UNIX® NEWS

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AT&T RELEASES UNIX SYSTEM V.4 - WITH REDUCED LICENCE FEE

AT&T Co's Unix Software Operation began licensing the latest release of Unix - Unix System V release 4.0 last month. At $100,000 the new version is $27,000 cheaper than System V/386 3.2. The basic system software components are the Posix compliant System V 4.0 base system with the Virtual File System and Streams, and kernel extensions, including virtual memory, and utilities. The new version also includes, as add-ons, Network File System and X/11 News from Sun Microsystems, and products from Lachman Associates that previously had to be licensed separately. Other features are Remote File Sharing, Internet Services, Open Look, TCP/IP, the XWIN graphical windowing system and XVIEW/Typescaler. And in order to encourage vendors to offer products compliant with X/Open Group Ltd guidelines, a standard sublicensing option is offered under which vendors are elegible for reduced fees if they conform to the Portability Guide Issue 3, implement and conform to AT&T Streams, and provide device driver interfaces. Minimum fees are $60 for a single user version, $170 for a multiuser system, as for System V/386 3.2, the maximum per copy fee is $10,000. The percopy fees will be either 1% of the price of the basic entry model of the computer or 10% of the list price the vendor charges for a sublicensed product based on Unix System V.4. The pricing and new rules were set after discussions with the Unix International Inc club.

DEC MOVES ON UP WITH TOP-END VAX 9000S

Under the shadow of Tower Bridge DEC duly unveiled its largest systems - " so far" - in London last month, and set its own sights on capturing 10% of the UK mainframe "within two years." The VAX Series 9000 comes in five models - each supporting optional vector processing - built around DEC's air-cooled, ECL, Multi-Chip Unit, which packs MCA-III and STRAM chips into a 4" by 4" unit connected by a polymide-copper High Density Signal Carrier. First out next spring, with an £850,000 price tag is the non-expandable single processor VAX 9000 Model 210 running VMS and Ultrix which like the other models, comes with up to 512Mb RAM. The Model 210VP, with vector processing, is rated at 125 MFLOPS. The multiprocessor VAX 9000 Models 410, 420, 430 and 440, come with 1, 2, 3 and 4 processors respectively - the Model 440 is rated at 100 MIPS - will be out next July, and go from £1,300,000 up to £3,250,000. Their vector processing equivalents, for floating point intensive computation, are rated at from 125 to 500 MFLOPS. A new version of the VMS operating system supporting vector processing is needed for all the machines, with the exception of the the Model 210 - initial 210 customers look like being beta test sites for the new VMS release - the finished version will be out in July. The Series 9000 Models 400s will also run the multi-processing version of Ultrix that DEC is currently working on, which is promised in a couple of months. Other new software includes a revamped Fortran compiler. Also on offer from July will be vector processing versions of the VAX 6000 Series - one vector processor is available on Models 410, 430 and 440, two on the 420. Performance goes from 45 to 90 MFLOPS, prices start at £22,300.

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MIPS UPS THE STAKES WITH TOP-END SYSTEM...

Mips Computer Systems has raised the Risc stakes for the rest of the Unix world yet another notch with the announcement of a top-end machine built around an ECL implementation of a new generation 32 bit processor architecture, the R6000 chip set. Configured around a single R6000, the RC6280 data server, which ships in the first quarter of next year, will deliver 55 Mips and 13.3 MFLOPS performance for around $180,000 - £200,000 in the UK - and support between 400 and 500 users. A basic configuration comes with 32Mb memory - expandable to 256Mb - 655Mb disk, SCSI controller, Ethernet, TCP/IP, NFS and RISCcomm-DN, Mips implementation of DECnet - see page 8. Control Data has signed up for the R6280 OEM and will market the new machine against the DEC VAX 9000 under its own name.

...BASED ON THE R6000 RISC PROCESSOR...

The emitter couple logic - ECL - three chip VSLI set comprises the R6000 processor, clocked at 66.7MHz, expected to go to 80MHz and 65 MIPS by the middle of next year, the R6010 floating point controller chip, and R6020 bus chip. Features include an on-chip memory management unit, two level cache, and separate instruction and data caches. is supported by an I/O sub-system capable of providing 200Mb per second culminative I/O bandwidth. On the RC6280 box, this is spread across multiple independent VME buses. Like the R2000 and R3000, initial versions of the R6000 are being manufactured for Mips by Bipolar Integrated Technology, though Sony and NEC are to start delivering the parts shortly.

...AS BULL AND NIXDORF SIGN UP

Market recognition of Mips Computer Systems' top of the league position in the RISC performance stakes - see page 6 - has arrived swiftly, with both Bull SA and Nixdorf AG announcing that their RISC future lies with the MIPS R-Series RISC family. Under the OEM deal with Groupe Bull, said to be worth an initial $50m, Mips has agreed to supply not only its R Series of processors, but complete systems, compiler software and its implementation of the Unix operating system. The agreement comes in two parts, the first being a ten year commitment by Bull for Mips' R3000 architecture - but thought not to include the older R2000 chip - the second is a three year deal for Mips' future technology, based on the forthcoming R6000 chip. Nixdorf Computer AG's agreement with Mips runs for five years and should bring Mips $35m in business over its term. The agreement, covering products, operating system, compilers and manufacturing rights to some unspecified Mips products, will enable the Paderborner to extend its Targon Unix line upwards. The first RISC machines from Nixdorf could be revealed as early as next year according to the firm, suggesting that Nixdorf will follow its OEM supplier Pyramid Technology with low-end RISC systems from Mips' Systems Division.

SHOWCASE

OPEN SYSTEMS CONNECTION MAKES STRONG SHOWING AT InterOP '89

The InterOp '89 technical conference and exhibition has traditionally been a premier forum for the TCP/IP user and vendor community. Not this year. In a sign of the times that TCP/IP's days are (eventually) numbered, it was the rival Open Systems Interconnection camp that drew all the attention. A group of 13 systems manufacturers, communications vendors, and other interested parties used last month's InterOP '89 - at the San Jose, California Convention Centre - to prove that OSI is real. Most companies admit the OSI market has been slow to take off, a fact they attribute to its relative immaturity when compared to TCP/IP, and that some important specifications are as yet undefined. Still, they agreed the biggest potential customer for OSI gear now is the US federal government. With the US federal government now pushing the GOSIP specification - based in large part on OSI - they say there's little doubt OSI will take off soon. Some even claim it should achieve dominance over TCP/IP in five years.

SunNET Support

Nineteen communications vendors used the InterOp '89 show to disclose their support for Sun Microsystems' SunNet Manager, a network management solution or multivendor, distributed computing environments that the workstation manufacturer hopes will become an industry standard. Those supporting SunNET Manager at the InterOp show with new products include: BICC Data Networks, which introduced a SunNET interface to 802.1; Brixton Systems, which introduced a SunNet interface to IBM's NetView; CMC, with an interface to SNMP; Computer Network Technology, which promised to integrate SunNet into its ChannelLink high-speed extended networking products; and Independence Technologies Inc, which promised to use SunNet Manager to monitor hardware and software elements in its transaction processing systems.

PROJECT MANAGEMENT

The 1989 International Project Management Exhibition took place at the Connaught Rooms in London's Covent Garden - the dearth of Unix applications around the stands showed how little confidence many software developers still have in the Unix operating system, and how much Unix supporters still have to achieve in getting their message across. Most of the project management applications on show were PC and VAX based - those interested in developing Unix versions of their products generally felt that the work needed to port to all the different colours and flavours of Unix that they still see out in the marketplace amounted to more time and money than it is worth.

Nevertheless some were out there waving the Unix flag. Welcome Software Technology International, London SE1, was demonstrating its Open Plan project management system which runs on PCs, VAXes, across LANs and now on Unix V.3.2 as well as DECstations and the ICL DRS 300 system, with a Macintosh version planned for next April. On PCs it integrates with dBase III, under Unix with Recital.

Porting of Cheltonian International's Panorama management software is somewhat easier given the fact its is based upon Oracle, with the rest written in C - it runs on VMS, MS-DOS and Unix and has a range of graphics features as well as a network mapping function. Unix ports so far include those to Sun Microsystems, Mips Computer systems, Hewlett-Packard, Pyramid, DEC and ICL hardware. Based in Kingston-upon-Thames, Surrey, Cheltonian's package starts at £6,000 on a PC and £20,000 on a four user Sun system - minus the Oracle database. Cheltonian's latest customer is the Eurodisney consortium that is building Europe's first Disneyworld just outside Paris - dubbed the Mickey Mouse system!

ICL'S NEW SPARC SYSTEM DIALS INTO UNIX EXPO

It's quite common for computer manufacturers to give a first airing to new machines at trade shows, but ICL went one better at Unix Expo by leaving the machine at home and logging into it on the Unix International stand. The machine was none other than one of ICL's new Sparc-based systems - codenamed Unicorn in some quarters - residing at the AT&T development Labs in Princeton, New Jersey. Here it has been used as part of ICL's joint work with AT&T's Unix Software Operation on the reference port of Unix V.4 for Sparc architectures. ICL's UK-based software development team has been working with AT&T on the project for the last 18 months, and recently shipped an initial release of the port to AT&T, which will distribute it to other Sparc vendors as an applications binary interface reference environment. Although ICL was keeping tight-lipped about its new Sparc systems, designed to broaden its DRS (previously Clan) Unix-based systems at the high end, it did say that systems had been out at customer test sites for some time now, and that work on a 'substantial' amount of applications software would be completed by the launch date. Expect to see the machine towards the end of January 1990 for 50 users and upwards.

