

# Pierce County: Increased capacity and lower costs with IBM @server xSeries and BladeCenter technology

## Overview

### ■ Challenge

Expand capacity to support a software upgrade and growing numbers of enterprise Geographic Information System (GIS) applications and their users

### ■ Why Become an

#### On Demand Business?

To increase server capacity and lower IT costs while increasing flexibility

### ■ Solution

Server consolidation solution includes IBM @server<sup>®</sup> xSeries<sup>®</sup> servers, IBM @server BladeCenter<sup>™</sup> HS20 systems, IBM TotalStorage<sup>®</sup> technology, and IBM Tivoli<sup>®</sup> Storage Management software

### ■ Key Benefits

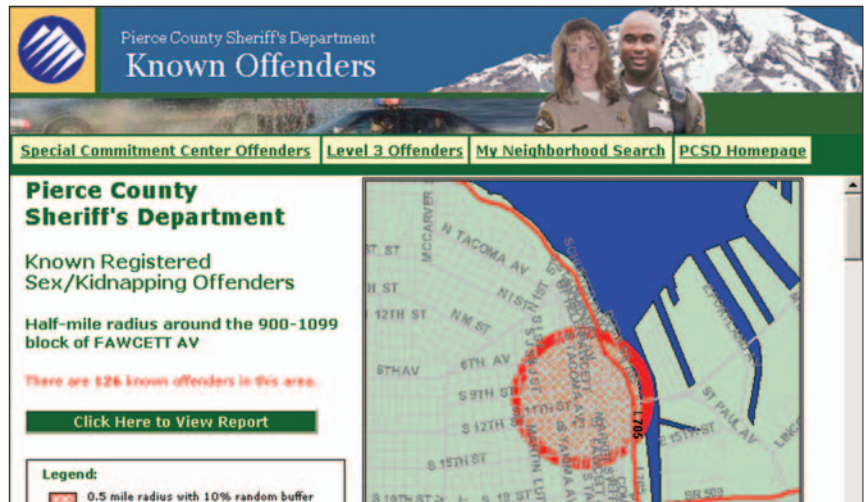
Greater capacity, reduced complexity and lower costs

### ■ IBM Business Partner

ESRI<sup>®</sup>

#### » On Demand Business defined

An enterprise whose business processes—integrated end-to-end across the company and with key partners, suppliers and customers—can respond with speed to any customer demand, market opportunity or external threat.



### Mapping a rich, varied topography

Bounded on one side by the Cascades' highest volcano, Mount Rainier, and Puget Sound on the other, Pierce County in Washington state has a rich, varied topography and a diverse economy. It's not only the number one rhubarb producer in the nation, but also home to leading computer and semiconductor chip manufacturers.

This heterogeneity places a huge responsibility on the county's enterprise GIS department, which is charged with designing, developing and maintaining geographic data sets for the entire county.

*“IBM not only had the technical knowledge we needed to implement this solution, but it also provided great support. They were responsive and flexible.”*

—Linda Gerull, Pierce County GIS manager

## **Pierce County benefits from IBM @server xSeries and BladeCenter technology**

### **On Demand Business Benefits**

- Provides higher availability for increasing numbers of users
- Saves US\$3 million in hardware costs over the next four years
- Saves US\$100,000 in IT staff costs annually
- Averages IT expenditures over three-year period through IBM Global Finance leasing arrangement
- xSeries 335 servers provide hardware management, software distribution and application workload management capabilities
- xSeries 445 servers provide the capability to scale up with industry-leading reliability and performance thanks to technologies such as hot-swappable, redundant power supplies and cooling fans, predictive failure analysis and hot-swappable drives
- All xSeries servers offer high-speed accelerated cache for improved database performance; increased uptime through additional memory reliability; and IBM Director, which has proactive and predictive tools to help increase availability and ease administration for database servers
- FASt900 provides high reliability and capability with up to 32TB capacity thanks to technologies such as RAID, redundant power/cooling, hot-swap drives, and remote copy and flash copy services

In addition to supporting more than 60 business applications for 700 users in 25 of the county's departments and 9 subscribing agencies, it maintains 14 GIS public Web applications used by the county's 700,000 residents. "One of our most popular applications is a Web site for surveyors and engineers that maps survey control points with orthophotography and provides a full survey control report," says Linda Gerull, GIS manager. "Users can access this information from their wireless laptops, instead of having to come to the county office and look it up."

Other GIS-driven Web sites available on the county's home page provide interactive searching and maps for census data, neighborhood crime statistics, parks, human resources, election information, sex offenders and property sales comparables. "The benefit of these innovative Web sites is improved public safety and access to community information that helps citizens connect with public service," adds Gerull.

### **Keeping up with success**

With its growing list of application offerings—and growing numbers of users—the GIS department needed to increase server capacity to ensure that system performance did not deteriorate. "Our servers were at capacity, so when county departments requested a new GIS application, we had to buy another server," explains Gerull. "Over time the enterprise system was comprised of different operating systems, different types of middleware, different versions of GIS, and a maintenance and support nightmare. Any common maintenance function, such as adding security patches, would not only be problematic, but could also lead to unexpected downtime."

The GIS department was faced with two options. It could either add more servers—and the additional staff necessary to support them—or it could consolidate its servers, thereby simplifying its architecture and maintenance while also adding flexibility and redundancy. Like most government agencies, Pierce County faces yearly pressures to reduce IT costs, so consolidation was the obvious choice. "Once we looked at the consolidation option, we totally changed the way we look at hardware," says Gerull. "The consolidation actually lowered our cost per CPU, so we could economically expand capacity for a three-year time frame."

