



News Release

## **Breakthrough platform from Freescale advances multi-core for embedded markets**

Combining 45-nm technology, on-chip fabric and an enhanced Power Architecture™ core, Freescale sets the pace for embedded multi-core semiconductor design

ORLANDO, Fla. (Freescale Technology Forum) – June 25, 2007 – Freescale Semiconductor unveils its new Multi-core Communications Platform, an innovative multi-core architecture that delivers breakthrough efficiencies, performance and scale, while addressing the emerging challenges of multi-core software development. Fundamental to Freescale's new approach are the power reduction and integration advantages realized by a migration to 45-nm process technology.

Consumer and business demand for new services and rich content is stretching network capacity everywhere. Meanwhile, incremental semiconductor product innovation is not sufficient to keep pace. Equipment manufacturers are looking for new processing solutions that enable the creation of long-lived, software-oriented platforms that give service providers the agility to quickly introduce new services over converged networks. Freescale's new platform addresses this trend by fulfilling the promise of embedded multi-core technology and establishing pragmatic new approaches to transforming the world's networks.

"Our new platform goes beyond simply adding more cores on a chip. This is a comprehensive SoC architecture based on a cache-coherent and extensively scalable approach to multi-core design," said Lynelle McKay, senior vice president and general manager for Freescale's Networking and Computing Systems Group. "We believe this platform and its ecosystem of enablement will unlock the real potential of multi-core processing, establish new industry benchmarks for total networking performance and dramatically streamline multi-core development."

Freescale's new Multi-core Communications Platform is designed to help customers more easily migrate to multi-core environments while preserving the value of legacy software investments. This is made possible by Freescale's rich heritage in developing a broad range of compatible processors based on Power Architecture™ technology and the robust ecosystem of Power Architecture silicon enablement.

At the heart of the platform is CoreNet™, a highly scalable fabric technology for on-chip connectivity. It is designed to eliminate bus contention, bottlenecks and latency issues associated with shared bus/shared memory architectures that are common in other multi-core approaches. CoreNet can seamlessly accommodate more than 32 cores as well as heterogeneous core implementations.

The move to 45-nm technology for this new multi-core platform enables dramatic performance, integration and power efficiency enhancements designed to outpace Moore's Law and advance the state of embedded computing. For example, at 45-nm geometries, Freescale is able to engineer a multi-level, cache-coherent hierarchy that endows each core with its own L2 cache while also integrating multi megabytes of shared L3 cache.

Freescale's multi-core platform includes an enhanced Power Architecture e500-mc core, based on the e500 core, targeting a top frequency of 1.5 GHz. It also integrates proven on-demand application acceleration capabilities such as new data path resource management technology that handles intra-chip message passing and memory buffer reservation. To enable safe and autonomous operation, the platform leverages a hypervisor environment that enables multiple individual operating systems to share system resources, including processor cores, memory and other on-chip functions.

"Rather than throwing a bunch of low-performance CPUs together, Freescale is combining several powerful e500 CPUs in a single device," said Linley Gwennap, principal analyst of The Linley Group. "Using its system-on-a-chip experience, Freescale then adds a high-speed fabric, offload of critical functions and intelligent I/O. This combination will keep the CPUs operating at a high level of efficiency."

To streamline and speed application development on the platform, Freescale is working with virtualized software development firm Virtutech to create a hybrid simulation environment that combines Virtutech's fast functional technology, called Simics™, with a Freescale cycle-accurate model of the platform. This environment is designed to enable developers to quickly switch between models for accurate performance prediction and accelerated development. Virtutech offers Freescale customers and partners a virtualized software development platform that provides a controlled, deterministic and fully reversible environment for the development, debugging and benchmarking of software for complex multi-core-based architectures. The Simics environment allows developers to migrate and partition operating systems and applications onto the virtualized multi-core platform well ahead of silicon availability and without real-world hardware constraints.

Freescale is engineering capabilities into the Multi-core Communications Platform to enable advanced debugging while working in tandem with its ecosystem partners to assure availability of tools that can take advantage of

these features. These capabilities include integrated instruction trace, watchpoint triggers, cross event triggers, performance monitoring and other debug features as defined by the Power ISA. These features enable dynamic debug essential for providing visibility into complex interactions that may occur among tasks running on different cores.

### **Availability**

Freescale expects to roll out a comprehensive roadmap of products based on the new Multi-core Communications Platform, the first of which is planned to sample in late 2008. A Virtutech simulation environment is now available for Freescale's current generation of multi-core processors, the MPC8572E and the MPC8641D. The simulation environment for the platform is expected to be available in Q4 2007, allowing development and system optimization to begin prior to product availability.

### **About Freescale Semiconductor**

Freescale Semiconductor is a global leader in the design and manufacture of embedded semiconductors for the automotive, consumer, industrial, networking and wireless markets. The privately held company is based in Austin, Texas, and has design, research and development, manufacturing or sales operations in more than 30 countries. Freescale is one of the world's largest semiconductor companies with 2006 sales of \$6.4 billion (USD). [www.freescale.com](http://www.freescale.com)

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