

Hurricane™

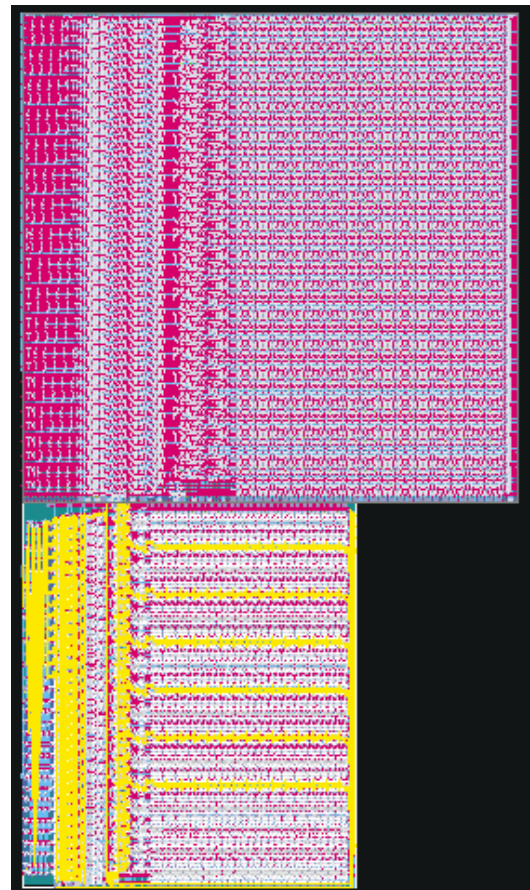
Re-Use and Optimize Your Existing, Silicon-Proven Intellectual Property

Features

- Significantly faster migration of large designs using new compaction algorithm
- 2 D scanning algorithm for superior recognition and treatment of 45 degree polygon edges
- Automatic resolution of conflicts between process rules and user-specified constraints
- Transistor resizing, either automatically or from user-supplied directives
- Display of design rules and critical paths to identify overweight or overwidth cells
- Reproportioning of power-supply bus bars to satisfy electrical design rules
- Contact addition/deletion to optimize gates and well/substrate taps
- Integration with industry standard characterization and optimization tools

Benefits

- Faster time-to-market for SOC by reusing and optimizing existing IP
- Lower porting costs by migrating, rather than redesigning cells and logic
- Leverage scarce circuit design and layout talent
- Start designing earlier and leverage the benefits of new process technology
- Smaller silicon area as compared to traditional methods
- Squeeze more performance out of existing designs using the same process technology



Overview

Hurricane, is Sagantec's next generation compaction software enabling rapid migration of physical layout. A significant speedup and increase in compaction capacity is achieved with Hurricane's new compaction algorithm. Hurricane provides an order of magnitude speed improvement and increase in compaction capacity compared to other commercially available compactors. With Hurricane large IP and full custom blocks can be quickly migrated to new process technologies and reused for implementing systems on silicon. An ARM core can be migrated in less than four hours.

Hurricane enables re-use and optimization of silicon-proven memories or arrays; large intellectual property; and full chips in new process technologies. Re-using hard IP is an efficient and speedier method for developing a system on a chip while leveraging the previous investment in design. With Hurricane, silicon-proven hard IP can be rapidly re-targeted to new processes and can take advantage of the latest

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deep submicron process to enhance the performance of existing or new products. It also can be used to retarget existing IC designs to develop a second source or to optimize a design for power and performance in existing process technologies.

Hurricane does a rapid re-layout of the existing memory block, or logic block to new process design rules, and produces an optimized and design rule correct, new layout. Hurricane preserves the source design's functionality and layout topology. Since Hurricane re-uses silicon-proven layout, it eliminates debugging concerns associated with redesign processes using synthesis, replace and re-routing. Sagantec's compaction software is the industry's most widely used physical design migration tool. It has successfully migrated large numbers of standard cell libraries, memory blocks, logic blocks and full chips.

The inputs to Hurricane are a source layout in GDS2 or CIF format and the new design rule file for target process technologies and any user-specified constraints. Based on these inputs, Hurricane produces a new optimized layout in GDS2/CIF format conforming to the new process design rules while preserving the functionality and maintaining the layout topology of the source layout. Hurricane is a polygon compactor that manipulates individual polygon edges by moving them closer together until constraints, either from a new process design rule file or from a user-specified constraint, are about to be violated.

Hurricane's many capabilities and expert rules, such as recontacting, direction control, wire length minimization, transistor resizing, and reportioning of power-supply bus bars, enable Hurricane to generate a much denser layout as compared to a traditional 'linear shrink.' Hurricane consistently generates layouts that are 10 to 20 percent better than traditional linear shrink. Hurricane's innovative 2D scanning algorithm enables accurate and optimum handling of 45 degree polygon edges.

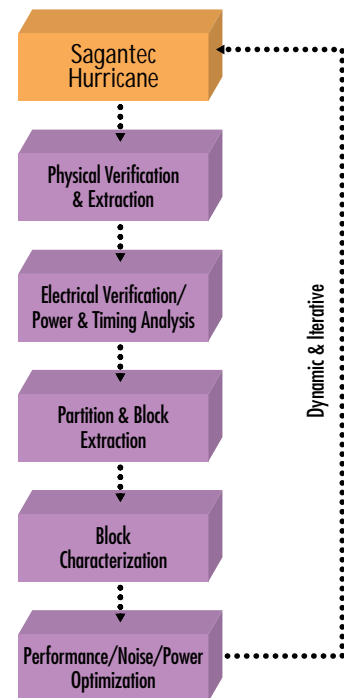
Unlike other tools in the market, the technology file for Hurricane is easy to set up using Sagantec's EnCORE, graphical user interface. A typical technology rule file can be created in a day as compared to weeks for competing products. Our partnership with leading foundries enable it to provide proven technology files for popular CMOS processes for faster development of customer-specific design rule files.

Sagantec's worldwide resources of experienced application engineers are always available to provide support for rapid implementation of customers' design re-use projects. Most design migration projects can be completed in a few weeks with Hurricane as compared to several months with other methods. With Hurricane, a full custom 400,000 transistor DSP core was migrated and verified in a new process

technology in less than a man-month. The same block would have taken several man-years of manual effort.

Hurricane's integration with industry standard timing and power optimization tools enables automated transistor resizing for speed and power at the layout level. It also is integrated with industry standard characterization and physical design verification tools enabling faster verification of migrated layouts.

Customer Tool Flow of Optimal IP Migration



Summary

Sagantec's Hurricane enables re-use of silicon-proven, familiar designs – memories, random logic or full chips – to conform to the exact design rules of a desirable, newer, faster deep submicron process. Results from Hurricane are comparable to results from handcrafting, and are far superior to those from a traditional linear/optical shrink. Hurricane generates a design rule correct layout by enforcing design rules of the new process during process migration. Each piece of logic is migrated to the new process, rather than being simplistically shrunk. In general, design rules can be changed nonlinearly.

Hurricane enables designers to start implementing designs earlier with existing proven designs and IP blocks. It also enables designers to leverage the performance advantage offered by the latest deep submicron process technology. Any unexpected, last-minute design rule changes by the foundry can be easily accommodated with Hurricane. It offers the flexibility of fine tuning layout rules to improve performance, yield and reliability.

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