



News Release

## **ASTUTE NETWORKS VALIDATES NEW PROCESSOR WITH CARBON'S VSP™**

*VSP Validates Firmware and Hardware for Next Generation Storage Processor*

Waltham, MA, April 20, 2006, Carbon Design Systems—a leader in virtual system prototyping—announced today Astute Networks' success in validating both their embedded firmware and hardware, for their next generation storage processor chip utilizing Carbon's VSP product. VSP reduced Astute's hardware simulations from months to days on their multi-million gate, multi-core processor design. In addition, VSP automatically generated a hardware-accurate full-chip model that Astute needed to thoroughly validate their embedded firmware.

"Initially, we bought Carbon's VSP product to accelerate our RTL simulation environment, which was very successful," proclaimed Keith Klarer, Vice President of Hardware Engineering at Astute Networks. "Once we got started, we found that the Carbon's virtual system prototyping technology also provided the accuracy we needed to validate our protocol and resource management firmware."

"We are delighted that Astute Networks chose Carbon to validate their next generation storage processor," said Alan Swahn, Vice President of Marketing at Carbon Design Systems. "Our VSP technology enabled Astute to deliver their chip and embedded software right-the-first-time, under a very aggressive design schedule."



## **New Generation Processor**

The Athens processor family, comprised of the AN2000 and the AN2004, is the industry's most highly integrated multi-protocol storage processor family of devices offering best-in-class price-power-performance at more than 1.6 million I/O operations per second (IOPs) in less than 14 Watts. On-chip Ethernet, Fibre Channel and PCI Express I/O interfaces surround a multi-core (10 CPU) design. Specialized hardware engines are used to provide protocol acceleration and to coordinate the use of the parallel processors. The Athens solutions allow storage OEMs to build systems that offer high-end features, low power, and high-performance at entry-level prices.

Astute used VSP to compile the Verilog hardware description for the complete chip, excluding analog blocks and pre-verified I/O blocks. The resulting Carbonized virtual system prototype replaced a hand-created behavioral 'C' model. Development of the behavioral model was extremely time-consuming, error prone, and difficult to keep in-sync with the RTL model. VSP's automatic compilation saved months of model development and produced a high-performance, hardware-accurate chip model that was used to validate Astute's embedded firmware.

## **About Astute Networks**

Astute Networks develops storage processors, application and protocol software, and reference designs for the storage array OEMs and sub-system suppliers. In addition, Astute actively partners with subsystem and software vendors to provide OEMs a turnkey solution. Astute's processors offer an order of magnitude cost and power savings, and are as easy to program as a general purpose CPU. Additional information is available at [www.astutenetworks.com](http://www.astutenetworks.com).



## About Carbon

Carbon is delivering a high-performance virtual system prototyping solution that enables a system prototype to be rapidly assembled and functionally validated on the desktop months before silicon. Carbon's new software approach allows multiple levels of abstraction to be validated together including C, SystemC, RTL, IP cores, transaction-level, and instruction-level models. The key to VSP is silicon accuracy and performance; the ability to execute billions of cycles and boot embedded operating systems, all with desktop software.

—END—

**Carbon Design Systems and VSP are trademarks of Carbon Design Systems, Incorporated. All other companies and products referenced herein are trademarks or registered trademarks of their respective holders.**

**For more information, please contact:**

Marion Camphausen  
**TRIAS Mikroelektronik GmbH**  
Tel. +49 (0) 2151 – 95301-55  
[marion.camphausen@trias-mikro.de](mailto:marion.camphausen@trias-mikro.de)