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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. TechNews focuses on emerging technologies and other technology news. Please navigate the Newsletter by clicking on the items within the table of contents below.

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Networking and Wireless

Analysis: Power over Ethernet (PoE)

Power over Ethernet (PoE) is a network technology for sending DC power over data cabling to provide power for networked devices. Proprietary power over Ethernet technology has been available for some time, but the IEEE ratified a PoE standard 802.3af in June 2003, since when the technology has been becoming more common in business networks. This has been driven by the growth in wireless local area networks (WLANs) and Voice over IP (VoIP), which can both benefit from PoE. PoE also has potential beyond these two key uses and has been characterised as “the first global standard for power distribution”.

The Power over Ethernet standard allows for 13W of power to be delivered to individual devices. This allows it to power devices such as wireless access points, VoIP phones, cameras, door entry systems, sensors, smart signs, print servers and lighting controls. Although there are an increasing number of devices that support PoE, they remain niche products. Wireless access points and VoIP handsets are expected to remain the major applications of PoE for some time.

The inclusion of PoE is one of the features that distinguish enterprise class wireless access points from less expensive consumer models. PoE allows for greater flexibility in LAN deployment as infrastructure can be installed in places away from power outlets and easily moved to meet requirements. This can help reduce the reliance on WLAN surveys. Another key consideration is potential cost savings of up to 50% on installation and management. Using PoE devices reduces the financial and time costs of employing a qualified electrician to install mains sockets and cabling. The reduction in wiring and lack of mains voltage can also improve safety. Using SNMP (Simple Network Management Protocol) PoE devices can be centrally controlled and powered down or rebooted from a single interface. By employing uninterruptible power supplies (UPS) with the PoE switches extra reliability and redundancy can also be added to systems.

Although PoE can be used over existing fast Ethernet Cat 5 and Cat 6 cabling (currently not gigabit Ethernet), the costs of mid-span PoE expansion modules, UPS, power supply units (PSU) and air conditioning to cope with the extra heat are not insignificant. However, many manufacturers such as Cisco, PowerDsine and Nortel are now incorporating PoE into switches. The development of second generation PoE chips has reduced costs by 25%.

Some analysts expect PoE to become a standard feature in enterprise switches over the next two years. Infonetics Research studies suggest that organisations will double the percentage of switches supporting advanced technologies like PoE and IPv6 between now and 2006. Manufacturers are differentiating their products with the addition of proprietary add-ons, such as the ability to prioritise power to certain ports, or to match the power delivered to the exact needs of individual devices. These manufacturer specific management features are not part of the 802.3af standard and are not interoperable with each other.

There is also a draft proposal before the IEEE to create a new standard for high-PoE (PoE Plus), which would double the power available, enabling notebooks and computer displays to be powered over data cabling. Currently higher power PoE is only available through non-standard proprietary solutions.

PoE is still emerging as an enterprise technology, but is something that needs to be considered when planning new/replacement infrastructure and the deployment of WLAN and VoIP solutions. The cost of implementing PoE remains a barrier, although prices should continue to fall.

http://dsp.twothirds.co.uk/poet_homepage1.html#
<http://www.gii.co.jp/sample/pdf/vd20461.pdf>

Networking and Wireless News

Ofcom review of UK telecommunications sector

Following the second stage of its Strategic Review of Telecommunications, the UK communications regulator, Ofcom, has published its proposals for the industry. The report has not called for the break up of British Telecom's Retail and Wholesale arms, but has called for BT to provide equality of access to its competitors wishing to provide broadband and fixed line services. The report says BT needs to make "behavioural and organisational changes" in order to achieve this. The review will be the basis for changes in the regulatory framework next year. Ofcom wants to foster a competitive, open market to drive innovation as the industry moves from the traditional switched network to new digital services.

http://www.ofcom.org.uk/media_office/latest_news/nr20041118

Broadband growth

The latest figures from Ofcom show that there are over 5.3 million broadband connections in the UK with over 50 000 connections added each week. The UK has 7.5 broadband connections per 100 people, ahead of Germany, Spain, Portugal and Italy, but behind France, Holland and many Scandinavian countries. Local Loop Unbundling (LLU), the process in which telecom companies install their own equipment in BT exchanges to offer services direct to homes, is starting to grow. This follows price cuts of 70% earlier in the year. There are currently only a small number of unbundled subscribers, but several companies are investing in the process and analysts expect strong growth next year. New services such as Voice over IP (VoIP) and broadband TV are expected to drive growth. 2Mbps ADSL is now becoming available over BT lines and companies with unbundled services offer connections up to 8Mbps.

http://www.ofcom.org.uk/research/industry_market_research/m_i_index/cm/qu_10_2004/?a=87101

Vodafone launches commercial 3G services

Vodafone launched its third generation (3G) services and handsets on November 10th. 3G networks enable faster downloads and new services such as video calls. 3G currently offers maximum speeds of 384Kbps. Vodafone is the first of the major networks to launch 3G phones ("Three" launched the first UK 3G network in March 2003) and Orange is expected to follow suit shortly. All the major operators launched 3G data cards for laptops earlier this year. Having paid billions of pounds for 3G licences the operators are hoping new 3G services will prove popular. However, it is not clear whether the public will pay for and use many of the new offerings. 3G also offers more capacity for voice and many analysts expect prices of calls to fall. 3G networks currently only cover about 60% of the population, mainly in major cities. However, under the terms of the 3G licences operators have to provide coverage to 80% of the population by 2007.

