The 50th and 100th Anniversary of the First Magnetic Disk Drive, September 13, 1956

Introduction

This Wednesday, September 13, 2006, is the 50th anniversary of the introduction of the first magnetic disk, the 5 megabyte IBM RAMAC. RAMAC rented for 2,300 US dollars per month. Adjusted for the past 50 years of inflation and converting from rent to a purchase price, RAMAC cost 1 million current US dollars. With the falling price of the newest Seagate 750 gigabyte magnetic disks, the cost of the equivalent magnetic disk storage (1 US dollar for 5 gigabytes) has dropped by a billion times from September 13, 1956 to September 13, 2006. [Please see below for references.]

More Details and References for the 50th Anniversary Sound Bite

This Wednesday, September 13, 2006, is the 50th anniversary of the introduction of the first magnetic disk, the 5 megabyte IBM RAMAC. RAMAC rented for 2,300 US dollars per month [http://en.wikipedia.org/wiki/Early_IBM_disk_storage#IBM_350]. Adjusted for the past 50 years inflation rate of 744 percent [http://www.minneapolisfed.org/Research/data/us/calc/] and converting from rent to a purchase price, RAMAC cost 1 million current US dollars. With the newest Seagate 750 gigabyte disks, the cost of magnetic disk storage has dropped by a billion to one ratio since September 13, 1956. The new 750 gigabyte Seagate disks [http://www.seagate.com/cda/products/discsales/personal/family/0,1085,742,00 .html] with perpendicular [http://www.seagate.com/docs/pdf/marketing/Article_Perpendicular_Recording.pdf] recording will provide the same 5 megabytes for 1 US dollar when it sells at 150 US dollars near the end of its commercial life in about 2008 when Seagate plans 2 terabyte magnetic disks. The 750 gigabyte drives introduced this year are the first generation of disk drives based on the new technology of perpendicular magnetic domains. This new technology is expected to provide the headroom for several more future generations of every increasing disk storage capacity. [http://www.pcworld.com/article/id,124925-page,1/article.html]. Soon, grandmothers will talk about their 5 megabyte disk drives, fathers will talk about their 5 gigabyte disk drives, and daughters will talk about their 5 terabyte disk drives.

But there is more: 5 thousand Seagate disk drives (in millimeters: approximately. 26.1 H x 101.6 W x 146.99 D = 390 thousand cubic mm = .4 Liters) would fit inside the IBM RAMAC (in meters: approximately. 1.72 H x .74 W x 1.52 D = 2 cubic meters = 2 thousand liters), 2 thousand Seagate drives (.72 kilograms) would weigh less than a RAMAC drive (1 ton, 1 thousand kilograms) [http://en.wikipedia.org/wiki/RAMAC], and the new Seagate disk drives transfer data 10 thousand times faster (3 gigabits per second for the Seagate disk vs. 72 thousand (8,800 bytes) per second for the RAMAC. The Seagate drives are sealed and can withstand a 300 G shock and continue to operate normally with the magnetic heads flying only 100 nanometers (one-half of a millionth of an inch) above the disks which spin at up to 15 thousand RPMs (revolutions per minute). With these physical changes, the magnetic disk drive cost / performance ratio has improved by a factor of 1 trillion-to-one over the past 50 years.

And, there is still more. Microsoft and Google are spending billions of 2006 US dollars to build their 1.4 million square foot (150 thousand square meter) data centers (with a 20 foot, 7 meter, ceiling height, the volume of the building would be 1 million cubic meters) near hydroelectric plants because they require a great deal (about 50 megawatts) (48 megawatts as described in Fortune magazine) [http://money.cnn.com/2006/05/05/technology/fastforward_fortune/index.htm] of very reliable electric power. By spending more than a million times the cost of a Seagate disk drive that has a cost / performance of 1 trillion times that of the 1956 RAMAC drive, Microsoft and Google are building multi-ExaByte (billion gigabytes) (10**18 bytes) server farms for their search engines and e-commerce sites that are a quintillion times (a million million million times) more capable than the IBM RAMAC system installations of 50 years ago.

Yes, the scale of computing has increased by one quintillion times (10**18) (10 raised to the 18th power) over the past 50 years. Will it happen again in the next 50 years (rounding out a century of computing)? Yes, Avogadro's number (6.02 x 10**23) [http://en.wikipedia.org/wiki/Avogadro's_number] and nanotechnology [http://www.foresight.org/] say it will. Archivists who planned to store digital data in 1956 for the minimum preservation period for archival materials, which is one century (50 years for records managers). should have planned for an undecillion (a trillion trillion trillion times) times (10**36) (10 raised to the 36th power) increase in the scale of computing. This could result in resulting in 1 trillion YottaByte server farms (10 **36 bytes) by the end of the first century of computing on September 13, 2056. Now, after the first 50 years of computing, computer scientists can finally make projections that are commensurate with the needs of archivists and records managers.

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Note to Editors

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Steve Gilheany, BA in Computer Science, MBA, MLS Specialization in Information Science, CDIA (Certified Document Imaging System Architect), AIIM Maser, and AIIM Laureate, of Information Technologies, CRM (Certified Records Manager, ARMA) has twenty years experience in document imaging and is a Sr. Systems Engineer at Archive Builders.

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His experience in the application of document management and document imaging in industry includes: aerospace, banking, manufacturing, natural resources, petroleum refining, transportation, energy, federal, state, and local government, civil engineering, utilities, entertainment, commercial records centers, archives, non-profit development, education, and administrative, engineering, production, legal, and medical records management. At the same time, he has worked in product management for hypertext, for windows based user interface systems, for computer displays, for engineering drawing, letter size, microform, and color scanning, and for xerographic, photographic, newspaper, engineering drawing, and color printing.