Leading electricity company gains increased scalability and agility for mission-critical SCADA application

Elenia Builds a Smarter Power Distribution Grid with Nutanix Invisible Infrastructure

ELENIA

BRINGING SCADA INTO THE 21ST CENTURY

The IT infrastructure behind the Elenia smart electricity distribution grid is centred around a commercial SCADA (Supervisory Control and Data Acquisition) application, originally hosted on conventional rack-mount servers and storage running a mix of Windows and Linux as the operating system. Having served the company well, this original hardware was nearing end of life and the search was on to find a replacement to cope with further expansion of the grid while also making the solution more resilient and manageable. That process, however, took a little longer than might be expected in other industries, as technical expert, Matti Lääkäri, explains.

"Because of the mission-critical nature of SCADA applications, risk averse developers are understandably conservative when it comes to embracing new technologies. Not only do they still rely on legacy communication protocols, one of the biggest hurdles to overcome was simply enabling the application to run on virtual servers instead of the 10-15 physical hosts located at each of our datacenters. This took some time, but was a crucial first step in the overall project"

A SMART INFRASTRUCTURE FOR A SMART GRID

Having secured the ability to migrate and virtualize the SCADA software, the next step was to upgrade the hardware and it was at this point that the company made the decision to switch from conventional servers to a Nutanix invisible infrastructure.

"We spent a long time evaluating the market and trying alternatives before choosing the Nutanix solution mainly because of its ability to scale," says Lääkäri. "That was to both enable us to cope with growth and, more importantly, rapid fluctuations in demand across our distribution grid. The compact and highly integrated nature of the Nutanix platform was also important – conventional servers and storage just have too many potential points of failure."

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– Matti Lääkäri,
Technical Expert Elenia

The Elenia infrastructure is spread across two data centre locations, with a third for disaster recovery. Given this set up, close integration with VMware and the single pane Prism management interface were among other key selling points.

"Servicing the memory and storage needs of our SCADA application was proving to be a real challenge," explains Lääkäri. "With our old infrastructure we had system management outsource in order to keep it all up and running, but with the Nutanix solution everything can be handled in-house by our existing support team."

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Your Enterprise Cloud Platform

READY, SET AND GO

The Nutanix Xtreme Computing Platform (XCP) proved to be very quick to install and configure, but the Elenia team has since spent several months migrating and testing the SCADA application on the new platform.

"We had the full production system up and running very quickly," says Lääkäri, "but with this kind of mission-critical system we have to go very deep and test everything to make sure every eventuality has been covered. The Nutanix XCP has passed with flying colours and we've been very impressed with the depth and knowledge of the Nutanix support staff who have helped us along the way."

The solution test is on place and we are building production for green light and go live. The solution implementation has huge importance given the company's ongoing commitment to improve the reliability of power distribution.

LONG TERM BENEFITS

Lääkäri, also confirmed that, although initially dedicated to hosting the SCADA smart distribution grid, Elenia will be looking to use Nutanix XCP elsewhere in the organisation.

"Nutanix is not only way ahead in terms of technology, it has inspired us with confidence in the hyperconverged infrastructure concept. It will be of huge benefit when it comes to embracing other new technologies such as the Internet of Things and we will definitely be looking to migrate other systems to the platform once this initial project is completed."

Company

The Elenia Group consists of the electricity distribution company Elenia Oy and its wholly owned heating company Elenia Lämpö Oy, services company Elenia Palvelut Oy and Elenia Finance Oyj. The Group provides services in close cooperation with local partner companies. Elenia operates in more than 100 municipalities and has 417.000 customers.

Industry

Energy -- Utilities

Business Need

To deliver a scalable, flexible and manageable infrastructure to cope with the demands of a SCADA (Supervisory Control and Data Acquisition) management application running a rapidly evolving smart electricity distribution grid.

Challenges

- Delivering a modern hyper converged infrastructure compatible with the legacy communication requirements of a SCADA application
- Strict availability and management requirements of an always-on electricity grid monitoring and management system
- Close integration with VMware hypervisor and single pane management across sites

Solution

- Hardware platform - 3 x NX-1365-G4 appliances (3 nodes per appliance)
- Dual Intel Xeon E5-2640 v3 processors (8-core, 2.6GHz) per node 128GB DDR4 memory per node 2 x Dual 10GbE network interfaces per node 800 GB SSD per node 12TB magnetic storage per cluster
- Hypervisor – VMware vSphere

Benefits

- Move to in-house management by existing support team
- Substantially lower rack footprint with significant reduction in power and cooling requirements
- Enhanced availability with fewer points of failure and the ability to survive the failure of an entire host server without affecting grid users. Confidence of ability to deliver on ongoing commitment to improve the reliability of power distribution
- Vastly improved scalability and agility – new VMs can be created in minutes and scaled to handle new workloads and growth in demand

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T. 855.NUTANIX (855.688.2649) | F. 408.916.4039
info@nutanix.com | www.nutanix.com | @nutanix