



NetApp®

## Success Story

# King County Creates Shared Infrastructure on FlexPod with Microsoft Private Cloud and Saves \$700,000 Annually



King County

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PRESIDIO™



### KEY HIGHLIGHTS

#### Industry

County government

#### The Challenge

- Migrate departments to a standard, virtualized environment that is more cost-effective, secure, and reliable
- Improve and enhance service delivery to citizens

#### The Solution

Build shared infrastructure on the FlexPod® platform, the unified, prevalidated data center solution from NetApp and Cisco integrated with Microsoft Private Cloud technology based on Windows Server® and System Center.

#### Benefits

- Consolidated from the county's 48 data centers to 2, saving over \$700,000 annually
- Reduced the size of the overall storage environment by 70%
- Enabled rapid scalability and provisioning for new potential sources of revenue for the county
- Maximized the value of data center resources, thereby improving value for taxpayers

#### Customer Profile

Located on Puget Sound in the state of Washington and covering 2,134 square miles, King County is nearly twice as large as the average county in the United States. With more than 1.9 million people, it also ranks as the 14th most populous county in the nation.

#### The Challenge

##### Taming a complex, decentralized environment

In King County, information technology (IT) consolidation and standardization are a high priority. From the executive branch to public health and defense to the Department of Transportation and Parks and Recreation, the county takes a decentralized approach to deploying systems and delivering services. This has resulted in numerous duplicate efforts and dozens of departments handling IT and maintaining disparate server environments or virtualized environments on their own. The resulting mismatched technology standards and redundant efforts ultimately increased overhead and made inefficient use of taxpayer dollars.

When Chief Information Officer Bill Kehoe joined the county, he saw an opportunity to make the transition to a

secure, shared cloud environment that would be far more efficient. His vision was to offer an infrastructure-as-a-service (IaaS) private cloud that could be shared among departments, yet managed centrally by King County Information Technology (KCIT) from the county's state-of-the-art data center hosted at Sabey Corporation in Seattle. Because the infrastructure would be shared, King County would need to offer ultra-secure multi-tenancy so that information such as police records, for example, would not be visible to unauthorized personnel in other departments.

##### Moving to a shared, service-oriented architecture

The overall business goal was to deliver county services to residents with greater speed and efficiency and enhance back-office functions using what would be called the standard virtualized environment, or SVE. Kehoe's solution was to offer an IaaS platform to his customers—the many departments countywide with diverse missions—that would be not only more cost effective but also more secure, offer higher availability and reliability, and simplify management.

"Much like our counterparts in the private sector, we are looking to provide

# “FlexPod with Microsoft® Private Cloud allows us to extend services to taxpayers in a more reliable, secure, and scalable way. As public servants, that’s what we are all about.”

**Bill Kehoe**

Chief Information Officer, King County, Washington

modernized technology platforms for alternative service delivery such as increased use of services over the Internet in the cloud,” Kehoe explains. “A wide range of efficiencies will emerge from this work, contributing to ongoing technology development at lower cost, improved business practices and processes, a more streamlined government, and a more informed public.”

Scalability was also vital: The move to a shared IaaS service would need to happen gradually. As a result, Kehoe and his team needed to start small and have the flexibility to scale as service demand increased.

Compatibility with Microsoft technologies was an important prerequisite. The county’s infrastructure is highly Microsoft-centric, and uses Microsoft software for office functions, collaboration, and content management; .NET for development; Microsoft Lync for unified communications; Microsoft Windows Server 2003 through 2012 operating systems; Microsoft System Center 2012 for IT management; and custom-developed solutions based on Microsoft SQL Server®.

King County also needed to enhance performance of several mission-critical applications by migrating them off an aging mainframe: ViewDirect, Control-M, InfoPrint; as well as migrating other

applications off of aging standalone servers: Steel Belted Radius, DOT Trip Planner, Law Safety Justice Integrated Solution Center (ISC) test, PAO Radius, McAfee Agent Handler, PH EMS scanner, EMC Networker Console, Hyperion Essbase budget applications, and other custom applications. These applications are used for everything from jail management to treasury, assessment, and security policy enforcement. Across the county, a more modern IT platform was needed to streamline updates, lower overhead, and enable responsive services to citizens.

