

City of Roanoke tServer Mainframe Hosts Application and Data Crossroads

The City of Roanoke, Virginia recently "rightsized" its principal server, installing a T3 Technologies tServer to host traditional mainframe OS/390 and associated applications serving diverse government agencies. The tServer allowed the City to retain S/390 architecture advantages, the gold standard in enterprise computing, while providing a significant cost savings from other platforms evaluated.

Virginia's fertile Roanoke Valley has long been a crossroads: first for buffalo and Native American trails, then stagecoach routes, railroad tracks, and airline flights. Ancient trails still echo in today's travels and commerce!

Two Petersburg explorers first reached the Valley in 1671, seeking westward-flowing rivers. Around 1730, German and Scotch-Irish settlers arrived via the Shenandoah Valley. By the Revolutionary War, the bustling area was home to about 30 farmers, tradesmen, and their families.

The first formal settlement at the crossroads was Big Lick, named for the saline marshes where deer, elk, and other animals gathered for the salt deposits. The first official use of the Big Lick name was for a post office in Spotts Tavern in 1798. Though some thought the name lacked dignity and tried to change it, it remained Big Lick for more than 80 years.

The Roanoke Valley, largely agricultural for much of its history, was also home to a few large plantations and many small holdings whose owners raised livestock and various crops. Some of the most fertile land was in what's now the City's heart.

The first train's arrival in 1852 began a period of industrial progress. Thirty years later, the new Shenandoah Valley Railroad connected with the Norfolk & Western at the recently chartered town of Roanoke. The railroad's arrival was a decisive moment for the region, turning tiny — population 500 — Big Lick into bustling Roanoke with 5,000 residents. The town officially became a city in 1884, soon nicknamed the "Magic City" because of its early rapid growth.

The City's name comes from an Indian word for shell money, sometimes spelled "rawrenoch". The name, first used at Roanoke Island on the North Carolina Coast, has been traced to 1585 when Sir Walter Raleigh's English expedition landed there. According



to George Stewart's book, *Names on the Land*, Roanoke was apparently the first name adopted by the English when they began settling North America.

Throughout the 20th century, businesses such as manufacturing, distribution, and later retail and medical companies operated across Southwest Virginia from Roanoke, which remains the largest metropolitan area west of Richmond, the state capital. Although the 70's and 80's shopping mall boom temporarily threatened the City's downtown, civic leaders and activists restored older buildings and encouraged alternate uses; this reversed the downward trend and welcomed the new millennium with nearly 100,000 citizens and a blend of progress and preservation. Located on the Roanoke River between the Blue Ridge and Allegheny Mountains at the southern end of the Shenandoah Valley, Roanoke remains a financial and transportation hub with industries as diverse as furniture, fiber optics, and cosmetics.

City of Roanoke Mainframe is Applications/Data Crossroads

Just as the Roanoke Valley has been a historical crossroads, the City of Roanoke has used generations of IBM mainframes and operating systems as the focal point — "crossroads" — of its data processing. As user, data, processing, and availability requirements have evolved, other computing platforms have been installed to interoperate with the mainframe. The central environment, now OS/390 based, runs on a T3 Technologies x/230 EFS (tServer), communicating and sharing data with platforms such as AS/400, Windows NT, Tandem, and Alpha.



...creating effective government

... supporting applications/data crossroads

...S/390: the gold standard for enterprise computing

Computing is highly integrated into the City government's business processes. The City's OS/390 mainframe users and applications are as diverse as the City's population, shown by Census 2000 data to include representation from around the world. Supported agencies and applications include Department of Finance, Treasurer's Office (personal property), Sheriff's Office (civil process application manages disbursement of legal civil summons) Commissioner of Revenue, Human Resources, Payroll, Billings & Collections, Fleet Management, and Public Assistance. Interactive Time Entry, a CICS application, supports multiple departments throughout City government; the Purchasing system is used enterprise-wide.

