

SERVERS

IBM eServer x250

Scalable server aimed at web or file serving and transactional workloads

Pros: Outstanding hardware design and construction, easy to install

Cons: Hefty price tag, additional hardware also pricey

Price: £7363 (£8651 inc VAT)



Despite being the instigator of the desktop PC revolution, IBM made its name from supplying large mainframes. It's been doing it for decades, so it certainly knows how to build powerful machines. The eServer x250 is no mainframe, but neither is it a desktop PC server. Instead it draws on aspects of both to create an extremely capable machine.

If you are running a server of this size and capacity, the chances are that its job is mission-critical. If any part of it does fail, you need to know that you can get to it quickly and if possible replace the faulty part without having to shut the machine down. Getting inside the x250 is as simple as a few turns of the thumbscrews holding the top plate on. This then slides off to reveal the interior of the server. One of the most immediately noticeable things inside the x250 is that there are lots of coloured stickers. These relate to removable components. Everything from the CPUs, the hard disks, and the power supplies to the cooling fans is modular and can be removed in just a few seconds. Almost every removable component also has a status light to indicate if it has failed. To test this we removed one of the CPU voltage regulator cards (also modular) and switched on the server to be greeted by a warning light on the front panel, a light on the internal status panel indicating a voltage regulator failure, and a third light immediately adjacent to the socket which should have contained the actual regulator.

The x250 has space for up to four Intel Pentium III Xeon CPUs, 16GB of RAM and up to 364GB of storage space. Also included are six 64-bit PCI slots, two of which run at 66MHz (the remaining four run at the more standard 33MHz). Our test model contained two

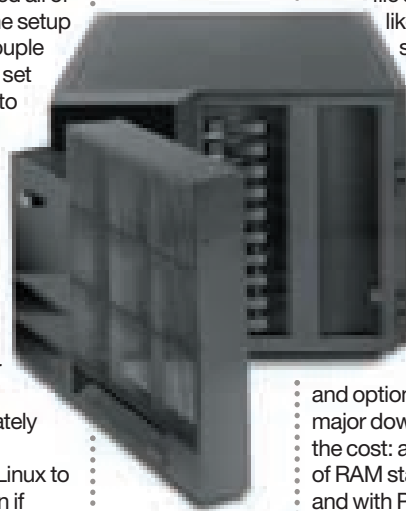
CPUs, 512MB of RAM and four 36GB U160 SCSI-3 hard disks connected to a ServeRAID controller.

From the above description you might think this machine is nothing like a normal PC and from a physical point of view that is mostly correct. But once you've run through the included setup CD you can install pretty much any operating system you would install on a more standard PC. IBM lists Windows 2000, NetWare, SCO and Linux as compatible. For our tests we used a standard i386 Red Hat 7.1 install which correctly detected and configured all of the available hardware during the setup process, although there are a couple of install options that have to be set according to IBM's instructions to ensure the machine boots correctly. This is a major boon as it automatically provides application-level compatibility with all of the standard platforms. More powerful servers that reside completely within the mainframe domain tend to require non-standard operating systems through their use of custom CPUs and motherboard hardware. Fortunately companies like IBM have put considerable effort into porting Linux to their 'big iron' machines so, even if binary compatibility is unavailable, source code can simply be recompiled.

However, the days of the single mainframe appear to be numbered since clustering technology has become extremely cheap and even multiple x250 class machines come in cheaper than, for example, an S/390-



Not quite big iron but still a pretty hefty server. The eServer bridges the gap between PC and mainframe, providing great expandability options and intense processing power



based mainframe. Once installed you can effectively forget about the hardware inside the box and use it as you would any other server. This makes the x250 extremely attractive if you require a powerful server with plenty of room for expansion and require useful levels of reliability and redundancy. So who would the x250 be suitable for? If you are dealing with very high web or

file serving loads then a server like this would be perfect, simply because of its expandability. If your load increases, just drop in another processor and some more RAM. Database operations would also be well suited to this machine because of its multi-processor capability and high-speed data bus options provided by the high-spec PCI bus and the use of hardware RAID cards

and optional gigabit Ethernet cards. The major downside of such a machine is the cost: a single CPU version with 2GB of RAM starts at a shade under £6000, and with Pentium III Xeon CPUs costing around £1500 each and a ServeRAID controller costing about the same, you will definitely need a sizeable budget to justify an x250. If you have that kind of budget it will be worth every penny.