<http://www.vodafone-i.co.uk/live3g/home.html>

Research says WiMAX will be complementary to Wi-Fi

A recent study by ABI Research suggests that WiMAX and Wi-Fi will coexist for some time. WiMAX wireless technologies based on the IEEE 802.16 standard will offer high speed broadband access (72Mbps max) over a wide area (50km max). The initial implementation, expected to appear next year, is for fixed wireless access to business and consumer premises. WiMAX is expected to be used as a back-haul technology for Wi-Fi hotspots and as a competitor to Digital Subscriber Line (DSL) services. It is not until the mobile version of the standard (802.16e) is ratified that WiMAX will begin to compete with Wi-Fi and even then the two technologies are likely to remain complementary. ABI Research expects WiMAX to start appearing in notebook computers in 2006/7.

http://searchnetworking.techtarget.com/qna/0,289202,sid7_gci1020550,00.html
<http://www.abiresearch.com/home.jsp>

LGfL to offer broadband at home

The London Grid for Learning, which provides broadband for LEAs across London, is offering broadband access to the homes of schoolchildren. They offer a range of services at different speeds and prices, all of which provide secure, filtered access and online learning material. Parents are given a password to bypass the filtering if they desire. It is not clear if this kind of service will be offered in other parts of the country.

<http://www.lgflhome.net/>

Study predicts growth in Wireless LANs due to better security

A recent report from the Meta Group found that 30% of organisations will have implemented wireless LANs by the end of the year. This figure is expected to rise to 50% by 2006. The report highlights better wireless security provided by standards such as Wireless Protected Access (WPA) and WPA 2 as the key driver for the growth in WLAN deployment. However, the report also emphasises the need for additional security measures such as network monitoring.

<http://www.metagroup.com/us/displayArticle.do?oid=50103>

International agreements to allow Wi-Fi hotspot roaming

An industry group called the Wireless Broadband Alliance recently finalised technical protocols to allow roaming between wireless hotspots run by different companies.

Wi-Fi hotspots provide wireless internet access in public spaces such as hotels, airports, pubs and restaurants. Several major wireless hotspot operators, including BT and T-Mobile, have now signed deals to allow their subscribers to access Wi-Fi hotspots provided by other companies. This means that over 20 000 hotspots in 11 countries are now available to subscribers. Cross network roaming will be free until the end of the year, after which roaming fees may be charged. The move may encourage greater use of Wi-Fi hotspots, although analysts have said that prices will have to fall to encourage mass market take up. Research from InStat/MDR expects worldwide Wi-Fi hotspots to grow from 43,850 in 2003 to over 200, 000 by 2008.

<http://www.wirelessbroadbandalliance.com/news.101104.html>

<http://www.instat.com/press.asp?ID=1103&sku=IN0401289MU>

Wi-Fi Alliance clamps down on pre-standard "802.11n" equipment

The Wi-Fi Alliance, which oversees the testing and certification process for wireless equipment standards compliance, has warned vendors not to offer 802.11n equipment before the standard is ratified. The 802.11n standard is currently in development and will offer real world wireless LAN speeds of over 100Mbps. However, the standard is not expected to be finalised until 2006 and the Alliance wants to prevent the situation that occurred with 802.11g (54Mbps) when several vendors launched products early that they claimed met the unrated standard. Despite this, some vendors have already launched "n" products to the market. Analysts advise organisations not to use equipment that does not meet IEEE standards due to lack of interoperability and the risk of vendor lock in.

[http://www.wi-](http://www.wi-fi.org/OpenSection/ReleaseDisplay.asp?TID=5&ItemID=200&StrYear=2004&strmonth=10)

[fi.org/OpenSection/ReleaseDisplay.asp?TID=5&ItemID=200&StrYear=2004&strmonth=10](http://www.wi-fi.org/OpenSection/ReleaseDisplay.asp?TID=5&ItemID=200&StrYear=2004&strmonth=10)

VoWLAN and mobile phone convergence

The Wi-Fi Alliance has begun testing and certification of devices that combine 802.11 wireless local area network (WLAN) chips with mobile phone communications. The first devices tested include WLAN enabled mobile phones, PDAs and add-in cards. Devices that can use the mobile phone networks and offer voice over WLAN (VoWLAN) are expected to become increasingly popular. ABI Research expects these converged devices to be used in the enterprise first, but to become more common as chip prices fall. The Unlicensed Mobile Access (UMA) consortium has already approved a set of protocols for seamless roaming between mobile and Wi-Fi networks. Devices are expected to be able to use the most cost-effective and appropriate network connectivity available at any given time.

<http://www.abiresearch.com/abiprdisplay2.jsp?pressid=361>

[http://www.wi-](http://www.wi-fi.org/OpenSection/ReleaseDisplay.asp?TID=5&ItemID=203&StrYear=2004&strmonth=10)

[fi.org/OpenSection/ReleaseDisplay.asp?TID=5&ItemID=203&StrYear=2004&strmonth=10](http://www.wi-fi.org/OpenSection/ReleaseDisplay.asp?TID=5&ItemID=203&StrYear=2004&strmonth=10)

London borough offers services through digital television

Newham Borough Council has been running a trial scheme that lets residents access digital channels, the internet, email and a range of computer applications through an Internet Protocol TV (IPTV) set top box. The RegenTV project is being run in conjunction with IBM and has had 70% take up in the trial areas. The service also provides access to e-government services, interactive advice channels, community channels and ICT virtual learning programmes. The latest stage of the project is creating an open source product and service model. It is hoped that the service can help bridge the digital divide and foster community cohesion. The Government hopes other councils will use the technology and the product will be made available through GCAT and SCAT.

