



## TOP FEATURES AND BENEFITS

- single intelligent environment to solve all your routing problems
- automatic Dragon tools work seamlessly with auto-interactive tools
- routing strategies are generated without any user knowledge
- reduced design cycle times
- ease of use
- improved completion

# CADSTAR DRAGON Auto-router

## Deliver more in less time

The current climate today means that engineers are increasingly expected to deliver more in less time, continually changing and adapting the way in which they work. This increase in complexity means that it is becoming more difficult for a designer to route a design manually. For PCB designers and engineers, autorouting can be one way of saving time and money, whilst coping with the increase in complexity.

## Setting up the auto-router

Historically, autorouting has been quicker than manual routing, but the perception was that the results were often not fit for purpose or did not look the same as manual routing results.



Setting up the router was perceived as a 'black art', or near impossible requiring an expert in the autorouting tools in order to get the best out of them. In a traditional approach to routing items that you may consider as part of the routing process include:

- Layer Stack – how many layers are required in order to fully route the design
- High Speed requirements – Constraints that must be met, Differential Pair routing
- Fan-out – For high pin count BGA and FPGA devices
- Routing options – what options are required in order to get the best routing pattern for the design
- Space – Is there physically enough space to complete the design

What is really required is a single intelligent environment to solve all of these problems. Taking the stress out of routing, CADSTAR introduces a brand new intelligent autorouting solution that puts power into the hands of the designer - the Dragon Routing Platform. The Dragon Routing Platform moves away from traditional settings based autorouting to a new approach that combines intelligence and a strategy driven approach to solve your routing requirements.

## Routing Strategy Environment

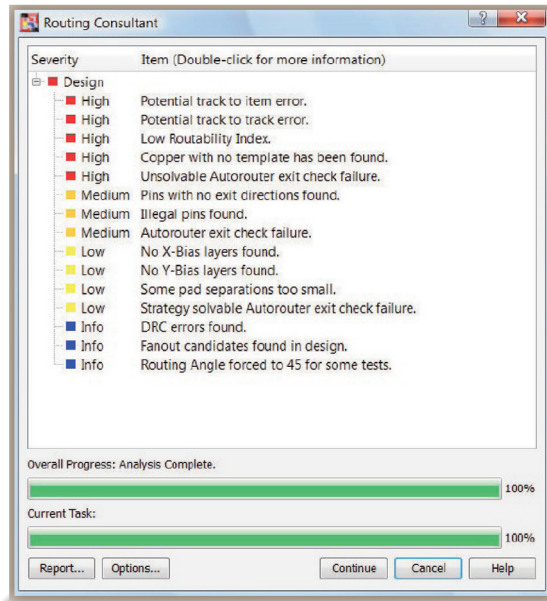
The Routing Strategy Environment allows easy set up and management of all routing tasks. Central to the Routing Strategy Environment is the Routing Consultant. The Routing Consultant performs an initial set of high level 'expert' checks on your design to identify potential 'blockers' for routing. You can iteratively fix and rerun the analysis in order to clear these 'blockers'.

Using the information gained during the analysis the Routing Consultant can then automatically generate a routing strategy for your design. A strategy is a list of steps that will run in order to route your design. The Routing Strategy has access to all of the routing tools available in the Dragon Routing Platform.

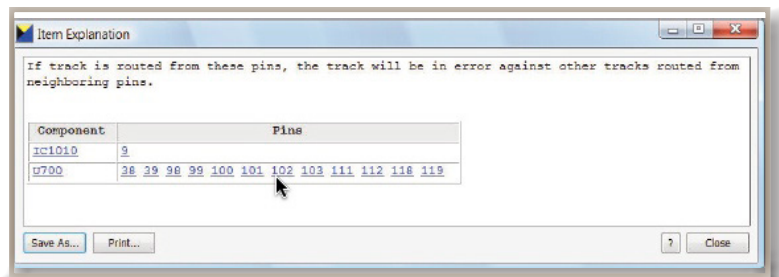
## Meeting the Strategy

Generation of a strategy is automatic from the Routing Consultant, with no specific knowledge required. This allows quick evaluation of the routing feasibility and set-up of the routing parameters.

