May 2005

TechNews is a technology, news and analysis service aimed at anyone in the education sector keen to stay informed about technology developments, trends and issues. Please navigate the newsletter by clicking on items within the table of contents below.

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Networking and wireless

Analysis: HSDPA

Most operators have only recently launched full 3G (third generation) mobile phone services, but already attention is turning to improving data speeds with an upgrade to W-CDMA networks called High Speed Downlink Packet Access (HSDPA). HSDPA, also known as 3.5G, was a major theme at the recent 3GSM conference. Research company Analysys sees HSDPA as vital to the future success of 3G networks. Timetables for the implementation of HSDPA have been brought forward with several companies announcing trials. This has been seen as a response to the potential competition from emerging OFDM based technologies such as WiMAX. It is also part of the general shift in telephony from circuit based systems to IP based ones, with higher speeds and innovative services.

HSDPA is a backwards compatible upgrade (3G Partnership Project Release 5) to the W-CDMA 3G networks currently being rolled out. It has a theoretical maximum data rate of 14.4Mbps, but the first handsets will be limited to 3.6Mbps. This still compares favourably with the 384Kbps offered by current 3G networks. However, operators have been cautious about over-hyping HSDPA and MMO2 initially expects real world data rates between 512Kbps and 1Mbps. The data rate increase is achieved through a variety of software changes. It uses adaptive modulation and coding that adapts to suit the conditions. Scheduling, error correction and other management functions will be handled by the base station rather than the network controller, helping to reduce latency. These changes allow better throughput, less delay and higher peak data rates. HSDPA also multiplexes several users on a downlink channel. The increased spectral efficiency should increase capacity and therefore reduce costs that could be passed on to users.

It is important to note that HSDPA only increases the download data rates. A further upgrade, High Speed Uplink Packet Access (HSUPA), due later, will provide maximum uplink rates between 640kbps and 5.8Mbps depending on the coding used.

MMO2 has announced that it is beginning trials of HSDPA on the Isle of Man, with full roll outs envisaged in 2006. The system will use the 3GPP IP Multimedia Subsystem (IMS) specification to provide services. At the 3GSM conference Ericsson talked about using IMS to provide IP based services such as presence, chat, collaboration, VoIP and innovative uses such as linking to a home PC or television.

NTT DoCoMo in Japan previously announced that it would launch HSDPA services in the autumn, but has recently delayed these plans by a year. Although, equipment manufacturers are keen to sell HSDPA to operators as a simple software upgrade, the reality is more complicated. Base stations may need new power units and it will take time to roll out a national 3G/HSDPA network. HSDPA is likely to be included in laptop data cards and then voice enabled PDAs before finally being included in handsets, which will need to overcome battery life and heat problems. A recent report from Informa does not expect HSDPA enabled handsets until the second half of 2006.

Operators seem to be moving ahead with an expensive upgrade to increase take up of 3G, enable more services, reduce costs and to combat the perceived threat of OFDM based wireless technologies such as WiMAX. The mobile version of WiMAX (IEEE 802.16e) is not expected to late 2006 and it is unclear whether regulators will allow the spectrum, mobility and voice capability that would allow it to compete with 3G. However, many analysts, such as Datacomm, see OFDM technologies competing strongly with 3G and eventually forming the basis for 4G technologies after 2010.

Ultimately, the technologies used are less important than the applications and services that they enable and at what price. 3.5G, which is expected to be widely available in 2007, should help provide the service that the hype surrounding 3G originally promised, moving us closer to ubiquitous high speed data access. Whether HSDPA can compete with other emerging technologies on performance and price remains to be seen.
http://www.techworld.com/files/whitepapers/NokiaHSPA.pdf

Networking and wireless news

Ultra Wideband (UWB) developments

The Multiband OFDM Alliance has merged with one of its supporting groups, the WiMedia Alliance. The new group to be known as the WiMedia Alliance is competing with the UWB Forum to have their version of the technology become the standard for UWB. The rival groups have now moved outside the IEEE standards process and are looking to bring products to market. UWB is a wireless networking technology that will offer extremely high data rates (100-500Mbps+) over short distances (10m). It is expected to be used for multimedia networking in the home and for cable replacement in implementations such as wireless USB (see TechNews Jan 05). Microsoft has recently joined the Wimedia Alliance, which has wider industry support than the UWB Forum. A Wireless USB specification based on WiMedia UWB is due to be published in June, with the first products appearing at the end of the year. Discussions on European UWB regulations are continuing.
http://www.wimedia.org/en/index.asp
http://www.techworld.com/mobility/features/index.cfm?FeatureID=1271
http://www.techworld.com/mobility/news/index.cfm?NewsID=3458&email

802.11n developments

IEEE 802.11n is the next generation wireless networking standard that should offer real world data rates in excess of 100Mbps.Two groups are competing for their technology to become the standard. At the latest IEEE vote neither group managed to gain the 75% needed. The TGn Sync group backed by Intel, Sony and Atheros achieved 55% of the vote while the WWISE group backed by Motorola, Airgo and Nokia gained 45%. Both groups are using MIMO (multiple input multiple output) which makes use of multiple antennas to send multiple data steams across the same channel. Recently, there has been some indication that the two groups may be more willing to merge their proposals. The final standard is expected to be ratified in the second half of 2006. However, several manufacturers have released pre-standard equipment using MIMO technology. These are generally not recommended due to lack of compliance with standards and lack of interoperability between vendors.
http://www.techworld.com/mobility/news/index.cfm?NewsID=3345

