

**Board of County Commissioners  
Leon County, Florida**

**Workshop  
on  
Leon County BCC  
MIS Technology Update**

**12:00 pm - 1:30 pm  
Tuesday, May 9, 2006**

**Leon County Courthouse  
Commission Chambers  
5<sup>th</sup> Floor**

**Distributed May 4, 2006**

## Board of County Commissioners Workshop Item

Date of Meeting: May 9, 2006

Date Submitted: May 3, 2006

To: Honorable Chairman and Members of the Board

From: Parwez Alam, County Administrator  
Kim Dressel, Management Services Group Director

Subject: Leon County BCC MIS Technology Update

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### **Statement of Issue:**

This workshop is to inform and update the Board of County Commissioners on IT (information technology) and how it continues to be implemented by Leon County BCC's MIS according to the strategic plan approved for 2003 - 2005. Approval of the 2006 - 2010 MIS Strategic Plan will be sought during this workshop.

### **Background:**

At the E-Government Workshop of December 2000, Board members expressed an interest in receiving regular updates about the technology and information management activities of Management Information Services. The last update workshop was held April 12, 2005.

On February 28, 2006, the Board authorized staff to schedule a workshop on May 9, 2006 to present the accomplishments of the current MIS Strategic Plan and the proposed MIS Strategic Plan for FY 2006 - 2010.

### **Analysis:**

The workshop will cover three areas:

- A status report of the 2003 - 2005 MIS Strategic Plan Goals,
- A review of the proposed 2006 - 2010 MIS Strategic Plan, and
- An analysis regarding the potential of migration from the current Groupwise email system to Microsoft Outlook

### **2003 - 2005 MIS Strategic Plan Goals**

Attachment #1 provides a summary overview of the status of each of the goals from the 2003 - 2005 MIS Strategic Plan. The majority of those goals have been met with additional unplanned activity undertaken during that time frame - most notably the implementation of the information management systems and office automation support for Emergency Medical Services, implementation of the Capital Area Flood Warning Network, migration of the Library's DRA system

to SIRSI, and enhanced application services for Human Resources' integration with benefits providers and the online employee appraisal system. Infrastructure changes included implementation of the Avaya phone system; implementation of wireless network connectivity within the public areas of the Courthouse and the Library facilities; installation of advanced audio/visual equipment in the Chambers; and wiring for telephone and computer support for the Ft. Braden, B.L. Perry, and Northeast Branch Libraries and the moves to the Bank of America Plaza (Courthouse Annex), including the design and implementation of network connectivity with the Courthouse.

During the time period of 2003 - 2005 MIS/GIS received recognition in several areas:

- 2003 Digital Counties Survey – Leon County's website placed 2<sup>nd</sup> for counties in the 150,000 – 250,00 population range,
- 2003 Excellence in Engineering Awards by the American Council of Engineering Companies and URISA for the TLC GIS program's LiDAR data acquisition project. The Board may recall that LiDAR provides aerial photography and data capture with laser technology that mitigates dense tree canopy coverage as enjoyed in Leon County, and
- 2005 Tallahassee/Leon County Historic Preservation Award for the TLC GIS Historical Properties Website know as "Zoompast".

### **2006 – 2010 MIS Strategic Plan**

The basic strategic issues from 2003 – 2005 continue to be relevant for the next five years.

- Strategic Issue 1: Customer Focus/Service Oriented
- Strategic Issue 2: Comprehensive, Timely, Integrated Information with Reliance on Online Access and Interaction
- Strategic Issue 3: Reliable and Effective Infrastructure
- Strategic Issue 4: Qualified, Productive Staffing and Consulting Services
- Strategic Issue 5: Systems, Data, and Network Security
- Strategic Issue 6: Disaster Recovery and Business Continuity

Specific goals for each of these issues are presented in the proposed 2006 – 2010 MIS Strategic Plan (Attachment #2). The goals have been derived from interactions with users, industry best practices, Board direction, and staff recommendations.

New opportunities are becoming available in technology with the convergence of communication and workflow hardware and software. Hand held personal devices have converged to provide phone, email, and application services to the workforce to allow mobility of information access and management. MIS will continue infrastructure building and maintenance to support more field devices through wireless technology and application services to allow seamless interaction between office applications and in-the-field devices to achieve process efficiencies for the organization. Additionally, the consolidation of servers and the growth of web services will continue the need to update and upgrade applications.

The evolution of disaster recovery into business continuity requires more resources and process planning and testing to provide near real-time continuity of core/essential services in an outage event – whether caused by human error, vandalism, terrorism, natural disasters, or fire. MIS will continue the strengthening of its infrastructure and the build out of the remote server center with redundant sources of communications and power. The development and maintenance of systems, software, and databases to support fail-over modes will require additional expertise, time, and testing.

**MIS Messaging System**

During the April 12, 2005 MIS Technology Workshop, the Board directed staff to analyze the impact of changing the County’s email system (Groupwise/Novell) to Microsoft Outlook/Exchange. Staff’s analysis included a market and functionality review by a computer services firm that provides Groupwise and Microsoft messaging services (Ageis Computer Services); research material from Gartner Group, Infotech Research, and the Yankee Group; sales and technical materials and services from Microsoft (Idea Integration); product testing of the Outlook client for Groupwise; a survey of Florida counties and cities; and interviews with IT management of organizations that have migrated from Groupwise to Outlook.

Based on this analysis, which is summarized in Table 1 and narrative that follows, staff recommends that the County remain with Groupwise; upgrade to Version 7.0 (which includes Service Pack One); continue monitoring Novell and MS product progress; and strategically prepare ourselves if migration to Outlook is warranted in the future. With the upgrade to Version 7.0, it is anticipated that the County would be in the position to offer Groupwise users, at no cost, the option of transitioning to the “look and feel” of a fully compatible Outlook messaging/calendaring desktop tool (through Novell’s Outlook Client), without the enterprise migrating to MS Outlook/Exchange.

<b>Table 1 – Summary of Considerations for Migrating from Groupwise to Outlook</b>		
<b>Issues</b>	<b>Groupware Product / Company</b>	
	<b>Groupwise / Novell</b>	<b>Outlook/Microsoft (MS) Exchange</b>
Viability for the Next Ten Years	Yes. Although market share is smaller than MS, Novell has \$1.2 billion in annual revenues; has partnered with hundreds of third party developers to enrich and grow the product; and is moving towards a LINUX open source platform which could result in increased market share. The company is committed to retain and grow Groupwise for at least the next ten years.	Yes. Has the greatest market share, likely attributable to the Windows operating system. MS has thousands of third party developers and a \$300 billion annual research and development (R & D) budget.
Compatibility between Groupwise and Outlook	Not fully compatible. Has a Microsoft Client, which was tested in fall, 2005, with identified	Not fully compatible. Posting of appointments to Groupwise users is not currently automatic. However, according

<b>Table 1 – Summary of Considerations for Migrating from Groupwise to Outlook</b>		
<b>Issues</b>	<b>Groupware Product / Company</b>	
	<b>Groupwise / Novell</b>	<b>Outlook/Microsoft (MS) Exchange</b>
	weaknesses which Novell claims to have addressed in Service Pack One, due for release in 2006. At the current time, posting of appointments between Groupwise and Outlook users is not automatic, but has been addressed in Service Pack One. <i>If Service Pack One is successful, then the County could offer the "look and feel" of Outlook to Groupwise users, without the County migrating to MS Outlook/Exchange.</i>	to Novell, this has been addressed in its Service Pack One release.
Functionalities	Comparable with MS Outlook, other than the underlying directory structure, which Novell plans to bridge in 2007. Novell's underlying directory structure is NDS while MS has the Active Directory Structure (ADS).	Comparable with Groupwise, other than the underlying directory system (ADS)
Security	Fewer security issues than MS, which is one of the main reasons for the strong loyalty base of non-MS solutions. Currently less of a consideration, as security is of greater concern to all systems.	Security issues mitigated with anti-virus software, spam filters, and software patches.
Migration Costs	N/A	High level cost estimates for transitioning to Outlook/Exchange and the underlying ADS directory range from \$890,000 to \$1.3 million: 1) Design (post offices, directory structure, etc.) and Conversion - \$190,000 - \$600,000 2) Additional licensing - \$500,000 3) Hardware - \$200,000

Local government organizations in Tallahassee (City, School Board, State) use MS Exchange/Outlook. However, comparable Florida counties such as Alachua, Volusia, Sarasota, and Hillsborough and the City of Tampa are remaining with Groupwise. A survey with 59 Florida counties responding revealed that 21 use Outlook, 12 use Groupwise, 1 uses IBM Domino, and the other 24 use other solutions.

Sarasota County and Tallahassee Memorial Hospital (TMH) are both migrating from Groupwise to Microsoft for different reasons. Sarasota County has made a strategic decision to use Microsoft's Sharepoint collaboration tool and the .NET environment to implement new applications, which requires MS' active directory structure (which Novell anticipates bridging, so that this will not be an issue in the future). For TMH, the issue was cost savings. TMH had not maintained their Groupwise licensing and software, and already owned the lion's share of the licensing costs for the MS messaging system through MS Software Assurance. Both organizations cautioned Leon County, if it were to migrate to Outlook, to be sure to take the time and effort to plan the migration for a smooth implementation.

Lee County will be completing their migration to Outlook this month. They migrated to take advantage of Microsoft's Sharepoint, a collaboration tool (which will not be an issue in the future with the anticipated Novell bridge). Lee County's migration effort took a year to implement with their existing staff of four and some services from Microsoft. The main effort of their implementation was the planning process that took over eight months. Implementation was completed in four months with a similar number of users as Leon County. They cautioned us to take the time to carefully plan and use Microsoft's services to ensure an accurate plan for the active directory structure.

City of Tampa secured services from KPMG to conduct a needs analysis and assessment on migrating to Microsoft Exchange/Outlook (Attachment #5). Their installation is about double Leon County's installation with 3,300 accounts. While KPMG suggested the City would achieve savings by minimizing the complexity of their messaging system implementation by migrating to MS, the City found that the \$1.5 million cost for the conversion and for entering into the Software Assurance program, combined with the increased costs for annual maintenance for Microsoft versus Groupwise, and the extensive time to implement made the option not viable at this time. Therefore, they have taken an "if it is not broke, don't mess with it" stand. City of Tampa IT officials, however, will be reviewing this decision every year as they monitor market/technology advances.

**Options:**

1. Accept the update report on the 2003 – 2005 MIS Strategic Plan.
2. Approve the 2006 – 2010 MIS Strategic Plan.
3. Approve Staff Recommendation regarding the MIS Messaging System.
4. Do not accept the update report on the 2003 – 2005 MIS Strategic Plan.
5. Do not approve the 2006 – 2010 MIS Strategic Plan.
6. Do not approve Staff Recommendation regarding the MIS Messaging System.
7. Provide Board direction to staff.

**Recommendation:**

Options #1, #2, and #3

**Attachments:**

1. Status of 2003 – 2005 MIS Strategic Plan Goals
2. 2006 – 2010 MIS Strategic Plan
3. Leon County Groupware Analysis by Aegis Computer Services, Inc.
4. Microsoft Draft Proposal
5. KPMG's Assessment of City of Tampa

PA/kd/pc

STATUS of GOALS FROM THE 2003 – 2005 STRATEGIC PLAN			
Strategic Goal	Description		Status
<b>BSI 1: Customer Focus/ Service Oriented</b>			
1.A.	Office Automation/Network Users Group		Not Implemented in lieu of departmental meetings
1.B.	Monthly Department meetings		Active
1.C.	Board Workshops		Active
2.A.	Application User Committees		Active
2.B.	Regularly scheduled surveys		Active (at least annually)
<b>BSI 2: Comprehensive, Timely, Integrated Information and Reliance on Online Access and Interaction</b>			
1A.	CJIS	Migrate legacy mainframe to a web browser based interface and Oracle database on a mid-range IBM RISC infrastructure	Completed June, 2003
1.B.		Develop interfaces to send/collect data between justice community databases	Completed interfaces to NCIC, FDLE, SAO, PD, FACC's CCIS, and OSCA's JIS
1.C.		Add comprehensive Jail Management functionality	Completed the following modules/applications: Lobby management, security threat group analysis, inmate moving and tracking, sexual predator notification, automated bond schedule, integration with electronic arrest affidavits to booking processing, and transportation module  In progress modules/applications: inmate case management, replacement of imaging system, integration with FDLE's sexual predator database.  Sheriff information management support for warrants is completed. Phase I of the North Florida Pawn Network is completed. Phase II to integrate with FDLE's stolen article file is in progress.
1.D.		Cooperatively work with JIS Interlocal participants	Active – Interlocal agreement renewed in 2005
1.E.		Support data access to mobile units in TPD and Sheriff law enforcement vehicles	Completed and under support
1F.		Incorporate new technologies in JIS such as electronic signatures, imaging, and internet interfaces	Electronic signatures and imaging completed, introduction of biometrics

STATUS of GOALS FROM THE 2003 – 2005 STRATEGIC PLAN		
Strategic Goal	Description	Status
		for identity management
1G.	Support the Probation's GPS monitoring program	Active
1H.	Provide public access opportunities as authorized by statute and policy	Active
2A.	<b>Banner</b> Migrate system to mid-range IBM RISC system	Completed
2.B.	Migrate custom reports from Focus environment to Oracle	Completed required reports
2.C.	Migration of Oracle 8i to 9i by 2005	In test mode Spring 2006 and to be completed Summer 2006
2.D.	Electronic Timesheets for the Board and Clerk Offices by 2004	Planned for late 2006 (dependent on software upgrade and Oracle 9i)
3.A	<b>EDMS</b> Deploy enterprise electronic development management solution.	
	- Growth Management	Historical Building Permits Completed, Environmental Permits in progress
	- Veterans Services	File conversion is 75% done
	- Human Resources	File conversion is 75% done
	- Facilities Management	Process began in 2006
	- County Attorney's Office	Work in Progress system active
	- Public Works	Animal Control Completed; Engineering/Operations File Conversion in Design
3.B.	Agenda process	System being installed and in test mode, to be deployed in 2006.
3.C.	Strive to complete conversion efforts of archived and/or filed Board documents by the end of 2005.	Extend to 2010 because of additional divisions and/or areas coming online.
4.A.	<b>Internet and Intranet</b> Continue maintenance and enhancement of sites for Board and participating Constitutional Offices.	Award winning website (2003 Digital Government Award) supporting all Board Departments, Blueprint 2000, the Sheriff's Office, the Property Appraiser's Office, the PD and SAO, and the Tax Collector.
4.B.i	Develop and support web stewards from the various offices	About 40 people serve as web stewards. Training and software are provided by MIS. Quarterly meetings are held to review standards and requirements.
4.B.ii	Online services for citizens	Submission of employment applications, committee volunteer service application, problem reporting, permit applications in place.

STATUS of GOALS FROM THE 2003 – 2005 STRATEGIC PLAN			
Strategic Goal	Description		Status
			Ability to pay taxes, some permit fees, and license renewals is in place. Access to County information via video and documents in place. Access to purchasing information in place. Web access to Library services in place.
4.C.		Enhance Intranet site for employees	Forms, policies, and documents are online. Limited on-line training available.
5.A.	<b>Work Order Management</b>	Migrate to a single work order management system for Board Departments.	Public Works Operations' Hansen system upgraded, Sign Shop in Public Works conversion to Hansen completed, Facilities migration to Hansen in queue for 2006. Mosquito Control and Stormwater and Fleet immigrations to Hansen planned for 2007.  Library's work order management system upgraded to SIRSI in new environment.
5.B.		Expand use of hand-held field data collection for near-real time updates	Citrix server infrastructure in place. Use of cellular services in place. Wireless access available at hot spots at the libraries and
5.C.		Remote office capabilities with laptops and/or tablets and wireless technologies.	
5.D.		Provide interface to GIS mapping	Interface to GIS in PETS is in place. Interface to GIS for Hansen being designed.
6.A.		<b>GIS</b>	Provide administrative and technical support to the GIS Interlocal participants – City of Tallahassee, Leon County, and the Leon County Property Appraiser's Office
6.B.	Continue partnership with the City on the joint implementation and maintenance of the Permit Enforcement Tracking System (PETS)		Program in operation since 1995 with latest upgrade completed in 2005.
6.C.	Land ID Project		Completed and online
6.D.	Align County Plat Codes with the City Code to require use of GPS survey monuments in the development of plats		Not done
6.E.	Enhance GIS web site with expanded functionality and additional data layers.		Award for website on Historic Properties; implementation of Property Information Sheet site and many additions through the

STATUS of GOALS FROM THE 2003 – 2005 STRATEGIC PLAN		
Strategic Goal	Description	Status
		new Imaps
6.F.	Infrastructure improvements	Ongoing
6.G.	Maintain and deploy Address Database as standard	Ongoing
6.H.	Keep the base map current with 5 year interval aerial photography	Award winning program with the incremental update using new technology in LIDAR occurring with 3 year update within the urban area and 6 year update in the rural areas
6.I.	Improve data capture of new data by GPS and field hand held devices.	Completed
6.J.	Densify the geodetic network in Leon County	Completed in conjunction with the Dept. of Revenue
6.K.	Enter into grant and contract work to deliver GIS services.	Generated about \$500,000 in grants with Dept. of Revenue, ESRI, Dept. of Corrections, Orange County Sheriff's Office, Woodville Karst Plain Project, and the Lake Lafayette Project
6.L.	Develop functionality and promote use of the GIS as a planning tool	GIS used extensively in City/County Growth Managements, Planning Dept., Public Works, TPD, Sheriff's Office, Property Appraiser's Office. Ancillary services provided to Elections, EMS, Emergency Operations Center.
7.A.	<b>Office Automation</b>	Provide and support the Microsoft Office Suite for word processing, spreadsheets, and small database management.
7.B.		Enhance user functionality for information sharing with collaboration tools.
		Current messaging system allows for calendaring and file sharing. System has been upgraded to include new features. Future upgrades will provide collaboration tools.
8.A.	<b>Training</b>	Introductory end-user training program for all employees and incoming new employees
8.B.		Office Automation training for users
		In place – outsourced to CompUSA and Computer Tutors in FY 2005
8.C.		Build into the acquisition and maintenance budgets for major computer systems training for end-users and maintenance personnel.
		Completed – examples: SIRSI and Banner