<http://www.localgov.gov.uk/page.cfm?pageid=839&Language=eng>

Multimedia

Analysis: Live TV on Mobiles

The idea of watching television on mobiles has been around for some years and some manufacturers in Japan and Korea have even produced models equipped with analogue TV receivers. More recently with the emergence of digital television, high speed networks, and more powerful handsets the idea has gained momentum and is seen by operators as one of the killer applications for third generation (3G) services that will help offset falling voice prices. There are several technical solutions for TV on mobile phones as well as different models for delivery of the service. All the major players are pilot testing the technology and services have already launched in some countries. However, as with video on other portable devices, the extent of demand for such services remains unclear.

There are two major ways of delivering TV to mobiles: over the cellular networks or digital broadcasts (terrestrial and satellite).

Some operators in the USA, Korea and Malaysia are already delivering content to users over cellular networks. However, these unicast solutions (delivering content individually to each device) are inefficient and take up a great deal of capacity. The Multimedia Broadcast/multicast Service (MBMS) standard is being overseen by 3GPP (3G Partnership Project) and allows unidirectional point to multipoint broadcasts over UMTS (3G) phone networks. Although this is more efficient and cheaper than unicasting, it will still involve a trade-off between voice and data capacity. MBMS should provide good coverage and integrating the technology into handsets is expected to be inexpensive. However, by the time the standard is ratified DVB-H (see below) is likely to have been launched.

In Europe, Digital Video Broadcast- Handheld (DVB-H), an adaptation of the digital terrestrial television standard (DVB-T), is likely to become the dominant solution. DVB-H is IP based and sends packets of data in bursts (time-slicing) allowing handsets to switch off the receivers in between times to preserve battery life. It also improves the robustness and reliability of transmissions for mobile devices, but remains compatible with DVB-T, so could be broadcast from the same multiplexes: <http://www.dvb.org/documents/white-papers/wp07.DVB-H.final.pdf>. DVB-H is currently being considered by ETSI (European Telecommunications Standards Institute) as a standard and is undergoing trials in several countries including, Germany, Finland, USA and the UK (O2, BT, NTL, Nokia). DVB-H solutions are likely to use the mobile phone network for interactivity, billing and for downloading some video clips. There are still technical and regulatory issues to overcome. Repeaters will have to be installed to provide coverage in buildings, the underground system and other areas where reception is poor, adding to the expense of setting up a DVB-H network.

Japan and Korea have adopted other standards: ISDB-T (Integrated Services Digital Broadcasting) and DMB (Digital Multimedia Broadcasting), which can be satellite or terrestrial. A joint Japanese/Korean consortium launched a satellite based DMB service in October 2004,

although mobile phones with DMB receivers have not yet been made available:
<http://www.mobaho.com/english/index.html>

Although operators believe that TV on mobiles will be a compelling service for users, there is currently little evidence to back this up. A recent study from Jupiter Research found that only 13% of Europeans were interested in mobile video. Sceptics have pointed to the fact that watching TV in public is not an attractive service for mobile users. They highlight the poor experience of watching video on small screens and lack of success of other portable video enabled devices. Even if video takes off as some analysts predict, early indications suggest that users on the go prefer video clips to live broadcasts. Clips can be downloaded, and watched at will. Users can pause, stop and skip video clips unlike live broadcasts that require direct attention for a set amount of time. Eventually digital video recorder (DVR) capabilities may be built into mobiles equipped with hard drives. Samsung recently launched a phone with a built-in 1.5GB hard drive and InStat/MDR estimate that by 2007 70 million hard drive equipped mobile phones could be sold annually.

Content and pricing are likely to be the keys to the success of TV on mobiles. In order to make people pay for content, which they may compare to the pricing of pay TV and DVD rental, it will need to provide added value (e.g. time sensitive content) or be inexpensive enough to use casually. Some analysts expect a mix of inexpensive/free broadcasts and premium downloads. Content is also being created or repurposed to suit the small screens and limited time of mobile users. News Corporation has created "mobisodes", cut down versions of TV dramas. Ofcom has mooted the possibility of setting up a public sector IPTV provider precisely to produce quality content for new devices and delivery methods. Trials of educational content over interactive digital television (IDTV) are taking place and this content could be adapted for mobile devices. In Japan, for example, the first mobile TV network includes English language lessons. The EU is also funding research into this area, which it sees as potentially enabling government services to be delivered to non-computer users: <http://www.brunel.ac.uk/instinct/>.

Momentum behind TV on mobiles is growing and it was a key theme at the recent CTIA (Cellular Telecommunications and Internet Association) Wireless IT and Entertainment Show in San Francisco. Nokia has stated its intention to launch TV enabled phones in 2006. Texas Instruments has recently announced the development of a single chip to enable TV reception on mobile devices over both the DVB-H and ISDB-T standards. They expect their "Hollywood" chip to be installed in 70% of mobiles in 3 years time. In the USA, Qualcomm has announced that it is to invest \$800 million in building a mobile TV network.