Wi-Fi growth

A recent report from Datacomm Research Company predicts that sales of Wireless Local Area Network (WLAN) equipment will have tripled by 2009 helped by improvements in speed, range and throughput. Home WLAN usage is expected to continue to grow strongly and could see even stronger growth if applications such as Voice over WLAN and wireless multimedia networking become mainstream. The report points to some reluctance in the business sector to adopt wireless networking due to fears over security. It also notes the slow roll out of wireless hotspots, but expects Wi-Fi mobile phone convergence to improve the situation. The research is echoed in figures for 2004 from Infonetics which show a 51% increase in unit sales over 2003. However, revenue increases have not matched sales due to falling equipment prices. Consumers and small businesses represent 52% of the market. IDC expects to see wireless networking integrated into more consumer electronics devices such as games consoles and audio/video equipment.
http://www.datacommresearch.com/competitiveedge/highlights/wlan.asp

Broadband growth continues

BT Wholesale has announced that it has reached 5 million broadband connections. This figure includes connections from the majority of UK ISPs who provide services over BT lines. Competition has lowered broadband prices and increased speeds driving up broadband subscriptions. The unbundling of local loops has allowed third party operators to provide faster and more innovative services to users. If these trends continue broadband should overtake dial up connections which still account for 59% of internet lines. Jupiter Research predicts that this will happen in mid-2005. Home broadband connectivity is seen as key to education, as despite widespread connectivity in schools and colleges most internet use still takes place in the home.

http://www.btplc.com/News/Articles/Showarticle.cfm?ArticleID=7e104b8e-30dd-48a1-a724-88808aa98ba4#Top

VoWLAN

Wireless voice over IP (VoIP), also known as voice over Wireless Local Area Networks (VoWLAN) is expected to grow according to a recent survey by InStat. 23% of the organisations surveyed had already implemented the technology and a further 30% were planning trials. VoIP breaks voice data into packets that can be sent over networks and the internet. It enables cost saving and added functionality such as unified messaging. Mobile phone operators are beginning integrating Wi-Fi chips into handsets to allow VoWLAN and internet browsing and analysts Infonetics expect it to become a common feature. Consumer use of wireless VoIP is also expected to increase as users take advantage of broadband connections to make inexpensive or free phone calls. Although growth is expected, the current market remains small with most success seen in particular sectors such as healthcare and warehousing. Issues over Quality of Service, roaming and billing remain.
http://www.instat.com/newmk.asp?ID=1238&SourceID=00000501000000000000

Orange trials WiMAX rival

Mobile telephone operator Orange is trialling a high speed wireless broadband technology that could rival WiMAX. The UMTS TDD/TD-CDMA technology is already used by wireless broadband company IPWireless who are providing equipment to the trial. The Lille based trial is aimed at business users and is intended to appraise the technical capabilities (range, data rates, coverage) of the technology compared to 3G. IPWireless claims similar real world capabilities as WiMAX based wireless broadband.
http://www.ipwireless.com/news/press_033005.html

RFID developments

Products conforming to the EPC Global's UHF Electronic Product Code Class 1 Generation 2 standard will soon be available. This specification for Radio Frequency Identification (RFID) tags should create a global standard for the technology improving interoperability between RFID devices from different manufacturers which is currently poor. The standard also improves security and encryption. Radio Frequency Identification (RFID) is a type of auto identification system and refers to technologies that use radio waves to identify objects or people. RFID tags are tiny microchips attached to antennae. The data on these chips can be read by a wireless reader and then passed back to computer systems. RFID is also moving beyond retail and supply chain applications to be used in more imaginative ways. RFID chips will be embedded in World Cup 2006 tickets in an attempt to reduce fraud and black-market sales. SD RFID cards have also been launched, allowing PDAs or smartphones to function as RFID readers. A few schools around the world are using RFID to monitor students. In the UK the technology is found in some SmartCards used in educational establishments for cashless catering and attendance.
http://news.zdnet.co.uk/communications/wireless/0,39020348,39194678,00.htm

3G Wi-Fi access point

Telabria has launched an 802.11a/b/g Wi-Fi access point that uses 3G/GPRS to connect to the internet. The AP-3G enables portable hot spots to be created in unusual situations where conventional DSL/LAN connectivity is not available. The access point has a rechargeable battery that can also be connected to a vehicle 12v supply. It supports WPA and RADIUS authentication. The device requires a 3G data card and network subscription. The company envisages the technology being used in the field at outdoor events, by the emergency services, or on construction sites as well as in buses and taxis. It could conceivably be used on educational field trips, but the high price of 3G data remains a barrier.
http://www.telabria.com/aboutus/newsandpressreleases.html#news16

Human Area Networks (HANs)

The idea of using the human body as a networking medium to link people and electronic devices is not new and several prototypes have been demonstrated. However, NTT the Japanese telecoms

company intends introducing products using the concept next year. The company's Human Area Network uses transceivers to send and receive weak electrical fields on the surface of the body. The RedTacton transceivers use optical sensors to pick up changes in the electrical field and can transmit data at up to 10Mbps. The company envisages using the technology for short range secure communications as an alternative to existing solutions such as Bluetooth. For example, suitably equipped people could exchange data by shaking hands. NTT is looking at shrinking the technology so that it could be integrated into mobile phones.
http://www.ntt.co.jp/news/news05e/0502/050218.html

