

● Right now, somewhere in the world, a data centre is storing and processing information about you. The information needed to access services from banks, governments, employers or even the local supermarket is held on a large computer plugged into an even larger set of computers collectively called a data centre.

All businesses need data centres because they will drive development in the first half of the 21st century in the same way the power grid drove development and mechanisation in the early part of the 20th century.

This is the infrastructure that stores and processes every piece of identifying information about every individual, organisation, department and corporation in Australia. Data centres are electricity-hungry and totally dependent on fibre-optic cables, and Australia is going to need a lot more of them. A purpose-built data centre will cost more than \$200 million to build and close to \$1 billion to equip.

"There's a general transition from data centres which have grown up gradually within organisations to data centres that are built for the specific purpose of processing and storing data," IT research group Ovum's research director, Dr Steve Hodgkinson, says. "There are a whole lot of commercial and financial reasons driving this shift, especially when you look at the inefficiencies that have been built into existing data centres."

Data centres require a big capital investment, good access to communications infrastructure and a secure power supply, and the global financial crisis has made it harder to raise funds to build them.

Concern over the environment has made it more difficult to secure power supplies. Access to high-quality fibre-optic cable in Australia is patchy at best. Power supplies and cables also need to be doubled up for safety as no one can carry the cost of one of these facilities being blacked out or cut off.

Australia needs a big increase in the number and sophistication of data centres to achieve the gains in efficiency and flexibility associated with utility or so-called "cloud" computing

Hodgkinson says. However, few of the data-centre projects being spruiked at present will ever see the light of day.

"There are a lot of people looking to raise capital on speculative builds that are really more about real estate than sophisticated data-centre strategies," Hodgkinson says.

Eight companies are looking to raise funding for the construction of at least 10 data centres throughout Australia by the end of next year, four of which are planned to supply the federal government in the Australian Capital Territory (see 'Data-centre plans', right).

The attraction of Canberra is the anticipated overhaul of the government's information technology systems following the review of its IT use and procurement led by United Kingdom efficiency expert Sir Peter Gershon. The government has flagged its intention to centralise data-centre requirements, which will require the construction of at least two large data centres in the Canberra region.

Having taken the lead over other data-centre suppliers looking to build in the ACT, Canberra Data Centres managing director Greg Boorer says the level of demand for data-centre facilities in the territory has been overestimated, although he concedes it will expand as the Gershon review recommendations are put into practice.

"The challenge for many of the new players is that they don't want to build until they have an anchor tenant, while the government departments won't put down any money until they see something on the ground," Boorer says. "Meanwhile, there's an enormous amount of servers out there that need to be overhauled as IT managers try to squeeze an extra 12 months out of existing equipment."

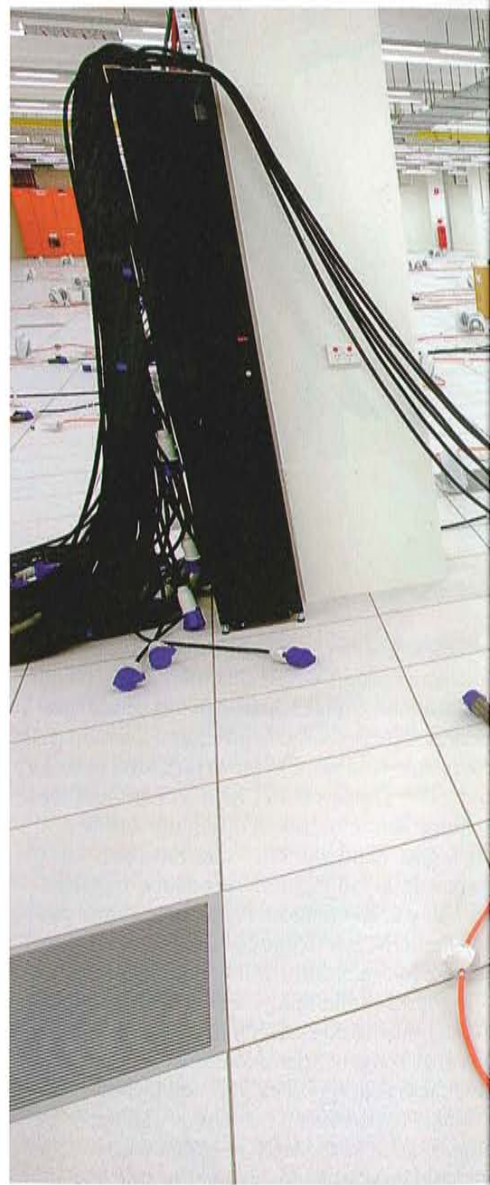
Most of the data centres scheduled for construction by the end of next year are essentially large, secure warehouses with redundant power supply and communications links. While the infrastructure is not built specifically to support utility or cloud computing services, these could be introduced by data-centre tenants.