Once the delivery systems are set up the possibility of streaming rich interactive content to mobile phones, PDAs, laptops and vehicles has great potential. Whether users will find these services compelling enough to pay for or just consider them "a nice extra" remains to be seen.

Multimedia News

Concerns over cameraphones growing

The popularity and ubiquity of cameraphones has raised increasing concerns over invasion of privacy and inappropriate usage of the technology. Recently, Privacy International voiced concerns over cameraphones after a rise in the number of complaints about the technology. Privacy International is calling for manufacturers to add a visual warning, such as a flash, to indicate that a photograph is being taken. The Consumer Electronics Association (CEA) in the US recently published a cameraphone "code of conduct" and analysts have warned organisations to implement policies on cameraphone usage to avoid abuse of civil liberties, harassment and compromises of corporate security. Some companies, schools, gyms and swimming pools have banned cameraphone use. States are turning to legislation to tackle the problem. In the US, for example, the Video Voyeurism Prevention Act will attempt to restrict the places in which images can be taken.

http://www.ce.org/press_room/press_release_detail.asp?id=10610

[http://www.privacyinternational.org/article.shtml?cmd\[347\]=x-347-83756](http://www.privacyinternational.org/article.shtml?cmd[347]=x-347-83756)

Ofcom proposes new digital public service provider

As part of its review of Public Service Broadcasting, Ofcom has proposed the idea of a new public service “publisher” to develop content for delivery over digital television, broadband, mobile networks and networked Digital Video Recorders (DVRs). The service would not be a traditional TV station, but would develop about 3 hours of quality content a day and compete with other public service broadcasters. Ofcom believes a new service is necessary to “maintain and strengthen the quality of public service broadcasting in the UK”. As new digital TV transmission technologies such as broadband develop, there will be more opportunities to develop a range of content for delivery to diverse devices.

http://www.ofcom.org.uk/media_office/latest_news/nr_20041103

Adobe launch new raw digital photo format

Adobe Systems has announced a new raw digital photo format called the Digital Negative (DNG). While most consumer digital cameras store photographs in the JPEG format, high-end cameras are increasingly using the raw format, which saves all the data captured by the camera sensor offering better quality and more creative control in editing. However, different camera manufacturers use their own proprietary versions of the raw format resulting in photographs that cannot be handled by all photo applications. Adobe is offering the DNG specification free to manufacturers and application developers and hopes it will be adopted as a universal standard. A free DNG conversion tool can convert raw files from a variety of cameras into the new format, allowing them to be archived and reducing fears that files could become inaccessible in the future. In a related development Konica Minolta Photo Imaging, Fuji Photo Film and Eastman Kodak have announced The Picture Archiving and Sharing Standard (PASS) to help ensure future compatibility.

<http://www.adobe.com/products/dng/main.html>

http://konicaminolta.com/releases/2004/0927_01_01.html

BBC to make programmes available on-demand on the internet

At the recent Cal-IT Europe Forum in London, the BBC said it would soon launch an internet media player that would allow users to watch BBC programmes from the previous week. The BBC intends using peer-to-peer file sharing to reduce demands on its systems. This is seen as part of the trend of moving away from scheduled TV to viewers choosing what they watch and when they watch it. Video on Demand (VoD) services are growing with the spread of fast broadband connections. Personal Video Recorders (PVRs) like Sky+ and TiVo can record hours of television according to viewers’ requirements, which can then be watched at leisure.

<http://networks.silicon.com/broadband/0,39024661,39125742,00.htm>

<http://www.newmediazero.com/lo-fi/story.asp?id=243987>

IBM developing search tool for video and audio

IBM is developing a new search engine, codenamed Marvel that can automatically classify and archive audio and video files. Eventually a user will be able to search for specific scenes from thousands of hours of video. Current search engines rely on text manually appended to videos in order to retrieve them. As the amount of video and audio generated grows this technique is increasingly inadequate. Marvel indexes and searches on the actual images in a video and will first be offered to TV companies for archiving their footage. As storage becomes cheaper, the idea of “life recorders” that constantly capture images/video of a person’s daily activities has become more prevalent: <http://www.mydejaview.com/>. A quick and easy way to search this data will be important. Search is moving beyond text and video/audio search could greatly increase the information available on the internet. Marvel is not expected to be complete for 3-5 years.

<http://mp7.watson.ibm.com/marvel/>

PCI –Express Graphics cards for notebooks upgradeable

Nvidia and ATI have announced the launch of the first mobile PCI-Express graphics card for notebook computers. The Geforce Go 6800 and Mobility Radeon X600 use the new, faster PCI- Express interface that is set to replace AGP. The new cards not only bring notebook graphics closer to that of desktops, but are based on modular technologies that will enable the

cards to be upgraded in the future. Upgradeable graphics on notebooks will further reduce their differences with desktop machines and could help increase notebook sales.

http://www.nvidia.com/page/go_6800.html

<http://www.ati.com/products/mobilityradeonx600/specs.html>

Microsoft to make connecting imaging devices to PCs easier

At the recent Photokina trade show in Germany, Microsoft announced plans to extend its Media Transfer Protocol (MTP) to allow digital imaging devices such as cameras to connect to Windows XP PCs without the need for additional driver software. Microsoft will make MTP freely available to device manufacturers and Canon has already agreed to support it. If MTP receives wide industry support it should simplify the process of connecting cameras and other devices to PCs.

http://news.com.com/Microsoft+focuses+on+camera+connections/2100-1041_3-5388702.html?tag=cd.top

New Media Center operating system

Microsoft has launched an updated version of its Media Center operating system called Windows XP Media Center 2005. Windows Media Center is a version of Windows XP aimed at enabling the PC to become an entertainment hub for digital media. It has a second interface that can play DVDs, music, video clips, digital pictures or record television and be controlled via remote control. The updated version improves the interface and includes support for multiple TV cards enabling the PC to act as a digital video recorder (DVR). It incorporates CD/DVD burning and some support for high-definition video. An add-on unit, the Media Center Extender, allows users to stream content from their PCs to television sets. This is part of the drive by the computer industry to merge computers with consumer electronics and create the "digital living room". However, it remains unclear whether users will accept devices from computer manufacturers in a space dominated by single purpose consumer electronics.