OPEN SYSTEMS '89 PALES IN COMPARISON

In comparison with the brash Unix Expo event which took place in New York at the beginning of this month, the Open Systems '89 Show in London's Olympia looked, unsurprisingly, feeble. Not only was there a lack of visitors at the show, with sales people talking to sales people about sales on most of the stands - or the bar - but also absent were many of the major "Open System" manufacturers, Sun and NCR included. Most distressing however, for journalists and punters alike, was the absence of any of Europe's major manufacturers. Where were the Siemens, Nixdorfs, Norsk Datas and Olivettis of Europe, from whom we have heard so much chest-thumping over the recent weeks and months? Answer - in New York.

Showpieces

One reason to keep efforts to rationalise the various industry groups each working on different standardisation efforts moving is the major expenses involved in staff attending meetings and working on similar standards initiatives for all the various bodies: Tom Mace from Unisys Corp said that Unisys spends up to $5m a year on such things, with up to 200 staff working on committees and specifications.

At the London show DEC promised its symmetrical multiprocessor Ultrix Unix within two months, with XPG3 branding, and says it will initially run over up to eight CPUs.

DOCKLANDS DTP SHOW

Unix and server versions of Advent Desktop Publishing Ltd's 3B2 publishing system were shown at the 1989 Desktop Publishing Show held in London's Docklands last month. The enhanced Version II of 3B2 from the Swindon, Wiltshire based company now runs on Apollo's 4500, 3500 and 2500 workstations and over a network of Hewlett-Packard Vectra PCs. Both versions of the software will become available on MS-DOS, and in addition to Unix will be developed to run in the OS/2 environment. 3B2 Version II costs £1,200, Version I is reduced by 30% to £695.

HARDWARE NEWS

MULTI-PROCESSING

Corollary Inc has introduced what it says is the first i486-based multi-processor, and says that its Symmetrical Multi-Processing Extended Kernel, and extension of SCO Xenix 386 and Unix 386, now supports the i486. The Corollary system allows configurations of up to ten i486 processors, with no adaption to off the shelf software necessary. The set includes a high speed proprietary bus, up to 10 i486 processor boards and 64Mb memory, and extends the 386/smp system. It uses a dual bus architecture that includes the AT-bus for peripherals and a 64Mb per second, 32-bit C bus for processor and memory traffic. Each board has a 256K write-back cache and four specialised I/O ports for connecting Corollary's 8-port terminal concentrator. Fully configured systems can support up to 256 users. Prices begin at $7,500 per 486 CPU board.

FPS Computing Inc, Beaverton, Oregon, is pinning most of its hopes on the 64-bit multiprocessor Unix technology it bought with the assets of Celerity Computing these days, and has now cast it as the FPS Model 500 Expandable System Architecture, which adds VectorPlus processing to the basic capability of the 500 processor. The Model 500EA is a 64-bit Unix mini-supercomputer that starts at $204,000 with typical configurations at $421,000, larger configurations up to $2.5m and ships have begun. In conjunction with a new FPS Fortran compiler and FPSMath library, performance of the 500EA is claimed to be 30% to 50% faster than the 500, and on some applications up to 2.5 times. New peripherals include a 200ips seismic tape subsystem and VME-based IBM 3480-compatible tape cartridge, and an new IPI-2 disk subsystem that provides 6Mbyte-per-second data transfers, which can be striped for peak rates in excess of 20Mbytes-per-second, FPS claims.

Consett, County Durham-based Integrated Micro Products Ltd has introduced what it claims is the industry's first multiprocessing computer system built around the racy 50MHz version of Motorola's 68030 microprocessor, previewed in August (UN No 7). The machine is being rated at between $2,000 and $4,000 per MIPS, and comes in the form of a board called JT-Cache, which packs the 50MHz chip with cache and control logic and plugs into the company's existing line of 25 MHz computer systems, thereby doubling performance to 10 MIPS from 5 MIPS per processor, the company claims. Only the system components that must run at 50MHz do so, minimising complexity and cost. The new 50MHz, 80 MIPS MJ systems for up to 256 users are from $40,000, and the 50MHz JT-Cache upgrade for existing MJ systems is $8,000.

MULTI-PROCESSING

Stratus Computer Inc has launched its new XA2000 Model 30 transaction processing family - the basic configuration comes in at £29,400, rises to £32,400 for the selectable fault-tolerant model, and increases to £39,500 for a fully fault-tolerant machine. All three use Motorola's MC68030 processor and the MC68882 co-processor, duplexed on each board. The Model 30 runs under VOS, but Unix System V will be available from the first quarter 1990. Single-board memory starts at 8Mb rising to 32Mb, and the peripheral package includes a disk, tape adaptor card, and choice of five 5.25" mirrored hard disks. Capacity ranges between 152Mb and 638Mb, with a 1.3Gb version due in first quarter of next year.

NEWS ROUNDUP

With international news dominated by tumbling walls and lots of talk about unification, the general thrust of change it seems has not been lost on the Unix business. The uncertain future of the operating system dominated the stage this month with news that a major restructuring of the Unix industry could result from plans to spin out **AT&T**'s loss-making operating system from its **Unix Software Operation** and reconcile the opposing Unix camps. A precursor to any such transition means firstly overcoming the **Open Software Foundation/Unix International barricades**, a wall that has divided the industry for the past eighteen months or more. It is known that the two have been holding top-level meetings over recent weeks with precisely this agenda, and according to highly-placed informants, the unification of the **OSF** and **UI** could be achieved by the time of the UniForum show next January. The **OSF** is certainly facing growing popular pressure from within its own ranks for some sort of strategic re-evaluation, with **Hewlett-Packard** wavering in its support for the **OSF**'s Unix offering, OSF1, **Bull HN** not ruling out a move to V.4, and **DEC** saying that the time is now ripe for re-thinking of the **Foundation's** plans. Even with all the royalties it collects, **AT&T** still loses around $75m on its Unix operation - its accountants say it should be sold off - and, incredulus as it may seem, **X/Open** is being touted as the vehicle that should ultimately buy Unix from **AT&T**, reason being that almost everybody peddling Unix these days is a member.

There was more restructuring in the European computer industry last month as firms jostle for positions in the run up to 1992. Catapulting itself into the front rank of personal computer manufacturers worldwide and leapfrogging **Ing C Olivetti & Co SpA** to become the biggest European company in the business, **Compagnie des Machines Bull SA** is buying **Zenith Data Systems** and **Heath/Zenith** from **Zenith Electronics Corp** by the end of the year for up to $635m. And there are yet more whispers about the future of **Nixdorf Computer AG**, with both **Mannesman AG** and now **AT&T** being touted as possible suitors to the Paderborner.

Intel Corp and **Siemens AG** threw the towel in on their **BiiN Inc** 50-50 joint venture on fault-tolerant multiprocessor systems - the company is being liquidated and the 113 systems that have been installed around the world will be recalled and written off. And **Intel** also had other problems - **Compaq** found a bug in the top-speed 80486 microprocessor - **Intel** is to ship new versions by the end of November.

The **Open Software Foundation** released details of those companies who have responded to its Architecture Neutral Distribution Format and distributed computing technology requests. With an ANDF, the **OSF** is seeking to find a way of enabling shrink-wrapped software to run on any Unix system regardless of processor, and 15 out of the initial 24 applicants are judged to have made the grade, including **Hewlett-Packard, Hunter Systems, Siemens, Nat Semi, Gimpel Software, Prysm Inc, Intermetrics Inc, UK Royal Signal and Radar Establishment, Unipress and Translation Systems** - see page 10.

WORKSTATIONS

Moving the pace of workstation development along at its usual breakneck speed, Longmont, Colorado-based Solbourne Computer Inc has come out with a new generation of its Sparc-based Sun-compatible workstation family. The Solbourne Series 5 machines include a new CPU board using the 33MHz Cypress Semiconductor version of the Sparc running at 33MHz, giving Solbourne a top rating of 65 MIPS for a four processor system. The Series5/501 diskless desktop system comes in at $28,900, a Series5/532 server offers 40 MIPS, 16Mb RAM and 661Mb hard disk for $50,300, top of the line 65 MIPS workstations and servers cost $2,000 per MIPS and $3,000 per MIPS respectively.