KCIT worked with technology partner Presidio for assistance in obtaining storage, servers, the virtualization technologies required to build out the SVE, as well as providing network design and consulting. Presidio recommended the FlexPod data center platform, a prevalidated solution combining NetApp® storage, the Cisco® Unified Computing System™, and Microsoft Private Cloud technology based on Windows Server and System Center into an integrated, flexible data center architecture.

## **The Solution**

### **A unified, prevalidated data center solution**

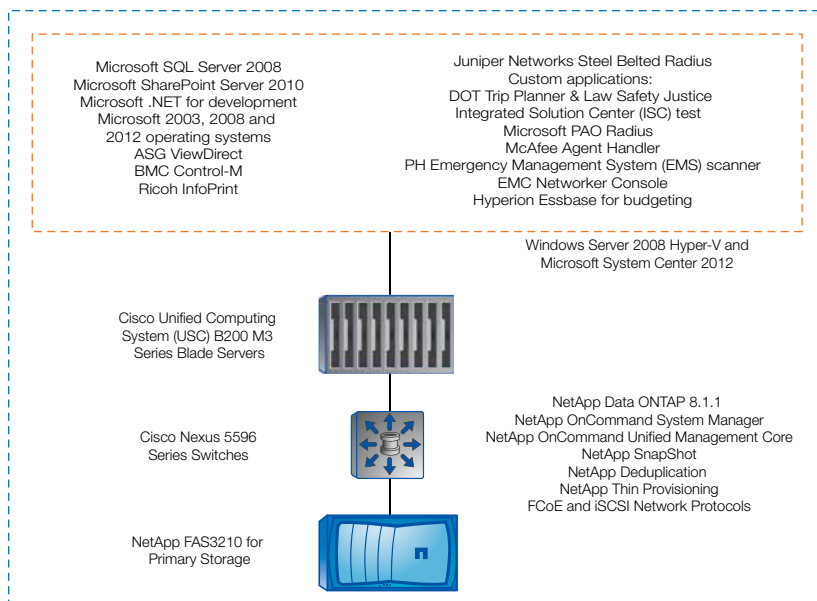
King County deployed Windows Server 2008 Hyper-V™ as its server virtualization platform for the SVE (currently upgrading to Windows Server 2012),

integrated with a NetApp FAS3210 as the primary storage system and a NetApp FAS2240 for backup and disaster recovery. The environment supports a wide variety of applications using Fibre Channel over Ethernet (FCoE) and iSCSI protocols.

The IT team uses the NetApp Data ONTAP® 8.1.1 operating system, System Center Virtual Machine Manager, and System Center Operations Manager to manage and monitor physical, virtual, and cloud infrastructure. Additionally, NetApp OnCommand® System Manager and NetApp Unified Management Core 2012 provide streamlined, “single-pane-of-glass” management for the NetApp storage systems with seamless integration to System Center.

NetApp deduplication technologies optimize the storage environment, achieving efficiencies such as reducing the size of the overall storage environment by an estimated 70%. NetApp thin provisioning has accelerated the time required to provision new projects as well as helps in further reducing the amount of storage being allocated.

“NetApp storage management solutions work with Microsoft Private Cloud technology, a very important factor for us, as well as with Cisco networking and servers to create a comprehensive, easily managed environment,” says Bob



**Figure 1)** King County deployed the FlexPod data center platform, a prevalidated solution combining NetApp storage, Cisco Unified Computing System (UCS) servers, and Cisco Nexus switches, with Microsoft private cloud technology based on Windows Server and System Center.

Micielli, enterprise technical services manager for King County. “NetApp helps us do what we’re here to do—be highly responsive to citizens at lower costs and greater efficiency.”

The infrastructure includes Cisco Unified Computing System (UCS™) B200 M3 Series blade servers, Cisco Nexus® 5596 Series switches, and Cisco 6248 Fabric Interconnects. The FlexPod system currently supports 65 virtual machines (VMs); there are plans to expand to 800 virtual servers within the next 4 years. The system supports the mission-critical applications that previously ran on the mainframe or other standalone physical servers, giving the county easier expansion, better performance, and lower costs to support better, faster citizen services.