<http://www.microsoft.com/windowsxp/mediacenter/default.aspx>

EU project to create personalised films

A 3-year EU funded project, New Media for a New Millennium (NM2), aims to enable users to personalise the TV/video they watch to their own tastes. Initially viewers will be able to influence a plot-line by SMS messaging, or be able to choose to watch different edits of a film. However, eventually the software developed by the project will let users create their own storylines and sets, resulting in a new media genre where the viewer is both consumer and producer. BT and several UK universities are involved in the project.

<http://www.ist-nm2.org/>

Blu-ray Camcorders could be launched next year

Sony, Matsushita (Panasonic) and Sharp plan to launch digital video cameras that record on Blu-ray optical discs, according to the *Nihon Keizai Shimbun*. Blu-ray is one of two main contenders for the next generation high-capacity optical discs that will eventually replace DVDs. The main rival to Blu-ray is HD-DVD backed by Toshiba, NEC and Sanyo. Standard Blu-ray discs are 12cm and can hold 25GB, but the cameras will use 8cm 16GB discs. The development of higher capacity optical discs is been driven by the switch to High Definition Television (HDTV). Both Blu-ray and HD-DVD recorders are now available, but it is too early to say which (if either) format will dominate.

<http://www.blu-ray.com/>

<http://www.cdinfo.com/Sections/News/Details.aspx?NewsId=10949>

Hardware

Analysis: BTX

Balanced Technology Extended (BTX), developed by Intel, is designed as the next generation desktop PC form factor (motherboard and chassis) and a replacement for current ATX (Advanced Technology Extended) designs. First proposed two years ago, BTX PCs have only

just begun to appear on the market (IBM, Gateway) and analysts predict it could take 3-4 years before widespread adoption. The BTX design is intended to address several issues including heat production, noise, system size and power distribution.

Computer components such as CPUs and graphics cards are running increasingly hot and current ATX PCs were not designed to cope with their heat dissipation and cooling requirements. The result has been the inclusion of more fans and consequently modern PCs doing demanding tasks can be extremely noisy.

As PC manufacturers increasingly look to place their products in the living room to act as entertainment hubs, this level of "white noise" is unacceptable. There is also more divergence in the design of PCs and some manufacturers, such as Intel, are looking at selling PCs for specific tasks. The popularity of space saving, small form factor (SFF) PCs and the contemporary emphasis on design have also encouraged the development of a smaller, more flexible PC chassis.

The BTX design places a large fan at the front of the PC to draw cool air through the case. The larger fans turn 40% slower than current designs helping to reduce noise. BTX also rearranges the layout of components on the motherboard to create an in-line air flow pattern with few obstructions and less turbulence. The case is divided into zones with the hottest components, starting with the CPU, at the front. The "thermal module" (fan and newly designed heatsink) covers the CPU and directs air in a controlled pattern. This should reduce the need for additional system fans, again reducing noise.

There are three sizes of BTX motherboard, BTX (325x266mm), microBTX (264x266mm) and picoBTX (203x266mm) and two case heights (Type I and Type II). Micro BTX is expected to be the biggest selling design. Even the smallest picoBTX chassis will be capable of using standard, high performance components, unlike current SFF PCs. BTX is also optimised for next generation interfaces such as PCI-Express and SATA.

Gateway, who have just released BTX PCs claim that the new design only adds \$30 to the cost of a system. Although Intel has just released two BTX motherboards the motherboard and case manufacturers in the Far East are not hurrying to build BTX systems. There have been BTX models on display at recent trade shows, but indications are that the majority of manufacturers do not see a fast change to the format. There will be significant costs in redesigning and retooling manufacturing processes that may add to the price of BTX PCs. If suppliers try to reduce ATX stock, this may result in lower prices for ATX PCs, slowing adoption further.

AMD is not supporting BTX at present and has stated it is waiting to see greater market adoption. However, AMD processors run at slower speeds than Intel's models and consequently produce less heat, lessening the need for the new design. The BTX design may also have to be re-engineered to accommodate AMD processors/memory controllers.

Most major PC manufacturers have not yet released plans for BTX and it is not clear how quickly the market will adopt the platform. BTX will not start appearing in any numbers until the second half of 2005. Buyers of PCs need to be aware of BTX, especially if considering small form factor PCs, which are currently based on proprietary designs. However, ATX designs are likely to remain dominant for several years with only a gradual switch over to BTX and it may be worth waiting for the technology to become more mature.

