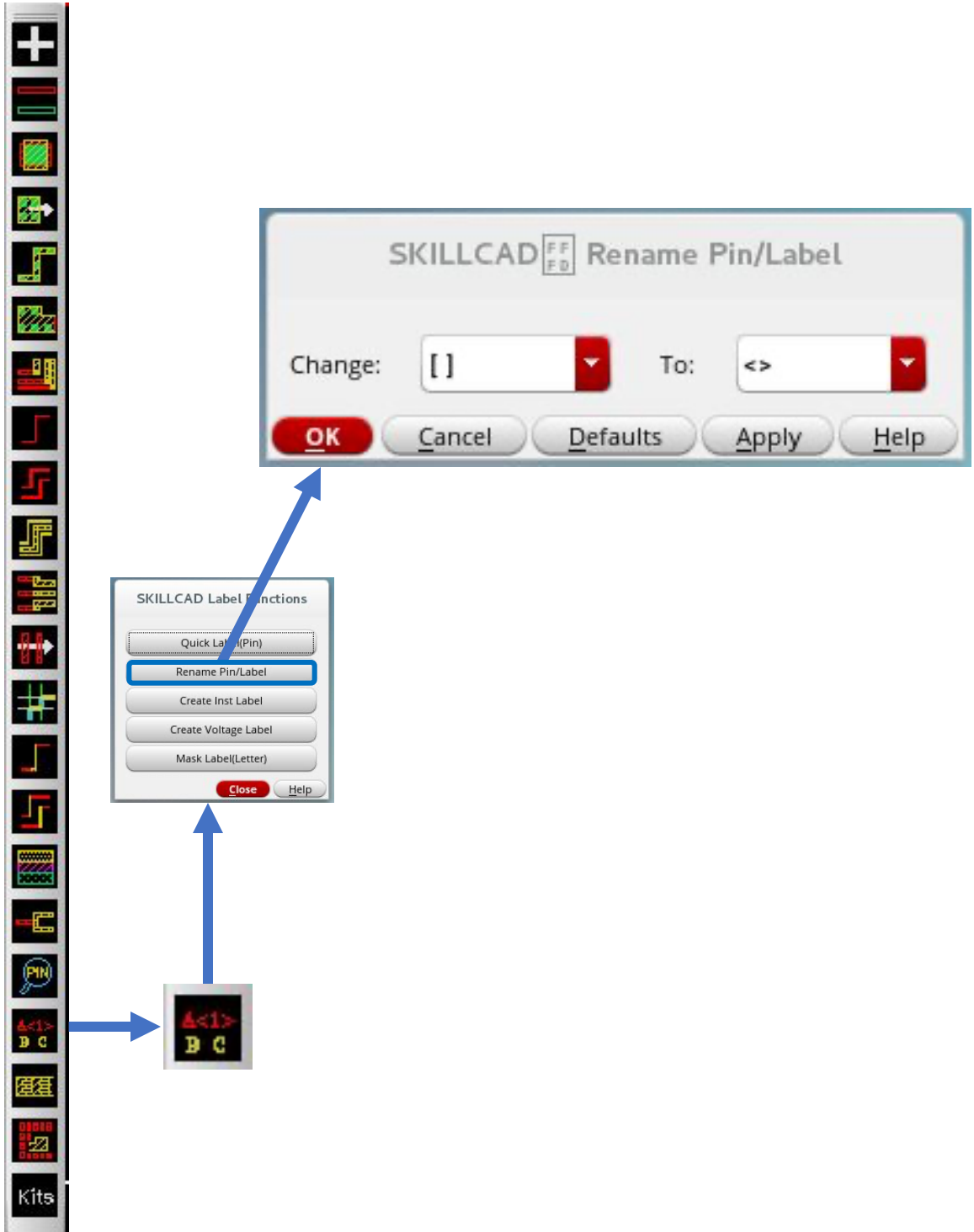
Undo All Undo Once Skip Keep Interleaf Bus Labels

==> <== Reset

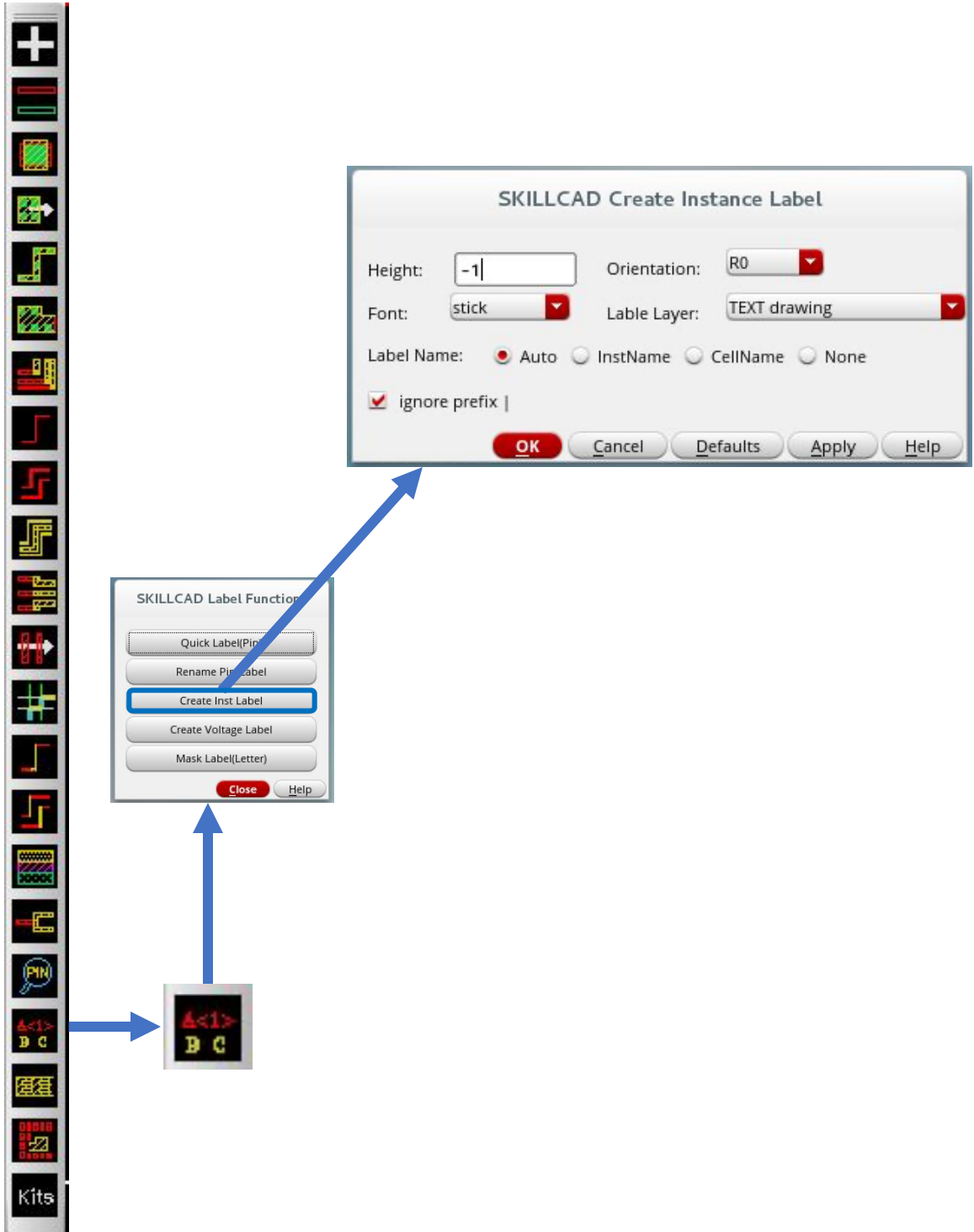
Snap To Boundary: Auto Left Right Top Btm

Hide Cancel Save As Default Help

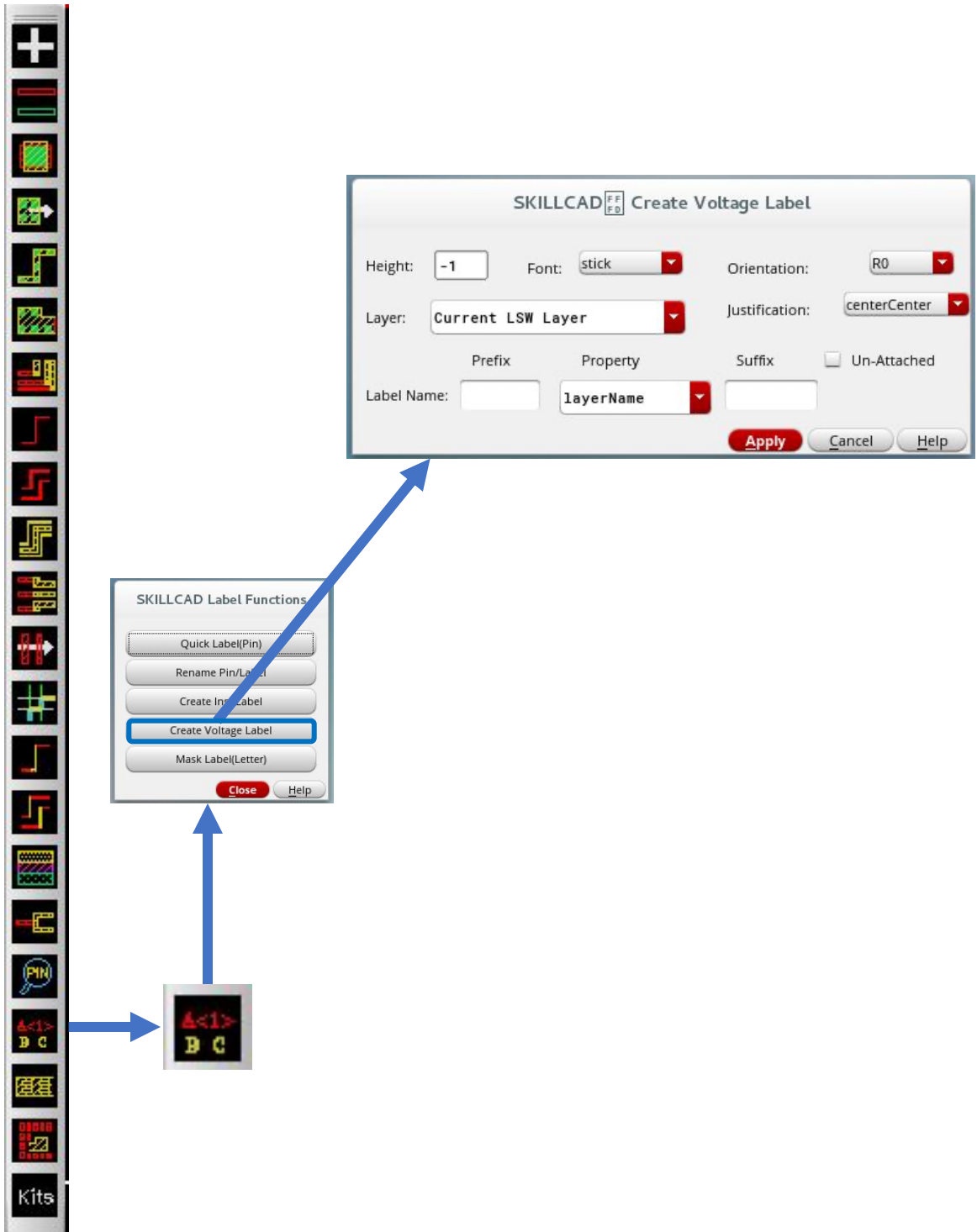
## SKILLCAD Rename Pin/Label



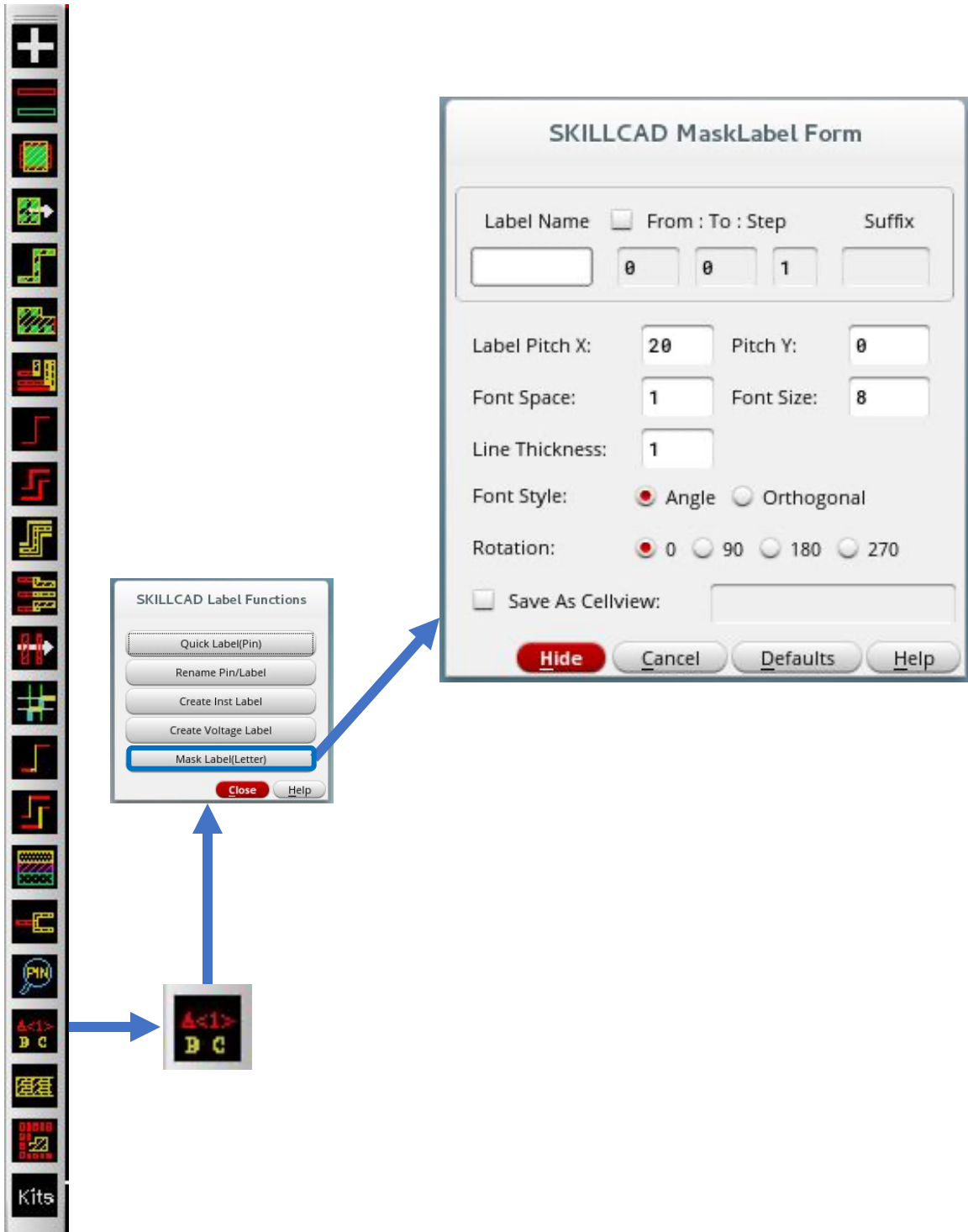
## SKILLCAD Create Instance Labels



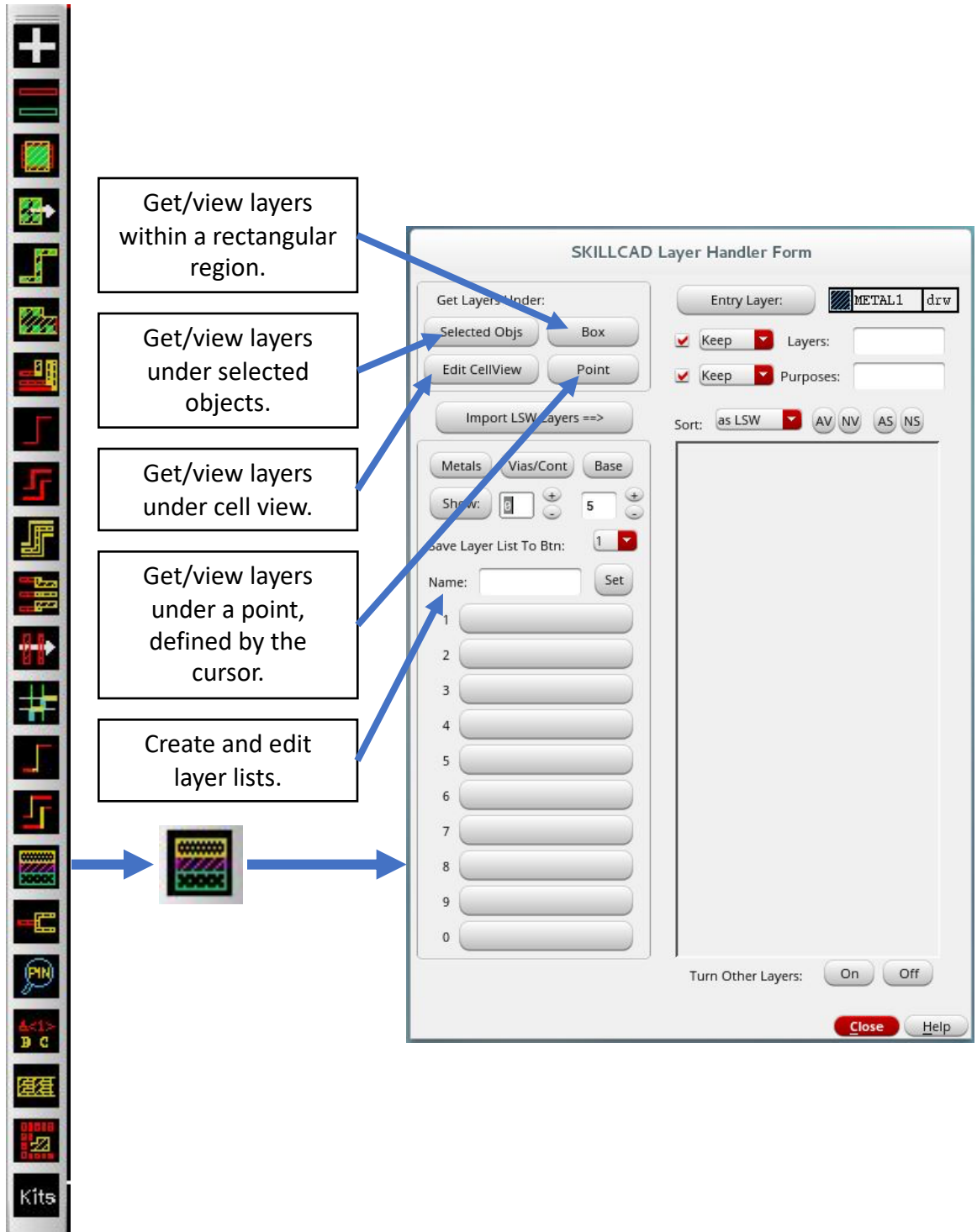
## SKILLCAD Create Voltage Labels



## SKILLCAD Create Mask Labels

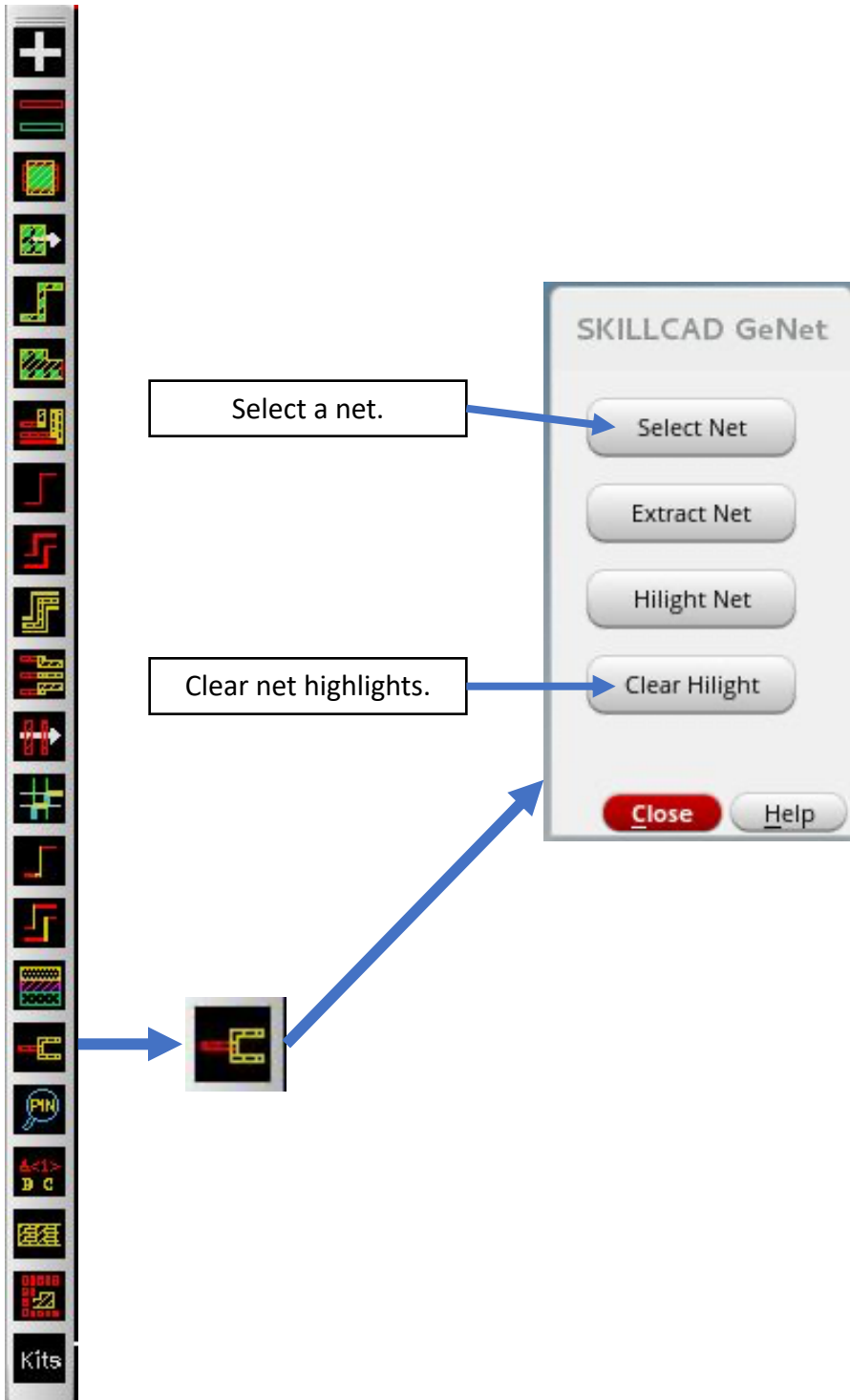


### SKILLCAD Layer Handler

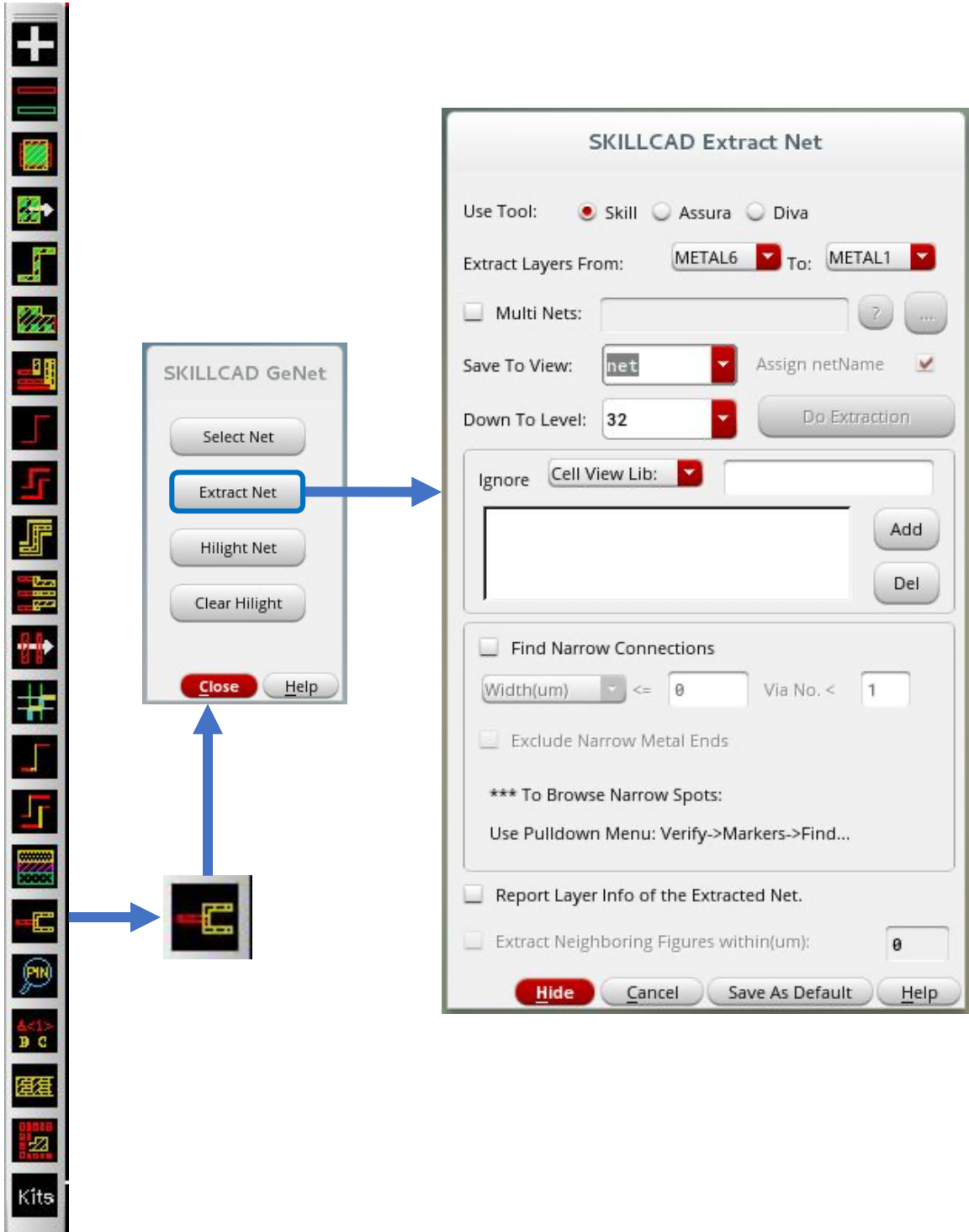




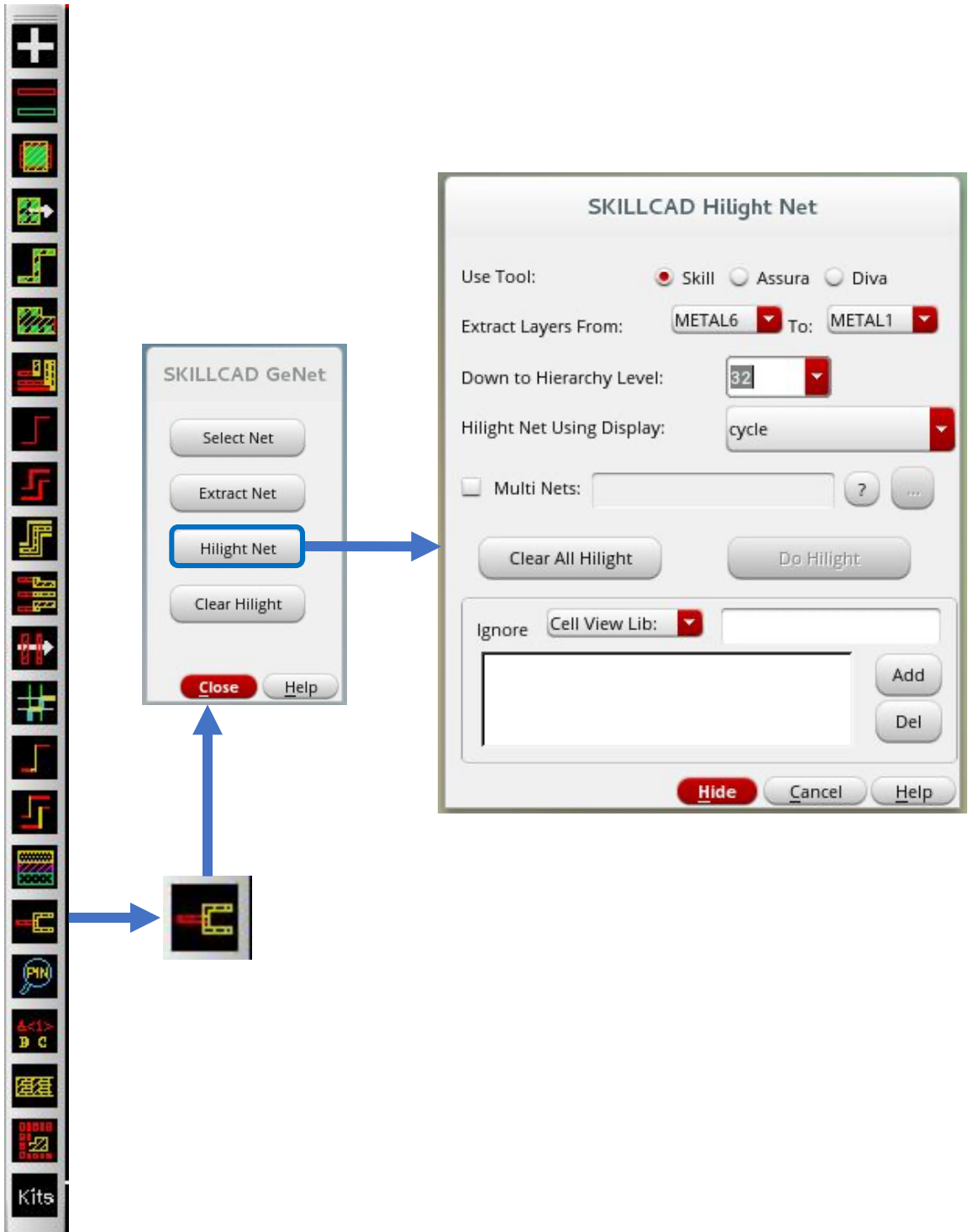
## SKILLCAD Select Net, Clear Net Highlight



## SKILLCAD Extracting a Net



## SKILLCAD Highlighting a Net



# SKILLCAD Pin Placer/Browser

The image shows the SKILLCAD Pin Placer/Browser interface. On the left is a vertical toolbar with various icons. A blue arrow points from the 'PIN' icon in the toolbar to a 'SKILLCAD Pin Functions' menu. This menu contains the following options:

- Pin Placer/Browser
- Quick Label(Pin)
- Promote Pins
- Create Pin From Label
- Create Pin From Coord
- Expand Pin To Shape
- Align/Distribute Pins
- Change Pin Size/Layer
- Rename Pin/Label
- Cover Pins By Metal Drawing

Below the menu are 'Close' and 'Help' buttons. A blue arrow points from the 'Pin Placer/Browser' option to the main SKILLCAD Pin Browser/Placer window.

The main window, titled 'SKILLCAD Pin Browser/Placer', has the following settings:

- Browse:  Pins  Labels on Layer: any
- Within:  Editing Cell View  Selected Instance
- Zoom Factor: 5  List Floating Pins/labels Only
- Name:  Select As Layout

The central list displays the following pin data:

Bit1	(METAL1 pin)	(276.11 7.41)
Bit1	(METAL1 pin)	(35.44 39.085)
Bit1	(METAL2 pin)	(167.605 43.85)
Bit2	(METAL1 pin)	(276.11 9.41)
Bit2	(METAL1 pin)	(35.44 41.085)
Bit2	(METAL2 pin)	(169.605 43.85)
Bit3	(METAL1 pin)	(276.11 11.41)
Bit3	(METAL1 pin)	(35.44 43.085)
Bit3	(METAL2 pin)	(171.605 43.85)
Bit4	(METAL1 pin)	(276.11 13.41)
Bit4	(METAL1 pin)	(35.44 45.085)
Bit4	(METAL2 pin)	(173.605 43.85)
Bit5	(METAL1 pin)	(276.11 15.41)
Bit5	(METAL1 pin)	(35.44 47.085)
Bit5	(METAL2 pin)	(175.605 43.85)
Bit6	(METAL1 pin)	(276.11 17.41)
Bit6	(METAL1 pin)	(35.44 49.085)
Bit6	(METAL2 pin)	(177.605 43.85)
Bit7	(METAL1 pin)	(276.11 19.41)
Bit7	(METAL1 pin)	(35.44 51.085)
Bit7	(METAL2 pin)	(179.605 43.85)
Bit8	(METAL1 pin)	(276.11 21.41)

Summary statistics: Unique Names: 8 Total Names: 24

Buttons on the right side of the list: Refresh, Sel All, Previous, Next.

Settings at the bottom:

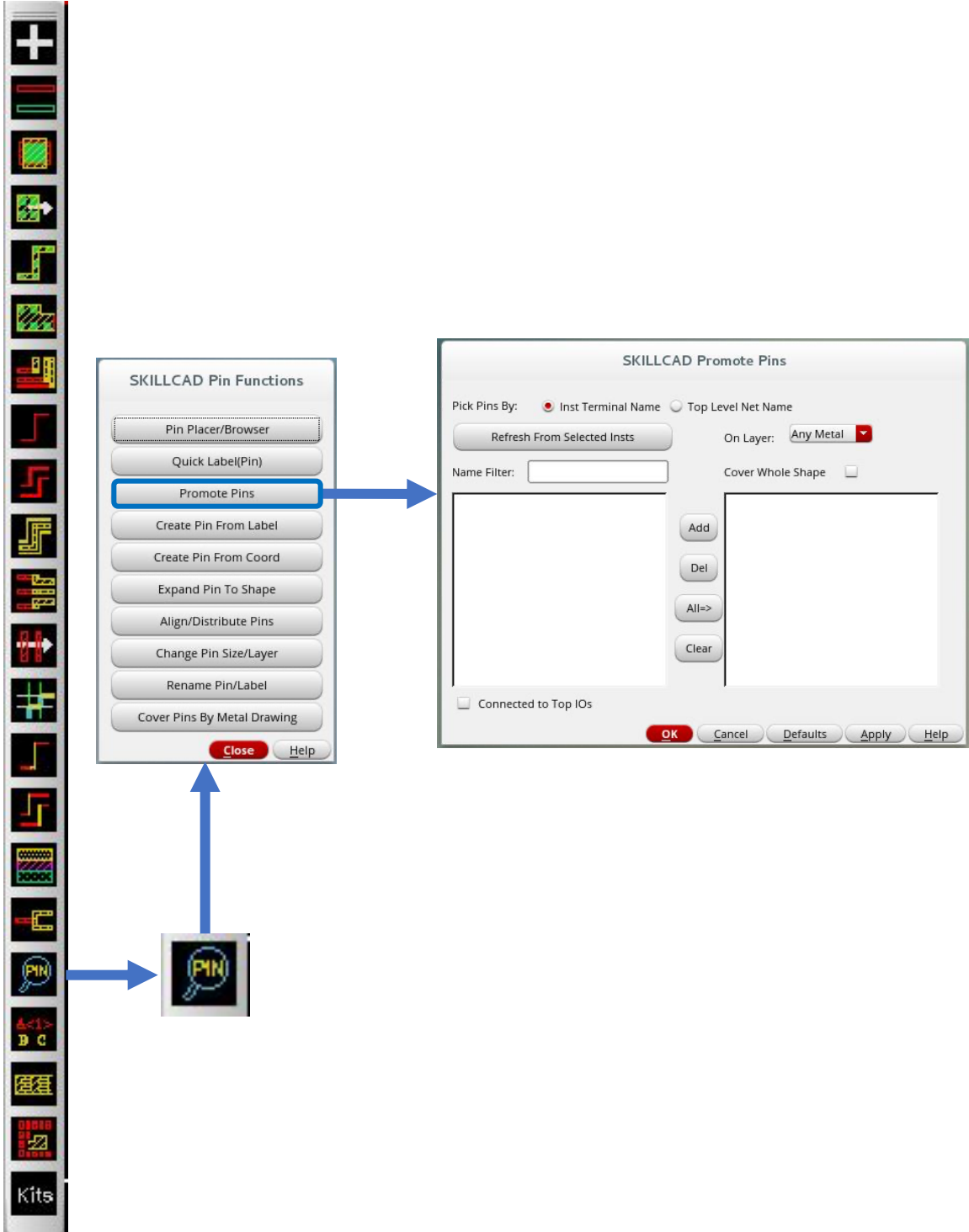
- Auto Place Selected (All Pins)
- Place On Selected Shapes/Insts
- Pin shape: Square
- Pin Layer: Auto
- Label Rotation: Auto
- At Location: Auto
- Only Relocate Floating Pins
- Create New if No Floating Pins

Buttons at the bottom: Close, Save As Default, Help.