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DISTRIBUTION

Red Hat Linux 7.2 Workstation Edition

Stable, updated distro with solid new features and updated apps

Pros: Ease of install, hardware support, journalling filesystem (finally)
Cons: Expensive, cut-down support
Price: £70 (£82.25 inc VAT) Workstation Edition



Once you've installed the new release of Red Hat's Linux distribution, you probably won't notice too much difference from the previous versions. Sure, there are updates to most of the core applications (KDE and the kernel in particular are positively bleeding-edge now), but in a similar way to Red Hat's previous x.2 releases, Red Hat 7.2 seems to focus on stability and fully integrating already existing features into

the OS.

However, don't let that put you off. This is a very worthwhile upgrade to anyone using a previous version of Red Hat, or indeed any other distribution. The major changes you'll notice in this new version are most apparent in the installer, with such features as a journalling filesystem by default and easy configuration of software RAID. Nothing new in terms of technology, but this is Red Hat's first release that truly brings these features to the average user.

Journalling filesystems are something of a buzzword at the moment. From the smallest workstation to the largest mainframe installations of Linux, journalling is probably the most oft-quoted reason why Linux isn't yet ready for the big time. Some distributions already have journalling support (notably SuSE's choice of ReiserFS), but this is Red Hat's first. Ext3 is the filesystem of choice here, which will please many due to its speed, claimed reliability, simple migration from existing ext2 partitions and, in common with most other journalling filesystems, no more lengthy waits for fsck on reboots.

Again, software RAID is more of a

7.2 may not be cutting edge but it does bring power to the people. Ext3 by default and software RAID made easy are just some of the features of this new and highly stable Red Hat release

feature for server installs rather than the workstation product featured here, but the tiny Make RAID button which appears during the install is another frequently requested feature. It allows you to create and control software RAID partitions (levels 0, 1 and 5 being supported). Additionally, it does its job quickly and efficiently, being based around kernel code that's been around for a number of years.

The only other new feature in the installer that you'll notice is the addition of GRUB, a bootloader alternative to LILO. GRUB features a snazzier interface, can access data on any installed device, and supports diskless systems and remote terminals. However, if you're used to LILO, then you're probably better off sticking with it. GRUB didn't seem to like the previously-existing installs of Windows 2000 and 98 on our test machine.

Assuming your install finishes without problems (as ours did on several test machines, including a notoriously fussy laptop), after a reboot you're up and running. If you're used to Red Hat in general, you won't notice too many changes; a few application updates, the inclusion of the Nautilus graphical file manager, decent hardware and user management tools and some new features and updates to the Kickstart auto-install system.

After using the system for a few days as a general workstation, the outstanding stability of the system is most noticeable. Gone are the quirks of recent Red Hat releases. Everything works out of the box just fine. The only problem you may face is kernel compilation. No matter how hard we tried, we just couldn't get the kernel source supplied (2.4.7) to compile properly. However, this won't affect too many potential buyers of this product, and the current kernel source (2.4.14) compiles flawlessly.

As in previous versions, security updates and bugfixes are available using the up2date tool. There have been several problems with this over the last few releases of Red Hat, and sadly they don't seem to have entirely gone away. One of our test systems froze completely while running up2date for the first time. However, this may have been a hardware issue and it's still highly worthwhile to make sure your system is completely Red Hat compatible. Red Hat's Hardware Compatibility List has been extensively updated for the new release.

Overall, 7.2 is an excellent, up-to-date Linux distribution that's simple to install, reliable to use, and well up there with the competition.

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SERVER MANAGEMENT
HARDWARE**Raritan Paragon
KVM**

High capacity KVM switch

Pros: Easy to set up and use, convenient cabling**Cons: Manuals not the best, expensive for just a few machines****Price: Matrix Switching Unit (UMT8) US\$6600
User Station (UST1) US\$1045
Computer Interface Module (UKVMP) US\$182**

Many KVMs allow sharing of a keyboard, monitor and mouse across either two or four PCs. This unit from Paragon, however, brings the concept to a whole new level of flexibility. For a start you get to control up to 32 machines from a single unit, more if you connect units together. To work with this many machines you are going to need more than just a switch to choose between them. Add to this the fact that you can plug up to eight sets of keyboard, monitor and mouse to mix and match control, and you'll realise that this is no ordinary KVM.