Late in 2000, the City developed a strategic plan to leverage technology to maximize the productivity of employees and improve customer services. With overall City visions of:

- Creating an effective government
- Enhancing economic opportunities
- Providing quality education
- Improving quality of life

the Department of Technology (DoT) established primary goals of:

- Maximizing customer satisfaction
- Providing convenient access to information and city services
- Establishing reliable communication and technology infrastructure

Roanoke City is undergoing a major organizational transformation, moving from traditional government structure to a high-performance, outcome-oriented organization focusing on customer needs, continuous quality improvement, and collaboration and partnerships. That process is mirrored in DoT efforts to apply the best and most cost-effective technologies; the strategic plan begins the DoT's description with the exhortation "Organizing to be the best!". The Strategic Plan's illustration of enterprise technology components shows the computing environment's interrelated applications, with main frame processing pervasive.

That led the DoT to engage T3 Technologies to help analyze their future architectural direction; this included a comprehensive review of hardware,

software applications, CPU utilization, mission criticality, existing infrastructure investment, and future budget needs. A full-day T3 seminar interpreted the overall computing environment and suggested a strategic direction. The existing 22 MIPS IBM 9672 processor was found to be significantly under-utilized (with about 30% maximum CPU load); this created an unnecessarily elevated IT cost structure, which is what prompted the examination! DoT was seriously considering converting major operations to Unix, perceived by some to be much less expensive than the mainframe.

Rightsizing the Mainframe

T3 proposed an eight MIPS x/230 EFS (tServer) which

- "right-sized" processing
- retained S/390, the gold standard architecture for enterprise computing
- maintained a budget that pleased the City's accountants

Their only alternative S/390 option with mainstream IBM hardware was the Multiprise 3000 Model H30, but associated higher costs ruled it out. It's been observed that most sites moving off S/390 processing abandon IBM completely. Similarly, since some solutions were already AS/400 based, that platform was considered for rehosting the CICS environment. But that would have imposed high dollar and staff learning curve costs.

So the tServer provided a cost-effective alternative to Unix, required no costly application/data conversions, retained IBM mainframe-quality operating system and applications, and delivered equivalent online and batch response times. The tServer "lifeboat" allowed maintaining S/390 presence, benefiting from years invested in applications, staff training, and customer familiarity.

The tServer was installed in less than a week, as a simple processor swap, without a test period. In the interest of time, existing software releases were transferred to the FLEX-ES-based (S/390 emulation) tServer system and then upgraded to the current releases. Acquisition of the x230 with a one-year financial payback was described as a "no brainer". The 9672's excess CPU capacity wasn't missed, and the smaller replacement system allowed one-time



...tailored solutions for customer satisfaction

...fulfilling Roanoke City strategic plan

...mainframe rightsizing

purchase of IBM software being used. In addition, a tServer upgrade path to 29 MIPS capability provides ample room for growth and a performance safety net.

The online environment is based on CICS Version 4.1 and VSAM file structures. Batch cycles include nightly, quarterly, and year-end processing. The tServer supports standard I/O devices, including the City's 3745 line controller, 6262 and 4245 printers, 3174 terminal controllers, and 3490 tape drives.

IBM's Websphere Host Publisher implements e-business by extending existing applications' reach to Web browser users. It provides browser-based employee self-service access to mainframe CICS applications. It allows users to essentially "go behind the scenes", bring up a CICS session, run transactions, get data, and have custom Java or equivalent programs present it to their browser. It provides access to functions such as retirement benefits, and payroll options. In the future it will support processing office forms, applying for benefits, and more. This function is seen as the prototype for services planned for public access such as viewing water bills and checking balances for all major financial receivables systems. As more applications are Web-enabled for citizen access, they will be available at Internet access stations at City/County libraries, as well as over the public network.

Applications are implemented across platforms, allowing specialized hosting of functions such as data storage, report generation, Web access, user interactivity, transaction processing, and data administration. Files are transferred among platforms on demand or by schedule, with a few transfers taking place in real time. The City's data processing staff regards the OS/390 mainframe as the foundational server in their server farm. More than a dozen client-server systems interface to mainframe financial systems, and data such as print files is exchanged via TCP/IP, mostly via FTP.

An AS/400 utility billing system uploads monthly data to the mainframe financial system, while the permitting/billing system downloads real estate, personal property type information, and land assessment information to a distributed platform. Transactions are uploaded nightly to the revenue system, then posted to into financial records.

A Web-based mainframe application supports online parking ticket payments. Data is downloaded nightly to a Windows NT server outside the site's firewall through an AS/400 running Lotus Notes

A Windows NT SQL Server-based GIS (geographic information system) provides an interface to extract real estate data from the mainframe. This online query system can locate a specific property and display information such as the number of bedrooms, square footage.