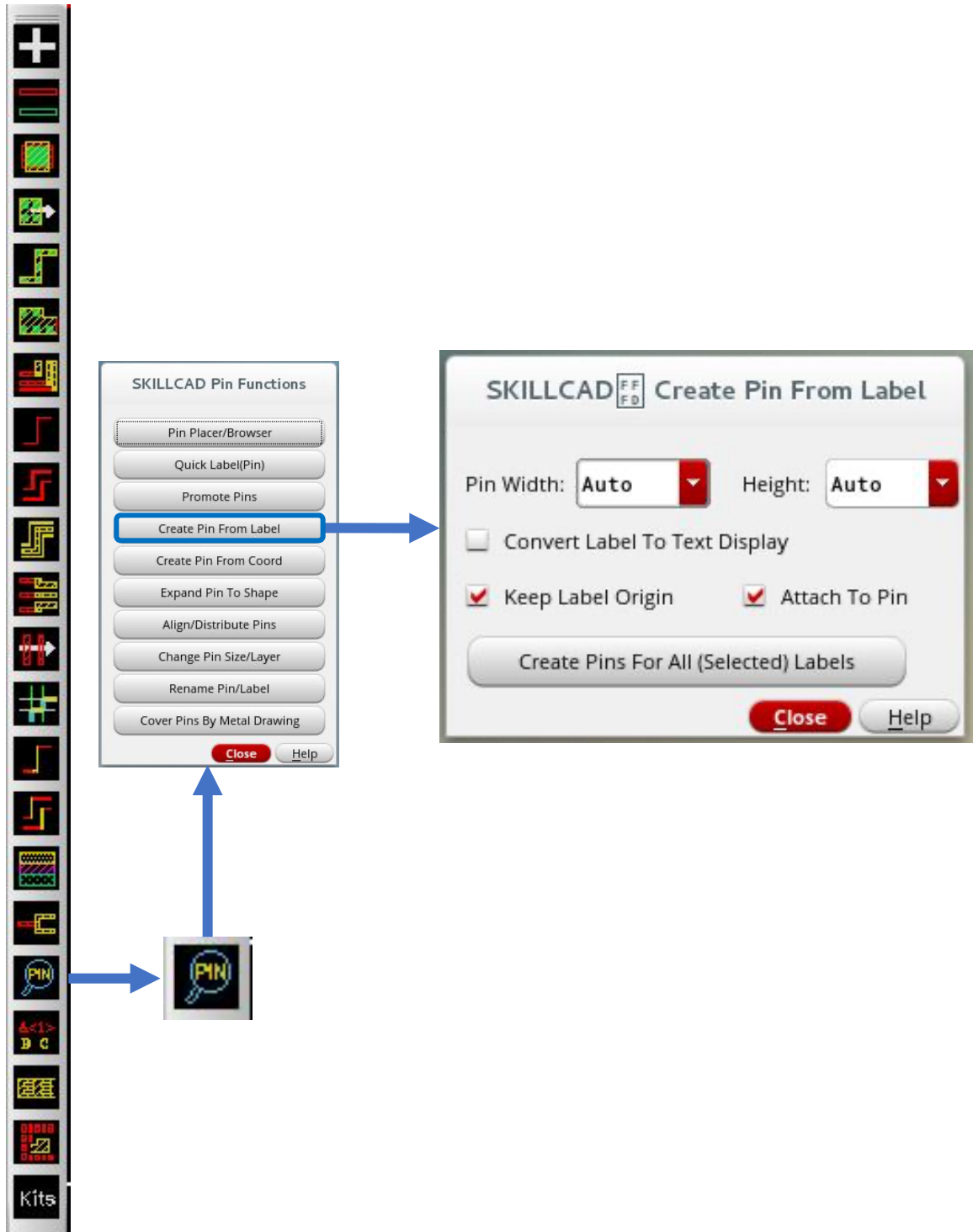
## SKILLCAD Pin Label

The diagram illustrates the workflow for pin labeling in SKILLCAD. It features a vertical toolbar on the left with various icons. A callout box labeled "Set the pin label orientation." points to the "Orientation" dropdown menu in the "quickLabel" dialog box, which is currently set to "Auto". Another callout box labeled "Re-create labels for selected pins." points to the "Re-Create Labels for All (Selected) Pins (and Keep Pin Shape/Layer/Position)" button in the same dialog box. A third callout box points to the "Quick Label(Pin)" button in the "SKILLCAD Pin Functions" menu. A fourth callout box points to the "PIN" icon in the toolbar. The "SKILLCAD Pin Functions" menu includes options like "Pin Placer/Browser", "Promote Pins", "Create Pin From Label", "Create Pin From Coord", "Expand Pin To Shape", "Align/Distribute Pins", "Change Pin Size/Layer", "Rename Pin/Label", and "Cover Pins By Metal Drawing". The "quickLabel" dialog box contains fields for "Height", "Font" (set to "stick"), "Orientation" (set to "Auto"), "Layer" (set to "Auto"), "Justification" (set to "Auto"), "Pin W(um)", and "H". It also has checkboxes for "Create Rect Pin Also", "Float Pin", "Align to Metal Shape", and "as Text Display". A "Re-Create Labels for All (Selected) Pins (and Keep Pin Shape/Layer/Position)" button is prominently displayed. Below these are sections for "Pick netNames from Schematic" (with fields for Lib: demo2, Cell: TEST, View: schematic), "Pins Only", "Exclude Defaults", "Filter", and "Expand all busNames". There are also "Mode" options (Single, Line, All), "No. of labels for a group" (set to 2), "Label dx/dy" and "Group dx/dy" fields, "Use VXL Net Name", "Input Labels", and "Interleaf Bus Labels" checkboxes. At the bottom, there are "Snap To Boundary" options (Auto, Left, Right, Top, Btm) and buttons for "Hide", "Cancel", "Save As Default", and "Help".

# SKILLCAD Promote Pins

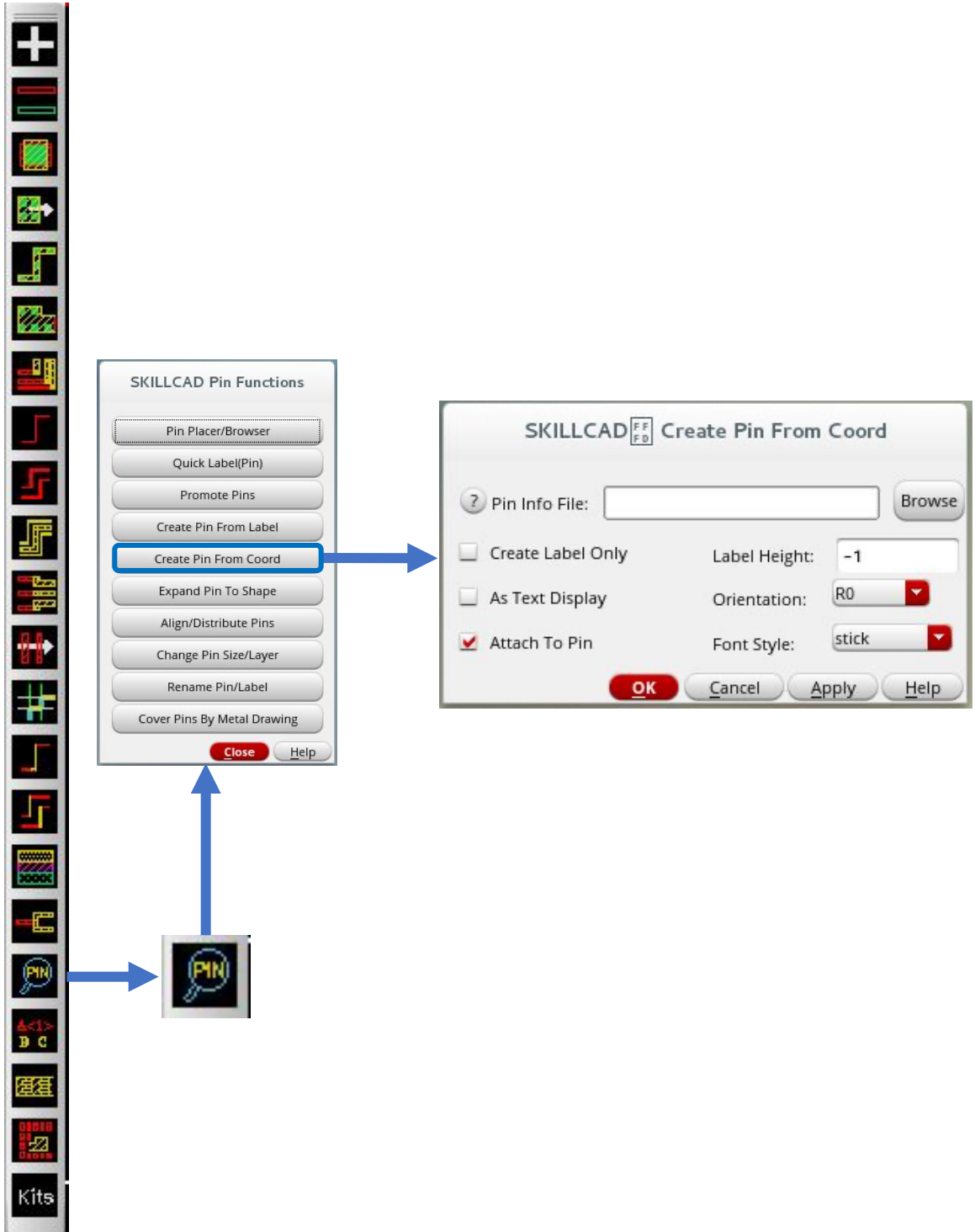


## SKILLCAD Create Pin From Label

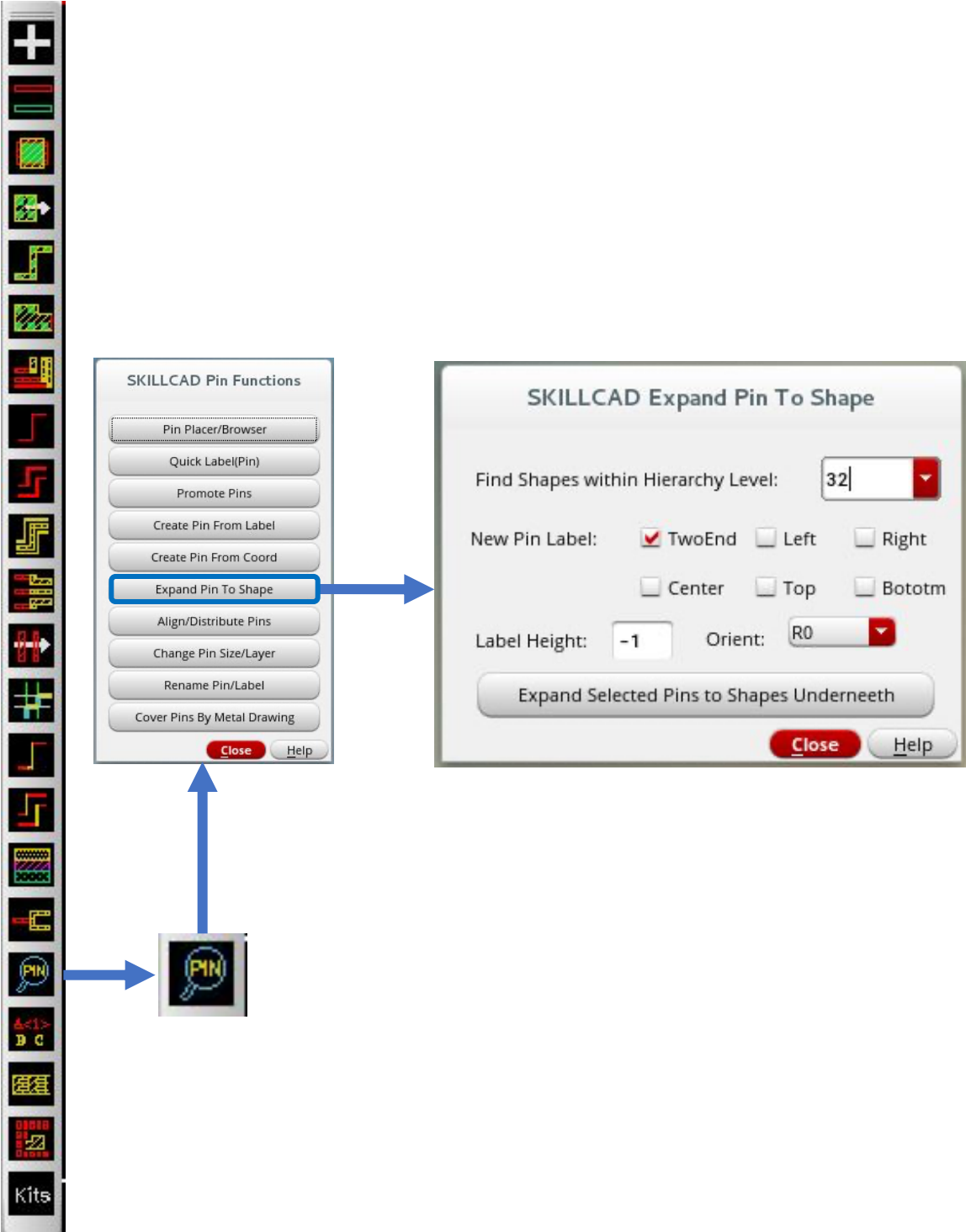




## SKILLCAD Create Pin From Coordinates



# SKILLCAD Expand Pin To Shape



## SKILLCAD Align/Distribute Pins

Sort pins by net name.

SKILLCAD Pin Functions

- Pin Placer/Browser
- Quick Label(Pin)
- Promote Pins
- Create Pin From Label
- Create Pin From Coord
- Expand Pin To Shape
- Align/Distribute Pins**
- Change Pin Size/Layer
- Rename Pin/Label
- Cover Pins By Metal Drawing

Close Help

SKILLCAD Move/Align Pins

Expand Selection To All Bits of Bus

Deselect Pins(Fig):

Change To Layer: METAL1 pin

Align Selected:

Move By: 0.005

Snap To:  prBoundary  Shape Edge

Adjust: Pin Label  Pin Size

Set Space: sp\_x: 0  sp\_y: Align

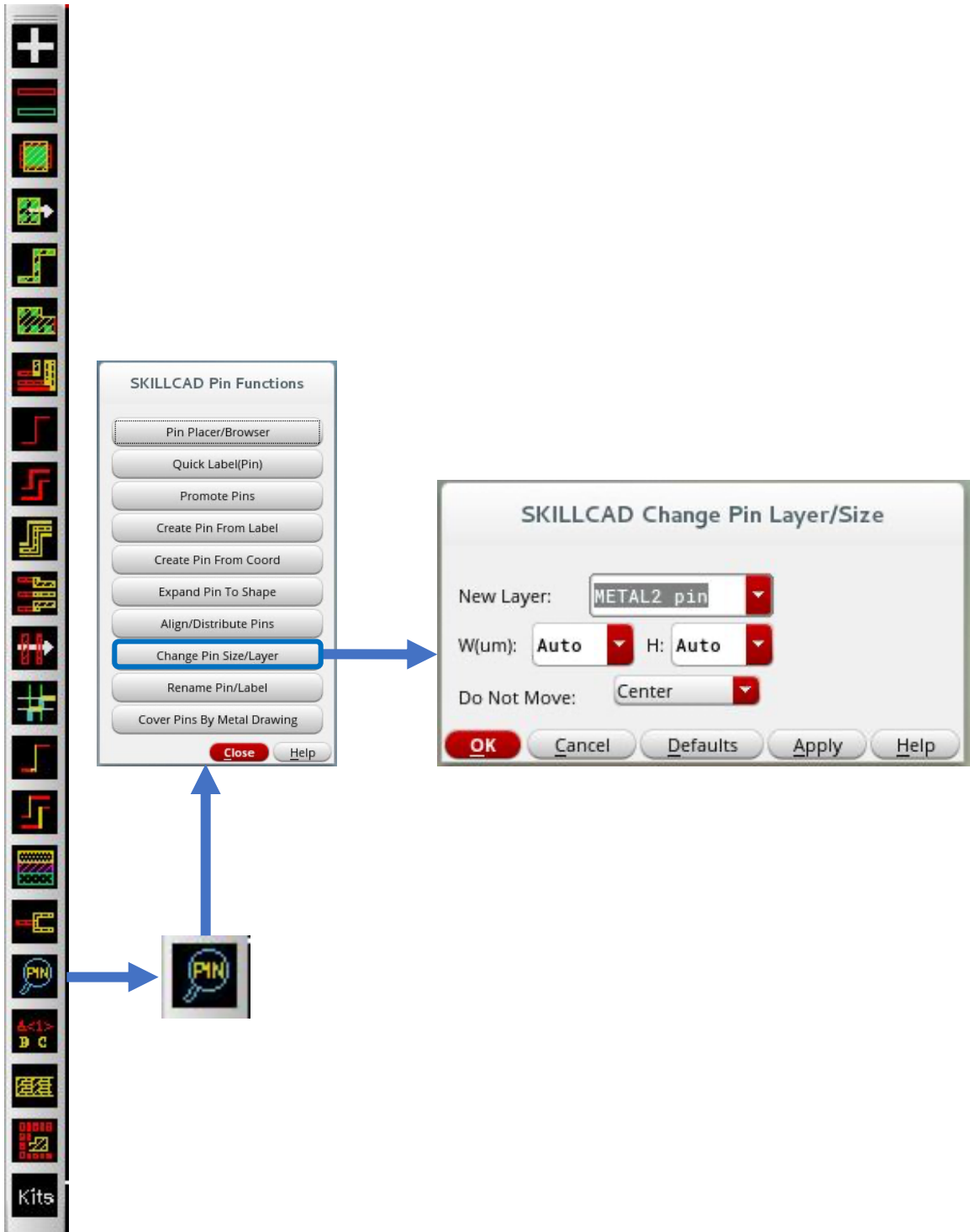
Distribute In:

Align pins to prBoundary.

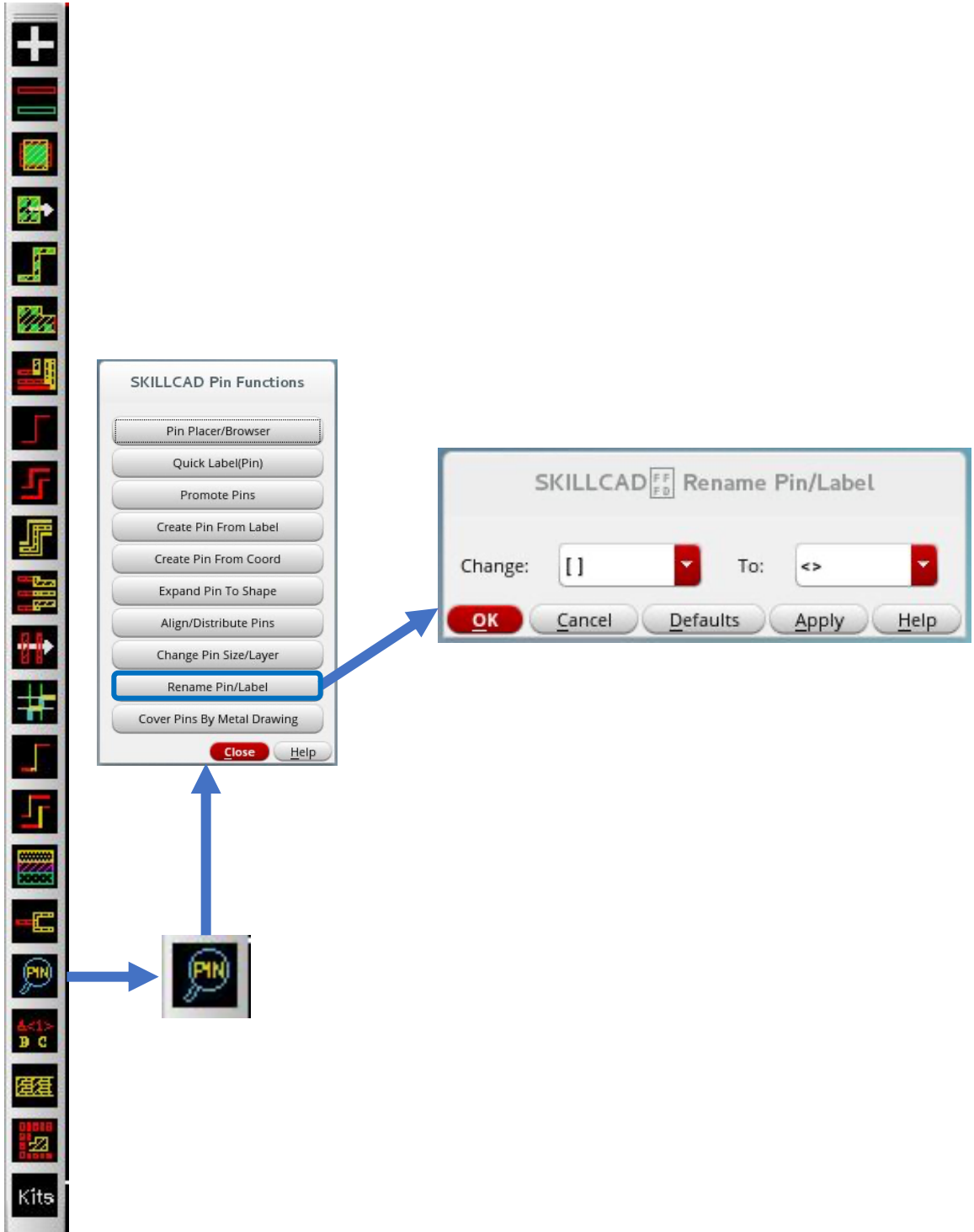
Align pins to shape edge.

Distribute pins within a range.

## SKILLCAD Change Pin Size/Layer



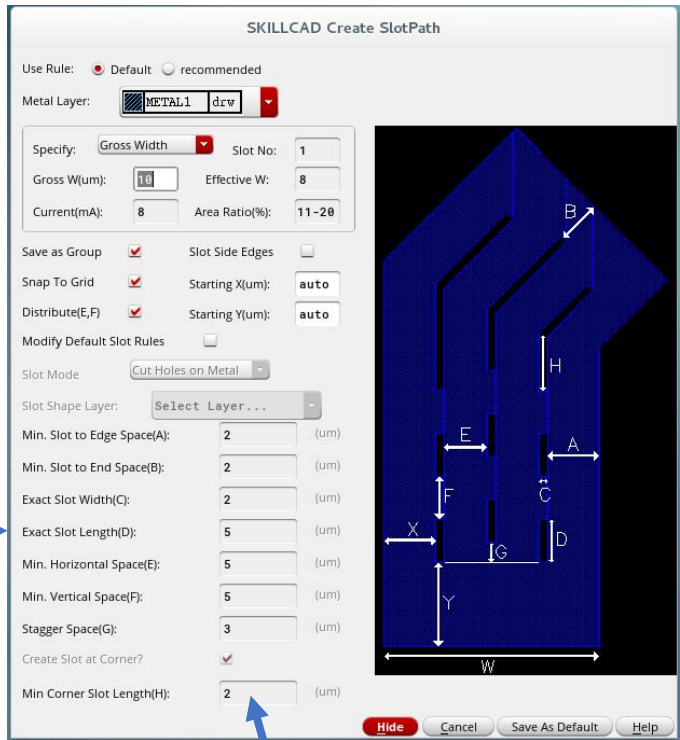
## SKILLCAD Rename Pin/Label



## SKILLCAD Cover Pins With Drawing Purpose



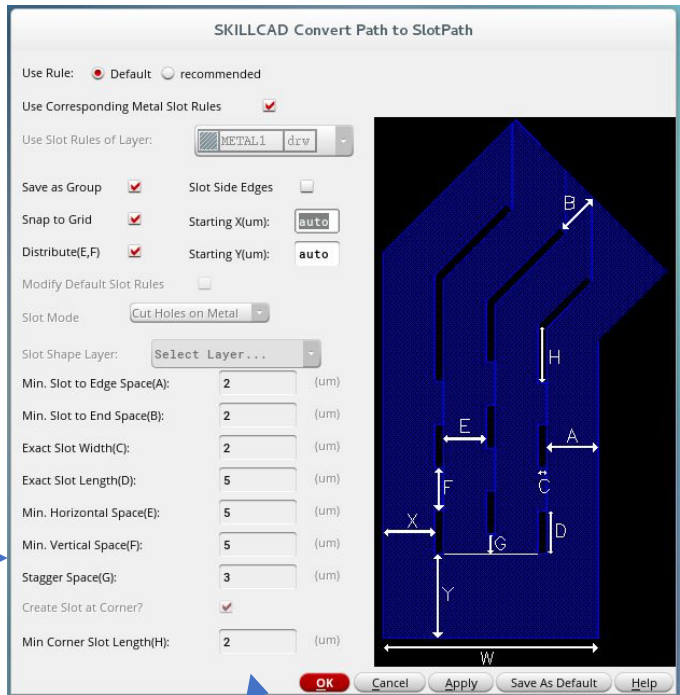
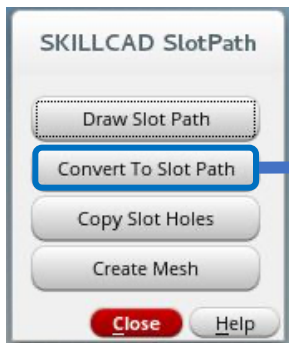
## SKILLCAD Creating A Slotted Path



Change the default slot path rules.

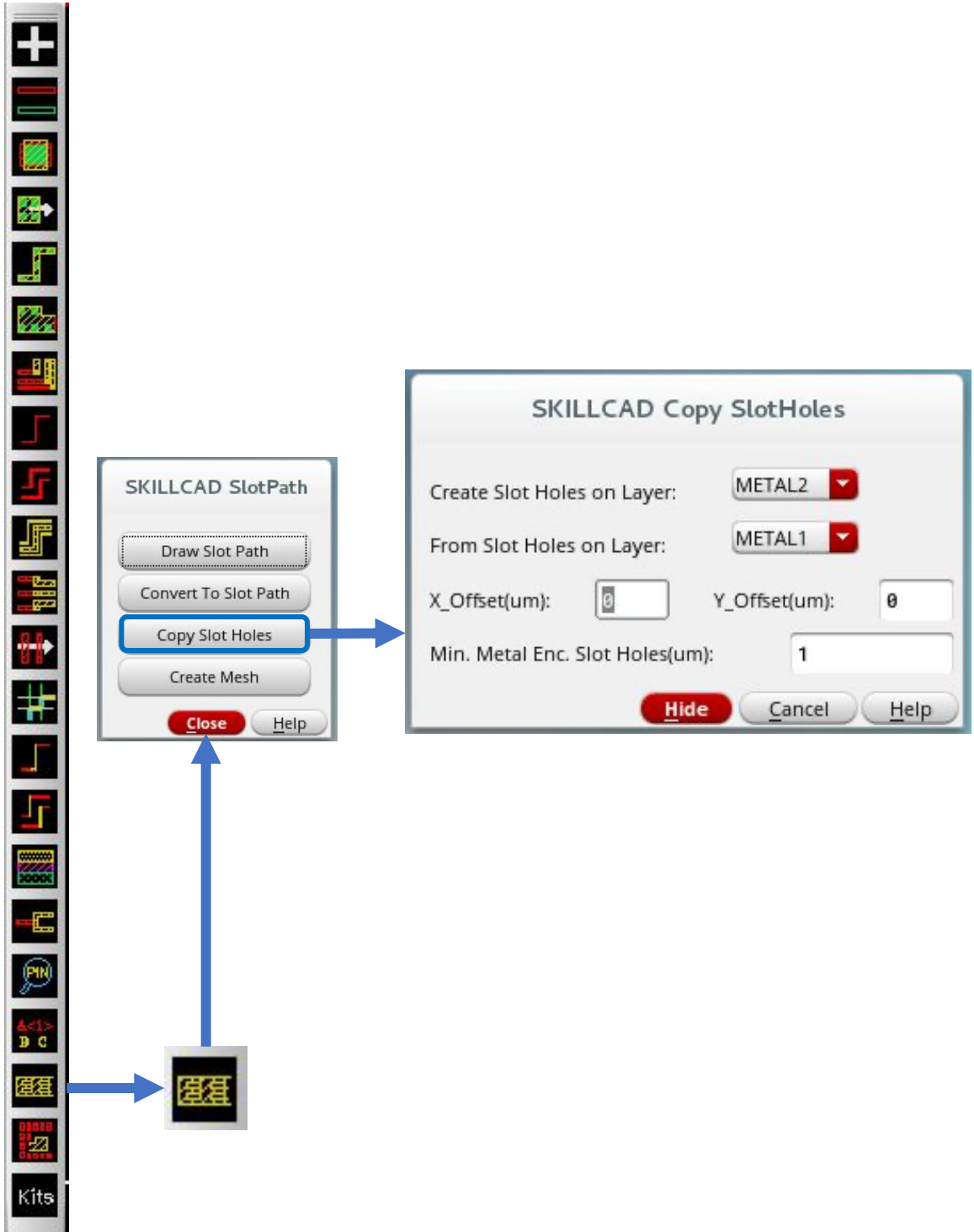


## SKILLCAD Convert A Path To A Slotted Shape



Change the default slot path rules.

## SKILLCAD Copy Slot Holes



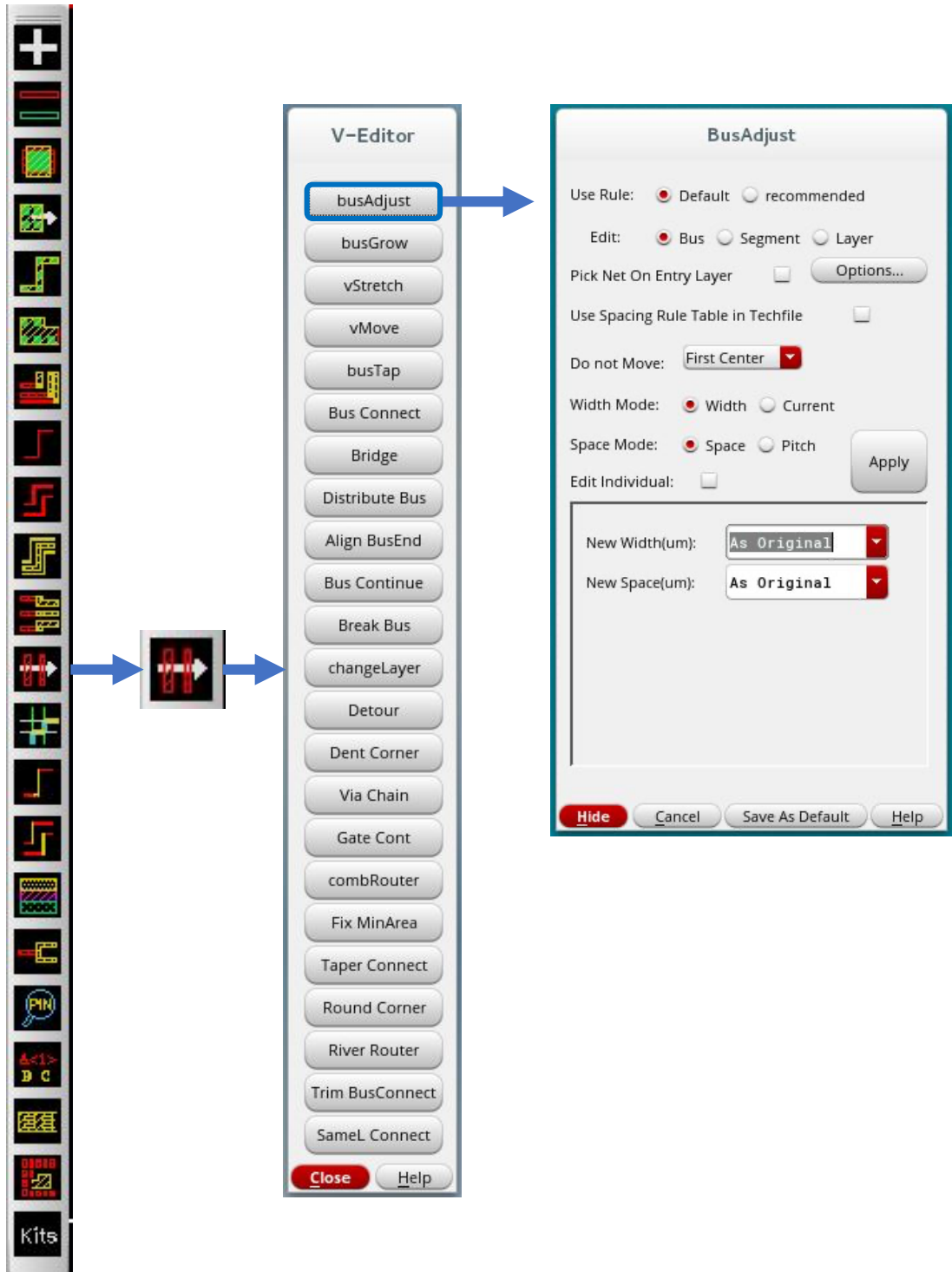
## SKILLCAD Creating A Metal Mesh

The image illustrates the workflow for creating a metal mesh in SKILLCAD. It starts with a toolbar on the left, where a blue arrow points to the 'Create Mesh' icon. This action opens the 'SKILLCAD SlotPath' dialog box. From this dialog, a blue arrow points to the 'SKILLCAD MESHBUS' dialog box. The 'SKILLCAD MESHBUS' dialog box contains the following settings:

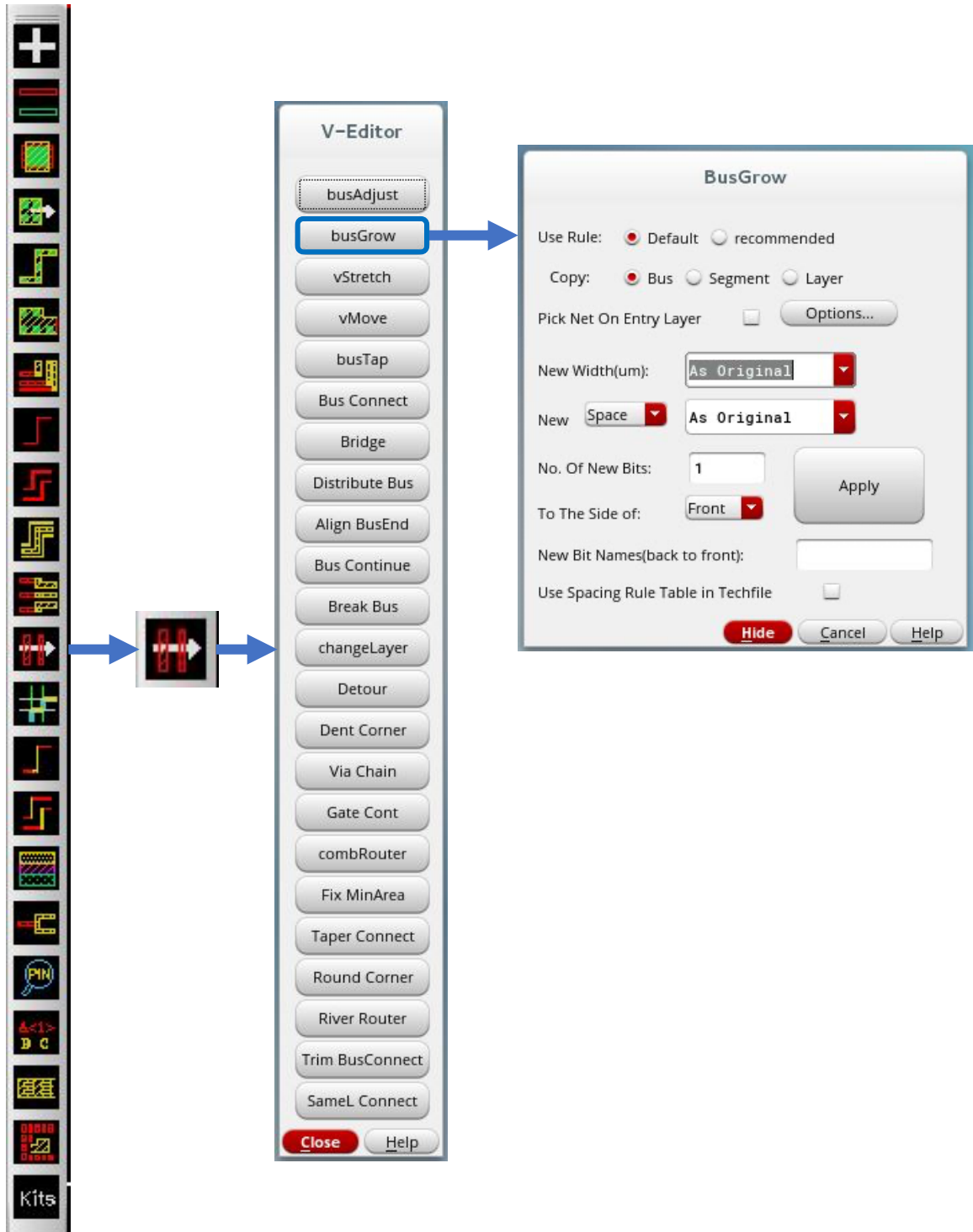
- No. Of Holes: 1
- By: 0.005
- Width(A): 1 um
- Height(B): 1 um
- Total Width(C): 3 um
- Via Type: Array
- Routing Layer: METAL1
- Hole to: (empty)
- Hole Space(D): 1 um
- Hole Vertical Space(E): 1 um
- Left Edge Space(F): 1 um
- Right Edge Space(G): 1 um
- Begin Edge Space(H): 1 um

The 'SKILLCAD MESHBUS' dialog box also features a preview window showing a grid of holes with dimensions A through H. The 'SKILLCAD SlotPath' dialog box has 'Close' and 'Help' buttons.