The latest speculation surrounding IBM's "peekaboo" next-generation RT boxes (aka Rios) reckons they will debut at Uniforum in Washington D.C., scheduled to run January 23-26. For months now, the rumour mill has been claiming that the "America" chip, the second-generation 801 RISC processor that's powering Rios, has been delivering upwards of 100 MIPS in the lab. Not that we'll be treated to anything like that come January. Figure more like 25 MIPS to 50+ MIPS in actual processing power. Observers are looking for Rios to come in at least two, perhaps three, performance levels and maybe five models from desktops, through servers to rack-mounted models. They think the entry-level will be priced at around $12,500, a little bit less than IBM's anticipated 486 PC, which could come in at $13,000 - $14,000. At the upper reaches, they guess it could be priced at $1000 per MIPS.

And true to its word Hewlett-Packard Co has released details of its plans for the Apollo Series 10000 Prism RISC-based superworkstation, saying that a new fully compatible RISC CPU to double the system's processing power to 44 MIPS and 12 MFLOPS per processor will arrive within a year. Parallelising and vectorising compilers will increase system performance two to four times. Also promised are a specialised software development environment for parallel programs and an interactive scientific software computation and visualisation environment; main memory will be raised four-fold to 512Mb, disk by a factor of six to 18Gb; and local-area-networking bandwidth will rise by a factor of 10 by the use of Fibre Distributed Data Interface. The promised scientific software is to be the C-Linda portable, parallel programming environment from Scientific Computing Associates Inc.

Siemens AG has a new low-end Unix machine, the WS 30-250 - the Unix workstation is fully compatible with the rest of the WS 30 family, and can be linked to different mainframes and departmental systems by Ethernet, Apollo-Token and IBM-Token Ring networks. The system's 32-bit 68030 microprocessor and 68882 co-processor run at 20MHz, enabling the machine to deliver 3.5 MIPS. It has a 4Mb main memory, which can be extended to 16Mb, and the integrated SCSI supports up to seven peripherals. The system also supports black and white graphics, with up to 1,280 by 1,024 dot resolution, and hard disks drives with 400Mb, extending to 760Mb are available. Prices start at $6,000.

NeXT Inc, Palo Alto has bowed to pressure to reduce the price of its NeXT Computer and offer a magnetic disk version, announcing a $5,000 networked system with a 3.5" 40Mb Winchester from Milpitas-based Quantum Corp's ProDrive series in place of the optical drive; the low price is for educational users only - and current users of optical disk-only NeXT computer systems can add the Winchester at no charge from NeXT, which also reduced 4Mb memory modules by 46%, to $800.

Mistral Computer Systems, born from the ashes of the defunct UK workstation builder Whitechapel Workstations firm, has revealed its first product since the Hitech-10 - a Mips R3000-based workstation rated at 20 MIPS and tagged at £20,000. The Mistral-20 workstation uses a 25MHz R3000 processor and runs Unix V.3 with BSD 4.3 extensions. It comes with 8Mb RAM expandable to 40Mb, up to 600Mb disk, Ethernet, a 16" or 19" colour monitor and X-Windows. There are presently around 100 Hitech-10 workstations installed in specialist markets, and the Mistral-20 is being targeted into the same areas - particularly 3D graphics and animation and finite element modelling.

Tektronix Inc, still pushing hard in its attempt to enter the workstation market has added a new low-end model to its XD88 family of Motorola 88000-based Risc systems. The XD88/10, rated at 17 MIPS, has up to 32Mb memory and 3Gb disk storage, has a VME bus, and runs the Tektronix Utek System V implementation of Unix. Shipping in the first quarter of next year, the new machine costs $15,450 with 8Mb memory, 156Mb disk and colour monitor. Other members of the XD88 family include the 2D 88/20 and 3D 88/30 workstations, as well as the XD88/01 applications processor and 88/05 file server.

X TERMINALS

Spectragraphics Corp, San Diego, California, has unveiled an X-Windows terminal that provides Unix and IBM 3270 mainframe connectivity over a local area network. The LanSet 800 incorporates Ethernet and TCP/IP for workstation networking - the link to 3270 applications is accomplished via Spectragraphics' DesignSet Communications Controller - DSCC - a channel control unit providing channel speed interface to the mainframe computer, and a board-based logic engine bought in from an undisclosed source. The X terminal will also connect to DECnet networks. The terminal - in 15" or 19" versions - is built around a Motorola 68020 processor with up to 4Mb memory, and a pixel resolution of 1280 by 1024. A 15" monochrome version with mouse, keyboard, 3270 and X-Windows software is $3,000, out in November. The LanSet 800 is expected in the UK around January of next year, from subsidiaries in Coventry and Wilmslow, Cheshire.

HP has also entered the X Terminal market with the 700/X family consisting of colour and monochrome X terminals using an Intel 80C86 processor and a 50 MHz TM 3410 graphics chip from Texas Instruments. 14 inch 640 x 480 or 16 or 20 inch 1,024 x 768 color versions are available, and a 19 inch 1,024 x 768 version in monochrome. Prices go from $3,000 to $5,000.

Yet another entry into the X Terminal arena is Princeton Graphic Systems of Roswell, Georgia. The system promises features such as a virtual screen capability, and custom memory management aimed at using memory more efficiently than typical X server configurations. Resolutions will range from standard VGA (640 x 480) up to workstation quality (1280 x 1024) are expected, with configurable memory from 512K up to 8Mb. Video adaptors for both analog and TTL digital will be available, and the terminal will support system communications over TCP/IP using thick or thin Ethernet.

And NCR has added two new members to its TowerView family of X-windowing graphics workstations: the modular X-Stations for business and technical users come in 15" and 19" versions. The new 68020-based models offer X-Windows, TCP/IP, 100 dots per inch resolution, 70Hz refresh rate and local VT100 emulation. NCR plans to add colour X-Stations and support for the DECnet and Network File System network protocols next year. The 15" TowerView modular workstation is $3,400, the 19" $4,200.

SERVERS

Santa Clara, California-based Auspex Systems has revealed its first product - a new line of Unix servers. The Auspex NS 5000 will process up to 1000 8Kb NFS operations per second, and connect up to eight Ethernet local area networks for an I/O capacity of 80Mb per second. The secret is a new architecture - dubbed Functional Multiprocessing architecture - which takes the network, file and storage processing functions normally performed by the CPU and distributes them around the system. Four Motorola 68020 processors with local memory and supported by bit-sliced processors and custom ASIC devices are used for this task: a host processor which supports Sun's SunOS, and an Ethernet, File and Storage processor each dedicated to its task. The machine can support over 100 diskless clients per server, supports multiple Ethernet segments, has greater disk capacity with faster disk access (16Gb in the base system cabinet), and simplified network and data management. Price for a base configuration is $114,900.

And Norsk Data A/S spinout Dolphin Server Technology A/S has announced the Motorola 88000-based servers that will come in at the top of its new Uniline family of Unix machines. The Triton 88 server provides 100 MIPS, and comes with from one to four 88100 CPUs and from two to eight 88200 cache and memory management units on the system board, and up to 128Mb of on-board memory is supported. The machine supports up to 250 users per local network controller, 1,000 users all told, and disk support extends to 30Gb. The machine comes with Unix System V.3 - V.4 next year - and will be available OEM from the Oslo, Norway-based firm early next year. No prices.

IBM has found a role for the AS/400 in the Unix world, designating the machine as a database server for its AIX Unix customers on the RT and successors. The new AIX Viaduct for AS/400 provides an interactive data bridge that enables RT users to integrate their AIX applications with AS/400 databases. Using the interactive LU6.2 APPC protocol, the bridge provides for connection of AIX and OS/400 environments through SQL. The AS/400 end of the thing costs $5,000 to $13,750 according to the size of the AS/400, and the RT end of the bridge is $250 per workstation.

Mips has upgraded its system level products with new machines based on the 25MHz R3000 chip. The two new systems include the RC3240, delivering 18 MIPS for around $30,000. The machine is positioned as a low-cost deskside server, and is said to be 50% faster than the older M/120 for no extra cost. The company has reduced the cost of the M/120 by around $4,000, and says it will also offer board swaps. The RC320 is a departmental server, rated at 20 MIPS, offering smaller packaging than the existing M/2000. Prices start at $45,000.

Unisys has made it clear that it has no doubts about the viability of the image processing market, with a major investment in image systems aimed at financial and industrial accounts. These are the Unisys Image Item Processing System and Image Cheque Processing System software, for high-speed image processing of payments for banks; and Unisys InfoImage Engineering Document Management System for engineering drawings, blueprints, charts and such. Imaging subsystems and software are separated from the V Series mainframe hosts, and run on Unisys U6000 Unix boxes, with the desktop machines being Unisys PW2 workstations. The Image Item Processing System has a camera into its DP1800 payment processor, with both sides of cheques captured at a rate of 1,800 a per minute. It is $1.5m to $3m, first quarter 1990. The InfoImage Engineering system is available immediately, at from $500,000.