<http://www.intel.com/update/departments/desktop/dt04041.pdf>

Hardware news

Intel cancels 4GHz Pentium 4, shifts focus

Intel has cancelled plans for a 4GHz version of its "Prescott" Pentium 4 processor. The processor had been put back to the first quarter of 2005, but has now been dropped completely. Chip manufacturers have had problems with excessive heat and power

consumption in fast processors. Intel is now shifting its strategy to emphasise performance and functionality rather than clock speed. It has already renamed its range of processors to exclude gigahertz figures and is now concentrating on developing dual-core processors, which offer better performance at lower clock speeds. Intel will boost the performance of Pentium 4s next year with larger caches and a faster Front Side Bus (FSB) on some models. The processors will top out at 3.8GHz.

<http://www.techworld.com/opsys/news/index.cfm?NewsID=2426&email>
<http://www.intel.com/products/roadmap/index.htm>

EU tax on monitors could raise prices

A European ruling that came into force in the UK on October 1st could raise the cost of new LCD monitors. The ruling classifies monitors with Digital Visual Interface (DVI) connectors as TVs, which are subject to a 14% import tax. Prices of new LCD monitors imported from outside the EU could rise as a result. Alternatively, manufacturers may continue to use analogue VGA connectors, slowing the adoption of the newer digital interface.

http://www.hmce.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?_nfpb=true&pageLabel=pageHome_ShowContent&id=HMCE_PROD_010853&propertyType=document

Tablet PC Evaluation

The Open University is carrying out an evaluation of Tablet PCs in schools in England on behalf of Becta. Two reports are expected to be published in spring 2005:

- 1) A review of the literature relating to the use of Tablet PCs and of those Authorities and institutions trialling or investing in this technology
- 2) A report comprising a set of approximately 10 case studies on the use of Tablet PCs in schools

During the initial research phase of the project through to December 2004, the research team are particularly interested to know of existing pilot projects, implementations or case studies on the use of this technology in schools. For further information see:

<http://www.becta.org.uk/research/research.cfm?section=1&id=3357>

An updated technical briefing paper on the Tablet PC is available from the Becta website:
<http://www.becta.org.uk/technicalpapers>

AMD to launch inexpensive internet terminal

AMD has announced its intention to produce an inexpensive Personal Internet Communicator (PIC). This is part of AMD's "50x15" project that aims to provide 50% of the world's population with internet access and basic computer capabilities by 2015. AMD will partner with other organisations to provide the devices to regions with large numbers of "first time technology users". It is unclear whether they will eventually become available in more established markets like Europe to help tackle the digital divide. The Windows machines are based on AMD's Geode GX500 processor, have a 10GB hard disk, 128MB RAM, and a modem. They run a browser, e-mail, word processor, spreadsheet and image viewer. The PIC is expected to cost \$185 without a monitor.

http://www.amd.com/us-en/Weblets/0..7832_12095_12096.00.html

New alliance to tackle digital divide

Following a recent Government report called Enabling a Digitally United Kingdom, which found that 48% of adults are "digitally disengaged"; a new alliance has been formed to tackle the problem. The Alliance for Digital Inclusion (ADI) hopes to increase the take up of the internet and other technologies. The alliance is made up of the charity Citizens Online, Microsoft, Intel, BT, Cisco, IBM, T-Mobile and AOL. It intends to target those from disadvantaged socio-economic groups, the elderly, the unemployed and disabled.

<http://www.citizenonline.org.uk/adi>

The Government report is available here:

<http://www.cabinetoffice.gov.uk/reports/digital/index.asp>

Memory Card capacity reaches 8GB

Sandisk has released Compact Flash memory cards with a capacity of 8GB. Capacities and read/write speeds of memory cards and USB memory keys have been increasing, but still

remain far below hard disk specifications. As capacities have increased per MB prices have fallen, but again cannot yet compete with hard disks. Demand for storage in digital cameras, PDAs and mobiles is growing as more digital content such as photos, music and video is stored on the devices. However, it seems likely that miniature hard disks will remain more competitive for some time. The first PDA and mobile phone with built-in hard drives have recently been launched.

<http://www.sandisk.com/pressrelease/20041109.htm>

PC sales forecasts

Figures from analysts IDC show that sales of PCs have been extremely strong in the first half of 2004. However, the strong growth is expected to slow through 2005. Most of the demand is coming from organisations replacing their existing equipment rather than from new growth. Dell and HP lead the market with around 30% share between them. Sales of notebooks have been particularly strong in Europe, with Canalys reporting a 28% increase in the third quarter of 2004 over the same period last year.

<http://www.canalys.com/pr/2004/r2004101.htm>

http://www.idc.com/getdoc.jsp?containerId=pr2004_10_16_135807

Mobile phone sales figures and forecasts

Research from the ARC group suggests that worldwide mobile phone sales will rise 16% in 2004 to reach 562 million. Sales of smartphones are expected to grow helped by an increase in data services over new technologies such as 3G. ARC expect a third of all handsets to be 3G enabled by 2009. Sales of WLAN enabled phones are expected to grow from 1.27 million units in 2005 to 18.75 million in 2009.

http://www.arcgroup.com/future_mobile_handsets_2004&marlinsource=PDChompagearc&ST=SEO

Chip implant enables mind control of computers

A company called Cyberkinetics has developed a chip that can be implanted into a human brain to allow motor control signals to send commands to a computer. In clinical trials the chip was implanted into the brain of a quadriplegic allowing him to control a cursor on a computer screen. It is hoped that this kind of technology will help disabled people in the future, but is still some way from commercialisation.