STATUS of GOALS FROM THE 2003 – 2005 STRATEGIC PLAN			
Strategic Goal	Description		Status
8.D.		Enhance on-line learning functionality	Initialized, but changing priorities put effort on hold
<b>BSI 3: Reliable and Effective Infrastructure to Meet Needs</b>			
1.A.i.	<b>Backbone Network</b>	Maintain a structured cable and wiring plan for future growth	In place and reviewed by outside electrical engineer every few years
1.A.ii.		Upgrade all County facilities and remote locations to Gigabit Ethernet bandwidth	Completed for all major locations (GEM, Public Works, Facilities, Sheriff's Office Complex)
1.A.iii.		Keep backbone bandwidth high to accommodate needs	Core switches at the Courthouse and Sheriff's Office have been upgraded.
1.A.iv.		Develop redundant network paths to remote sites for security and emergency issues	Redundant links via Sprint, Comcast and/or City fiber in place to the Sheriff's Office Complex, Public Works, and the Courthouse.
1.A.v.		Upgrade internal network wiring in County Facilities	Completed the Jail rewiring project in 2005.
1.A.vi.		Advocate, implement, and support wireless technology	Installed wireless in public areas of the Courthouse, in the Board Chambers, at the Main Library, and at the branch libraries.
1.A.vii.		Research and develop new technologies as they emerge	Ongoing
2.A.		<b>Public Access</b>	Provide public access to appropriate applications on the network for the public.
2.B.	Community access to the automated library system		In place
2.C.	Support public access PC's at the Main Library and the branch libraries		Approximately 165 PCs are available for public use.
3.A.	<b>Inter-Agency Access</b>	Provide support, services, and connectivity to other agencies as funded and approved by the Board.	Law enforcement agencies such as TPD, Capitol Police, and FDLE have secured access to the JIS system.
3.B.		Provide connectivity with outside resources as user needs and security allows.	VPN connectivity is maintained and is available. Example - appellate attorneys with the PD's Office

<b>STATUS of GOALS FROM THE 2003 – 2005 STRATEGIC PLAN</b>			
<b>Strategic Goal</b>	<b>Description</b>		<b>Status</b>
4.A.	<b>Desktop Infrastructure</b>	Support PCs to provide reliable, available infrastructure with a maximum down time of 4 hours.	Achieved 99% of the time.
4.B.		Strive for a budgeted PC replacement program to support upgrades every three years	The program has been funded at a level to provide about a three to five year replacement plan with high-end users receiving upgrades sooner than low-end users. PCs lives have been extended with memory add-ons where possible. The public access PCs for the libraries are sourced from the surplus pool.
4.C.		Expand internal capabilities of electronic mail, the desktop environment and the Intranet.	Upgraded Groupwise to the 6.5 version. Added virus and spam filtering to the desktop environments. Continued support of the Intranet.
5.A.	<b>Telecommunications Infrastructure</b>	Maintain the telephone system for the Board, the County Health Department, and participating Constitutional Offices (Elections, PD's Office, SAO's Office)	Implemented the Avaya digital IP hybrid phone system with integrated voice mail in late 2005. Only the County Health Department remains on the older system to be compatible with a State provided interface.
5.B.		Provide enhancements to telephone services as customer needs grow and/or become more sophisticated.	Custom work done for the PD's Office in 2003 and 2004.
5.C.		Incorporate the use of IP technology as deemed beneficial	The Avaya system is a hybrid solution that uses some IP features.
6.A.i.	<b>Computer Standards</b>	Maintain and/or establish standards to streamline operations – Oracle database	In place
6.A.ii.		Maintain and/or establish standards to streamline operations – UNIX, Novell and Windows-based systems/servers	In place
6.A.iii.		Maintain and/or establish standards to streamline operations –Desktop standardization	In place
6.A.iv.		Maintain and/or establish standards to streamline operations – Cisco network infrastructure	In place
<b>BSI 4: Qualified, Productive Staffing and Consulting Services</b>			
1.A.	<b>Training</b>	Defined roles for MIS staff with performance standards	JDQs and performance standards up to date
1.B.		Provide training to appropriate staff	In place – average of \$2,000 of training per

STATUS of GOALS FROM THE 2003 – 2005 STRATEGIC PLAN			
Strategic Goal	Description		Status
			year per staff
1.C.		Provide application training for appropriate staff and departmental super users through vendor conferences.	In place -- average of \$2,000 of training per year per staff or authorized super user.
1.D.		Provide training on latest technologies through technology conferences for appropriate staff.	In place -- average of \$2,000 of training per year per staff
1.E.		Augment technical training with interpersonal and communication skills training that promote customer service and team building.	In place -- average of \$500 of training per year per staff.
2.A.	<b>Planning and Project Management</b>	Improve planning and management capabilities with Gartner Services	In place
2.B.		Collaborate with other County and Municipal governments on best practices for IT management and deployment	Involved in the Florida Local Government Information Systems Association.
2.C.		Training for program management and planning	Initial efforts underway
2.D.		Using industry best practices, maintain a quality control framework for project management.	Initial efforts underway
3.A.	<b>Human Resource Management</b>	Working with Human Resources, maintain well defined job descriptions with appropriate compensation packages	HR conducts salary market reviews on a regular basis and makes recommendations for upgrades accordingly
3.B.		Develop career paths for technical positions	Through the HR and Budget process, reclasses have been made as appropriate
3.C.		Continue to review the MIS organization and adjust as customer needs and technology industry changes to ensure resources are distributed to provide services as needed.	Ongoing
3.D.		Use of consulting services to augment staff resources and introduce technology expertise.	Ongoing -- especially with Oracle services and specialized GIS services.
<b>BSI 5: Systems, Data, and Network Security</b>			
A.i.	<b>Security Standards and Procedures</b>	Maintain standards for security	In place
A.ii.		Develop security procedures	In place
B.i.	<b>Hardware and Software Infrastructure</b>	Install, maintain, and upgrade firewalls	In place
B.ii.		Obtain tools and services for security assessment and mitigation.	Security audits completed in 2002 and 2004
B.iii.		Train staff through the SANS institute and Infragard	Ongoing
C.i.	<b>High Availability and Performance</b>	Document Systems	Ongoing
C.ii.		Keep systems patched to the current levels	Ongoing
C.iii.		Monitor performance of systems	Ongoing
C.iv.		Provide virus protection for desktops and servers	In place

<b>STATUS of GOALS FROM THE 2003 – 2005 STRATEGIC PLAN</b>			
<b>Strategic Goal</b>		<b>Description</b>	<b>Status</b>
C.v.		Research industry solutions for spam filtering	Identified and installed
<b>BSI 6: Disaster Recovery and Business Continuity</b>			
A.i.	<b>Remote Data Center</b>	With cooperation of the Sheriff's Office, design and install a remote data center at the Jail	Completed 2005
A.ii.		Provide redundant network connections	Completed
A.iii.		Include participating Constitutional Offices and incorporate their system needs in the design	Ongoing
B.i.	<b>Disaster Recovery Plan</b>	Develop disaster recovery and business continuity plan.	In conjunction with Emergency Management, developed COOP plan.
C.i.	<b>Update and Testing</b>	Conduct annual reviews of the plan with a mock disaster test.	Participated in COOP plan update and tabletop exercises.

# **MIS Strategic Plan**

## **2006- 2010**

**Leon County Board of County Commissioners**  
**Department of Management Services**  
**Division of Management Information Services**  
**May, 2006**

**Management Information Services  
Strategic Plan 2006-2010**

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**Management Information Services  
Strategic Plan 2006-2010**

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## Vision Statement

Leon County policy makers, management, staff, citizens, and the business community will be provided current, accurate, comprehensive, and integrated information in a user-friendly, secure, effective, and reliable medium to reflect the County's activities and to improve decision making and work processes. Infrastructure, applications, and technology solutions to support such information management and delivery will be effective, reliable, and secure. MIS staff resources will be certified experts in their fields and will deliver outstanding customer service and satisfaction.

## Vision

Our vision is delivering current, comprehensive, and accurate information and technology solutions in a user-friendly and reliable medium to policy makers and management for their decision making process; to staff for effective processing of their work; and to the citizens and business community of Leon County for effective access to County information and interaction with processes.

Our vision is driven by the partnerships between MIS and its customers to assist those customers as they redefine their business processes to meet changing needs and priorities. By being flexible, innovative, and responsive, MIS will build and/or strengthen trust with its customers to solve information management needs with technical solutions.

Our vision is of a MIS Division delivering prompt, courteous, and efficient service with 100% customer satisfaction with a staff that is well trained, highly motivated, and professional.

Finally, our vision is of Leon County MIS as a pacesetter in providing quality, leading edge technical services to its customers with the promotion of security and provision of disaster recovery and business continuity.

**Management Information Services  
Strategic Plan 2006-2010**

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**Leon County  
Board of County Commissioners  
Mission Statement**

Leon County Government is dedicated to preserving and enhancing the outstanding quality of life which has made our community a desirable place to live, work, and raise our children. Through the provision of cost effective, superior services, Leon County Government will insure the promotion of orderly growth for the economic health and safety of its citizens.

**Department of Management Services  
Mission Statement**

Management Services Support Services' mission is to provide customers with assistance, guidance, oversight and other resources to enhance the provision of departmental services.

**Management Information Services  
Mission Statement**

In conformity with Leon County's Mission statement, the MIS mission is to serve our end users with continually improved, efficient, cost effective technology and telecommunications products, services, and information so that our customers are totally satisfied and able to fulfill their missions.

**Management Information Services  
Strategic Plan 2006-2010**

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## **Management Philosophy**

Management Information Services commits to a team approach in the delivery of quality services to our customers and to safeguarding the information resources entrusted to us. We strive to deliver our services on time, defect free, and in a professional and courteous manner.

Management Information Services also commits to providing employees with necessary resources, training, and the encouragement to develop creative, comprehensive solutions to information technology issues and challenges. Communication and feedback from our employees and customers are encouraged and expected.

## **Guiding Principles**

1. Quality comes first. To achieve customer satisfaction, the quality of our products and services must be our number one priority.
2. Customers are the focus of everything we do. Our work must be done with our customers' needs in mind.
3. Continuous improvement is essential to success. We must strive for excellence in all we do; in our products, our services, and our human relations.
4. Employees are the source of our strength. They provide our expertise and determine our reputation and vitality.
5. Employee involvement and teamwork is our way of life. We are a team. We must treat each other with respect and trust.
6. Integrity is never compromised. The conduct of our Division must be pursued in a manner that commands respect for its integrity and positive contributions to County services.
7. Security is seriously managed to ensure the accuracy and reliability of data, to protect privacy as required by law, to secure data from improper access and/or changes, and to safeguard the County's technical infrastructure assets against loss of use, tampering, and/or destruction.

**Management Information Services  
Strategic Plan 2006-2010**

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**Strengths**

Our strength lies in the dedicated, resourceful MIS Staff and their ability to meet the professional needs of our customers by innovative means that are responsive and cost effective. That strength has come about with the stability of the staff with a position vacancy rate of less than 5% for the past four years (2002- 2005).

Collaboration and coordination are important means in defining solutions and augmenting resources through sharing and networking with other County and City IT/MIS Directors through the Florida Local Government Information Systems Association, GIS leaders and professionals through the GIS SHRUG (Seven Hills Regional User Group), security professionals through Infragard (a FBI sponsored technology security program), and State IT members through the Digital Government Summit Advisory Board.

The Division continues to develop a strong human resource plan that provides and encourages career advancement, skill development, and skill enhancements.

MIS has a strong technical certification and training program for staff that ensures staff are maintaining core competencies and learning new technologies.

Superior MIS staff expertise has built a reliable, secure, and high speed network that enables effective deployment of applications to County users, augmented with wireless technologies.

Superior MIS staff expertise for web services and applications development, augmented with Oracle services, continues to support and enhance the County's award winning web site for the Board and most of the Constitutional Offices.

Superior MIS staff expertise has built and maintains an integrated criminal justice information management system that is used by the entire justice community in Leon County where data is entered at the first point of entry and is shared among all users. Integration with other local, regional and state programs is provided with enhancements through the Global Justice XML.

Superior MIS staff expertise in security management which is strengthened with liaisons with FDLE (Florida Department of Law Enforcement), the FBI, and alliances with SANS Institute (SysAdmin Network Security) and the Gartner Group.

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### **Weaknesses**

The Board and the administration have recognized the challenge of meeting the demand for information management services by providing additional resources for MIS through the budget process in past years, and that support will need to continue to meet the growing demand for services and technology solutions. As our customers become more aware of technology opportunities to improve their work processes, more projects are defined and expectations of enhanced services grow.

While improvements have been made, stronger processes need to be put into place to include MIS in the planning of grant applications where technology is provided, so that MIS can be responsive to its customers.

MIS needs to prepare for the retirement of several of its management/technical leaders within the next five years. For successful succession management, the division will need to continue documenting institutional knowledge and work processes and provide cross training for critical areas.

### **Opportunities**

The ever growing demand of fast, easy, and reliable open access by citizens and staff in Leon County offers us the opportunity to develop a totally integrated information management system of data that will be cost effective, improve decision making, provide for increased public safety, and incorporate efficiencies for all of our customers. Additionally, the convergence of several communication technologies (phones, email, personal data assistants (PDAs), and mobile laptops/PCs) will empower staff and management to have access to information and to make updates to computer applications and databases at all times and in a near real-time mode. To take advantage of these opportunities, MIS professionals must be totally involved with and have a significant understanding of the activities, from strategic planning through systems implementation, of each and every program.

### **Threats**

As the country deals with the real threats of terrorism, war, and natural disasters, MIS must ensure that the data and information management of the County Departments and Divisions and the Constitutional Offices are protected and recoverable in a disaster. While the protection of data at off-site locations has been in place for many years, the development of a remote sever center allows for the development of a stronger disaster recovery plan with business continuity which will ensure that critical County

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information management processes can continue with minimal or no down time in the event of a situation.

Additionally, MIS must be prepared to support widespread employee displacement due to a potential pandemic by the bird flu or any other event that shuts down office facilities. Providing for home or off-site connectivity to the County network and information will need to be addressed in the network infrastructure, web services, and application development projects.

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## **Strategic Goals and Objectives**

Although this strategic plan is for the MIS Division, its strategic goals must be interconnected with the future of the entire organization. Management Information Services' success in providing necessary information processing, technology infrastructure, and services will determine, to a large degree, the effectiveness of staff and operating departments in meeting the overall County goal of quality services to the citizens of Leon County.

### **Strategic Issues**

- |                          |   |
|--------------------------|---|
| Basic Strategic Issue 1: | Customer Focus/Service Oriented   |
| Basic Strategic Issue 2: | Comprehensive, Timely, Integrated Information with<br>Reliance on Online Access and Interaction |
| Basic Strategic Issue 3: | Reliable and Effective Infrastructure   |
| Basic Strategic Issue 4: | Qualified, Productive Staffing and Consulting Services  |
| Basic Strategic Issue 5: | Systems, Data, and Network Security   |
| Basic Strategic Issue 6: | Disaster Recovery and Business Continuity   |

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**Basic Strategic Issue 1: Customer Focus/Service Oriented**

**Background:** MIS must continue to better understand its internal endusers/customers. The responsibility of MIS is to ensure the County's information computing is done well, securely and in a timely manner. MIS's role is not merely to produce more applications and information systems; rather, it is to build and support the County's information management infrastructure with integration and collaboration as needed.

**Strategic Goals:**

- 1. Continue to improve policy-making coordination for technology through better definition, action and improved participation with customers.**
  - A. Continue the Office Automation/Network Users Group, chaired by the Director of Management Information Services as a forum for:
    - i. The continued enhancement of suggested standards for applications and use of automation whereby systems are technically sound, efficient, cost effective, and allow for orderly growth and development of the infrastructure.
    - ii. Senior management to take an active part in setting the requirements and standards for use of information technology within the County government.
  - B. Continue monthly meetings with Departments to discuss technology needs and issues. Currently in progress are meetings with Growth Management, Public Defender's Office, Facilities Management, Public Works, Elections, the Sheriff's Office, and the Library.
  - C. Continue providing workshop updates to the Board on a regular basis to communicate progress on technology initiatives and seek executive direction on policy issues regarding information management.
  
- 2. Continue to strive to improve customer relations and partnerships with customer focus a priority.**
  - A. Continue to establish, support, or assist appropriate Application User Committees with representation from all offices, departments and divisions to build consensus among the various offices on technology issues regarding applications, infrastructure, and services. End-user responsibility should be an explicit goal. All decisions regarding information technology should be made within the context of the goal to enhance end-user productivity.
    - i. Currently User Committees are operating for the following applications: JIS, Finance (Banner), GIS, PETS, and Web Stewards.
    - ii. Establish a User Committee for Hansen (Work Order Management).
  - B. Continue to solicit feedback from customers through a regularly scheduled survey about delivered services to gauge customer satisfaction and learn of opportunities for improvement.

