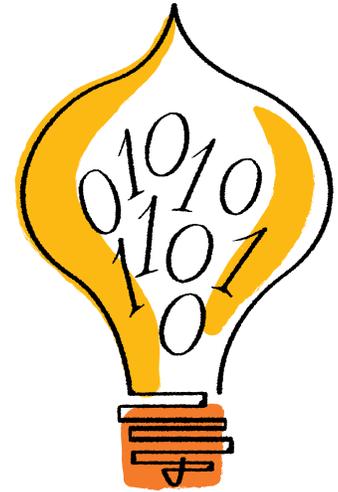




NetApp®



Industry Solution Brief

Flexible, Reliable Data Storage and Management for Utilities

KEY BENEFITS

The Challenges

- Manage rapidly rising data streams
- Maintain high reliability
- Comply with NERC CIP and other regulations
- Minimize IT staffing changes

Proven Results

- Adapt to rapidly growing data demands, without changing data storage and management systems
- Implement “always on” availability of data, so that storage never causes an outage
- Increase storage utilization by using virtualization, while decreasing power, cooling, and space requirements
- Protect sensitive, valuable customer and corporate information from loss or corruption
- Ease the burden of initial and ongoing data storage configuration and management
- Comply with NERC CIP efficiently

The Challenge

In your smart grid projects, you may need to gather, process, store, back up, and archive orders of magnitude more data than ever before. Eventually, this data will include real-time or near real-time energy consumption of every customer in your service territory. Smart meters gather this data as part of the Advanced Metering Infrastructure (AMI) initiative—the first step toward realizing your smart grid goals.

Many electric power plants and substations are also installing sophisticated monitoring and process control systems (PCS), with the goal of reducing environmental impacts and improving power system operation. Data is gathered remotely from electric, gas, and water transmission and distribution systems and fed into these systems.

The amount of data gathered in these projects will probably rise rapidly, so you may be concerned about the scalability of your IT systems. If you make any changes to your IT infrastructure, you want these systems to remain highly reliable. It's also necessary to comply with industry regulatory requirements,

such as the North American Electric Reliability Council (NERC) Critical Infrastructure Protection (CIP). And you want to do all of this without major IT staffing changes if possible. This means that you're probably dealing with the toughest IT infrastructural challenges in the history of the industry.

The Solution

Build your data storage and management infrastructure with NetApp

NetApp is the innovation leader for storage and data management solutions. We help large and small utility companies meet their IT infrastructure needs during this period of unprecedented industry change. We understand the challenges that you face as you design and implement AMI projects, other smart grid initiatives, and projects to enhance power system monitoring, operation, and control. We partner with industry leaders such as GE and Siemens AG to help utility companies:

- Scale up from a few terabytes to petabytes, using the same operating system and skill set for management
- Maintain the highest levels of availability for mission-critical applications

“With NetApp’s solution, we quadrupled our storage capacity and still kept costs under control. We haven’t even had to increase our data center staff. Without NetApp, I estimate we’d need at least four more full-time employees.”

Chris Rima

Supervisor, Infrastructure Systems, Tucson Electric Power

- Configure and manage systems to scale up and benefit from sophisticated functionality, without an army of storage managers
- Take full advantage of server and storage virtualization
- Use NetApp® Snapshot® and replication technology that is integrated with database applications for easy backup, restore, and disaster recovery of complex software environments
- Administer instant, zero-capacity provisioning and cloning for test, development, and quality assurance environments
- Achieve maximum protection for corporate and customer data with high-performance RAID 6 and write once, read many (WORM) archiving capabilities
- Scale and change multiprotocol systems, without downtime, to meet evolving requirements

Now you can use these capabilities to help your customers reduce energy consumption. You can improve the efficiency of power system operation and decrease environmental impacts. Our solutions help you maintain or enhance the reliability, quality, and security of your systems and service.

Flexibility through multiprotocol support

In the rapidly evolving smart grid space, you need a flexible data storage and management solution that accommodates change as data requirements shift. In a single storage platform, the NetApp multiprotocol storage solution meets that need. Our solution supports Fibre Channel Protocol (FCP) and iSCSI access for blocks, as well as NFS and CIFS access for files. We are leaders in Ethernet storage and have formed partnerships with leading networking vendors. This means that we can offer the seamless integration of a unified fabric with Fibre Channel over Ethernet (FCoE) and Enhanced Ethernet in the data center.

