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Tree Route Quick Help

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Tree Route Quick Help

Layout designers can increase layout productivity by learning how to automate the creation of interconnects using the new Tree Route flow.

Tree route is a new routing solution for layout designers who work on structured and row-based advanced node designs.

The following help topics provide more details about the new Tree Route flow.

Related Topics

Getting Started

How do I view the Tree Route options?

What are the options that I can specify for Tree Route?

What are the various methods to run Tree Route?

How can I analyze the structure of Tree Route?

Can I use a preset to set the Tree Route options?

Can I run Tree Route in a specific area?

Getting Started

What is Tree Route?

What are the requirements to run Tree Route?

Related Topics

About Tree Route

What is Tree Route?

Tree Route is a new routing flow with more automation and less GUI controls. This routing flow lets you:

- automatically route advanced node device-level row-based designs, with a minimum set of options.
- quickly connect device pins in a structured topology.
- automatically identify and route mesh, ring (tap cell rings), and tree structures in the design.

Related Topics

Getting Started

What are the requirements to run Tree Route?

What are the requirements to run Tree Route?

The main requirements to run the Tree Route flow are as follows:

- Virtuoso EXL - Setup to run Layout EXL
- Pin to Trunk Router – technology file must be set up to run the Pin to Trunk router
- Ensure that *Design Style* in the Wire Assistant is selected as *Device Level*

In case, Tree Route is run on a layout with standard cells, a warning message is displayed stating that the Tree Route flow supports only advanced node device-level designs. This message is also displayed when the design style in Wire Assistant is set to *ASIC* or *Chip Assembly*.

Related Topics

Getting Started

What is Tree Route?

How do I view the Tree Route options?

The Tree Route options are available in the:

- Wire Assistant

- Virtuoso Space-based Router Options form

Related Topics

How do I view the Tree Route options in Wire Assistant?

How do I view the Tree Route options in the VSR Options form?

Displaying the Tree Route Options

How do I view the Tree Route options in the VSR Options form?

To view the Tree Route options in the Virtuoso Space-based Router Options form:

1. Select *Tree* from the *Route Flow* drop-down list.
2. Click the ellipses button next to it.
3. The Tree Route options are displayed in the Tree subform of the Virtuoso Space-based Router Options form.

Alternatively,

1. Click *Route – Design Setup*. The Virtuoso Space-based Router Options form is displayed.
2. Select *Tree* in the left pane of the Virtuoso Space-based Router Options form.

The Tree Route options are displayed in the Tree subform.

How do I view the Tree Route options in Wire Assistant?

To view the Tree Route options in Wire Assistant:

1. Choose *Window – Assistants – Wire Assistant*.
2. Select *Auto Route* from the *Command* drop-down list in the *Automatic* section.
3. Select *Tree* from the *Route Flow* drop-down list.

The Tree Route options are displayed in Wire Assistant.

What are the options that I can specify for Tree Route?

Related Topics

How do I define the scope of Tree Route?

How do I delete the routed net after checking?

How do I highlight trunks after running Tree Route?

What are the various ways to generate trunks using Tree Route?

Specifying the Tree Route Options

How do I define the scope of Tree Route?

You can define the scope of Tree Route.

- Route all the nets in the design by clicking *All* in *Route Net*.
- Route only the selected nets in the design by clicking *Selected* in *Route Net*.
- Perform area-based tree routing by clicking the *Select Area and Route with WA Overrrides* option in the *Net* context-sensitive menu.

In addition, you can also define the type of pins to connect to.

To select the pin type, click the *Pin Type* field. You can select the pin type as *All*, *Gate*, or *Source and Drain*.

How do I delete the routed net after checking?

You can choose one of the following methods to delete routing on the selected net:

- Click the *Undo* button on the Edit toolbar. This option is best used when you have just completed routing and want to delete it immediately to update a setting or correct an error.

- Choose *Delete Routing* from the *Command* drop-down list in Wire Assistant and click *All* or *Selected*.
- Click the *Delete* icon on the *Virtuoso Space-based Router* toolbar.

How do I highlight trunks after running Tree Route?