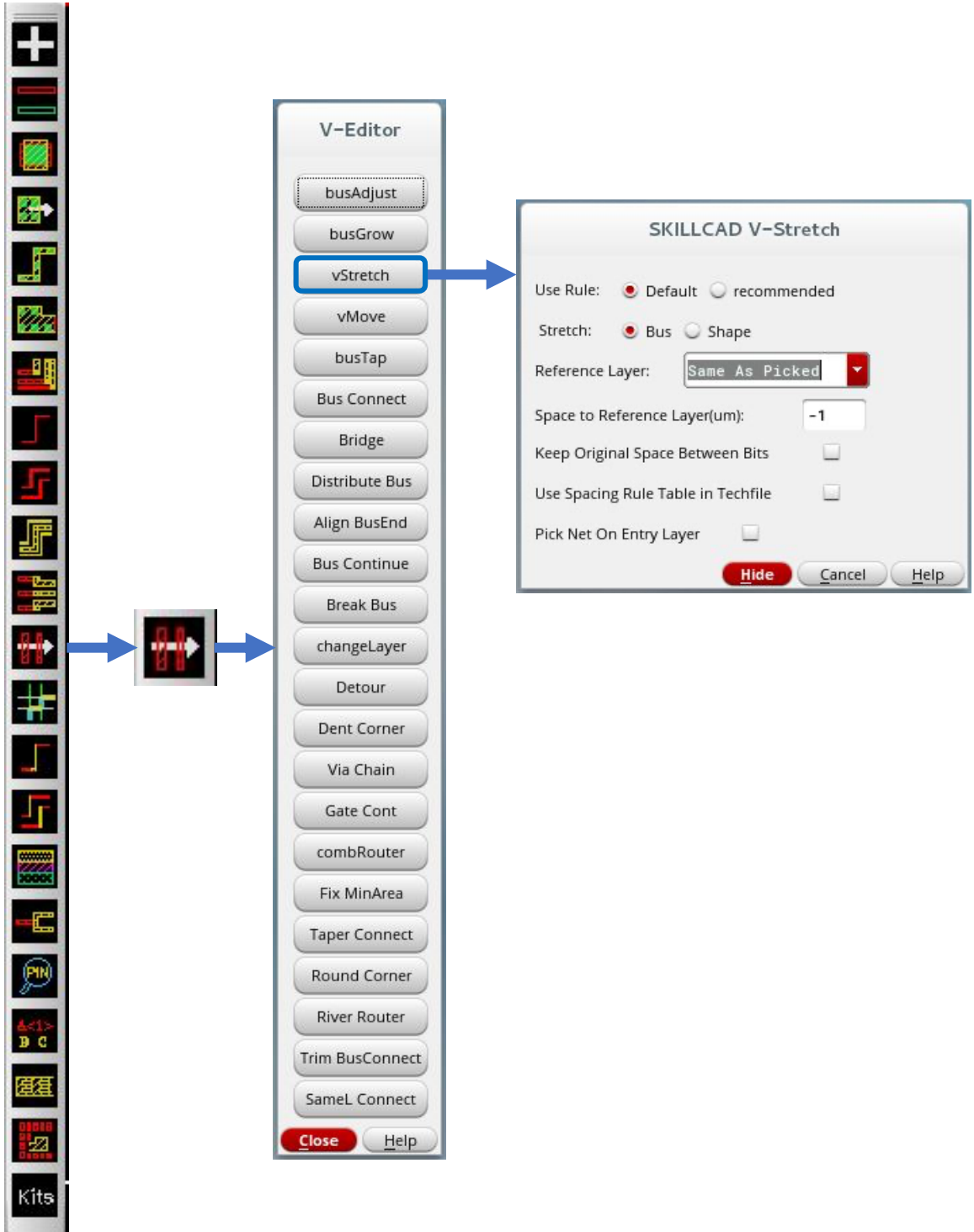
## SKILLCAD V-Editor, Bus Adjust



## SKILLCAD V-Editor, Bus Grow

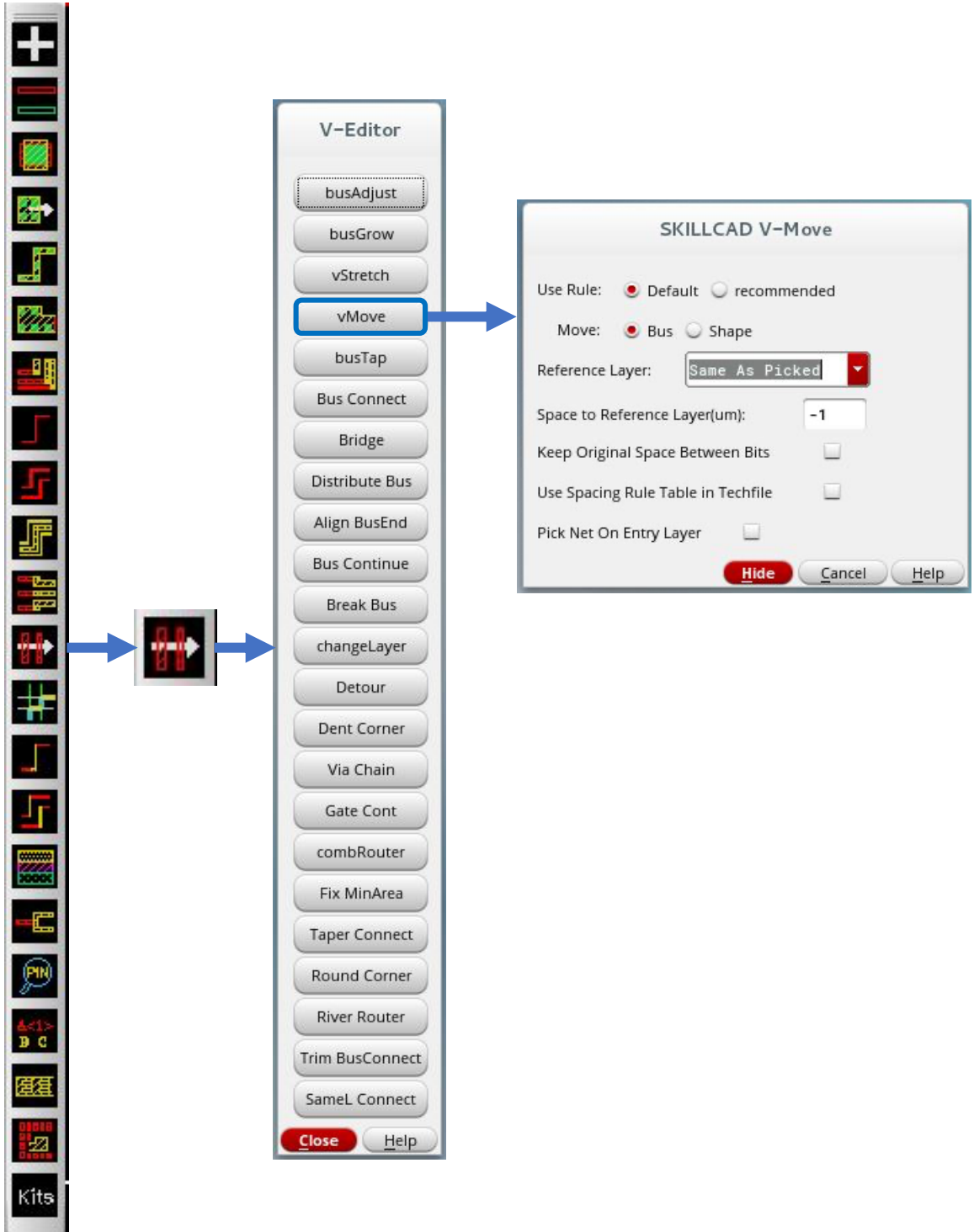


## SKILLCAD V-Editor, V-Stretch



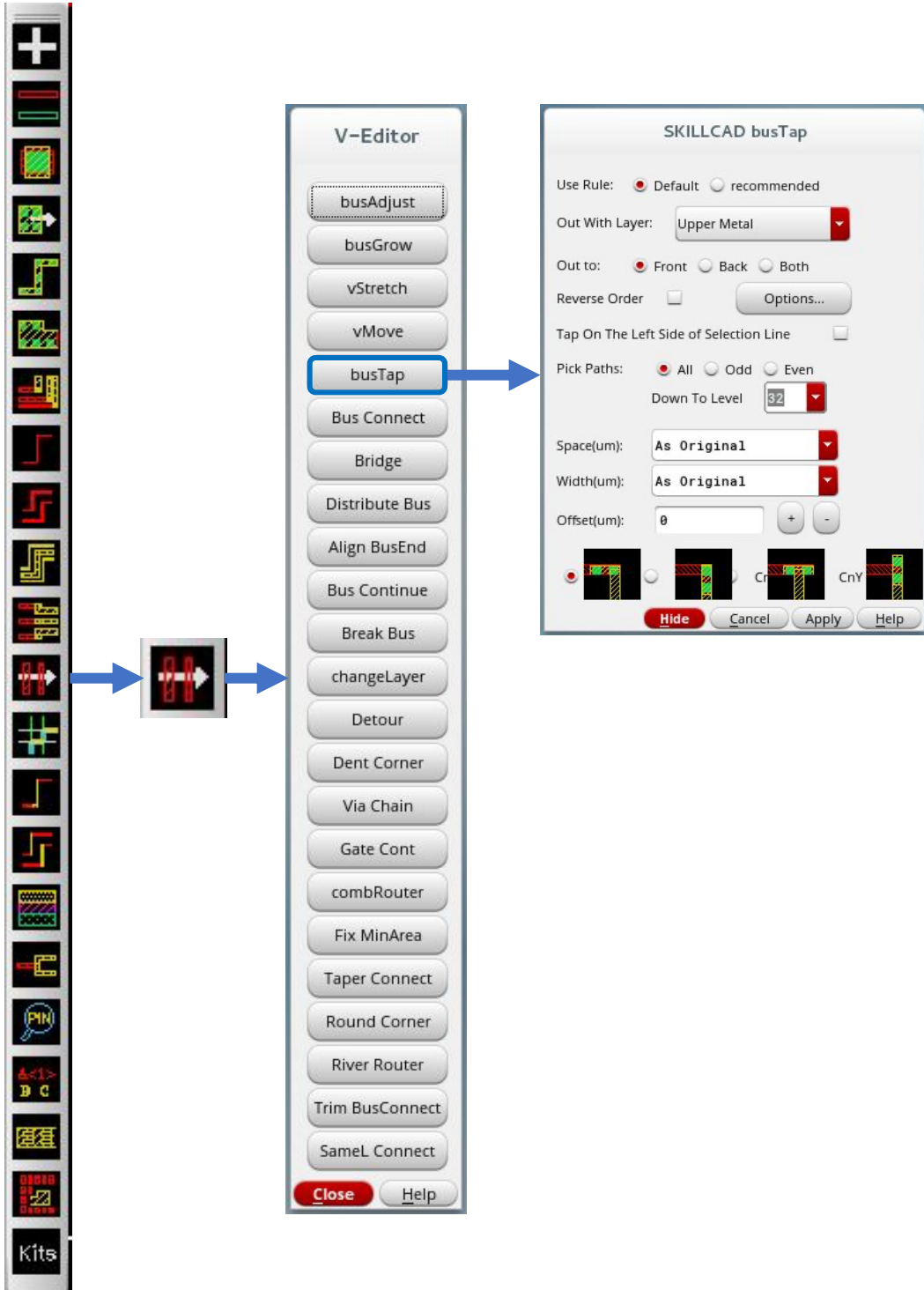


## SKILLCAD V-Editor, V-Move

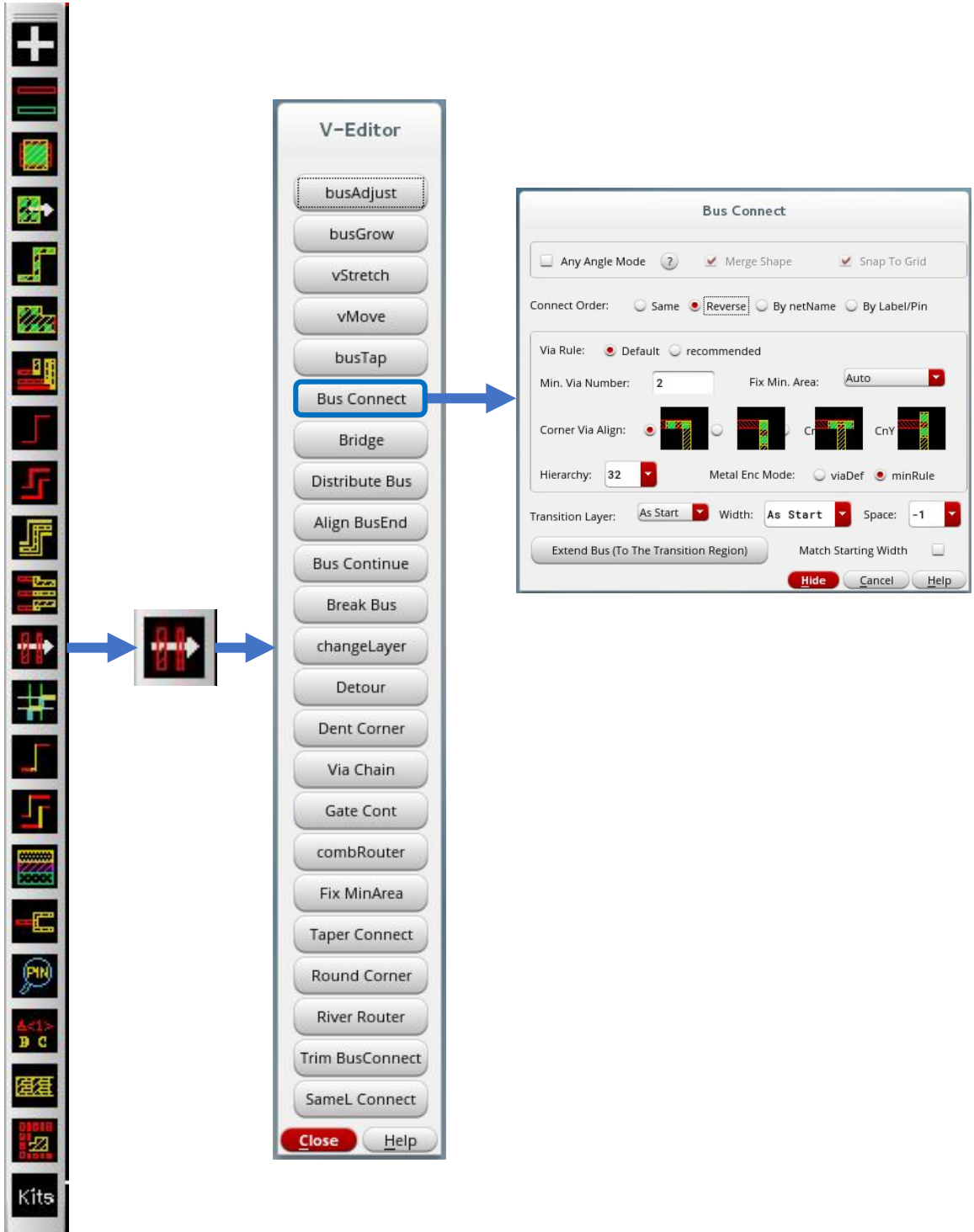




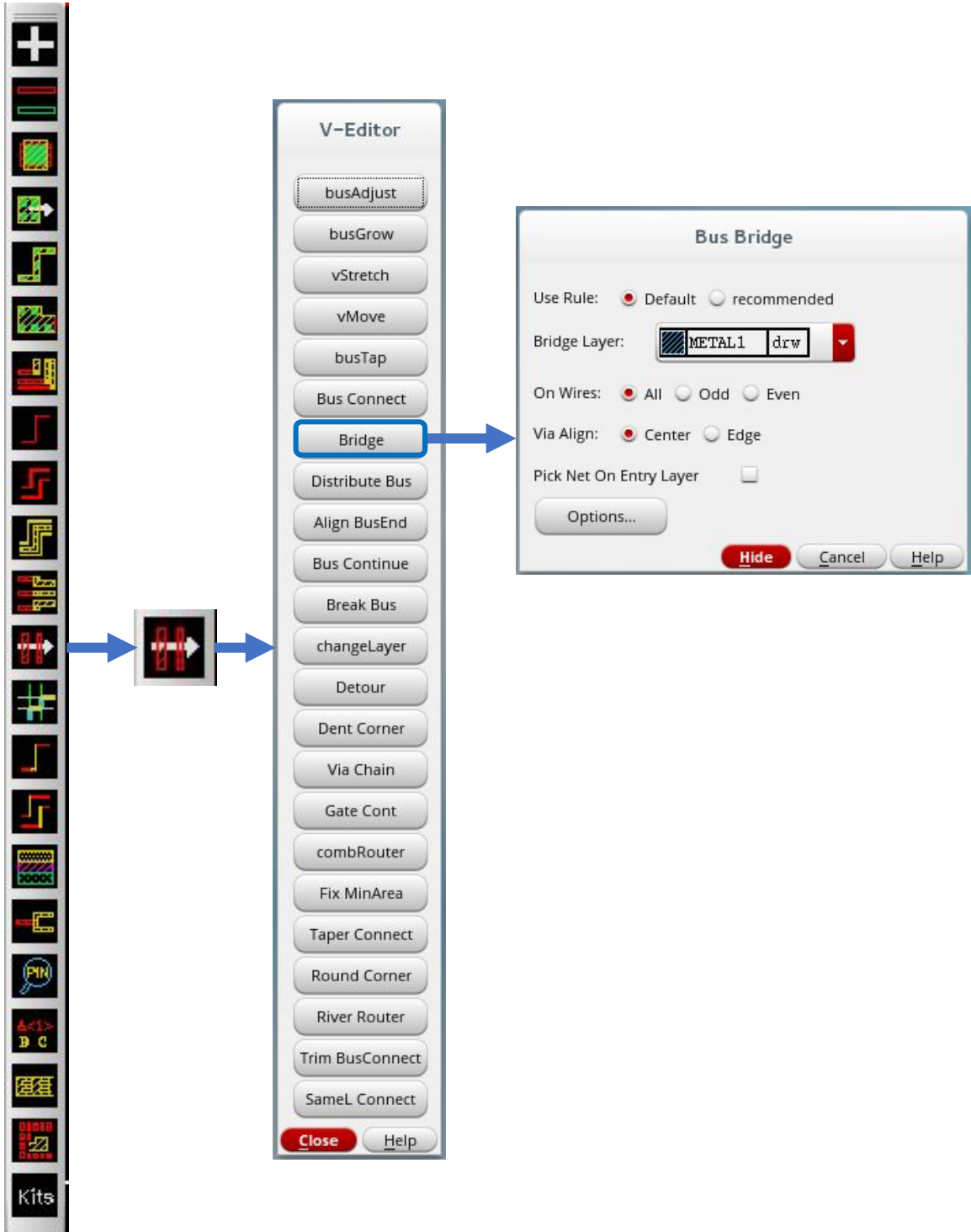
## SKILLCAD V-Editor, Bus Tap



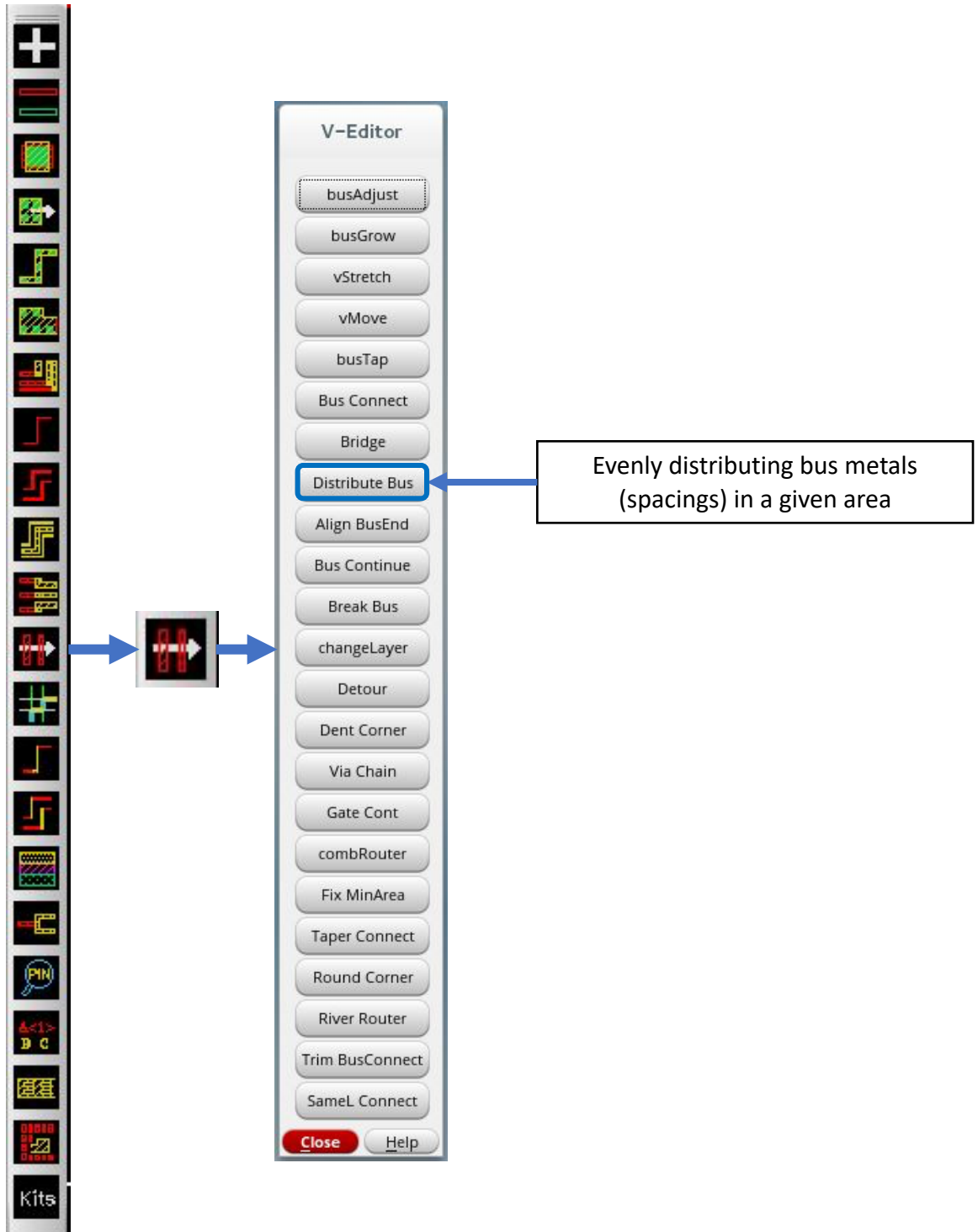
## SKILLCAD V-Editor, Bus Connect



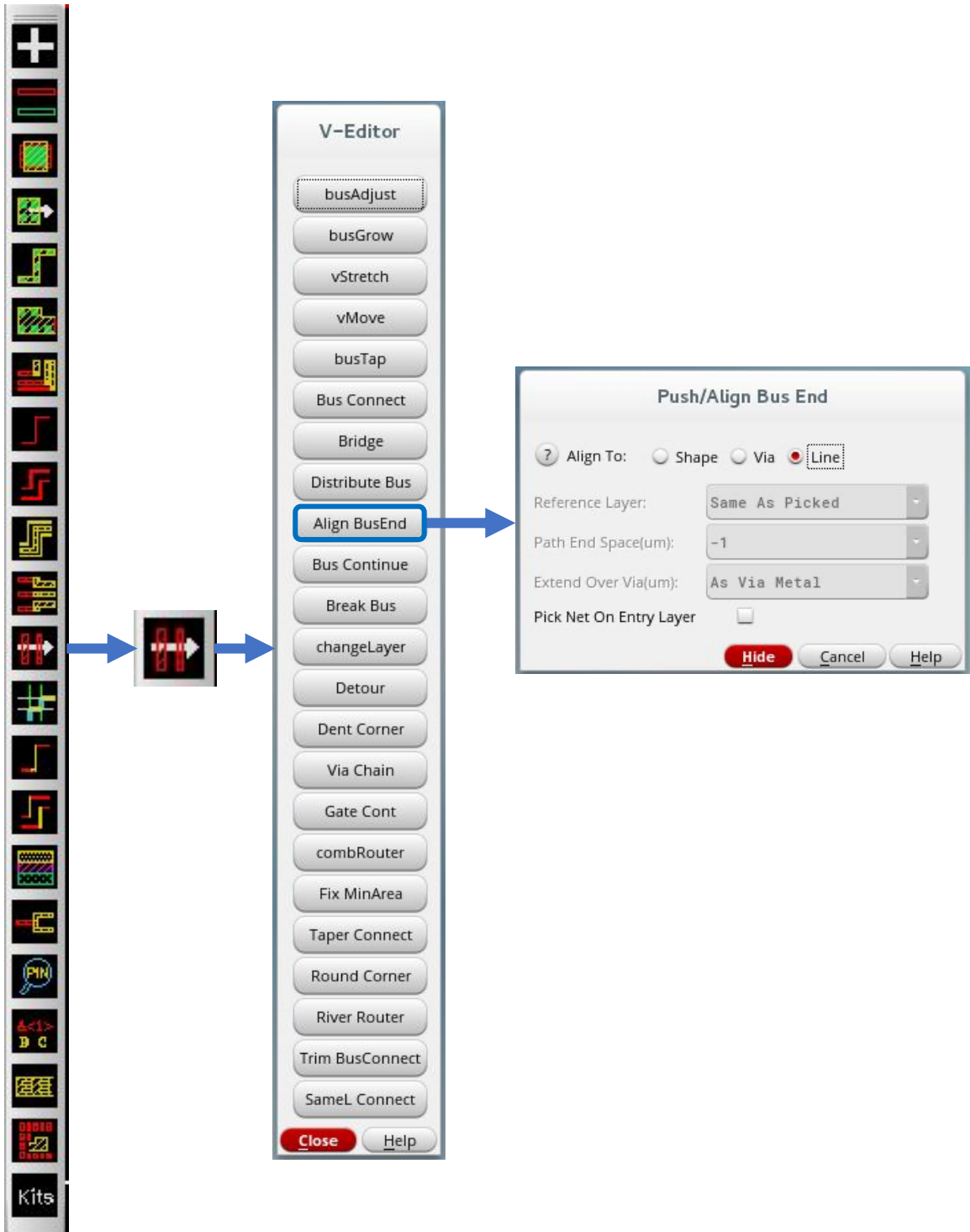
## SKILLCAD V-Editor, Bus Bridge



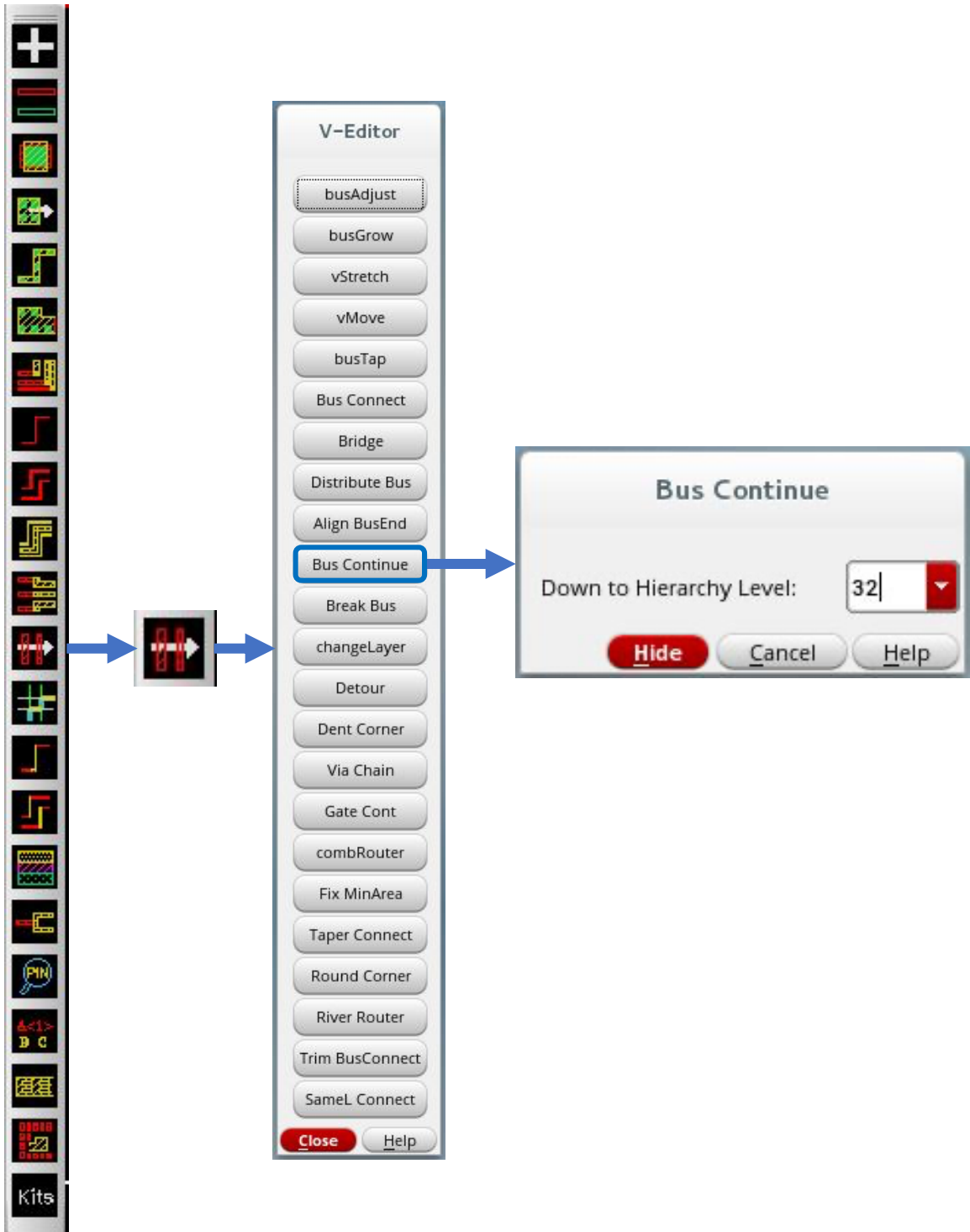
## SKILLCAD V-Editor, Distribute Bus



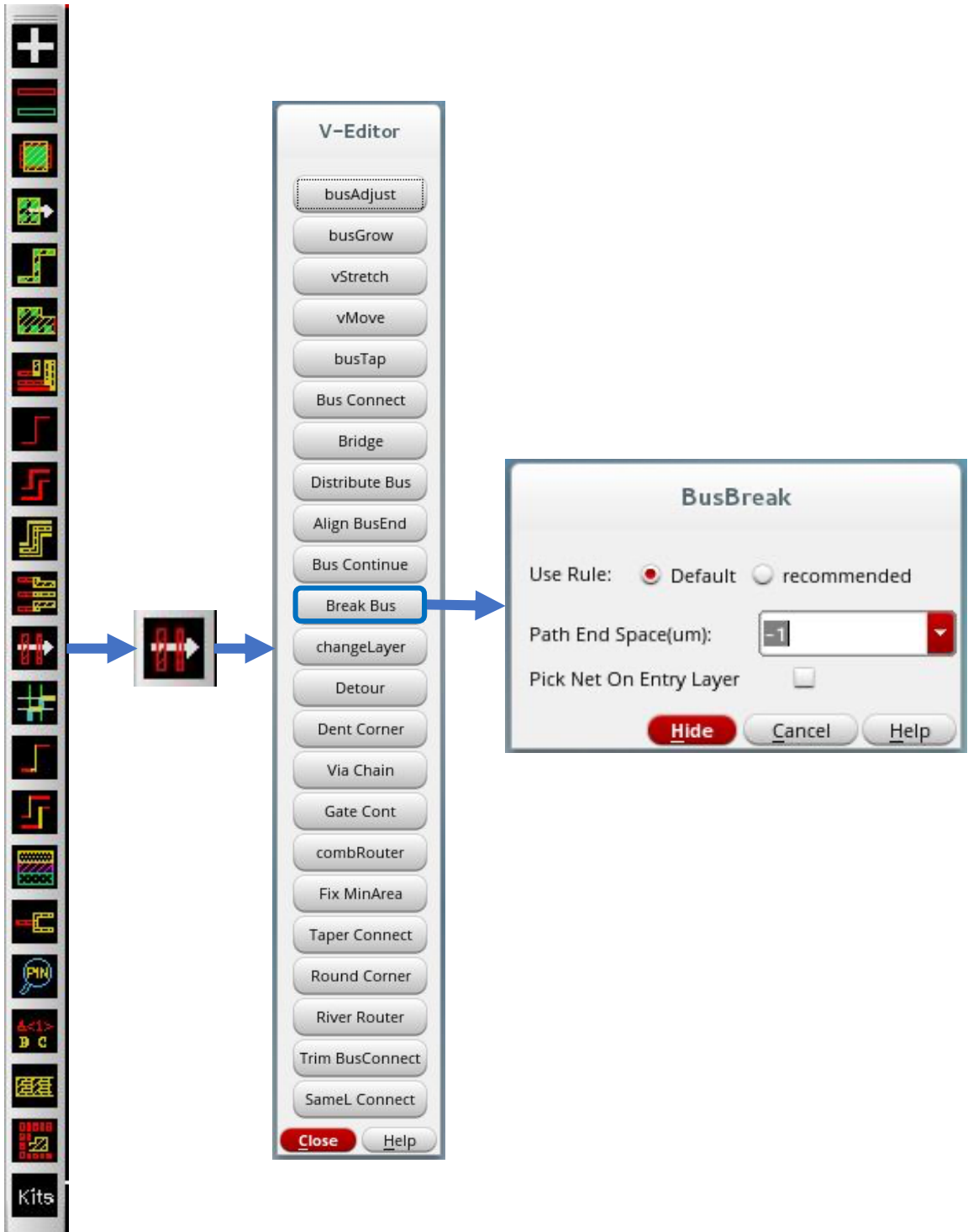
## SKILLCAD V-Editor, Align Bus End



## SKILLCAD V-Editor, Bus Continue

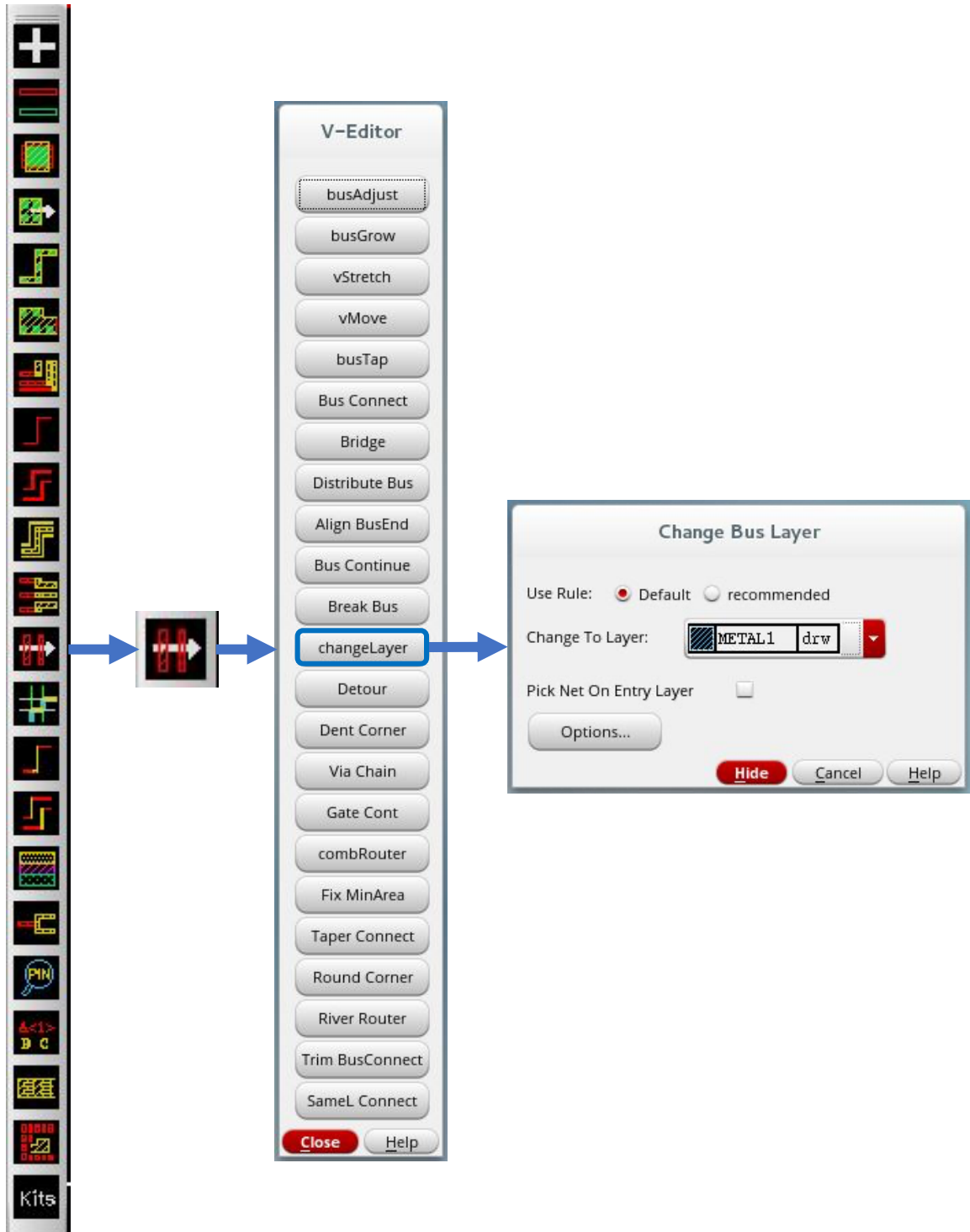


## SKILLCAD V-Editor, Break Bus

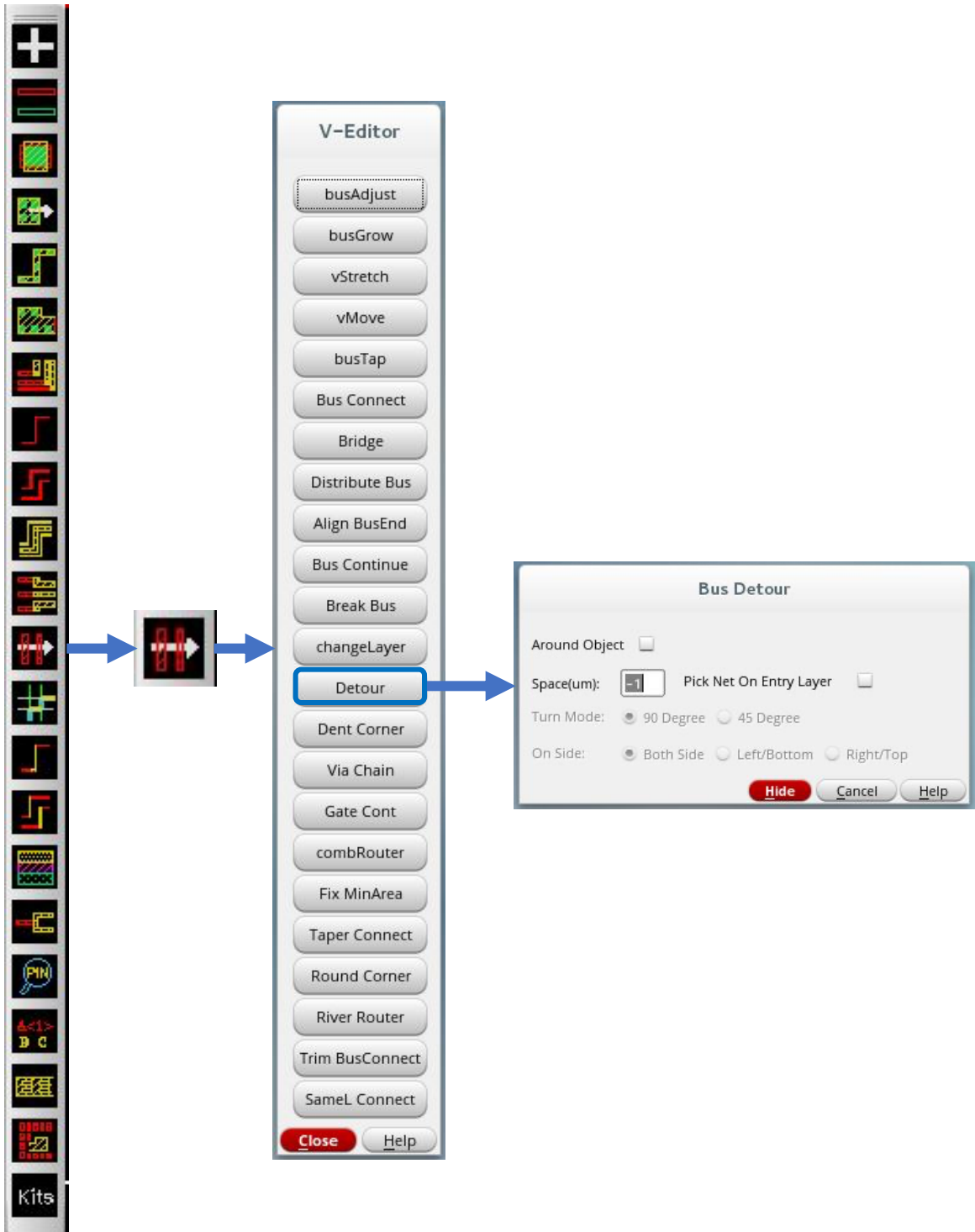




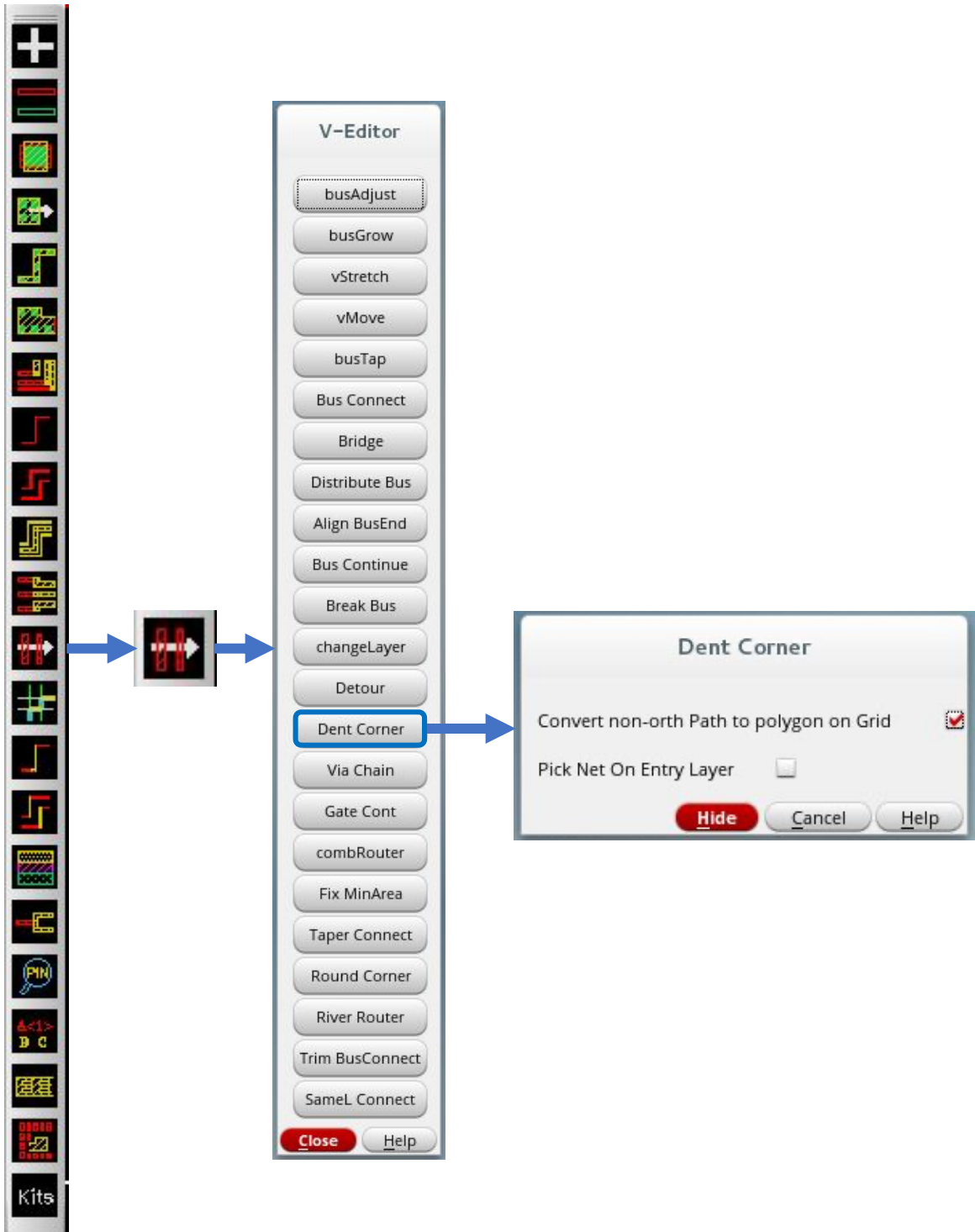
## SKILLCAD V-Editor, Change Bus Layer



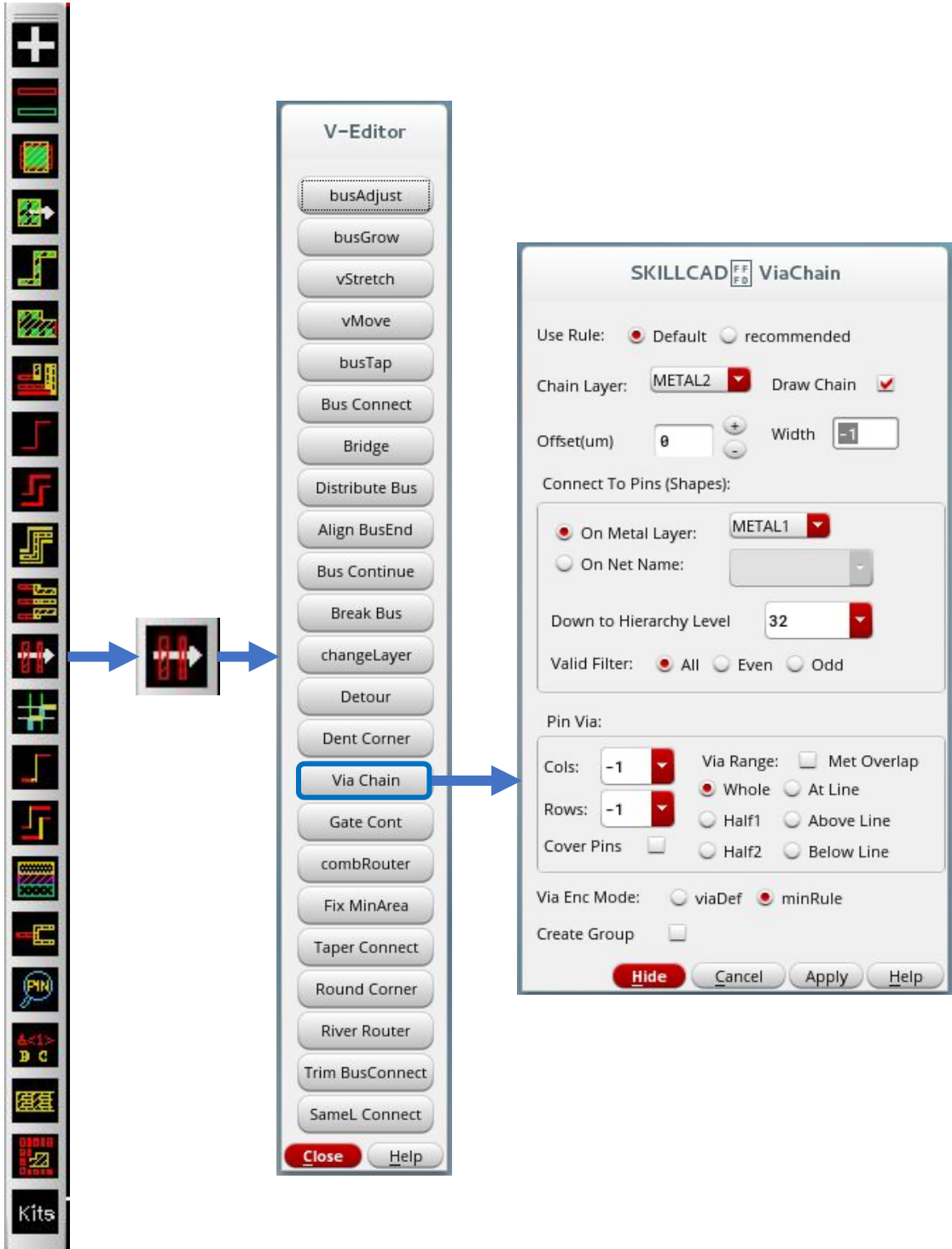
## SKILLCAD V-Editor, Bus Detour



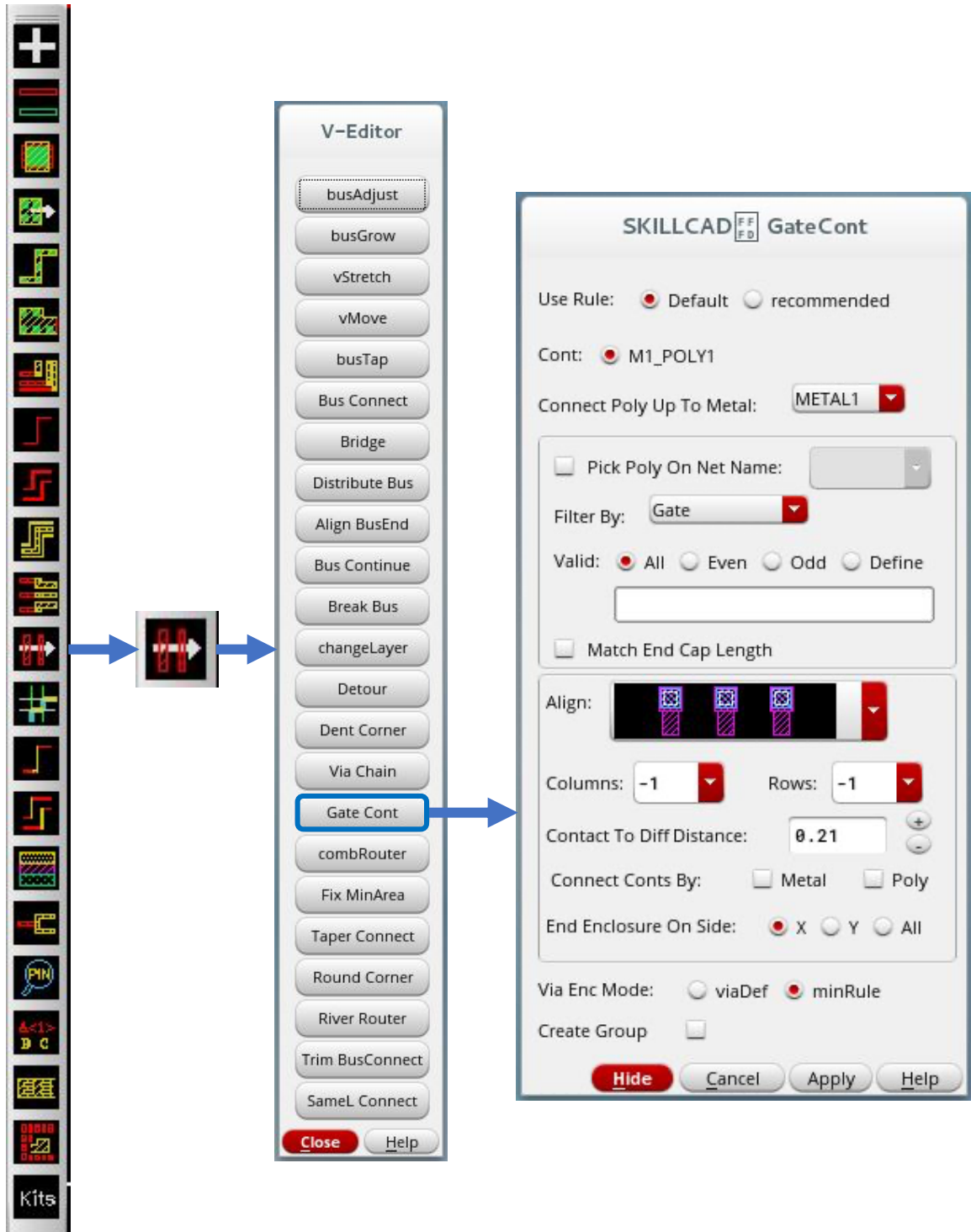
## SKILLCAD V-Editor, Dent Corner



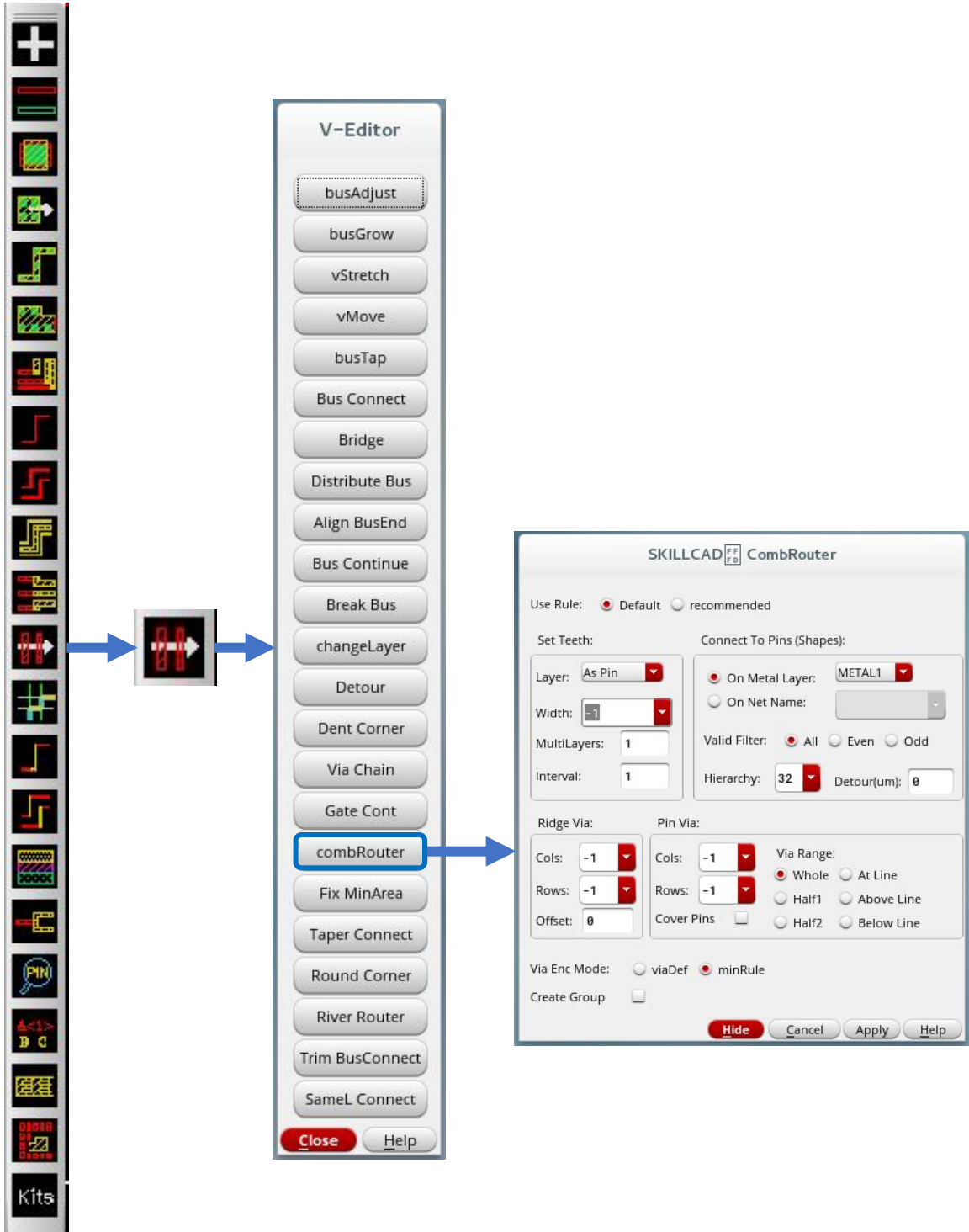
## SKILLCAD V-Editor, Via Chain



## SKILLCAD V-Editor, Gate Contact

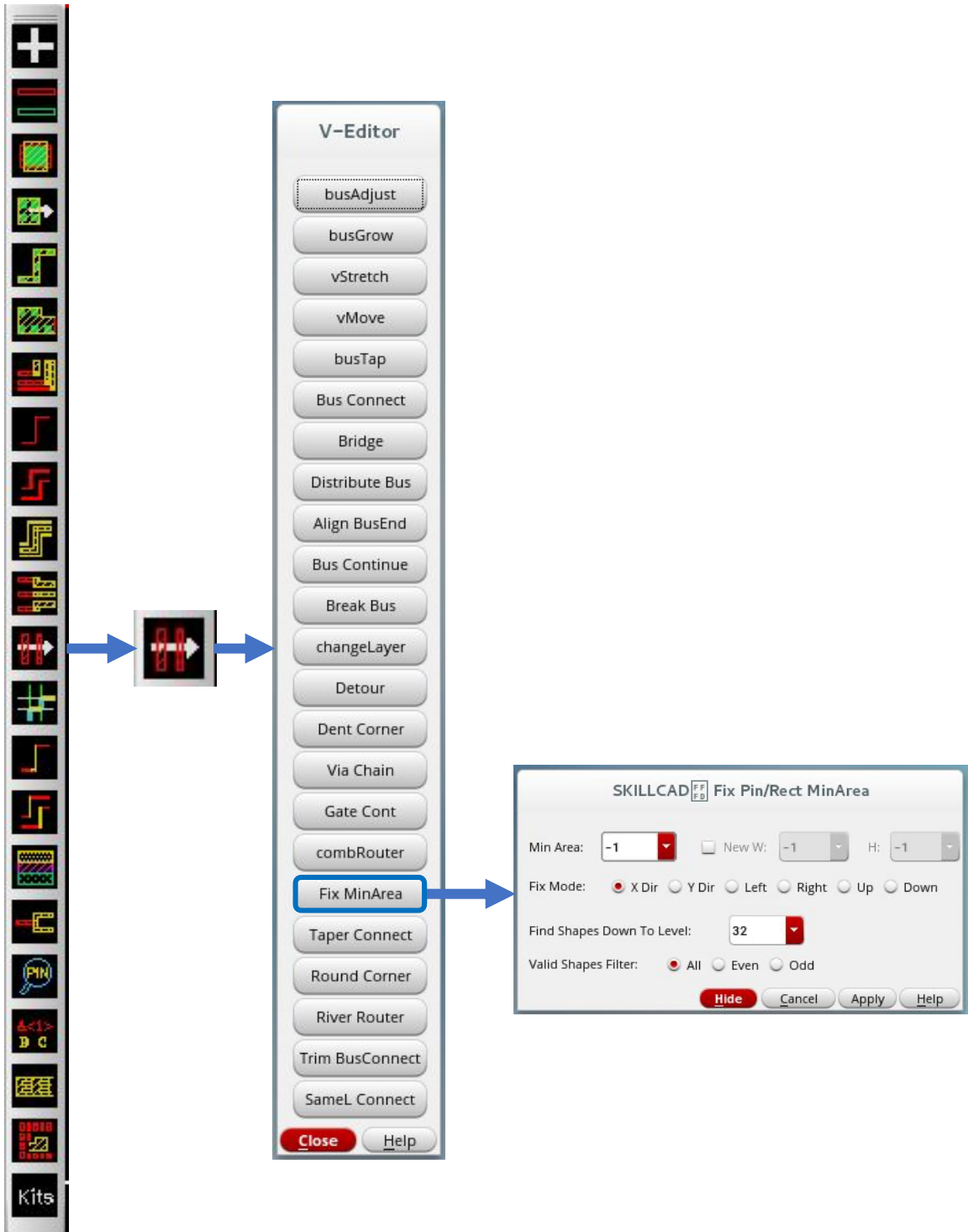


## SKILLCAD V-Editor, Comb Router



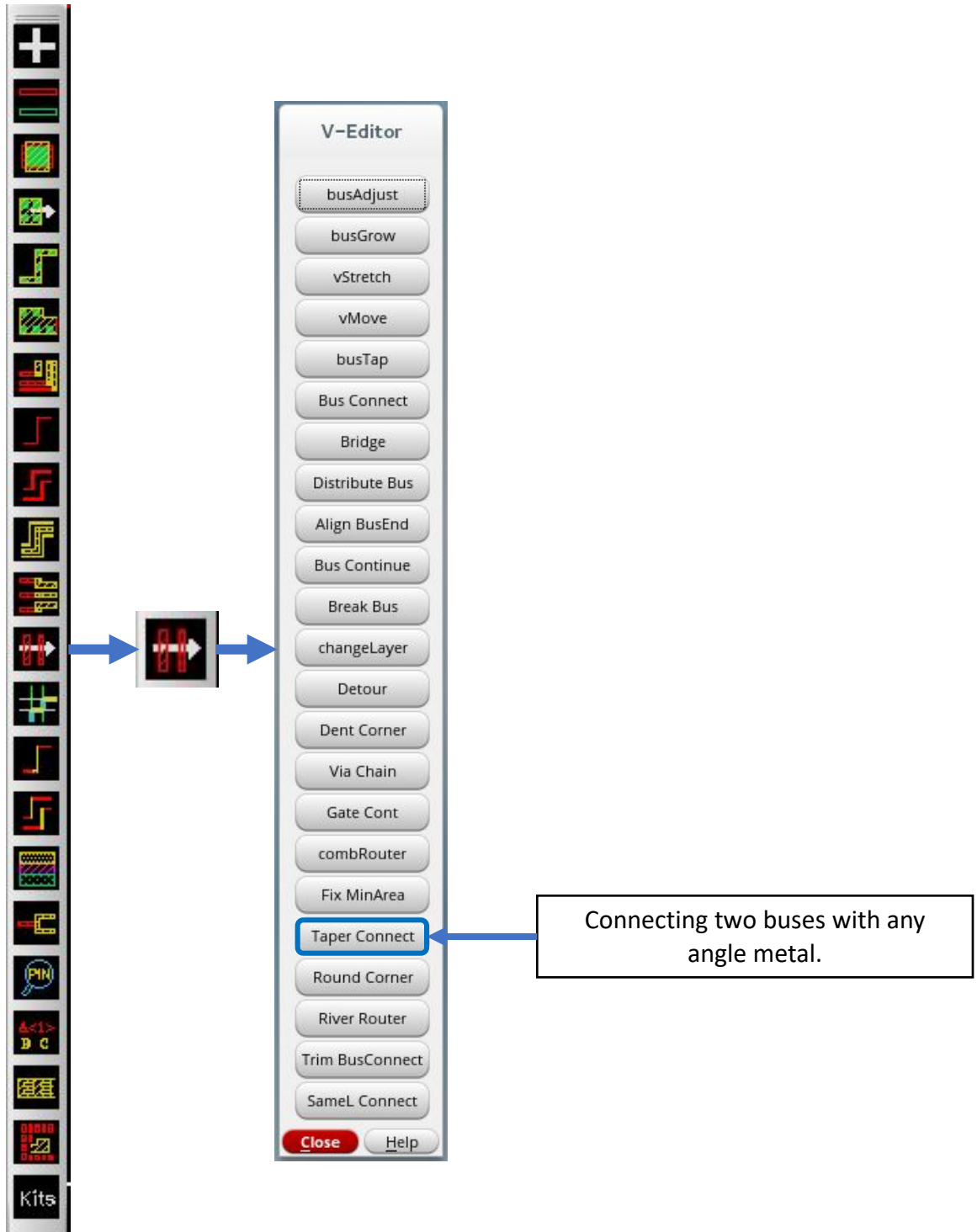


## SKILLCAD V-Editor, Fix Minimum Area

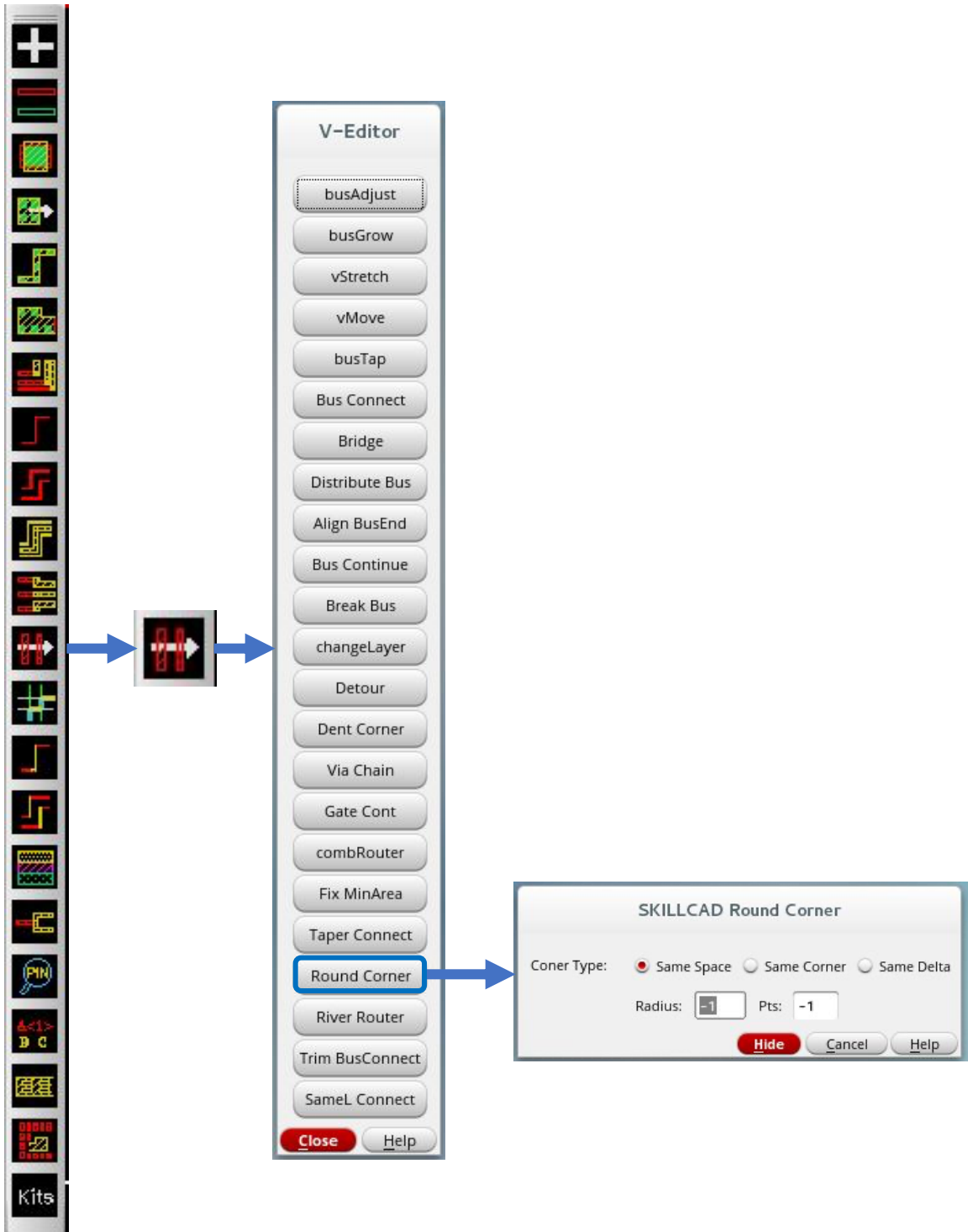




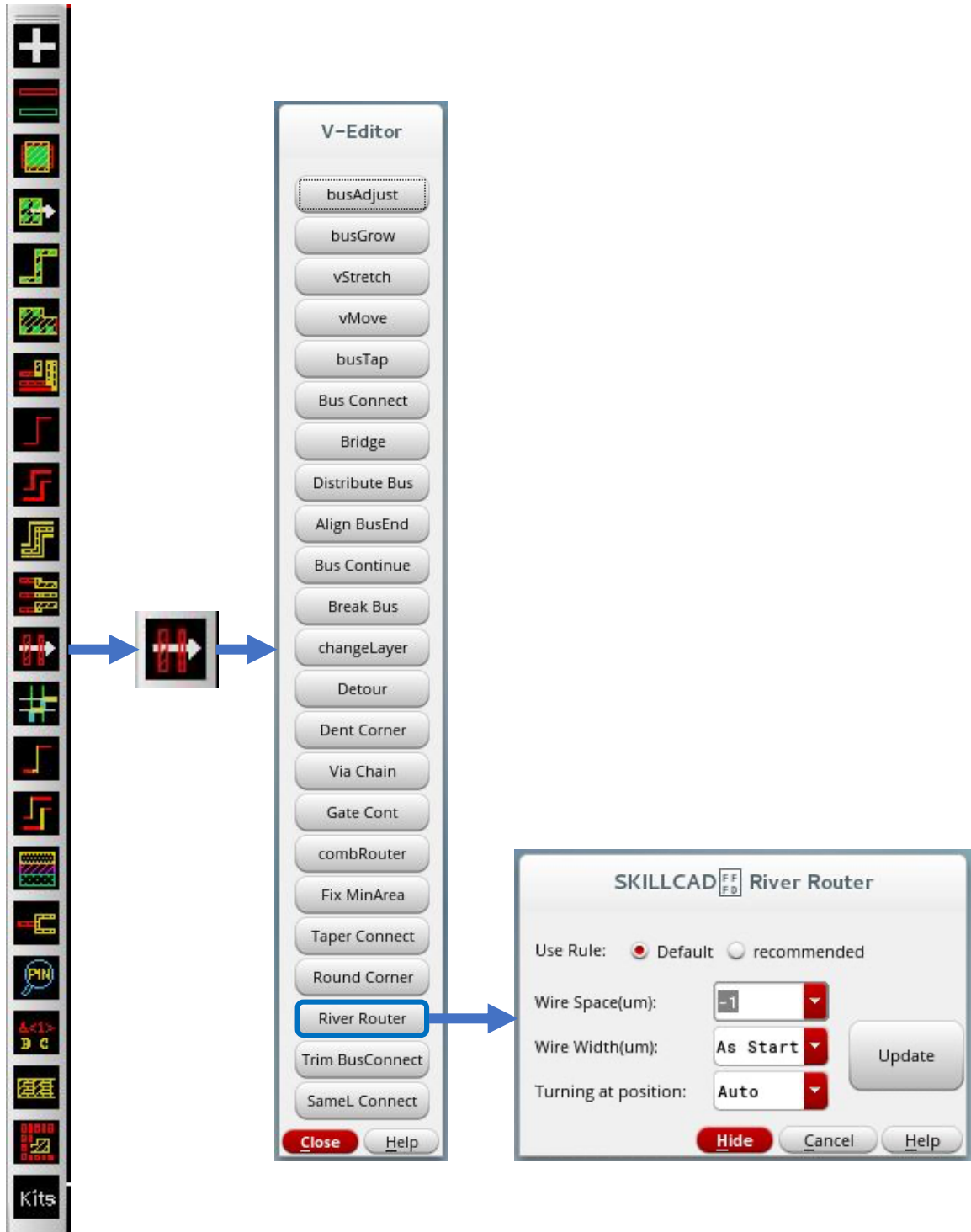
## SKILLCAD V-Editor, Taper Connect



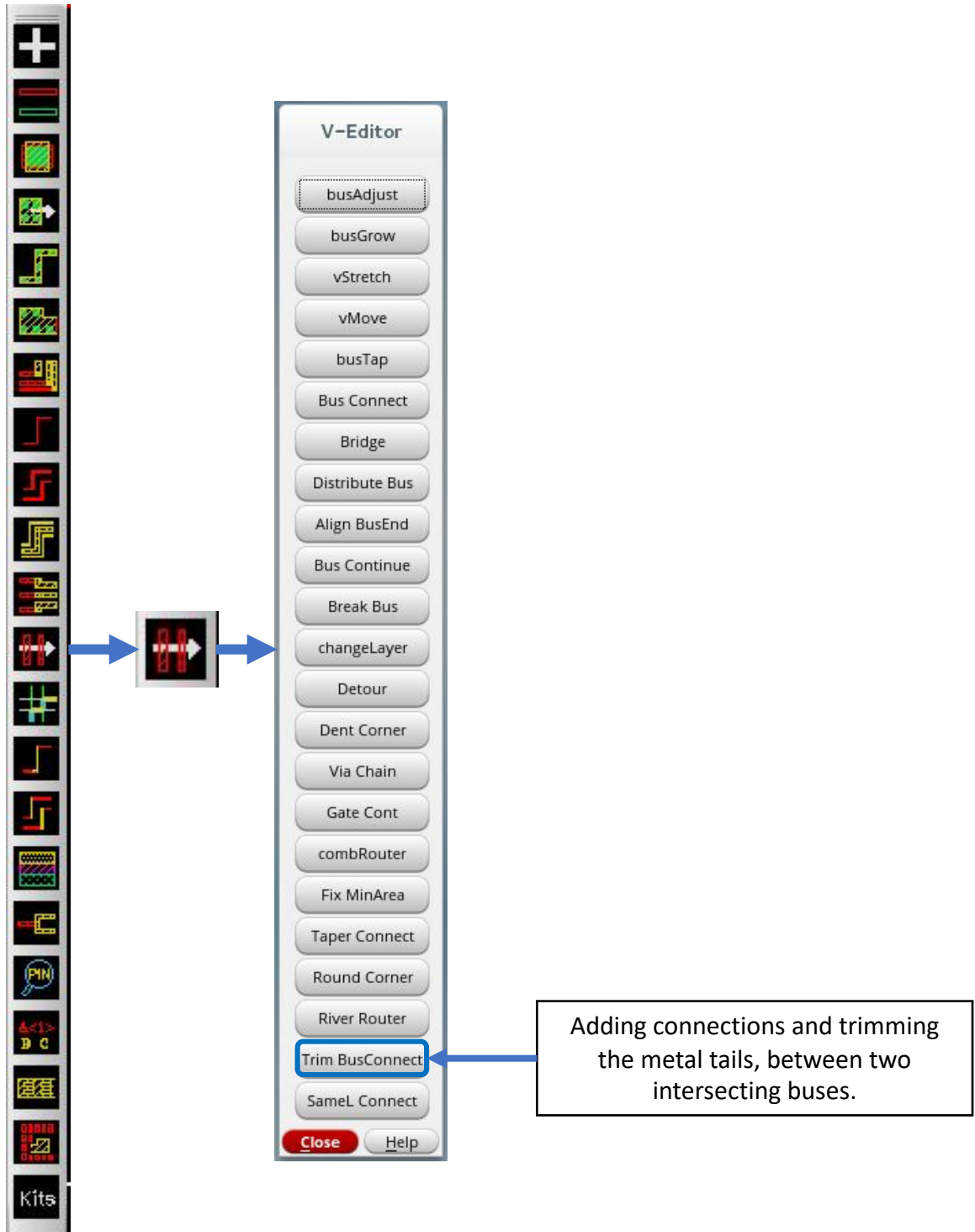
## SKILLCAD V-Editor, Round Corner



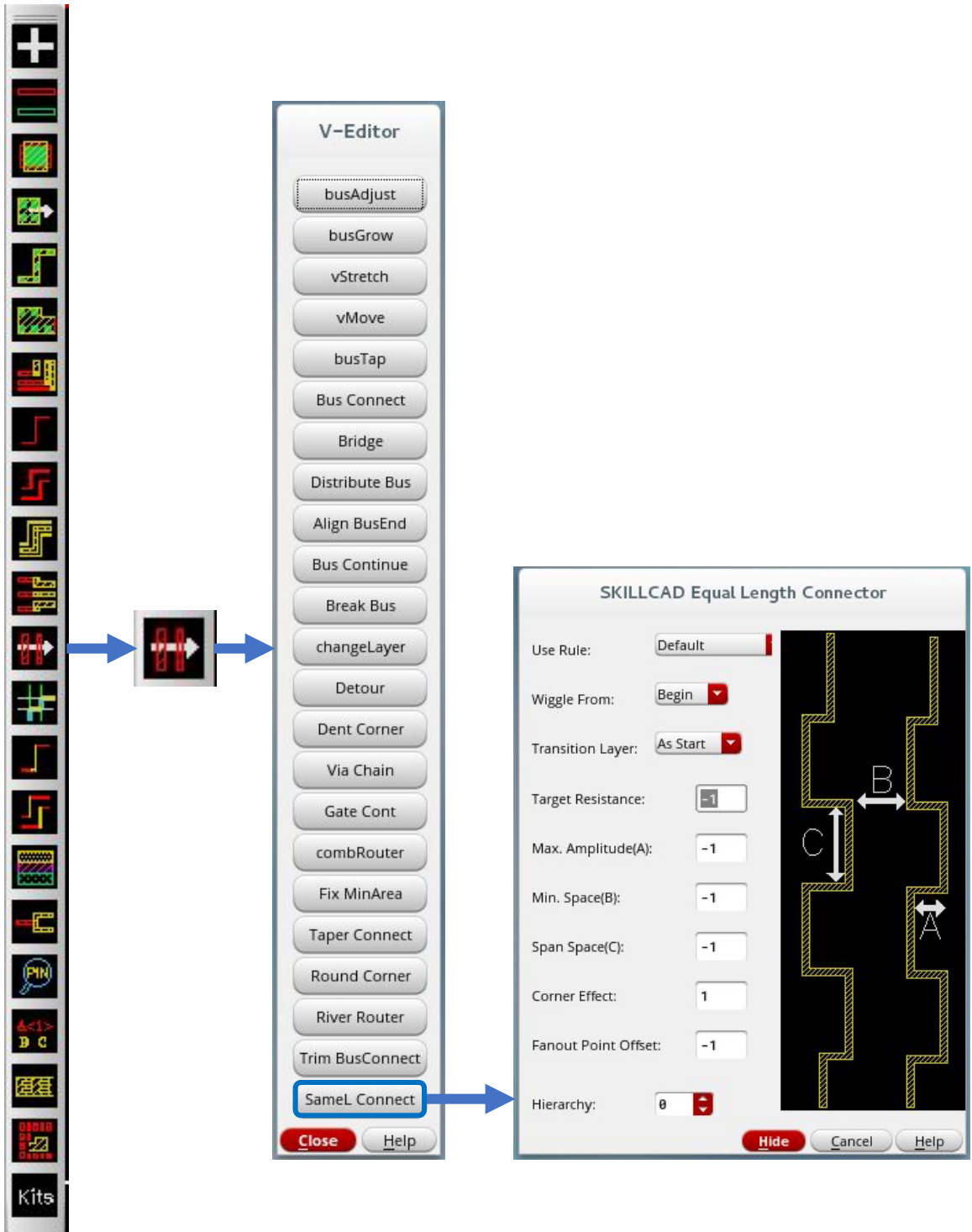
## SKILLCAD V-Editor, River Router



## SKILLCAD V-Editor, Trim Bus Connect



## SKILLCAD V-Editor, Equal Length Connector



## SKILLCAD Create A Shielded Bus

The image shows the SKILLCAD interface for creating a shielded bus. On the left is a vertical toolbar with various routing tools. A blue arrow points from the 'ShieldBus Jumper' icon in the toolbar to a 'ShieldBus Functions' dialog box. This dialog box has two buttons: 'ShieldBus Jumper' (highlighted with a blue border) and 'Via Wall Shield'. A second blue arrow points from the 'ShieldBus Jumper' button to the main configuration dialog box.

