IP telephony and peering networks - making the smart grid work

by Charles Studt, IntelePeer Vice President, Product Management

With the Smart Grid, with smart meters tracking and reporting usage in real-time, power used during peak periods will cost more and during slow periods less. This will reduce strain on the grid, lower carbon emissions and reduce energy consumption. However, unless utilities can tell consumers what to do, and when, they cannot respond effectively to reduce their expenses and help the power company. Utilities can outsource the systems needed to inform consumers using the expertise of telecom service providers.

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The Smart Grid offers a practical way to reduce energy and even water use while reducing related pollution. The concept is straightforward; the utility deploys smart meters that track how consumers and businesses use power or other resources, and then shares that information with the users so they can use energy in a more cost-efficient manner.

Power used during peak periods will cost more, while power used during slow periods will cost less. As a result, power use will change, reducing the strain on the grid and power plants, making the entire system more efficient, lowering carbon emissions and cutting overall energy use. The same principle applies to usage of water or other resources.

Here is the key question - while the Smart Grid promises to improve lives, conserve resources and save consumers money, how is this vision going to become a reality? It will not happen simply through the installation of smart meters and the associated two-way communication links that will be necessary for the meters to work.

It's not just a technology problem. Utility consumers are not in the habit of regularly checking their meter. Furthermore, utilities need a simple, straightforward way to let consumers know when they should reduce consumption versus when they can crank up the power.

Executed effectively the Smart Grid should help consumers save money, identify habits that waste power, while reducing strain on the overall grid. Furthermore, the Smart Grid may offer ways for utilities to generate additional revenue.

The bottom line: utilities must find new ways to connect and communicate with customers

effectively, using already familiar tools and technologies. This approach means utilities need to embrace new communications strategies that connect with their customers in new, personalized ways.

Fortunately, these communications elements already exist, which eliminates the need to create them. Instead, utilities can outsource a wide range of integrated communications services that take advantage of emerging voice and multimedia features delivered over hosted voice peering networks. This approach allows utilities to roll out communications capabilities in stages while eliminating most up-front capital expenses and offering significant operational and ongoing cost advantages over other communications channels.

Let's start with the basic premise. Once the utilities install smart meters, they gain a completely new level of insight into when each consumer uses power or even water, allowing them to raise rates for high-demand times and reduce rates when demand is lower.

However, unless consumers - and businesses - understand how to analyze their usage, they will lack the ability to respond in a way that reduces their costs while helping the utility operate more efficiently. The utility needs a way to tell consumers how to reduce their utility bill while helping reduce the strain on the grid.

In many scenarios, the vision is to provide consumers and business operations professionals with special portals, online dashboards and other fancy widgets that they can use to analyze their consumption patterns, so they can adjust them accordingly.

Yet, past experience suggests asking consumers to do anything complex will likely fail. It is not that consumers or business executives lack the ability to manage complex online dashboards or other tools. Rather, they simply do not have lots of time or patience for navigating online menus, consoles and dashboards. Messages need to reach them where they are, rather than forcing them to find the message.

Here is a basic example:

The local power company determines the high usage days for the next two weeks along with times when the demand on the grid is light. Unless consumers develop the habit of checking their online dashboard - an unlikely prospect - few will know about these projected usage patterns and how they will impact their utility costs.

However, the utility could push that information out to customers via email and text message blasts to each consumer and business customer. That message, using familiar communications tools, is more likely to get the attention needed to change their behaviour.

Furthermore, the email might provide more detail, such as a list of high-demand dates and times when power use will include a high-demand surcharge, along with a list of off-peak times when power use will cost less - much like the type of information cell phone users receive from their wireless carrier.

The text message might include a link to a website optimized for mobile browsers or alert the consumer to check the website for details on high-cost power days. Through effective communications, the utility can help consumers save money while preventing potential outages resulting from on-demand spikes that can exceed the grid's capacity.

These capabilities are just the beginning. Once the smart meter is in place, the utility should be able to generate a standard usage pattern for how each home consumes power. Once a standard pattern is established, the smart meter should be able to identify anything out of the ordinary.

If someone leaves the outdoor floodlights on or anything else that consumes a lot of power, the smart meter may alert the utility of the unusual power spike. In turn, the utility sends a text message, email or voicemail to the customer noting the power spike. As homes become more sophisticated, the consumer might eventually be able to go online to access a remote console that allows them to turn off the offending appliance or light. For most of us today, though, a trip home or a call to a trusted neighbour, is necessary to stop these wastes of power.

Advanced smart grid communications might also help parents identify when their teenage children decide to ditch class for a video game tournament at home. Any unusually high spike in power can trigger an automatic email, text message or even automated voicemail, alerting parents that something is going on at home.

For businesses, alerts of unusual power spikes can identify machines that need maintenance. Perhaps a part is wearing out and requires more power to do the same work. A smart meter might also recognize power spikes and trigger a text message alert to the maintenance staff so they can check for potential problems.

Smart Grid and smart meters can also be applied to other resources, such as water. As clean water becomes an increasingly limited resource, water use can be monitored in much the same way as electricity, natural gas and other resources. If a pipe bursts or a toilet or faucet leaks, the smart meter will note the spike in consumption. The Smart Grid can trigger a text message, email or call from the utility to alert the resident of a potential leak or other problem.

Well-networked utilities might even generate additional revenues by directing consumers to appropriate plumbers, electricians or home appliance repair services to fix problems - and earn themselves a referral fee.

Currently, utilities are accustomed to one-way communications with customers. The Smart Grid requires new capabilities in areas where utilities lack both the resources and expertise. Developing these capabilities in-house is prohibitively expensive and can delay Smart Grid deployments by months or even years.

The fastest way for utilities to embrace this advanced level of customer communications is by outsourcing communications through a service provider who offers hosted voice and rich media services. A number of IP telephony infrastructure providers have emerged to offer Communications as a Service hosted platforms, providing utilities with a wide range of options to connect directly with consumers. The hosted model eliminates most of the up-front costs and risks of deploying these new voice capabilities, while the pay-as-you-go delivery model ensures the utility pays only for the services used.

This hosted communications model allows utilities to take full advantage of all the insights they gain from smart meters. It also allows the customers to fully participate in the promise and the cost and quality benefits of the Smart Grid, while protecting against usage spikes and reducing their carbon footprint - an effective way to embrace a bright and promising future. ●