

# National Australia Bank

CASE STUDY

FINANCIAL SERVICES &  
BANKING STATE-OF-THE-ART  
DATA CENTER



DIGITAL REALTY



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Digital Realty is a strategic partner in National Australia Bank (NAB)'s Data Center Transformation Program, focused on transforming the organisation's data center and technology-hosting environment as part of NAB's broader transformation agenda. NAB's new Tier III design and construction certified facility in Melbourne is a crucial building block in helping NAB to achieve its technology transformation.

### The Client

NAB is a financial services organisation with more than 12 million customers and 45,000 employees, operating over 1,800 stores and business banking centers globally. Four years ago, NAB began to transform its technology environment with the aim of making banking easier for all Australian customers. The Total Environment Transformation is a 10-year program, and it represents a multibillion-dollar investment for the firm.



## The Challenge:

NAB's long-term technology strategy is to:

- Create economic value by designing-out complex processing and reducing costs
- Transform core banking systems
- Reduce risk by moving away from custom or proprietary legacy systems
- Establish an operational environment based on flexibility and scalable capacity
- Move from “building and maintaining” systems to coordinating services and paying for usage only
- Make the “bank of the future” faster, safer and more reliable

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NAB to benefit from a global community of experts without the need to have these skill sets in-house. In this case study, we focus on how Digital Realty helped NAB achieve one of its critical goals, i.e., building and maintaining a Tier III-certified data center, which is the foundation for the firm's technology transformation.

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## The Background:

In modern banking, information technology (IT) systems are mission critical, and data centers are the fundamental building blocks of a robust, resilient IT environment. These strategic facilities need to be:

- Resilient to ensure minimal downtime
- Highly secure
- Flexible to accommodate perpetual technology refreshes
- As energy and carbon efficient as possible

For a financial institution, a data center portfolio represents its largest user of power, and as a result, accounts for the majority of carbon emissions within the organisation. NAB currently has two strategic data centers in Melbourne (in Knox and East Melbourne). The firm also has more than 20 smaller distributed data centers spread across Australia, with many located in mixed-use commercial office space.



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As part of its technology transformation, NAB identified key objectives for the data center work stream:

- Optimize all technology capacity requirements into a smaller, more efficient footprint, and create an “on demand” architecture
- Move from a primary-secondary model (Knox-East Melbourne) to a “primary all” configuration with two strategic sites, each capable of running the entire bank
- Construct a new purpose-built, state-of-the-art facility (in Deer Park) to replace an existing secondary data center (in East Melbourne) as well as consolidate the 20-plus smaller data centers

### **The Solution:**

After extensive due diligence and a comprehensive procurement process, in late 2011 NAB signed a long-term lease with Digital Realty for a customized data center solution in Deer Park, west of Melbourne.

From the outset, Digital Realty's engineering team worked closely with the NAB project team to review and optimize Digital Realty's Turn-Key FlexSM (TKF) architecture to meet NAB's specific technical and operational needs. There were a number of technical design adaptations around power generation, water recycling and fire systems to meet the bank's stringent requirements, all undertaken with close collaboration between NAB and Digital Realty.

The state-of-the-art 5,600 square metre facility was delivered in a tight timeline using Digital Realty's TKF architecture (using 2N power distribution and free-air cooling), construction expertise and supply chain advantages. A comprehensive commissioning/ process was implemented, following Digital Realty's proven standards. The facility was certified to the Uptime Institute's Tier III design and facility benchmark, and was also built to meet TIA-942 Tier III requirements.

The project was delivered in an open and transparent manner, with collaboration between NAB and Digital Realty at all stages. An example of this collaboration was the work undertaken by the Digital Realty Client Services team on adapting its standard security and escalation process to align with the bank's comprehensive requirements.

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A key requirement from the bank was the delivery of an integrated white-space fit-out, and Digital Realty worked closely with NAB on this point. This work included a computational fluid dynamics study, detailed 3-D modeling and the development of a full-scale mock-up off-site.

The entire facility was built and delivered on schedule in early 2013, and the bank is currently working through its migration to the site. The Deer Park integrated fit-out project was also recently recognized as the Best Project of 2013 by the National Electrical and Communications Association.



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The Digital Realty Operations team was integral to the project deployment phase, and is now operating the site using proven global processes that have delivered 99.999 percent uptime across the company's TKF portfolio for the past six years. The facility — which is staffed 24/7 by both security and technical operations team— also features a number of NAB-specific support spaces, such as storage, build rooms and dual point of presence rooms.

### Efficiency:

NAB'S data center portfolio typically accounts for a large portion of this carbon footprint, and choosing a highly efficient facility was a key consideration in the selection process.

With that in mind, Digital Realty has taken a holistic approach to the carbon footprint and energy efficiency of the facility, with the following features being incorporated:

- LEED Gold certification underway to ensure the construction process was as efficient as possible, and benchmarking against industry standards
- The site employs a low-water usage design throughout, with water used solely for humidification
- Rainwater-harvesting tanks provide water for landscaping and bathroom facilities
- A solar thermal system generates the majority of hot water required on-site
- Multiple roof-mounted, free-air handling units (N+1 configuration) use resilient and innovative economization cycles to ensure constant efficient operation
- Target power usage effectiveness (PUE) is of less than 1.3, with no water used for heat rejection

The new Deer Park facility enjoys a PUE of less than 1.3, representing a considerable improvement over the East Melbourne data center that it replaced, which had an estimated PUE of 2.1. The estimated average PUE across the 20-plus smaller consolidated data centers was 2.5. This significant improvement is expected to help the project ultimately reduce NAB's technology power usage by around 40 percent. Digital Realty's energy-efficient design makes use of free-air cooling, as opposed to a chilled-water system. Free-air cooling is a more environmentally friendly approach, as a minimum amount of water is used in



the mechanical system. In the Melbourne climate, free-air cooling can be used for up to 90 percent of the year.

### **Operational Efficiency:**

The “integrated fit-out” covering power (overhead bus-ways and power take-off boxes, or PTOBs), structured cabling and cabinets have greatly reduced cost and time for moves, additions and changes.

This allows new equipment to be deployed and powered-up without the need for deployment of additional electrical infrastructure, i.e., a “snap in, snap out” model, where individual PTOBs can be easily installed whenever equipment is deployed or moved. This also improves power utilisation, allowing 100 percent of available power to be allocated anywhere on the floor without the need for rebalancing at the switch or power distribution unit.

The use of structured cabling (fibre and copper) separated by conduits for LAN, management/

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operations and SAN, allows new infrastructure to be deployed/moved/changed easily without deploying new cabling or requiring complex cabling redesign/changes. Such savings in both time and money will be significant in the future, as new equipment will be added, upgraded or replaced.

### **Continuous Collaboration:**

NAB continues to work closely with Digital Realty’s team toward optimising the Deer Park facility as the bank endeavours to shift its technology requirements into a more efficient footprint.



## About Digital Realty

Digital Realty Trust, Inc. supports the data center and colocation strategies of more than 1,000 firms across its secure, network-rich portfolio of data centers located throughout North America, Europe, Asia and Australia. Digital Realty's clients include domestic and international companies of all sizes, ranging from financial services, cloud and information technology services, to manufacturing, energy, gaming, life sciences and consumer products.

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