I/OAT to boost networks by 30%

Intel unveiled a new technology at its recent Developer Forum aimed at increasing server processing speeds. The technology called I/O Acceleration Technology (I/OAT) will be built into Intel chipsets and processors from next year. It aims to reduce the time servers spend processing network traffic from the TCP/IP stack rather than application data. Some vendors have already introduced TCP/IP Offload Engines (TOEs), add-in cards that handle network traffic, but they have not become widely used. Intel claims the technology will increase data exchange by up to 30%.
http://www.intel.com/technology/ioacceleration/

Multimedia

Analysis: Holographic optical discs

The idea of holographic storage has been around for several decades, but has not yet left research labs. However, recently several announcements and prototype demonstrations seem to have accelerated the possibility of optical storage devices appearing over the next two years. Holographic optical discs promise extremely high capacity removable storage with fast data retrieval particularly suited to archive applications and storing large amounts of images and video.

Most holographic storage systems follow the same basic design principles. A blue-green argon laser is split into two beams. The object or signal beam passes through a LCD panel known as a spatial light modulator (SLM) containing a pattern of light and dark squares that encodes the "page" of data in the beam. The reference beam takes a different path and converges with the signal beam creating an interference pattern that is stored in a photopolymer or crystal as a hologram. The location of data is determined by changing the angle of the reference beam. Data is retrieved by sending a reference beam at the identical angle. This diffracts in the storage medium recreating the original page, which can be captured by a CCD camera and processed by the computer. Crucially holographic storage allows the whole storage volume to be used with holograms being overlapped. This contrasts with CD and DVD storage where data is only captured on the surface of the disc. Also, an entire "page" of millions of bits of data can be stored or read in one laser pulse.

A variety of technical problems have held back the development of holographic storage. These include creating a reliable storage medium, the high cost of components, the noise/interference created by adjacent holograms and maintaining the optical accuracy required. The increasing availability of inexpensive parts such as CCD cameras and LCD panels has enabled manufacturers to build on their development of storage photopolymers and coding/signal processing advances.

Two companies have recently made announcements about the launch of holographic optical disc products and other companies such as Aprilis and Colossal Storage are developing solutions.

- Japanese company Optware demonstrated a holographic system writing/retrieving video last year. They have announced a roadmap for products with capacities between 100GB and 1TB and speeds of between 100Mbps and 1Gbps. The first products are expected after June 2006. Optware has developed a collinear technology with coaxially arranged beams allowing for more compact systems. They use pre-formatted CD size media with an extra laser for tracking the position of the disc. Optware has founded the HVD Alliance with several other companies and is working with the European Computer Manufacturers Association (ECMA) to develop a HVD standard that is intended to be put forward to the ISO by the end of next year.

The creation of international standards would increase confidence and help reduce prices. The first drives are expected to cost $20000 with discs at $100.

- In-Phase, a spin–off from Lucent, is planning to launch its 200GB “Tapestry” drive next year. Hitachi will produce 13cm discs for the device. The drive was demonstrated at the recent Storage Visions event in Las Vegas. In-Phase is initially targeting archive and video management applications before moving into consumer models.

Despite these announcements, holographic optical storage remains an untried and untested technology. Even if manufacturers can overcome technical difficulties to bring products to market, it will take time before companies trust their mission critical data to such a new technology. However, solutions that combine inexpensive, high capacity media (tape attributes) with fast read/write speeds (hard disk attributes) could prove popular with many users. If successful, holographic discs are likely to initially be used for niche applications such as archiving, medical imagery, broadcast video, geo-spatial images amongst others. The increasing use of high definition video and other applications needing high capacity storage could see the need for mainstream holographic discs to replace Blu-ray/HD-DVD. In addition the speed of holographic data retrieval could enable emerging applications such as data mining. However, analysts point to the lack of investment in the technology by many existing tape and storage manufacturers and the inaccuracy of previous announcements as indicators that mainstream holographic storage remains some way off.
http://www.inphase-technologies.com/
http://www.optware.co.jp/english/

Multimedia news

Expiration dates for recordable CDs/DVDs

The US National Institute of Standards and Technology's Government Information Preservation Working Group (GIPWoG) is working with the DVD Association to establish a standard for labelling optical discs with minimum expected life-spans. The longevity of recordable optical discs such as CD-Rs and DVDs varies considerably, with some becoming unreadable in as little as 1 year. GIPWoG is carrying out a survey of US Government users to determine how long users expect media to last.
http://www.itl.nist.gov/div895/gipwog/
http://news.com.com/Disc+expiration+dates+debated/2100-1041_3-5645832.html?tag=nefd.top

MMS worm

The first worm to spread through the Multimedia Messaging System (MMS) has been discovered. MMS enables messages with images, audio or video to be sent over mobile phones. The CommWarriorA virus sends copies of itself as an attachment in MMS messages to numbers in the address book of a phone. The virus affects Symbian Series 60 based phones. Although this particular virus is not considered serious, it shows the potential for mobile phone viruses to spread extremely quickly. Previous phone viruses relied on Bluetooth wireless connections to spread, limiting their impact.
http://security.itworld.com/4340/050307mobileworm/page_1.html

