

Nominee: Colt Data Centre Services

Nomination title: Inzai 2

The Asia Pacific region is experiencing a significant uptake in demand for cloud services, but investing in the "Ring of Fire" comes with its own unique technical challenges.

Gartner has forecast the public cloud services market in the region will grow from \$10 billion today, to \$13.6 billion by 2019. The demand for managed cloud and professional services has especially grown in countries like Japan, which have a mature cloud landscape. This is due to a surge in big data and other complex workloads such as enterprise resource planning (ERP) being migrated away from on-premises systems to cloud-based solutions.

Colt Data Centre Services has made significant investments in the region, and currently has five facilities in Japan alone. Its latest and largest data centre is Inzai 2, the second facility at the Inzai Campus with 15MW power capacity on the edge of Tokyo, which was launched in 2017. Building a data centre always presents challenges; in Japan, however, it requires a uniquely innovative approach to ensure protection against seismic activity.

Challenges and opportunities

The rise of cloud computing, complex and high-intensity workloads, and bandwidth-heavy traffic such as video have given rise to a huge demand for data centre services, especially those that provide a high degree of edge connectivity.

At the same time, the Pacific Rim is one of the most notoriously earthquake-prone areas of the globe. The catastrophic 2011 Tōhoku earthquake and subsequent tsunami shows how natural disasters can cause immense disruption to vital infrastructure such as transport, nuclear power - and IT.

Building a state-of-the-art data centre is always a unique undertaking, but building one in Japan involves a number of specific challenges. Not least of these are the ability to cope with potential seismic activity, as well as providing access to the widest range of carriers.

Construction

Building a data centre is a unique construction project. It differs considerably from building an office, a residential complex or a sports facility. Not only in how the floor space is used, but in the power, cooling, security and other aspects that are needed to ensure reliable, defensible and consistent operation of all the vital computer and networking equipment stored within it.

Tokyo is prone to frequent and strong seismic activity, so the Inzai 2 facility has incorporated the most advanced earthquake resistance techniques. This includes tying the walls, floor and roof together to form a single superstructure, to ensure the building can withstand lateral forces. It is designed to withstand earthquakes up to M7 on the Japanese intensity scale, with a Probable Maximum loss (PML) of under 3% - one of the lowest of any building in Japan.

The superstructure sits on an isolated foundation that employs seismic isolators and Teflon sliders, which can absorb much of the colossal forces unleashed by an earthquake. These isolators are sometimes called a "shake table" - capable of holding 125 tonnes per m², isolating the whole building from any seismic forces and allowing the sub-structure and superstructure to move independently - permitting the bulk of the seismic shock to be dissipated by the sub-structure and thus reducing the impact on the superstructure.

The result is a substantial reduction in the impact of any movement, and a considerable reduction in the vibration from a seismic event, protecting the building, customer hardware and staff on-site. By reducing this impact, hard drives are less likely to be damaged or produce write errors, while blade servers and other cards, as well as fans and other cooling aides, are less likely to be unseated by a tremor.

Capabilities and key features

Based across six floors, the facility provides ten 5,000m² of floor space for tenants, with a floor dedicated to storage, electrical and HVAC resources, and a mezzanine floor for offices and workspaces.

- " 15MW carrier-neutral data centre facility
- " 5,000m² of white space capacity, infrastructure will support up to 12KW per rack
- " Located 32km from Tokyo with easy access to Tokyo and Narita airport

The site employs the latest in data and physical security measures, meeting the latest ISO and ISMS standards for security. These include advanced biometrics, air locks and multiple points of verification to prevent unauthorised access to the site. Meanwhile, the facility incorporates advanced security services with high-performance network connectivity and extendibility that complies to recognised international standards, including ISMS / ISO27001, SSAE16 Type II certification, and FISC guidelines.

The data centre is managed from a single control centre and is unique in its ability to leverage highly-skilled, bi-lingual staff in-house to manage its facilities and support customers, rather than relying solely on external professionals.

Inzai 2 provides a model for best practice for future facilities in earthquake / tsunami zones, while also incorporating the latest power / UPS, connectivity, cooling and safety technologies. These comprise:

Connectivity:

- " High-performance connectivity using Colt DCS' resilient, low-latency backbone
- " Multi-carrier connectivity
- " Diverse routing into the facility and to each data hall

" **Connected to DCNet, Colt DCS' new burstable data centre-to-data centre interconnection service that links close to 75 facilities across Asia**

Cooling:

- " **Water-cooling centrifugal chillers with water side economisers**
- " **N+1 standard, upgradeable to @N**
- " **Exact temperature and humidity controlled within a pre-set range**
- " **Cold aisle containment**

Safety:

- " **Inert gas-based fire suppression system**
- " **VESDA early warning system**
- " **Multi-layer physical security with biometric authentication system**
- " **Customer-specific authentication**

Results

Inzai 2 is one of the most logically and physically secure high-specification data centres in Japan. It is also one of the most sustainable: by adopting the latest facilities that enable optimal energy savings, Inzai 2 provides a high-density computing environment that meets customer demands for efficient use of electrical power and cooling facilities, and generates annual Power Usage Effectiveness (PUE) of 1.5 or less.

In moving these and other resources to the cloud, customers can benefit from scalable processing and storage. At the same time, it moves a considerable amount of IT spending away from large capital expenditure (CapEx) investments and over into more scalable operational expenditure (OpEx), that is directly linked to the size and scale of the customer's business needs.

Why nominee should win

- There is no better data centre in Japan for security and business continuity - Colt DCS' Inzai 2 facility boasts the most advanced earthquake resistance techniques and is a model for best practice for future facilities in earthquake / tsunami zones



- The first phase of operational delivery was completed and handed over to the customer within 12 months in budget and on time
- Colt DCS has taken on a difficult and risky challenge, and delivered a facility that will provide the foundation for business growth and innovation in APAC for years to come
- Aside from the innovative construction techniques, Colt DCS has built a facility that represents state-of-the-art best practice, including carrier neutrality and the latest in data and physical security measures