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**Basic Strategic Issue 2: Comprehensive, Timely, Integrated Information and Reliance on Online Access and Interaction**

**Background:** There is a need to access and understand the results of the work processes in the various Departments and Divisions in the County at all levels in the organization - from program, to managerial, to executive, and ultimately to the citizens. Most work processes have adopted some level of technology for productivity and effectiveness within the division/program level. MIS must partner with customers to help implement strategies for integration and deployment of comprehensive and timely information for in-house use and for citizen access via web browser based technologies. Technology advances in application services via the web and use of XML interchange services need to be incorporated in existing applications.

**Strategic Goals:**

1. **Justice Information System (JIS)**
  - A. Continue enhancements and maintenance of the JIS, which uses a web browser based interface and incorporates the Oracle relational database.
  - B. Continue to develop interfaces to justice community entities to share information and incorporate the Global Justice XML interface as recommended by the State's Article V Technology Board.
  - C. Continue enhancements to the JIS to add comprehensive jail management functionality.
  - D. Cooperatively work with the JIS Interlocal participants in enhancing the JIS into an integrated data warehouse for justice information with interfaces to systems such as the Clerk's Courtview and Judicial Website.
  - E. Continue to support the data access to mobile units in TPD and Sheriff law enforcement vehicles.
  - F. Continue to incorporate new technologies such as electronic signatures, imaging, and Internet interfaces.
  - G. Provide application support to the Sheriff's Office to support process needs such as warrants and ongoing phases of the North Florida Pawn Network.
  - H. Provide application support to Probation and Pre-Trial for case management.
  - I. Continue to support the Probation Office's GPS monitoring program.
  - J. Continue to provide public access opportunities as authorized by statute and policy.
  
2. **Finance Information Systems (Banner)**
  - A. Continue to maintain Banner on the IBM AIX platform.
  - B. Deploy Banner upgrades as made available by the vendor.
    - i. Employee self-service module by 2007 for Board and Clerk.
    - ii. Electronic timesheets via web interface for the Clerk in 2006.
    - iii. Electronic timesheets via web interface for Board in 2007.
  - C. Migrate Banner to Oracle upgrades as made available by the vendor.
    - i. Oracle 9i by 2006 and Oracle 10g by 2009.

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**3. Electronic Document Management (EDMS)**

- A. Continue deployment of enterprise solution throughout the County. Conversion activities underway for Growth Management, Public Works Engineering, Public Works Animal Control, Human Resources, Facilities Management, and Veterans Services.
- B. Introduce EDMS to the agenda process and Administration in FY 05/06.
- C. Strive to complete conversion efforts of archived and/or filed Board documents by the end of 2010.

**4. Internet and Intranet**

- A. Continue the maintenance and enhancement of the Internet for the Board Departments and participating Constitutional Offices (Property Appraiser, Tax Collector, Sheriff, Supervisor of Elections, State Attorney's Office, and Public Defender).
- B. Continue to maintain the content of the web site with current and meaningful information.
  - i. Continue developing and supporting web stewards in the County Departments and Divisions to keep content on the Web updated and easily accessible.
  - ii. Continue developing online services for citizens to be able to interact with their local county government at any time (i.e. access to Commission meetings and workshops, online submissions of employment applications, online citizen reporting of problems, online permitting, payment transactions for tax payments, tickets, license renewals).
- C. Continue to enhance the Intranet site for the County Board employees.
  - i. Continue to develop the Intranet for County employees as a resource for information (i.e. policies, documents, forms).
  - ii. Continue to augment online training opportunities.

**5. Work Order Management**

- A. Migrate to a single work order management system for Board Departments by 2010.
  - i. Facilities Management – 2006
  - ii. Mosquito Control and Stormwater – 2007
  - iii. Parks and Recreation – 2007
  - iv. Fleet – 2007
  - v. Landfill – 2007 - 2008
  - vi. Pavement Management - 2008
- B. Expand the use of hand-held field data collection for near-real time updates to the work order management database.
- C. Continue to support remote office capabilities with laptops and/or tablets and wireless technologies.
- D. Provide interface to GIS mapping as processes require.

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**6. Library System (SIRSI)**

- A. Continue support and enhancements through vendor upgrades.
- B. Deploy Oracle 9i upgrade and web services implementation in 2007.

**7. Geographic Information Systems (GIS)**

- A. MIS continues to provide administrative and technical support to the GIS Interlocal as well as to the Leon County GIS program in accordance with needs and the requirements of the Tallahassee Leon County Interlocal agreement.
- B. Continue partnership with the City on the joint implementation and maintenance of the Permit Enforcement Tracking System (PETS).
- C. Continue a comprehensive land identification system in conjunction with the City/County Growth Managements, the Planning Department and the Property Appraiser's Office to allow for first point of entry into the GIS System and PETS.
- D. Align the County Plat Codes with the City Code to require use of GPS survey monuments to improve quality and accuracy of plats and to streamline the integration of future plats to the digital base map.
- E. Continue to enhance the GIS web site with expanded functionality and additional data layers.
- F. Continue infrastructure improvements with the consolidation of City servers with GIS Central, NT on the desktops; database conversions, and the integration of electronic documents with GIS.
- G. Maintain and deploy the Address Database as the standard to any existing and future City ISS and County MIS applications and systems.
- H. Continue to keep the base map current with an incremental update of aerial photography where highly populated areas are updated every three years and rural areas are updated within six years.
- I. Continue to coordinate the development and maintenance of data layers from the participating departments such as zoning, utility services and assets, recreational facilities, property information, school districts, voting precincts, flood zones, environmental data, building development information, and County and City facilities.
- J. Continue to improve data capture time of new data with methods such as field handheld units and GPS technology.
- K. Continue to work with the professional community in maintaining the geodetic network in Leon County to insure accurate GPS and surveying measures.
- L. Continue to take advantage of contract and grant opportunities that will provide funding for additional data development and/or program enhancements.
- M. Continue to develop functionality and promote use of the GIS as a planning tool.

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**8. Office Automation**

- A. Continue to provide and support the Microsoft Office Suite for word processing, spreadsheets, and small database management.
- B. Enhance user functionality for information sharing with collaboration, approval processing, and workflow tools.

**9. Training**

- A. Continue an introductory end-user training program and train employees as needed.
- B. Continue providing office automation training for users.
- C. Continue to build into the acquisition and maintenance budgets for major computer systems training for end-users and maintenance personnel.
- D. Enhance on-line learning functionality.

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**Basic Strategic Issue 3: Reliable and Effective Infrastructure**

**Background:**

The MIS Division has exclusive responsibility for the County's backbone communications network and the computer platforms that provide information access. MIS needs to maintain this network in a stable, secure, virus free and fully operational state. Thousands of users, including County employees and countless citizens, depend on this network to access data and information.

MIS needs to continue development and documentation of its IT infrastructure and continue to train all employees required to support it. The MIS Division needs to continue investing in network management tools to ensure that a secure, optimally functioning network is available 24 hours a day, seven days a week.

**Strategic Goals:**

**1. Backbone Network**

- A. Continue to enhance the County-wide communications network and connect all employees that use the automated system(s).
  - i. Continue to a structured cabling and wiring plan updated to allow for future growth and maximum bandwidth and emerging technologies.
  - ii. Continue to upgrade the network backbone between all County facilities and remote locations to Gigabit Ethernet bandwidth and be in a position to take advantage of industry improvements.
  - iii. Continue to assure that network bandwidth limitations stay far ahead of computer hardware limitations so that connectivity is never limited by backbone services.
  - iv. Continue to develop redundant network paths to remote sites for security and emergency issues (i.e. fiber from the City, Comcast, Sprint, and/or other providers).
  - v. Continue to upgrade internal network wiring in the County facilities.
  - vi. Continue to advocate, implement, and support secure wireless technologies.
  - vii. Continue to provide remote access services for employees with secured connections into the network.
  - viii. Continue to promote best practices in networking and security.
  - ix. Continue to research and develop new technologies as they emerge.

**2. Public Access**

- A. Continue to provide public access to information in County automated systems by constantly and consistently enhancing the county wide backbone network to allow the most secure, efficient and cost effective interfaces to information and services provided. Statutorily allowed recapture of costs associated with public access shall be recaptured whenever feasible and practical.

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- B. Community access from home computers to the automated library system is in place via the Internet and will continue to be enhanced.
- C. Continue to support public access PCs at the Main Library and the branch libraries.
- D. Continue to provide wireless access for citizens and employees in common areas in the Courthouse (Chambers, jury assembly, some courtrooms) and major facilities of the County (i.e., Main Library and the branch libraries).

**3. Inter-Agency Access**

- A. Provide support, services and connectivity to other agencies as funded and approved by the Board of County Commissioners.
- B. Provide connectivity with outside resources as user needs and security allows.

**4. Desktop Infrastructure**

- A. Continue support for the maintenance of PCs to provide reliable, available infrastructure for employees to conduct their work with a maximum down time of four hours.
- B. Continue to strive for a budgeted PC replacement program that supports the upgrading of desktops to maintain necessary functionality.
- C. Continue to expand the internal capabilities of electronic mail, the desktop environment, collaboration and workflow processes, and the Intranet.

**5. Telecommunications Infrastructure**

- A. Continue to maintain the telephone system for the Board Departments, the County Health Department, and participating Constitutional Offices such as the Supervisor of Elections, Public Defender's Office, State Attorney's Office.
- B. Continue to provide enhancements to telephone services to meet customer needs.
- C. Continue the use of IP technology in telecommunications services as deemed beneficial to the County.

**6. Computing Standards**

- A. Maintain and/or establish organizational computing standards which streamline operations such as:
  - i. Oracle database infrastructure for large applications; SQL server database for mid-range to smaller applications
  - ii. Unix, Novell, and Windows-based systems/server infrastructure
  - iii. Desktop standardization
  - iv. Cisco network infrastructure.

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**Basic Strategic Issue 4: Qualified, Productive Staffing and Consulting Services**

**Background:** The MIS professional of today has transformed from the singular programming "techie" and mainframe guardian of the past Data Processing environment to a MIS professional that is involved and understands the business of the end user and current industry technology to provide solutions for effective and integrated information management.

With the purpose of providing high quality services, the Leon County MIS Division must continue to keep abreast of fast paced changing technical environment. Technicians and MIS professionals are encouraged to maintain their respective technical currency on their own as well as benefit from County provided training. In this age of changing information technology, employees have a responsibility to maintain currency in order to insure improved customer service and individual career development.

**Strategic Goals:**

- 1. Continue to invest in training as a high priority in the MIS budget.**
  - A. Clearly define the roles for MIS staff and ensure that the employees fulfilling those roles clearly understand the performance standards needed to meet expectations in the positions.
  - B. Continue to provide complete training to the staff that is required to operate and maintain the platforms, operating systems, and databases under its purview.
  - C. Continue to provide continuous training for staff to stay current with the latest technologies.
  - D. Continue to augment technical training with interpersonal and communication skills training that promote customer service and team building.
  - E. Continue to use consulting services to transfer technical skills.
  
- 2. Continue to improve planning and management capabilities for project management and systems analysis.**
  - A. Continue to use services such as Gartner Group, InfoTech and Yankee Group to augment analysis of emerging technologies, to receive planning and research assistance for project planning and development.
  - B. Continue to collaborate with other County and Municipal governments (ie. FLGISA) on best practices of IT management and deployment.
  - C. Continue to receive training and continue to create written project plans, including schedules and task assignments, and have the status of projects measured and reported using the criteria established in the plans.

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- D. Using best practices from the computer technology industry, maintain a quality control framework and apply it to all major projects.
- 3. Strive to hire professional and competent staff.**
- A. With the continued support of Human Resources, maintain well defined job descriptions with appropriate compensation packages that continue to attract highly qualified applicants.
  - B. Continue to develop career paths for technical positions.
  - C. Continue to review the MIS organization and adjust as customer needs and the technology industry changes to ensure resources are distributed to provide services as needed.
- 4. Continue to use consulting services to augment staff resources as needed.**

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**Basic Strategic Issue 5: Systems, Data, and Network Security**

**Background:** MIS staff expertise in security management is strong and strengthened with liaisons with FDLE (Florida Department of Law Enforcement), the FBI, and alliances with SANS Institute (SysAdmin Network Security) and the Gartner Group. Extensive training investment and support has contributed to MIS' ability to build and maintain a reliable, secure, and high speed network that enables effective deployment of applications to County users, augmented with wireless technologies.

**Strategic Goals:**

1. **Continue to work with management and the user community regarding security standards and requirements.**
  - A. Maintain standards for security on all systems supported by the MIS Division. Other agencies attached to the network must meet minimum access standards.
  - B. Maintain procedures to ensure that a viable security policy, approved by the Board of County Commissioners, is in place. It is to be updated as appropriate and enforced by Senior Management.
  
2. **Continue to maintain a protected hardware and software infrastructure that protects the network from viruses, spam, and loss of service.**
  - A. Continue to maintain and upgrade security hardware such as firewalls.
  - B. Continue to obtain tools and services for security assessment and mitigation.
  - C. Continue to train staff on security issues and practices through organizations such as SANS Institute (SysAdmin, Audit, Network, Security) and the Tallahassee Chapter of the FBI's Infragard.
  - D. Continue to undergo an outside security audit every two to three years.
  - E. Continue vigilant implementation of system security patches.
  
3. **Continue to maintain systems for high availability and performance.**
  - A. Continue to document systems.
  - B. Continue to keep systems patched to the latest level.
  - C. Continue to monitor performance of systems and develop solutions for enhancements
  - D. Continue to provide virus protection for desktops and servers.
  - E. Continue to provide spam filtering.

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**Basic Strategic Issue 6: Disaster Recovery and Business Continuity**

**Background:** MIS has been diligent in protecting County data and technology assets with off-site storage of data and systems tapes. Plans for securing a "hot site" data center for recovery were re-prioritized in light of the 9/11 terrorist attacks. Now, the IT industry has recognized that a remote systems center that is "live" with near-real time transactions will assure a timely recovery and successful business continuity. With applications such as the Justice Information System, the County's web site, the Geographic Information System, the County's messaging system, and the County's purchasing and HR systems, it is felt these systems must be recovered as soon as possible to ensure public safety, Country operations, and continued services to the citizens.

**Strategic Goals:**

- 1. Activate a remote data center with County systems able to run applications in test and production mode.**
  - A. With cooperation of the Sheriff's Office, maintain a remote data center at the Jail complex.
  - B. Provide redundant data/internet coverage through multiple network connections.
  - C. Coordinate with other participating Constitutional Offices and incorporate their system needs in the design and implementation of the remote data center.
  
- 2. Maintain a disaster recovery and business continuity plan.**
  - A. In cooperation with the Emergency Management Program, MIS maintains its disaster recovery and continuity plan and is participating with Court Administration in the specific business continuity plan of the Office of the Florida Supreme Court (OSCA).
  
- 3. Maintain the disaster recovery and business continuity plan to meet the changing needs and/or circumstances of the organization.**
  - A. Annual reviews of the plan will be conducted with a mock disaster test.



Leon County Groupware Analysis  
June 1, 2005  
Revised April 5, 2006

### Groupware Defined

Leon County requires an analysis of groupware products used in the industry today. Groupware is a concept, beginning in the 1980's. The goal was to provide the computer end user a software application that would be available in a computer network for messaging, contacts and calendaring. Groupware was important because of the advances in technology, allowing computer end users to send electronic mail within their organizations and later across the internet.

For the most part software vendors integrated these products making it easier to implement one standard across the entire organization. In the mid 1980's, an international standard emerged, allowing vendors to create a standard messaging packet that could be read and transmitted between vendor products. This allowed the vendors to customize their offering, promoting competition among the vendors and assuring the customer that as long as the transmission and packet standards were in place, the receiving end users would be able to view, reply and manage any electronic message received, regardless the sending system.

Most groupware products contained messaging, calendaring and contacts. However, in an effort to capture market and provide customers an integrated approach to group communication developers began to differentiate their products by adding functionality thus emerged the leaders in the industry. Today there are hundreds of groupware products abiding by the standard.

Leon County has utilized a groupware product from Novell named GroupWise since 1994.

Novell's GroupWise is one of the three leading groupware products in the world today, along with Microsoft Exchange and IBM Domino. An emerging trend in the market is open source groupware products developed and run on the LINUX operating system. However, for the purposes of this analysis, the top three will receive the most attention.

It is important to note that groupware products are more than the electronic messaging application viewed and used at the end user desktop. The software, hardware and network infrastructure that manages the internal and external transmission is critical to the effectiveness and security of the communication. In addition, the addressing mechanism used to manage and maintain contacts must also be totally integrated and robust. Finally, the linkages between mail, contacts and calendaring give the organization the final assurances that end users will be able to communicate seamlessly regarding events.



Leon County Groupware Analysis  
June 1, 2005  
Revised April 5, 2006

It is recognized that what you see on the desktop is only a small component of the overall requirement for organizational communication. The desktop application for Microsoft is Outlook, for Novell, GroupWise and for IBM, Lotus Notes.

#### Current Conditions in Leon County

Leon County's groupware environment is the Novell GroupWise application. There are 1,500 users and 1,700 accounts. The implementation is across 40 county entities and the Sheriff's Office, Courts, Clerk, Tax Collector and five counties supporting PD & SAO. The county primarily uses electronic messaging and contacts. To provide a mobile capability there is a PDA server application that allows staff the opportunity to synchronize the GroupWise data on their PDAs. GroupWise Instant Messaging is currently in testing with the Help Desk in MIS and the Public Defender's Office in the County as well.