There are three distinct types of unit that make up the Paragon system. At the centre of the system is the Matrix Switching Unit (UMT8) which the other units connect to. The User Station (UST1) has a keyboard, monitor and mouse connected and, once plugged in, this gives you access to a menu system for controlling machines and configuration. Each machine is

connected via a Computer Interface Module (CIM). Connection between the units is by means of standard UTP patch cables which makes cabling easy as these cables can be readily obtained or made up.

The Matrix Switching Unit is in a 1U 19" rack-mount chassis, although no mounting brackets are supplied. On the front is a small display and some buttons which are used for resetting and identifying the unit. The back is much busier with 32 channel ports and eight user ports. There are also ports for connecting to other UTM8 units. Included in the box is a power cord, two decent length UTP cables and an A4 manual.

Eight User Stations can be connected and each can control any of the 32 machines connected. They have metal cases which are strong enough to sit under the monitor. There are ports at the rear to connect the keyboard, monitor and mouse, as well as a UTP port for connecting back to the UMT8. There is also a pass through power connection for the monitor, although no cables are included either for pass through power or connection to the UMT8.

Only two of the Computer Interface Modules were tested. The passive unit (UKVMP) simply connects to the keyboard, monitor and mouse ports of your PC and then, via a UTP patch cable, to the UMT8. The UKVMP adds connections for using a local keyboard, monitor and mouse, which remain live when the machine is being controlled via the KVM.

Once connected you are presented with a login screen followed, once logged in, by a menu of the ports available on the UMT8. Those that have a machine connected are highlighted.

From here it is simply a matter of using the cursor keys to select one and using enter to switch to that machine. Getting back was omitted from the quick start section of the manual unfortunately, but is simply a matter of double-clicking the scroll-lock key. This is reconfigurable if you prefer another key.

Once up and running there are a number of configuration changes that can be made to make life easier. The most obvious is to add names to the machine menu for easier identification. Delving further you find that User Stations can be used in a passive viewing mode which would be ideal for use in a classroom. You can also operate in either private or shared mode. This basically defines whether or not another user can take over control of the machine if you have been idle for a period of time. There is also the ability to manage users, defining which machines they can control and whether they have administration rights.

The Paragon is a sophisticated system, particularly useful when you have large numbers of servers to work with, or in training and testing environments. If you only have a few machines to connect up the costs involved probably aren't justifiable. It's also worth thinking about what functionality you will gain, particularly with SSH which gives you all the control you need while the server is running. The key advantage is the ability to work with the boot process without having to play with cabling. That said, this is a very nice piece of kit if you can justify the cost.

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Get switched on in the matrix. Much more than your common or garden KVM, the Paragon is a highly configurable server management solution for those who want total machine control right from power on



The Paragon is a sophisticated system, particularly useful when you have large numbers of servers to work with, or in training and testing environments... The key advantage is the ability to work with the boot process without having to play with cabling.

DISTRIBUTION

Mandrake 8.1

A no-nonsense, well supported and solid distribution which brings Linux within the reach of both desktop and enterprise users alike

Pros: Easy to install, top-notch apps and good support

Cons: Too many cuddly penguins featured

Price: Standard 29 euros (34 euros inc. VAT), PowerPack 59 euros (69 euros inc. VAT), ProSuite 149 euros (175 euros inc. VAT)

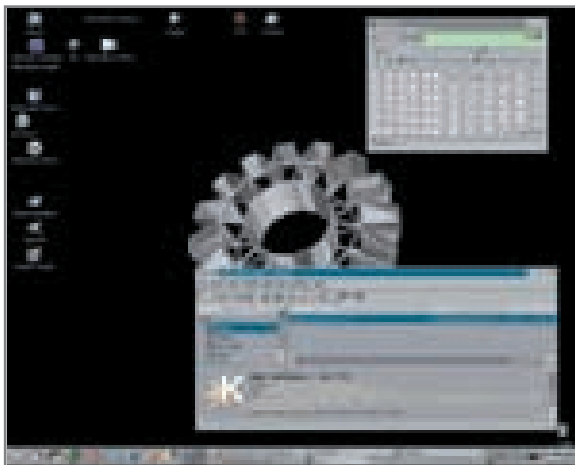


As a self-confessed Mandrake junkie already, I was only upgrading from 8.0 but this still involves a complete reinstall of the guts of the distribution with only your /home partition (where your users live) staying put. Booting straight from the first CD (or conveniently from a single DVD) you are launched into the installation menu from where the usual procedures of choosing partitions, mount points and configuring packages are performed. The graphical installation screens have online help and are clear and intuitive. They will best guess your configuration for you if you so wish, but for those who like to fiddle, the 'expert' mode still lets you control the nuts and bolts of the installation.