Bull has introduced a new DPX/2 series of Unix machines and enhancements to its DPS 6000 minicomputer line. The DPX/2 100 is the 25MHz 80386-based Micral 600/ix; the 210 is a 25MHz 68030-based machine; the 320 has one or two 25MHz 68030s, the 340 takes one to four 33MHz 68030s and prices go from $11,000 to $66,000. A 68040-based model is to be added, and they are to be complemented by Bull's newly revealed Open Software platform - a bundle of software including Oracle 6.0, Informix, Uniplex, Unify, Alis and Motif which will run right across the range. Bull has enhanced its DPS 6000 minicomputer line with new departmental systems for four to 300 users, supporting Open Systems Interconnection, SNA, X400 messaging, MS-DOS micros as terminals, the Oracle database and Unix. The DPS 6000/200 comprises four models with single and dual processor versions, with 4Mb to 16Mb main memory, delivering 0.7 to 1.7 MIPS. It supports 142Mb to 1.2Gb on disk and four to 30 communications lines. The seven-model DPS 6000/400 line comes in single to quad processor models with 8Mb to 64Mb memory delivering 1.1 to 5.6 MIPS, taking up to 9.52Gb on disk, and up to 160 lines. And the 6000/600s also come with one, two, three or four CPUs, rated at from 3 MIPS to 10.1 MIPS, 16Mb to 64Mb memory, up to 9.52Gb disk and 272 lines. Prices range from $17,000 to $340,000, in the US, £10,000 to £200,000 in the UK.

Encore's Gould Electronics division has added support for Motorola's 88000 Risc processor to its CLAS4000 logic analyser system. It has already been tested on 33MHz versions of the chip, but the firm claims that it will handle both the 50MHz and 150MHz versions of the 88000 that Motorola is planning for the future. The stand-alone box allows 88000 system developers to symbolically debug their designs and is fronted by an Apple Mac II. On its own the CLAS4000 box is £1,200, with a Mac II and additional software the price is £20,000. Intel's 80860 Risc chip will be supported from the first quarter of next year.

ON BOARD

Two UK companies, Meiko Scientific Ltd, Bristol and Real World Graphics Ltd of Hertford, introduced new products based on the new Intel 80860 RISC at London's Intel Fair 89 last month. Meiko is using the chip to boost the vector capabilities of its Transputer-based Computing Surface: the MK086 Vector co-processor board has two 32MHz 80860s and two 25MHz T800 Transputers to provide communications, all sharing 4Mb or 8Mb of dual port RAM. The new CPUs were transparently integrated into Meiko's parallel machine using its CS Tools software - also used to integrate Sun Sparc CPUs with the Computing Surface in Meiko's In-Sun product line. And Real World Graphics has a plug-in card designed to turn an AT-alike into a "three-dimensional graphics supercomputer". It has 3.5Mb video RAM, 4Mb or 16Mb main memory and can display up to 16.7m colours; it is £12,000.

Chase Research has an intelligent input/output controller board for the Extended Industry Systems Architecture bus all ready at its Basingstoke, Hampshire base - all it is waiting for now is systems to put the things into. The 16 port EISA16 card, which uses on board 16MHz 80186 processors, has drivers for Unix and Xenix initially, with others to follow. It will be out when the first EISA machines materialise, priced at £1,645.

And Acer America has announced an add-on multiprocessor upgrade solution for Micro Channel Architecture. Called the Acer Application Processor, the board can be installed in any 32-bit Micro Channel based, PS/2-compatible 386 machine - and is claimed to double its performance. It features an MCA-based Application Processor together with multiprocessor Unix software, and will be out in the second quarter of next year.

MIPS CLEANS UP IN PERFORMANCE STAKES - OFFICIAL

The Systems Performance Evaluation Cooperative - or SPEC - was set up at the end of last year, with the intention of developing a sensible benchmarking suite for comparing the performance of various RISC technologies. It claims that existing measures like MIPS are often manipulated by manufacturers and misinterpreted by the press and users. SPEC has now come up with its first set of benchmarks, and the all important results of testing them on various architectures. The initial Release 1.0 set consists of a Unix-based suite of 10 Fortran and C benchmarks that examine the performance of both integer and floating point computation in scientific and technical applications. These are available on a tape from SPEC for $450, and SPEC is also publishing a quarterly newsletter containing benchmark results, which costs $150. Future suites will measure other aspects of system performance, such as disk, graphics and communications, and will measure system performance in networked and multi-user environments, as well as applications. Apollo, Hewlett-Packard, MIPS Computer Systems, Sun Microsystems and Electronic Engineering Times were the original founders - they have since been joined by AT&T, Control Data, DEC, Data General, IBM, Intergraph, Motorola, Multiflow Computers and Stardent.

The SPEC Reference Time is the average time in seconds that it takes a DEC VAX 11/780 machine to run the complete set of tests. A SPEC Ratio is derived from dividing the SPEC Reference Time by each machine's corresponding run-time, and the single figure that summarizes the ten tests is the SPECmark , which is the mean of the SPEC Ratio result for each of the 10 benchmarks. The table below is compiled from the test results of all the benchmarks -

Machine	Processor	Reference Time	Machine Time	SPECmark
MIPS M/2000	R3000-25MHz	3867.7	235	16.5
Motorola Delta 8864DP	2x 88100-20MHz	3867.7	511.8	15.1
Apollo DN10010	PRISM-18.2MHz	3867.7	267	14.5
Sun SPARCstation 330	CYC7C601-25MHz	3867.7	343.7	11.3
MIPS M/120-5	R2000-16.67MHz	3867.7	345.3	11.2
DECstation 3100	R2000-16.67MHz	3867.7	381.4	10.1
HP9000 Model 834	PA-RISC-15MHz	3867.7	408	9.5
MIPS RC2030	R2000-16.67MHz	3867.7	417.6	9.3
Sun SPARCstation 1	MB 86901-20MHz	3867.7	468.5	8.3
Motorola Delta 8864SP	88100-20MHz	3867.7	473.3	8.2
Motorola Delta 8608	88100-20MHz	3867.7	496.5	7.8
DECstation 2100	R2000-12.5MHz	3867.7	518.7	7.5
HP9000 Model 370	68030-33MHz	3867.7	980.3	3.9
HP9000 Model 340	68030-16.67MHz	3867.7	2432.4	1.6

MIPS PLOTS A COURSE THROUGH BYTE ORDERING MINEFIELD WITH APPLICATION INTERFACE

Mips admits that the only reason other Mips orientated manufacturers such as DEC, haven't brought out kit based around the R6000 before itself, (see front page), is due to development implications of incorporating ECL technology into new hardware. The Big-Endian byte ordering on the processor is the same as on the previous chips, and DEC is again set to reverse this arrangement to Big-Endian, as it has with its implementation of the R2000 for its DECstations, done to bring the workstations in line with VAX and PDP-11 hardware and allow for easier data transfer across DECnet. On this score DEC's Mips-based hardware is incompatible with other Mips-based systems at the binary level. In addition, because DEC's Ultrix operating system is incompatible with AT&T Unix, it means that the Applications Binary Interface being developed by AT&T and Mips for Unix which is due in six months time, will not deliver shrink wrapped software to DECstation users. However, to try and steer a path around DEC's idiosyncrasies, and now that Mips' own Synthesis Software business has been reabsorbed into the company, Mips, and companies using its Risc architecture are collaborating in a new effort to provide software source code compatibility across the board. The Mips Application Interface, will consist of a range of specifications for compilers and user interfaces amongst other things. In addition industry sources are confident that DEC is now ready to release the source code for Ultrix, which will allow other system builders to configure and sell Mips based systems into the Ultrix marketplace.

COMPUTER INDUSTRY SURVIVES EARTHQUAKE RELATIVELY INTACT

The first reaction of the computer and semiconductor industries to October 17th's 6.9 force earthquake was sighs of relief that most of the buildings that house Silicon Valley's precision chip, disk drive and instrument manufacturing businesses came out superficially undamaged, and chip companies that put out messages generally talked of losing only a shift or two. But the earthquake, with its epicentre between Santa Cruz and Hollister was very uneven in its impact, and the assessment is that Oakland, much further from the epicentre than Santa Clara county, which has the highest density of high-tech firms, suffered the most damage. Hewlett-Packard Co, which has more than 70 buildings the San Francisco Bay area, and employs 18,000 people, reported one building in Palo Alto damaged beyond repair. Overall damage to its facilities is "easily in the millions", the company said - its first priority as the quake struck had been to transfer the "mission-critical" data on which its worldwide operations depend out of California and over to Geneva, Switzerland. Santa Cruz Operation Inc, based in Santa Cruz, eight miles from the epicentre of the earthquake, reported ceilings were down in its buildings and all its computers and phone lines were down. MIPS Computer Systems Inc in Sunnyvale, reported that "MIPS is still standing" and saw no serious damage. Intel Corp, making the 80486, 80386 and 80860 in Santa Clara said there had been no damage to its buildings, and Advanced Micro Devices in Sunnyvale reported little more than plaster off the walls. Pyramid Technology, Mountain View - between San Jose and Palo Alto - reported its only disaster a smashed fish tank and the demise of its tropical fish, whilst unkind people will say that at last Borland International Inc, notoriously late with new products, has a good excuse: the Scotts Valley, California company reported that it sustained heavy damage to its headquarters and was operating from its parking lot. It did not, however expect delays in shipping product - software is relatively insensitive to quakes.

