MARCH 2010

THE NATION'S CAPITAL AND HP

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Up and Down the Lines: Smart Utilities and Advanced Metering

Congress holds hearings on the status of an intelligent electric grid. Utilities tout the benefits, while environmentalists see opportunities for consumers to reduce usage. IT firms, hardware developers and countless others have filed patents to bring new products and services to market.

The potential impact of a widely used, technologically advanced electric grid is huge. Many of the Obama Administration's energy goals depend on a smarter grid, helping consumers and utilities alike reduce electric consumption while bringing renewable generation onto the grid more effectively, and making the electric car a widespread reality.

Using enterprise data warehousing like HP Neoview allows for capture of information continually, while HP Business Intelligence Solutions helps utilities meet the specific challenges of resource planning and integration of more environmentally efficient technologies to bring about the benefits of the smart grid, described below.

Putting Control in the Hands of Consumers

While inexpensive electronic measurements have existed for years to allow consumers to see, for example, the effect of a hair dryer on their electricity demand, the combination of a smart utility grid and advanced metering systems for consumers opens the door to a new world of energy conservation. For example, consumers can keep track of when the electric system is overloaded, such as during a hot summer day, and adjust their use accordingly—like running the washing machine at night.

HP's Exstream is used by four of the top 10 utility companies. Exstream allows utilities to provide understandable ways to provide consumers the intelligence from smart meters. Making information available to consumers in this manner gives electric companies the opportunity to offer time-of-use pricing, where the price changes based on the demand on the grid. So consumers can use that data to their benefit, using electricity at times when it costs less.

Longer term, with innovations in IT and wireless communications, we're not far off from homes that link heating/cooling systems and high-demand appliances to allow for central control by the consumer.

The Power Plants You Don't Use

Congestion occurs when too much power is online at a given time, creating constraints on the electric grid while wasting energy. A smarter grid will allow for improved management of power plants, ensuring more of the electricity generated is actually used.

More efficient generation means less generation, which means fewer emissions of nitrogen oxides, sulfur dioxide, carbon dioxide and mercury. As the population grows, a more efficiently engineered electric grid, bolstered by advanced IT solutions, will result in the construction of fewer power plants while still reliably meeting consumers' needs.

Wind and Solar When It's Still and Dark

One of the biggest obstacles to bringing utility-grade wind and solar power to the nation's utilities is the simplest: wind doesn't blow all the time, and sun doesn't always shine, even during the day. As a result, utilities and regional independent system operators sometimes have to scramble to ensure consumers on the grid all have the reliable power they need. Worse, in these cases, power plants often have to idle, with power unused, to be ready at a moment's notice to ensure demand is met and the grid is "live" with the constant flow of electrons that keep the grid stable.

Providing far more real-time information related to each resource on the electric grid can help operators respond more quickly. This makes it possible to account for fluctuations in wind and solar generation, reducing the need for idling plants, which tend to be powered by fossil fuels. Combined with continued increases in the efficiency of wind turbines and solar cells—as well as burgeoning battery technology that will allow power generated by wind turbines at night to be used during times of greater consumption—the smart grid enhances renewable development.

Who Holds Back the Electric Car?

Today? Nobody. The Nissan Leaf and the Chevy Volt are poised to lead the market in providing a fully electric, rechargeable vehicle that works with today's commuter needs.

Bringing widespread use of electric vehicles onto the grid depends on information. Who's charging the car where, for how long and at what voltage?

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If it's a charging garage, like those in development in Portland, Houston and San Francisco, how do you bill the consumer for the electricity? As is the case with renewable generation, how does the transmission operator ensure the lines remain stable when many users are plugged in at once?

Because the adoption of electric vehicles is occurring in concert with investments in the smart grid, utilities, working with IT companies, are poised to ensure they're adopted efficiently and safely, giving consumers an electric option that results in far less pollution from transportation.

Reliability Through a Stronger Electric Grid

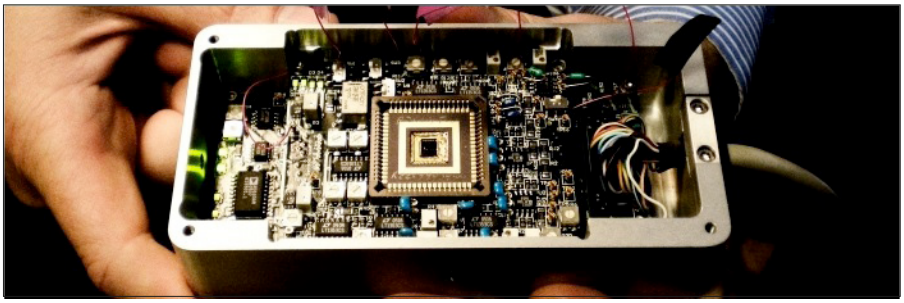
A smart grid allows utilities to pinpoint electric outages caused by adverse weather, diagnose the central node that created that outage and get consumers' lights back on more quickly. In fact, an effective smart grid will improve detection of lines that may be faulty through regular diagnostics.

