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An Agile Approach to Datacentre Design

Article

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There are many definitions of Agile.

One definition of Agile might be: to divide tasks into small projects and manage them in short timeframes.

Another description given by Agile Alliance is: "the ability to respond to change in order to succeed in an uncertain and turbulent environment."

At Centiel, we often use the term Agile to describe our approach to developing and delivering industry-leading critical power protection solutions. It is also a term we use when describing a flexible adoption of datacentre design that incorporates both of the descriptions above.

The benefits of being Agile

In 2017, at the Nordic Digital Business Summit, Helsinki, Finland Dr. Anders S.G. Andrae estimated, in his paper called "Total Consumer Power Consumption Forecast", that power used globally by datacentres will have moved from an estimated 11% in 2015 to represent 43% of use by 2025 as the best case scenario.

Although such predictions are hard to verify, there is little doubt that the electricity required to power datacentres across the world is set to increase significantly. Therefore, minimising energy usage in order to control running costs and also the environmental impact of datacentres, must be a priority.

Adopting an agile approach to infrastructures within datacentre designs can help to reduce the cost of initial investment in equipment and result in long term savings. The use of true modular UPS systems offers a flexible solution that can grow with the demand of the datacentre and adapt to both planned and unplanned changes to load demand. It can also speed up essential servicing and maintenance, and overall, reduce carbon footprints and total cost of ownership (TCO).

Running a more efficient operation also means higher levels of profitability. A better bottom line means increased budgets to play with for further investment and expansion plus the opportunity to work with a larger, more diverse client base.

Pay as you grow

Generally legacy UPS systems are oversized. Oversized systems cost more to purchase, install, run and maintain. Along with the associated batteries, oversized UPS systems also take up far more space which could be being used for other revenue generating opportunities. Right-sizing your UPS using a system designed with the capability to grow with your load in managable increments, means that you have the flexibility to pay-as-you-grow.

The most modern, true modular solutions such as Centiel's industry leading UPS CumulusPower™ are designed to be easily scalable, ensuring the installation can be both right-sized and futureproofed. Installing a fully rated frame or empty carcass from the outset, provides the option to add the required number of modules to suit the actual load, plus more only when needed. Right sizing in this way, minimises energy loss and keeps the TCO as low as possible.

Implementing infrastructures that offer the ability to pay-as-you-grow according to load requirements will require some intelligent analysis. However, with expert advice from trusted advisors who have decades of experience implementing the most efficient solutions such as the team at CENTIEL, it is possible to have the highest level of power protection in the most cost effective way.

Re-allocation of Resources

A colocation datacentre selling decompartmentalised space may shrink with one client and grow with another. Standardisation of frames which can accept the same physical size and power rating of UPS modules can ensure that if one client decides to reduce their rack space or moves on, the over and above hardware can be reutilised elsewhere.

Using a true modular UPS such as CumulusPower™ is the key to agile re-deployment of power protection. This is because with CumulusPower™, all the individual modules are a UPS in their own right, all containing a rectifier, inverter, and static switch and all operating online in parallel with each other.

CumulusPower™ also, uniquely offers Safe-Hot-Swap, which is the ability to exchange UPS modules on a live system safely. CumulusPower's Distributed Active Redundant Architecture (DARA) ensures any module being added to a system can be fully isolated and tested within a running frame before it accepts any load. It means datacentres have the opportunity to re-allocate resources rapidly or redeploy modules between areas or facilities based on priority. It is very easy to add another UPS module if needed and one can even be removed and redeployed to another site just as easily to ensure load protection and redundancy is kept at the most critical locations.

Maintenance

Modular UPS are, by far, the fastest growing sector of the UPS industry. This is because of their many advantages which include high efficiency, availability and scalability. However, they have also been designed with ease of maintenance in mind. For example:

CumulusPower's Safe-Hot-Swap capability ensures that if a system needs to be maintained, there is no need to switch to maintenance bypass. Modules can be exchanged in a live system, avoiding risk to the load. Downtime is eliminated.

Modular Concept Datacentres

Here, data halls are divided into smaller, more efficient, manageable spaces of say 100kW, 200kW or even 500kW. Deploying a modular concept across the entire facility, means sites are divided into rooms which are in effect mini-datacentres, each containing all the elements of a datacentre but on a much smaller scale. If the space in a particular room is no longer required, equipment and the associated infrastructure can be powered down or put into "hibernation" to minimise energy consumption and cost. The room and its infrastructure remains available and ready for use by future clients. If security is a consideration, these smaller rooms are also easier to manage, particularly when not in use.

Achieving an agile data centre design

To achieve an agile data centre design and for the modular datacentre concept to work, purchasers need to select quality UPS systems with a high-power density and the highest level of resilience. Modular UPS systems need to be robust and of high enough quality to withstand being relocated regularly.

As well as needing standardised frames and a robust, quality modular system, it is also necessary to manage the whole network closely. A full view of the facility is needed, where the environment can be monitored and managed in detail, to optimise the use of hardware. The use of a Building Management System (BMS) will allow datacentre managers to monitor the facilities mechanical and electrical equipment, the buildings internal environment and energy usage.

Datacentre managers can also utilise system features to understand the health of equipment. For example: an SNMP network management card is an industry standard protocol providing a simple tool to enable real-time management of a UPS system. It identifies any issues and can be used to notify when elements need maintenance, it collects data from the UPS, provides status information and can execute user-defined events such as server shutdowns. In essence, it bridges the gap between the UPS and the IT team allowing the client to manage the system's efficiency. For clients, this helps them further understand their own equipment, so they can fully optimise their systems.

Total cost of ownership reduction

To make the changes necessary for a datacentre to become more agile in the ways described, requires careful planning of infrastructure. For datacentres looking to switch over their existing infrastructure/frames, a TCO calculation can be made to show the costs savings of this move.
However, ultimately installing the most flexible UPS solution which can be scaled as required and making the right choices when it comes to the essential elements of the datacentre build, will pay dividends over the long term. By developing a flexible approach and making better use of the resources available, it is possible to reduce TCO significantly, ensuring datacentres keep their options open to remain agile in an uncertain world.

For more information about Centiel's full range of flexible, scalable, true modular UPS solutions please see: **www.centiel.com**

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