

## Nominee: Vertiv

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### Nomination title: Amdocs Reaches Utmost Energy Efficiency with Vertiv's Liebert PDX with EconoPhase

Vertiv™, designs, builds and services critical infrastructure that enables vital applications for data centres, communication networks, and commercial and industrial facilities. Vertiv supports today's growing mobile and cloud computing markets with a portfolio that includes the Liebert® thermal management products. Using Liebert high-performance thermal management systems that are intelligent and rapidly deployable, you can improve reliability of your critical environments while reducing operating costs and enhancing their revenue potential.

Amdocs is a market leader in customer experience software solutions, with more than 25,000 employees serving customers across 90 countries. Their customers includes over 250 service providers, featuring some of the world's largest telecommunications companies - AT&T, Telefónica and Vodafone to name but a few.

Amdocs has experienced rapid growth in a continually evolving market, and as such found themselves occupying two separate offices in London, each with critical server rooms, and a co-location site. A strategic decision was made to consolidate these critical facilities and the two offices to a new site – Building 4, Chiswick Park, a full-fledged tier III level data centre

Amdocs traditionally choose Vertiv for critical cooling applications across their global estate, but this would be the first UK site. The data centre team, based in Israel with a remit spanning globally, found security in a supplier that had a strong global presence and proven track record.

Ronnen Perry, Global Technical Manager, contacted Vertiv in January 2016 outlining the plans for the consolidation exercise with an aggressive programme targeting completion of the new facility by July 2016. The remit for the critical cooling design was simple – it must be a standalone system independent from any landlord or incumbent tenant services, provide N+N resilience, be quick to manufacture and install, and fit within the constraints of the new site. Additionally, Amdocs is committed to reducing its carbon footprint and is an active participant in the Carbon Disclosure Project. Consequently, Amdocs is constantly looking for ways to maximise efficiency in its data centres, so free-cooling was a mandatory requirement for the new facility.

The scope was clearly defined, and to start with Amdocs were open to the type of cooling system to deploy as the site location was to be confirmed. With this in mind, Vertiv carried out a high-level feasibility study that compared the total cost of ownership (TCO) for each applicable technology available from the portfolio. This included a more conventional Liebert PDX air cooled system, water-glycol direct expansion (DX) free-cooling system, dedicated independent chilled water system, and Liebert EconoPhase™ pumped refrigerant economiser system. The study used energy modelling with design conditions specific to Amdocs requirements, comparing the cap-ex cost of equipment, installation and forecasted operational costs for a London location to help map the predicted life-cycle costs of the respective solutions.

It was Liebert PDX with EconoPhase that benchmarked itself as the perfect solution for this project. It offered supreme levels of efficiency, a good lead time that worked with the programme, an installation no more complex than a conventional DX install, and a great payback.

Once the Chiswick site was agreed, Vertiv were quick to survey, confirm its suitability and the design was then finalized.

The Liebert PDX with EconoPhase is configured like a conventional DX air-cooled system, but with the incorporation of a refrigerant pumping module on the liquid line. This facilitates transition to a more economical mode of operation when the external temperature is lower than the internal temperature of the facility. This controls the unit to shift from compressor mode to economiser mode, utilising refrigerant pumps which are far more economical than compressors when conditions suit. This results in a significant reduction in power consumption as the EconoPhase module uses approximately 10% of the power of the compressors. When the external environment is no longer compatible with full EconoPhase operation, the system can operate in mixed-mode or revert back to full air-cooled DX operation.

The intelligent Vertiv ICOM™ Control platform ensures the system is dynamic and responds to fluctuating loads and room conditions, and that resilience is in no way compromised. The system can be further optimised by deploying aisle containment in the IT environment which allows the system to achieve 100% free-cooling at external ambient temperatures up to 20°C.

The Liebert PDX with EconoPhase provides 40-50% energy saving compared with the most efficient air-cooled DX models. It is capable of achieving partial Power Usage Effectiveness (pPUE) levels down to 1.05, equating to an annual energy cost reduction of up to £170,000 when compared to a typical 1 MW data centre with a pPUE at 1.3. This equates to a CO<sub>2</sub> saving of 1,150 tonnes.

For Amdocs the payback compared with a standard DX air cooled system was very compelling (under 3 years considering the load profile) and the fact that the pumped refrigerant module was serviceable without loss of cooling mitigated any perceived risk. The install was no more time-consuming than a conventional DX system, with the units delivered, installed and running within 12 weeks of order receipt. The use of Liebert MC Microchannel Condensers meant the heat rejection plant was very compact and only required a small amount of space on the roof.

The IT load at the new site would not reach full design capacity for 2-3 years, so to help monitor and manage the heat load in the space, Vertiv proposed the patented SmartAisle™ control system. This control philosophy is an extension of the ICOM control platform, which utilises temperature sensors located in calibrated openings within the aisle containment. These monitor temperature fluctuations which dictate the amount of cooling and airflow required. This further optimised the efficiency, ensuring the cooling system will adapt to match the site requirements without the need for re-commissioning or rebalancing.

Following the success of the installation at Chiswick Park, the new data centre has a lowered PUE and has seen an improvement in the overall score, demonstrating the commitment to a reduction in carbon footprint. Amdocs are looking to replicate the design at other sites in Europe and will be considering the Liebert PDX and EconoPhase technology for all future projects.

## **Why nominee should win**

- 1. Liebert PDX with EconoPhase offers savings up to 70% in freecooling mode compared with DX close control systems.**
- 2. It provides 40-60% annual energy savings and 1.05 pPUE, providing an annual energy cost reduction of £170,000 compared to a 1 MW, 1.3 pPUE data centre.**
- 3. It offers great freecooling potential for legacy sites, despite limits of building layout or external space.**
- 4. It is incredibly resilient, scalable, quick to deploy, and offers great payback.**
- 5. Vertiv ICOM Control ensures the system is completely dynamic, responding to fluctuating load profiles and optimising room conditions as efficiently as possible.**