The main configuration dialog box is titled 'SKILLCAD FreeJumper (ShieldBus)'. It contains the following settings:

- Use Rule:**  Default  recommended
- Path Width Mode:**  Min Width  Fixed Width  Fixed Current
- Signal Path:** Width(um): 0.22, Current(mA): 0.22, Number: 2, Space(um): 0.23
- Shielding Path:** Width(um): 0.22, To Signal Space: 0.23
- Shielding:** Left  Right  Top  Bottom  Middle
- Current Entry Layer:** METAL1 drawing, MultiLayers: 2
- Next Click, Jump To:** METAL1 drw, Layer Intervals: 1
- Min. Via Number:** 2, **Use Squarish Via Array:**
- Max. Stack Levels:** 6, **Fix Min. Area:** Auto
- Corner Via Align:**  (viaDef),  (minRule),  (viaDef),  (minRule)
- Metal Enc Mode:**  viaDef  minRule, **Align Via Metal To Path:**
- Create Note Labels Along Path: ?
- Alert if Non-Preferred Dir Routing > 5 (um)  Swap Dir
- Reverse Bus Order at Corner Layer Jumping
- Convert Non-orthogonal Path to Polygon on Grid
- Extend Path at Layer Jumping  Auto Pan Window
- Merge with Starting/Ending Path  Align Starting/Ending to Center
- Rule Assistant  Use My Min. Space Rule(um): 0
- Metal Display:**  Current Level -1 to +1 All None
- Snap To The Center Between Two Nearby Shapes On Layer:** Same

Buttons at the bottom of the dialog: Hide, Cancel, Save As Default, Help.

## SKILLCAD Create A Via Wall Shield

The image illustrates the process of creating a via wall shield in SKILLCAD. It shows the following steps:

- The user selects the **Via Wall Shield** option from the **ShieldBus Functions** dialog box.
- The **Shield Bus(Via Wall)** configuration dialog is opened, showing various settings for the shield.
- Key settings in the configuration dialog include:
  - Use Rule:** Default (selected)
  - On Side:** Left, Right, Middle (checked)
  - Top:** Upper Metal (selected), Plate (selected)