Terabyte-to-petabyte scalability through NetApp Unified Storage Architecture

In your smart grid initiative, you may have first implemented foundational systems such as meter data management systems. Then you probably expanded to a broad array of data applications in outage management systems (OMS), supervisory control and data acquisition (SCADA) systems, energy management systems (EMS), and others. NetApp Unified Storage Architecture supports the need to scale from terabytes to petabytes of

data for these systems over time. This unified architecture is a single, end-to-end foundation for dynamic data management. It goes beyond simple multiprotocol storage to provide integrated data management and data protection. Essentially, we support all tiers of storage, quality of service, and other elements—all in a single platform.

The highest levels of availability for mission-critical applications

To provide reliable energy service to customers, utility companies must have “always on” availability of data (greater than 99.999% storage availability). To meet this need, NetApp systems are configured in a fully mirrored environment at our client’s production side. Two separate clusters, each with two controllers, mean that your storage reliably avoids scheduled or unscheduled service outages, even for routine storage system maintenance.

Take full advantage of server and storage virtualization

As providers of energy, utility companies are particularly interested in reducing their own energy consumption. Server virtualization offers a way to decrease power, cooling, and space requirements for IT hardware resources. NetApp’s approach also reduces hardware expenses and operational costs, provides continuous uptime, and improves business agility.

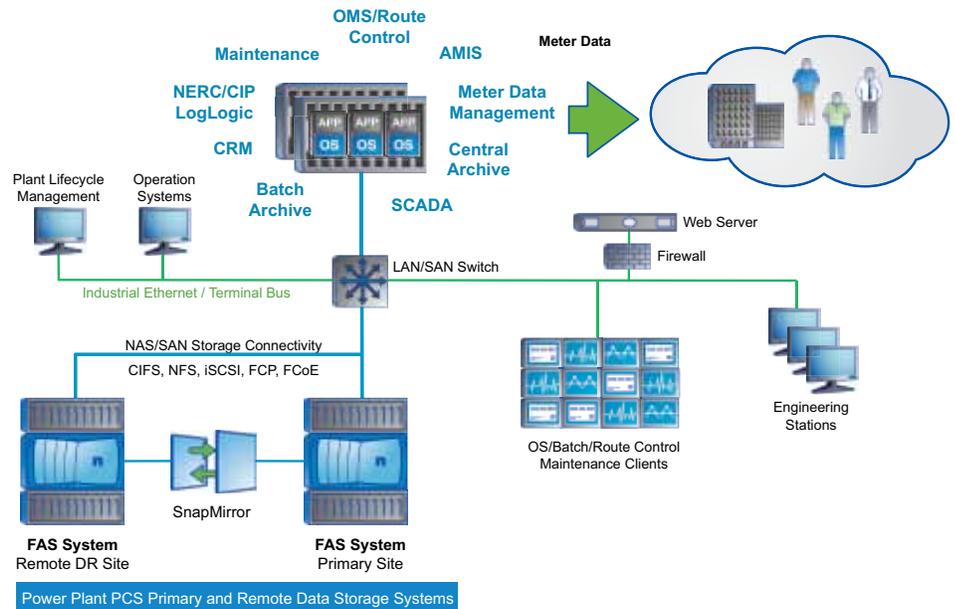


Figure 1) Utility infrastructure built on NetApp virtualized storage.

To unleash the full potential of virtualization in utility IT environments, NetApp offers virtualization that complements and integrates with VMware® applications and Microsoft® Hyper-V™, for example. In addition to reduced energy costs, our combined solutions offer you high efficiency, comprehensive data protection, agility and flexibility, and simplified, centralized manageability.

NetApp deduplication complements storage virtualization. You can reduce multiple copies of data to a single instance, decreasing your storage capacity needs by up to 90%.

Maximum protection for corporate and customer data

The data gathered in smart grid and other initiatives is a treasure trove of information. It's important to protect this sensitive and valuable operational and customer data from loss or corruption. To provide this protection, NetApp offers state-of-the-art data backup, restore, and disaster recovery solutions, including high-performance RAID 6 and WORM capabilities.

A NetApp Snapshot copy is a point-in-time image of a file system. It reduces backup windows to just seconds and helps to avoid the performance limitations of traditional tape or disk-based backup and restore. NetApp SnapManager® software simplifies policy-based backup and other data management

functions on either physical or virtual machines. And NetApp SnapMirror® software reliably replicates your data across unlimited distances over the internet to provide the disaster protection you need.