SOFTWARE NEWS

DATABASES

Heralding a new generation of database technology, Burlington, Massachusetts-based software developer Ontologic Inc has released what it claims to be the first available multi-user object oriented database for Unix systems, using the C++ language. The product is called Ontos, it runs on Sun and Apollo kit. As well as the full-blown Ontos multi-user distributed database, Ontologic is also offering Ontos Persistent C++ - a single user stand-alone version. Ontos currently supports development in C++ and SQL. CASE developer Index Technology said it would integrate Ontos into future generations of its CASE tools, and Neuron Data Inc has developed a bridge between Ontos and its Nexpert Object expert system shell. Ontos is priced at $15,000, and will ship by the end of the year.

Adding a transaction processing monitor to Version 6.0 of its Oracle relational database management system the company claims that it can now offer a multi-threaded multi-server Unix database system. The key element of the new system is the /iTi Transaction Manager, an enhanced version of the AT&T Co Tuxedo System/T transaction monitor from Independence Technologies Inc. Multi-threading means that each server can service multiple clients more efficiently by sharing common processing resources, increasing the number of users each server can handle. Multi-threaded, multi-server Oracle and /iTi will be jointly marketed by Oracle and Independence on Pyramid's MISservèrs. First ships are set for November and versions for other Unix systems are planned for second quarter 1990.

And Oracle is reportedly pulling out all the stops to finish Oracle Version 7.0 to get it ready for launch in the spring of next year. The new release is planned to offer a fully distributed location-transparent database which if it works will substantially increase the attractions of Oracle by virtue of the fact that the software runs on so many different types of hardware from IBM 370-type mainframes down. Other features planned for Oracle Version 7.0 are B2-level security and further support for ANSI database standards.

In other news Oracle has unveiled the first members of a new generation of application development tools in the shape of SQL*Forms 3.0 and SQL*Menu 5.0. The same Oracle applications can automatically support all standard character mode, block mode, and bit-mapped user interfaces, including Presentation Manager, DECwindows, Apple Computer's Macintosh, and OSF/Motif. The VAX/VMS versions for character mode ship in 60 days and the others follow in the second quarter 1990 at from $1,500 to $70,000 the two. They will run only with Oracle 6.0.

Unify Corp's contributions to last month's Unix festivities were two new products, Accell/Net and Accell/SQL Open Look Interface. Accell/Net is compliant with the distributed computing standard proposed by Sun and Novell Inc, (UX No 8), enabling developers to take advantage of the new generation of low-price, high-performance workstations. It separates application code from the underlying database libraries, enabling users to distribute applications across a network. It supports heterogeneous machine environments transparently, and can run an application as a client. Accell/SQL Open Look Interface supports the Open Look graphical user interface - current Accell/SQL applications will run Open Look over X stations without modification. Accell/Net costs $4,500 to $120,000 immediately, Accell/SQL Interface for Open Look follows in the first quarter 1990.

With version 3.0 of its relational database management system, DataFlex, Miami, Florida-based Data Access Corp has broken apart the application and database engines into two modules that can be linked by NetBIOS and IPX 9600 Baud Async X25, TCP/IP, LU6.2 or a custom arrangement. Gateways for the Intel and Motorola processor ranges are sold as separate products. First up for release are database engines for Novell NetWare, OS/2 and MS-DOS based networks at the beginning of 1990, with Unix, Xenix and VMS versions available in the following quarter.

Sybase Inc describes its new 4.0 release of the Sybase SQL Server as the first open relational database, claiming that the new Sybase Open Server communications product, it enables users to develop on-line applications that span multiple servers; integrate data and functionality from non-Sybase sources; and provides a generic communication mechanism between clients and servers. Server-to-server communication is implemented through Sybase's database remote procedure calls. Sybase announced two versions of Open Client for the Macintosh, and versions of the Sybase system for the Hewlett-Packard HP9000 300 and 800 Series, the AT&T 3B2 and 6386, and the IBM RT. Sybase Version 4.0 is in production release on all Sun Microsystems machines, and is in beta test under VAX/VMS, with all other supported systems to be available in first quarter 1990. It's $$3,000 to $192,000, Open Server object code is $800 to $40,000.

UK company, VisionWare, Leeds, has announced an SQL database server which links up Microsoft Windows with Unix-base databases called SQL-Connect, allowing PCs to access data stored in host databases from within PC applications using SQL statements. VisionWare's aim is to integrate PCs and Unix around the Presentation Manager interface, and will be adding X-Windows functionality with a new product called XVision to be released shortly. The first release of SQL-Connect supports Informix, Oracle and Uniplex databases - others will follow.

MF Systems Ltd, Kensington, London, unveiled a new version 2.2 of its MetaFour fourth generation environment at last month's Open Systems Show in London. This latest edition supports C-ISAM, and is compatible with SQL. In fact MetaFour bypasses the SQL engine altogether, linking directly to the database being used - although there are plans in place for communication via SQL. Oracle, Informix, Ingres and Unify databases are to be supported at a rate of one a month. MetaFour 2.2 is written in C, and applications developed with it are portable across Unix, Xenix, C-DOS, MS-DOS and networks including Novell. Prices for Version 2.2 go from around £1,000 for a run-time licence, or £8,000 for a developers copy.

GRAPHICS

Among graphical user interfaces still a major topic of discussion amongst the Unix industry and user communities, UK company IXI Ltd, Cambridge, used last month's Unix Expo show in New York as the launch platform for a second generation version of its X.desktop graphical desktop manager. X.desktop 2.0 adopts the Open Software Foundation's Motif look and feel, through use of the Motif toolkit, and has new 3D icons. Available by the end of the year for Sun3, Sun4, Apollo Domain, Hewlett-Packard 9000, Sony, Mac, DECstation and Intel 80386-based hardware, the retail cost of X.desktop 2.0 will be $495 per single user, although upgrades are free.

Concurrent Computer has a new graphical software product claimed to allow programmers to visually transform sequential Fortran programmes into parallel form. Dubbed Environment for Sequential-to-Parallel processing - or E/SP - it automatically identifies the parts in sequential Fortran VII source code that can be converted into parallel form and displays the programme in a graphical structure on screen, so that the user can select other parts that seem appropriate for similar conversion. E/SP is currently available on Concurrent's 5000 and 6000 Series, the Sun-3 and Apollo 4500.

NETWORKING

In a new development from a company based in Coral Gables, Florida, with one of the most bizarre names yet - CocoNet Inc - Novell networking technology users can now run Unix on their systems with release 1.3 of its NetBios Unix/DOS Network, called CocoNet. It is an Ethernet implementation of SCO Xenix-Net and Microsoft's Networks, designed to tie together 286 and 386 based PCs running Unix, MS-DOS and OS/2, and Novell. It gives virtual logins as well as access to the Unix file system and print spool facilities. With CocoNet, Novell-based workstations can run server applications, and both MS-DOS file and record locking calls and the NetBios application programming interface are supported. It enables transparent MS-DOS and OS/2 file sharing from Novell or Unix servers, or both, and the architecture - which merges Novell and MS-Net in such a way that it is invisible to the MS-DOS user - also allows an MS-DOS-based workstation to run both a Novell shell and CocoNet NetBios Network simultaneously with no additional memory usage. It supports thick, thin and twisted pair Ethernet and StarLan, with Token Ring and Arcnet facilities promised soon. CocoNet, which is compatible with Netware 2.15 and higher, is available as a hardware/software upgrade kit for existing Unix/Xenix 386 users at £1,895, or as a preconfigured CocoNet Tree Server from £11,400. CocoNet can be obtained in the UK from its distributor LAN Technology International Ltd, Rushden, Northants.

Mips has announced its RISComm-DN software that enables MIPS RISComputers to be integrated into DECnet networks. The new software enables the RISCstations to interoperate with DEC VAXes and with other devices for which DECnet protocol implementations are available - in particular MS-DOS and Macintosh micros. RISComm-DN uses existing MIPS Ethernet controllers and interfaces and Ethernet cables and connectors. It co-exists with other Ethernet protocols such as TCP/IP, so that RISC/os users can choose Ethernet or other protocols. RISComm-DN is an end-node implementation of DEC's DECnet Phase IV, and communicates with other Phase III and IV nodes over Ethernet. Pricing is $1,900 for an RC3240 system, $2,850 for an RC3240 system.

Sun Microsystems has rechristened its networking product line the SunNet family and added five new packages to it. SunNet Manager is a multi-function network management package for TCP/IP networks and looks after computers, bridges, network applications and services - but also provides a migration path to OSI-based networking standards once these become established. SunNet License is a program for managing data collection for determining usage of licensed concurrent usage packages so that vendors and departments can charge for software on an actual usage basis. In the UK it costs £8,950. The FDDI-Dual Attach Controller, FDDI/DX is a VME board for users wanting to put their Sun workstations onto a high performance Fibre Distributed Data Interface 100Mbps optical net; price is £11,200. SunLink Channel Gateway connects Sun stations to IBM mainframes, enabling file interchange with 370-type machines. It costs £17,900 for a single unit. The High-speed Serial Interface is another VME board to link to T-1 lines in the US or CEPT lines in Europe, costing £5,400. The new SunNet line includes all the existing TCP/IP, Ethernet, X25 and other products, with Sun's Open Network Computing products at its core.