At any point in time the Dragon Routing Platform can be called upon to analyze any current strategy and suggest changes or an entirely new strategy, to deliver higher quality results in less time.

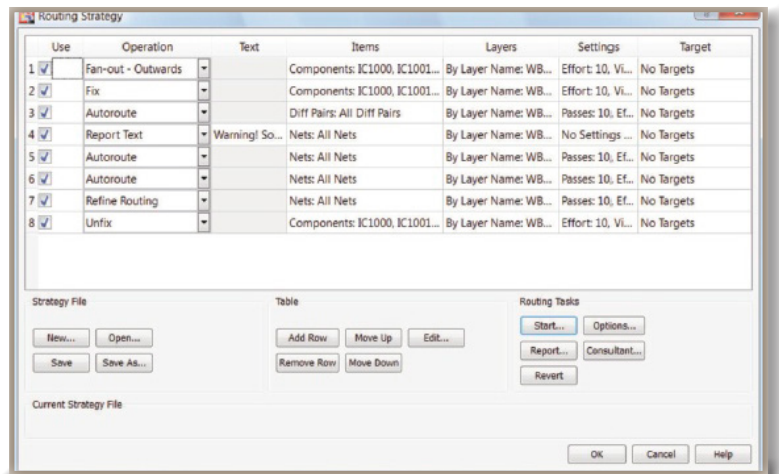


The Routing Consultant identifies potential routing blockers in your design.



Double clicking on an item will show an explanation dialog for the potential routing blocker and a short explanation of the problem.

The generated strategy consists of a number of steps in order to complete the routing process for your design. Each step can have one or more targets defined, which must be met in order for the step to be complete. At the end of each step any specified targets will be checked. If these are not met the Dragon Routing Platform can adaptively tune the router settings and repeat a step in order to meet the specified targets.



A routing strategy is generated by the consultant as a result of the analysis. This defines a set of steps that run in sequence in order to route the design.

## Routing Strategy Advantages

- Easy to use - a routing strategy can be generated without previous user knowledge required.
- Expert user interaction - allows modification and complete generation of a strategy if required.
- Repeatability - a strategy can be stored and recalled for future use.
- Reuse - strategies can be re-used across multiple designs.
- Targets – can be individually specified for each step.
- These are checked at the end of each step. Strategies can be paused if targets not met. Manual user interaction is allowed if desired.
- Review – a full report of all steps is generated with hyperlinks onto stored design versions for the end of each step in a strategy. This allows review and adaptive tuning of a strategy.
- What if analysis - multiple strategies can be run on the same design and results will be automatically stored for review.

## Improved completion

The Dragon Routing Platform has access to all of the routing tools available in the P.R.Editor application. The tool required in order to complete a step in the strategy will be automatically selected and will be transparent to the user.

On top of this two new routing technologies have been developed that are key to the Dragon Routing Platform. A new native-45 degree single trace router has been developed. This is optimized for performance in dense areas achieving shortest total net length. Integrated into this, a new native 45-degree Differential Pair autorouter has been developed. This is based on very recent advances in network theory. Differential Pairs will be routed in order to minimise uncoupled length and skew.

## DRAGON Router Features

- Fan out routing – improvements in BGA/FPGA fan-out routing
- Innovative solutions to traditional PCB based routing problems
- (Native 45-degree)
- Innovative Differential Pair routing
- Strategy review - full report of all steps is provided allowing review
- What if analysis of multiple strategies
- Strategies can be re-used across multiple designs

## DRAGON Router Benefits

- Single intelligent environment to solve all of your routing problems
- Automatic Dragon tools work seamlessly with Auto-interactive tools such as Trunking and interactive lengthening
- Design cycle times are reduced
  - Manual routing can be slow and expensive
  - Set up time will be small compared to manual routing time
- Easy to use
  - Initial automatic 'Expert' checks run on design
  - Guidance for less experienced users
  - Quick access for expert users
- Improved completion
  - Easy identification of routing blockers
  - Suggestions on how to solve these to optimise routing
- Generates a strategy as a result of analysis
  - Proposes routing strategy for your design
  - Routing strategy generated with no user knowledge required