Configuration of your network, printer and your dial-up connections can all be performed during the installation process. If you get it right first time you can boot right back into a work-ready Mandrake box. If you don't get it right first time the Control Centre (drakconf) is always there to help as is the Software Manager (rpmrake). These packages are both handily presented as desktop icons. Also on the desktop are links to some of the Mandrake help sites such as Mandrake News, Mandrake Campus and Mandrake Expert.

Mandrake 8.1 of course is bundled with the usual suspects; Koffice including Kword, Kspread, Kivio (diagramming), Kchart, Kpresenter and StarOffice 5.2. There are also communications tools, mail tools, chat clients, the usual browsers (including Mozilla 0.9.4 and Opera 5.0) and the standard choice of desktops and window managers (GNOME 1.4 and KDE 2.2.1) with the highly configurable and very stylish environments that go with them. There are also of course the usual multimedia players, graphics tools, the latest development tools and a few games to keep you amused.

On the server side Mandrake 8.1



packs in the Apache web server, directory servers for LDAP, NIS and Kerberos, a firewall and router, file and print server and PostgreSQL and MySQL database servers. The kernel version is 2.4.8 and provides support for more than 1024MB of physical memory as well as SMP (symmetric multiprocessing).

With its ease of installation, supreme functionality and excellent presentation of many of the latest cutting edge Linux applications, it's hard to criticise Mandrake. Mandrake comes close being to a testament of the state of the Linux nation, a maturing product whose ease of use and depth of functionality is quickly becoming unrivalled.

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How much longer is it before Linux can fulfill the goals of the average user as assuredly as its competitors? On the evidence of the latest Mandrake, not too long at all. In fact, it might already be there

Close in spec to the Ultimate Linux Box, DNUK's Workstar sports dual Athlons, and excellent Geforce 2 MX graphics

WORKSTATION

DNUK Workstar 720-DDR workstation

Pros: Blindingly fast, fantastically expandable

Cons: Poor software setup and configuration

Price: £1293 (£1519 inc. VAT)



The 720-DDR is latest in DNUK's line of high-performance Linux-based workstations. The system as reviewed was configured with two Athlon 1800MP processors, 512MB RAM, a GeForce 2 MX 64MB graphics card, 10/100 Ethernet, and a 40GB IDE hard drive containing a pre-installed and pre-configured version of Red Hat Linux, with the latest kernel image (2.4.13 in this case).

It came as no surprise to find that this was an extremely fast system. In particular, my personal benchmark of loading time for StarOffice was met in around 5.5 seconds. This particular

system is aimed at high-end graphics or number-crunching work, though, which is where the dual-processor aspect really comes into its own. The average user (and even the hardcore gamer) is unlikely to notice the extra processor much in normal use though.

The system came supplied with Red Hat 7.2 installed, but only Red Hat 7.1 on CD. The normal user probably wouldn't notice this anomaly until they tried to install or update a package from the older version and ran into countless problems. A correct CD version wasn't forthcoming at the time of review, so we were unable to test the proper install version. DNUK ships a base Red Hat system with some modifications, most noticeably the current stable kernel at the time of system shipment.

The default install of packages on our system was more than adequate for our needs. KDE was selected as the default desktop and, once a sensible X configuration had been set up, worked flawlessly. KDE in particular seems speedy on this machine, the combination of the extremely powerful GeForce2 MX400 graphics adaptor and sheer processing power working well together.

A slightly strange configuration choice is that the machine comes as standard with an 8x DVD-ROM drive, which is not supported by Red Hat, and is set up as a standard CD-ROM drive. Several after-market software and hardware solutions are available to allow use of this, but DNUK does not

appear to offer these as an option.

Our system came with an ATA100 IDE hard drive, but SCSI is available as a more expensive option for those who absolutely must have the extra performance. Other options available include an array of sound card and backup drive options, CD writers, UPSs, and gigabit Ethernet adaptors. However, the option to change the case is conspicuously absent. The only case available is absolutely gigantic and, while this is great for expansion, it does look out of place on the average desk.

Overall, this is a well-constructed and specified system for the high-end workstation or

power user, with a few minor drawbacks which may deter newcomers to Linux from getting 100 per cent out of it.

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