Leon County staff is trained and proficient in the management and use of the Novell products. There are 4 trained FTE in the Leon County MIS for Novell and GroupWise support.

The cost for maintaining Novell in Leon County is projected to be \$34,960 for GroupWise and the Novell operating system infrastructure will cost \$36,392 for FY 04/05. These are the software maintenance costs which are in line with the cost for Microsoft and much lower than the cost for IBM.

#### A features comparison Novell, Microsoft and IBM

Organizations traditionally make groupware decisions based on the functional requirements. These functional requirements should take into account the features, the cost, the current infrastructure, the staff capabilities, and finally the viability of the software developer.

Leon County made the Novell GroupWise decision initially in 1994 when conditions were different from today.

A features comparison today does reveal how each of these products has emerged with strengths and weaknesses. For the purposes of this analysis, Aegis did not do a complete needs analysis to determine if the functions required in the County meet the features currently being supported by the top vendors.

We took the approach of looking at current features as the products have matured. It would be recommended that before any final decision is made on one product over another in the county, a complete needs analysis be conducted.



Leon County Groupware Analysis  
 June 1, 2005  
 Revised April 5, 2006

As with any organization, the county has continually enhanced the functionality of the computer applications to ensure that current needs are met. In this case, Leon County has made additional investments in Novell products and training to add functionality over the last twelve years.

Furthermore, the current features of the Microsoft and IBM applications are significantly different today from the 1994-95 decision point.

This section will provide an overview of the major features in each application today. It is presented as a prelude to an analysis on the viability of the products in today's market. Detailed specification information is made a part of the report as an addendum.

One added note, since the beginning of this analysis until today, Novell has announced a new product release, GroupWise Connector for Outlook. This product release states that many of the existing problems with using Outlook for a client in a Novell GroupWise environment will be corrected. This does provide a measure of hope for current Novell environments, where end users find the Microsoft desktop more user friendly.

Feature	Novell 6.5	GroupWise	MicrosoftExchange 2003	IBM 6.51	Dominos
Email		√	√		√
Mail Status Notification		√	√		√
Instant Messaging		√	Live Communication Server 2005		
Calendar		√	√		√
Scheduling		√	√		√
Task Management		√	√		√
Web Access		√	√		√
Remote Synchronization		√	√		
Windows Client		√	√		√
Document Management		√	Limited		√
Anti-virus Integration		3 <sup>rd</sup> Party	3 <sup>rd</sup> Party		3 <sup>rd</sup> Party
Spam filtering		√ + 3 <sup>rd</sup> Party	√ + 3 <sup>rd</sup> Party		√ + 3 <sup>rd</sup> Party



Leon County Groupware Analysis  
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Feature	Novell 6.5	GroupWise	MicrosoftExchange 2003	IBM 6.51	Dominos
Attachment blocking		√	√		√
Support for mobile devices		√	√		√
Filtering		√	√		√
Linux client offering		√	3 <sup>rd</sup> Party		
Contact Management		√	√		√
Mailbox Proxy		√	√		√
Shared Folders		√	√		√
Flexible views		√	√		√
Remote Support		√	√		√
Full Text indexing			With indexing services		
Routing		√	√		√
Clustering Support		√	√		√
Backup and restore capabilities		√	√		√
Deployment ease (HML)		√	√		√
User Authentication		√	√		√
Customization		√	√		√
Multiple organizational support		√	√		√
Multiple language support		√	√		√
Diagnostic support		√	√		√
Applications		√	√		√



Leon County Groupware Analysis  
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Feature	Novell GroupWise 6.5	Microsoft Exchange 2003	IBM Dominos 6.51
support			
Third Party Integrations	√	√	√
Ease of Use	√	√	√
Operating Platform Flexibility	Novell Linux Windows	Windows	Windows server Linux AIX
Scalability	√	√	√

State of the Industry in Groupware Products

Due diligence is important in any organization when deciding to remain in one computer application versus another. For most organizations the cost and benefits are weighed against a five year cycle. In 2007, Leon County will approach the 13 year mark with Novell.

The changes in the industry over the last twelve years allow Leon County alternatives with the decision of staying with Novell or migrating to a different product.

The most important factors constituting a change would be:

- Does the product have a viable life cycle?
  - What is the vendor research and development budget for the product?
  - What is the current installed base for this market segment?
- What are the security issues affecting the products?
- What are the costs for migration and maintenance over a 5 year cycle?
- What are the future requirements for compatibility?
- What are the future trends in the industry that effect this decision?
- What are the other decisions that will need to be made in conjunction with this decision?



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June 1, 2005  
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### Viable Life Cycle

Research and development expenditures are a good way to determine if the vendor has faith in the product and for how long.

Microsoft has announced a \$300 billion R & D budget for this next year. This is the largest budget ever presented by any industry at any time in history. This certainly bodes well for the continued support of Exchange and Outlook.

However, Novell has made significant investment in the GroupWise application as well. NETWORKWORLD, dated 2/14/05 observed that with Novell's new three year road map, it appears GroupWise is not going anywhere but forward.

IBM is looking to leverage their relationship database technologies for the email data store as well as lock in additional application and infrastructure opportunities according to Gartner; June, 18, 2004. IBM is investing to ensure Lotus/Dominos products will help move customers to Lotus Workplace, leveraging IBM's DB2 database and WebShare application server and portal infrastructure.

IBM and Novell were players in the market before Microsoft offered their Exchange product. Today however Microsoft is a dominant player. Important as it is to look at overall market penetration it is also important to look closely at the way the figures are derived.

Vendors count their installations to determine the overall market share. When clients purchase Microsoft Office (for Word Processing) they also receive an Outlook client. Therefore, Microsoft can count all the desktop users of Office as part of their market share.

Since Microsoft owns the word processing market with Microsoft Office it is hard to separate those non-Outlook clients.

When clients purchase Novell GroupWise or IBM Dominos they are purchasing with the intent on use which makes this count much more accurate.

In addition, most personal computers are equipped with a base of Microsoft software. These home based computers are therefore equipped with Microsoft Outlook and are counted in their market share. In fact in March 2005, The Radicati Group, Inc. reported that corporate messaging accounts for only 32% of the worldwide mailboxes in 2005.

Therefore it is difficult to develop an accurate count of the number of groupware users by vendor in the government and corporate organizations. It is however safe to call Novell GroupWise the number 3 player of the top three.



However, according to Gartner, Inc. although IBM and Microsoft dominate the market, with a combined 90.2% by 2003, the rise of Linux in Europe, Asia/Pacific, Japan and Latin America will challenge their ability to grow in those markets.

This could be good news for Novell because they are heavily invested and developing on the Linux platform. Novell acquired SUSE and Ximian which has positioned them as a major player in building messaging and collaborative applications over a Linux kernel. However, they still must compete with IBM and Sun in this environment.

Gartner reports that worldwide IBM was leading the market with 46% in 2003, Microsoft was 2<sup>nd</sup> at 44.2% and Novell was third with 2.5%. If you were to look at the US only Microsoft is first with 59.7%, IBM 2<sup>nd</sup> with 32.3% and Novell again third with 2.5%. All other rated groupware products have less than 1.3% to .2% of any market.

### Security Issues

If there has been a defining reason for IBM and Novell users to continue with these products it could be security. Unfortunately, Microsoft Exchange and Outlook have been targeted in the last five years by breaches in security. These constant attacks in the way of computer viruses, worms and Trojan horses have caused major disruptions for those using Microsoft as their groupware choice.

An entire industry has been built around protecting our computer and data resources because of these attacks. We are now forced to include anti-virus and firewall protections in attempts to thwart off these daily security attacks.

However, when you look at both IBM and Novell users they have very few disruptions from these same security breaches. Not that there are not attacks against these groupware products, however they experience far less.

This has made those loyal to IBM and Novell wary of migrating to the Microsoft platform. This has also forced Microsoft to make constant security patches to their software to help fight off these security breaches. Microsoft is currently working on integrating anti-virus into their operating systems.

The complexity of anti-virus installations at all levels of our computing infrastructure also places a demand on resources. It takes a more robust computer to serve both applications and the protections for security breaches.

Microsoft is in the unfortunate position of being the largest target and this does provide IBM and Novell an edge.



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### Migration and Maintenance Costs

The cost for an organization to migrate from Novell to Microsoft, as would be the case for Leon County, is much more in the man-hours than in the cost of software.

Most of the computers in the County could already have the client, Outlook, installed on their computers. Currently, the installation process does not include Outlook but could be modified to do so. However the addressing system found in GroupWise is very different from Exchange's Active Directory.

This is not an easy conversion and would most likely take upwards to 18 months in planning, purchasing, testing and careful migration to ensure that each end user has no data loss and is as well trained in the environment as before.

Software costs are estimated to be:

MS Exchange Server Enterprise Edition per server	\$ 3,860
MS Exchange Server Client user licenses (1,700)	\$ 110,500

The technical services hours for planning and installation in 40 government units with 1,700 users could be easily 10,000 or as much as \$1,200,000 contract dollars. (3.5 dedicated staff for 18 months)

The hardware might well be adequate for the operating system but could also affect up to 40 additional servers at a cost of \$5,000 each or another \$200,000.

Added to the \$1.5 million in software, hardware and services will be the cost for conversion of data currently embedded in the GroupWise system such as contacts, tasks, documents and emails. Since this analysis was not focused on the design of a new groupware system, data was not collected to determine the extent of these costs.

The County would need to carefully analyze the need for this data and determine the best course for either conversion or not.

After the migration the costs for maintenance would be similar to that of Novell GroupWise. There would be ramp up time technically to have MIS where they could efficiently maintain this new environment. However, because Microsoft is a dominate application the technical resources are more abundant than those that can efficiently manage Novell.



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### Future Requirements for Compatibility

Leon County should take a responsible look at all future requirements for integration and compatibility when making a decision to either continue with Novell GroupWise or migrate to another groupware product.

This would include internal computer applications that are required by multiple governmental entities. Many computer applications today are being built on platforms that take into account a security system based on the addressing in the Exchange platform, Active Directory.

Should such an application be required in the next three years, planning would be critical at least 18 months prior.

Another issue might be the need to combine local governments under one groupware system, such as the School Board (currently Microsoft Exchange) or the City of Tallahassee (also, Microsoft Exchange). However, compatibility will not be required unless there are joint applications that must work seamlessly, such as contacts or calendars.

Email alone does not require this collaborative connection.

However, one critical requirement for compatibility would be in technology transfer between peer Counties. Our analysis reveals that many of the Counties similar in jurisdiction size are also utilizing Novell GroupWise with no plans to migrate to another groupware product. Included in this list are: Alachua, Volusia, Sarasota and Hillsborough.

A survey complete this year among the Florida Counties (59 responding) reveals that 21 counties are using Microsoft Exchange, 12 counties are using Novell GroupWise, 1 county is using IBM Domino and the other 24 are using a combination of outsourcing, open source and less known products.

Of these 56 counties, 14 are seriously considering moving to Microsoft Exchange. Of these 12 are currently using Linux Postfix and 2 are using GroupWise.

This survey confirms that many like counties have made the same decisions regarding groupware applications and are still committed to these decisions. It is interesting to note that among the Florida Counties Novell has 21% of the market share to Microsoft's 37.5%.



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Having other Counties with similar technical infrastructures allows Leon County the ability to cross pollinate staff and technical knowledge. As a block, the Florida Counties using Novell have more leverage to negotiate for price and support.

Novell is unique in that it has a workflow process that is completely integrated into the base product. Unlike Microsoft, that requires an additional product to be integrated. This workflow is one of the strongest differentiating features for Novell.

As workflow applications are developed, the County has an opportunity to provide technology transfer to other governmental units and visa versa. This is just one example of how compatibility could benefit Leon County.

#### Futures Technology Trends that could effect a decision

Open Source is a new catch phrase that has the technology industry watching closely to see the results. The definition of Open source is just that, software developed and published that performs functions and is "free" to the industry to use for custom development.

The goal is to provide software that is in the public domain with peer review and therefore more standard and less expense.

Open Source has been tried before with UNIX. Today the base for this is LINUX. UNIX was embraced by the scientific community. However, instead of one UNIX emerging, there were many. It was difficult to find UNIX developers and therefore it has only a small share to the market in key vertical industries such as engineering.

LINUX has a strong following, especially outside of the US. Today, LINUX is mainstreamed in many technical components such as security firewall and internet routing.

More and more vendors are embracing Open Source as a viable way to compete with Microsoft. No other vendor more than Novell has spent research time and dollars to find a market niche in LINUX for groupware.

It will be an important trend to watch, to see if Novell can capture new market share with their offerings. If they do, Novell could see resurgence in the life cycle of their product offerings.

Another critical technical trend is the collaborative development process of each of the three leading vendors, Microsoft, IBM and Novell.



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Historically, Novell owned the market until the mid 1990's. One major reason was the excellent development process they took to establish the groupware tools as one collaborative application. All the functions of email, calendaring, addressing, tasking, workflow, etc are all coded together to work as a single application.

IBM took a similar approach when developing Domino/Lotus Notes and now the Lotus Workspace.

### Decisions for Migration

Migrating to a new groupware product means planning and resources must be in place. For Leon County, it means resources and preliminary data management issues must be resolved to make the transition as efficient as possible.

Strategic Plan Analysis:

**Leon County will need to review their Five Year Strategic Plan for Information Systems.** Applications that will be developed using the .NET technologies and requiring Microsoft Active Directory as a security base will require Leon County to rethink the overall IT security and user roles definitions.

In a study done collecting data from Florida Counties regarding their current platforms for groupware, the overall driving factor in converting from one email system to Microsoft Exchange was the need to develop in .NET for browser based applications.

This said Leon County should not simply make the decision to migrate away from Novell to another such as Microsoft due to external pressures of market share or viability. Migration comes at a large cost in time and resources. This decision should be based on functionality. If the County requires applications now and in the future that are best developed in .NET this should be a deciding factor.

It should be noted that not all browser based computer applications are developed in .NET. Leon County has many browser based applications today that utilize other technologies and do not require Active Directory.

However, .NET applications that are based on the Active Directory structure of Microsoft provide an opportunity to manage end user security roles centrally for all applications in this family. This can reduce the time for IT to support security roles for the organization.



Needs Analysis:

**Before making a decision to migrate from GroupWise to another groupware product the County should conduct a complete Needs Analysis.** The Needs Analysis will identify all the required features and functions of a groupware product in the County. It should also factor in the Strategic Plans for applications development and any planned growth.

The Needs Analysis will compare the required functionality to all the viable groupware products to ensure the best product is chosen. This decision will effect the County for many years and therefore the County should use due diligence in ensure it is the best decision.

The Needs Analysis could take months of planning and analysis and should have clear goals and opportunities for success.

Records Management Policies:

**Records Management is an issue in the County today but will be considered a critical decision point with any change in the groupware application.** Currently, staff has no enforced policy or procedure used to manage data quality in the groupware system. Because of this, some staff can hold critical decision making emails in their In Boxes that should be properly archived or filed.

This becomes important during the migration because the most costly step will be to ensure all end users have all their data correctly loaded into the new system. Email is the most commonly use form of communication in most organizations today. In Leon County, end users have spent eight years developing contact lists, scheduling events and tasks and sending and receiving communications.

Many end users spend over 50% of their days in their email systems conducting business. Should a disruption or loss of data occur the current smooth operations of County business could be negatively impacted.

Therefore, the County should take immediate action to develop policies and procedures for proper use of emails. Gartner Group reports on the various forms of policies that can be put into place and should be considered in the policy development. A summary of this report is attached as an addendum.

Priorities:

**Leon County has limited resources that must be applied judiciously.** Therefore priority should be placed on how, what and when a decision about groupware migration takes place. If the Strategic Plan and Needs Analysis are both pointing to a migration path, project management will be the next step.



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To ensure adequate planning time and to ensure adequate funding, the County could be looking at a minimum lead time of 18 months and possibly 24 months to ensure budget priority.

If priority was placed on this project today it will be the end of 2008 before the migration would be complete.

#### Summary

Leon County is at a cross roads in this decision making process. They are heavily invested in the Novell GroupWise application. It currently functions very well and staff can effectively manage this technical environment for a relatively low cost of under \$42 per user per year.

The market viability of Novell is ensured for at least three more years according to the research. However, the dominate player is Microsoft Exchange, who are investing billions to see their products into the future.

Critical in this decision is the County's Strategic Plan. If the functionality and the future demands for application development are not considered, Leon County could be in a situation where the groupware application is incompatible and not functional.

But just as important, the Strategic Plan may well lead to the decision that Novell GroupWise does not hamper future development or growth. However, this must be studied.

Finally, the County must put priority on this issue today, over other pressing information systems issues, to ensure a smooth migration and contain the migration costs.

**Response to:**

**Leon County**

**Network Migration for Leon County Statement of Work**

**Submitted by:**



**August 4, 2005**



August 4, 2005

Pat Curtis  
Leon County Commissioners  
Tallahassee, FL

Dear Ms. Curtis:

On behalf of Idea Integration, we are pleased to present the following proposal to Leon County for Microsoft Directory and Messaging Enterprise Solution offerings.

This proposal will describe our approach to fulfilling your platform and communication needs, including the methods and processes by which Idea Integration will implement a solution, help you select the needed hardware, manage the project, track performance, interface with your management, and conduct knowledge transfer as well as short/long-term support.