<http://www.cyberkineticsinc.com/braingate.htm>

Swedish researchers find mobile phone tumour risk

Researchers at the Institute of Environmental Medicine at Karolinska Institutet in Sweden have published a report that suggests that long term mobile phone users are almost twice as likely to develop benign tumours called acoustic neuroma (AN) on the side of the head. The research, which is part of the World Health Organisation's Interphone project, looked at a ten year period and therefore covered use of analogue phones as well as GSM. This means it is not possible to judge whether the results are valid for users who have only been exposed to GSM signals. No increased risk was found for less than 10 years mobile phone use. In 2000 the Government's Independent Expert Group on mobile Phones funded concluded that there was no conclusive evidence of a health risk from mobile phones, but that further research was needed. All mobile phones sold in the UK meet international guidelines on RF radiation.

<http://www.imm.ki.se/PDF/Press%20release%20Oct%2013%202004.pdf>

<http://www.who.int/peh-emf/project/intorg/en/index1.html>

<http://www.iegmp.org.uk/>

Software and Internet

Analysis: Alternative browsers

Microsoft's Internet Explorer (IE) dominates web browsing around the world. However, due to security problems, lack of development and poor support for standards, some users have been

turning to alternative browsers, which have been gaining momentum in recent months. However, it remains to be seen whether they can challenge IE's dominance.

Well publicised security problems with IE are one of the key reasons for users to switch browsers. In June the US based Computer Emergency Readiness Team (CERT) advised users that switching to alternative browsers was one of several security measures users should consider. This advice is seen as having contributed to the first drop in market share for Internet Explorer since it won the "browser wars" with Netscape. A spokesman from the German Federal Office for Information Security (BSI) also recently advised users to switch from IE to alternative browsers such as Mozilla and Opera due to security concerns.

Figures from WebSideStory suggest that IE share fell from 95.7% to 94.73% between June and July 2004. This trend has continued with IE dropping to 92.9% by the end of October. Mozilla based browsers have been the main beneficiary rising to over 6% market share. Other browsers such as Opera and Apple's Safari account for only 1%. The open source, cross-platform Mozilla Firefox browser has raised its profile over recent months. It has been advocated by many commentators and has received positive reviews in the media. 8 million copies of the pre-release versions of Firefox have been downloaded. Firefox released version 1.0 on November 9 and it has already broken its download targets. It is aiming to achieve 10% market share by the end of 2005.

Although, some argue that IE is inherently insecure because of its integration with the operating system and its ability to run Active X commands and VB Script, it is also a victim of its own success. Writers of malicious code inevitably target the most widespread browser. Other browsers are certainly not immune from security problems and Mozilla recently patched 10 security flaws in its own code. As the profile of alternative browsers rises, more attacks may become evident. XP Service Pack 2 (SP2) addressed many security concerns with Windows and Internet Explorer. However, about half of IE users are not running XP and therefore cannot take advantage of the improvements delivered by SP2.

One of the major criticisms of IE has been the lack of development of the browser, and poor support for standards. Last year Microsoft announced that they would not release any more stand alone browsers instead linking upgrades to new versions of the Windows operating system. With no major upgrade to Internet Explorer since August 2001, many have criticised the stagnation of browser development by the dominant player. Some developers have criticised IE for not being fully compliant with standards, in particular for poor support of Cascading Style Sheets (CSS).

Alternative browsers, such as Firefox, include standard features like pop-up blockers and tabbed browsing to avoid having to open multiple copies of the application. They can also include integrated multiple search tools and RSS feeds as well as protection against phishing attacks. Although XP SP2 did introduce a pop-up blocker and improved security, IE is still considered less feature rich than its competitors. Many hope that increased competition will spur Microsoft to develop their browser further. Microsoft recently indicated that new features could be released through IE's add-on facility.

The majority of websites are created and tested with IE in mind. Support for alternative browsers is patchy. Although, browsers such as Firefox comply with W3C (World Wide Web Consortium) standards, many web authors take advantage of features and multimedia components in IE that will not render properly in other browsers.

However, despite the fact that a limited number of individuals are switching to other browsers this is not the case for the majority of organisations. Moving to an alternative browser on networked clients needs careful management. Due to its tight integration with the operating system IE cannot easily be removed. Many organisations have applications and services that are designed to work with IE and could have problems with alternatives. Also, some Microsoft services such as Windows Update and features in Outlook are limited to IE.

It seems likely that if alternative browsers became a real threat then Microsoft has the resources and ability to react. The fact that they currently seem willing to wait until 2006 before releasing their next browser suggests that the small gains made by IE competitors are not yet seen as significant.

Some analysts see the internet, email, and web enabled applications as competitors to Microsoft Windows. Microsoft is expected to integrate its next browser even more fully with its new operating system, codenamed Longhorn. Microsoft's XAML (Extensible Application Markup Language) will enable applications to interact with the web directly, avoiding the traditional browser all together in many cases. This tight integration could reduce the use of alternative browsers on the desktop.

Mobile devices and fast wireless services are expected to grow considerably over the next decade. Browsers such as Opera, which have a small footprint, are attractive to mobile device manufacturers. Nokia has recently signed a deal with Mozilla to develop its "Minimo" browser for mobile phones. The mobile market is enormous: in 2003 over 500 million mobile phones were sold compared to 155 million PCs. Alternative browsers will find it difficult to challenge IE on the desktop, but mobile devices will increasingly be used to access the internet and alternative browsers may become prevalent in this area.

