

MAINFRAMES: WHERE ARE THEY NOW?

By David Stephens

TALES OF THEIR DEMISE WERE EXAGGERATED, IT SEEMS. THERE'S LIFE IN MAINFRAMES YET.

In the middle of this year, Bull released a major new version of its legacy GCOS 8 mainframe. At the same time, Unisys announced a third consecutive quarter of Clearpath mainframe sales growth, and IBM was still celebrating the decision by Korea's largest credit card company to move its payment system from UNIX to an IBM mainframe. Not bad for obsolete systems that should be long gone.

The 1980s and 1990s saw the decline of mainframes as companies lined up to adopt emerging UNIX and Microsoft Windows solutions. Proprietary mainframes were expensive, difficult to use, and did not work with other systems. UNIX and Windows promised cost savings, GUI screens, and the Internet. By the 1990s most had written mainframes off as extinct.

But mainframes are yet to leave the building. IBM estimates that 71 per cent of global Fortune 500 companies still use their mainframes, and over a third of air passengers and cargo are processed on Unisys mainframes.

Revenue and development

You may be surprised that there even is a mainframe market. However, manufacturers such as IBM, Unisys, Fujitsu, Bull and HP earn big dollars from their mainframe platforms. IBM's System z dominates with a global market share estimated to be as high as 85 to 90 per cent. All four major Australian banks, insurance giants such as AMP, government departments, Telstra, and even Qantas are IBM mainframe users. Mainframes from smaller manufacturers Bull and Fujitsu rarely appear outside Europe and the US, although Unisys and HP have mainframe customers worldwide.

Unisys claims 200 Clearpath customers in Japan alone, and HP estimates that its NonStop systems can be found in 81 per cent of Global 100 companies. Although dwarfed by IBM, smaller manufacturers enjoy healthy mainframe revenue: quarterly sales of Fujitsu BS2000/OSD mainframes are around \$75 million. These profits are greatly enhanced by lucrative services and software income. It's not just manufacturers that

enjoy mainframe-related income. Independent software company BMC last year recorded mainframe revenue of \$860 million, and outsourcing giants such as CSC and EDS have earned billions from hosting and managing government mainframe systems. With such profits on the line, mainframe manufacturers continue to invest strongly in their legacy systems. TCP/IP networking, Java and C/C++ language support, virtualisation, and even environments for ported UNIX applications are now standard for most mainframes. Mainframe applications and data are today accessible from other computer systems, and legacy applications can be web-enabled with little or no code changes.

New mainframe models are regularly released, using the latest technology to improve capacity, performance and reliability while reducing electrical, cooling and space requirements. Large computer rooms designed for mainframe hardware are now more likely to be filled with Windows and UNIX servers. GUI tools to simplify application programming, systems administration and database management are also key mainframe features. ►

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Another tactic to protect sales is to run mainframe operating systems on cheaper Intel-based hardware. Bull, Fujitsu and Unisys all offer low-end Intel-based mainframe servers, retaining their traditional systems for larger customers. HP has gone one step further, phasing out its legacy S-series NonStop servers for Intel Itanium machines.

IBM has resisted this temptation, though it does release a smaller Business Class mainframe. Other organisations have looked to fill this gap with System z emulation software. However, IBM controversially won't license its proprietary operating systems on anything other than a genuine System z mainframe.

Intel-based machines, together with "speciality processors", open up mainframes to other operating systems such as Windows and UNIX. IBM is winning new mainframe customers running Linux, and has announced the new z196 model with an optional extension to host its POWER7 and System x systems.

But are these technological improvements enough to save the mainframe?

Mainframe costs and migration

Mainframes often host critical core systems developed over decades that have high transaction rates and availability needs. Moving to other platforms without impacting functionality, security or performance is rarely easy or cheap. David Ireland, Unisys director for Clearpath Sales Asia Pacific, believes many customers are more interested in better using existing mainframe assets, rather than spending on migration. "It's surprising to see how many people are turning back to the mainframe," he says. Ireland hasn't lost any Asia Pacific Clearpath customers over the past couple of years.

