Precision RTL Plus

Key Product Features

Physically Aware Synthesis

- ♦ Improved Fmax performance by 10% on average
- ♦ Broadest physical synthesis device support
- ♦ Push-button operation

Automatic Incremental Synthesis

- ♦ Industry's only automatic incremental synthesis
- ♦ Up to 60% runtime savings
- ♦ All FPGA families supported

Partition-Based Incremental Synthesis

- ♦ Divide and conquer for team-based design
- ♦ Sub-partition synthesis
- ♦ Up to a six-fold runtime improvement

Resource Manager

- ♦ Industry-first technology in resource analysis and control
- ♦ Improved Fmax and device utilization
- ♦ Identifies available resources
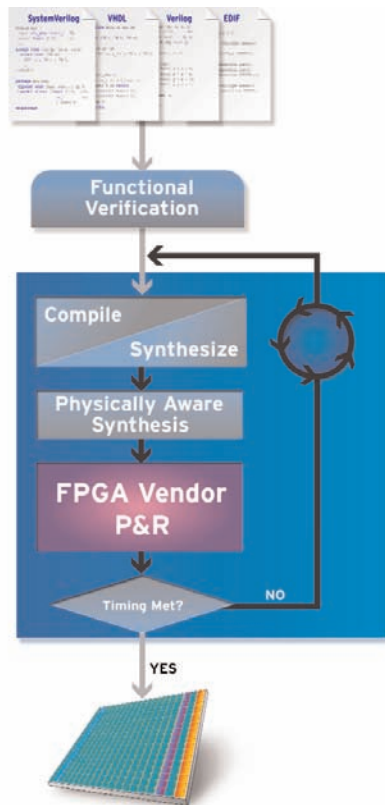
Precision® RTL Plus provides a new way to design FPGAs — enabling every designer to improve productivity, reach desired performance fast and easily, and control the allocation of dedicated FPGA resources.

Breakthrough Timing-Closure Improvements

Reaching the project's market window is the most important goal. However, the reality is that project goals are aggressive in terms of performance, area, and schedule; and design requirements often change during project development. Precision RTL Plus offers breakthrough advantages in FPGA design, enabling every designer, regardless of level of expertise or architectural knowledge, to improve productivity by reaching timing closure faster, minimizing the impact of late-cycle design changes, and controlling FPGA resource allocation.

Physically Aware Synthesis

Physically aware synthesis enables designers to reach their timing goals faster and with fewer iterations. With a growing list of over 19 supported FPGA families, physically aware synthesis is push-button, timing-driven technology, providing an optimized netlist to the FPGA vendors' place-and-route (P&R) tool — technology every FPGA designer can benefit from. Precision physically aware synthesis offers:

- ♦ The industry's broadest device support for physical synthesis
- ♦ Typical Fmax improvement ranging from 5 to 40%, with 10% on average
- ♦ A synthesis engine that considers device-specific potential placement, available routing resources, and design rules

- ♦ Pre-place-and-route physical synthesis optimizations based on advanced timing estimation:
  - Register rebalancing with retiming in both forward and backward directions
  - Logic restructuring to reduce logic levels
  - Register replication to minimize routing delay
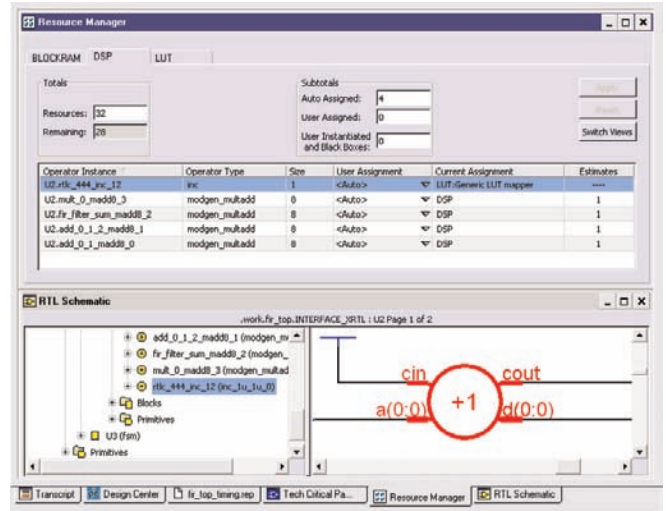
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Incremental Synthesis

Design projects inevitably have changes, and too often these changes come late in the design cycle when the project is nearing completion. Precision RTL Plus enables designers to preserve work already completed and minimize the impact of these late changes by rapidly and predictably processing the change to keep the project on schedule and within budget.

Precision RTL Plus features:

- ♦ The industry's first automatic incremental synthesis:
  - • Requires no partitioning or prior planning
  - • Maintains QoR with cross-hierarchy optimization
  - • For all FPGA families supported by Precision Synthesis
- ♦ The industry's first fully automatic incremental synthesis and P&R flow (when used with Xilinx SmartGuide):
  - • Average three-fold improvement in runtime with up to ten-fold possible
- ♦ Partition-based incremental synthesis supported through vendor P&R:
  - • Localizes changes to sub-partitions
  - • Up to six-fold runtime improvement
  - • Divide-and-conquer methodology for team-based design
  - • Supports Altera and Xilinx incremental P&R

Resource Management

FPGA devices vary in the amount and type of dedicated resources available on-chip. Being able to control the use of these resources can have a tremendous impact on a design's performance and area consumption. The Precision RTL Plus resource manager empowers every designer, through a graphical user interface, to control how each design component is implemented, improving both Fmax and device utilization.

Patent-applied-for resource management technology identifies available architectural blocks and assists in re-mapping implementations for the best performance and device utilization.

The industry's first resource analysis and control technology:

- ♦ Aides in tightening critical path timing
- ♦ Helps identify available resources
- ♦ Easily remaps implementations
- ♦ Budgets resources for team-based design
- ♦ Cross-probes to HDL and schematic views

Part of the Precision Synthesis Family

The Precision Synthesis products are the most advanced synthesis tools available for FPGA applications. Precision RTL Synthesis offers FPGA-vendor-independence, industry-leading hardware language and constraint support, advanced optimizations, and award-winning analysis and debug. Precision RTL Plus Synthesis adds improved productivity with physically aware synthesis, incremental synthesis flows, and resource management. Precision Physical Synthesis completes the offering by adding post-place-and-route physical optimizations and the PreciseView graphical viewer and editor. Precision Synthesis helps designers maximize the potential of their designs.

To learn how Precision Synthesis can address your FPGA design needs, call Mentor Graphics to schedule a product demonstration, or visit our website for the latest product news and information at www.mentor.com/synthesis.