Providing government services imposes an absolute requirement for the production CICS region available to be available 6 am to 6 pm weekdays. At present, CICS regions remains up 24x7 to allow off-hour employee access from home for software maintenance and upgrades.

DoT's portfolio of add-on software packages migrated easily to the new environment. Among them are New Dimension's Control-T tape management system which manages 50 to 100 tapes each batch cycle, Mackinney Systems' Batch product which opens and closes online files during batch processing, and Mackinney's Track and Xray debug tools, used by development staff. Decision Technology's Decision Analyzer report generation product, used through CICS, allows online browsing of spooled mainframe reports, as well as submitting jobs to run library programs via TSO sessions.

City of Roanoke Department of Technology staffers are satisfied with their rightsized mainframe, as it continues to play a central role in fulfilling their strategic plan. They're pleased that T3 and the tServer did exactly what they said they would do: providing a cost-effective mainframe environment, enabling the City to give citizens, employees, and the business community access to information and services in a timely, convenient, and reliable manner.

For more information on the Roanoke area, visit <http://www.roanokechamber.org/> and <http://visitroanokeva.com/>

For more information on City of Roanoke government, visit <http://www.roanokegov.com>



An IBM Premier Business Partner

T3 Technologies' Business Process Provides More Than Just a "Sale"

Rather than offering a one-size-fits-all solution or simply performing a quick-and-dirty requirements analysis, T3 Technologies collaborates with clients to specify, plan, and install new equipment. T3's proprietary, detailed, and step-by-step checklist ensures problem-free ordering of the proper hardware and software.

The process includes:

1. Detailed analysis of current client environment, requirements, and the new desired environment. This generates a proposed hardware/software/peripherals configuration.
2. Systems Assurance Meeting. Participants typically include T3 sales executive, systems specialist, and operations manager, along with client technical and management staff. Aimed at avoiding surprises, this meeting reviews the proposed configuration just before installation, and coordinates team activities:
 - Review T3 installation process and plan
 - Verify client tasks (e.g., ensure proper electrical service, check modem line operation);
 - Satisfy miscellaneous logistical/checklist items (e.g., loading dock present, door frames wide enough)
 - Schedule installation
 - Provide after-sale telephone support information
 - Identify upgrade options.
3. Installation, following T3's standard checklist, customized for each site. This list includes over six-dozen specific tasks.
4. System validation and tuning, closely collaborating with customer, to assure the best initial and ongoing results.
5. Post-installation client satisfaction phone call and post-installation client survey. Joe Slone, Director of Roanoke City's Department of Technology, said "With reference to T3, my satisfaction from a management point of view is 10, on a scale of 1 to 10, 10 being the highest."
6. One year post-sale telephone support.

T3's experience includes installing numerous and varied mainframe systems. We shipped nearly 100 FLEX-ES based systems worldwide in 2001. We're also among the leading IBM Business Partners for installations of Multiprise 3000 systems. Learning from these diverse projects has allowed creating a standard system planning/installation checklist. And customizing the list for each site and system avoids a cookie-cutter approach and smoothly handles routine and unusual requirements. In fact, rather than committing to spending specific elapsed time on site, T3 targets and completes a mutually agreed-upon task list. Company expertise allows comprehensive what-if, contingency, operation, and upgrade planning, making T3 a valuable long-term partner rather than an install-and-goodbye presence.

T3 Technologies is an IBM Premier Business Partner. Our business is dedicated to the sale and support of IBM S/390 products and services. In addition to FLEX-ES-based systems, T3 offerings include the IBM Multiprise 3000, IBM Enterprise Storage System, tape drives, printers, and other S/390 peripheral devices. Service offerings include VSE, VM, z/VM, OS/390, and z/OS systems programming services, TCP/IP, CICS Transaction Server, Linux for S/390, Websphere and other S/390 Web-enabling services. We provide training on various S/390 products, disaster recovery, and remote hosting options.

T3's unparalleled experience in the under 200 MIPS marketplace, our status as the most experienced, most highly referenced, and most successful vendor of FLEX-ES technology, our outstanding reputation for services, and our strong financial standing, illustrate a professional and reliable vendor second to none!

Established in 1992, T3 is a privately held Florida-based corporation.

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