Idea Integration is keenly aware of the importance of this initiative. We are pleased to present an approach that is sensitive to the issues described in your request. We appreciate your interest in our solutions and hope to have the opportunity to forge a lasting partnership between Idea and Leon County.

We look forward to a growing and mutually beneficial relationship. If you have any questions, please contact me at (904) 360-2431.

Sincerely,

**Tom Causseuax**

Tom Causseuax  
Sales Director  
Idea Integration



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## I. Executive Summary

Leon County (hereinafter referred to as the "County") is seeking to partner with vendors capable of providing outstanding enterprise solutions offerings on time and within budget.

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Specifically, the County is seeking a new architecture platform to replace the existing Novell Network and Groupwise system. Like any other government entities, the County has found it necessary to become more progressive in its communications, application development, and overall architecture, while still meeting the needs of a large county organization and populace. The County desires a partnership that will meet its short-term messaging and communication needs while laying the ground work for future implementation and support of the County's many applications..

Idea Integration, a **Microsoft Gold Certified Partner**, is uniquely qualified to exceed the County's expectations. With over 17 years' experience in the public sector, Idea understands the county's desire to progressively upgrade its systems while decreasing overall effort, cost, and cycle time. It is Idea's objective to help key clients like Leon County succeed in this mission. We have a proven track record of developing and implementing complex government solutions using top-notch employees that are knowledgeable in many different technical specialties. Specifically, Idea's solutions have addressed the following business topics:

- ❑ Access to information: Idea teams can create easy-to-find single points of access to government services including active directories, email, and other enterprise-wide communications portals
- ❑ Streamlining business transactions: We reduce the reporting burden on businesses and make it easier for them to work with government organizations
- ❑ Transaction protocols: Idea can help you take advantage of commercial electronic transaction protocols to maintain open standards while maintaining compliance with security and government infrastructure.
- ❑ Automating internal processes: Our experienced teams can create applications that automate internal processes and reduce internal costs.
- ❑ Seamless sharing of information: Idea provides faster, more convenient sharing of information across all levels of government.

Improving quality of service to clients is one of Idea's core objectives. Idea can be clearly distinguished from its competitors in the strength and wide range of services offered; our proactive and innovative custom solutions, high quality, value-oriented resources delivered, and competitive response times.

We serve some of the most prestigious clients in the world, and are confident that we can provide creative, first to market, enterprise solutions including application development, GIS

capabilities, wireless, networking, and telecommunications solutions that will meet or exceed your standards at significant savings.

In the following response, Idea will provide information supporting our capabilities in the County's directory and messaging needs that will allow the County to reach the following goals:

- ❑ A platform providing enhanced email and directory services accessible to anyone in the County.
- ❑ A platform that conforms to industry standards in it communications, application development, and overall architecture
- ❑ An architecture that can support future initiatives such as GIS, Public Safety, and Digital Permitting applications
- ❑ End-to-end implementation services, knowledge transfer and short/long-term support

## Company Overview

Idea Integration, a business unit of MPS Group (NYSE: MPS) delivers innovative technology solutions that enhance business including business applications, application outsourcing, creative media, enterprise integration, security and infrastructure, Web services and strategic staffing to Fortune 1000 and middle-market companies in the United States. Our clients look to us as a valued partner who can deliver comprehensive solutions, with quantifiable results, that exceed their expectations.

Serving industries ranging from healthcare and utilities to government, communications and financial services, Idea provides the broad vision and specific vertical expertise needed to help your organization compete and win—not just against competitors, but also against a chaotic, constantly changing economy.

Idea strategically combines front-office solutions (strategy consulting, user experience design, and application development) with back-end implementation (customer relationship management, business intelligence, enterprise application integration, enterprise solutions) for strong financial returns on large-scale, core IT, and business projects. As an experienced integrator, we synthesize disparate data and information into knowledge, and apply our creative vision to craft powerful solutions to our clients' business challenges.

## Solutions Overview

Idea Integration provides successful, innovative technology solutions for the business challenges our clients face. Our industry specialists and information technologists work closely with you, our client, to create optimum solutions specifically tailored to your company. Idea professionals provide total dedication to solutions effectiveness and client satisfaction. After all, we judge our success by our high number of repeat customers.

Idea's range of experience includes:

<b>Technical Communication &amp; Learning Solutions</b>	<b>Web Design &amp; User Experience</b>
Technical writing, technical Technical writing, instructional Application training Training certification Learning strategy design Learning program evaluation Communication strategy design Communication strategy evaluation	Creative design Multimedia development Content development Information architecture Usability Accessibility compliance Custom web site design Custom web-based training
<b>Business Applications</b>	<b>Infrastructure &amp; Security</b>
Business intelligence Microsoft IBM E-Agenda UCCNet Web services Application outsourcing	Messaging & collaboration Mobility solutions Desktop deployment & management Systems management Password automation Identity management Secure infrastructure Storage & server consolidation Technology assessment Enterprise security assessment Information security governance Managed security monitoring Annual security subscription Disaster recovery planning Physical security testing Security policy implementation/review Wireless security assessment
<b>Strategic Staffing</b>	<b>Enterprise Integration</b>
Staff augmentation Outsourced services Knowledge transfer Project management Direct placement	Application Integration SAP Oracle PeopleSoft

## II. Proposed Solution

### Leon County Solution Overview

Idea Integration has developed a cost effective solution that meets or exceeds all of the County's requirements. The solution provides the necessary fault tolerance, scalability, and integration to provide Directory, Messaging, and Systems Management services to THE COUNTY at a compelling cost, providing significant value..

### Solution Description

Idea Integration's solution encompasses a variety of technologies and applications to meet the requirements. In order to fully understand the proposed solution, the Solution Description is broken into the following areas:

- Core Active Directory Design and implementation
  - Windows 2003 Server installation and configuration
  - Active Directory design, installation and configuration
  - Domain controller placement and configuration
  - Active Directory integrated certificate authority installation and configuration
  - Best practice OU design and configuration
  - Migration of users to AD domain using Quest Migration Suite
  - Consultation on the setup and configuration of additional supporting network services
  - Configure Windows 2003 Server Terminal Services for remote Management
  - Active Directory deployment testing
  - As-built Active Directory documentation
- Core Exchange Design
  - Windows 2003 Server installation and Configuration
  - Exchange Architecture and Design
  - Storage Subsystem and Exchange specific SAN environment validation (if applicable)
  - Consultation on the setup and configuration of additional supporting network services
  - PDA/handheld/SmartPhone access
  - Web Based Rich Client Access
- Instant Messaging and Application Sharing (Optional)
  - Live Communication Server assessment and preparation
  - Base Windows 2003 Standard Server installation and configuration
  - Two LCS 2005 SP1 Standard Server installations and configurations (including configuration of access proxy)
  - Creation of single LCS pool
  - Secure remote access to LCS servers

- LCS client configuration and deployment (Windows Messenger 5.1)
- LCS 2005 SP1 deployment Testing
- As-built LCS deployment documentation
- Basic Operations and Management Solution (Optional)
  - Windows 2003 Server installation and configuration
  - Deployment of Microsoft Operations Manager, including Active Directory and Exchange monitoring Modules.
  - Deployment of Microsoft Systems Management Server 2003, including the Native agents (and their related functionality) and the Device Management Module
- Advanced Operations and Management Solution (Optional)
  - Windows 2003 Server installation and configuration
  - Deployment of Quest Software Exchange Management Suite or selected subset of tools
- Antivirus/AntiSpam/Content Filtering Solution
  - Deployment of Server Based Antivirus Solution on all Idea Integration deployed Servers
  - Deployment of Exchange Specific Mailbox Based Anti-Virus product on all Idea Integration Mailbox Servers
- Archival Solution (Optional)
  - Deployment of Zantaz or Quest Exchange Archival Solution (depending on business requirements) on dedicated hardware for automated, policy based archival of all mail.
- Backup and Recovery Integration
  - Deployment of Backup Agents as defined in solution description on all deployed Servers, as well as application specific agents as outlined in solution description.
- Sharepoint Collaborative Solution (Optional)
  - Base Windows 2003 Standard Server installation and configuration
  - Base Deployment of Sharepoint Portal Server 2003
  - Definition and deployment of Portal Taxonomy
  - Consultation on leveraging deployed solution to extend Sharepoint to existing business process

Idea Integration is keenly aware of THE COUNTY's desire to control costs and maximize the use of its existing internal staff wherever possible. At the request of the County, Idea Integration is proposing 4 unique, individual Core Solution options, based on a Single Forest, Single Domain distributed Directory Services architecture. These Core Solution options will allow THE COUNTY to evaluate the costs and benefits of various levels of migration, project management requirements, costs, and change within the organization, with the ability to choose the Core Solution option that best fits THE COUNTY's needs.

- The Complete Deployment Core Solution option leverages Idea Integration consultants to complete all migration work effort, including the repetitive and time consuming process of workstation and file server migration.
- The Assisted Deployment Core Solution will leverage THE COUNTY's staff to perform the bulk of the workstation and file server migration, leveraging the processes, methodologies, and guidance provided by the Idea Integration Consulting team. The

use of the internal staff for these repetitive, well defined, and time consuming migration processes significantly reduces the cost to THE COUNTY.

- The AD Only Core Solution option allows THE COUNTY to deploy AD as their primary Directory Services solution. This will allow THE COUNTY to fully leverage any Microsoft product that requires AD for its use such as Sharepoint, Exchange, or LCS without the full cost, complexity, and organizational change impact of a complete migration.
- The Exchange Only Core Solution option allows THE COUNTY to migrate its existing GroupWise users to Exchange 2003 as their primary messaging platform. This solution includes a minimum installation of AD with Novell's E-Dir remaining the authoritative Enterprise Directory Service. This allows THE COUNTY to fully leverage the collaborative aspects of Exchange and any related supporting/complementary technology such as Sharepoint or LCS without the complexity, cost, and organizational change impact of a complete migration.

In addition to the 4 Core Solution options, additional optional components are described that can assist THE COUNTY by providing management, security, and administration capabilities to the complete solution. These component options allow THE COUNTY to select only those options that provide value to them.

### ***Core AD Design***

Multiple Domain Controllers would be deployed into THE COUNTY's environment (specific number and locations will be determined as part of the Development phase). This distributed architecture will ensure resiliency if communication links between locations fail, as well as ensure these critical locations have authentication sources at all time. Each of these servers could be leveraged as File/Print Servers to reduce hardware requirements for THE COUNTY.

### ***Core Exchange Design***

Idea Integration is proposing a single organization, Exchange server deployment consisting of one or more centralized mailbox servers located at THE COUNTY's Primary Data Center. Each Exchange Server will provide email and calendaring services for THE COUNTY's personnel. The field offices mailboxes will be evenly distributed across the Exchange Mailbox servers. The mailbox assignments could be modified due to geographic locations and/or bandwidth limitations. The Exchange Mailbox Servers will be configured with multiple Storage Groups and Information stores to mitigate the risk of database corruption and minimize the backup restore windows required during a disaster recovery situation. Exchange 2003 will allow THE COUNTY to delegate daily administrative tasks to remote site sysadmins to offload the burden of daily Exchange tasks off core IT personnel without compromising the security of the Exchange infrastructure. Outlook 2003 coupled with Exchange 2003 will allow end users to leverage Exchange Cached Mode to reduce the amount of network traffic to and from the Exchange server as well as provide seamless offline capabilities to THE COUNTY end users. The Exchange 2003 deployment will consist of a Public Folder hierarchy to support commonly used resource mailboxes, as well as provide a shared replicated repository for electronic forms.

Idea Integration will leverage a Front End Server to provide secure Remote access to the Exchange Mailbox Servers (two Load Balanced servers will be utilized if HA Exchange option selected). This Front End Server will be located on an isolated segment of the COUNTY network provide access for both internal and external users. In addition to the front end server, an ISA 2004 Server (two Load Balanced servers will be utilized if HA Exchange option selected)

will be deployed in a single NIC configuration in the DMZ to perform application proxies and traffic inspection. The implementation of ISA 2004 as the Internet facing systems follows Microsoft best practices, greatly increasing security of the OWA environment through the following means:

- Providing an application level proxy between the external client and the internal OWA Front end server. This effectively terminates the web session at the proxy, preventing any packets from traversing the DMZ into the internal network
- Enabling SSL bridging, allowing for traffic to be decrypted at ISA 2004, inspected, then re-encrypted for transmission to the OWA front-end servers. By decrypting and inspecting the packets at the ISA server, ISA will drop illegal packets based on its deep knowledge of properly formatted OWA requests, attack vectors, and illegal commands.

The use of forms based authentication provides a more robust authentication mechanism. By utilizing Forms based authentication, additional security policies can be enforced at the browser, including forced log-off after a preset time and restriction of attachment downloads (uniquely settable policies for private machines vs. public kiosks).

### ***PDA/handheld/SmartPhone access***

Idea Integration will leverage the built in mobile access features of Exchange including Server Active Sync and OMA to provide native remote access. OMA enables real-time access for any web enabled phone to the Exchange message store in a low-bandwidth text-only format. Server Active Synch provides wireless synchronization of Mail, Contacts, Calendar, and Tasks. This allows users to access these items regardless of wireless service and with no waiting. Additionally, Idea Integration can provide alternative mobile messaging solution support (such as Blackberry and Palm Device support), although these items are not part of this SOW and will need to be priced separately.

### ***Anti-Virus/Anti-Spam/Anti-Spyware/Content Filtering***

Idea Integration's solutions leverage our relationship with industry leader Trend Micro and its product suites. THE COUNTY, however, has indicated its desire to leverage its existing investment in its McAfee site license, which Idea will implement as part of this proposal. As such, Idea Integration does not warrant or provide any guarantee of product effectiveness. Additionally, any problems relating to the installation of the product suite may result in additional charges or the requirement to enlist McAfee Professional services for problem resolution.

### ***HA (High Availability) Exchange Design: Localized (Optional)***

To provide for greater messaging high-availability, Idea Integration is proposing a n+1 node cluster option with one or more active cluster servers and one passive server. The failover server has the capacity to handle a single server failure without any degradation of service. This design, complemented by fault tolerant hardware, provides for several layers of risk mitigation. The server specification and proposed design also provides for fault tolerant data paths through multiple switches and GB NIC cards.

### ***HA (High Availability) Exchange Design: Distributed (Optional)***

To provide for an even greater messaging high-availability, Idea Integration can extend the n+1 node cluster into a geographically distributed environment, known as a stretch cluster. Utilizing NSI Software's "Geo Cluster" solution, Idea can move the cluster node to THE COUNTY's specified DR site at the County Jail facility.

### ***Instant Messaging and Application Sharing (Optional)***

To achieve integrated Instant Messaging and Application Sharing, Idea Integration proposes a new Live Communication Server 2005 deployment, and IM archiving services. For internal secured access one LCS 2005 Standard front-end server will be deployed to serve as LCS server and director roles. To facilitate secure anywhere-anytime to access the LCS environment from external sources without the requirement for VPN connectivity, one LCS access proxy will be deployed in THE COUNTY DMZ network. Idea Integration will also develop the strategy to deploy the MS Windows Messenger client to all compatible workstations. LCS will be configured to archive all IM transactions to an existing SQL database for tracking and internal auditing purposes. Idea will provide a custom developed GUI tool to query and generate rich reports on LCS IM archives. In addition to IM services, LCS will enable THE COUNTY to use integrated point-to-point video conferencing, shared applications, interactive electronic whiteboards, and point-to-point audio capabilities. All these functions coupled with Exchange 2003, and Office 2003 will provide THE COUNTY with a flexible cost effective real-time collaboration environment. Centralized, public IM connectivity to third party public IM service providers such as AOL AIM, MSN Messenger, and Yahoo!IM are not part of this SOW, but can be added if desired. While no additional hardware is expected to be required, per user subscription to the Gateway Services (\$13-\$15 per user per year) and additional deployment time would be required.

### ***Basic Backup and Recovery Integration***

Idea Integration will leverage THE COUNTY's existing backup and recovery system, providing deployment of appropriate agents for each server deployed by Idea as part of this solution. These servers include:

- All Idea Integration deployed Domain Controllers
- All Idea Integration deployed Exchange Servers, including Exchange specific agents
- All Idea Integration deployed MOM Servers (including any related Databases)

Idea Integration will leverage THE COUNTY's existing central backup server and tape unit. If this server and/or tape library is incompatible, undersized, or otherwise unsuitable as a backup device, Idea Integration can assist THE COUNTY in specifying an appropriate Servers and or tape library. The cost of this effort, hardware, and/or software is outside of the scope of this proposal.

### ***Basic Operations and Management Solution (Optional)***

Idea Integration will leverage Systems Management Server 2003 and Microsoft Operations Manager 2005 (with the associated Windows 2003, Active Directory and Exchange Management Packs). MOM and these Management packs allow for cost effective, application aware monitoring off all critical components of Windows, Active Directory, and Exchange 2003 Server. By Leveraging this solution, THE COUNTY will be able to have pre-emptive

notifications to issues that could lead to downtime, allowing it to take corrective action before the end user is impacted. Additionally, Microsoft Best Practice knowledge is built in to the Management packs allowing THE COUNTY to fine tune the environment to provide the best uptime and performance for the end users. Systems Management Server 2003 will provide a robust patch management, patch reporting, hardware/software inventory tool, and application deployment solution. The Mobile Solution module extends the management capabilities to include all Windows CE, PocketPC, and Smartphone devices. Optionally, MOM Workgroup Edition can be leveraged to reduce licensing costs. MOM 2005 Workgroup edition does not require SQL Server, is limited to 10 Monitored servers, and does not have the full reporting capabilities of MOM 2005 (full edition).

