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## [Western Digital Breaks HDD Storage Density Barrier](#)

### *520 Gb/square inch*

It seems that only yesterday, perpendicular recording was making its way into hard disks, and now, more than two years later, HDD manufacturers continue to break density barriers. Western Digital yesterday announced that they have achieved the "hard drive industry's highest demonstrated density to date using continuous media". The company revealed the milestone this week at the Perpendicular Magnetic Recording Conference in Tokyo after an earlier demonstration in California. "Following WD's growing investments in technology the past five years, the company achieved 520 Gb/square inch using its own perpendicular magnetic recording (PMR)/tunneling magneto-resistive (TuMR) head technology", the press release reads. This record translates into a 640 GB-per-platter capacity for 3.5-inch units of up to 3 TB. According to Western Digital, current industry-leading hard drive densities shipping in high volume are about 200 Gb/square inch, as featured in WD's 250 GB WD Scorpio 2.5-inch drive for notebooks and mobile applications. "WD was the first hard drive manufacturer to ship in volume the 250 GB capacity point in the 2.5-inch form factor," said Hossein Moghadam, chief technology officer for WD. "Our technology investments position WD with our customers as a leading choice for the highest, cutting-edge capacities. Our top priority will be to remain keenly focused on providing the highest quality and reliability, which customers have come to expect from WD after years of relying on our products", he added. However, despite reaching this milestone, Western Digital predicts that these capacities will be available to consumers in the 2010 timeframe. Conventional longitudinal recording stores data on a magnetic disk as microscopic magnet bits aligned in plane. Although advances in magnetic coatings continue to improve data recording densities on HDD, when the densities become too extreme, the magnetic bits repulse each other due to in-plane alignment. Squeezing more bits on to a disk will eventually reach a point in which crowding degrades recorded bit quality. By standing the magnetic bits on end, perpendicular recording reinforces magnetic coupling between neighboring bits, achieving higher and more stable recording densities and improved storage capacity. Western Digital's announcement was preceded by [Hitachi's promise](#) that they would offer 4TB HDDs by 2011.