  - Bottom:** Lower Metal (selected), Plate (selected)
  - Number of paths:** 1
  - Layer:** METAL1
  - Signal Path Widths(um):** 1
  - Signal Path Space(um):** 1
  - Shield to Signal Space:** 1
  - Via Space:** Minimum
  - Enc Mode:** minRule (selected)



## SKILLCAD Kits, Area/Perimeter Calculator

The image shows the SKILLCAD interface. On the left is a vertical toolbar with various icons. A 'Kits' button at the bottom of the toolbar is highlighted with a blue arrow pointing to a 'Kits' dialog box. This dialog box contains a list of tools, with 'Calculate Area Perimeter' highlighted by a blue arrow pointing to the 'SKILLCAD Area Perimeter Calculator' dialog box.

**SKILLCAD Kits**

- Calculate Area Perimeter
- Simple Net R
- Fix Offgrid
- Sky View
- Flip Within BBox
- Swap Bit Line(Vias)
- Toggle Via CutClass
- Full Selection
- Select Net Objs
- nCopy
- Manhattan Edge (Conic)
- Create Spiral
- Formula Plotter
- Fill Holes
- Cut Out Short
- Cover Fig/Net
- Grow Shapes
- Edge Grow
- Line Distance
- Sync Window View
- Copy From Background View
- Chop Array
- Inductor Pin Checker
- Create Arc Shapes
- Convert Shapes

**SKILLCAD Area Perimeter Calculator**

Merge Shapes on Different Purpose

Highlight Merged Region With:

Layers of Interest:

Calculations	Area	Perimeter
[Empty Table]		

Total: [Empty Field]

Current Calculation Results:

Area:  Perimeter:

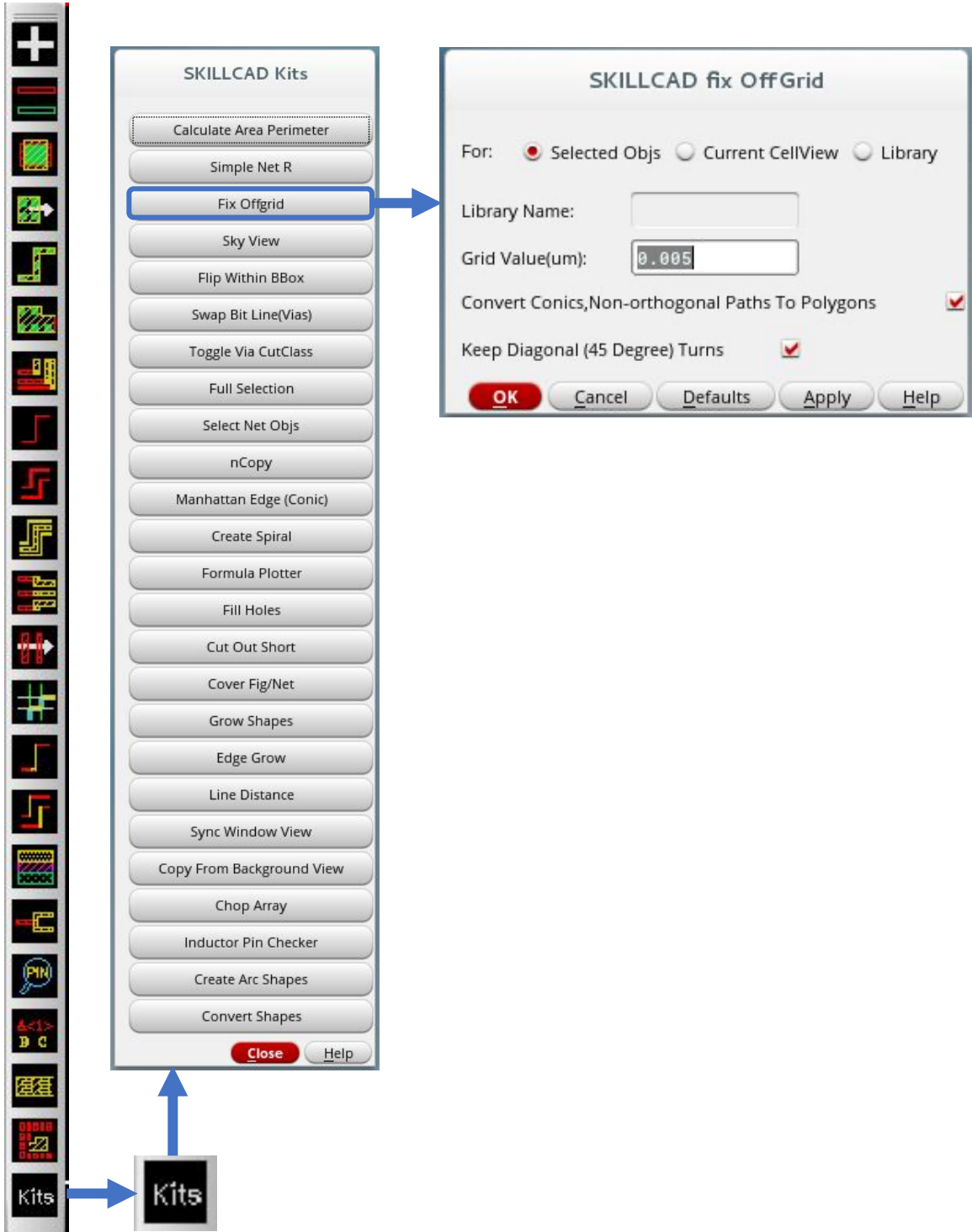
## SKILLCAD Kits, Simple Net Resistance

The image shows the SKILLCAD interface with the 'Simple Net R' menu item highlighted in the 'SKILLCAD Kits' panel. The 'SKILLCAD Simple Net R' dialog box is open, showing the following options:

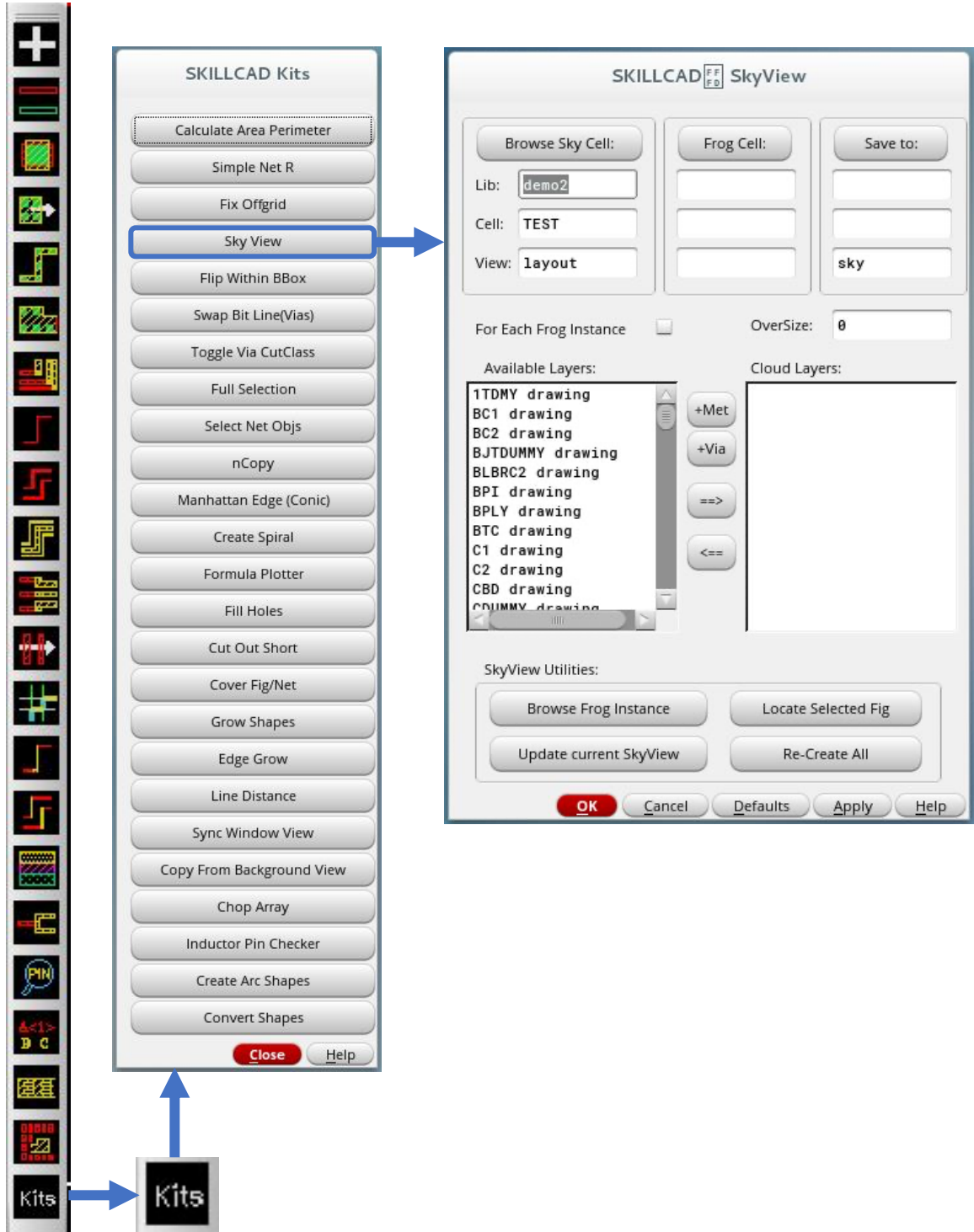
- Highlight Net With: Cycle
- Down To Level: 32
- Buttons: Reset, Report Detail, Part of Net, Whole Net
- Table with columns: Index, Net Name, R\_Total
- Buttons: Close, Help

Blue arrows indicate the flow from the 'Kits' button in the toolbar to the 'Kits' panel, and from the 'Simple Net R' menu item to the dialog box.

