

**Linux Standard
Base 1.0 Released**

After three years, Version 1.0 of the Linux Standard Base (LSB) specification has been released for community review. The specification is intended to "increase compatibility among Linux distributions and enable software applications to run on any compliant Linux system." The LSB defines binary interfaces for Linux applications on different hardware architectures, and is therefore actually a collection of related specifications. The first part of the LSB is generic, covering elements of the interface that are required for all conforming implementations, and the second part describes architecture-specific requirements.

The application binary interface (ABI) lets you write to APIs and libraries rather than system primitives. The libraries include system interfaces, graphics interfaces, and auxiliary interfaces such as a compression library. Compile-time stub libraries can be used to verify LSB compliance. For more information, see <http://www.linuxbase.org/>.

**Now Everyone
Knows You're a Dog**

Privacy advocates have long been concerned about the amount of personal data being collected online, and the ineffective security that protects such collections. As it turns out, there's no better example than the U.S. Department of Commerce's Safe Harbor web site (<http://www.export.gov/safeharbor/>), which offers a certification process by which U.S. companies may establish that their privacy protections comply with the European Commission's Directive on Data Protection. The Department of Commerce's privacy policy promises, "We will not share any personally-identifying information you give us with any other government agency, private organization, or the public, except with your consent or as required by law." However, the site's databases were publicly accessible for several months, allowing anyone to look up information such as the revenue or number of employees of participating companies. Visitors were even free to modify such data. "We regret any inconvenience this may cause for firms visiting the Safe Harbor web site," stated the Department. "We anticipate that this matter will be resolved shortly."

**Maximum Fiberoptic
Capacity Calculated**

Currently deployed fiberoptic systems transmit just under 2 terabits of data per second, and prototypes have been developed that can transmit up to 10 terabits per second. But the theoretical limit of optical bandwidth is hard to determine, since glass scrambles light in a nonlinear fashion. The speed of light traveling through fiber is not a constant.

However, scientists at Bell Labs, the research arm of Lucent Technologies, have published calculations that set the maximum theoretical capacity of a fiberoptic strand to 100 terabits per second. They studied wavelength division multiplexing—in which different colors of light are used in parallel—and found the maximum amount of power that can be used to boost the signals before they begin to interfere with each other.

Lucent hailed the theoretical optical speed limit as proof that fiberoptics can meet the needs of communications networks for the foreseeable future. The findings were originally published in *Nature*, June 28, 2001. For more information, see <http://www.lucent.com/press/0601/010628.bla.html>.

**Mass Producing
Quantum Chips**

The National Science Foundation has dedicated four years and \$1.6 million to finding a reliable, repeatable, room-temperature process for manufacturing quantum chips. Current methods require dozens of manufacturing attempts to yield only a few working quantum dots. Also, the working dots are never evenly distributed across a wafer, so part of the research effort will focus on predicting the size, shape, and placement of quantum dots.

Engineers planning to manufacture quantum dots less than 10 nanometers wide will study three separate architectures: resonant tunneling diodes, which encourage electrons to skip through semiconductor layers; single-electron transistors, which switch on and off with the use of only one electron; and quantum cellular automata, which allow complex interconnection networks to be created in a plane.

The research team includes engineers at Ohio State, the University of Illinois at Urbana-Champaign, the University of Notre Dame, the University of California at Riverside, the Naval Research Lab, and

the Air Force Research Lab. At the end of the grant period, the team's findings will be reported to the NSF's Nanoscale Science & Engineering Program. For more information, see <http://www.nsf.gov/home/crssprgm/nano/start.htm>.

Mo' Better Batteries

Scientists at Brookhaven National Lab have developed a new metal alloy that could significantly improve the performance of rechargeable batteries for portable electronic devices and electric and hybrid cars. When used as an electrode in nickel/metal hydride (Ni/MHx) batteries (currently the most popular rechargeables), the alloy has a high capacity for storing charge, a long-lasting ability to be charged and recharged, and good resistance to corrosion. Furthermore, the alloy does not contain cobalt, an expensive metal found in many Ni/MHx batteries, nor cadmium, a toxic metal found in nickel-cadmium rechargeables. Composed of lanthanum, nickel, and tin, "this new alloy is inexpensive and relatively environmentally benign," said James Reilly, the project's team leader. The new alloy is based on a formula used for Ni/MHx batteries that consists of a cube-like lattice with lanthanum atoms on the corners and nickel on the inside. Through trial and error, the team found a combination of lanthanum, nickel, and tin with a very high storage capacity that doesn't decay over many charge/discharge cycles. For more information, see <http://www.bnl.gov/bnlweb/pubaf/pr/bnlpr072601a.htm>.

**Patenting the
Software Service Model**

In yet another example of what appears to be a patent process gone amuck, Mcafee.com (<http://www.mcafee.com/>) has been granted a U.S. patent (#6,266,774) for treating software as a service—a concept that has been in practice for at least 20 years. Specifically, the patent is for a "method and system for securing, managing or optimizing a personal computer" and covers the company's software-as-a-service technology and subscription-based business model for delivering services to users via the Internet. Treating software as a service rather than a product is a model that's been used by IBM among others, and is reportedly in Microsoft's future plans.