VERTIV.

Case study

NEXTDC brings the edge to remote Australia region with Vertiv modular solution

Background

Driving Pilbara's Digital Evolution with Sustainable, High-Performance Data Infrastructure

The Pilbara region in Western Australia is one of the world's most resource-rich areas and a global leader in mining production. Known for its deep rocky canyons and dramatic landscapes, Pilbara is a major source of iron ore and is also home to abundant reserves of natural gas, lithium, gold, copper and nickel. Because of its vast mineral output and economic contribution, Pilbara is often referred to as Australia's "engine room."

At the heart of Australia's digital infrastructure landscape is NEXTDC, an ASX 100-listed technology company and the country's leading independent data centre operator. NEXTDC supports business transformation through world-class data centre outsourcing, connectivity services and infrastructure management software.

With 17 Tier III and Tier IV data centres in operation across Australia, and another 17 in various stages of planning and development across the APAC, NEXTDC provides highly secure, always-on environments for mission-critical workloads. The company is a key enabler of digital growth and resilience for many of the region's leading organisations.

NEXTDC also delivers data centre solutions with high energy efficiency ratings, with its facilities certified under the National Australian Built Environment Rating System (NABERS), including multiple 5-star energy efficiency ratings, reflecting a strong commitment to renewable energy and environmental responsibility.

Vertiv Solutions

An integrated modular solution with robust power and cooling infrastructure to support NEXTDC's new edge data centre facility in the remote Pilbara region, Western Australia.

- Full Vertiv integrated modular solutions deployment.
- Vertiv™ Liebert® DM cooling system.
- Vertiv™ Liebert® CRV4 cooling system.
- Vertiv™ Liebert® eXM2 UPS with lithium-ion batteries.
- Vertiv™ iMPB Busway.

Challenge

Overcoming Distance: Bringing the Cloud to the Edge in the Pilbara

With its vast mineral wealth and boundless potential, the Pilbara is a powerhouse of the Australian economy. Yet its sheer scale and remoteness pose a serious challenge for businesses striving to adopt digital technologies. High latency, limited connectivity, and extreme weather conditions make it difficult to fully embrace cloud-based applications like AI, machine learning, and autonomous operations, which are now critical to sectors such as mining, telecommunications, agriculture and government.

"Vast amounts of information from these services had to traverse from operational sites in the Pilbara all the way down to Perth before routing to Melbourne or Sydney in some cases," said Adam Gardner, Head of Product at NEXTDC. **"It's a tremendous distance to travel, impacting the capabilities and technology solutions that could be deployed."**

That distance was limiting the region's digital potential. To help solve this, NEXTDC launched its first edge data centre in Port Hedland: PH1 Port Hedland. With 1.5 MW of IT capacity and over 300 racks planned, PH1 Port Hedland was purpose-built to support edge-based operations in one of Australia's most remote, yet economically vital, regions.

"By deploying the NEXTDC PH1 data centre here, combined with Vocus' extensive connectivity network, those services can be delivered locally, eliminating latency concerns for localised compute and future AI/HPC deployments" Mr. Gardner added.

Recognising the opportunity to set a new benchmark for data centre design and efficiency in a challenging location, NEXTDC partnered with Vertiv to deliver a modular, prefabricated data centre optimised for both speed and resilience. The entire facility was completed in just 12 months, which was significantly faster than standard builds, enabling quicker access to cloud services and operational agility for local enterprises.

“We knew how capable Vertiv is for edge data centre builds, particularly in far-flung locations, and selected them for a prefabricated solution that would make PH1 fit to service the region’s operational safety and productivity needs,” said Mr. Gardner.

In addition to distance and scale, the Pilbara’s climate added another layer of complexity. With temperatures soaring above 45°C in summer and a Wind Region D classification, the project demanded infrastructure capable of withstanding extreme heat and high winds. NEXTDC required a solution that would be rugged, energy-efficient, and capable of maintaining uptime under pressure.

Today, PH1 Port Hedland brings cloud computing and next-generation technologies closer to the heart of Pilbara’s industries. It removes latency bottlenecks, enables real-time data use, and opens the door to a smarter, more connected future for the region.