However, mainframe applications continue to be migrated, including the Commonwealth

Bank's huge four-year, \$580 million core banking modernisation project. A 2010 Aracti survey found the overwhelming reason for migrating away from the mainframe is cost.

This is despite evidence that mainframe running costs have fallen for many years – and continue to do so. Respondents to a CA European survey in 2008 spent an average 19 per cent of their total ICT budget on mainframes that hosted 50 per cent of critical applications and data. In the same survey, 44 per cent declined to throw their mainframe away because of migration costs.

IBM and Unisys have both attempted to attack the ongoing cost of software licensing with usage-based options. Final price tags can be based on actual processor usage, rather than the size of the mainframe.

Cost is also a major catalyst for outsourcing some or all mainframe infrastructure, development and support.

Skills shortages

The availability of mainframe skills is a major issue for mainframe users. Few ICT students graduate with any mainframe knowledge or skills, and invariably move towards 'sexier' technologies. A 2008 BMC survey found 63 per cent of mainframe sites in the Asia Pacific region ranked skills shortages as a major concern. This concern extends to the average age of mainframe staff, estimated by some to exceed 55. Of respondents to a 2008 CA survey, 72 per cent had mainframe staff eligible for retirement.

However, it's not all bad news for mainframe employers. New languages like Java, together with GUI tools for application development and system administration, ease a graduate's mainframe learning curve. Any consolidation, migration or outsourcing of mainframe applications also adds available mainframe experts to the market.

IBM also argues that its IBM Academic Initiative has been successful in producing more computing graduates with mainframe skills. In Australia, only one tertiary institution offers a mainframe curriculum: Canberra University in partnership with Global Online Learning. Unisys reports that no customers are feeling any immediate mainframe skills shortages.

For those companies willing to train up graduates, the road may be long and expensive.

Mainframe classroom course prices hover around \$800 per student per day, and are infrequently scheduled. HP's website shows no HP NonStop courses scheduled in Australia or New Zealand for the second half of 2010. Unisys

provides on-demand online training and webinar options, as do independent training suppliers such as Datatask.

Reasons to keep a mainframe

So why hold on to a mainframe? Mainframe manufacturers claim that their proprietary platforms are better suited to larger workloads: more stable, efficient, reliable and secure. These claims have merit: z/OS on the IBM System z is the only platform with an EAL5+ security rating. Martin Kenny, manager of Business Critical Systems for HP South Pacific, says that, "HP NonStop hardware and software fault-tolerant architecture delivers unprecedented reliability and availability that is unsurpassed in the market".

However, Microsoft and other vendors disagree. HP in particular has attacked the IBM mainframe, claiming in 2008 that 250 mainframe customers worldwide saved 70 per cent by migrating to HP Integrity systems in the previous two years. Microsoft isn't far behind, launching the Mainframe Migration Alliance: a group of vendors offering tools and solutions to migrate from mainframes to Microsoft platforms.

The global warming debate has become a white knight for mainframe manufacturers, producing an increased awareness in environment costs – both dollars and carbon credits. Mainframes are being positioned as the green alternative: reducing cooling and electricity by centralising many servers onto one mainframe. In May 2009 Allianz Australia agreed, moving 60 Windows servers onto one IBM mainframe: an expected saving of \$1 million.

Mainframes are also marketed as a centralised solution to problems from an increasing sprawl of smaller servers and vendors.

The mainframe future

Mainframes continue to perform more processing than many would believe possible. Manufacturers are successfully protecting their customer base and revenues with technological innovations and smarter solutions. Many customers are happy with their mainframes, and are hesitant to make the investment needed to move away.

However, the signs are not all good. HP's Business Critical Systems, which includes the OpenVMS and NonStop systems, suffered an 18 per cent decrease in revenue over the nine months to June. IBM was hit even harder, with System z sales plummeting more than 20 per cent over the same period. They will both hope that these figures are a result of the global financial crisis, and not a sign of things to come. ■