Instant, zero-capacity provisioning and cloning for test and development environments

Before production versions of systems are deployed, they must be developed and tested, and quality assurance must be performed in a controlled environment. With NetApp FlexClone®, database administrators can clone a copy of a dataset, manipulate it, and save it without placing huge overhead demands on the storage infrastructure.

We also help database administrators integrate new applications such as customer relationship management (CRM) applications with databases such as Oracle®, SAP®, and Microsoft SQL Server®.

Easy configuration and management, without an army of storage managers

NetApp solutions make it easy to configure and manage data storage without expanding your IT staff. NetApp OnCommand® management software simplifies storage management by putting it in a single pool, so that administrators can control, automate, and analyze the shared storage infrastructure.

Efficient NERC CIP compliance

To help you comply with NERC's CIP cyber-security standards, we partner with LogLogic, which offers a suite of compliance software that is tailored for NERC CIP compliance. The software mines data such as log data, flow data, and flat files from corporate firewalls, databases, Web proxies, intrusion detection systems, e-mail servers, and backup systems. The compliance solution monitors and scans identity and access, user activity, change control, security, and IT infrastructure, while providing business continuity management. Operating as a virtual appliance, it then provides real-time alerting via e-mail and SNMP. Its reporting on NERC compliance status includes more than 75 alerts mapped to NERC CIP.

The green data center

NetApp is an industry leader in the conservation of power and other resources in the data center. The NetApp Dynamic Data Center, located at the NetApp technology center in Research Triangle Park (RTP), North Carolina, earned the U.S. Environmental Protection Agency's ENERGY STAR award, the national symbol for protecting the environment through superior energy efficiency. The RTP center, which opened in 2009, is the first data center to achieve this distinction from the EPA.

“Since our IT team is small, we were looking for an efficient, secure, and reliable solution that requires minimal support. After a rigorous selection process, Gaznat chose NetApp.”

Remo Monn
IT Director, Gaznat

Most storage vendors can reduce power consumption by consolidating data onto fewer systems with higher-capacity hard disk drives. Our approach goes well beyond consolidation by applying NetApp technology—FlexVol®, FlexClone, Snapshot, and deduplication—to dramatically increase storage utilization. For example, it’s possible to increase storage utilization from less than 40% to an average of 60% by using NetApp FlexVol technology for thin provisioning.

Siemens Partnership

In the utilities sector, one of NetApp’s partnerships is with Siemens AG. Siemens offers a broad range of services across the energy landscape to help utilities move to smart grid and smart metering. Their consulting services form the foundation, including business modeling, transformation planning, and understanding consumer behavior. Siemens then builds the smart network. They incorporate the products and IT components needed, as well as the business change processes, so that utilities have a reliable infrastructure to deliver smart services. Siemens also offers full operational services, including

front- and back-office support, field operations, and value-added services. Using open industry standards, Siemens solutions integrate with all metering, communications, and enterprise technologies for providers of electricity, natural gas, and water.

Why NetApp?

For more than a decade, a long list of large enterprises in financial services, healthcare, telecommunications, energy, high tech, and manufacturing have placed their trust in NetApp to capitalize on our extensive experience. Our people, processes, and technology deliver ideas and innovative solutions that return dollars to your bottom line. Our credentials include:

- More than 5,000 global customers
- An extensive list of delivery partners
- Worldwide strategic global technology partners
- Thousands of NetApp Professional Services storage experts
- Thought leadership for Technology Professional Services Association (TPSA) and Storage Networking Industry Association (SNIA)

We look forward to helping you create an infrastructure that will support the evolving goals of your high-performance business.

Let’s Get Started

At NetApp, we help you succeed by becoming a storage partner with the solutions, partnerships, and support that free your personnel to focus on business goals. NetApp Global Services has years of experience supporting NetApp technologies in large and small utilities. Our support engineers understand the unique issues that utilities embarking on smart grid projects face and respond accordingly. Get started by contacting NetApp today.

About NetApp

NetApp creates innovative storage and data management solutions that deliver outstanding cost efficiency and accelerate business breakthroughs. Discover our passion for helping companies around the world go further, faster at www.netapp.com.

Go further, faster*



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