It also improves consumer convenience and lowers utilities' costs by allowing consumers to start service and have meters read remotely. Given that utilities are regulated, lower utility costs translate to lower electric bills.

Bringing energy efficiency, cleaner power, cleaner cars and reliability to the grid depends on detecting information and developing the tools to use it to mankind's greatest advantage. Given the nation's environmental and energy goals, IT is the most cost-effective part of the solution.

HP and Shell Partner To Study Seismic Activity

In the first commercial application of HP Labs's "Central Nervous System for the Earth" (CeNSE) technology, HP and Shell recently announced a significant collaboration that will create a competitive advantage for Shell oil exploration. The two companies will work together to deliver comprehensive intelligence and high-resolution pictures which will provide a better picture of existing and alternative energy resources and allow Shell to perform more targeted oil exploration thereby reducing their environmental impact. Initially, a wireless sensor network will be deployed in difficult oil and gas reservoirs such as under salt formations in the Middle East and deep pockets of natural gas in North America.



The ground-breaking solution will be delivered by HP Enterprise Services, and will include HP's high-performance sensing technology, a recent breakthrough from HP Labs and the company's Imaging and Print Group. This sensing solution is a great example of the power of HP's portfolio – it brings together HP Labs research running on HP ProCurve networking products, storage, computation and software products, to sense, collect and store geophysical data.

The collaboration is just one part of the broader goal of CeNSE: to create an intelligent network of billions of nano-scale sensors that will feel, taste, smell, see and hear what is going on in the world and communicate that information over fast and powerful computing networks so it can be analyzed and acted upon quickly—so small problems can be fixed before they become big costly problems, and other problems are avoided altogether.

By sensing what is happening in the world we will add another layer of intelligence to our global computer system that will empower people to make better, faster decisions, and take subsequent action to improve safety, security and sustainability.

Beyond the sensors themselves, HP is studying the way IT can collect and use that data. One million sensors running 24 hours per day create 20,000 terabytes of data in just six months, and that's just data—not analysis. However, commercial projects like the seismic work with Shell will lead to continued improvements of performance, ultimately bringing the breadth and detail of information to monitor the Earth.

HP Technical Support Center Bringing 1,200 Jobs to Arkansas

HP CEO Mark Hurd and Governor Mike Beebe dedicate the facility

On March 3, an enthusiastic crowd of more than 300 members of the Conway, Arkansas community celebrated the dedication of HP's new technical support center, expected to bring 1,200 employees to Central Arkansas by 2012. The city has a strong infrastructure, an educated workforce and an interest in bringing new businesses to the region, making it an ideal fit for HP.

Arkansas Governor Mike Beebe and Conway Mayor Tab Townsell were on hand, along with HP CEO Mark Hurd. The technical support center comes at a time when unemployment is rising in the state, bringing economic development and city pride to the seat of Faulkner County.

Mike Holston, Governor Beebe, and HP CEO Mark Hurd at the facility

HP's Irving Named One of Top 10 Black IT Leaders

HP's Larry Irving was highlighted at Monster.com's InsideTech as one of "10 Black Men and Women Who Are Leading the Way in IT and Business." The piece notes Irving's longstanding goal of bringing greater access to technology to middle- and working-class communities, as well as his work with the Irving Information Group and President Obama's transition team.

Community Investment

The **Hewlett-Packard Company Foundation** made a donation of $500,000 for relief and recovery efforts following the earthquake that struck Chile. The company has also launched a dedication website for employee donations, and the Hewlett-Packard Company Foundation has committed up to $250,000 to match eligible employee contributions in a bid to raise an additional $500,000. The Foundation is chaired by Marcela Perez de Alonso, a Chilean native, who is executive vice president of Human Resources at HP. "Our thoughts are with all the families that have fallen victim to this tragedy and with the terribly trying challenges my country and my people are now faced with. We are all extremely shocked by this tragedy and are committed to supporting recovery efforts through such reputed organizations as the American Red Cross and Doctors Without Borders," she stated.