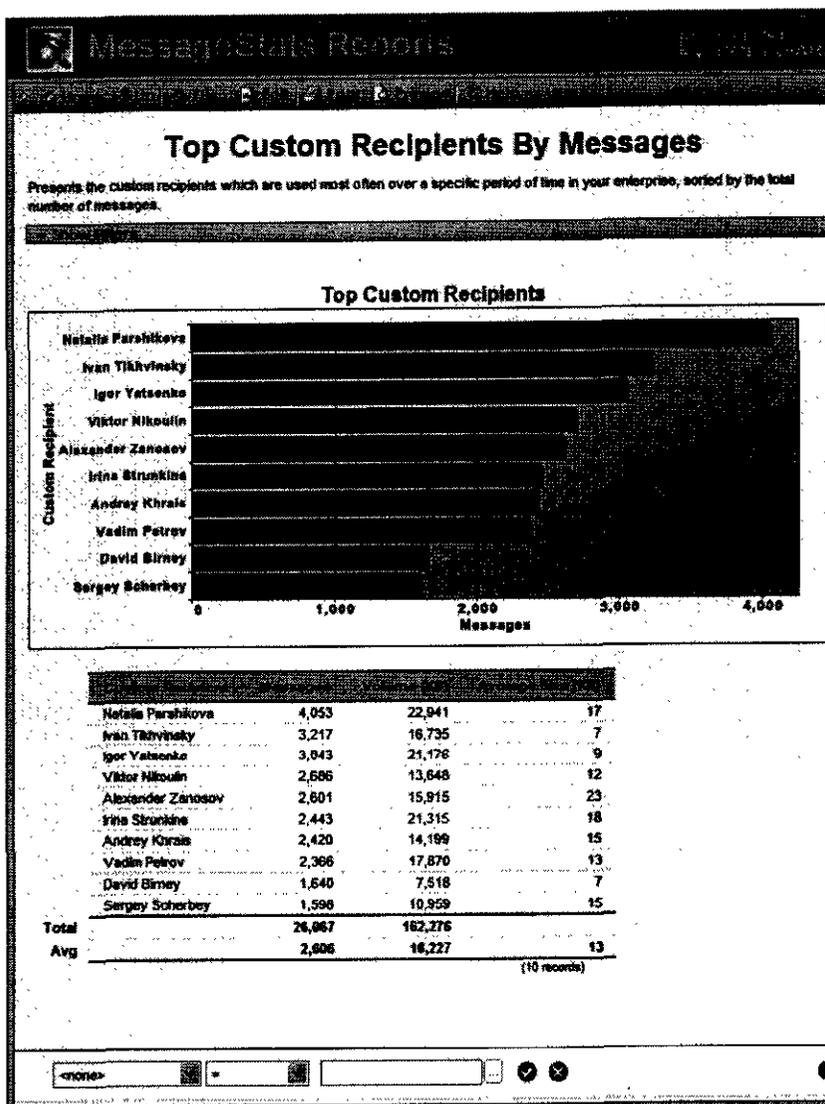
### ***Advanced Operations and Management Solution (Optional)***

Idea Integration will leverage the Microsoft Approved Quest Management Suite for Exchange solution in conjunction with Microsoft Operations Manager to provide deep insight into the system, and provide pro-active monitoring capabilities to prevent unplanned downtime. The Quest Management Suite for Exchange is comprised of several components including:

- **Quest Message Stats:** Provides Microsoft Exchange reporting and analysis to assist IT managers, Exchange administrators, and business users. MessageStats measures e-mail traffic, reports policy compliance, defends SLAs, ensures sufficient capacity, and assesses Exchange migration readiness. MessageStats offers high-level business-focused reports with graphics, metrics, interactivity, drilldown capabilities, and powerful custom reports.
- **Quest Archive Manager:** Consolidates historical data from mailboxes and personal folder (PST) files in to a cost-effective, comprehensive archive. Administrators achieve operational efficiency, while reducing costs and maintaining end user access. Organizations reduce risk by securing and centrally managing critical data.
- **Quest Directory Integrity Agent (DIA):** Automates administration of Exchange and Active Directory environments while ensuring consistency and availability of directory data, enforcing mailbox data management policies and improving security and manageability of Exchange public folders. The product eases clean up and secures directories, mailboxes and public folders with a minimum of time and effort. DIA maximizes IT resources by automating tasks associated with directory management.
- **Quest ActiveGroups:** Automates, secures and ensures the accuracy of distribution list and security group membership for Exchange and Active Directory, eliminating error-prone manual administration tasks. The membership criteria can be defined as a query of Active Directory, Exchange Directory or any external data source.
- **Quest SelectDL:** Relieves IT administrators from time-consuming tasks by delegating distribution list management to multiple list owners for more effective control over membership changes and creation.
- **Spotlight on Exchange:** Helps administrators detect problems in their Exchange environment, quickly diagnose exactly where and what the problems are, and resolve the problems from a single easy-to-use interface. Its unique Topology Viewer provides a high-level overview of the entire Exchange organization, while its patent-pending interface displays the real-time activity within individual Exchange servers. Spotlight's built-in alarm thresholds and extensive Expert Help complement your knowledge to help create an action plan for resolution.
- **Aelita Recovery Manager for Exchange:** Provides for Brick-level restore from regular

Exchange backups. Eliminates the need for brick-level backups and Exchange recovery servers. Permits message-level recovery from unmounted and inconsistent information stores. Enhances service levels across the enterprise, streamlines Exchange administration, aids in investigations, and facilitates compliance with regulations regarding record retention

The combined functionality of the individual components provides an extremely powerful insight and management of an exchange system of any size. Idea Integration will also leverage the built in knowledge base and monitoring, alerting, and notification capabilities of Microsoft Operations Manager along with the Active Directory and Exchange Management packs to provide proactive monitoring of key performance and health indicators of the complete Exchange Environment. Alternatively, Idea can select any combination of the individual components (as opposed to the entire suite) to reduce costs.



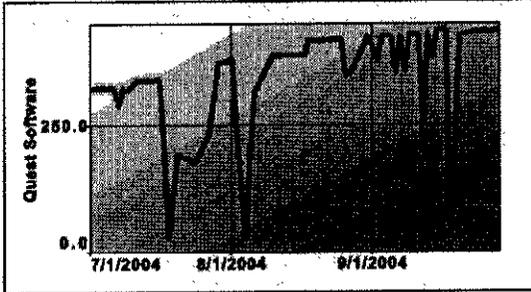


# Exchange Capacity Executive Summary

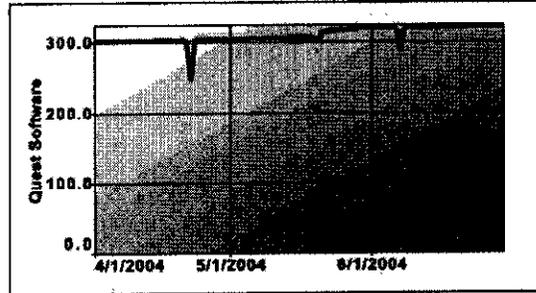
The Exchange Capacity Executive Summary report provides composite information about the components of an Exchange environment that impacts storage, including mailbox metrics and quota metrics. An overview of system capacity is critical to ensuring service level expectations are met.

## Exchange Storage

Over This Quarter



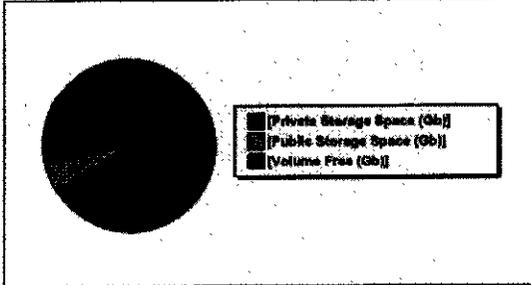
Over Last Quarter



The Average Growth Rate for Quest Software is 34.91%.  
 The Average Public Store Growth Rate for Quest Software is 19.06%.  
 The Average Private Store Growth Rate for Quest Software is 36.92%.

The Average Growth Rate for Quest Software is 6.96%.  
 The Average Public Store Growth Rate for Quest Software is 19.55%.  
 The Average Private Store Growth Rate for Quest Software is 5.55%.

## Storage Snapshot



The Space Used By All Stores for Quest Software is 438.73 GB.  
 The Disk Space Available on all Servers for Quest Software is 365.91 GB.

## Traffic Volume

Volume Distribution Summary Over This Quarter

Organization Volume Summary Over This Quarter

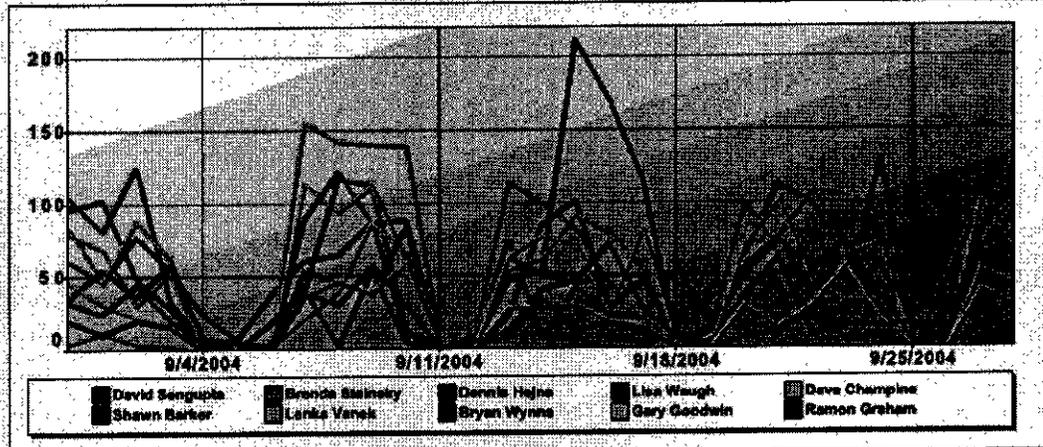
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# MessageStats Reports

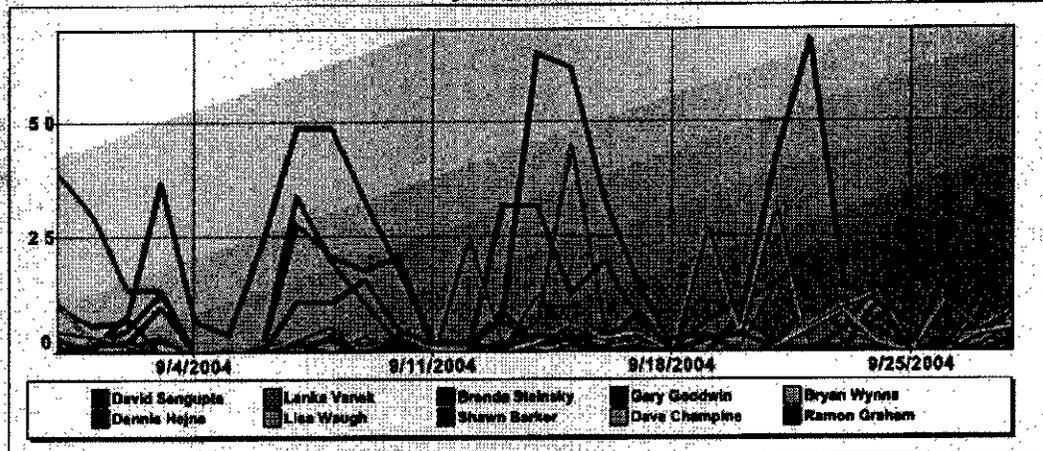
GUEST SOFTWARE

Home | Up | Help | Print | Refresh | Reload

### Mailbox Activity Top User Activity Internal Sent Daily Graph



### Mailbox Activity Top User Activity External Sent Daily Graph



### Mailbox Activity Top User Activity Internal Received Daily Graph

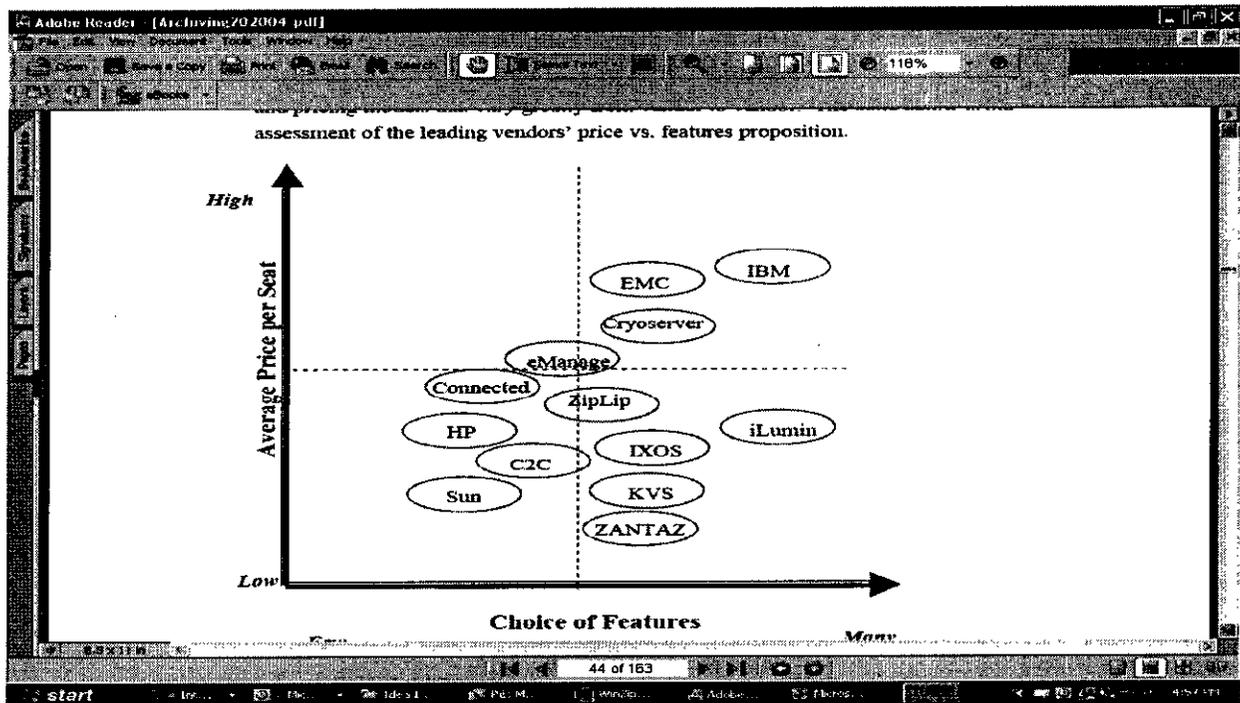


## Archival Solution (Optional)

Idea Integration's Archival and Compliance solutions are built around two product suites. For customers that require extensive, full power archival solutions, Idea leverages Zantaz's EAS Archiving Software. The EAS software provides THE COUNTY with a scalable archival solution that allows for

- ❑ PST File Archiving
- ❑ End User Retrieval of Archived Mail
- ❑ Working with Compliant media
- ❑ Scalability – Parent/Child Architecture for enhanced scalability
- ❑ Storage optimization through true Single Instance Store and 50% compression of messages
- ❑ Search and retrieval of across multiple archival sites
- ❑ Implementation of Hierarchical Storage Management (i.e. online vs. near line vs. offline storage)
- ❑ Integrated Disaster Recovery through simultaneous multiple site archival
- ❑ Data Portability (all data stored in EAS can be easily extracted for migration to a different platform, preventing THE COUNTY from being locked into the solution)

EAS is the Market share leader in Email archival and compliance space with 27% market share, more than double that of the nearest competitor. Gartner reports Zantaz EAS as the value leader in the Archival market with significant features and performance at the lowest cost per seat (represented as "ZANTAZ" in figure).



While Idea integration believes that Zantaz' EAS solution provides the most powerful, effective, feature rich solution, Idea Integration understands that THE COUNTY may have

reduced/simplified archival requirements. As such, Idea Integration will alternatively provide the Quest Software Archive Manager E-mail Management solution. This solution provides basic functionality to archive all messages effectively at a reduced cost.

### ***Sharepoint Collaborative Solution (Optional)***

Idea Integration has proven expertise with helping organizations develop collaborative environments. Idea has leveraged this experience to develop a integrated solutions leveraging Microsoft technologies such as Sharepoint to allow organizations to collaborate efficiently and effectively across multiple geographical areas. This Sharepoint Collaborative Solution creates a central portal for your organization to share documents, ideas, and activities. Features such as document management, document check-in/check-out, shared calendars, content expiration, and enterprise search create a full featured enterprise portal for your organization. Idea's proposed solution creates a base implementation and initial consulting to understand how Sharepoint can be utilized to enhance existing business process and share information.