<http://www.microsoft.com/windows/ie/default.msp>

<http://www.mozilla.org>

<http://www.opera.com/>

Software and Internet News

Open Source in public sector report published

The Office of Government Commerce (OGC) has published a report on open source software in the public sector, following year long proof of concept trials in various organisations. The report is largely positive saying: "Open Source software is a viable and credible alternative to proprietary software for infrastructure implementations, and for meeting the requirements of the majority of desktop users". However, it raises issues such as lack of functionality in applications, lack of open source equivalents of some proprietary business applications, interoperability, training and migration costs.

<http://www.ogc.gov.uk/index.asp?docid=2190#finalreport>

Microsoft to licence dual-core processors as one

Microsoft has announced that it intends to consider multicore processors as single chips for licensing. Multicore chips that have more than one processor core on a single die offer greater performance at lower speeds and than conventional processors. They are seen as the future of computing and both Intel and AMD will launch dual-core processors next year. Software, particularly on servers, is often licensed on a per processor model. This could prove a barrier to the take-up of multi-core processors. Companies have different approaches to this issue and Microsoft's lead may encourage others to follow suit.

<http://www.internetnews.com/bus-news/article.php/3423971>

Windows XP "Release 2" due

At the Gartner Symposium in October, Microsoft CEO Steve Ballmer said that they would launch a second version of XP incorporating several updates before the release of the next Windows operating system, codenamed Longhorn, expected in 2006. However, no definite dates were revealed.

http://www4.tomshardware.com/hardnews/20041023_181154.html

Google launches desktop search tool, rivals to follow suit

Google has launched a free PC desktop search application that should speed up finding documents, emails and visited web pages. The application indexes files on a hard drive and

integrates with the Google search engine offering users results from the desktop as well as the web. Although it does not send personal information to Google it has raised concerns over privacy and the security of information on PCs. Search is becoming a key battle ground between major players such as Microsoft, Google, Yahoo and AOL. Microsoft has said it will launch a desktop search tool by the end of the year and AOL and Yahoo are also working on versions. Niche companies like X1, Copernic, and Blinkx offer desktop search software, but the major players see search as important to maintaining their market presence and customer loyalty.

<http://desktop.google.com/>

Google has also launched a search engine that concentrates on academic, scientific and technical publications. It can retrieve results from subscription journals, but users may have to pay to see the full article/publication.

<http://scholar.google.com>

Microsoft launches its own search engine

Microsoft has launched a beta version of its new search site using its own search engine. Microsoft claims that the sites indexes over 5 billion pages. However, Google quickly announced that their search engine now indexes over 8 billion pages. Microsoft has invested \$100 million in developing search technologies and admits that it has been slow in entering this key market. Increasing competition between the major search engines is seen as positive and a way of driving innovation and preventing the reliance on one company for web search.

<http://beta.search.msn.com/>

Microsoft to give 3 days warning of updates

Microsoft is to give 3 days warning of upcoming security updates/patches for its software. Patching has become a major issue for organisations running networks of Windows computers and Microsoft has already moved to a fixed "patch" day each month to help network administrators plan their deployments. From December users will be able to sign up for free email alerts giving information on upcoming patches three days in advance. Patches will continue to be issued on the second Tuesday of every month.

<http://www.microsoft.com/technet/security/bulletin/advance.msp>

<http://www.microsoft.com/technet/security/default.msp>

Windows overtakes Palm on PDAs

A recent study from analysts Gartner reports that Windows operating systems have overtaken Palm in the PDA market. In the third quarter of 2004 Windows was installed on 48.1% of PDAs sold whereas Palm OS had a 29.8% share. Overall PDA sales are expected to be 11.9 million in 2004

<http://www.gartner.com>

<http://www.technewsworld.com/story/38144.html>

Desktop Linux sales figures may hide software piracy

A recent report by analysts Gartner claims that many of the PCs sold in emerging markets will eventually run pirated copies of Windows. The growth of Linux on the desktop is an issue that is particularly relevant to both business and the public sector. Figures from emerging markets such as Eastern Europe, South America, and Asia suggest that sales are growing strongly. However, Gartner's research suggests that 80% of PCs sold with Linux in these markets will eventually use pirated copies of Windows. This implies that using Linux is a way of reducing the costs of PCs in these regions. Worldwide, Linux accounts for around 5% of the operating systems sold with PCs, but this figure is much higher in emerging markets. Microsoft's recent introduction of cut-down, inexpensive versions of Windows software in emerging markets has been seen by many analysts as a response to software piracy and competition from Linux. The full report can be purchased from Gartner.

<http://pcworld.about.com/news/Sep302004id117999.htm>

Schools get access to research telescopes

The Dill Faulkes Educational Trust has funded the construction of two robotically controlled research grade telescopes in Hawaii and Australia. They are used to study galaxies and track near earth objects (NEOs) such as asteroids. Schools can access and control the telescopes over the internet and educational materials and research projects have been developed in conjunction with universities to meet the needs of the national curriculum. A basic package is available for £160.

<http://www.faulkes-telescope.com/index.htm>

Historical directories online

The University of Leicester has put digital images of local and trade directories of England and Wales from 1750-1919 online. The website uses a fuzzy-logic search engine developed by ZyLab, which can search the images for specific words. The lottery funded website is free to use and is expected to help historians, genealogists, and other researchers.

<http://www.historicaldirectories.org/hd/index.asp>

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