Electronic paper developments

Electronic paper displays are continuing to develop. The monochrome displays combine resolution approaching print quality, extremely low power consumption and the possibility of being manufactured on flexible substrates. Commercial applications from companies like E-ink and Gyricon have so far used solid substrates and been used for smart signage and in some portable devices such as Sony’s Librie e-book reader. Intel has just invested in E-ink indicating that the technology is being taken seriously. Philips Polymer Vision has been developing flexible versions of the displays for some time and plans commercial production within two years. These are expected to provide roll-up or pull-out displays for mobile devices, overcoming the limitations of small screens and improving battery life. Companies are also working on developing flexible Organic LED (OLED) and Light Emitting Polymer displays (see TechNews Jan 05 Analysis: OLED displays). OLED displays are seeing strong growth

and sales are expected to double in 2005. They are mainly being used in mobile phones and MP3 players.
http://www.theregister.co.uk/2005/03/23/intel_e_ink_fund/
http://www.eetimes.com/showArticle.jhtml;jsessionid=ORZNSFVDHE4XOQSNDBCCKH0CJUMEKJVN?articleID=160502243

Google to trial "video blogging"

Video blogging or vlogging could be set to follow the growth in blogging (web logging) and photo blogging on the internet. Several sites already offer video logging services (eg vidblog.com), but it is not yet a mainstream activity. Google, who own the popular Blogger website, will shortly launch a video logging service according to an announcement by co-founder Larry Page. The beta service is currently accepting submissions, but it is not yet possible to view any videos. Blogging (online journals) is increasingly popular and is beginning to be used in educational establishments to allow students to publish their work and encourage collaboration.
http://news.com.com/Google+queues+up+video/2100-1025_3-5653879.html?tag=nl
http://www.educationworld.com/a_tech/techtorial/techtorial037print.shtml

Mobile Phone projector prototype shown

At the recent CeBIT technology show in Hanover Siemens demonstrated a mobile phone with built in projector. Mini-projectors have been put forward as a possible solution to the limitations of small displays on mobile devices. The Siemens prototype is able to project a single colour image of the screen or a keyboard using a laser projector similar to those used in virtual keyboards for PDAs. Users can write using a Bluetooth connected digital pen and store the information in the phone.
http://communications.siemens.com/cds/frontdoor/0,2241,hq_en_0_99399_rArNrNrNrN,00.html
http://www.physorg.com/news3505.html

Home multimedia networking to grow

A recent report from InStat suggests that home multimedia networking is set to see annual growth of 30% over the next four years. Home networking of computers has become increasingly popular since the introduction of inexpensive wireless equipment. The report expects multimedia networking, which involves sending audio and video around the home from media hubs (an entertainment PC or consumer device), to initially be undertaken by early adopters. However, faster wireless technologies such as 802.11n and ultra wideband should increase its popularity. There are issues over digital rights management (DRM) and the sharing of content between devices to be overcome as well as making more people aware of the technologies involved.
http://www.instat.com/press.asp?ID=1270&sku=IN0501962RC

Forward Versatile Disc format launched

The Forward Versatile Disc (FVD) format has been launched in Taiwan. Essentially a high capacity DVD, FVD was developed by the Taiwanese Government's Industrial Technology Research Institute (ITRI). The FVD optical disc format uses the standard red-lasers found in DVD/CD players. However, by using Windows Media compression a single layer FVD can hold between 5.4 and 6GB (single layer) compared to a standard DVD's 4.7GB. This is much less then the emerging blue-laser technologies Blu-ray and HD-DVD which can hold between 15GB and 25GB on single layer discs. However, the FVD format is much less expensive than blue laser technologies with the first FVD player on sale in Taiwan costing around £100. It is now been overseen and promoted by an industry consortium, the Advanced Optical Storage Research Alliance (AOSRA). FVD is unlikely to offer enough capacity to meet the long term demands of High Definition (HD) content, although it can hold 135 minutes of HD video. However, it could offer an inexpensive solution until blue-laser devices become more affordable. It is not yet clear whether FVD will become available worldwide and whether users will be prepared to adopt another format.
http://www.dvd-intelligence.com/main_sections/news_archive/2003_free/3_taiwan_fvd.htm

Next generation DVD entente?

Some reports from Japan suggest that the rival groups behind two next generation optical disc technologies have begun talks to try to achieve a compromise solution. The Blu-ray and HD-DVD formats are vying to become the standard for higher capacity, fast optical storage. Single layer Blu-ray discs offer 25GB capacity compared to HD-DVD with 15GB. Blu-ray is also more scaleable with plans for 2, 4 and 8 layer discs. However, the HD-DVD format is closer to the current DVD format making them cheaper to produce. Blu-ray is backed by Sony, Philips and other consumer electronics firms. It also has the backing of computer manufacturers such as HP, Dell and Apple. HD-DVD backed by Toshiba, NEC and Sanyo is supported by many Hollywood studios, whose content may be crucial in determining which format is most successful. Although all sides agree that a unified standard would be desirable, many analysts are sceptical about the chances of this being achieved.
http://www.blu-ray.com/
http://www.hddvd.org/hddvd/
http://www.dvdforum.org/forum.shtml

UK to have digital cinema network

The UK Film Council plans to roll out a Digital Screen Network. Arts Alliance Digital Cinema (AADC) has been awarded the contract to set up the network in around 150 cinemas. It is hoped the network will encourage the screening of British and less commercial films. The system will use high definition digital projectors and servers to store the films. Films will be distributed on encrypted hard drives. There is growing interest in the film industry in digital projection and distribution. Currently distributing traditional prints to cinemas is extremely expensive and limits the types of films likely to be shown, especially outside large cities. Eventually studios plan distributing films over broadband and satellite connections, significantly reducing costs. Unlike conventional films, digital films can be played without the risk of degradation in quality and do not suffer from scratches and other imperfections.
http://www.ukfilmcouncil.org.uk/funding/distributionandexhibition/dsn/

TV tax on computers?

