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future-proofing south australia's electricity grid.

Renewable energy generation such as household solar has changed the nature of electricity distribution networks, requiring them to support both large centralised generation sources such as traditional power stations and distributed generation within the grid itself.

This has vastly increased the technical challenges to safely and efficiently manage electricity loads and maintain balance across the grid. It has required grids to become more flexible and intelligent. For example, they need to immediately respond as householders flip between provider and user, depending on their power needs and the solar power they are generating.

These networks also need to meet growing customer technology and information expectations – customers want more timely information to manage their electricity usage at an increasingly granular level – and require significantly increased security protection.

why power networks are being transformed across the globe.

SA Power Networks, the sole electricity distributor in South Australia, was not only facing the same industry challenges as other power distributors, as part of its continuous improvement program, it also wanted to upgrade its Telecommunications Network Operations Centre (TNOC).

SA Power Networks wanted to upgrade to a single ubiquitous operational telecommunications platform that offered a more secure and reliable end-to-end network management system for the delivery of all its critical management services.

It had also concluded that the cables and information transmission systems, processes and components that underpinned its existing communications network also needed upgrading, as certain systems operated independently of each other, requiring significant manual intervention.

Need for change
SA Power Networks' reliance on its telecommunications network had grown significantly, and it was clear its existing set-up was no longer sustainable without additional resources through its continuous improvement program.

The growing use of network automation and mobile devices was also exposing the network to security threats such as cyber attacks.

Needing to guarantee the ongoing delivery of power to over 850,000 customers, to service ever-increasing customer expectations and to improve network security while satisfying regulatory requirements, SA Power Networks looked to revitalise its TNC through the 'SA Power Server Refresh Project', introducing of new server hardware, software and operating procedures.

SA Power Networks turned to CommTel to help design and build this new centralised and automated network management system and help provide an efficient, reliable and secure communications environment for years to come.

Challenges
The challenges included:

- The need for more efficient use of its communications systems to accommodate greater demand, flexibility, reliability and work load.
- An increasing requirement to manage cyber security issues.
- The need to accommodate a move to IP-based digital communications technology requiring specialised commissioning and network management tools. This also meant new training programs for the operators, system administrators and field staff who would use this digital technology.
- The requirement to maintain some legacy communications systems within the network, due to the uniqueness of certain long-life equipment.
- Business demands for greater remote access and control of electrical distribution infrastructure.
- The need for greater, more efficient and extensive reporting capability. SA Power wanted to upgrade from its manual system.

Requirements
SA Power Networks required effective, real-time data collection to improve network flexibility and responsiveness, and sophisticated supporting systems to combat potential cyber attacks.

It also anticipated that South Australia's state and local planning authorities would gradually move towards community-based energy systems and net zero carbon residential developments to support the state's 60 per cent emissions reduction target by 2050. To accommodate this, the new network management environment needed to be highly agile.

SA Power drafted stringent requirements and parameters for the commissioning of a new computing platform that would enable it to meet current and future demands. This platform required:

- The latest hardware and software.
- A virtualised environment.
- Redundant multi-site data centre architecture with potential scalability for additional sites.
- The elasticity to grow and shrink processing power to meet changing demands.
- Performance without compromise, including high availability and robust resiliency.
- Inherent backup and restore capabilities.
- Fully integrated and optimised management tools.
- Cybersecurity requirements in line with SA Power Networks standards.
- Comprehensive planning to ensure SA Power's existing virtual machines could be migrated to the new platform with 'Zero Data Loss and Minimal Operational Impact'.

Solution
CommTel helped provide an integrated and engineered solution that included replacing SA Power Networks' server farm. It consisted of high-performance hardware combined with intelligent operations management software, to create a virtualised platform with inherent scalability, redundancy and security capabilities.

The solution included:

- Hardware devices with greater capability, higher performance, improved availability, increased storage capacity and inherent resiliency.
- A virtualised environment that enabled high availability, agile scalability, optimised load balancing and the effortless movement of virtual machines between hardware platforms.
- A 360-degree cyber security solution that covered all primary layers (Data, Host, Server Infrastructure)
- Inherent hardware scalability and flexibility.

CommTel's solution delivered a blend of leading-edge hardware and software while navigating the effort and complexity of merging two disparate legacy platforms – its operating systems and applications – to a new ubiquitous state-of-the-art operational platform, which also offered greater capacity, renewed vendor support and extended component life.

As part of this project, CommTel provided a full range of project services, including project management, design, hardware installation, software commissioning, virtual machine migration, integration, acceptance testing, training and technical support.

Outcome
The data centre hardware replacement was a success and data migration completed without complication. The single ubiquitous operational platform delivered a significantly more secure and reliable end-to-end network management system.

> **SA Power Networks has upgraded to a future-proof network management system that meets its needs today and has the flexibility to accommodate its requirements tomorrow.**

For SA Power Networks, the benefits have included:

- An on-premise platform supporting over 100 virtual machines.
- Significantly increased capacity and computing power.
- Inherent redundancy and robust resiliency.
- Security assurance through extensive platform hardening.
- In-built health and performance monitoring and management.
- Enhanced capacity planning with resource optimisation capabilities.
- Intelligent workload placement and rebalancing functionality.
- The elimination of downtime through robustly redundant architecture.
- The flexibility to scale quickly and easily to meet changing demands.
- The ability to expand the redundancy to additional sites as required.
- Performance realisation from the latest technology.

The project was delivered on time and within the three-month expected duration, within budget and at the expected quality level. All of which ensured a best-of-breed solution for a customer who immediately booked a second phase expansion project with us.

It was honour to help this leading power utility with its continuous improvement program and assist it to achieve its network objectives.

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about commtel

CommTel is a leading international provider of advanced and engineered solutions for mission and business critical networks. We are a technology integrator, specialising in the delivery of network solutions that ensure the reliable delivery of vital services such as water, gas, electricity, public transport, and emergency services.

CommTel is widely known for innovative technology solutions, providing the network infrastructure and associated applications that optimise existing networks, as well as delivering digital transformation programs that provide a seamless transition from legacy to new technology. Businesses in the mining, transport, oil & gas, utilities and emergency services sectors rely on

CommTel as their trusted, long-term partner to ensure their systems meet their exacting requirements in the critical areas of safety, reliability, capacity, efficiency, intelligence and security.

CommTel is certified to the highest international standards for Security, Health & Safety and Quality, and maintains a strong commitment to the environment.

To find out more about how CommTel can take your business into the future, visit www.commtelns.com

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