## SKILLCAD Kits, Fix Off Grid



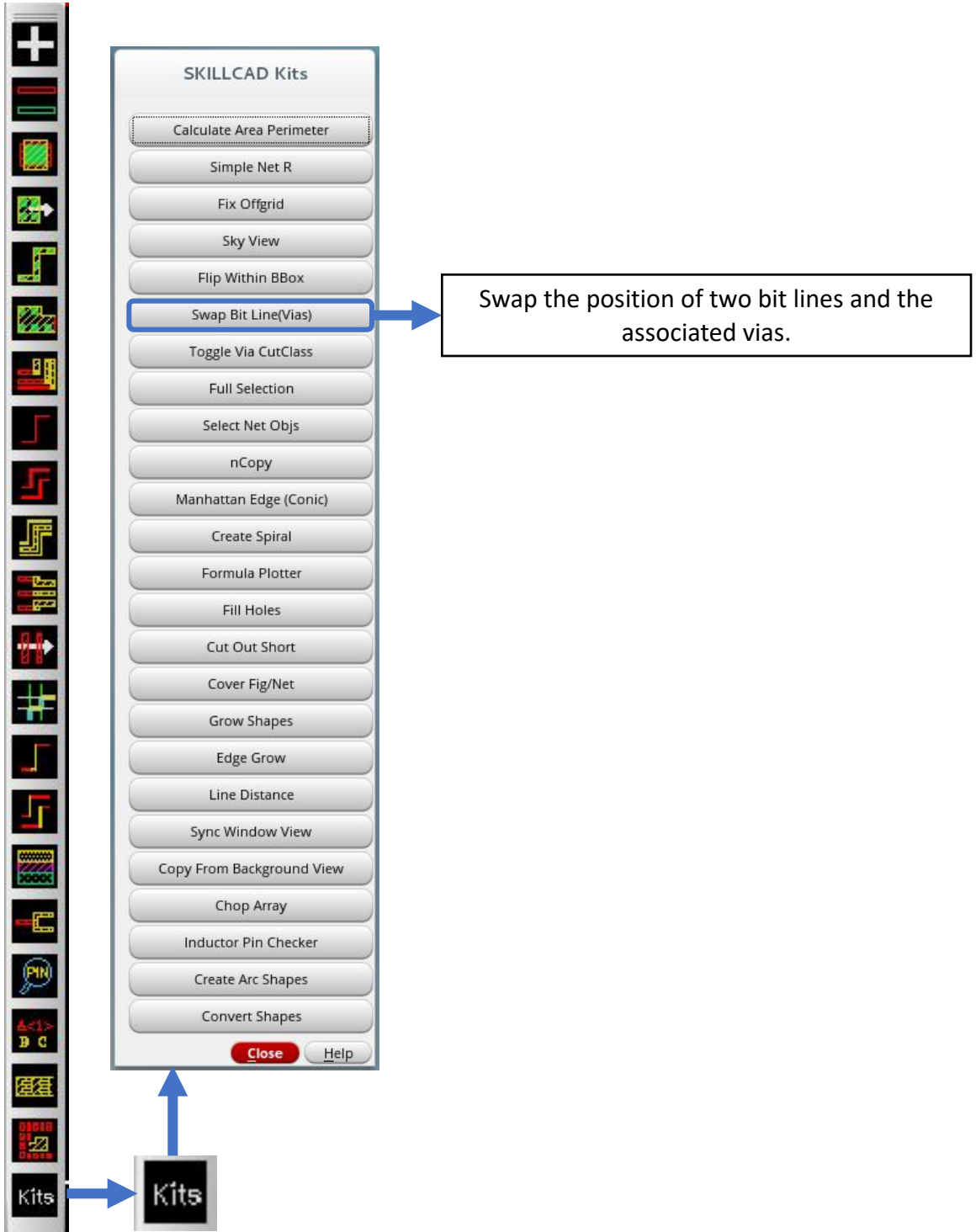
## SKILLCAD Kits, Sky View



## SKILLCAD Kits, Flip Within A Bounding Box

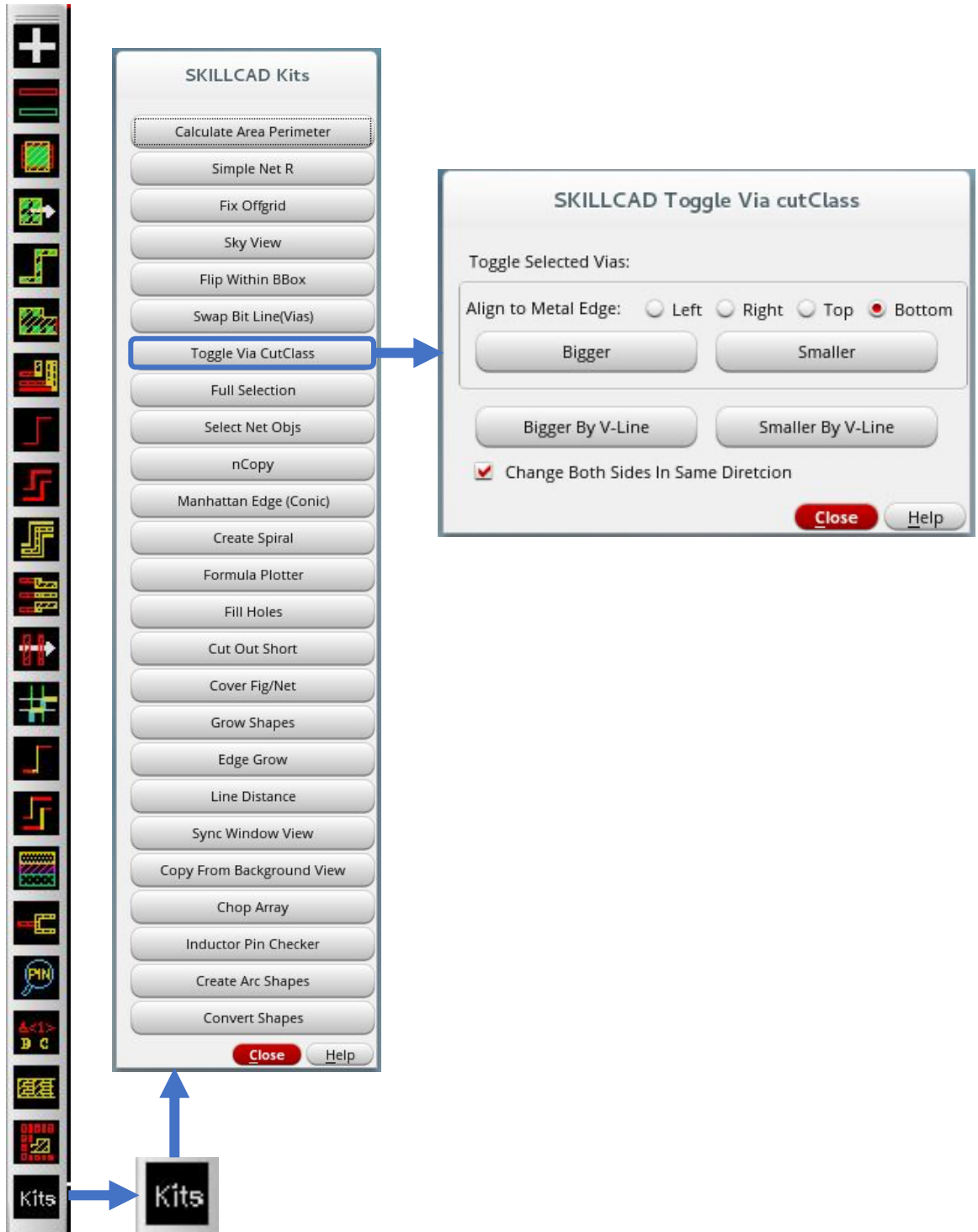


## SKILLCAD Kits, Swap Bit Lines



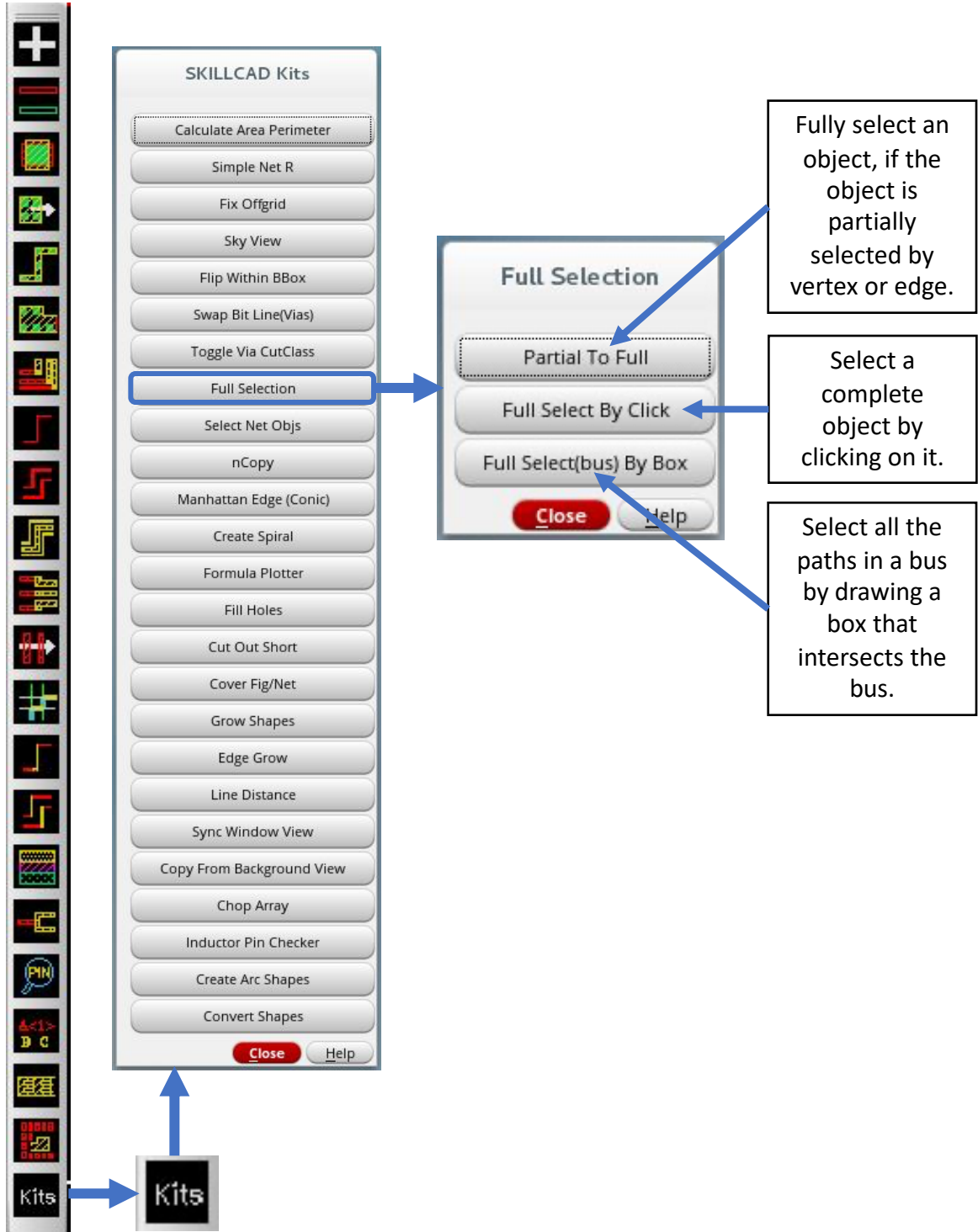


## SKILLCAD Kits, Toggle Via Cut Class

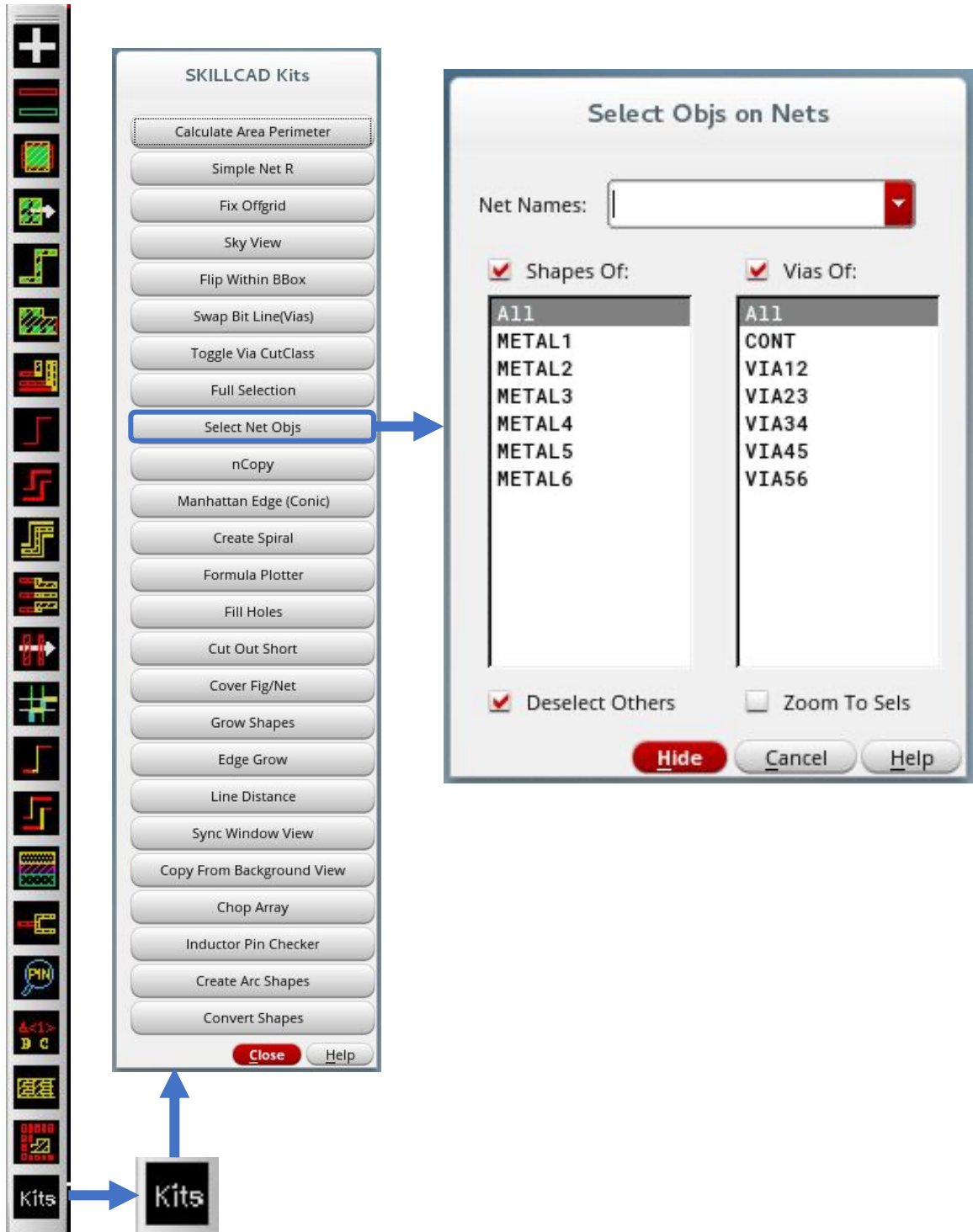




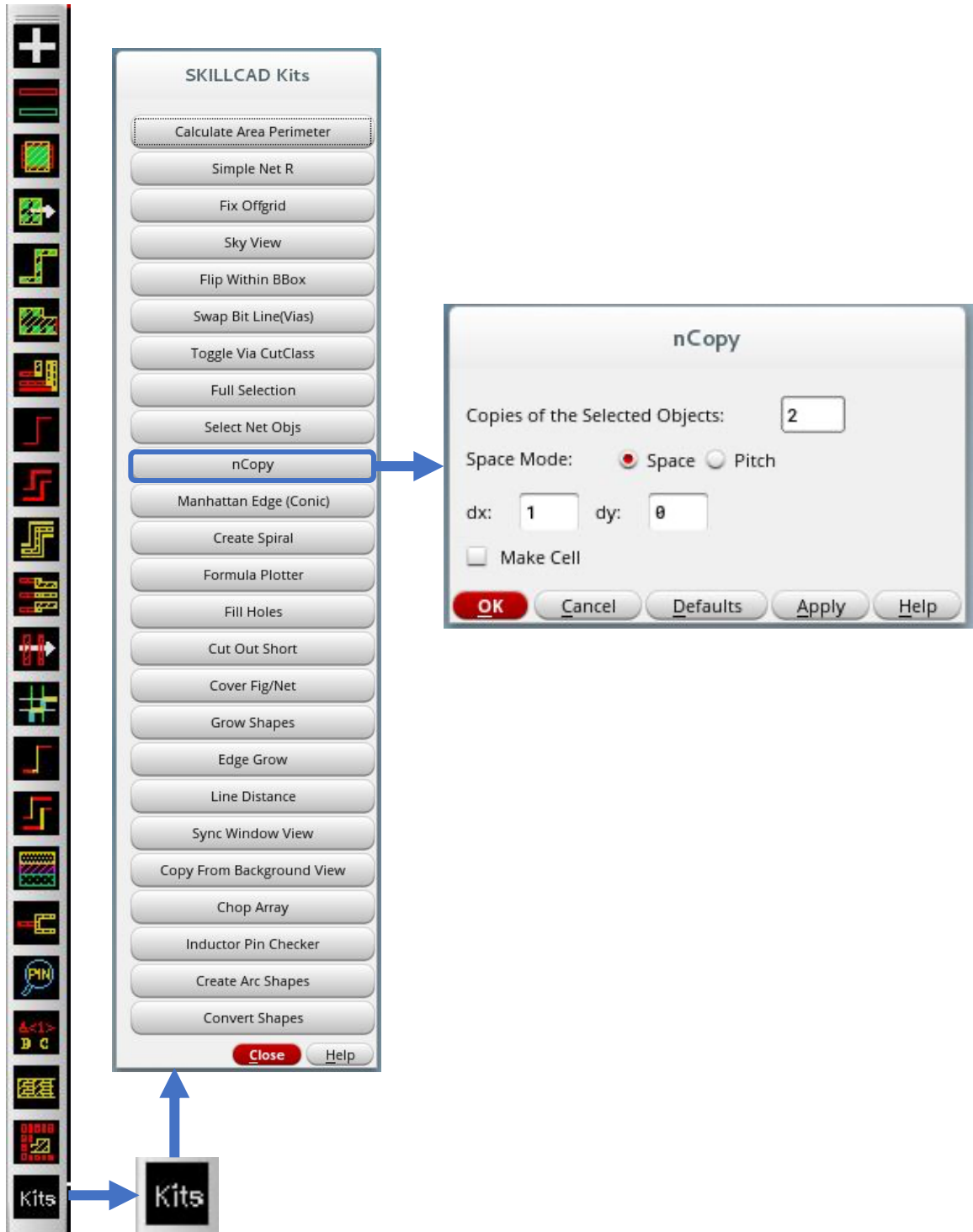
## SKILLCAD Kits, Full Selection



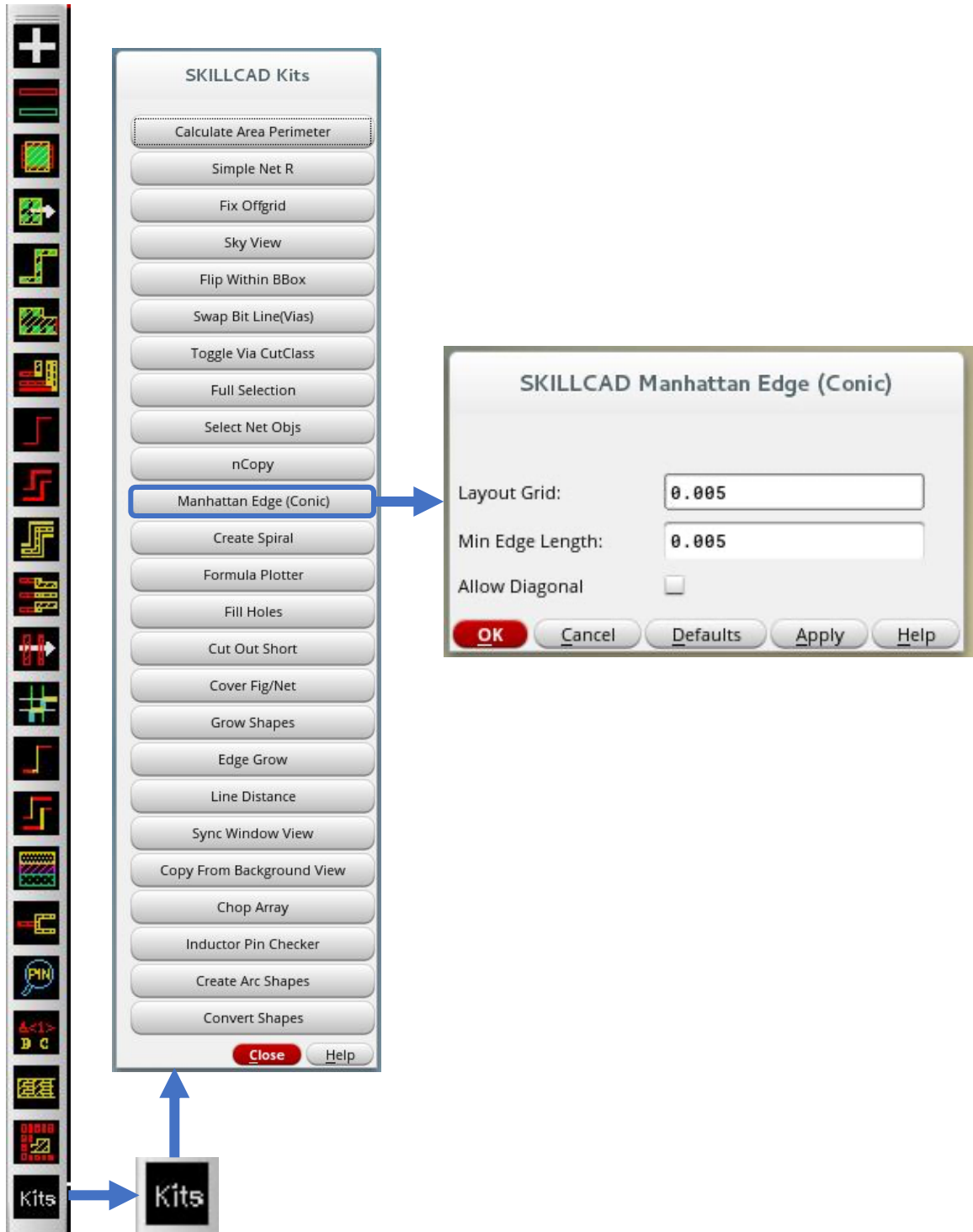
## SKILLCAD Kits, Select Objects On Nets



## SKILLCAD Kits, Making Multiple Copies



## SKILLCAD Kits, Creating A Manhattan Edge Shape



## SKILLCAD Kits, Creating A Spiral Shape

The image shows the SKILLCAD interface. On the left is a vertical toolbar with various icons. A 'Kits' button at the bottom of the toolbar is highlighted with a blue arrow pointing to a 'Kits' dialog box. This dialog box lists various tools, with 'Create Spiral' highlighted by a blue arrow. A second blue arrow points from 'Create Spiral' to a 'SKILLCAD Create Spiral Shape' dialog box. This dialog box contains the following settings:

Parameter	Value
From:	METAL1
To:	METAL1
Width(um):	2
No of Circles:	4.5
Space(um):	2
Sides/Circle:	60
Inner R(um):	5
Rotate:	R0

Buttons at the bottom of the dialog include 'Done Editing', 'Hide', 'Cancel', and 'Help'. The 'Kits' dialog box also has 'Close' and 'Help' buttons.

## SKILLCAD Kits, Creating Shapes By Equations

The image shows the SKILLCAD interface. On the left is a vertical toolbar with various icons. A 'Kits' button at the bottom of the toolbar is highlighted with a blue arrow pointing to a larger 'Kits' button. This larger button opens a 'SKILLCAD Kits' menu. The menu contains a list of tools, with 'Formula Plotter' highlighted by a blue arrow. A blue arrow also points from the 'Formula Plotter' button to a 'SKILLCAD Formula Plotter' dialog box. The dialog box has the following fields and controls:

- Use Two Formulas
- Width(um):
- 1st f(x)=
- 2nd f(x)=
- x Range:  to  Step:
-



## SKILLCAD Kits, Filling Holes In Shapes

The image shows a vertical toolbar on the left with various icons. The 'Kits' icon at the bottom is highlighted with a blue arrow pointing to a 'Kits' button. This button opens the 'SKILLCAD Kits' dialog, which is a list of tools. The 'Fill Holes' tool is highlighted with a blue arrow. This tool opens the 'SKILLCAD Fill Holes' dialog, which has the following settings:

- Fill holes with:  Width  Area
- From:  to:
- Buttons: **OK**, Cancel, Defaults, Apply, Help



## SKILLCAD Kits, Cutting Out Overlapping Shapes

The image shows the SKILLCAD software interface. On the left is a vertical toolbar with various icons. A blue arrow points from the 'Kits' icon at the bottom of the toolbar to a 'Kits' dialog box. This dialog box contains a list of tools. A blue arrow points from the 'Cut Out Short' tool in the list to a secondary dialog box titled 'SKILLCAD Cut Out Short'. This dialog box has two input fields: 'Space From Existing Shapes' and 'Min Width', both containing the value '1'. At the bottom of this dialog are buttons for 'OK', 'Cancel', 'Defaults', 'Apply', and 'Help'. The 'Kits' dialog box also has 'Close' and 'Help' buttons at the bottom.

## SKILLCAD Kits, Cover Mask Shape

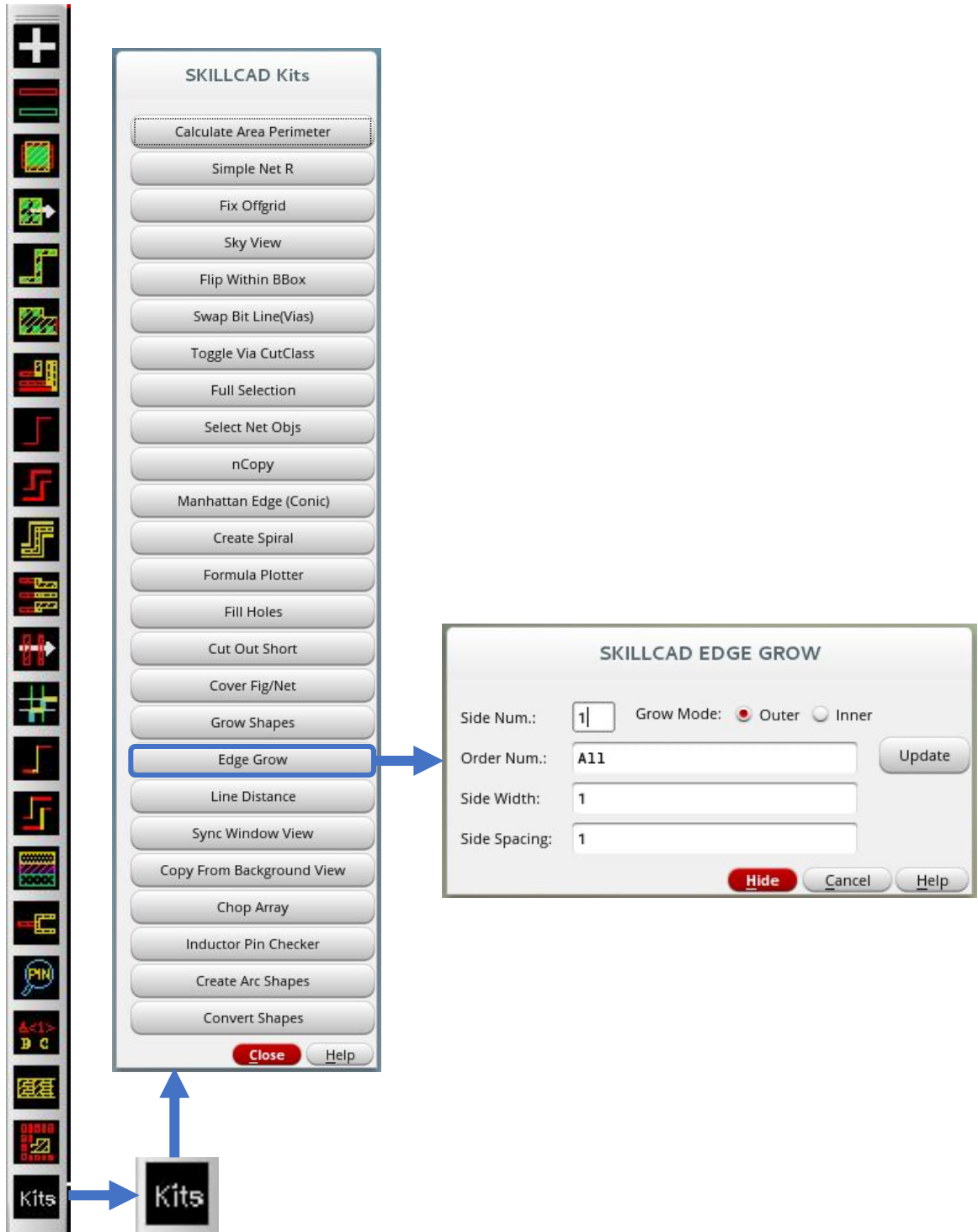
The image shows the SKILLCAD software interface. On the left is a vertical toolbar with various icons. A blue arrow points from the 'Kits' icon at the bottom of the toolbar to a 'Kits' button. This button opens a 'SKILLCAD Kits' menu. The menu contains a list of tools, with 'Cover Fig/Net' highlighted by a blue box and a blue arrow pointing to the right. This arrow points to the 'SKILLCAD Cover Mask Shape' dialog box. The dialog box has the following fields and controls:

- Cover By Layer Name:** Same (dropdown menu)
- Layer Purpose:** Same (dropdown menu)
- Trace Shape/Net to Level:** 32 (dropdown menu)
- Size By:** 0 (input field)
- Selected TopLevel Shapes and Instances (No Trace):** (button)
- Trace Clicked Shape:** (button)
- Trace Selected Shapes:** (button)
- Trace Clicked Net:** (button)
- Trace Selected Nets:** (button)
- Close:** (red button)
- Help:** (button)

## SKILLCAD Kits, Growing Shapes From Existing Shapes

The image shows the SKILLCAD interface. On the left is a vertical toolbar with various icons. A 'Kits' button at the bottom of the toolbar is highlighted with a blue arrow pointing to a larger 'Kits' button. This larger button opens a 'SKILLCAD Kits' menu. The 'Grow Shapes' option in this menu is highlighted with a blue box and a blue arrow pointing to the 'SKILLCAD Grow Shapes' dialog box. The dialog box contains a 'Template' field, 'Selected Reference' options (Shape, BBox, Layer), a list of 'Layers To Be Created' (including 1TDMY drawing, BC1 drawing, etc.), 'Dist To Reference' settings (Inner(um) and Outer(um)), and 'Add =>', '<= Del', and 'Reset' buttons. There are also 'Apply', 'Cancel', and 'Help' buttons at the bottom of the dialog.

## SKILLCAD Kits, Growing Shapes From Existing Edges



## SKILLCAD Kits, Measuring Linear Distance

The image shows a vertical toolbar on the left with various icons. The 'Kits' icon at the bottom is highlighted with a blue arrow pointing to a 'Kits' dialog box. This dialog box contains a list of tools. The 'Line Distance' tool is highlighted with a blue border and a blue arrow pointing to a callout box. The callout box contains the text: 'Measure and display the linear distance across an object, or objects.'

**SKILLCAD Kits**

- Calculate Area Perimeter
- Simple Net R
- Fix Offgrid
- Sky View
- Flip Within BBox
- Swap Bit Line(Vias)
- Toggle Via CutClass
- Full Selection
- Select Net Objs
- nCopy
- Manhattan Edge (Conic)
- Create Spiral
- Formula Plotter
- Fill Holes
- Cut Out Short
- Cover Fig/Net
- Grow Shapes
- Edge Grow
- Line Distance**
- Sync Window View
- Copy From Background View
- Chop Array
- Inductor Pin Checker
- Create Arc Shapes
- Convert Shapes

**Close** Help

**Kits**

Measure and display the linear distance across an object, or objects.

## SKILLCAD Kits, Syncing Window Views

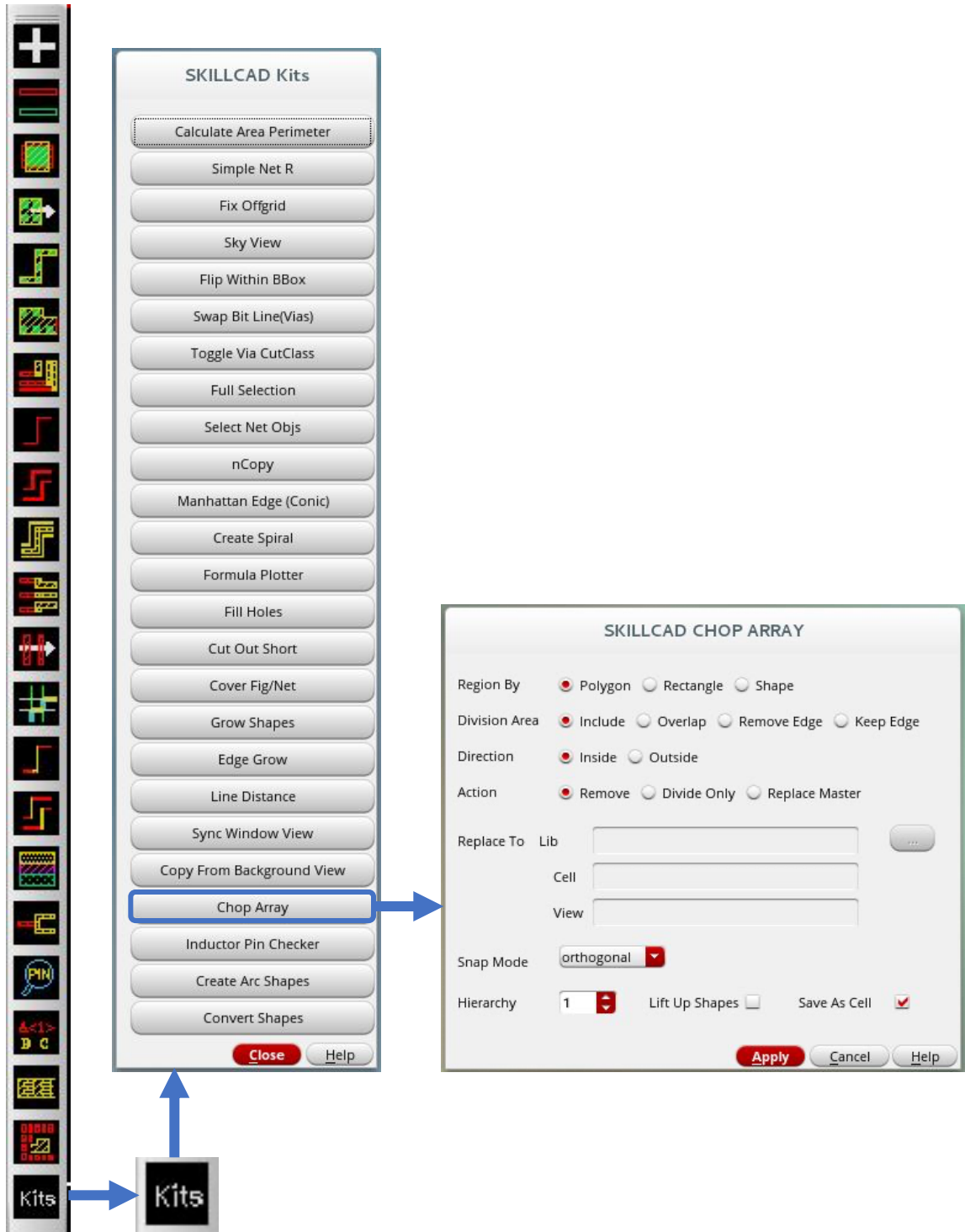
The image shows the SKILLCAD software interface. On the left is a vertical toolbar with various icons. A 'Kits' button at the bottom of the toolbar is highlighted with a blue arrow pointing to a larger 'Kits' button. This larger button is part of a 'SKILLCAD Kits' menu. The menu contains a list of tools: Calculate Area Perimeter, Simple Net R, Fix Offgrid, Sky View, Flip Within BBox, Swap Bit Line(Vias), Toggle Via CutClass, Full Selection, Select Net Objs, nCopy, Manhattan Edge (Conic), Create Spiral, Formula Plotter, Fill Holes, Cut Out Short, Cover Fig/Net, Grow Shapes, Edge Grow, Line Distance, Sync Window View (highlighted with a blue box and arrow), Copy From Background View, Chop Array, Inductor Pin Checker, Create Arc Shapes, and Convert Shapes. At the bottom of the menu are 'Close' and 'Help' buttons. To the right of the menu is a 'SKILLCAD Sync Window View' dialog box. The dialog has fields for Library (demo2), Cell (TEST), View (layout), Win/Inst (window: 2), and Win/Inst ( ). It also has checkboxes for Enabled (checked) and offbet: (0). There are buttons for Get Win1/Inst1, Get Win2/Inst2, Browse, Tile Windows, Close, and Help.

## SKILLCAD Kits, Copying From A Background View

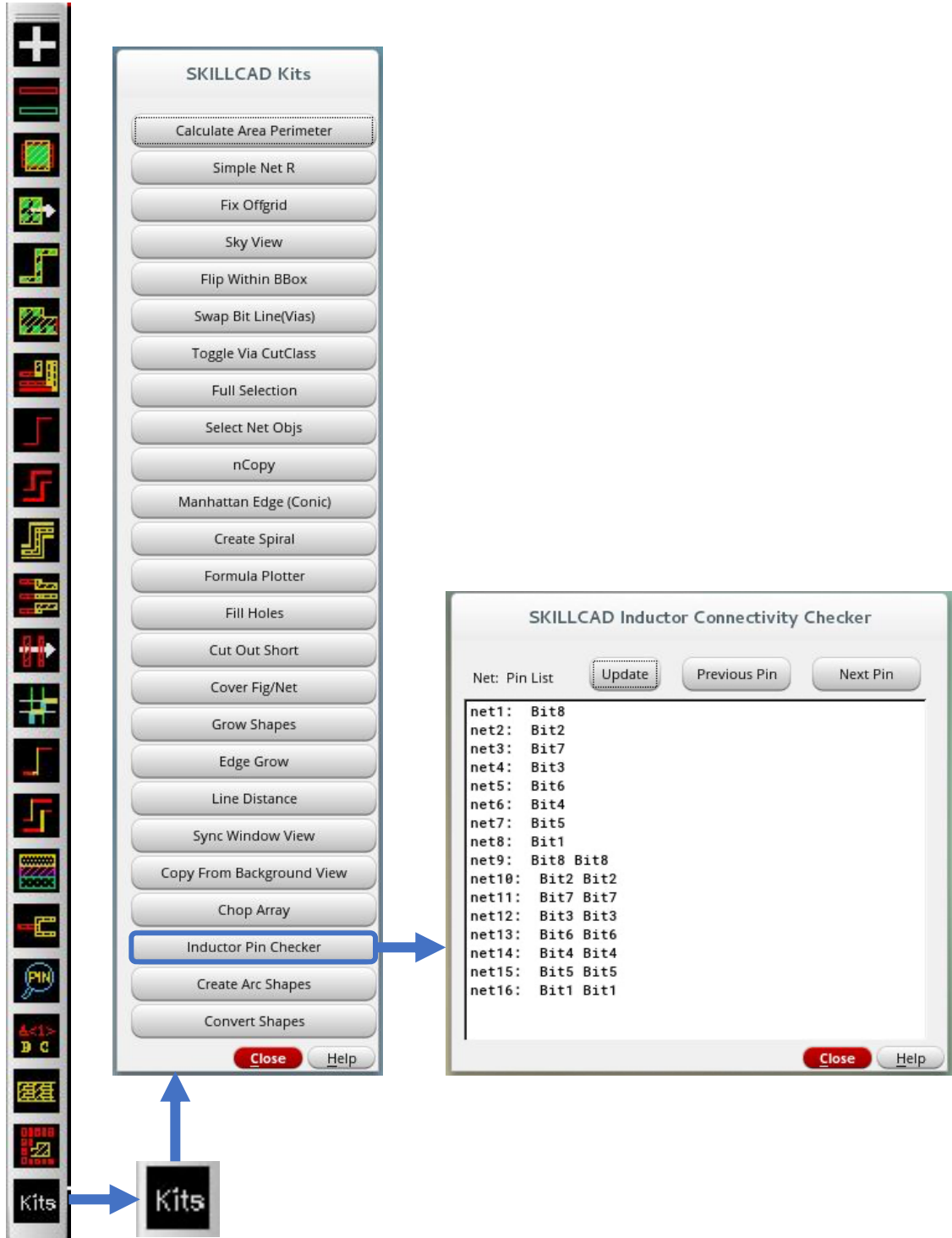




## SKILLCAD Kits, Chopping An Existing Array



## SKILLCAD Kits, Checking Inductor Connectivity



## SKILLCAD Kits, Creating Arc Shapes

The image shows the SKILLCAD interface. On the left is a vertical toolbar with various icons. A 'Kits' button at the bottom of the toolbar is highlighted with a blue arrow pointing to a 'Kits' button in a separate box. This 'Kits' button has another blue arrow pointing to the 'Create Arc Shapes' option in the 'SKILLCAD Kits' menu. The 'SKILLCAD Kits' menu is a vertical list of buttons, with 'Create Arc Shapes' highlighted in blue. To the right of the menu is the 'SKILLCAD Arc Shapes' dialog box. The dialog box has a 'Template' field, 'Save' and 'Load' buttons, and a 'Layer' dropdown set to 'ref'. The 'Shape Type' is 'Arc90'. The 'Radius(um) (r)' is '10'. 'Space (sp1)' and 'Space (sp2)' are both '1'. 'Width (w)' is '1'. 'No. of Tracks' is '1'. 'Extension(ext)' is '1'. The 'Rotate' dropdown is set to 'R0'. There is a 'Create Group' checkbox which is unchecked. The dialog box also has 'Hide', 'Cancel', and 'Help' buttons. A diagram in the dialog box shows a red arc with labels 'ext', 'W', 'sp1', 'sp2', 'r', and 'ext'.