To highlight trunks after running Tree Route:

1. In the Navigator assistant, right-click the selected net.
2. Click the *Highlight Trunks* option from the context-sensitive menu.

Alternatively, you can also highlight trunks straight from the layout window (without using the Navigator assistant).

1. In the layout window, right-click the selected net.
2. Click the *Highlight Trunks* option from the context-sensitive menu.

The routed trunks are highlighted in different colors. The level-1 trunk is highlighted in Yellow and the level-2 trunk is highlighted in Cyan.

By viewing the highlighted trunks in the layout, you can easily check the topology and quality of the routing results. In addition, you can also check the routing results in Annotation Browser and see if there are any opens or shorts.

Related Topic

How can I analyze the structure of Tree Route?

What are the various ways to generate trunks using Tree Route?

The options that are available in Tree Route to generate trunks are:

- Auto Mesh

  Select *Auto Mesh* to automatically identify the regions for mesh routing. You can also force it on or off.

- No Mesh

Select *No Mesh* to perform routing without creating any mesh. This is the default option.

- Force Mesh

  Select *Force Mesh* to force mesh routing when *Auto Mesh* results in no mesh, based on the properties of the net.

What are the various methods to run Tree Route?

When using Layout EXL, you can run Tree Route using one of the following methods.

- Automatic Routing icon on the Virtuoso Space-based Router toolbar
- Wire Assistant
- Navigator assistant
- Context-sensitive menu in layout
- Auto Device P&R assistant

Related Topics

Running Tree Route

How can I run Tree Route using context-sensitive menu in layout?

How can I run Tree Route using the Navigator assistant?

How can I run Tree Route using Wire Assistant?

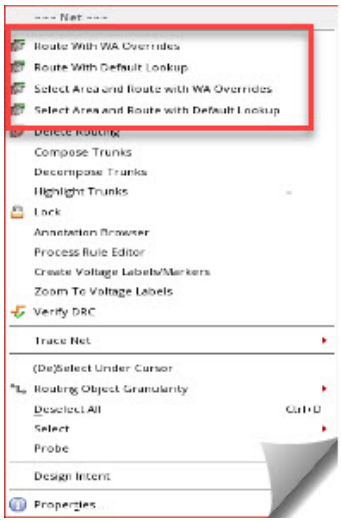
Can I run Tree Route from the Auto Device P&R assistant?

How can I run Tree Route using context-sensitive menu in layout?

To run Tree Route from the layout canvas:

1. In the layout canvas, select a net.

2. Right-click the selected net.
3. Choose one of the routing options from the *Net* context-sensitive menu.



ⓘ The selection of the option is dependent on the scope of running Tree Route.

Related Topics

How can I run Tree Route using the Navigator assistant?

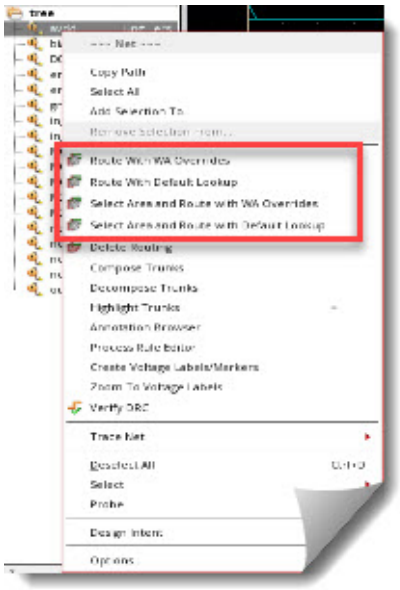
How can I run Tree Route using Wire Assistant?

Can I run Tree Route from Auto Device P&R assistant?

How can I run Tree Route using the Navigator assistant?

To run Tree route from the Navigator assistant:

1. From the Navigator assistant, select a net.
2. Right-click the selected net.
3. Choose one of the routing options from the Navigator context-sensitive menu.



Related Topics

How can I run Tree Route using context-sensitive menu in layout?