Locus Computing Corp is set to release its previously IBM specific Transparent Computing Facility to the open market, it was revealed last month. TCF is a kernel add-on module to the operating system that has been utilised by IBM to implement transparent access between AIX-based RTs and PS/2 and mainframe systems. It allows fully transparent access to the file system, implementing a single tree structure over the network - very different from NFS-based systems where each workstation has its own root.

X/Open Co has won a major concession from IBM Corp over the licensing of IBM's Common Programming Interface for Communications - the applications programming interfaces that allow program to program connection between IBM's SAA conformant systems and non-IBM machines. After discussions with X/Open, IBM agreed to license the interface free of charge to X/Open, with no restrictions on notification to IBM needed for those using the specification.

DEC has put the first meat into the vaporous July announcement of its Network Application Support (NAS) strategy, with the introduction of the first products under its All-In-One Phase II umbrella. Built on top of NAS services, All-In-One Phase II opens up DEC's widely used office automation software suite to include support for MS-DOS, OS/2 and Macintosh PCs, DECwindows workstations running VMS and Unix, and DEC video and IBM 3270 terminal users. DEC claims to have over three million All-In-One users, all currently running on VMS-based hardware. New versions of the software under Phase II will support existing NAS services such as DECwindows and Compound Document Architecture, using the client/server model, and future elements as they are released. The schedule includes All-In-One Desktop releases for MS-DOS next January, VMS DECwindows in July, and Macintosh, OS/2 and terminal support "within 12 months." However, Ultrix users it seems will have to wait.

NCR has unveiled NCR Tower NetWare networking software that enables the Unix-based Tower processors to be used as high-performance file, application and communications servers on local area networks running Novell Inc's NetWare operating system. NCR also added two new Tower models, the entry-level 20MHz 68030-based 32/300 at $11,290 with 32Mb memory, one 5.25" or two 3.5" SCSI disks and three Multibus I slots; and the 32/500, which has the same processor but comes with 64Mb memory, 1.1Gb disk and seven Multibus I slots, at $19,790. Through bridge products, the NCR Towers support multiple communcations products such as Token Ring, ARCNet, AppleTalk, and concurrent TCP/IP and Ethernet-based Tower NetWare environments. General availability of Tower NetWare is the first quarter 1990 and prices will start at $5,200.

Hewlett-Packard has announced the first components in a new distributed computing environment strategy dubbed Team Computing, aimed at tying up the resources in a network. Team computing aims to use standard operating systems and networking configurations, user interface and application development tools to integrate HP and Apollo workstations, HP Vectra PCs, X Terminals and super minicomputers, as well as systems from other vendors. The components introduced include Apollo's Network Computing System - combined with X Windows System and the Motif user interface and software originating from the Hewlett side of the business. Task Broker is a stand alone distributed computing application for end users. Using an intelligent "bidding" process to distribute tasks to the computer most suited to the job, Task Broker (unlike NCS) does not require application modifications, and functions on Unix systems using TCP/IP. So far it has been ported to HP, Apollo, and Multiflow systems, with Sun Microsystems and DEC Ultrix versions to follow. NCS requires modifications to both software and hardware, and currently runs on IBM VM, DEC VMS and Ultrix, Sun, Multiflow, Convex and Prime systems, as well as HP/Apollo workstations HP MPE hardware and MS-DOS PCs. Task Broker, available by the end of the year, starts at $5,000 for a 10 user license, while NCS development environments cost $850.

And HP is to begin shipping Lan Manager/X - its beefed up translation of Microsoft's OS/2 LAN Manager into C - this month, prices start at $2,000 for an eight user licence.

OPERATING SYSTEMS

Intel Corp has revealed its own implementation of Unix - currently V.3.2, but soon V.4 - which it will market as the standard version of Unix for Intel 386 and 486-based hardware. An important element of the release will be the Intel/AT&T developed Applications Binary Interface that will allow applications to run unchanged across any hardware system supporting the ABI. The move will put Intel into direct competition with the two major operating system vendors concentrating on Intel platforms, Santa Cruz Operation and Interactive Systems Corp, both of whom largely support the Intel/AT&T ABI on their current releases of Unix V.3.2. Intel's version is expected to include communications, concurrent DOS/Unix capabilities and graphical interface components bundled in. Prices begin at around $500.

And sources at Intel have revealed that the effort to produce a multi-processing version of Unix V.4, in conjunction with Olivetti and Unisys, is moving into the testing stage with a beta release scheduled for the beginning of next year and user versions planned for the second quarter.

Emeryville, California-based Wind River Systems' VxWorks real time operating system is now available running on Intel's 80960 Risc processor, will support X-Windows by the end of the year, and 88000-based architecture soon after. Applications written under Unix - or VMS, of which versions 4.5 and above are now supported - are off loaded from the host CPU, usually a workstation, via TCP/IP, Ethernet or NFS to a stand-alone VME-based box in which VxWorks resides, running Motorola's 68000 range, Sun's Sparc chip, or now the 80960. VxWorks then takes charge of the applications and executes them for use in real time environments.

The Unix lookalike Helios operating system environment is establishing itself as a de facto standard in parallel computing. Bristol based Distributed Software Ltd is getting in on the act by offering two new tools - a Helios source debugger, and X-Windows graphics support - both of which have been developed by Perihellion Software Ltd, designers of Helios. The debugger is claimed to allow software developers to debug parallel programs running simultaneously on any number of processors via high level source code objects, and source windows which are opened for each particular task. It includes a command language and user interface. Initially supporting the Helios C compiler, future versions will also support FORTRAN and other compilers. Graphical windowing support is also offered to users of Helios on PC based transputer systems via an implementation of X Windows for Inmos G300, Paracom GDS, Quintek Harlequin and Tektite XTRAM transputers. Available this month, both products are priced at £485.

LANGUAGES AND CODE GENERATORS

Apple Computer Inc has extended its object-oriented programming tools and languages with the launch of Macintosh Programmers Workshop C++ and says that it fully supports the industry standard defined by AT&T Language System Release 2.0. Apple has enhanced its C++ to support the Macintosh Toolbox and operating system and Object Pascal-based functions and procedures. The new C++ features multiple inheritance, operator overloading and protected members and variables within classes, and includes libraries for complex maths as well as input-output stream processing. It is for the Macintosh Programmers Workbench and C Version 3.0 or higher and Macintosh System Software 6.0.2 or later. MPW C++ v.3.1B1 is available this month in a beta version selling for $175.

WHEELIN' AND DEALIN'

Halloween time proved nightmarish for some - **Prime's** do or die wizardry in employing **J H Whitney Co** to thwart **MAI Basic Four's** hostile takeover aspirations look set to cost the firm around 2,500 jobs, and a major re-structuring into three distinct business units. But at the same time Prime is playing devil's advocate, signing its largest ever deal - with **Sun Microsystems** for Sparc-based kit worth $200m over the next two years.

Meanwhile **Sun** is preparing to sell off its **TOPS** networking division - Sun is currently cash hungry, and looking to a variety of sources for additional funding to fuel its explosive growth plans.

AT&T has signed up for $30m of **Pyramid Technology's** MIServers for the top end of its range, and $400m worth of multiprocessor systems running Unix V.4 to be developed by the companies under the agreement.

Spend spend spend - **Hoskyns Group Plc** has bought up the North London training and services house **The Instruction Set Ltd,** which majors on Unix for up to £12.2m: the **Headland Group Plc** - the former **Compsoft** - is paying £11m for Unix accounting software house **Multisoft Plc,** and **Apricot Computer** has bought Britain's last independent minimaker **ITL Information Technology Plc,** boosting Apricot's volume to £140m.

Emerging from its management buyout from **CLF Yeoman,** (UN No 8), **TFB Holdings Ltd** has been signed up by Taiwanese giant **Acer** to distribute its PCs in the UK. TFB is also developing financial software based on **Tetra's** Tetraplan package and has bought the rights to **Brook Street Computer'** Unison application.

Rapid Recall has set up a separate division to concentrate on selling HP's Unix based Vectra PC systems in the UK. **Rapid Premiere,** with 24 staff, will operate out of offices in Nantwich, Cheshire; High Wickham, Buckinghamshire; and London - the new 486-based EISA machine will spearhead the effort. And as part of its parent's reorganisation, **Rank Xerox Ltd** has created **Xerox Engineering Systems Ltd** in the UK.

The **Commission of European Communities** has decided it cannot wait any longer for **X/Open** to make up its mind whether or not to endorse a graphical user interface, and is forging ahead with the choice of OSF/Motif.

The **CCTA,** the Central Computer and Telecommunications Agency, has recommended that all UK government information technology acquisitions be maintained by single third party sources - it says public services contracts will be advertised by 1991.

Ashton-Tate Corp, DEC, Fujitsu America, Hewlett-Packard, Informix, Metaphor, NCR, Oracle, Relational Technology, Sun, Tandem, Teradata and **Wang** have come together in San Jose to form the SQL Access Group, dedictaed to developing a set of specifications for porting SQL-based software to various stand alone and networked database and hardware platforms.