The Department of Culture Media and Sport (DCMS) has recently published a Green paper on the review of the BBC Charter which is due for renewal in 2006. The paper puts forwards alternatives to the licence fee including the suggestions that it could be replaced with a tax or levy on computers. As more TV/video is likely to be watched on computers and mobile devices via high speed connections, the TV licence fee may become increasingly anachronistic. However, no changes are expected until after the next charter runs out in 2016.
http://www.bbccharterreview.org.uk/
http://hardware.silicon.com/servers/0,39024647,39128359,00.htm

Hardware

Analysis: Memory

The major memory manufacturers are looking at alternatives to Flash memory, which is expected to begin to reach scaling limits in the next few years. Flash, which has been around for over sixteen years is increasingly important as it provides inexpensive, compact and relatively fast storage. Crucially, Flash memory is non-volatile retaining data without power. Despite the growing use of mini hard drives, Flash remains vital to mobile applications where size, robustness and low power drain are important. However, developments in technology have increased the need for faster, higher capacity memory capable of more write cycles. The ultimate goal of most manufacturers is the creation of “universal memory” with the speed of SRAM, capacity of DRAM and the non-volatility of Flash.

Currently no technology can offer the same characteristics as Flash. Scaling (shrinking transistor sizes) is expected to increase capacity and reduce costs until at least 2008. However, several alternatives that could offer an evolutionary change and enable new possibilities are emerging.

Magneto-resistive RAM (MRAM) is the most developed alternative to Flash/RAM and could be seen in products such as mobile phones as early as next year. Around 20 major companies are working on

MRAM and Infineon produced a 16MB MRAM chip last year. MRAM is extremely fast, non-volatile, has low power consumption and unlimited write cycles. It is based on magnetic rather than electrical charges as used in Flash and measures the difference in resistance between two magnetic layers on silicon to record a 1 or 0. Some scientists have suggested that the differences are too subtle to be reliably measured. However, most concerns regard the scalability of the technology and its ability to compete with Flash on price and capacity. MRAM could potentially replace both Flash and RAM. Its speed would enable computers to boot-up instantaneously and could improve computer performance and a range of other applications such as wireless and mobile video.

IBM demonstrated the latest prototype of its Millipede memory technology at the recent CeBIT technology show. Millipede is a micro-electrical-mechanical system (MEMS) that uses thousands of nanometre scale microscopic tips to “punch” pits in a polymer layer. The re-writable storage device has data densities of almost 20GB cm^2 and is intended to replace Flash memory in portable devices. It is not expected to be commercialised for at least two years.

Several companies are developing phase change memory technologies that use the same principle as recordable CDs and DVDs in that the state of a material can be changed between two states by applying energy. Intel is developing Ovonic Unified Memory (OUM) using these principles. Although not offering the performance of MRAM, OUM would outperform Flash and be inexpensive to produce. Philips recently announced its own version of the technology that it claims requires lower voltage enabling it to be scaled using CMOS processes.

A number of manufacturers and start-ups are working on other memory technologies such as polymer memory, FeRAM, NRAM (using carbon nanotubes) and silicon nanocrystals. However, the extremely competitive Flash market is lucrative for manufacturers and scaling and other improvements should enable Flash performance to remain competitive until at least 2010. Indeed, the Flash memory market is expected to triple by 2009 (InStat) due to increased demand form digital portable devices. It remains unclear whether emerging memory technologies will be able to compete with Flash on capacity and price at this point. Currently MRAM is the front contender as an alternative memory technology and could offer a major advance in performance.
http://www.freescale.com/webapp/sps/site/overview.jsp?nodeId=0ST287482186253
http://www.zurich.ibm.com/st/storage/millipede.html

Hardware news

Dual core processors launched

Intel and AMD have launched their first dual core processors. Dual core chips are essentially two processors on a single die (silicon wafer). They can give better performance at lower clock speeds than single core chips, when running optimised software. This allows for less power consumption and cooler operation. Dual core processors can run two threads simultaneously. This parallelism enables calculations to be divided between the two cores to increase efficiency. Alternatively, each core can handle a different application allowing true multitasking. However, to achieve performance gains dual core processors require software written to take advantage of multithreading. AMD has launched dual core versions of its Opteron server processors and will launch its X2 desktop versions in June. Intel has released dual core Pentium Extreme Edition 840 processors and chipsets aimed at high end users and gamers. More mainstream desktop dual core processors called Pentium D are expected in May. Intel plans dual core mobile and server processors in 2006. By the end of 2006 Intel expect 70% of its desktop and mobile chips to be dual core.
http://www.intel.com/pressroom/kits/pentiumee/index.htm

WEEE Directive delayed until January 2006

The DTI has announced that the EU Waste Electronic and Electrical Equipment (WEEE) directive will not be fully implemented until January 2006. The directive deals with the disposal and recycling of electronic waste and makes manufacturers responsible for financing the correct disposal of all equipment made after the directive is implemented. They are also responsible for disposing of old equipment if replacing devices on a like for like basis (see TechNews February 2005). The directive

was due to have been implemented in August 2005. More time has been needed to work out the practical details of how the regulation will work. The WEEE directive is expected to add to the cost buying new IT equipment and disposing of old machines.
http://www.dti.gov.uk/sustainability/weee/Planning_for_Implementation.pdf