The county is looking forward to migrating to Windows Server 2012 Hyper-V because it will enable more flexibility in terms of live storage migrations, dynamic disks supported in production, more virtual CPUs supported per VM, more memory per VM, and support for virtual host bus adapters.

The county is also looking into NetApp SnapManager® for SQL Server and SnapManager for Microsoft SharePoint® to automate and simplify backup, recovery, and—in the case of SQL Server—database cloning.

### Business Benefits \$700,000 annual savings

Already, the SVE has enabled King County IT to consolidate from 48 data centers down to 2, resulting in total-cost-of-ownership reductions and efficiencies of \$700,000 annually. As the demand for reliable, high-performing IT services continues to increase, the county’s IT team can use its new, more flexible infrastructure to take an enterprise view toward investments to maximize value to the county. Investments can be shifted to where they are most beneficial, to the most in-demand products and services being delivered to departments and, ultimately, to taxpayers.

“Using FlexPod as the basis of our standard virtualized environment, we’re consolidating and simplifying rather than continually creating a more complex architecture, which always requires more staff and more costs,” says Micielli.

In addition to consolidation, the KCIT team migrated to a pure service-oriented organization with a defined catalog and eight end-user services aligned with the King County Strategic Technology Plan (STP). Called “Server Storage and Database,” the service running on FlexPod has entirely altered the budget structure and the way KCIT interfaces with customers around IT services. Departments can compare the cost of

their current technology usage with what it would cost to tap into the centralized private cloud on FlexPod.

### Better citizen service through standardization and service orientation

Departments order services—everything from solutions needed to support parks and recreation areas to core jail management systems—through the county’s Server Storage and Database team. When the IT team discusses the advantages of SVE, the conversation is based on real, quantified data versus hunches. The organization can show customers their current spend for physical servers in the data center, and the substantial decrease in cost if customers run the applications and store data on the SVE. KCIT can also discuss the additional reliability, security, and staff time saved—time that can be dedicated toward more strategic initiatives.

The ability to show actual measured data is a substantial business benefit, because it helps the county move toward maximizing the value of its data center space, offer standard environments, and utilize capacity much more efficiently. By encouraging use of centralized resources, KCIT can maximize value for taxpayers, as well as potentially open new lines of revenue as additional cities and counties tap into the SVE.

“Using FlexPod as the basis of our standard virtualized environment, we’re consolidating and simplifying rather than continually creating a more complex architecture, which always requires more staff and more costs.”

**Bob Micielli**

Enterprise Technical Services Manager, King County, Washington

“Ultimately, we must be good stewards of taxpayer money, and IT should embody that ethic,” says Kehoe. “We’re consolidating and standardizing on a prevalidated, trusted technology solution and making better use of our investment and capacity. FlexPod with Microsoft Private Cloud allows us to extend services to taxpayers in a more reliable, secure, and scalable way. As public servants, that’s what we are all about.”

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#### SOLUTION COMPONENTS

##### FlexPod Components

NetApp FAS3210 storage system  
Cisco Unified Computing System (UCS) B200 M3 Series blade servers  
Cisco Nexus 5596 Series switches

##### Virtualization Components

Microsoft System Center 2012  
Microsoft Windows Server 2008  
Hyper-V

##### NetApp Software

Snapshot™ technology  
Deduplication  
Thin provisioning  
OnCommand System Manager  
Unified Management Core

##### Third-Party Products

Applications: Microsoft SharePoint Server 2010, ASG ViewDirect, BMC

Control-M, Ricoh InfoPrint, Juniper Networks Steel Belted Radius, Microsoft PAO Radius McAfee Agent Handler, PH Emergency Management System scanner, Hyperion Essbase for budgeting, and custom applications including DOT Trip Planner and Law Safety Justice Integrated Solution

Database: Microsoft SQL Server 2008  
Server Platform: Microsoft Windows Server 2003, 2008, and 2012 operating systems, Microsoft .NET

##### Partner

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