Situs Routing Strategies
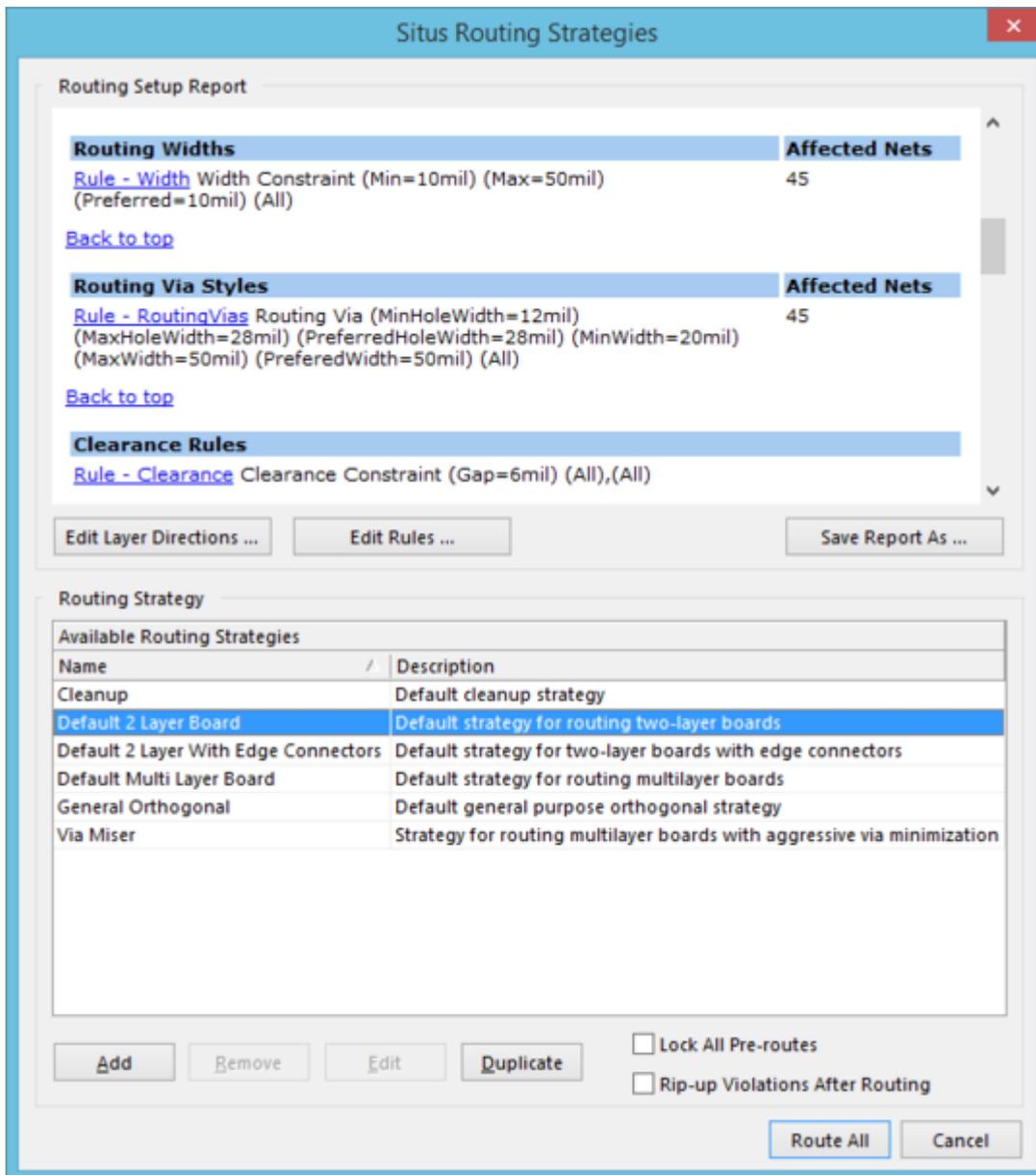
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Situs Strategy Editor (Dialog)

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The *Situs Routing Strategies* dialog

Summary

This dialog provides controls to access a pre-routing setup report and configure routing strategies and other options in relation to use of the *Situs Autorouter*. The Situs Autorouter uses advanced topological mapping to first define the routing path, then calls on a variety of proven routing algorithms to convert this 'human-like' path to a high-quality route. As an integral part of the PCB Editor, it follows the PCB electrical and routing rule definitions.

