MODERNIZE ENERGY ARCHITECTURE AND ACHIEVE GRID RESILIENCE WITH VPAC

A platform for next-generation substation management at a reduced cost

Major forces are transforming the generation, distribution, and consumption of energy, shaking the utilities industry to its core. Companies are now obliged to adhere to new policies and meet net-zero emission targets. Two-way intermittent energy production and storage is on the rise, demanding new and robust wind and solar infrastructure systems. This and more means electric utility companies need a solution with inherent flexibility and resilience to modernize grids and substations to cope with disruption and achieve vital objectives.

Tap into the potential of virtualization technology

Virtualization technology has proven itself in the IT sector. Its potential in utilities, however, is largely untapped. By separating application functions from the underlying hardware infrastructure, virtualization allows functions to be added to a computational platform while sidestepping the need for additional hardware. In basic terms: virtualization technology simplifies substation operations in an increasingly complex landscape.

Virtualization also facilitates architecture maintenance and the process of upgrading or scaling frameworks based on need. This is critical for simplifying the process of making grids more resilient in the face of sudden and severe weather events. And with virtual hypervisors capable of supporting multiple software-defined workloads, proprietary devices performing isolated tasks (a bottleneck of conventional substations) are no longer needed, reducing overall operational cost.
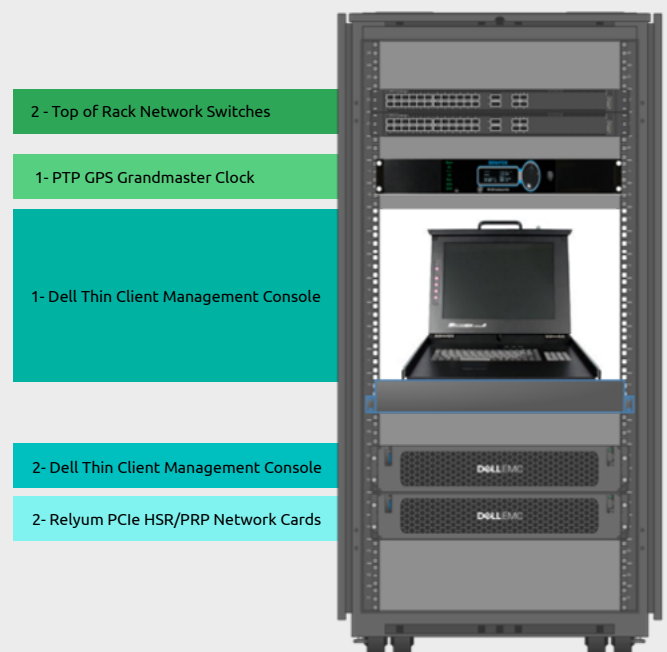
A platform for driving sustainable energy generation and distribution

Capgemini's Virtual, Protection, Automation, and Control (vPAC) platform brings these capabilities to electric utility companies, equipping them with the required infrastructure and software components for operationalizing the monitoring and reporting functions of their substations. It is built for streamlining the process of piloting next-generation substation architectures, those that will drive the sustainable energy generation and distribution methods of the future.

The benefits of the vPAC platform include:

- Distributed energy resources (DER) integration with a reduced hardware footprint in substations

- Built-in remote-management capabilities with proactive failure detection mechanisms for greater operational resilience

- Cyber-resilient architecture for enhanced security

- Reduced operational and capital expenditures due to smaller hardware footprint and lower maintenance overhead

- Facilitated upgrades and deployment of new, innovative algorithms within minutes, bypassing the need for on-site interventions.

vPAC also leverages the Dell Technologies PowerEdge XR12 2U server to guarantee reliability, security, and high performance in computing. It was built for operating at both low and high temperatures and in harsh, space-constrained environments with demanding processing workloads – typical of many electric-utility substations – and designed to comply with the global IEC 61850-3 global energy industry standard. vPAC also benefits from ABB and its proprietary technology to centralize all protection and control functionality into one software package for improved process management and to optimize substation performance.

2 - Top of Rack Network Switches

1 - PTP GPS Grandmaster Clock

1 - Dell Thin Client Management Console

2 - Dell Thin Client Management Console

2 - Relyum PCIe HSR/PRP Network Cards

At this critical juncture, Capgemini believes that electric utility companies must take the right actions to guarantee their future. Our experts have vast experience in supporting global utilities corporations with large-scale transformations in pursuit of a more resilient, efficient, and sustainable energy enterprise.

Our teams can leverage our vPAC platform solution to modernize your electricity architecture and help achieve your net-zero ambitions. We can work together to apply technology for a great cause: positioning your business for success while generating clean and sustainable energy for a better future.

About Capgemini

Capgemini is a global leader in partnering with companies to transform and manage their business by harnessing the power of technology. The Group is guided everyday by its purpose of unleashing human energy through technology for an inclusive and sustainable future. It is a responsible and diverse organization of over 350,000 team members in more than 50 countries. With its strong 55-year heritage and deep industry expertise, Capgemini is trusted by its clients to address the entire breadth of their business needs, from strategy and design to operations, fueled by the fast evolving and innovative world of cloud, data, AI, connectivity, software, digital engineering and platforms. The Group reported in 2021 global revenues of €18 billion (about $21 billion USD at 2021 average rate).

Get the Future You Want | www.capgemini.com

AmerIcsa_Feb23_AD5339