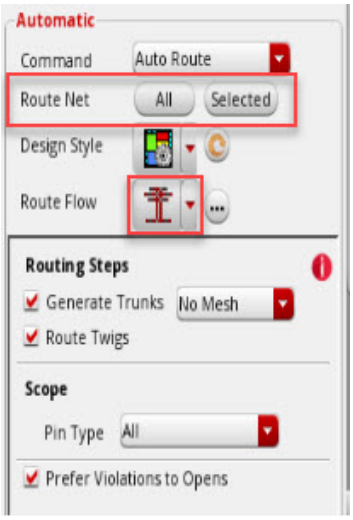
How can I run Tree Route using Wire Assistant?

Can I run Tree Route from Auto Device P&R assistant?

How can I run Tree Route using Wire Assistant?

To run Tree Route from Wire Assistant:

1. Select the *Tree* option from the *Route Flow* drop-down list.
2. Click the *All* or *Selected* button next to *Route Net*.



Related Topics

How can I run Tree Route using the Navigator assistant?

How can I run Tree Route using context-sensitive menu in layout?

Can I run Tree Route from Auto Device P&R assistant?

Can I run Tree Route from the Auto Device P&R assistant?

You can enable Tree Route using the Auto Device P&R assistant. To enable Tree Route:

1. Right-click the empty space in the Virtuoso Layout Suite menu bar.
2. Choose *Assistants – Auto Device P&R*. The Auto Device P&R assistant is displayed in the layout window.
3. Click *Route Devices* in the assistant. The *Enable Tree Router in Wire Assistant* option is displayed.
4. Click *Enable Tree Router in Wire Assistant.*

This enables Tree Route in Wire Assistant, and the *Route Flow* field in Wire Assistant displays the Tree Route icon.

Related Topics

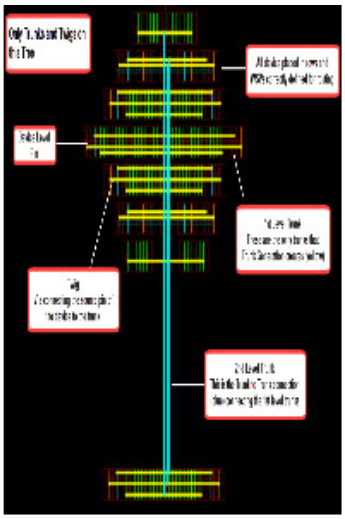
How can I run Tree Route using the Navigator assistant?

How can I run Tree Route using context-sensitive menu in layout?

How can I run Tree Route using Wire Assistant?

How can I analyze the structure of Tree Route?

After running Tree Route, the trunks in the design are highlighted in different colors. The different colors represents different levels of trunks. The level-1 trunks are highlighted in Yellow and the level-2 trunks are highlighted in Cyan.



In addition, Tree Route automatically creates and connects all levels of trunks.

Related Topics

Getting Started

What is Tree Route?

What are the requirements to run Tree Route?

Can I use a preset to set the Tree Route options?

You can use a preset to set the Tree Route options. To do this:

1. Choose Window – Toolbars – Virtuoso Space-based Router to open the VSR toolbar.
2. Click the VSR Load Preset icon.
3. Select *Auto Device Routing preset* option from the *VSR Load Preset* drop-down menu.

The device routing option settings are automatically loaded, and the Tree Route flow in the Wire Assistant is enabled.

Can I run Tree Route in a specific area?

To run Tree Route in a specific area:

1. Open a design in the layout window.
2. In the Navigator assistant, select a net. The instance pins on the selected net are highlighted in the layout window.
3. In the Wire Assistant, select the design style as *Automatic* from the *Design Style* drop-down list.
4. Select *Tree Route* as the routing flow from the *Route Flow* drop-down list.
5. Ensure that *Generate Trunks* is selected in the *Routing Steps* group box.
6. Select *No Mesh* from the *Generate Trunks* drop-down list.
7. In the Navigator assistant, right-click the selected net.
8. From the context-sensitive menu, click *Select Area and Route with Wire Assistant Overrrides*.
9. With the net still selected in the Navigator assistant, use the mouse to select two points to digitize a box around the area of the net pins.

The routing result will show that only the area that was selected is routed.