



VIRTUALISATION GIVES FULTON COUNTY TAXPAYERS MORE BANG FOR THEIR BUCK

The American county's CIO adopted a server consolidation strategy using virtualisation technology to increase efficiency and save public dollars

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CASE STUDY

The challenge

The County of Fulton in Georgia, in the US, provides services to about one million residents. An infrastructure consolidation project quickly consumed available data centre floor space with aging servers. IT managers wanted to find a way to more economically and efficiently consolidate servers in a highly complex environment.

The solution

Fulton County managers adopted a server consolidation strategy. Leveraging virtualisation technology, legacy Wintel servers are being consolidated onto Fujitsu Primergy series server blades. To economically support Oracle databases, managers also elected to deploy Intel Itanium 2-based Primequest servers leveraging Red Hat Enterprise Linux. The enhanced Fujitsu administration tools and remote access capabilities have reduced management labour hours by 25 per cent, and virtualisation has dropped server deployment time by 89 per cent – from six hours to 40 minutes.

A full-service county IT department

The Fulton County government in Georgia, which includes the city of Atlanta, serves about one million residents, supporting a full range of services from the court system to tax collection to human services. Fulton County's 5,500 employees are scattered across 70 facilities, although the vast majority of them are concentrated in a few locations.

To increase efficiency and optimize taxpayer contributions, the county's CIO adopted a server consolidation strategy. He sent out a communication to departmental IT staffers to launch the project. "We call it the 'Statue of Liberty email,'" said Jay Terrell, CTO and deputy director of IT for Fulton County. "We asked IT managers to send us their tired, huddled servers. At that time, discrete locations were each maintaining their own servers. And some of them weren't backing up data. So implementing a server consolidation strategy to cut administration costs and start using consistent data backup policies was the right thing to do."

The CIO's plan struck a chord, and servers began flooding into his facility. So many, in fact, that the county soon faced a number of new challenges. "Almost immediately, we had a lack of physical space to house the servers," explained Terrell. "We also found that among the 250 or so Wintel servers we had, the majority were being grossly underutilised."

Among the consolidated server pool were a number of aging legacy boxes, some as old as seven years. Administrators found that the mean-time-between-failure (MTBF) for these servers was shrinking, and that overall, a significant portion of their time was spent managing them. Collectively, these challenges triggered a decision to seek more powerful servers. And that process led the county to choose a server virtualisation strategy.



Fujitsu Primergy wins head-to-head competition

Like most government entities, Fulton County uses a competitive bid process when purchasing new equipment. While cost was a driving factor in the final selection, so too was the need to find a solution that really performed. And it had to inter-operate well with the county's 54 terabytes of backend tiered storage.

"We considered three alternatives," said David Medlin, network administrator for Fulton County. "We quickly narrowed that down to two and put them side-by-side to do some scenario testing." In the end, the Fujitsu Primergy won out over competitors. According to Medlin, "We require a lot of redundancies in our servers to meet our uptime objectives in support of public safety - police, fire, E-911. The Fujitsu blade servers have redundant power, cooling, and I/O."

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The Fujitsu server administration tools also impressed the county technical evaluators. "My team found that the Fujitsu administration tools were more feature-rich and user friendly than the other vendor's tools," said Medlin. While these were important considerations, the evaluators were concerned about the compatibility of the new servers with their enterprise storage. "We have 54 terabytes of tiered storage," explained Brooks Virtue, senior storage architect for Fulton County. "We wanted to make sure that the blade servers we were considering would mesh in our SAN fabric and interoperate with our Brocade/McData switches."

What were the consequences of going with a solution that failed to achieve this? "Had we gone with the other vendor, we would have had to

re-engineer all our storage connections and architecture," explained Virtue. "That would have been expensive, time consuming, and difficult to maintain. The Fujitsu servers avoided all that, which was a plus in their favour."

Adopting an effective virtualisation strategy to boost server utilisation

"We didn't start off looking for a virtualisation solution," said Keith Dickie, assistant director of networks for Fulton County. "But as we became more familiar with the Fujitsu solution, we realised its robust qualities could leverage VMware to achieve a more efficient virtualisation operational model. Compared to a standalone server model to support applications, we project our new virtualised model will deliver up to 8:1 service. That's going to free up badly needed real estate in our data centers."