Springfield Land Corporation's Polaris Data

DATA-CENTRE PLANS

Company	Location	Year of completion
Data Centre City	South Brisbane	2010
Fujitsu	Perth	2010
Global DC	Canberra	2011
Interactive	Northern Sydney	2010
Springfield Land Corp	Canberra	2010
Springfield Land Corp	Sydney	2010
Springfield Land Corp	Melbourne	2011-12
Technical Real Estate	Sydney (Norwest)	2010
Technical Real Estate	Sydney (Erskine Park)	2010
Technical Real Estate	Sydney (Camden)	2010
Technical Real Estate	Wollongong	2010
Technical Real Estate	Canberra	2010
Technical Real Estate	Melbourne	2010
Tretecnic	Melbourne	2009
Tretecnic	Canberra	2009

The future is here: The huge Polaris data centre in Springfield, Queensland, below and above right



INFORMATION OVERLOAD

The next leap in internet and computer power will see the demand for data centres explode across the nation. **Report: Jeanne-Vida Douglas**

centre, south-west of Brisbane, cost \$160 million to build and is more than 90 per cent tenanted. The facility is valued at about \$220 million.

Springfield Land Corporation executive general manager Chris Schroor warns would-be investors to do their homework. "There are a lot of data-centre projects being mooted at the moment, but a lot of them won't go ahead because it's hard to get the commitment from clients, especially if you don't have the credibility of already having built a data centre," he says.

"We started thinking about data centres back in 2003, but we were only talking about small data centres. But the demand is so great that we needed to keep expanding our plans."

With five data centres operating in Sydney, Melbourne and Brisbane, and another due for completion in first quarter 2010, Interactive's managing director, Christopher Ride, says the corporate sector is creating strong demand for data-centre space despite the downturn.

"We're not seeing the massive move into utility computing that will come later,"

Ride says. "For now, companies are looking to transfer their own servers into a less expensive, more reliable environment."

Technological changes are also forcing a crucial change. Server-virtualisation technology has enabled many software applications to be run on a single server.

Previously, data centres faced physical constraints, but now that more applications can be run on a single server the data-processing capacity of existing data centres has increased substantially, if only they could get access to enough power.

"Power is a massive bottleneck in the data-centre industry," Ride says. "Most of the existing data centres were built in the central business district of major cities and they can't install high-density computing because they can't draw the power to run the servers, let alone to increase the air-conditioning."

"The more power you draw, the more cooling you need." **BRW.**



Roar of the cloud

Not since the term "information superhighway" was used to hype the internet has there been a phrase as overused and misrepresented as cloud computing.

At an analyst briefing in the United States, Oracle Corporation chief executive Larry Ellison described cloud computing as gibberish, portraying the term as a fashion rather than an innovation. "The interesting thing about cloud computing is that we've redefined cloud computing to include everything that we already do," he railed.

Cloud computing refers to the ability to access software and process and store data on a remote server as a pay-per-use service.

Anyone who has used an email account such as Hotmail, Yahoo or Gmail has used cloud computing. Web-based versions of software have been available over the internet for years, and most business software packages now feature specific web-based applications aimed at small to medium-sized enterprises.

The greatest difference is that some large computing companies are investing in building data centres to provide cloud computing services on a big scale.

In his book *The Big Switch* (W.W. Norton and Co, 2008) author Nicholas Carr likens the rise of cloud computing to the way electricity moved from being a locally generated resource into a utility-based model at the beginning of the 20th century.

"A hundred years ago, companies stopped using their own generators to create electricity and began to draw power from the electric grid, and now we are going to see the same model of utility computing being rolled out," Carr says. "Companies like Google and Microsoft are investing in building large data centres which will be able to do what your servers do in your business today, only they'll be cheaper."

The shift to the cloud is in effect a shift into buying and using computing power such as a utility service. The motivation to do so will come when the utility computing services become demonstrably more reliable and cheaper than current models.

"There's been a lot of hype surrounding cloud computing and utility computing, and my sense is that the transition will take effect over at least a decade rather than it being a sudden shift to a utility computing model," Carr says.