Toshiba battery promises fast recharge times

Toshiba have developed a prototype lithium-ion battery that can be recharged in as little as 60 seconds. The battery uses nanoparticles that can absorb energy much faster than conventional materials. The batteries also offer longer useful life than conventional lithium ion solutions. There are currently two versions 600mAH and 3000mAH. The battery can reach 80% of its capacity in 60 seconds, but takes a few minutes to be fully charged. Standard lithium ion batteries take between 1 and 4 hours depending on size. Toshiba expects to make them commercially available next year, but they are not likely to appear in consumer devices until 2007. The batteries should offer greater convenience and flexibility in addition to reducing energy consumption.
http://www.techworld.com/mobility/news/index.cfm?NewsID=3397&email

eSATA specification

The specification for External Serial ATA (eSATA) has been finalised and is expected to appear in motherboards later this year. eSATA will allow external hard drives to be connected at 150Mbytes/sec and 300Mbytes/sec (SATA II). This brings the performance benefits of SATA connectivity to external drives and offers much faster connections than USB 2 or Firewire, due to lower protocol overheads. Previously some manufacturers have provided standard SATA interfaces externally. The eSATA specification however, is especially designed to give a robust external solution. A CE-ATA (consumer electronics) specification has also being published. It is intended to connect hard drives to battery powered electronic devices such as digital cameras, PDAs and digital music players.
http://www.sata-io.org/esata.asp
http://www.techworld.com/storage/news/index.cfm?NewsID=3259

DDR2 prices to fall

Prices for the newer DDR2 memory chips are expected to match standard DDR memory by the middle of the year. DDR2 is currently 2-3 times more expensive than DDR and is adding to the price of PCs using the latest motherboards and chipsets. Prices should fall as production of DDR2 equals and then surpasses that of standard DDR RAM.
http://www.tomshardware.com/hardnews/20050307_130138.html

Security chips for PCs set to see growth

IDC estimate that sales of computers with Trusted Platform Modules (TPM) chips will grow from 8 million in 2004 to 20 million in 2005. Dell recently announced that it would start to include TPMs in notebook computers. TPMs can carry out several functions related to security such as holding passwords and encryption keys, authentication, secure transactions, digital signatures and network security. The Trusted Computer Group has overseen the development of open standards for TPMs. As the prices for the chips have decreased more manufacturers are offering the feature. The next version of Windows (codenamed Longhorn) is expected to add more support for the technology through Microsoft's Next Generation Secure Computing Base (NGSCB). Critics are concerned that TPMs will be used to enforce digital rights/copyright.
https://www.trustedcomputinggroup.org/home
http://www.technewsworld.com/story/41471.html?u=dley&p=ENNSS_88ea1a083ed351171d2bddb02dd31fb4

Mouse adapter to filter out hand tremors

An IBM researcher has developed a device that can filter out tremors and unintended mouse clicks using sophisticated algorithms. The device connects between the mouse and the computer and its sensitivity can be adjusted, or the device switched off entirely. A variety of conditions, including Essential Tremor, can cause people's hands to shake making controlling a standard mouse extremely difficult. It is estimated that 3 million people in the UK are affected by tremor. The Assistive Mouse Adapter will be manufactured by a UK electronics firm and sold online for £65.

http://www.montrosesecam.com/index1.html
http://domino.research.ibm.com/comm/pr.nsf/pages/news.20050314_mouseadapter.html

Mobility growing

A study by InStat reported significant growth in mobile technologies in 2004 and expects to see changes in the market and mobile devices. According to the report desktop PCs are being segmented into inexpensive low-end machines and high-end desktops with the middle market increasingly being taken by notebooks. Total sales of notebooks and desktops across the EU are almost identical according to figures from Context, but notebook sales are expected to overtake that of desktops this year. Research carried out by Quocirca indicates that organisations will invest heavily in mobility this year. Almost a third of organisations surveyed intend increasing spending on mobility by over 20% compared to the average 2.5% overall increase. Access to enterprise systems is available in 38% of companies surveyed while 25% will add it this year. Mobile email is already used by two thirds of organisations. 60% plan using 3G data cards, 50% wireless PDAs and 40% RIM Blackberrys.
http://www.mobilepipeline.com/showArticle.jhtml?articleID=60402807
http://networks.silicon.com/mobile/0,39024665,39128141,00.htm
http://www.theregister.co.uk/2005/03/21/euro_notebook_market_jan_05/

EU trails US in ICT

A new report from the European Commission highlights how EU organisations are far behind the USA in the use of ICT. The report produced by Ovum called 2010: Achieving the Lisbon Agenda found that in the EU IT makes up 18% of spending compared to 29% in the US. Moreover US use of ICT is more effective accounting for 80% of productivity gains compared to 42% in Europe. The report finds that lower European investment in ICT is compounded by more regulation and poorer education in IT skills. The EU Lisbon strategy intends to make Europe the most competitive and dynamic knowledge based economy by 2010.
http://www.indepen.co.uk/panda/docs/achieving_the_lisbon_agenda-summary.pdf
http://www.infoconomy.com/pages/effective-it/group104927.adp

Moves to tackle digital divide

The Government has launched a 3 year plan to tackle the problem of the digital divide. The plan was launched by the Prime Minister, DTI and Intellect. It includes several initiatives: a program will be set up to provide students with access to low cost computers under a national leasing scheme. All pupils are to be offered a “virtual learning space” to store and access their work. Schools will be able to purchase equipment through a National Procurement Scheme to ensure value for money. Ofcom has been charged with encouraging broadband connections for disadvantaged households. Local governments have the chance to win a £10 million “prize” for providing universal online access to services. UK Online centres will be expanded to provide access to IT for adult learners. Government will be encouraged to make services available online and accessible to all. The Government and public bodies will encourage the creation of more innovative broadband content and will have guidelines on content procurement. The plan will also tackle online security and crime.
http://www.strategy.gov.uk/downloads/work_areas/digital_strategy/digital_strategy.pdf

Software and internet

Analysis: Virtualisation on the desktop

Virtualisation is increasingly popular in servers and storage networks. However, it has remained a niche technology for client machines. Recently there has been more momentum behind virtualisation on the desktop and analyst firm Gartner sees it as one of the most disruptive PC technologies for a decade.