British Telecommunications Plc is to standardise its mid-range systems world-wide under **Oracle's** relational database management system.

Unisys, CdFi SA, and **La Mondiale SA** have teamed to form **European Assurance Informatique SA** - with a disaster recovery centre in Lyons, the new firm will offer remote diagnostics and insurance against data loss.

IBM AND MICROSOFT CHANGE MOST OF THE RULES ON OS/2 IN LAST DITCH RESCUE EFFORT

Maureen O'Gara reports

With its Unix business in limbo until the RT successors are launched in January to threaten IBM with terminal schizophrenia, the company is making what could well be the final attempt to salvage OS/2 - fewer than 200,000 copies have been sold in its 30-month life - as a real contender for uncommitted desk-tops rather than simply a de-facto proprietary operating system for IBM mainframe users.

At the Comdex show in Las Vegas this month, IBM flooded the show floor with shopping bags and soft drink cups bearing the OS/2 logo, and blue-and-white TV sets in the convention centre lobby challenging attendees not to visit IBM's massive exhibit, prompting one big-time competitor to accuse IBM of attempting to "buy the show". And on Monday afternoon, IBM's James Cannavino got together with Microsoft Corp's Bill Gates to map out what the two see as the future of OS/2. Users have of course been able to get 32-bit desk-top versions of Unix that exploit the native architecture of the Intel 80386 for years, and OS/2's credibility has been crippled by the fact that the only versions currently available are 16-bit. Now, as the first generation 32-bit Intel microprocessor sinks slowly in the west and the 80486 peeps over the horizon, OS/2 users are finally to get a 32-bit version of the operating system.

Plan for the 1990s

The IBM-Microsoft "Platform for the '90s" is defined as an 80486 or 80386 personal computer with 4Mb memory and 60Mb disk running OS/2 and Presentation Manager. The two promise that "the majority of their application and systems development resources will be applied to OS/2 solutions," and from the second half of 1990, IBM and Microsoft say they plan to make their graphical applications available first under OS/2. The 32-bit OS/2, will feature demand paging and the ability to run multiple MS-DOS applications concurrently, and able to support the 32-bit flat memory model - all features freely available on Unix machines that cost no more than 80386-based AT-bus or Micro Channel machines, and less than the first 80486 machines. Presentation Manager applications will run unmodified under the new version of OS/2. Early development support for 32-bit OS/2 will be available by the end of this year with a common development toolkit, and the partners warn that software developers starting new high performance or server applications for 4Mb 80386SX machines and above "should build directly on the advanced Applications Programming Interfaces of this forthcoming 32-bit version of OS/2". And OS/2 is to slip the surly bonds of the Intel architecture and be implemented for other architectures and instruction sets, including RISC. That's all very well, but plenty of people working with computers today have experience of the mainframes of 15 years ago that had no more than 512Kb memory and think that it is ridiculous to have to pay for 4Mb memory to run a simple application - and IBM and Microsoft are finally addressing this block. "Today's OS/2 1.2 is recommended for systems with at least 3Mb of memory and 30Mb fixed disk drives" they say cheerily without a trace of irony or shame. But to make the thing a little less greedy, as a first step, they are to make the over 512Kb of memory used by the MS-DOS compatibility box available to OS/2 when the MS-DOS program is inactive - later this year.

And "both companies are making a concerted effort to enable OS/2 for 2Mb entry systems," although users should plan on Microsoft Windows to implement graphical applications on machines with less than 2Mb of memory. But you'll need 4Mb to take full advantage of advanced system features such as the High Performance File System, expanded local area network client features and advanced applications. The absurdity of that statement is highlighted by the fact that the biggest 9370 can still address only a maximum of 16Mb memory. Still, the vast majority of users still don't actually need OS/2, the partners finally admit: "OS/2 is currently best suited for customers using or building database applications, needing full multi-application and background processing support, or using distributed processing solutions requiring full local network client support," they say. OS/2 is also recommended for all server applications; the 32-bit version will be further enhanced for server requirements, and advanced operating system features such as Department of Defense security, full object-oriented capabilities and symmetrical multi-processing, will be available only in future releases of 32-bit OS/2.

SAA and OS/2

MS-DOS and Windows are recommended for systems with 1Mb to 2Mb of memory or disk drives smaller than 30Mb - the first time IBM has formally endorsed Windows - although "while Windows will provide the Systems Application Architecture user interface, it is not planned to include the full range of SAA support that OS/2 will provide". Windows is not intended to be used as a server, nor will future releases contain advanced OS/2 features such as distributed processing, the 32-bit flat memory model, threads, or long file names. The companies also committed to work together to make the Database Manager, Communications Manager and LAN Requester and Server functions of IBM's OS/2 Extended Edition available to all OS/2 users and to make IBM's OS/2 LAN Server and Microsoft's LAN Manager identical over time. These local network products will be designed to run under the base OS/2 operating system in both client and server configurations, like LAN Manager does today, and will exploit 80386 and 80486 functions. And, just to underline the degree of commitment IBM and Microsoft are giving to OS/2, IBM told users that OS/2 Extended Edition 1.2 was delayed and the original ship date of this month had been put back to March.

What are your views on OS/2 ? Are you using it now or have any plans to do so in the future ? Write and tell us your views on this and any other issue that you think is important for the Unix user community. All contributions are welcomed.

MORE HARDWARE AND SOFTWARE NEWS

EISA MACHINES

Last month Hewlett-Packard Co became the first of the majors to announce an 80486-based EISA bus machine in its Vectra personal computer line, pitching the machine at CAD, multi-user business computing and server applications. The Hewlett-Packard Optimised Architecture in the case of the Vectra 486 PC means that the memory subsystem communicates with the CPU at processor speed - the 80486 is clocked at 25MHz - and comes with 2Mb standard, expandable to 64Mb on the system board, and 108Mb to 670Mb disk drives for a maximum of 1.3Gb, with 16mS access time and 2.5Mbytes-per-second transfer rate. Eight 32-bit EISA slots, which take existing AT boards, are available. In the UK, the machine with 1.2Mb 5.25" floppy is £10,000, in limited numbers this quarter, volume shipment begin first quarter 1990 and the same configuration is also offered with a 152Mb, 330Mb or 670Mb disk. The firm has also confirmed that it plans to use the EISA bus in future workstations, starting in the first half of next year, and that eventually all its personal computers and workstations will use it. US prices for the Vectra 486 PC go from $14,000 with 2Mb and 150Mb disk to $20,000 with 670Mb disk. In addition the Santa Cruz Operation Inc says that its SCO Unix System V/386 Release 3.2 supports Hewlett-Packard's new Vectra 486 microcomputer.

Acer America Inc has joined the rush to bring out 80486-based EISA bus machines. The Acer 1200 has a 128Kb secondary level caching scheme to complement the on-board 8Kb cache of the 80486, and Acer reckons it achieves a benchmark rate of 11.01 MIPS and 3974.9 K-Whetstones, 37% and 67% respectively better than Acer's 33MHz 80386-based 1100/33. It is due for first quarter 1990 shipment, it costs $11,000 with 4Mb memory, 1.2Mb floppy, two serial, one parallel ports, power supply, keyboard, MS-DOS 4.01 and MS Windows/386, rising to to $13,200 with a 380Mb hard disk.

SUPERCOMPUTING

The Applied Physics Laboratory of Johns Hopkins University in Baltimore, Maryland, claims to have developed the first desktop supercomputer - the Quen-16 parallel memory-linked single and multiple instruction-multiple data machine. The architecture is a version of the Pentagon's Very High Speed Integrated Circuit technology, and the machine is said to pack the power of a Cray-1 in a 17" by 8.75" by 21" box weighing 45 lbs. It is designed as a back-end for DEC VAX and Sun Microsystems machines, and will sell for only $50,000 to $100,000, and Interstate Electronics Corp, Anaheim, California, is licensed to make it.

Convex Computer Corp, Richardson, Texas, is giving its C Series of supercomputers an overhaul, with new hardware and software enhancements dubbed its Open Supercomputing strategy. The Enhanced Scalar Processor CPU - ESP - is object-code compatible with the present C2 line and is claimed to boost performance from 34 to 56 MIPS. A C240 system is now reckoned to deliver 200 MFLOPS and 224 MIPS - an ESP upgrade is $75,000. Also introduced is an Intergrated Disk Channel for high-performance systems. Based on an IPI-2 - Intelligent Peripheral Interface - it supports up to 32 IPI-2 disk drives and costs $48,000. Convex also says that its BSD/Unix variant ConvexOS operating system is now available in a POSIX compliant version for all its C Series machines, prices go from $7,500 to $37,500. Other parts of Convex's Open Supercomputing strategy include a new process scheduler which allocates CPU time slots where users are competing for resources, prices start at $7,500 rising to $12,500, and OSF/Motif which is to be offered as the standard user environment on its range of systems. A far as communications are concerned in addition to HYPERchannel, its supercomputers can now connect to mainframes and DEC VAXes over UltraNet, from Ultra Network Technologies via an OEM deal signed recently. The VME/UltraNet interface, COVUE - Convex To VAX User Environment - can be intergrated into the new ConvexOS and costs $28,000. Connectivity to minis is also made easier with connection over Ethernet available, supporting both TCP/IP and DECnet protocols - emerging technologies such as High Speed Channel and Fibre Distributed Digital Interface will be supported as they emerge.