## SKILLCAD Kits, Converting Objects



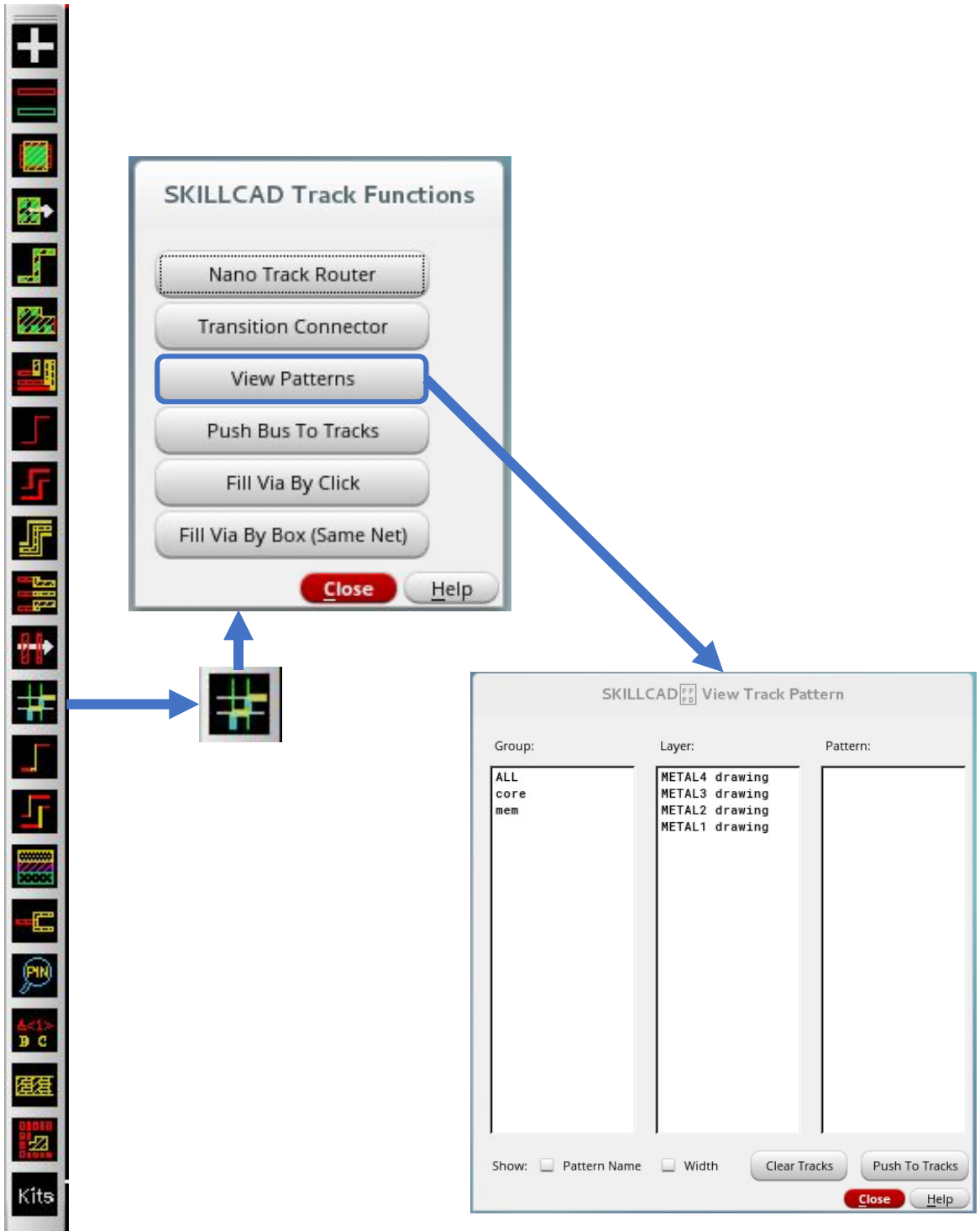
## SKILLCAD Track Functions



## SKILLCAD Track Transition Connector

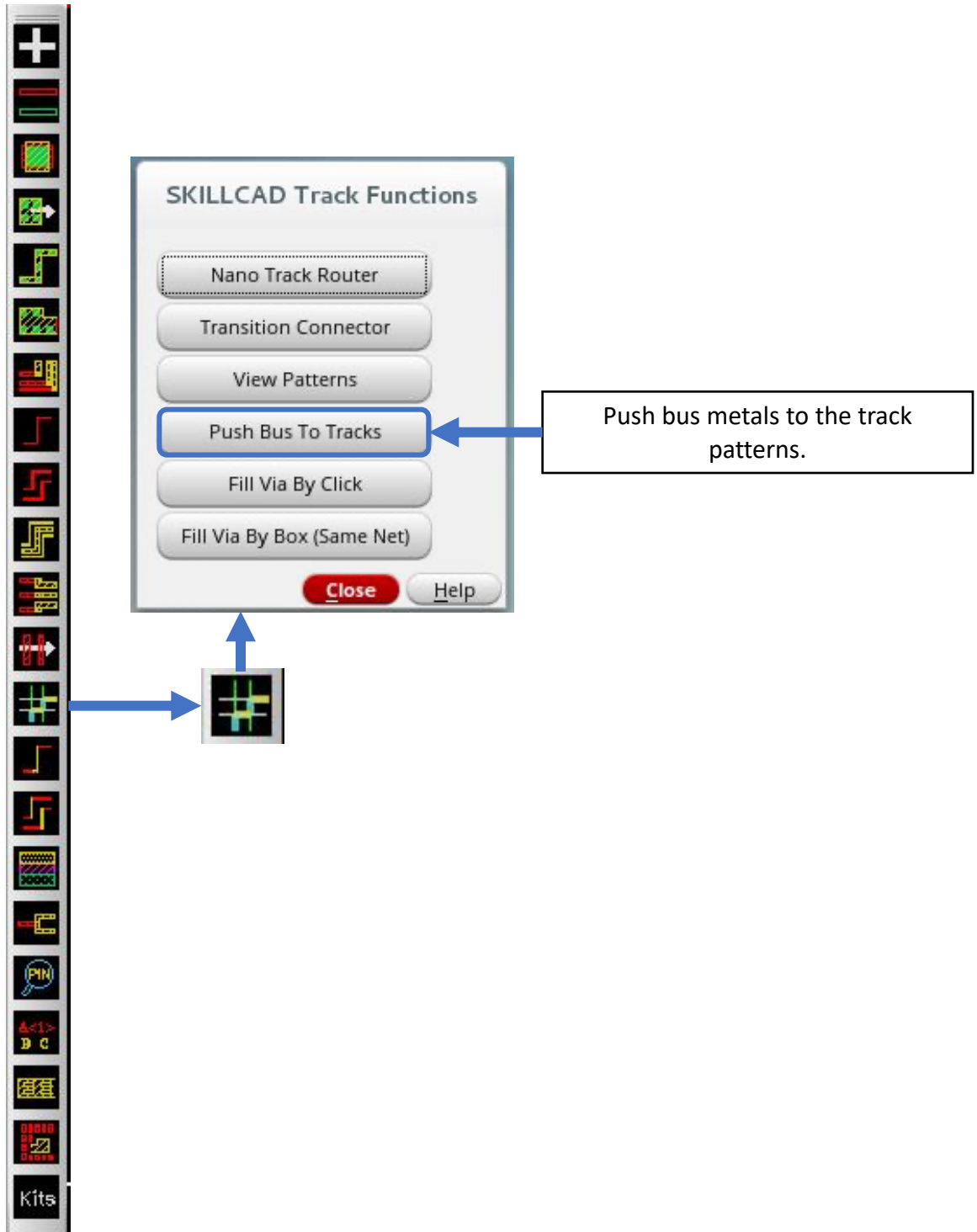


## SKILLCAD View Track Patterns

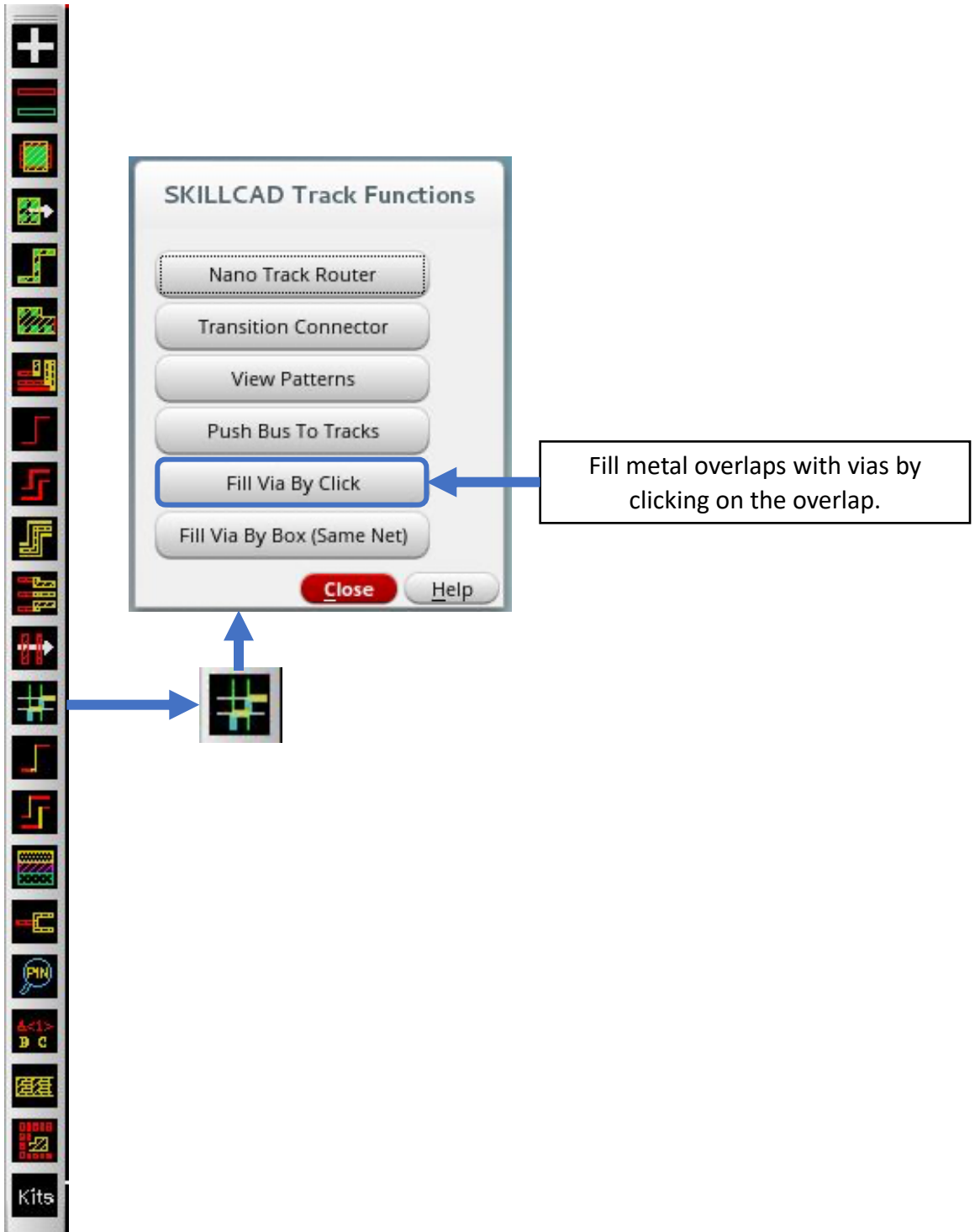




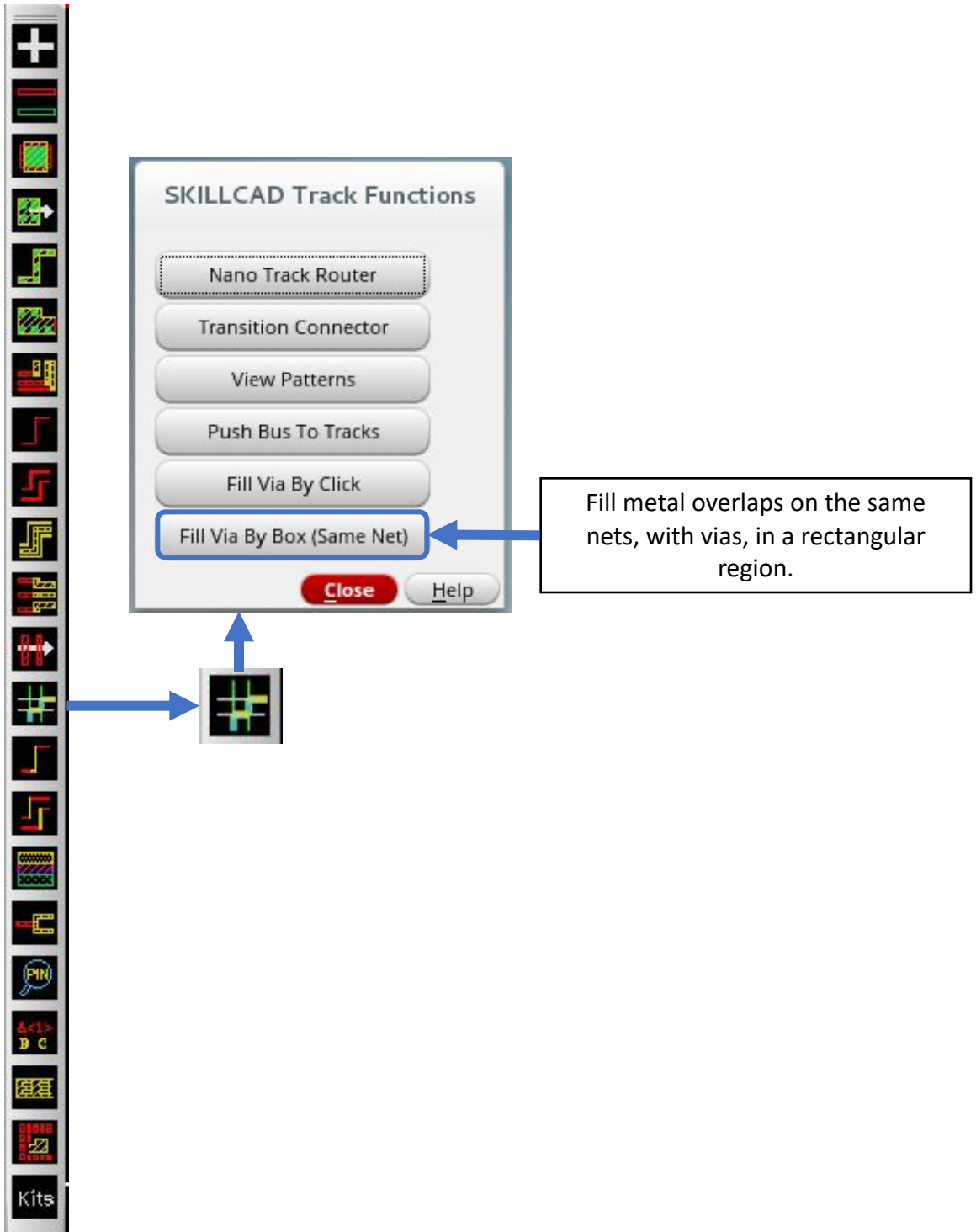
## SKILLCAD Pushing Bus Metals To The Track Patterns



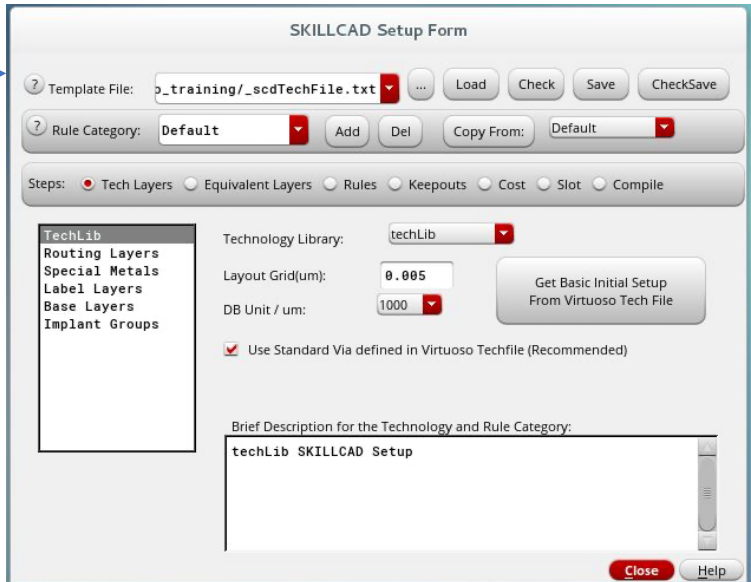
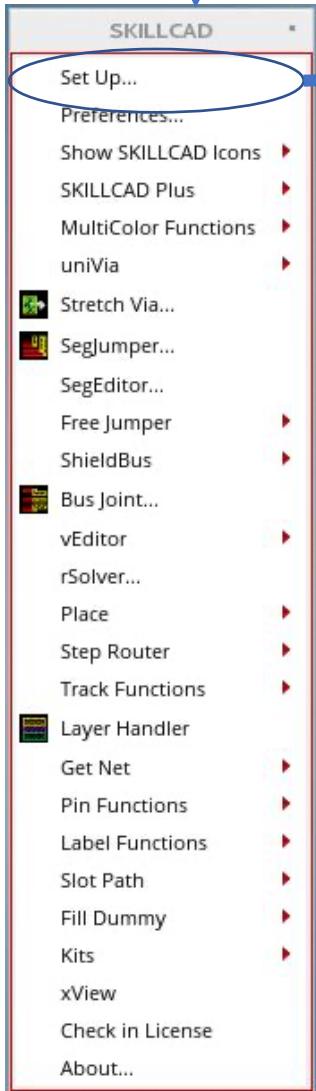
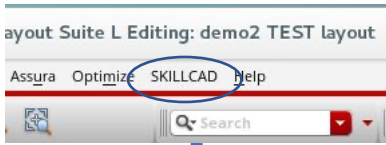
## SKILLCAD Click To Fill Metal Overlaps With Vias



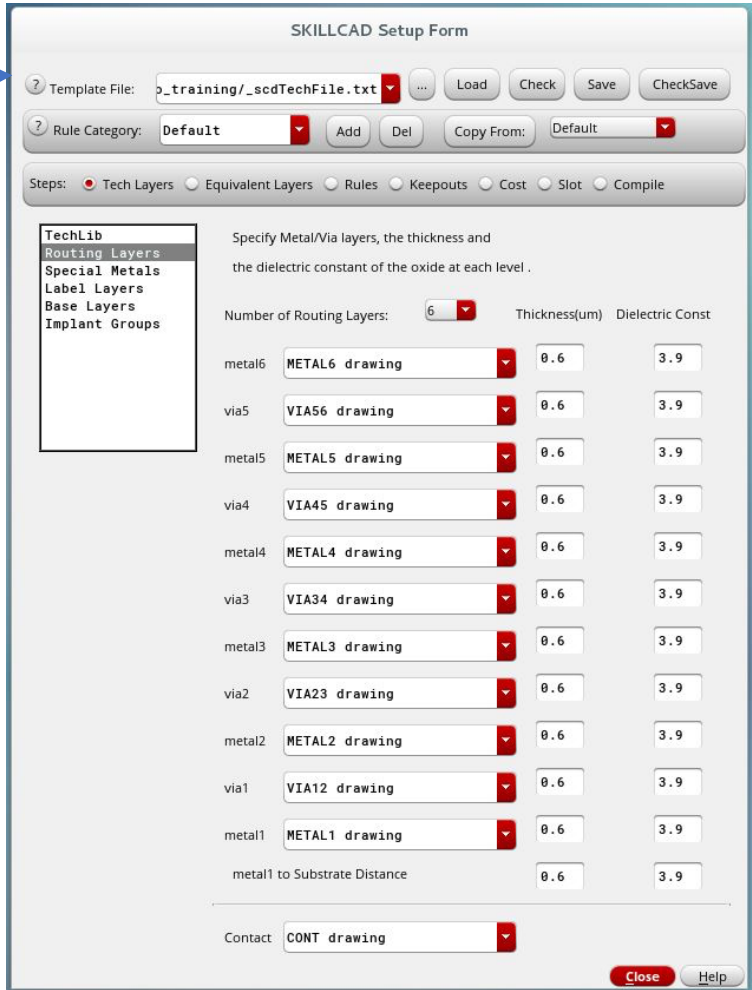
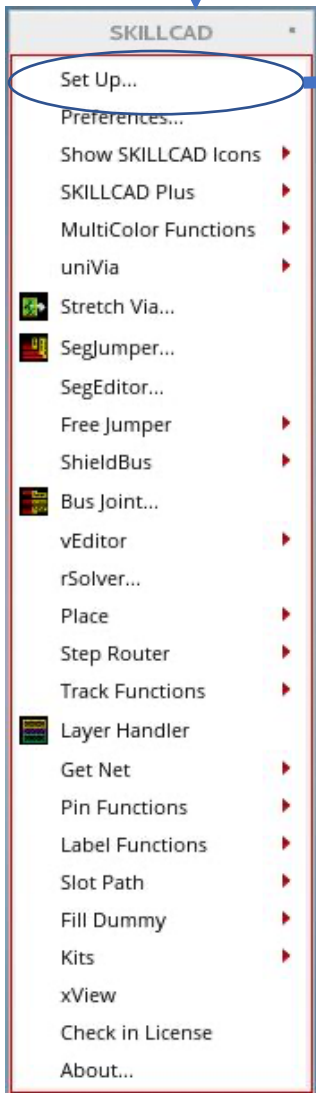
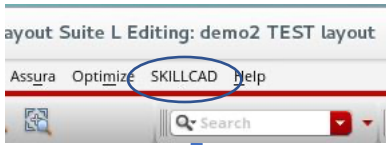
## SKILLCAD Fill Metal Overlaps On Same Net, With Vias



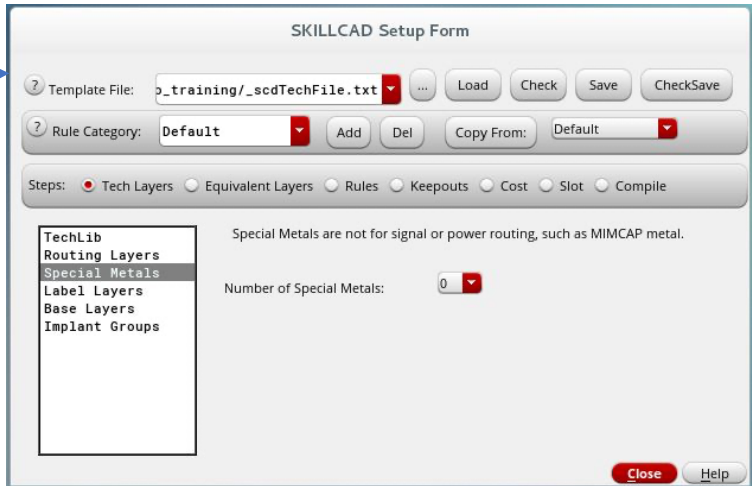
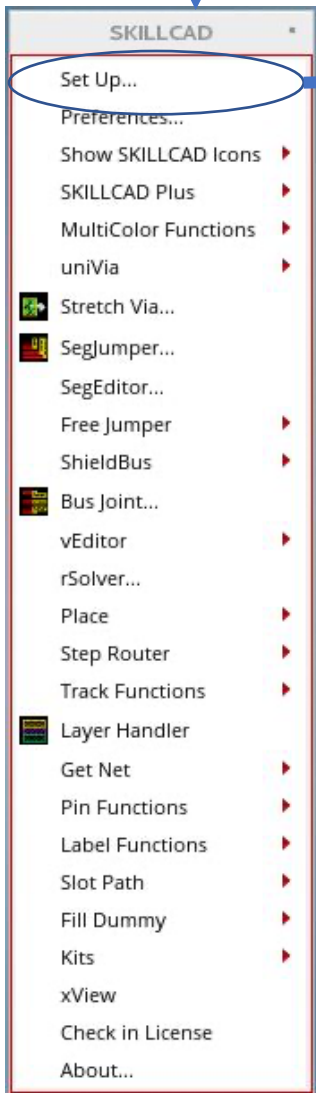
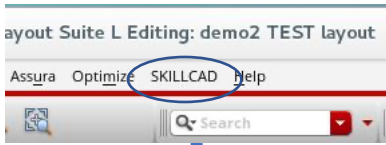
## SKILLCAD Setup Technology Library



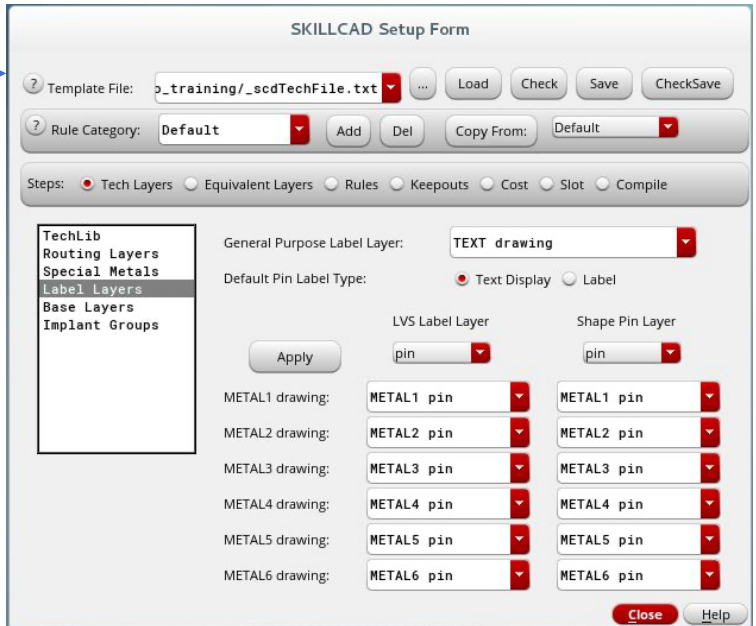
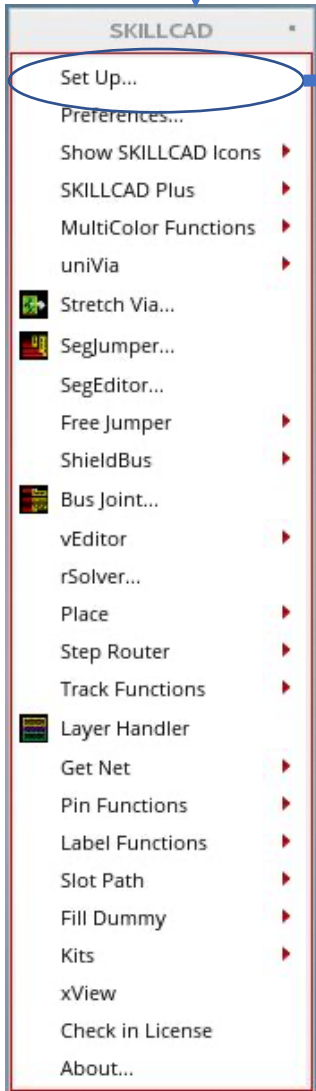
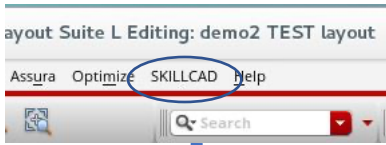
## SKILLCAD Setup Routing Layers



## SKILLCAD Setup Special Metals

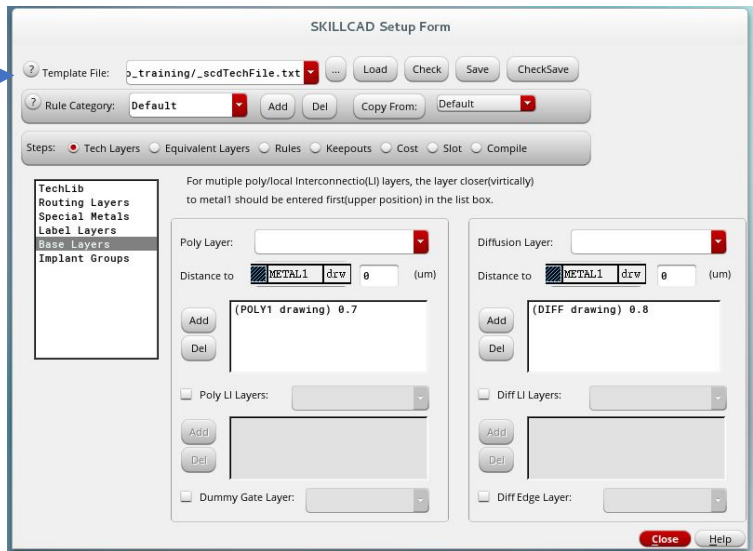
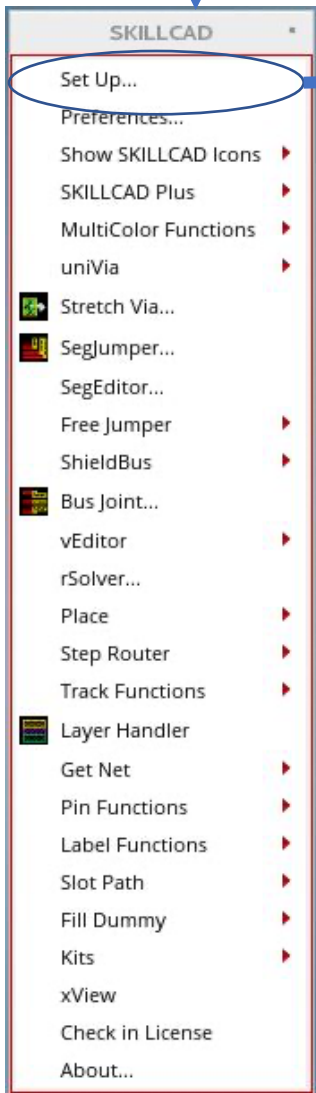
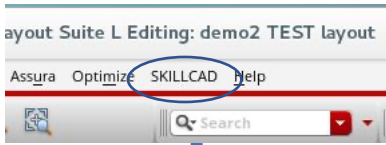


## SKILLCAD Setup LVS Labels, Pin Layers

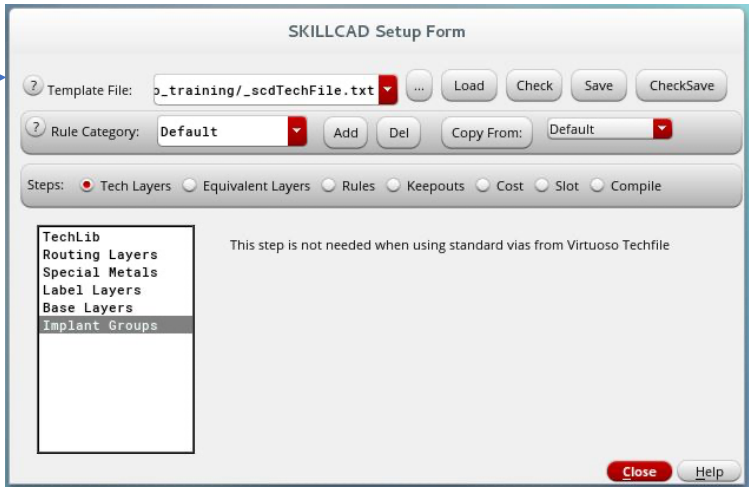
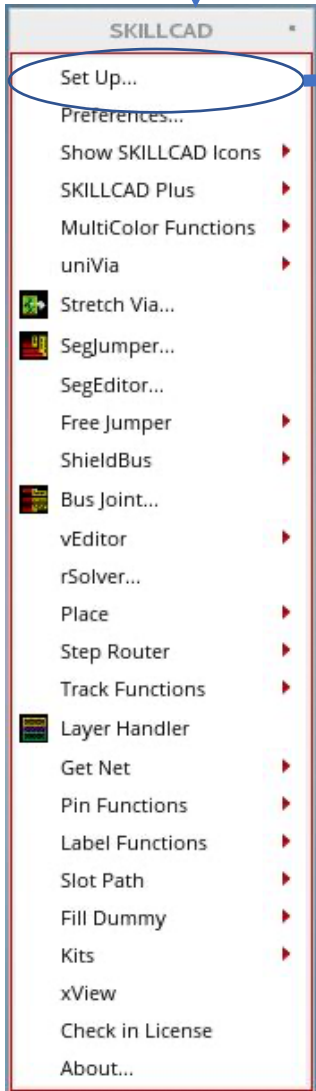
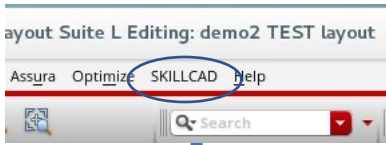




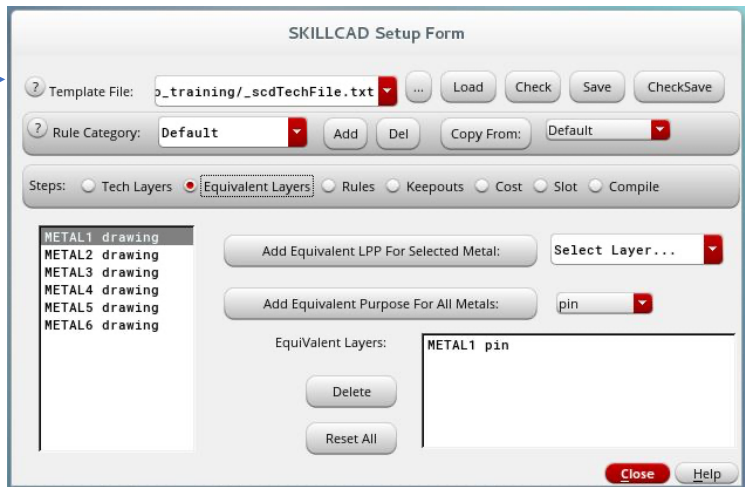
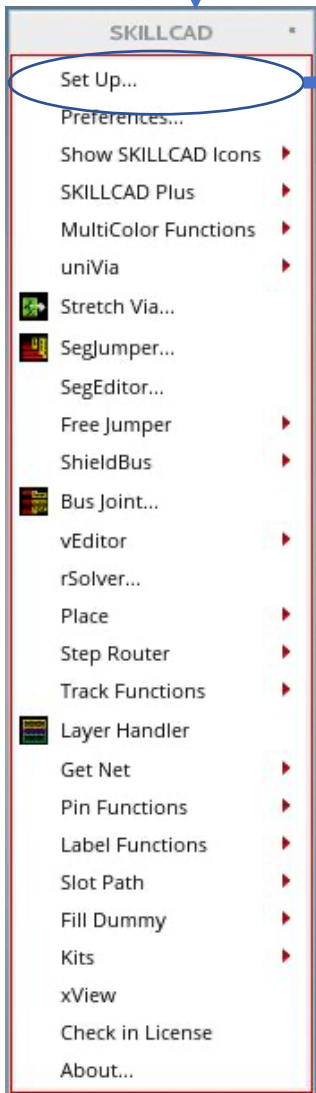
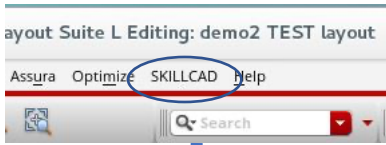
## SKILLCAD Setup Base Layers



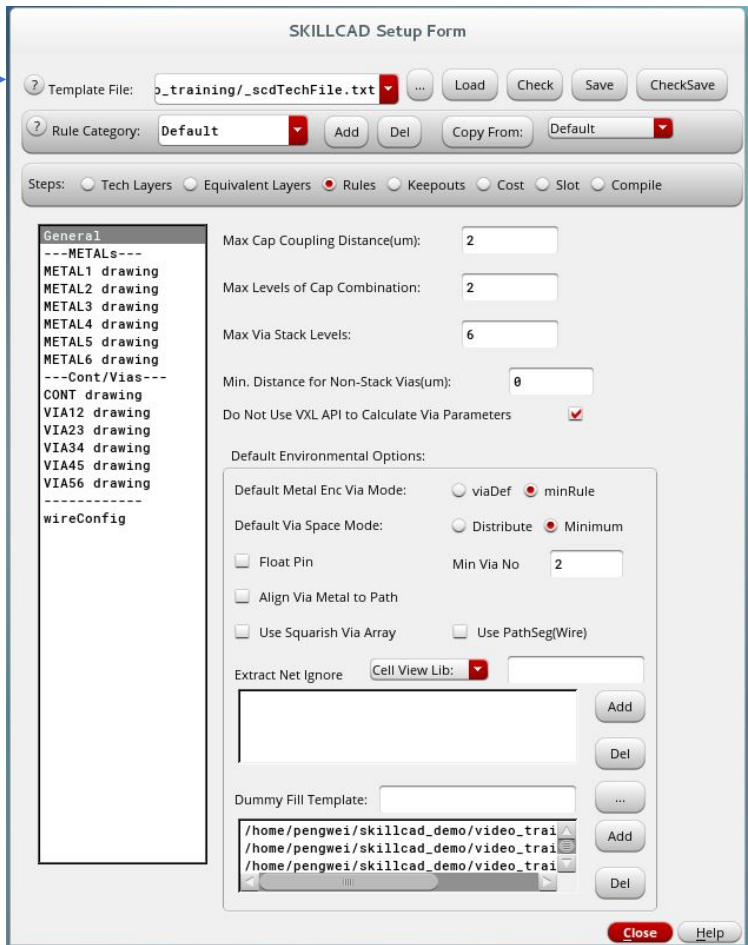
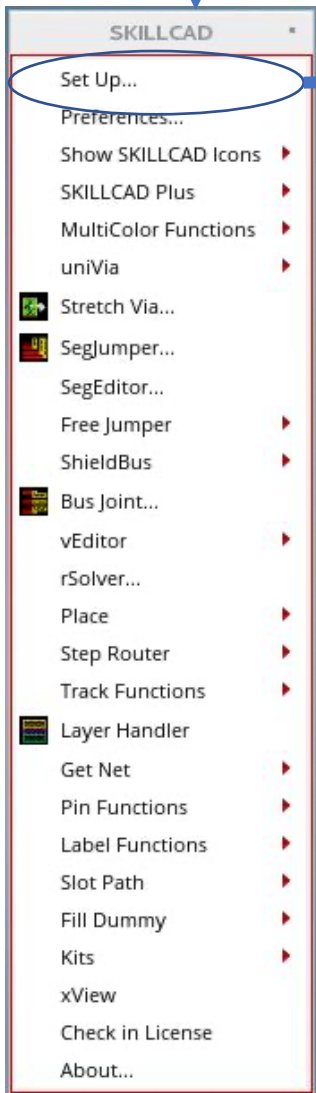
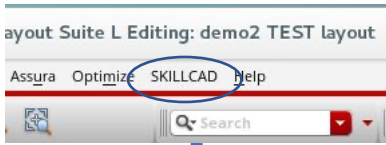
## SKILLCAD Setup Implant Groups



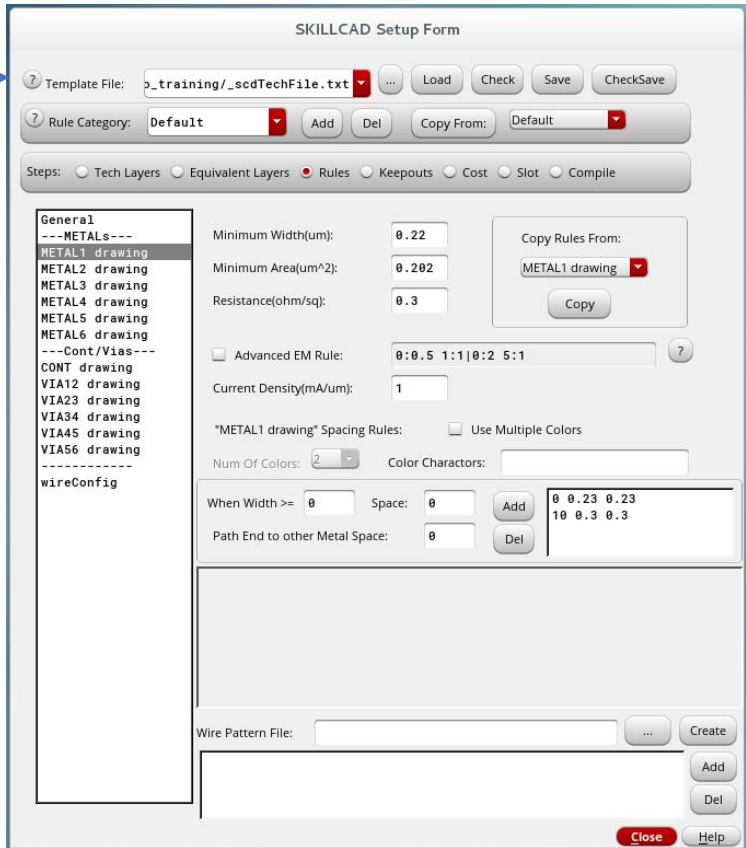
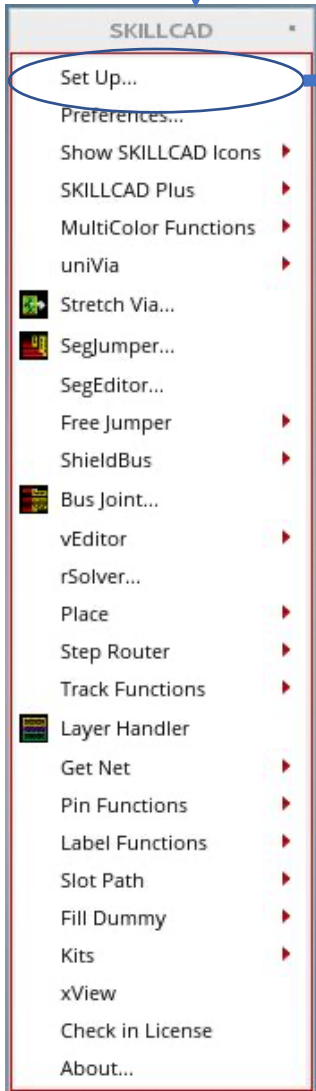
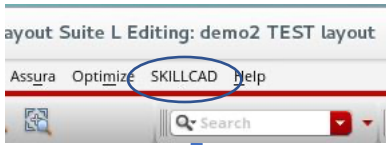
## SKILLCAD Setup Equivalent Layers