Virtualisation essentially allows many separate devices to appear as one, or one device to appear as many. Virtualisation allows a single machine to run multiple instances of the same or different operating systems (OS) at the same time and isolated from each other. Most virtual systems work by having a host operating system installed on the hardware with a virtual machine manager (VMM)/hypervisor. Guest operating systems are then installed on top and remain isolated from each

other. The VMM/hypervisor abstracts the hardware from the operating systems, effectively making each OS act as if it has control of the entire system. Indeed, operating systems can be made to behave as if they are accessing hardware that is not actually present on the system. This allows almost any OS or application to run on almost any hardware. However, there is a performance penalty of around 25% on virtual systems.

The advantages for back end systems are well known. It allows multiple servers running separate applications to be consolidated to a much smaller number of systems, pooling available computing power. This improves hardware utilisation as most dedicated servers only use a fraction of their available processing power. Virtualisation not only allows one physical server to run many tasks, reducing costs, but can also have management and security benefits. However, the case for virtualisation on the desktop is less clear.

Virtualisation on client machines is still a new and complex idea. However, recent announcements have added to the momentum behind it. Intel and AMD will introduce hardware support for virtualisation on both servers and desktops over the next year. They are also supporting the open source hypervisor Xen. Microsoft will support this technology in the next version of Windows (Longhorn) due in 2006 and has already released Virtual PC 2004 and Virtual Server 2005, adding to existing products from companies such as VMWare and SWSoft. Analysts expect virtual software market to grow 20% annually through to 2008. Steve Ballmer (Microsoft CEO) recently said: "Virtualisation is an area of intense interest and activity for us. Driving virtualisation is a key technology to facilitate better compatibility and lower total cost of ownership."

Virtualisation on the desktop is currently mainly used by software developers and testers. However, virtualising the desktop could have several major advantages. Two of the main ways to reduce costs and increase reliability are to standardise systems and software images and lock down desktops. Virtualisation could enable organisations to use one stable system image across all machines regardless of hardware configuration. It also allows the deployment of one locked down, robust environment and another more open environment that users can freely configure. It is possible to run legacy applications and operating systems making migration easier. Problems can be fixed by reloading an OS image from a “snapshot”. These benefits, if properly managed, could give large savings in administration and support and enable new functionality. For example cut down OSs could boot quickly and handle dedicated functions like audio/video playback. Some analysts argue that virtualisation would increase the commodity status of PCs as it breaks the traditional link between hardware and software.

Intel intends introducing its VT (virtualisation technology) on some Pentium 4 and Itanium chips this year. Other processors will follow in 2006. AMD has announced that its Pacifica virtualisation technology will be launched next year. Moving the management of virtual system resources into hardware should improve performance, increase reliability, security and efficiency and make it easier to write VMM/Hypervisors.

Virtualisation is still an emerging technology and has many issues to overcome: improvements in usability and security are still needed; software needs to be developed to take advantage of virtualisation; running several operating systems entails using more expensive machines with more memory (the move to multicore processors should help); currently each instance of a virtual OS has to be patched and configured separately; the virtualisation software adds to costs; users will need careful training to understand the systems; and support agreements may be problematic, especially when running software from different vendors. Licensing of virtualised computers is perhaps the biggest unresolved issue. Some manufacturers may try to increase revenues by charging for each instance of software, but it is likely that a per-machine model will eventually prevail.

http://www.xensource.com/
http://www.intel.com/technology/computing/vptech/
http://www.amd.com/us-en/Weblets/0,,7832_8366_7595~96162,00.html
http://www.vmware.com/

Software and internet news

DfES publishes E-Strategy

The DfES has published "Harnessing Technology: Transforming Learning and Children's Services" which sets out the Governments vision for ICT in education. It sets out six priorities: an integrated online information service for all citizens; integrated online personal support for children and learners; a collaborative approach to personalised learning activities; a good quality ICT training and support package for practitioners; a leadership and development package for organisational capability in ICT; and a common digital infrastructure to support transformation and reform. For more information and to download the report see:
http://www.dfes.gov.uk/publications/e-strategy/

Becta's Advice to content providers and developers

The new content providers' section of the Becta website is now available.
In the new section, you'll find articles about topics such as funding sources, designing for electronic whiteboards and sources of information about the schools and Learning and Skills sectors. You'll also be able to subscribe to a free monthly email bulletin and join online discussions. Other articles coming soon will cover accessibility, learning styles, interface design, networked learning and a feedback report from the commercial content providers' consultation day held in January. To find out more, visit:
http://www.becta.org.uk/industry/content

