



# Gas and electric company makes paperless power management easy with Citrix NetScaler

Louisville Gas and Electric Company (LG&E),  
Kentucky Utilities Company (KU), and Citrix

Louisville Gas and Electric Company (LG&E) and Kentucky Utilities Company (KU) regularly receive best-in-class customer-satisfaction ratings. That is significant for utilities that together serve nearly 1.3 million customers, including providing power in all 77 counties in Kentucky and five counties in Virginia, in addition to providing natural gas for customers in Louisville, Kentucky, and 16 surrounding counties. LG&E and KU are part of the PPL Corporation family of companies, and they are headquartered in Louisville.



Serve  
**1.3 million**  
customers



Employ nearly  
**3,600** people



Provide power  
to **83** counties

## The Challenge: Perpetuate a paperless workplace and maximize application availability

In order to empower field employees to access the information they need at any time, LG&E and KU have steadily moved toward mobile-powered workforces and paperless operations. In a power plant, mobile connections can be challenging. Wireless network connections aren't always available in power plants, and when they are, they often suffer from interference. To combat the unreliable nature of wireless connections, the LG&E and KU development group turned to cellular connectivity and developed several internal-facing mobile applications that employees use on Apple iPad devices. In the early stages of the move to a cellular-based approach, employees were sometimes unable to connect to the mobile applications due to LG&E and KU's previous load-balancing solution ineffectively handling traffic. The solution couldn't consistently deliver the needed

capacity and reliability—which meant that employees couldn't consistently access critical apps and data.

To support more secure, reliable mobile-application access in the field and on employees' personal devices, in 2012, LG&E and KU deployed Citrix XenMobile. Citrix NetScaler was already deployed to provide remote access to a small, internal virtual-desktop-infrastructure (VDI) environment. The companies also used a different load-balancing solution to support other critical application workloads, such as their existing SAP solution-based customer portal, Microsoft Exchange, and Oracle Financials. The addition of XenMobile, and the pending end-of-life of the existing load-balancing appliance, provided the opportunity for LG&E and KU to consolidate all their load-balancing requirements onto a single vendor platform—a move that could meet application-delivery needs and lower overall operational costs.

## The Solution: Choose NetScaler for one-platform, one-vendor efficiency

LG&E and KU chose NetScaler appliances, run on Intel Xeon processors, as their solution. The utilities upgraded their existing NetScaler solutions to the multi-tenant NetScaler SDX platform, which has allowed them to service additional applications and isolate virtual instances from a single appliance. With the NetScaler SDX solution, LG&E and KU use a single platform for all of their load-balancing needs and help secure access to critical enterprise application workloads and their entire Citrix infrastructure, which includes Citrix XenApp, XenDesktop, XenMobile, and ShareFile.

Field employees securely access applications from their mobile devices using the XenMobile and NetScaler SDX solutions. The NetScaler SDX appliance ensures the availability of XenMobile mobile-device-management (MDM) servers

during high-traffic surges, delivering 100-percent uptime for apps and data. LG&E and KU reduce costs by maintaining a digital “paper” trail that increases accuracy, response times, and productivity by removing the need to manage pieces of paper and the risk of losing those papers.<sup>1</sup>

LG&E and KU can now host quality-assurance (QA) and production environments from the same NetScaler appliance, separating them as virtual instances on the multi-tenant NetScaler platform, NetScaler SDX. And because NetScaler appliances are run on Intel Xeon processors, LG&E and KU’s NetScaler solution takes advantage of the processor family’s improved encryption, performance, and data availability. NetScaler appliances also benefit from Intel Virtualization Technology for Directed I/O (Intel VT-d), which improves performance for input/output (I/O) devices in virtualized environments.

## Key Benefits

A paperless model won’t work if digital connections aren’t always available and secure. With its NetScaler solution, the LG&E and KU operations team can fully support the LG&E and KU corporate commitment to digital transformation. NetScaler appliances can also help the team drive even more paperless processes that help reduce errors, deliver greater time savings, and help maintain and improve compliance. Employees are empowered, and customers are more satisfied, by having consistent service and a faster return to service when outages occur. “We believe doing it electronically instead of on paper is better. And NetScaler helps us do it electronically,” says Bill Brumleve, System Administrator at LG&E and KU.

***“With NetScaler, giving users access is simply checking a box and picking a certificate from a drop-down, and we are done, and it all works. Because of the integration, it isn’t different processes working on different platforms. It works much better. The integration really helps us.”***

**Bill Brumleve** | System Administrator | LG&E and KU

### Cost savings and data-center consolidation

With the NetScaler SDX solution, cost savings come from more than just being paperless. Using the NetScaler SDX solution has allowed LG&E and KU to consolidate their data centers with fewer NetScaler appliances, which delivers significant cost savings. Consolidating to a single load-balancing vendor has also contributed to lower operational costs, as a result of decreased data-center complexity and technical debt. The entire operation, with its 1.3 million customers, is now run using four NetScaler SDX 14030 appliances housed in two different data-center locations. And those NetScaler appliances are run on Intel Xeon processors, which contribute to outstanding performance in virtualized environments and high consolidation ratios.

### Improved user experience and IT productivity

Consolidated load balancing with the NetScaler solution lets LG&E and KU deliver a better experience for field employees. It also has allowed LG&E

and KU to improve field employee and IT productivity. Users can easily and reliably connect, and connections no longer fail as they occasionally had with the previous VPN solution. Users aren’t kept from getting their jobs done, and they don’t have to find time-consuming workarounds either. “Now, users get everything they need in a much easier way. The end user has a much smoother experience than before,” Brumleve says.