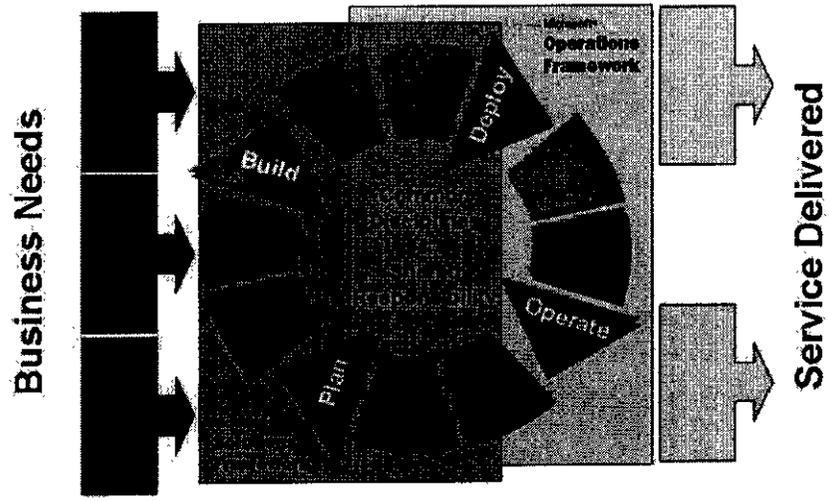
### ***Technical Solution Requirements***

#### **Migration/Upgrade**

As part of the project, Idea Integration will provide migration services utilizing Microsoft best practices and toolsets to ensure the optimum configuration of the Active Directory, Exchange, SMS, and MOM environment (if options selected). The Idea Integration design and implementation team will insure that all migration requirements are met. As with all solutions implemented by Idea Integration, the MSF (Microsoft Solution Framework) and MOF (Microsoft Operational Framework) will be utilized to develop the solution, and provide a seamless defined transition envisioned solution, to developed and tested migration plan, to operational production environment.



### IT Project Life Cycle



Idea Integration has a vast experience in Active Directory, Exchange, and Systems Management migration services. Extensive statistical reporting and management information will be available through the use of Idea's Exchange Monitoring Solution (if selected). This solution is a blend of Microsoft Operations Manager and Quest Software's Management suite for Exchange. The combined monitoring solution provides deep insight into the day-to-day operational statistics of the Exchange environment, long term trending analysis, and exceptional operational impact monitoring to prevent unscheduled production downtime. Idea will also leverage the IPF (Idea Project Framework) to provide THE COUNTY access to a secure central project portal. This project Portal will allow THE COUNTY to see scheduled tasks, project timelines, Issues (and affected tasks), Risks (and associated at risk tasks), individual task and overall project status. All project-related documents, contact lists, discussions, and other items are centrally located on this portal, providing a single self-serve location for all project related data.

#### Problem Management and Escalation

As previously stated, the Idea Integration Exchange Monitoring Solution includes Quest Software's Management Suite for Exchange (Optional) in conjunction with Microsoft Operations Manager (Optional). Microsoft Operations Manager (Optional) is utilized as a primary notification engine, giving deep monitoring of the Exchange environment's key problem indicator's and overall health metrics. By utilizing the built Microsoft Operations Manager's built-in knowledge of Exchange along with its proactive notification services will allow Idea to quickly resolve any issues that could negatively impact the Exchange environment. Initial end user problem reports will be handled via the existing THE COUNTY Call Center. Idea will work with THE COUNTY to create an acceptable workflow and ticketing method to transfer and assign the trouble call to the Idea Integration personnel on site.

#### Disaster Recovery

Idea Integration proposes that THE COUNTY leverages its existing backup solution to allow for

recovery of the AD, Exchange, General Use, and Systems Management servers. If THE COUNTY specifically requires that brick-level backups be run, Idea Integration can meet this requirement through the existing backup system's Exchange backup agent.

## **E-Mail Archiving and Compliance**

Idea Integration's Exchange archival solution is built around Zantaz EAS archival software. The EAS solution will consist of a single server and database backend located at the Primary COUNTY site (if option selected). EAS can easily service up to 20,000 mailboxes with one installation of the product and one archiving server. EAS's true single instance store solution along with its 50% compression ration drastically reduces the storage required to archive messages. EAS has the capability to archive all PST files into the archive. This is an advanced automated process that can eliminate all PST file Local and Shared Storage. This process can save hundreds of GB's in Local and Shared storage. EAS is also removing all emails archived off the Exchange environment. Often this will result in a 98% reduction in Exchange storage and assist in Backing up the email as well as dramatically improving the Exchange environment as a whole. This process can also assist in an Exchange migration as all the mail is in the archive and does not need to be moved. This usually improves the migration time by up to 80%. EAS offers a number of configurations to allow any compliance requirement to be met. The Idea Integration archiving solution based on EAS software uses 13 EAS archiving variables to create a policy that looks for a certain type of Email from a user. Based on the policy any length of retention period can be given to the mail and is unavailable for removal until the retention is expired. Other options include the use of Folder archiving and have the users move mail to a specific folder, where it is then archived and retention is applied based on the folder name. This is also done with users marking the mail that needs to be archived.

While we feel that Zantaz EAS is the best solution for the THE COUNTY Exchange Environment, Idea Integration is also prepared to Quest's Archive Manager into the Exchange deployment (if option selected). While this solution is not as robust as the proposed EAS solution, it can reduce the associated licensing cost significantly for simpler/reduced archiving requirements.

## **Hardware Requirements**

Idea Integration has a long partnership with many hardware/Software vendors such as Dell, IBM, and HP, and is experienced with all such vendors' hardware and management suites. Idea Integration understands that THE COUNTY would like to leverage its existing investment in hardware and will make the best use of existing equipment. If additional equipment is required, Idea can provide server hardware for THE COUNTY Upgrade Solution.

Our strong partnerships with Dell, IBM, and others can be leveraged to insure best price alternatives for these vendors. All hardware specifications are based on current solution and information provided to Idea Integration by THE COUNTY. All hardware specifications are subject to change as solution definition and additional requirements are collected as part of the Envisioning and planning phases, although no costs changes will occur without mutual agreement by both Idea Integration and THE COUNTY. If the solution is modified or any information is proven to be incorrect or incomplete, Idea Integration may require the specification of alternate approved hardware to meet the new requirements.

## Implementation requirements

Idea Integration insures that the Active Directory, Exchange, and Systems Management Solutions follow all Microsoft best practices, patterns, and methodologies. Idea Integration has extensive past performance and experience in Active Directory, Exchange, and Systems Management design and deployments. Idea Integration follows the IT deployment principles in Microsoft's Solution Framework (MSF) and Microsoft's Operations Framework (MOF) in all projects to insure project success.

## Operational Support Options

Idea Integration can offer an optional onsite or remote support model of 1 or more onsite or remote personnel for any required period of time after the initial project start date, renewable annually. This on-site or off-site support team can assist the Leon County IT staff in the proper management of the newly implemented technology solution. These persons will be required to work hours as needed by the client, not to exceed 50 hours in a given week without prior overtime approval from Idea Integration. The onsite support team would be well versed and understand aspects in Active Directory Management, Exchange Management, SMS Management, and MOM Management. The support personnel will initially consist of the deployment team, with ongoing management provided in the form of 1 or more support personnel. Additionally, Idea provides the following Value-add items as part of its support agreement:

- ❑ One for one matching of Microsoft provided training vouchers (Onsite or Offsite, as required)
- ❑ Access to additional Idea Integration consulting resources for technology solution research for THE COUNTY, not to exceed 10 hours per month unless otherwise agreed upon per instance.
- ❑ Support Escalation as required with Microsoft and its related product groups
- ❑ Access to Idea's Government Technology Center (GTC) for testing and demonstrations of new technologies (subject to availability and scheduling).
- ❑ Ongoing use of Idea Integration Lab Environment and system resources to host THE COUNTY's testing environment (subject to availability and scheduling).
- ❑ Optional reduced cost Annual Enterprise Security Assessment with separate deliverable Security findings document.
  - Internal Vulnerability review
  - Architectural Review
  - Policy Review
  - External Threat Assessment
  - Publicly Available information gathering
  - Findings Document and action items

Idea Integration has a proven Operational and Systems Management history, providing onsite program management and day-to-day operational services to such organizations as DISA (Defense Information Systems Agency), NAVSISA (Naval Supply Information Systems Agency), OPM (Office of Personnel and Management), and ATF (Dept of Alcohol, Tobacco,

and Firearms). Idea Integration leverages the MOF (Microsoft Operational Framework) in all of its data-center and Program Management projects. The MOF is based wholly on the ITIL (IT Infrastructure Library), a comprehensive approach to IT Services Management providing a cohesive set of best practice methodology drawn from both public and private sector. The MOF provides methodology and well-defined procedures and processes in the following 3 areas:

- The Team Model
  - Provides timely, efficient, and accurate customer service.
  - Understands the business priorities and enable IT to add business value.
  - Build strong, synergistic virtual teams.
  - Leverages IT automation and knowledge management tools.
  - Attracts, develop, and retain strong IT operations staff.
- The Process Model
  - Structured architecture. The MOF Process Model organizes all operational activities needed for mission-critical computing in a complex IT environment.
  - Rapid life cycle, iterative improvement. MOF supports an iterative IT life cycle that facilitates rapid assessment and change to respond to evolving business needs.
  - Review-driven management. The Process Model requires operations management reviews (OMRs) at key points in the life cycle. In these reviews, the team and key stakeholders evaluate performance for release-based activities as well as time-based operational activities.
  - Embedded risk management. Since the ultimate business cost of an IT service failure can be catastrophic, MOF proactively manages risk throughout operational processes.
- The Risk Management Discipline
  - Assess risks continuously. This means the team never stops searching for new risks, and it means that existing risks are periodically re-evaluated.
  - Integrate risk management into every role and every function. At a high level, this means that every IT role shares part of the responsibility for managing risk, and every IT process is designed with risk management in mind.
  - Treat risk identification positively. For risk management to succeed, team members must be willing to identify risk without fear of retribution or criticism.
  - Use risk-based scheduling. Maintaining an environment often means making changes in a sequence; and, where possible, the team should make the riskiest changes first to avoid wasting time and resources on changes that cannot be released.
  - Establish an acceptable level of formality. Success requires a process that the team understands and uses.

By leveraging the MOF and ITIL, Idea Integration's solution exceeds all requirements for documented strategies in the area of Operations. In addition to the On-site personnel, THE COUNTY will have access to the collective knowledge of the Idea Integration National Security and Infrastructure practice, allowing THE COUNTY to leverage Idea's strong ties with Microsoft, HP, Dell, RSA, LeftHand Networks, Digital Persona, and other best in class product vendors to help solve any issues that may arise during the support period.

Idea Integration has combined Quest's Management Suite for Exchange (optional) with Microsoft Operations Manager (Optional) to provide a best-class monitoring solution. This

solution provides Idea with a true insight into key metrics of the overall Exchange environment, as well as the ability to drill down into individual Exchange servers and information stores. Microsoft Operations Manager (Optional) allows Idea Integration to monitor key Active Directory and Exchange health indicators to insure that small issues are identified and resolved quickly, preventing them from growing into major problems that would cause a service disruption. Idea will make these metrics available to the County through standard web based reports on a central portal site and through ad hoc reports as required.

### III. Pricing Detail

- **Core Solution Options**
  - Core Solution 1
    - Assisted Deployment: **\$189,529** (*\$15k software*) \_\_\_\_\_
  - Core Solution 2
    - Complete Deployment: **\$441,560** \_\_\_\_\_
  - Core Solution 3
    - Active Directory Migration: **\$64,388** \_\_\_\_\_
  - Core Solution 4
    - Exchange Deployment with E-Dir Co-existence: **\$88,802** *← 504 hours of labor includes \$18,610 for Quest tools*
- **Component Solution Options**
  - Component Option 1a, HA Exchange (local): **\$9,870** \_\_\_\_\_
  - Component Option 1b, HA Exchange (stretch): **\$24,940** *includes software (10k)*
  - Component Option 2, IM Solution: **\$21,870** *→ needs MS licensing also*
  - Component Option 3, Basic Management Solution: **\$10,000** *→ requires server & agent licensing also*
  - Component Option 4, Advanced Operations Management: **\$46,275** \_\_\_\_\_
  - Component Option 5, Zantaz archive Solution: **\$68,419** \_\_\_\_\_
  - Component Option 6, Sharepoint Collaborative Solution: **\$15,000** \_\_\_\_\_

\*\*Please reference all selected options by name and option number when generating a P.O.

## Other Solution Componentets

### ***Biometric Simplified Sign-On (optional)***

Idea Integration proposes that THE COUNTY deploy a DigitalPersona biometric-based pilot solution to provide simplified sign on capabilities to reduce administrative overhead and enhance overall network security for 50 users. The DigitalPersona solution will be tightly integrated in the Core Active Directory deployment providing a single account and single biometric key for each user in THE COUNTY's organization. Using the DigitalPersona solution THE COUNTY can leverage the solutions ability to map a binary key based on an individuals fingerprint to an Active Directory user account to create a simplified sign on solution as well as easily provision and de-provision external accounts from Active Directory. By eliminating the dependency on passwords, THE COUNTY will realize greater operational efficiency and reduced password reset and account lockout issues. Idea will leverage THE COUNTY's resources to assist in the deployment of the end devices to reduce the overall deployment cost of the solution. Although the USB Based UrU devices are proposed, Idea Integration can leverage the integrated biometric and smartcard keyboard solution if desired, with appropriate adjustments to costs.



# City of Tampa Strategic Planning and Technology

## Netware and Office Products Study March 2005



## Executive Summary

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The City of Tampa ("the City") engaged KPMG LLP ("KPMG") to analyze its present network and desktop operations to determine if the City was making the most appropriate use of current technology. Presently, the City uses Novell's Netware Operating System and other related applications for its network operations, certain servers and office automation. In addition, the City has a significant quantity of Microsoft products such as Windows 2000 servers, SQL databases and various Microsoft-based desktop operating systems.

Over the last eight years, the City has implemented an increasing number of business applications and middleware, which operate on the Windows Server operating system. Many of these applications and middleware products are tightly integrated with, or can be easily integrated with, other Microsoft technologies. Integration of Microsoft based systems into the overall technical environment to date has been successfully achieved. However, the City wants to address the perception that the integration process is troublesome, unnecessary, and unwarranted.

KPMG has completed its analysis of the City's IT environment and found it to be functional and effective in providing the City with most of the services it needs. However, enhancements to the environment could be made through the adoption of a strategic vision and standardized platform across the enterprise. Without this, the City is faced with continued challenges in selecting, testing, deploying, maintaining and supporting multiple technologies. These challenges result in the City assuming additional risk including:

- Product selection risk is higher due to environmental complexities (e.g., multiple directory infrastructures);
- Testing of new systems and updates to existing systems is more difficult to manage in a non-standardized environment;
- Product deployment projects often require additional customization;
- Maintenance of existing products is more difficult due to difficulties in producing a test environment that mirrors production; and
- Additional support overhead is required in non-standardized environments (e.g., desktop operating system version and application version inconsistencies).

These risks can be mitigated by the assimilation of the information contained in this study, into the City's own strategic vision. Advantages associated with the adoption of a well defined strategic vision include:

- A single directory structure will increase the ease of deployment and limit the need for customized solutions;
- Maintaining and supporting the infrastructure will become more efficient and cost effective as the City begins to leverage all of the administrative tools available to an entity with a standardized environment
- Selection of new applications will become a more effective process due to the existence of a well documented standard operating environment; and
- Testing will become more streamlined due to a more standardized server and desktop environment.

The intent of our report is to help ensure that the City aligns its infrastructure with appropriate industry practices. It provides the City with the necessary qualitative and quantitative information to help management determine the appropriate next steps. The result of our analysis and inquiry shows a need by the City to move toward a standardized operating environment. Although the operating environment may include multiple platforms, adopting a strategic vision that incorporates one of the standardized alternatives discussed in this study will improve the City's overall IT operations and help address its future network and office product requirements.



## Background

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The objective of our study was to analyze the current and future use of the City's desktop operating systems, desktop productivity tools, and Netware based systems. The study included the following systems/services employed by the City:

- Netware Operating System
- eDirectory
- Border Manager
- ZenWorks
- Netware File and Print Services
- Groupwise/Virtual Office
- Spam Filtering/Virus Protection
- Desktop Operating Systems
- Standard Desktop Products (including: Word processing software, Spreadsheet Processing Software, Presentation Software, and Browser software)

The study was conducted for all departments ("areas") of the City and included all network connected workstations (mobile and desktop).



## Current IT Environment

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To gain an understanding of the current IT Environment, KPMG conducted interviews with various key department heads and employees. These interviews, along with information gathered (e.g., network diagrams, budgets, license and maintenance fees) provided the foundation for our understanding of the current IT environment. See Appendix 1 for an organization chart that illustrates the City personnel involved in this study.

### Baseline Analysis

The City of Tampa's Information Technology Department is faced with continuous challenges in designing, implementing, and deploying new technologies to support the City due to the current lack of standardization of directory environments. Past and current project initiatives incur additional cost and resource consumption due to the complexity of the current network configuration. Furthermore, currently deployed technologies are not fully utilized due to the lack of standardization and the lack of commitment to any single technological platform. As a result, custom solutions have been developed to compensate for the integration issues.

After analyzing various network diagrams and documentation, as well as discussing core network technologies and infrastructure with network administrators, KPMG found that the City's core network infrastructure is robust and well managed allowing for the smooth operation of the client server environment.

We documented and analyzed the City's network infrastructure and logical design. A depiction of this network is attached as Appendix 3. The diagram illustrates the complexities of running two Directory Services products, Novell's eDirectory and Microsoft's Active Directory. Novell's eDirectory services were the first to be used by the City and are the most defined and mature directory service at this time. Novell remains the primary directory service and is utilized for desktop management by Zenworks and email configurations by GroupWise. eDirectory Groups are used extensively for authorization, application deployment and internal application usage. eDirectory is also used by BorderManager for LDAP authentication services, Internet Access authentication services and proxy cache authentication services.