64-bit Windows launched, Apple launches Tiger OS

Microsoft has launched the awaited 64-bit versions of Windows XP and Server 2003. The Windows XP Professional/Server 2003 x64 Edition operating systems will work with the new 64-bit x86 architecture processors from AMD and Intel. The processors can also run conventional 32-bit applications natively. 64-bit computers can address vast amounts of memory as well as process larger integers. Current 32-bit computers are limited to 4GB of memory. There are few 64-bit applications for the desktop and the technology is likely to be mainly used in servers (for database and web servers) and workstations (for CAD, video and 3D). However, the release, coupled with the wide availability of 64-bit processors should help move 64-bit computing to the mainstream and encourage developers to produce applications and hardware drivers to take advantage of the systems. Microsoft is offering a free, time-limited upgrade for users with 64-bit processors currently running 32-bit Windows XP Professional. Apple has launched OS X Tiger (10.4), which also supports 64-bit and includes integrated desktop search called "Spotlight" amongst other features.
In other news, Microsoft has also announced that it will support Linux in future editions of Virtual Server 2005.
http://www.microsoft.com/windowsserver2003/64bit/x64/overview.mspx
http://www.apple.com/

Government security alerting service

The Government has launched a new website aimed at home and small business users to provide easy to understand information and advice on IT security. The ITsafe website also offers a free e-mail and text message alerting service informing users of major security threats.
http://www.itsafe.gov.uk/
In a separate announcement, several major vendors including Microsoft, Cisco, Qualys and Symantec have created a common standard to describe the severity of security alerts called Common Vulnerability Scoring System (CVSS). It is intended to help system administrators prioritise the security updates and measures that they apply. Qualys will be the first company to publish alerts the system in information it provides to the SANS Institute newsletters.
http://www.newscientist.com/article.ns?id=dn7040

Microsoft to launch combined update service

At the recent RSA Conference in San Francisco, Microsoft announced that it has begun testing Microsoft Update for release later this year. Microsoft Update will offer users the ability to update several Microsoft applications from one place. The service will allow users of Windows XP, Windows

2000 and Windows Server 2003 to update their operating systems, Office applications, SQL Server and Exchange e-mail systems. Other applications may also be added to the service. Users will still have the choice of automatic or manual installs.
http://software.silicon.com/security/0,39024655,39128937,00.htm

Report reveals UK internet user attitudes

Recent research from MORI contained in the report Understanding the Audience, reveals the attitudes and perceptions of online users in the UK. The research was commissioned by the Common Information Environment Group. Not surprisingly the study found that information from museums, libraries and archives was considered more trust worthy than that found on commercial sites. 92% of people surveyed said that reliability was important and 54% use the internet as their preferred information source. 80% of current internet users mainly go online at home and only 3% use mobile phones as their preferred access method. In addition the report found that 83% see the internet as an important learning tool with 40% of those online having used the internet for their own education and 25% to help their children. A recent NFER study of English secondary school pupils found that 77% use the internet for homework, 52% for IM, 36% for shopping and 29% for chat rooms. 12% admitted to using the internet to access adult sites.
http://www.common-info.org.uk/audienceresearch.shtml
http://www.nfer.ac.uk/research/downloads/RR626.pdf

CompTIA recommends use of four passwords

The Computer Technology Industry Association (CompTIA) has warned users over password use. Users should have multiple passwords for different uses to limit the risk of compromises. The organisation sees human error as one of the greatest security threats. CompTIA recommends the use of four passwords: one simple password for ordinary websites; a more secure alphanumeric password for online transactions; a very secure password including a mixture of upper/lower case characters, numbers and punctuation marks for online banking; and finally a separate work/organisation password. Passwords are seen as one of the weak points in security and many organisations and vendors are looking at alternatives including token based and biometric systems.
http://www.vnunet.com/news/1161436

UK Creative Commons licenses

Creative Commons is a licensing system that allows users the flexibility to decide what can be done with the content they create. It allows creators to maintain copyright while allowing others to copy and distribute the work as long as credit is given. Creators can also allow users to modify work if they wish. The original US licences are now being adapted for use in countries around the world, including the UK. Creative Commons is of particular interest to the public sector, not-for-profit organisations, education, museums, galleries, public broadcasters and anyone not interested in commercial gain from their work. Content published on the internet can be tagged with a Creative Commons licence allowing it to be searched for. Yahoo is now supporting this feature.
http://creativecommons.org/
http://creativecommons.org/worldwide/uk/
http://search.yahoo.com/cc

Open Office 2 Beta launched

A snapshot build of the next version of the open source office application Open Office is now available for free download. This is a beta version that is still in development. It includes many changes to the user interface and functionality of the applications that are detailed on the website: http://marketing.openoffice.org/2.0/featureguide.html.
It also includes a stand alone database application which should increase its appeal to organisations currently using MS Access. There is increasing interest in open source applications in the education sector, primarily to reduce licence costs.
http://download.openoffice.org/680/index.html

Instant Messaging (IM) attacks increase

According to the recently created IMLogic Threat Centre IM and P2P malicious exploits are increasing 50% per month. Several IM worms have been spreading recently, mostly targeting Microsoft products. Research for the Pew Internet and American Life Project has found that 30% of US IM users have received IM Spam, known as SPIM. IM is increasingly popular, but can compromise networks and systems. IM applications can be easily installed by users and can bypass many firewalls. IM can spread worms and viruses, allow attackers remote access to systems, and disclose sensitive data. Instant messages are not usually encrypted, and authentication is weak allowing impersonation of users. Currently only a minority of organisations control and monitor IM.
http://www.imlogic.com/im_threat_center/index.asp

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