With the NetScaler solution, the LG&E and KU IT team can focus on more strategic initiatives instead of managing application-access issues. “Better integration has helped make management of app delivery easier,” Brumleve says.

With the Intel Xeon processor E5 family powering its NetScaler solution, LG&E and KU optimizes performance based on workload demands at the server level. NetScaler appliances are optimized to squeeze the maximum capacity and support from Intel architecture and up to 55 MB of L3 cache on the Intel Xeon processor E5 v4 family. This lowers latency and accelerates performance, because it’s much faster for data to move



*“The high-availability feature has performed absolutely as advertised and has been wonderful for us.”*

Bill Brumleve | System Administrator | LG&E and KU

through the L3 cache than through main system memory. By playing off of one another's strengths, the Intel Xeon processor E5 v4 family and the NetScaler solution let Brumleve and his team move more data more quickly through the data center.

### High availability and disaster recovery

The NetScaler solution's reliability and high-availability (HA) capabilities keeps users connected and productive in ways they don't even realize because of the platform's seamless failover capabilities. And running on the Intel Xeon processor E5 v4 family helps further ensure the NetScaler solution's overall availability because of the processor family's improved encryption, performance, and data availability. LG&E and KU once experienced a failure while upgrading a virtual-machine host; the upgrade caused their NetScaler appliance to fail. However, the appliance automatically failed over to standby, and users didn't experience a single millisecond of disruption.

“We were able to do all of that without the end user knowing a thing. It failed over to its standby and never skipped a beat. We've done that several times, and it allows us to do a lot of things without having to cause outages for the user. I've been very happy with that. The HA and DR functionality is very near and dear to our hearts,” Brumleve says.

Brumleve and his team use the global server load balancing (GSLB) capability in the NetScaler appliance wherever possible to ensure traffic

is intelligently distributed between data centers. The team deploys NetScaler appliances in each data center to distribute XenMobile traffic. Virtual IP addresses (VIPs) that support

GSLB run in each data center, and all LG&E and KU appliances in each data center run as HA pairs. “GSLB makes disaster recovery that much easier,” Brumleve says.

## Citrix NetScaler Runs on Intel Xeon Processors

When NetScaler solutions run on the Intel Xeon processor E5-2600 v4 product family, organizations can take advantage of features that help keep the transmission of data stable, secure, and swift. NetScaler is designed to put data as close to the processor as possible and to perform multiple operations while data is in caches. This design enables NetScaler to decrease the latency of the data moving through the application delivery controller (ADC). Current-generation Intel Xeon processors further these capabilities with a higher core count than previous generations, in addition to enhanced virtualization capabilities and higher memory bandwidth. Plus, Intel Xeon processors are ideal for environments that require automation and orchestration capabilities, service tiering, and optimal quality of service (QoS) levels.

- **Intel Resource Director Technology (Intel RDT)** and other features enable better management of shared platform resources.
- **Improved security keys** help safeguard network access and strengthen platform protection against malware attacks without slowing apps down. And accelerated cryptographic performance allows for more widespread use of encryption without any degradation in performance.
- **Intel Data Direct I/O Technology (Intel DDIO)** bypasses main memory and sends I/O packets straight to the processor cache to improve throughput and lower latency.
- **Intel VT-d** improves performance of I/O devices in virtualized environments and enhances the system's overall security and reliability.
- **Intel Hyper-Threading Technology (Intel HT Technology)** allows each core to manage two threads simultaneously. A NetScaler appliance is able to process different packets within each core, resulting in better performance and scalability.

Together, the NetScaler solution and the Intel Xeon processor family empower an organization to accommodate even the largest high-traffic environments, while delivering high availability with security for users and data.

Learn more about [Citrix and Intel](#).

## Looking Ahead

In the next few years, LG&E and KU want to consolidate even more onto NetScaler SDX appliances by adding SSL VPN functionality with Citrix NetScaler Unified Gateway to eliminate the need for their current VPN solution to deliver all their applications. LG&E and KU are also looking to upgrade their remaining NetScaler MPX platforms to NetScaler SDX appliances.

### Industry

- Electric utilities

### Key Benefits

- Support for corporate commitment to digital transformation
- Cost savings and data-center consolidation
- Improved user experience and user and IT productivity
- High availability and disaster recovery

### Citrix Products

- [NetScaler ADC](#) (NetScaler SDX and NetScaler MPX)
- [XenApp and XenDesktop](#)
- [XenMobile](#)

Deliver apps and data with the security, reliability, and speed trusted by thousands of networks worldwide. Start by [trying NetScaler VPX free for 90 days](#).

Or set up a fully functional [99-user, 90-day free trial of XenApp](#) in your environment.

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### Locations

Corporate Headquarters | 851 Cypress Creek Road Fort Lauderdale, FL 33309 United States  
Silicon Valley | 4988 Great America Parkway Santa Clara, CA 95054 United States

<sup>1</sup> Citrix. "NetScaler ADC." [www.citrix.com/products/netscaler-adc/](http://www.citrix.com/products/netscaler-adc/).

### About Citrix

Citrix (NASDAQ:CTXS) is leading the transition to software-defining the workplace, uniting virtualization, mobility management, networking and SaaS solutions to enable new ways for businesses and people to work better. Citrix solutions power business mobility through secure, mobile workspaces that provide people with instant access to apps, desktops, data and communications on any device, over any network and cloud. With annual revenue in 2015 of \$3.28 billion, Citrix solutions are in use at more than 400,000 organizations and by over 100 million users globally. Learn more at [www.citrix.com](http://www.citrix.com).

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