Solution

Modular Data Centre Design for Remote Deployment

To meet the logistical challenges of constructing a data centre in one of the most remote and rugged regions of Australia, Vertiv delivered a complete prefabricated modular facility tailored to NEXTDC’s requirements. The design, procurement and implementation were all managed by Vertiv, using standardised, pre-engineered components to reduce on-site assembly time and enable a faster deployment schedule.

The PH1 Port Hedland facility, featuring over 300 racks, leverages Vertiv’s proven prefabricated architecture, which is ideal for locations where labour, material transport, and environmental conditions make traditional builds difficult and costly.

High-Efficiency Power and Cooling Solutions

PH1 Port Hedland is fully powered and cooled by Vertiv’s critical infrastructure systems:

- Power: The site runs on the Vertiv™ Liebert® EXM2 UPS with lithium-ion batteries. Designed for harsh conditions, it achieves up to 98.8% efficiency in Dynamic Online mode, tolerates ambient temperatures up to 50°C, and remains highly efficient at partial loads thanks to its intelligent paralleling feature.
- In-row Cooling: To handle the site’s high-density IT loads, Vertiv deployed the Vertiv™ Liebert® CRV4. Compact yet powerful, it supports racks exceeding 8kW per unit, with intelligent thermal controls that allow remote monitoring of temperature, humidity, leaks, and smoke — essential for unmanned or remote operations.

- Supplementary Cooling: For smaller server rooms, Vertiv installed the Liebert® DM, known for its small footprint, high sensible heat ratio, and advanced controller with a clear, easy-to-use interface. The unit provides efficient, reliable cooling that aligns with NEXTDC's commitment to sustainability.

Engineered for Harsh Pilbara Conditions

Operating in the extreme heat and high winds of the Pilbara desert requires specialised infrastructure. PH1 Port Hedland was engineered to withstand temperatures exceeding 45°C and meets Australia's Wind Region D classification — the highest for cyclonic activity.

"Standard data centre equipment isn't usually specified for these conditions," said Adam Gardner. "Vertiv knew this, and together we made sure to use condensers rated for 55°C and structural tie-downs capable of withstanding cyclones with winds of up to 300km/h!"

The facility's ruggedised enclosure includes reinforced wall panels, structural tie-downs, and protection around critical assets, ensuring business continuity during extreme weather events.

In addition, the site has been pre-configured for solar panel integration, supporting NEXTDC's broader sustainability roadmap and future-proofing PH1 Port Hedland for renewable upgrades.

Results

Bringing AI-Ready Data Centre Infrastructure to Remote Australia

NEXTDC's PH1 Port Hedland data centre opened in late 2023 with Tier III certification, delivering enterprise-grade resilience, security, and low-latency connectivity to Australia's remote northwest.

PH1 enables businesses across the Pilbara to confidently deploy cloud-based applications and unlock real-time data processing for smarter operations, even in one of the country's most isolated regions.

"We're proud to have delivered a robust facility that empowers industries to modernise the way they operate," said Mr. Gardner. **"The resources industry are high-power consumers, and as AI is increasingly deployed to production environments, these sectors can now use real-time data to optimise extraction and logistics on-site."**

Following PH1 Port Hedland's successful launch, NEXTDC has now opened its second-edge facility in the region. NE1 Newman, approximately 600 kilometres inland, is a Tier III certified data centre with over 250 racks planned, designed to support autonomous mining operations and other data-intensive industries.

"NEXTDC is bringing full-scale data centre capabilities, security, low latency, and high uptime, to places where they've never existed before," said Lulu Shiraz, Senior Director Sales at Vertiv Australia and New Zealand. **"Together, we're enabling AI adoption and digital transformation for Australia's founding industries, by making high-speed cloud access a reality in the regions that need it most."**

Results:

- Tier III certified facility built to withstand adverse weather and temperatures.
- Provision to accommodate high-density computing of up to 30kW per rack.
- Fully-integrated, modular design means fast deployment and flexibility for future expansion.
- Provision for solar panels for greater energy savings.

Looking to optimize your data center's efficiency? Explore how innovative cooling solutions can transform your operations and drive long-term savings.

To learn more about Vertiv solutions, visit Vertiv.com

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