The Primergy blade servers provide the Intel Xeon dualcore and quadcore processor computing power that the county needs to achieve these consolidation ratios. Additionally, "The new virtualised solution will allow us to size-on-the-fly to right-size virtual servers for each application," explained Terrell. "That will give us some real leverage against hardware purchases."

Currently, the county is managing about 200 servers. Baseline testing showed that server utilisation rates were in the 30-40 per cent range. Based on internal testing of the Primergy blade servers, managers believe they can boost that rate up to 80 per cent or more in a virtual environment, making it much more cost-effective than before.

A phased implementation plan

The IT team is using a phased approach to migrate about 12 rack mounted servers per month. "We expect to complete migrating more than 100 servers within a year," stated Terrell.

Dry runs have supported the promise virtualisation holds for drastically cutting the time to provision new servers. To date, testing showed a provision time drop of 89 per cent – from six hours to 40 minutes. "It would take us about six hours to provision a conventional server," explained Terrell. "That would include the installation of the operating system, the loading



of the drivers, system updates, antivirus software, backup agents, and everything else.

The VMware and Primergy solution has given us the ability to clone a server in as little as 15 minutes – with a high side of 40 minutes being a very defensible number.”

In addition to provisioning time savings, fail-over speeds support the county’s high-availability environment. “A dying server will be back up on another Primergy blade within five minutes,” stated Terrell. “We have tested this many times and will stand by that number.”

Addressing the datacentre real estate problem

“Because we’re so early in the virtualisation process, we haven’t experienced the space-saving ratios yet that we anticipate,” explained Terrell. “However, the Fujitsu Primergy blade servers have helped tremendously because we’re not bringing in new servers at the rate we used to. The density of the blades allows us to support new applications with fewer servers.”

New solutions: cuts maintenance by 25 per cent

Previously, county technicians had to be onsite to administer servers during their limited maintenance windows. “Once a month we have what we call ‘maintenance Sunday,’” recalled Medlin. “The administrators had no remote power management capability, so we had people lining up to get to monitors and servers. With the Fujitsu blades we can now do that remotely. I estimate that will cut our administration labour hours by 25 per cent over the long term.”

An added advantage of the Primergy servers has been the retirement of old servers that were taking up a lot of administrators’ time. “Many of our servers were at end of life,” said Terrell. “The MTBF was approaching unacceptable levels. Many of the same issues kept popping up and overall, we spent a lot of time looking after those servers.”

Primequest selected to support Oracle database environment

The second part of the server consolidation project focused on the infrastructure underpinning the county’s Oracle databases. “These support our justice system, ERP, tax, and library systems,” said Terrell. “Our criteria included being able to run the Red Hat Enterprise Linux

operating system and delivering improved performance for an economical price.”

In-depth, side-by-side testing showed that the Fujitsu Primequest server best met the county’s requirements. “They have excellent expandability, reliability, and frankly, deliver a

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lot more hardware for the same money as the competitor we evaluated,” explained Terrell.

County evaluators liked a number of other qualities of the Fujitsu solution as well. “An attractive feature of the Primequest servers is the ability to partition them for two different operating systems,” added Dickie. “We’ll be able to create a redundancy of services to meet our uptime objectives. And by having a single platform for our databases, I’ll reduce my maintenance costs and labour hours.”

The Fujitsu customer experience

As a group, Fulton County managers were impressed with the end-to-end quality of the service the Fujitsu staff delivered. To date, Terrell rates the service the county has received as “extremely good,” for both pre- and post-sales support. With an experienced in-house team managing a relatively complex environment, county technicians asked detailed questions of Fujitsu up front. “Our team will shoot holes in fluffy vendor proposals in a New York minute,” explained Terrell. “Companies often make aggressive claims about their products. But the Fujitsu contacts consistently do their homework and give us accurate answers to our questions.”

“Fujitsu gave us exceptional pre-sales support,” added Dickie. “We challenged them on various issues and they addressed each in turn. That established a level of trust early on.” ●