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Vodafone Success Story

Vodafone Airtouch Faces the Challenge of Explosive Growth with Hewlett-Packard's and QStar Technologies

THE BUSINESS

It's the kind of business problem most companies would pray for. With the planet partying for the new millennium, Vodafone Airtouch Plc, the world's largest mobile communications company, found itself celebrating record growth. In the UK over a million new customers had signed up in the last quarter of 1999, taking the total number up to 7.94 million - nearly a quarter of the company's 35.5 million customers worldwide.

THE CHALLENGE

A million new customers, making millions of phone calls, both voice and text - there were more than 86 million text messages sent in Britain during December alone. Great news, but that record explosion in usage brings with it a record challenge for administration. Every call must be counted, every detail of duration and location logged, every text message tracked, every conversation noted and timed. Customers have the right not only to expect minutely detailed billing, but since expenses may only be totalled up annually, they also expect to query any aspect of that detail going back months, even years. Every single phone fact must be available in the case of complaint or investigation. In fact, for legal reasons, Vodaphone Airtouch has to keep those exhaustive records for a full seven years. That's terabytes of data which, while they may never be needed, must always remain accurate, uncorrupted, and instantly available.

Furthermore, the explosive growth in customers, the massive potential traffic promised by new applications such as WAP (wireless application protocol) services, and the company's own dynamic expansion into new markets, all combine to ensure that the scale of that challenge will grow exponentially.

THE SOLUTION

A challenge yes, but not a problem. Need to store terabytes of data? How about a device with a capacity of up to 1.2 terabytes? Legal requirement to keep data for years? Best to opt for the one medium that's actually guaranteed for a century. A burning need for data integrity? Then best choose a medium which can only corrupt the data if heated to a temperature over 200 degrees Celsius. Not only is that an unlikely occurrence in the office environment, but it also stands in stark contrast to other magnetic media which can be corrupted by the electromagnetic fields emitted by anything from power plugs to portable phones (not so unlikely in the office environment). The solution in question, boasting all the above benefits, is an HP SureStore magneto-optical jukebox.

Success Story

"Vodafone Airtouch is the perfect illustration why you'd choose magneto-optical technology over tape, or hard drives, or CDs," comments Scott Paul, Product Manager for magneto optical jukeboxes at Hewlett-Packard. "They have a huge amount of data, and although individual records are rarely accessed, the data has to be available at any time, and it has to be stored for a long time." Given the tumbling costs of ever larger hard drives, however, you could be forgiven for wondering why Vodafone Airtouch doesn't simply store the data on a bank of them.

"It's true that gigabytes of storage on hard drives is cheap, certainly for those of us who can remember the old 5MB drives that measured fourteen inches across," says Paul. "The problem is that when you have lots of data, you have to buy lots of disc mechanisms, and although individually they are reliable, when you put them together you're looking at expensive file system maintenance and the possibility of failures and data loss. By contrast, the stability of magneto-optical means we can guarantee each disc for 100 years." Which means that the discs, and their precious data, are guaranteed to outlast all but the most exceptional customers.

That stability translates to rock-solid data integrity, essential not only for customer confidence but also legal requirements, and this requirement rules out the option of magnetic tape storage, as Paul explains: "If you save the data to tape you find that the medium requires conditioning after relatively short periods. Plus occasionally tapes can exhibit what's called 'print-through' where data migrates from one point to another." Print-through is impossible on magneto-optical, because the way the discs are imprinted with information is by heating the disc substrate with a laser to a physical limit known as the Curie point (after the physicist). Above that temperature materials can change their magnetic characteristics easily so it is then that the data is written into the magnetic field, and as the disc cools the data is 'frozen' in. Subsequently even the strongest magnetic field can't damage it.

By contrast, a CD left in strong sunlight can lose data. To further ensure data integrity the disc is encased in a hard plastic cartridge with a sliding door. "It's like a stronger, more reliable version of what you see in a floppy disk. In fact, you can stand on these things as they are designed for handling by robots."

Hewlett-Packard has been building these storage libraries for twelve years, claiming 65 per cent of the market for itself in the process, and is now working with fourth-generation robotics. The HP SureStore 1200ex model, for example, stores 1.2 terabytes of data in a single box the size of a small wardrobe. In it there are 238 discs stored on shelves like a library. The robots pick out the discs and insert them in the drives, of which there may be between four and ten depending on access needs. Unlike humans, the robots also remember to take the discs out and put them back where they belong. Access times are fast: even when the robot has to find and insert the disc, the total access time, including the finding and transportation of the disc, is a truly remarkable six seconds.

Not only can the user leave the robot to find the right disc for the required data, but the system control software, installed by ISV QStar, takes away the worry about the physical location of each phone fact. "What we've done is take the HP range of jukeboxes and combine them with high performance caches so that the whole thing functions as a native UNIX file system," notes QStar's Paul Appleby, who provides technical support for the installation. "The disc system is transparent and is presented as a single normal magnetic disc, so it hasn't meant any major changes to Vodafone Airtouch's applications or operating system." That, in turn, means minimal disruption when it comes to upgrades or expansion - a key consideration for a company contemplating the boom in mobile telephony.

"Getting the latest jukebox up and running has proved perfectly smooth and trouble-free," reports Appleby, in the process confirming why Vodafone Airtouch has chosen magneto-optical jukeboxes from Hewlett-Packard for the last four and a half years.

"We've got three HP M-O jukeboxes running here," notes Bill Hart, UNIX Team Leader at Vodafone Airtouch. "The decision to go with them was threefold really – firstly, Hewlett-Packard is a preferred supplier of the company. Secondly, we are a Hewlett-Packard house in terms of our servers - 90 per cent of our equipment here is HP and so the integration is seamless. Thirdly, the equipment fits neatly with our support contracts, essential when you're demanding a mission-critical support level. Here at Vodafone we've been scaling up drastically over the last four years, and when it comes to the equipment we chose the kit because it's reliable - the latest, a 660ex, has been totally trouble free. We know it - since it's our third such device - and it's compatible with the system."

Which leaves Vodafone Airtouch free to face the challenges of explosive growth, as well as WAP and third-generation telephony, secure in the knowledge that its records remain totally safe, regardless of how many more millions of mobile users sign up.

TECHNOLOGY SUMMARY

The contract billing division of Vodafone Airtouch Plc is running three Hewlett-Packard magneto-optical jukeboxes, of which the latest is the HP SureStore 660ex, residing on a UNIX-based HP network.

Ends

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