APPLICATION BINARY INTERFACES

It turns out that the reason Intel Corp has made a $3m investment in Alliant Computer Systems Corp, for a 4% stake in the company, is that the two are working on an Application Binary Interface - ABI - and Application Programming Interface - API - for Intel's 80860 microprocessor that will enable shrink-wrapped software to run on single and parallel, multi-processor systems built upon the RISC architecture, without the need for source code recompilation. It goes beyond the existing, basic ABI specification for 80860 systems running Unix V/80860, and is being called the Parallel Architecture Extensions standard - or PAX. Intel says it will incorporate the PAX standard in future generations of the 80860 architecture, the first implementation of which is promised for early next year. In addition to an ABI and API, PAX covers hardware, operating systems, libraries (for integer, graphics and floating point), and compilers. Alliant's contribution to PAX is software in the form of its concurrency control architecture, Fortran and C compilers and parallel PHIGS and PHIGS+ implementations, all of which it has also licensed to Intel, which in turn is to supply them to 80860 system developers. PAX-compliant compilers will have the capability to recognise the API and apply automatics parallelisation, then emit machine language that will obey the ABI. PAX is designed to enhance loop-level execution on the chip - to get more than one instruction through every clock cycle - Intel claims the 80860 presently does three. Whilst Alliant will continue to manufacture its Motorola 68020 based FX minisupercomputers, it has confirmed its intention to build a successor based on the 16 processor implementation of the 80860, which will be out in the first quarter of next year.

Mips Computer Systems, Sunnyvale, California, has been signing up supporters for its R Series RISC processor left, right and centre over the last few months - now the company has announced plans to collaborate with AT&T on the development of a Unix V.4 Application Binary Interface for the chip. When available - in around six months time - the ABI should ensure that applications under Unix V.4 will run in binary form without recompilation, on any machines using Mips' RISC architecture.

C GENERATORS

Munich-based Ebusoft GmbH has developed a fourth generation applications development environment that generates C source code. The new Ebus-Generator-C is claimed to generate immediately compilable C source, making use of macro technology. The system is being touted as a machine-independent generator, and applications written for any of the machines supported are claimed to run on all the others: the company implies that these include most Unix and Xenix systems, including Siemens' Sinix variant, the Targon range from Nixdorf Computer AG, and Bull SA's DPX2000 machines.

Sycero C Ltd, Maidstone, Kent has a new Sycero C fourth generation language that generates C source code. Built around the Microsoft C 5.1 compiler, Sycero C enables dBase programmers to program in dBase and generate C code. The engine of Sycero C, however, is the company's fourth generation language, the Sycero Programming Language, which enables the programmer to use dBase syntax. Sycero C costs £600, with a multi-user Sycero C Net at £900, for MS-DOS with a Unix version planned to be released at Christmas and an AS/400 version in 1990.

Marosi, a new company formed by **Sphinx Ltd** founder Dr Pamela Gray made its debut at Unix Expo: Marosi stands for marketing of open systems, and th UK-based company from Bray in Berkshire will specialise in seminars, conferences, product launches, marketing campaigns and mailshots on behalf of US companies anxious to break into the lucrative European market.

Informix Software Inc is developing a new version of its Wingz graphic spreadsheet for DEC's DECstation family of RISC workstations for the first half of 1990 and says it will use DEC's Network Application Support services.

The **K3 Group**, Worcester, has released its Change and Configuration Control software for DEC's Ultrix-based systems in the UK - price on the DECstation 3100 is £2,450.

Alsys Ltd 's secure Ada compiler is now available running in a Unix environment on a PC platform - it is dubbed the Secure Xenix Ada Compilation and Toolset, and runs on top of SCO's B2 stamped Secure Xenix system on PCs with at least 4Mb RAM and needs 20Mb hard disk.

MF Systems Ltd, Kensington, London, has developed a gateway linking its MetaFour 4GL with Alton, Hampshire based **Multisoft**'s Premier accounting package, enabling VARS to configure customised systems without having to program in C - the gateway is transparent to users and costs £8,500.

Relational Technology Inc, Alameda, California has a new user interface for its Ingres relational database, based on **Sun Microsystems Inc**'s Open Look for Unix: developed jointly with Sun, Ingres/Simplify is for Sun-3, Sun-4 and Sparcstation 1 users and costs $350 per user, now.

Irrepressibly nosey **Network General Corp**, Mountain View, California has added the SniffMaster I, claiming it to be the first software package that enables local network managers to analyse problems within distributed local area networks from a single workstation: initially designed to run with the Sun Microsystems Inc SunNet Manager, SniffMaster I enables simultaneous monitoring and control of both local and remote networks or multiple segments of a large, enterprise-wide network from a single control console, and Sun running SunNet Manager and SniffMaster I enables the manager to view multiple, overlapping windows on the console screen simultaneously; out in December, it's $2,000 per Sun.

Prime Computer Inc, Natick, Massachusetts has packaged its computer-aided engineering, design and manufacturing software with the WS40C and WS42C Sparc-based workstations it buys OEM from Sun Microsystems to create 17 CADDSolutions, offering savings of up to 39% on the price of the elements unbundled. Prices for the CADDSolutions go from $39,500 to $139,900.

Spider Systems Ltd, formed in Edinburgh in 1983, has opened its first continental subsidiary in Paris: the company now has offices in Edinburgh, Wokingham, Bournemouth, and in Boston, Massachusetts; Spider Systems SA has been established following a £3m investment by a Syntech -led syndicate, and other memebers include County Natwest Ventures, and CIN Venture Managers ; the Scottish Development Agency, European Coal and European Community have also contributed; by 1992, Spider Systems aims to have 10% of the networking market in France, and to achieve continental sales approaching the £40m mark, an in crease of £30m on current figures - Spider has also signed an OEM agreement with Millhouse, Alton, Hampshire, which is to incorporate SpiderTCP into its Linguist family of multiprotocol converters providing transparent connectivity between Unix and non-Unix applications on Bull, IBM, ICL and Unisys hardware.

Siemens AG expect to bring out four or five MIPS Computer Systems RISC-based systems at Hanover early next year following its agreement to fabricate the R2000 and R3000 chip sets as the sole European source: it is currently sampling the parts to several companies in the joint qualification process; it also says it has no interest in second sourcing 80860 and 80890 from Intel Corp, but denies that Intel's refusal to give it masks for the 80386 has any bearing on its decision to take the MIPS route, or indifference to the new Intel RISC chips.

Bedford, Massachusetts based **Progress Software Corp**'s 4GL is now available on Data General's 88000-based AViiON Unix workstations, DEC's DECstation, Mips Computers' RISCstations and Solbourne's Sun-compatible Series 4, and will be compliant with the 88open consortium's standard for Motorola's 88000 processor by mid-November: Progress for MIPS and Solbourne ranges from $1,250 to $38,000, on Data General's AViiON family ranges from $1,250 to $29,000, and on DECstations and DECsystems from $3,400 to $65,000. Meantime the Solbourne Computer Inc machines, which run under

The Soviet Union is considering a proposal to spend a large part of its scarce hard currency resources on importing $1,000m of personal computers for use in educational establishments - but no decision on the plan is likely for at least a year.

What is the maximum performance now permitted for personal computers to the Comecon countries under the new CoCom rules? These are very precise, and specify a performance that does not exceed an 80286 with 16MHz clock, total disk capacity can be no more than 140Mb, and screen definition and colour are also restricted - a high-resolution 1,024 by 1,024 pixels can draw from a palette of only 64 colours, and if they want 256 colours, it has to be at low 320 by 320 resolution.

Dell Computer Corp is extending its reach into the Unix market by adding a version of the X Window System for its 80386-based machines and adding the **Open Software Foundation** Motif Unix user interface. Support is included in Dell Unix System V Release 1.1, which also features a faster file system and improvements in compatibility with Xenix file systems and floppy disk formats.

A new company - **IQ 150 Ltd** - has been formed by **Vision Computer Products Ltd**, Reading, Berkshire, and **Second Computer Ltd**, to amalgamate their respective product and development operations - also in Reading, IQ 150 will build new systems around Vision's Intel based file servers for 16 users.

The **Stepstone Corporation** has enhanced version 4.0 of its object orientated Objective-C compiler with releases for MS-DOS and OS/2 priced at $249 and $495 respectively: the Sandy Hook, Conneticut based firm also has an X-Windows version of its object orientated user interface toolkit - ICpak201 - for Sun and IBM RT workstations, with DEC and H-P versions planned for the future.

A Unix Systems Centre has been opened in Birmingham, where customers can have PC systems configured and tested with hardware and software of their choice. The centre comes to life after an agreement betwwen **Houston Technology Ltd**, Sheldon, Birmingham, and PC manufacturer **Digital Matrix Ltd**, Solihull.

CONTACTS

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