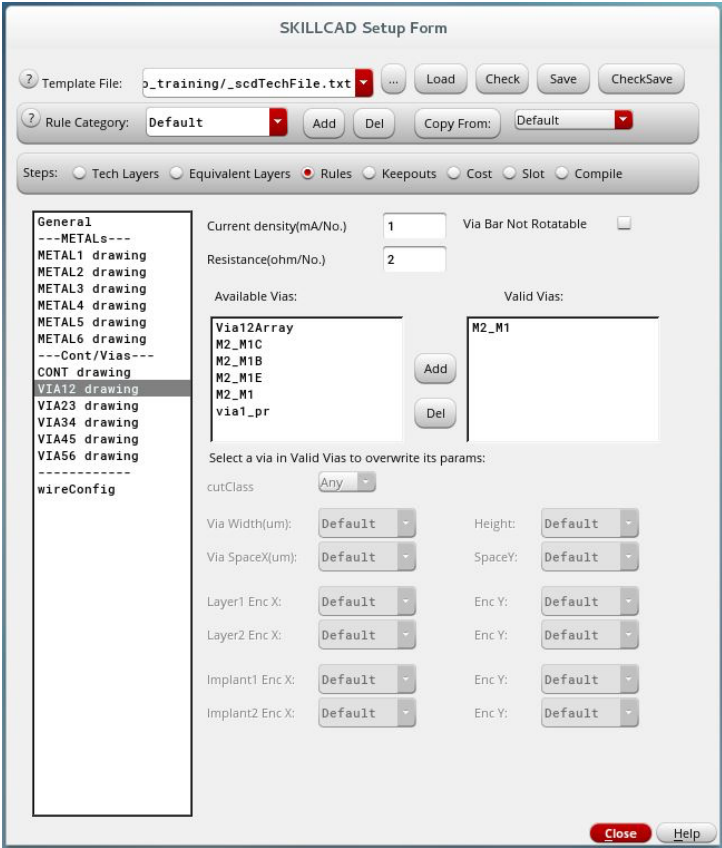
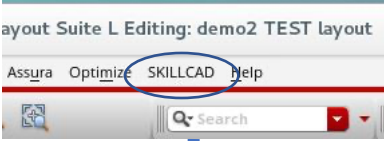
## SKILLCAD Setup General Metal/Via Rules



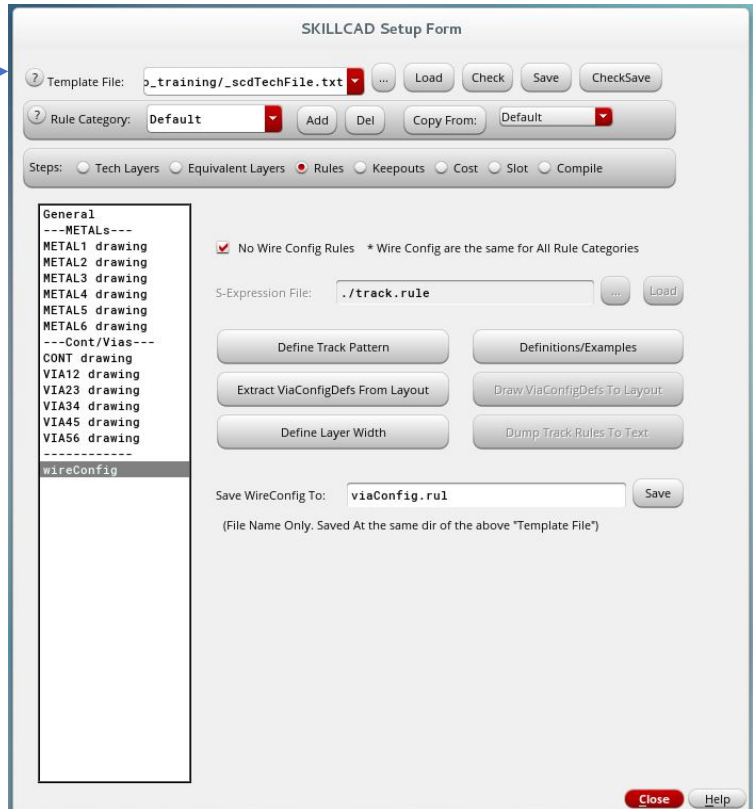
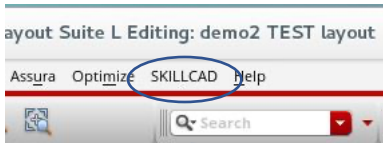
## SKILLCAD Setup Individual Metal Layer Rules



# SKILLCAD Setup Contact And Via Rules

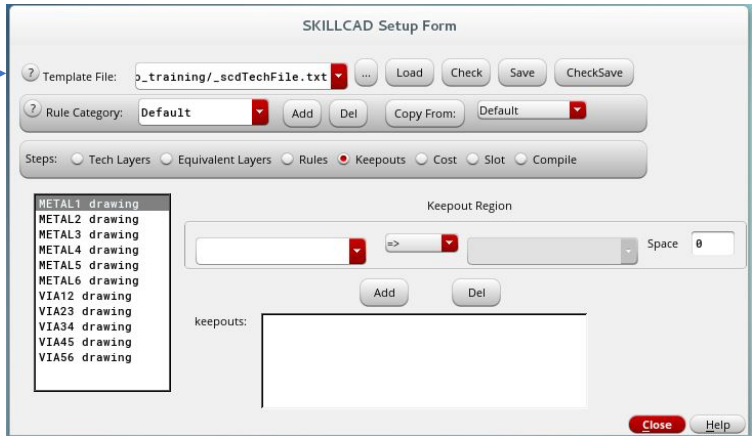
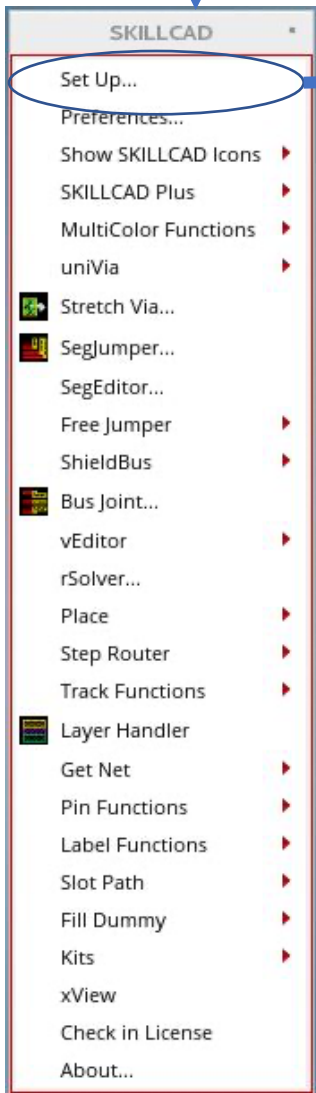
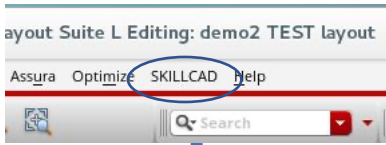


## SKILLCAD Setup Wire Configuration Rules (Nano Router)

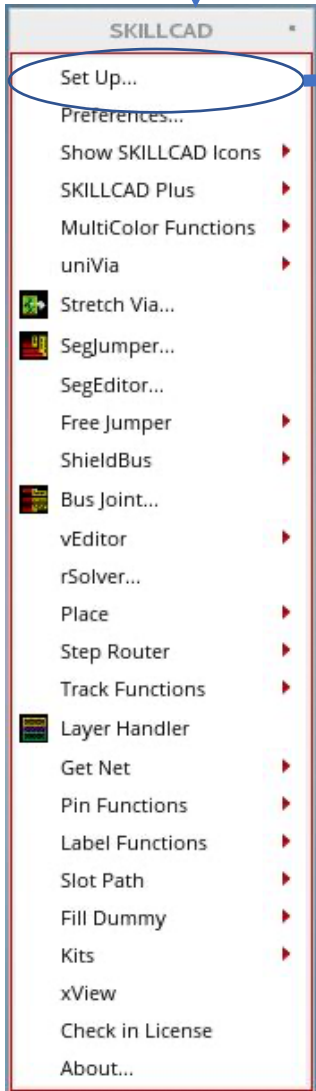
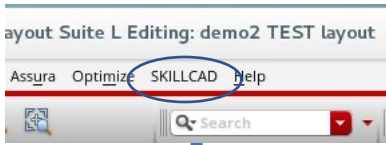




## SKILLCAD Setup Metal And Via Keepout Regions



## SKILLCAD Define Metal Direction And Via Costs



SKILLCAD Setup Form

Template File: p\_training/\_scdTechFile.txt Load Check Save CheckSave

Rule Category: Default Add Del Copy From: Default

Steps: Tech Layers Equivalent Layers Rules Keepouts Cost Slot Compile

Routing Layer	Swap Dir	X Dir Cost	Y Dir Cost	45 Degree Cost
METAL1 drw	x y	1 Forbiden	3 Forbiden	1 Forbiden
METAL2 drw	x y	3 Forbiden	1 Forbiden	1 Forbiden
METAL3 drw	x y	1 Forbiden	3 Forbiden	1 Forbiden
METAL4 drw	x y	3 Forbiden	1 Forbiden	1 Forbiden
METAL5 drw	x y	2 Forbiden	4 Forbiden	1 Forbiden
METAL6 drw	x y	4 Forbiden	2 Forbiden	1 Forbiden

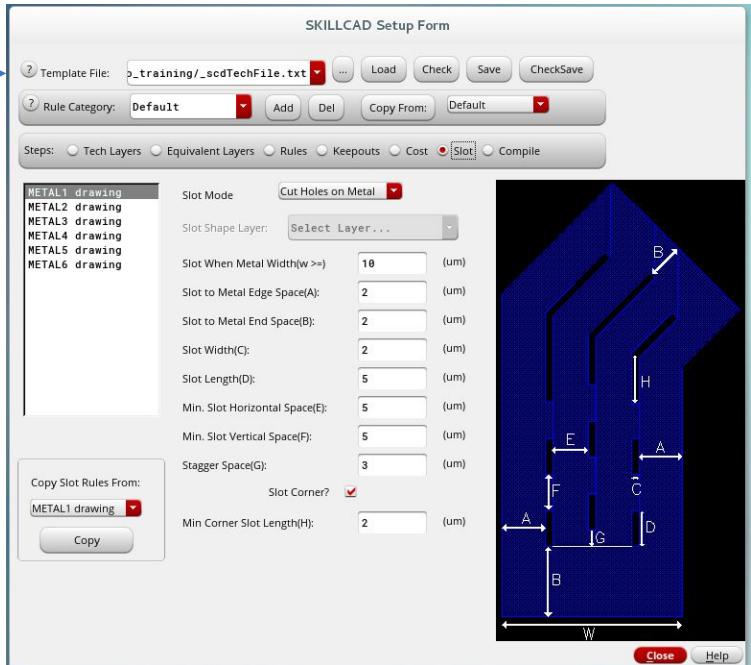
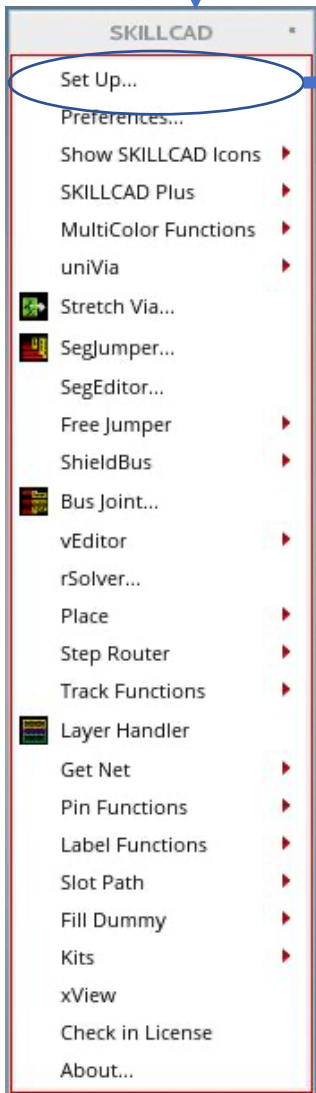
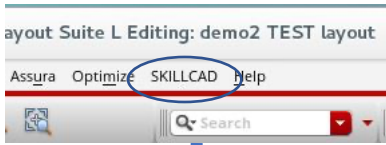
Via Layer	Cost
VIA12 drw	8
VIA23 drw	8
VIA34 drw	12
VIA45 drw	15
VIA56 drw	20

Recommendations for a good route result:

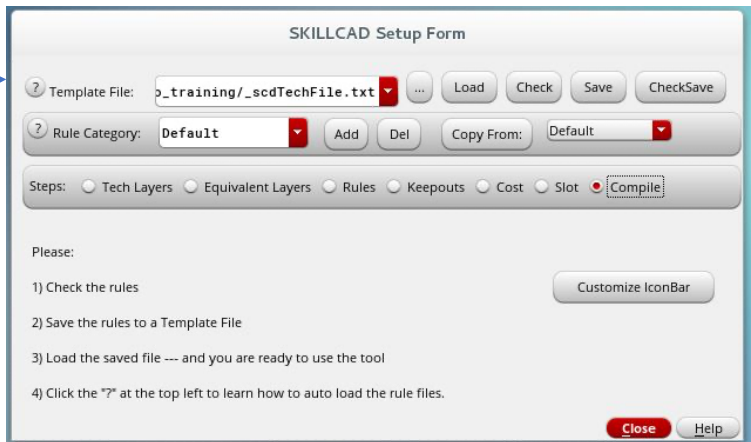
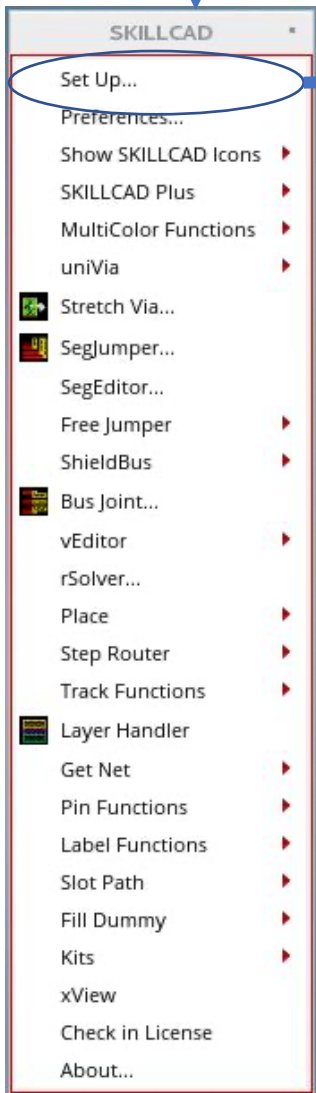
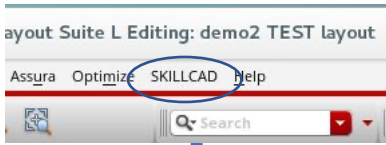
- Set the cost of non-preferred direction 1-2 times bigger than that of preferred direction.
- Set the cost of a via layer 1-2 times bigger than cost of non-preferred direction of the via metals.
- Avoid setting layer cost to 0.

Close Help

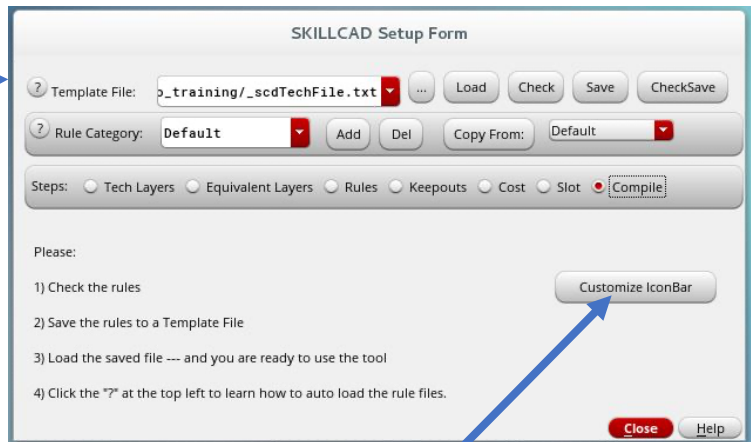
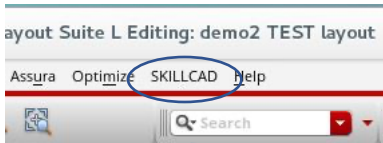
## SKILLCAD Setup Metal Slotting Parameters



## SKILLCAD Compiling The Setup File

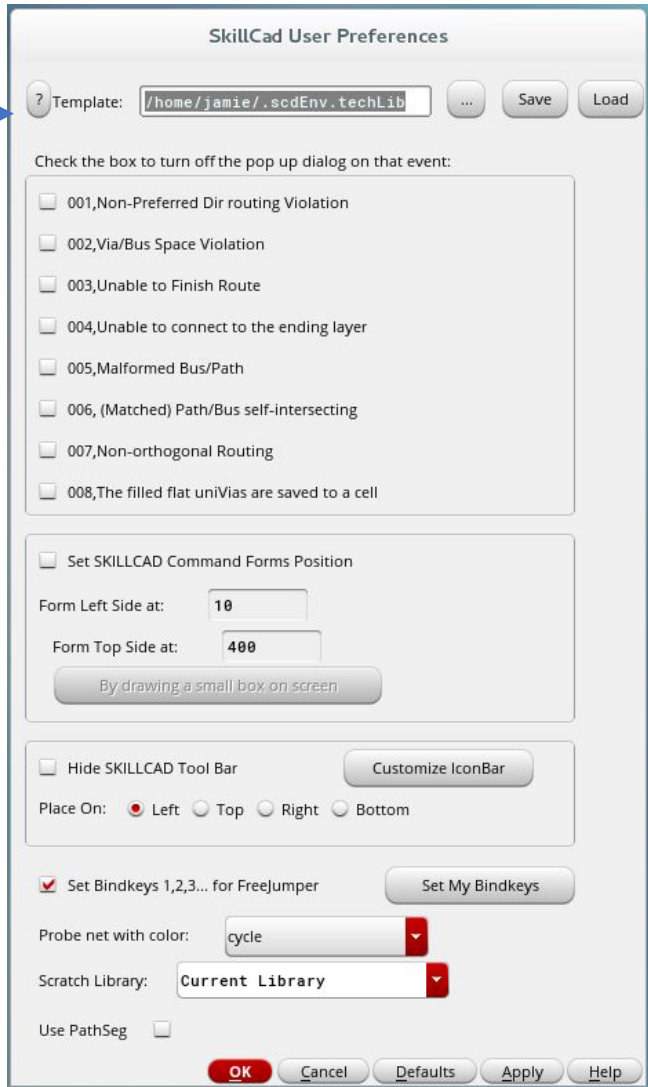
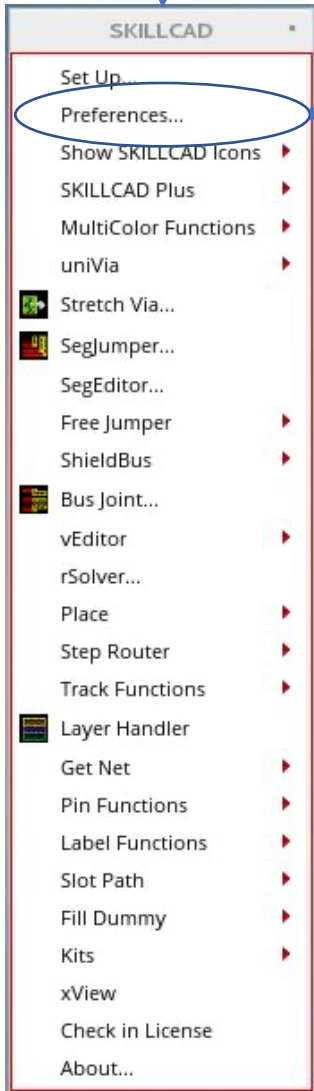
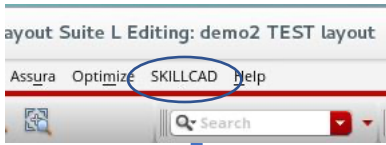


## SKILLCAD Customizing The Icon Bar

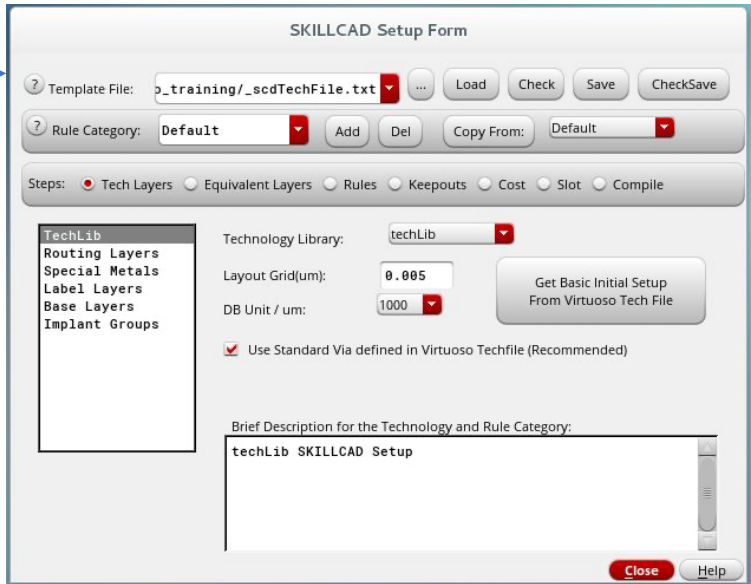
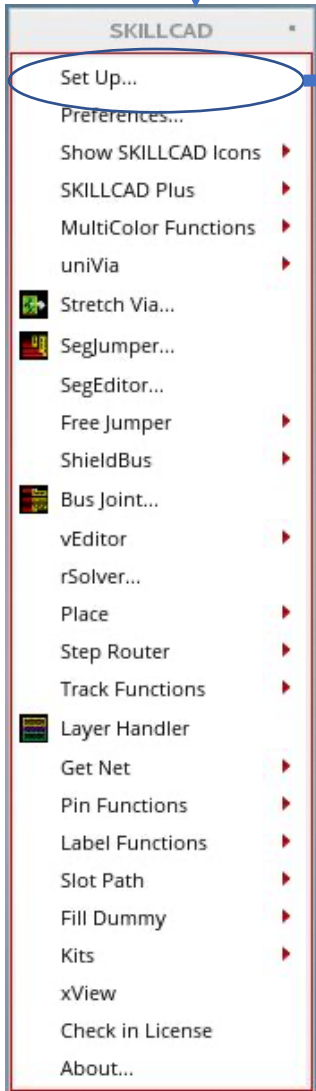
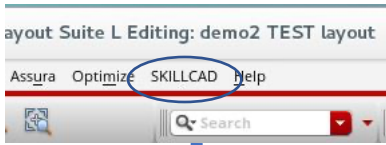


Customize the functions that appear on the icon bar.

## SKILLCAD Setting Up User Preferences

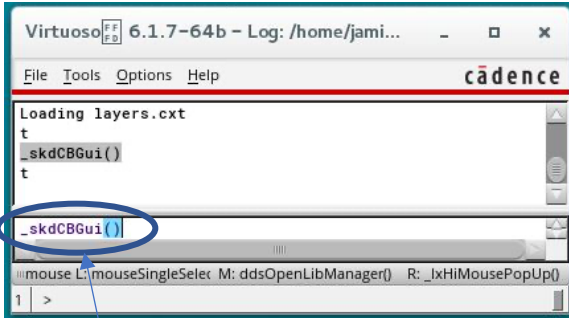


# SKILLCAD Complete Setup



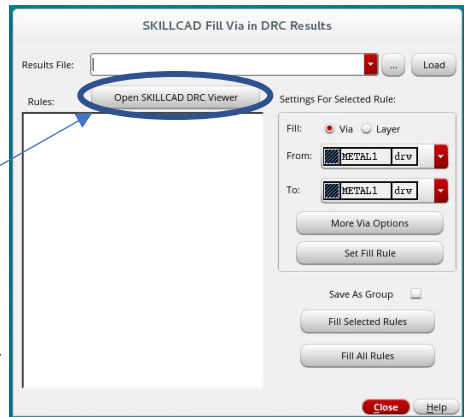


## SKILLCAD DRC Viewer

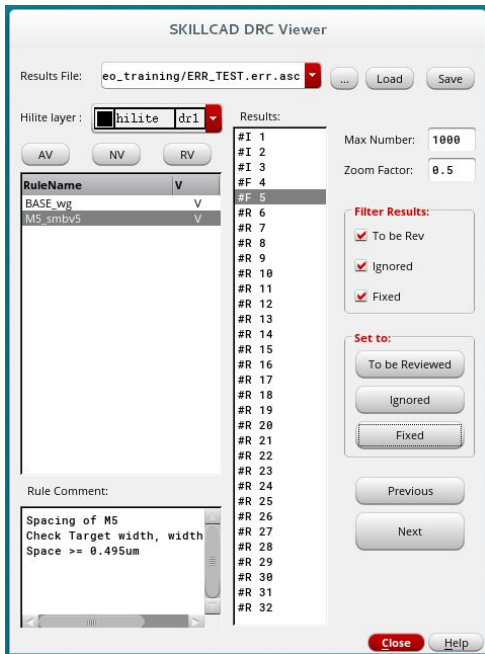


Type `_skdCBGui()` on the command line in the CIW.

This brings up the SKILLCAD Fill Via in DRC Results form.

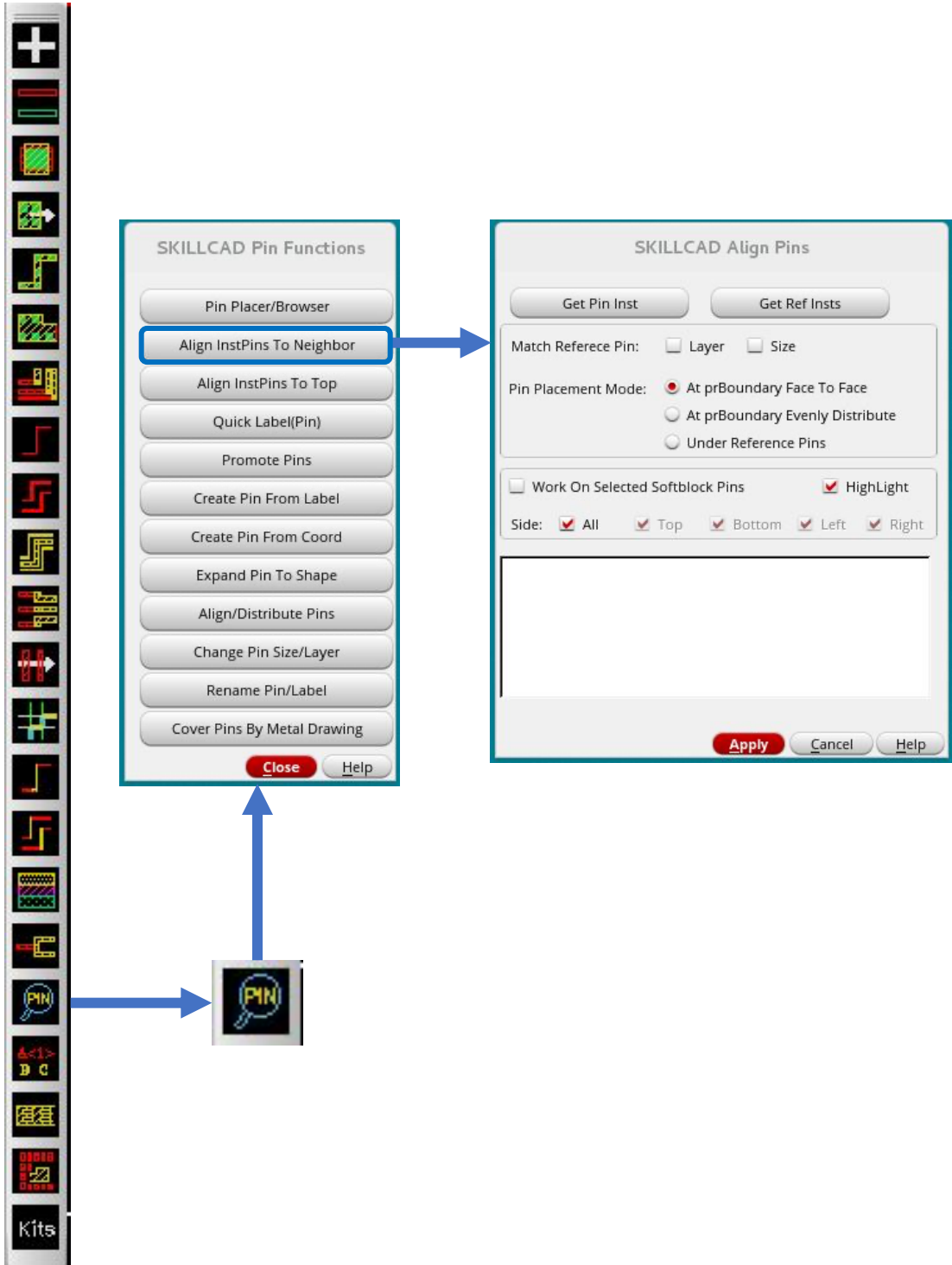


Click on Open SKILLCAD DRC Viewer.

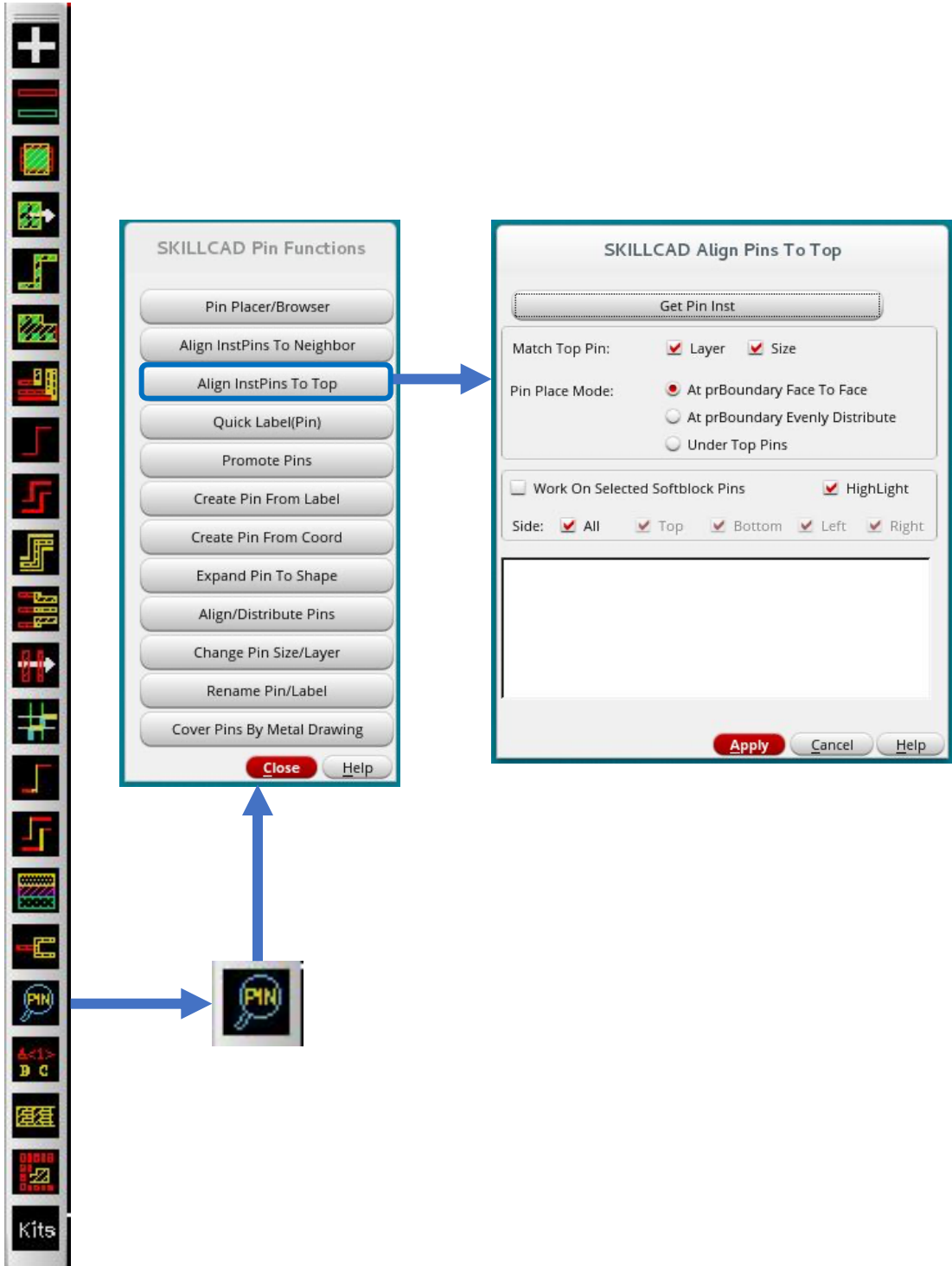


This brings up the SKILLCAD DRC Viewer form.

## SKILLCAD Align Instance Pins to Neighbor



## SKILLCAD Align Instance Pins to Top



## How To Use The SKILLCAD Topical Guide

The SKILLCAD Topical Guide was developed to help designers to know where to find the SKILLCAD commands to complete common layout tasks and provide training materials that teach how to use the commands. The topics, or tasks, in the Topical Guide are grouped alphabetically under main headings such as “Arrays”, “Buses”, “Calculations and measurements”, etc. Each topic is linked to a page containing links for all the available training materials for that command (PDF, Word Document or PowerPoint Presentation, and video). These are the same training materials available from the SKILLCAD Index Guide. A link on the first page of the Topical Guide will call the Index Guide. Both guides are available to help a designer know how to use the SKILLCAD functions.

To use the Topical Guide, just click on the topic that describes what you want to do. The topic link will call the page showing the command name, where the command is found on the SKILLCAD tool bar or menu, and what the next level menu or form contains. This page also contains links to the training materials and video. For commands that have a PowerPoint document, the PowerPoint presentation can be downloaded and run as a PowerPoint slide show. This will demonstrate the command, using an easy to follow, step by step approach.

The section on SKILLCAD Setup contains training materials for setting up the technology file, used by the SKILLCAD tools.

**Example:** Select the topic “Connecting Buses” in the Topical Guide. This will take you to the page showing how to access the command, as well as links to the training materials.

**Buses**

- [Adding bits to a bus](#)
- [Adding connections and trimming the metal tails, between two intersecting buses](#)
- [Adjusting bus metals](#)
- [Aligning bus ends; to vias, to shapes, to a drawn line](#)
- [Breaking a bus into two buses](#)
- [Changing bus metal layers](#)
- [Connecting Buses](#)
- [Connecting buses using minimum area at corners, river routing](#)
- [Connecting metal buses, with a metal pattern that equalizes the metal lengths](#)