The implementation, which began in April 2004, was in full production by the end of the year. It replaces 13 Sun Solaris and 14 HP servers that had been connected to a 1TB EMC Clarion SAN.

The new consolidated system includes four IBM @server xSeries servers running ESRI ArcSDE, which are clustered for database serving of a five-terabyte data storage management system; and most importantly, four IBM @server BladeCenter chassis equipped with IBM HS20 blade servers that serve ESRI 9.0 ArcGIS and ArcIMS applications. To support the large number of GIS applications, the blade center contains clustered spatial servers that perform the geo-processing. The system is connected to the FAST900 Storage Server and the IBM 3583 Ultrium Scalable Tape Library by a SAN switch. This new solution not only requires fewer servers—and less power and floor space—than the previous solution, but also provides added database redundancy and application failover, as well as incremental backup and data recovery capabilities. In addition, the solution offers secured databases and Web map services inside a firewall.

While ESRI provided systems sizing and configuration, ArcGIS 9.0 software education and application implementation assistance, IBM ensured a successful startup with additional support services. Due to budget constraints, the department could not attend the recommended training. IBM provided consulting assistance to help the county get up and running, and resolve performance and operational issues early in system installation, which ensured early success for this enterprise server consolidation project. “We are very appreciative of IBM’s technical expertise and assistance, which allowed this project to realize tangible benefits very quickly,” says Terry Hale, director of the Information Services Division.

### Leasing over buying

IBM Global Finance provided a very competitive three-year lease arrangement that avoided a large supplemental budget request for the new capital equipment. Whether an organization is replacing an entire system or upgrading systems, equipment expenditures can dramatically spike yearly budgets and are difficult to anticipate and justify. “The IBM leasing arrangement gives us a consistent, predictable yearly budget for core hardware, software and storage, which is one of the largest cost components for our enterprise GIS,” notes Gerull. “The yearly budgeting process is simpler, and as technology changes, we will be able to transition in new equipment with little budget impact.”

## Key Components

### Software and storage

- IBM TotalStorage 3583 Ultrium Scalable Tape Library connected to a 3TB IBM TotalStorage FAST900 Storage Server that backs up various GIS data
- IBM Tivoli Storage Manager Extended Edition Version 5.2
- IBM Tivoli Storage Manager for Databases Version 5.2 for backup
- ESRI ArcGIS®, ArcIMS®, ArcInfo®, ArcView® and MapObjects®

### Servers

- Two IBM @server xSeries 445 servers used as an eight-way cluster running ESRI’s ArcSDE®
- Four IBM @server BladeCenter chassis equipped with IBM HS20 blade servers with dual processors, 4GB random access memory (RAM) and two 73GB drives, some of which are SAN connected
- One IBM @server xSeries 335 server used as an IBM Director management server
- One IBM @server xSeries 365 server used to run IBM Tivoli Storage Manager server software

### Services

- IBM Business Consulting Services
- IBM Global Finance



## Capacity to grow

Thanks to its server consolidation solution, the Pierce County GIS department estimates it will save nearly US\$3 million in total IT expenditures over the next four years. That means it can continue to develop advanced GIS applications to deliver new services to subscribers and the public.

The capacity differences between the old and new systems became abundantly clear during the last elections. "During the primaries we tested a new application that allowed residents to key in their address and map their correct polling place," explains Gerull. "We had it on the old system, and the application was overloaded and failed often—which is not helpful when voters have to get to their polling places." Between the primary and the national election, the department moved the application to the new BladeCenter. "Thanks to the new system, we were able to partition the application on different blades," says Gerull. "With more than 3,400 visitors by noon on Election Day, the application performance was not degraded."

Looking back, Gerull sees another positive result of the server consolidation solution. "We have a new way of evaluating hardware and software solutions. Instead of simply accounting for the total cost of hardware, software and support, we are assessing a computing system's value in terms of the price of capacity over time. The IBM solution dramatically increased our computing capacity from 45 CPUs to 98 CPUs without doubling the costs. When we compared the capital and personnel costs of purchasing additional servers over a three-year period to the cost of leasing the consolidated servers, which did not require increasing staff, the difference was dramatic. Our estimated cost for adding servers to meet our capacity needs from 2004 to 2007 was more than US\$2 million for hardware alone, plus another US\$100,000 each year for support staff. In contrast, our hardware leasing costs for the consolidation option during the same period are less than US\$800,000—with no increase in support staff."

## For more information

To learn more about IBM Government solutions, contact your IBM sales representative, or visit:

**[ibm.com/government/esri](http://ibm.com/government/esri)**

For more information on ESRI, visit:

[www.esri.com/ibm](http://www.esri.com/ibm)



© Copyright IBM Corporation 2006

IBM Corporation  
1133 Westchester Avenue  
White Plains, NY 10604  
U.S.A.

Produced in the United States of America  
1-06  
All Rights Reserved

IBM, the IBM logo, [ibm.com](http://ibm.com), the e(logo)server, BladeCenter, Tivoli, TotalStorage and xSeries are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both.

ESRI, the ESRI globe logo, [www.esri.com](http://www.esri.com), ArcGIS, ArcIMS, ArcSDE, ArcInfo, ArcView and MapObjects are trademarks, registered trademarks, or service marks of ESRI in the United States, the European Community, or certain other jurisdictions.

Other company, product or service names may be trademarks or service marks of others.

Many factors contributed to the results and benefits achieved by the IBM customer described in this document. IBM does not guarantee comparable results.

References in this publication to IBM products or services do not imply that IBM intends to make them available in all countries in which IBM operates.