

Canovate's all in one data center solution was the perfect solution for Oman International Container Terminal's disaster recovery data center.



Canovate has been selected by the Oman International Container Terminal, Sohar in Sultanate of Oman as the solution provider for their new state of the art disaster recovery data center.

Hutchison Ports Sohar is an ultra-modern container-handling facility capable of accommodating the latest generation of mega-vessels. The terminal is located in the Port of Sohar, outside the Straits of Hormuz in the Gulf of Oman, approximately 200 kilometers from Muscat and 160 kilometers from Dubai. Ongoing investment in the Port of Sohar means it is emerging as an engine of economic growth, and a catalyst for further expansion in infrastructure, industry and commerce in the region.



Requirements

Mr. Mohammed Khan & Mr. Nazeeruddin Qureshi of Hutchison Ports, were very clear in their requirement. They wanted a high density data center to act as a DR site to their primary data center. The active equipment was to be of high heat dissipation and a solution with targeted precision cooling was asked for. The security requirements and access controls were asked for with RFID as well as with remote management. The design had to be a Tier 3 layout.

Challenges

The room allocated to house the DR Datacenter was fairly small. The location of the DC was at a port hence the humidity was bound to be heavy. Raised floor was not a possibility hence cable management had to be done overhead.

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Canovate Istanbul
Eksioglu Mah. Atabey Cad.
No:12 Cekmekoy,
Istanbul, TR 34794
T: +90 (216) 484 22 22
F: +90 (216) 429 02 02

Canovate UAE
Saif Zone Q4-272
P.O BOX: 121650
Sharjah, Dubai
T: +971 6 5528523
F: +971 6 5528522

Canovate America
4210 L.B. McLeod Rd
Suite 111-113
Orlando, FL 32811
T: +1 407-286-0178
F: +1 407-914-2845

Canovate Hellas I.K.E
VAT: 800886889
Address: Argiri G.10
Likovrisi, Athens 14123
Greece
T: +30 6944 571000

Solution offered

Canovate teamed up with their local distributor M/S. Suleyum Al Kiyumi Trading LLC, who had over 22 years of operational experience in the Sultanate of Oman. Together the two companies faced the challenge of designing a data center in a challenging environment with extreme temperatures. The team devised a solution by using IP54 cabinets with in row / side cooling systems circulating air inside the cabinets. A cold aisle was formed behind the IP 54 rated glass door and the front face of the equipment and a hot aisle behind the back of the active components and the back door of the cabinets. The solution was space saving, modular and provided with rack mount fire suppression units with independent Novec 1230 cylinders built into the 2U units.

Inrow / side DX cooling system was chosen as preferred cooling system to provide efficient and reliable cooling. Aluminum frame IP54 racks were installed with front glass and rear split metal non perforated doors. These racks were supported by extruded aluminum frames which can carry up to 2000 Kg load. IP gaskets on the doors ensured no escape of air from the cabinets.

All cable entries were designed with cable glands to ensure no escape of air from the cabinets.



Each rack has two PDUs (A and B feed). Each are powered by UPS A and UPS B so that the power redundancy is obtained on rack level to meet the Tier 3 datacenter requirement. As there were some equipment used with single power inputs, the design considered fail safe cabinet mounted transfer switches with dual power inputs and single outputs.

Canovate DCIM (Datacenter Infrastructure Management) and EMS (Environmental Monitoring System) solutions were installed to accurately monitor and control the datacenter. Access control with magnetic locking system for the front and rear doors of the cabinets, coupled with Pneumatic door opening systems, ensures that the doors can be opened remotely or in case of a catastrophic multiple AC failure or fire.

This is the first 'All in One Datacenter' installation in Oman and it was made possible only due to the technical knowledge the HPL team had in understanding the airflow dynamics, energy saving opportunities and the low operational costs that this solution provided along with the superior safety and security features.

Phase 2 – Primary Datacenter:

With the successful implementation of the DR DC solution which was an All in One DC, HPL team decided to work with Canovate for their primary DC as well. The primary DC was to be planned and executed by Mr. Nazeeruddin Qureshi and Mr. Azhar Munawar of HPL. Once Mr. Khan who headed the IT team was convinced with the solution, Canovate was given a free hand with design as well as customizations.

Requirements

The requirement was for a Tier 3 modular DC which could be expanded as per future requirements. The heat load would depend on the addition of equipment and for the design consideration a cooling requirement of 10 KW per cabinet was considered. EMS with temperature and humidity monitoring was required. DCIM was required to monitor multiple locations with IT Equipment within the port complex. Any breach of set thresholds was to be intimated by SMS, E mails as well voice calls. The DC was not to be designed with a raised floor and all cables had to be managed over the cabinets while ensuring that the cables would not be visible and maintain high aesthetic value.

Green energy concept with minimal wastage of energy and inline cooling systems were requested for. Yellow fiber ducts were to be used for running fibers and fire suppression systems were to be NOVEC 1230. ESD safe vinyl flooring was asked for.

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Istanbul, TR 34794
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F: +90 (216) 429 02 02

Canovate UAE
Saif Zone Q4-272
P.O BOX: 121 650
Sharjah, Dubai
T: +971 6 5528523
F: +971 6 5528522

Canovate America
4210 L.B. McLeod Rd
Suite 111-113
Orlando, FL 32811
T: +1 407-286-0178
F: +1 407-914-2845

Canovate Hellas I.K.E
VAT: 800886889
Adress: Argiri G.10
Likovrisi, Athens 14123
Greece
T: +30 6944 571000

Challenges

The room built by the civil contractor was not designed to be a datacenter. This created difficulties with drain pipes and refrigerant piping into the cooling units. The lack of a raised floor was an added challenge as the pipe routing had to be made keeping in mind the aesthetics of the DC.



Solution offered

The offered solution was a cold aisle containment with automatic doors and access control. The inline units were 28 KW DX units designed to match a Tier 3 redundancy level. Two independent paths of power with two independent UPS units ensures compliance to dual power pathways. In case of active equipment with single power source, fail safe transfer switches (FSTS) were used to provide dual power path redundancy. Cable shields and channels from Canovate fixed seamlessly into the top panels of the cabinets thereby ensuring that no cables or cable trays were visible to the naked eye.

Cabinets with a safe load bearing capacity of up to 2000 Kgs were chosen from the Canovate Aluminum cabinet range to ensure that the customer had no restraints on cabinet loading. The containment was designed and fixed as per customer's requirement to ensure easy seamless expansion. As the 'N' value in the DC increases with new active components that are being brought in, the HPL IT team can increase their cooling by adding new inline units which ensures that they maintain their Tier 3 compliance.

A special commendation goes out to Mr. Nazeeruddin Qureshi and Mr. Azhar Munawar of HPL from Canovate for the excellent clean room environment they have maintained at the DC and their strict guidelines on cable management within the DC. The IT team at HPL maintains this DC extremely well which makes this DC our flagship DC in the region.

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