Access

The *Situs Routing Strategies* dialog can be accessed from the PCB Editor in the following ways:

- Choosing the **Tools | AutoRoute |** ⌐ Autoroute ▾ **» Setup** command from the main menus. Use this command to access the routing report and configure routing strategies without actually routing.
- Choosing the **Tools | AutoRoute |** ⌐ Autoroute ▾ **» All** command from the main menus. Use this command to access the routing report and configure routing strategies. When ready, choose a routing strategy and invoke the Situs Autorouter to route the entire board in accordance with the routing passes defined in that strategy.

Options/Controls

The dialog's controls are divided over two main regions as described in this section. The only difference in controls between the two access methods is the button at the bottom of the dialog to the immediate left of the **Cancel** button. When accessing to perform setup only (not route), this appears as the standard **OK** button. Clicking this will save changes to user-defined routing strategies. When accessing to route the entire board, it appears as the **Route All** button. Clicking this will attempt to route the board in accordance with the currently selected routing strategy.

Routing Setup Report

- **Report Window** - this area presents a report based on pre-routing analysis of the design, gathering together information including: design rules currently defined for the design that will be adhered to by the Autorouter (and the number of design objects - nets, components, pads - affected by each rule), routing directions defined for all signal routing layers, and drill layer pair definitions.

  The report lists potential problems that could affect router performance. Such warnings can include routing layers that have their routing direction set to Any. Where possible, hints are provided in order to advise better preparation of the design for autorouting. Any errors/warnings/hints that are listed should be scrutinized and, if needed, the corresponding routing rules adjusted before proceeding to route the design.

  > It is essential that any routing-related rule violations are resolved before starting the Autorouter. Not only can violations prevent routing at the location of the violation, they can also greatly slow the Autorouter as it continually attempts to route an unrouteable area.

  ✅ Use hyperlink entries in the report to quickly access the *Edit PCB Rule* dialog for a given rule definition to adjust the scope and/or constraints of that rule as required. For

> ✅ unroutable pads, clicking the relevant hyperlink entry in the report will zoom and center the offending pad in the main workspace.

- **Edit Layer Directions** - click this button to access the *Layer Directions* dialog from where you can modify the routing directions for signal layers as required.
- **Edit Rules** - click this button to access the main *PCB Rules and Constraints Editor* dialog. Alternatively, if you wish to modify an existing routing rule directly, click on the rule's respective hyperlink within the main body of the report.
- **Save Report As** - click this button to save the report as a HTML document. A standard *Save As* dialog will open. By default, the report will be saved in the same location and with the same name as the PCB design file (`DesignName.htm`). Use the dialog to change the name and location as required.

Routing Strategy

- **Available Routing Strategies** - this area lists all of the currently available routing strategies that can be used by the Autorouter to route the design. Each strategy is listed in terms of its name and a description. The following six routing strategies are defined and available by default:
  - *Cleanup* - default cleanup strategy.
  - *Default 2 Layer Board* - default strategy for routing two-layer boards.
  - *Default 2 Layer With Edge Connectors* - default strategy for routing two-layer boards with edge connectors.
  - *Default Multi Layer Board* - default strategy for routing multi-layer boards.
  - *General Orthogonal* - default general purpose orthogonal strategy.
  - *Via Miser* - default strategy for routing multi-layer boards with aggressive via minimization.

> In general, the default routing strategies for two layer and multi-layer boards are fine for most routing situations. It is important, however, to ensure that any relevant routing design rules are set up prior to running the Autorouter.

- **Add** - click this button to add a new user-defined routing strategy to the list. The *Situs Strategy Editor* dialog will open from where you can fully define the strategy including, and most importantly, its constituent routing passes.
- **Remove** - click this button to remove the currently selected and user-defined routing strategy from the list of available routing strategies.

> The six default routing strategies cannot be removed.

- **Edit** - click this button to edit the currently selected and user-defined routing strategy. The *Situs Strategy Editor* dialog will open from where you can make changes to the strategy including its constituent routing passes, as required.

> The six default routing strategies cannot be edited.

- **Duplicate** - click this button to make a duplicate of the currently selected routing strategy. The *Situs Strategy Editor* dialog will open. Give the new strategy its own, more meaningful name and description and modify its setup as required.
- **Lock All Pre-routes** - enable this option to prevent any pre-routed nets from being deleted

("ripped up") and re-routed by the Autorouter. Often, certain nets will be manually routed and the remainder autorouted.

- **Rip-up Violations After Routing** - enable this option to have any routes that violate defined (and applicable) design rules, ripped up after the Autorouter completes its routing session.