The City has configured these two directory infrastructures to synchronize changes and additions via DirXML. The synchronization of directories is functional in its application and use. As the secondary directory, Microsoft's Active Directory provides applications with the required authentication information and other user configuration data. However, as the City's needs have evolved applications have been acquired that predominantly designed for deployment in a Microsoft Active Directory environment. Accordingly, the City has evolved into a more complex multi-directory environment.

Analysis of the existing systems deployed on the City's network show a significant Microsoft presence. Over 70% of the servers currently managed by the City operate use the Microsoft operating system. The investment in Microsoft products is further evident on the desktop where all workstations use some version of Microsoft's operating system and Microsoft's office suite. See Appendix 2 for details. This significant investment in Microsoft technology is in line with industry and government practices and was taken into consideration during the engagement and should be considered by the City as they decide upon their overall strategy.



### **Initiatives**

As discussed in the City's FY 2005 Business Plan many objectives have been outlined for 2005 including:

- Refining the IT Governance Process
- Development of a Project Management Office ("PMO")
- Implementation of a Change Management Process
- Deployment of a Microsoft Project Web Server
- Deployment of a Time-Management System

The City is planning to use Microsoft Project Web Server to improve communication, coordination and project management while providing all staff with the ability to view a project's progress and to facilitate collaboration. This system is currently in place but will not be utilized until the deployment of the Time-Management tool.

In addition to the initiatives discussed in the City's business plan, desktop standardization is also an objective being considered. This initiative is being considered to lower the cost of support and to eliminate possible application conflicts.

### **Technology Costs**

We analyzed the Total Cost of Ownership ("TCO") of the current and alternative IT environments. Our TCO model considered both the direct and indirect costs associated with operating a particular solution. Direct costs include hardware and software; operations such as technical services, planning and process management; and finance and administration. Indirect costs include downtime and end-user operations such as training, peer support, casual and formal learning, and application development. In addition to the ongoing costs, the cost of migrating from the current solution to an alternative was considered and analyzed. These costs include relevant hardware, software, testing, system integration and consulting fees.

For the purposes of this study we made certain assumptions and considered specific limitations. These are described below:

#### *Direct Costs*

- Current server hardware employed by the City is assumed to be adequate for the alternatives within this report. However, some additional hardware will be needed for use during the migration from one platform to another. Accordingly, the costs associated with additional hardware for migration are included in Appendix 4.
- Solutions were compared by annual cost of ownership derived by applicable license and maintenance fees. For the purposes of this report, all annual costs will be based on a minimum of three years of functional use. Although the City can and most likely will utilize software beyond this three year minimum, industry often considers that software and hardware be budgeted for replacement every three years.
- Based on 2004 actual and 2005 budget amounts, between \$35,000 and \$50,000 may be utilized for consulting services independent of the direction (alternative) adopted by the City. Therefore, consulting fees that are not directly associated with migration to a new platform will be excluded from our cost analysis.



*Indirect Costs*

- Training costs are the most significant indirect cost of maintaining the current IT infrastructure. We used the existing training budget of \$42,500 to represent current training expenses.

*Annual Cost*

The annual maintenance commitment for the Novell suite of products by user and in total is shown in the table below. Note that these fees are for licenses purchased for 2005 and do not necessarily reflect historical costs.

Annual Maintenance and License Fees:

<b>Product</b>	<b># of Users</b>	<b>License Fee (Initial Cost)</b>	<b>Maintenance Fee (Annual)</b>	<b>Extended Annual Maintenance Fee</b>
Netware	3403	\$93	\$23.6	\$80,311
ZenWorks	2000	77	19.5	38,940
Border Manager	2118	24	5.9	12,496
Groupwise	2459	77	19.5	<u>47,877</u>
				<b>\$179,624</b>

Current variable annual cost of ownership for Novell products and related services is estimated to be **\$179,624** for continued operation of operating systems and related applications included in this study.



## Alternatives

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In addition to performing interviews and gathering information related to the City's current IT environment, we have also researched and considered the alternatives. Based on our analysis, we found three options to consider:

- Multi-Directory
- Open-Source
- Microsoft

### Multi-Directory

The City of Tampa's current mode of operation is mixed. In a mixed environment it is acceptable to deploy any number of technologies to solve a particular problem. Along with Novell and Microsoft technologies, the City employs various instances of UNIX, Linux, zOS and AS400 for specific tasks. In-house applications are in use for the City's Message Center, and proprietary applications are in use for human resource functions and other areas of specialty. This should provide a flexible environment for deploying a "best-of-breed" solution as required by the City's technology team.

However, any organization that adopts many new technologies is inevitably going to be faced with the same issues the City faces today. Lack of standardization can lead to a complex environment. As a result, applications may become more difficult to integrate into the ever expanding networked environment. Furthermore, costs associated with help desk, end user support and training may increase due to the lack of transferability of knowledge from one platform to another and the difficulty in troubleshooting performance issues.

Costs associated with the Multi-Directory solution would be directly in line with the current IT budget. Growth from software licenses, hardware, support, and consulting fees would continue along current trends. However, challenges would continue to arise during the selection, deployment, management and support of new technologies. In addition, complexity will continue to increase as new technologies are brought into the environment and resource needs may continue to grow as additional application servers and users are deployed.

### Open Source Solution

During our analysis, we found that open source software has been gaining popularity in the public and private sectors over the last few years. Certain government segments have embraced the possibility of adopting open source solutions as evidenced by the significant policy restatements by such institutions as the Office of Management and Budget, the Department of Defense, and the State of Massachusetts. These policies are specific to the acknowledgement of the viability of open source projects for use in government enterprise and the necessity for open standards as a requirement for product acquisition.

The majority of government and private sector deployments are contained to utility use of open source operating systems and applications to solve a particular problem. The prevalence of the Apache web server, with 70% market share, is a perfect example of a utility open source application. This web server application is very stable and secure as compared to its proprietary competition. However, the full scale adoption of open source technologies to provide a complete enterprise solution in government is very rare. Although a few governments have completed this transition, it is unclear whether this strategy provides sufficient relief from the City's existing issues to warrant execution. In particular, concerns exist about the



difficulty in integrating existing applications with an open source solution. Further analysis of existing applications would be necessary to determine their interoperability with an open source solution. Particularly those applications that are currently integrated with the Microsoft Active Directory environment are a concern. It is possible that the City would end up facing the same challenges it does today after migrating from the Novell Netware environment to an open solution.

Although there are certain challenges surrounding the possibility of a large scale adoption of open solutions, there are ongoing open source projects that could be considered for the replacement of Novell applications in use by the City today. Many of these projects are supported by Novell and Red Hat themselves. Novell's Netware operating system could be replaced by any number of Linux distributions providing openLDAP for directory services. Squid Web Proxy along with any iptables compatible firewall application such as Shorewall could provide the functionality of BoarderManager. Desktop management could be replaced by publishing X windows sessions similar to Citrix or Terminal Server (this is the method described in the below case study) in which case the City would not need a desktop management solution to replace the existing Zenworks application. File and print services could be replaced by Samba and Groupwise could be replaced by Open-Xchange and sendmail. Virus protection could remain a Norton solution and spam protection could utilize SpamAssassin. Desktops could remain Windows based or migrate to a Linux distribution such as SUSE Linux or Red Hat desktop. The Microsoft office suite could be replaced by the OpenOffice project.

#### *Linux License Overview*

Most open source applications and operating systems are released under GNU General Public License ("GPL"). The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software and to make sure the software is free for its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. Most of the projects referred to in this document are released under some form of the GPL.

Pragmatic use of funds would allow for a "pay as you go" philosophy for support with an open source solution. However, vendors are making end roads into both the server and desktop market including Novell with SUSE Linux and Red Hat with its Red Hat Enterprise solutions. In both cases license fees are for the support of freely available operating systems and software applications released under the GPL. Red Hat Enterprise pricing will be used for the purposes of this cost analysis. SUSE pricing would be comparable in cost to Red Hat from a network operating system perspective. In addition, if the City chose to continue with a Novell centric application solution for network services, application pricing would be consistent with current Novell costs. The kernel would change from Netware to Linux, but the network services applications would remain. Therefore, the City would be obligated to continue existing maintenance payments.

Under the terms of the Red Hat Enterprise Linux usage agreement, a subscription is required for every system on which Red Hat Enterprise Linux is installed. Subscriptions are fully inclusive, and include maintenance and updates (via Red Hat Network), version upgrades, and unlimited support incidents. Several price points are available based on the specific Red Hat Enterprise Linux product and the level of support required (12 x 5 support, 24 x 7 support, etc). Each version is supported for 7 years and subscription prices for subsequent years are the same as year 1. For Intel based systems, prices range from \$179 for Basic support on Red Hat Enterprise Linux WS to \$2,499 for Premium Support on Red Hat Enterprise Linux AS. Also, further volume discounts may be available.



*Open Source Estimated Pricing*

Based on a 1:1 migration from Novell to Red Hat Enterprise Linux support agreement, the fees would be as shown in the table below. The fees below are representative of the annual payment necessary to remain in good standing with Red Hat for the systems support required to migrate directly from the City's network to a current version Red Hat Enterprise. In this method, no license fees are assessed, but the City is purchasing a support plan for its systems. Outside of the Red Hat Enterprise support agreement, which covers the Red Hat Enterprise Linux operating system, the City would be deploying additional open source applications to replace existing Novel Netware solutions; however, these applications are released under the GPL and any support would be negotiated between the City and the entity releasing the application or some other knowledgeable Linux integrator. The point of open source technology is to give the users of the product the freedom to use it as they like without having to rely on propriety support for applications; hence, the release of the source code.

<b>Product</b>	<b>Units</b>	<b>License Fee w/ SA</b>	<b>Extended License Fee</b>
Red Hat Enterprise Linux AS	30	\$2,499	\$74,970
			<b>\$74,970</b>

*Training*

The City has a pool of talented administrators for both Netware and Windows platforms; however, the Linux and open source skill set is not prevalent. Therefore training fees will be substantially more for in-house administrative staff. All network administration and support personnel would be required to attend entry level training plus additional training in various specialty areas.

<b>Vendor</b>	<b>Course Title</b>	<b>Cost</b>	<b># of Attendees</b>	<b>Total</b>
Red Hat	RH035 Red Hat Linux Essentials For Windows (R) Professionals	\$2,298	30	\$68,940
Red Hat	RH133 Red Hat Linux System Administration	2,298	15	34,470
Red Hat	RH253 Red Hat Linux Networking And Security Administration	2,018	5	10,090
Red Hat	RH401 Red Hat Enterprise Deployment And Systems Management	2,898	5	14,490
Red Hat	RH423 Red Hat Enterprise Directory Services And Authentication	2,598	5	12,990
Red Hat	RH436 Red Hat Enterprise Storage Management	3,980	2	7,960
Red Hat	RH442 Red Hat Enterprise System Monitoring And Performance Tuning	2,898	2	5,796
				<b>\$154,736</b>

Additionally, end user training will also be necessary to ensure a smooth transition from the Netware environment. Accordingly, we estimate the City will expend up to \$150,000 on documentation and in-house instruction. This training would predominantly cover the changes in authentication procedures and e-mail client usage. Included in this estimate are the costs associated with documenting these changes and



creating a one day training curriculum as well as the cost of setting up the lab with a simulated City network environment. Fees for leasing lab space for 20 days are also included at an estimated \$650 a day. The City would be required to supply instructors.

#### *Case Study*

Although wide scale open source deployments are rare in both government and private sectors, the City of Tampa has the unique privilege of being in proximity to a successful deployment at the City of Largo. The City of Largo has been utilizing Linux and open source applications to provide enterprise solutions for over ten years and has published a white paper on their experience, the full text of which is available by request from Mike Pearlman or Dave Richards at the City of Largo.

Some background information is required to understand the current use of open source technologies at the City of Largo. The City of Largo has taken evolutionary steps towards where it is today by building upon past successes and learning from areas that needed improvement. It was clear even in 1993 that the PC client/server environment was very costly and support intensive. In-house expertise existed in using UNIX as the desktop presentation layer so it was deployed on roughly 20 thin clients, with the remaining users still running character based VT220 terminals. Each year, additional thin clients were budgeted for, and after 5 years the entire City was fully migrated. A graphical desktop from SCO called IXI was used from 1993 until 1999 and KDE was used from 1999 until early 2004. The GNOME desktop was used starting in 2004.

#### Population:

- 800 unique users
- 450 wired thin client devices
- 6 wireless thin client devices
- 300 concurrent users
- 75 printers
- 3 Digital Sender Scanners
- 20 Servers

#### Human Resources:

- 1 Manager
- 3 Systems Administrators
- 2 Programmer/Analysts
- 3 Help Desk Specialists
- 1 PC Specialist
- 1 Support Manager

The City of Largo fully utilizes the thin client methodology for its distribution of desktops and applications and credits this technique over all other factors as the key to cost savings. The lack of "desktop support" is the key to keeping IT costs to a minimum. The properties of a thin client are not new. They represent the best of both worlds; the stable environment of a "dumb terminal", with the graphical interface of a PC. A common misunderstanding exists about what types of software can run on thin clients. A thin client provides a very simple device from which UNIX character, X windows GUI, Microsoft Windows and Mainframe applications can run. It's designed to connect, and give you the presentation and allow you to alter the presentation. Because of this, the duty cycle of a thin client can reach 10+ years and therefore is far less prone to technology churn. While new thin clients always come to the market with new features, a



thin client from years past run as well now as they did when they were new *even with brand new software applications running on them*. One normally does not have to upgrade hardware to compensate for software changes. A baseline device that supports 1024x768 and 16bit color will meet the needs of most office workers. There are thin clients available with higher resolution and greater color depth for power users. It is important to obtain thin clients that support X Windows, because this offers the only license free transport for software. Thin clients that only support RDP or ICA will work, but will require licenses on the servers to allow them to connect. The thin clients should also support XDMCP connections, so that they can connect to the servers easily using the standard designs built into GNOME and KDE.

Desktop software such as web browsers, word processing applications, spreadsheet applications, and e-mail clients are all provided from the pool of open source applications being supported by a multitude of commercial companies and individual contributors. OpenOffice provides a word processor, spreadsheet, and presentation application. Ximian's Evolution provides an "Outlook like" replacement and Firefox, from the Mozilla foundation, provides the Largo end users with a very competent web browser. In addition to these open source solutions, the City of Largo has successfully deployed multiple proprietary applications in this environment including Microsoft Project.

#### **Microsoft Solution**

The Microsoft solution may be the most obvious answer to the challenges currently facing the City's information technology department. Considering the existing investment in the human resource capital necessary to administer, the software and hardware necessary to deploy, and the training and education necessary to utilize the Microsoft product family, the City is well positioned to embrace a more homogeneous Microsoft environment. Once agreed upon, the City has the opportunity to begin leveraging existing technology to produce a much more efficient and productive computing environment for its information technology staff and the end users they support. Creating this environment will alleviate many of the issues surrounding selection, testing, deployment, maintenance, and support of existing and new technologies.

The selection of new applications will become a more effective process due to the existence of a well documented standard operating environment. Testing will become more streamlined due to a more standardized server and desktop environment. The challenges of deployment will never go away, but a network containing a single directory structure will increase the ease of deployment and limit the need for custom solutions. The process of maintaining and supporting the infrastructure will become more efficient and cost effective as the City begins to leverage all of the administrative tools available to an entity with a standardized environment.

Microsoft provides multiple options for acquiring their products. We have included two of the various pricing alternatives for acquiring Microsoft licenses to help the City gain an overall understanding of some of the nuances embedded in acquiring and maintaining license compliance with an enterprise wide adaptation of Microsoft products.

#### *Microsoft License Overview*

Microsoft provides a multitude of methods for acquiring licensing to their products. Everything from OEM to an Enterprise Agreement is an acceptable method for acquisition. For an organization the size of the City, there are some advantages to using one of the more manageable methods for acquisition. It is important to manage your licenses and have a continued understanding of what products you are licensed for under your terms and conditions to ensure legal compliance. For the purposes of comparative analysis, we have provided detailed explanations and pricing information for both the Enterprise Agreement with Software Assurance and the Open Volume License method without the optional Software Assurance.



However, there are many other options that the City could consider and the City may be able to negotiate better pricing than our analysis indicates.

*Enterprise Agreement* - Microsoft Enterprise Agreement is a software volume licensing program designed for corporate customers with 250 or more desktops, such as the City. As an Enterprise Agreement customer, the City would be able to license Microsoft software to standardize on specific Microsoft enterprise products (Microsoft Office Professional, Microsoft Windows Professional Desktop Operating System upgrade, and Core Client Access License) at discounted prices for three year terms. Bundling software licenses and client access license (CAL) can help the City simplify its licensing. As an Enterprise Agreement customer, the City would pay an upfront fee for all Microsoft products in production on the network at this time. This includes any products currently deployed utilizing OEM, Open Volume, or off the shelf license. This is viewed by many as the major downfall to the Enterprise Agreement. However, this upfront license fee is significantly less than the license fee associated with the Open Volume product. In addition to the upfront license fee, the City would pay for ongoing Software Assurance for the second and third years of the agreement. Any additional licenses added to the Enterprise Agreement are paid in full during the annual "true up" period in which the City accounts for any new deployments of Microsoft products and adds them to the Enterprise Agreement.

*Open Volume License* - Volume licensing is a method of purchasing licenses in quantities as needed at discounted rates. Microsoft Volume Licensing offers companies of all sizes the access and ability to manage multiple software licenses for as few as five desktops and as many as several thousand. This is the solution most similar to purchasing the software "off the shelf". However, governments receive substantial savings by purchasing Microsoft products from an authorized reseller. As an Open Volume licensed customer, the City would have the option of purchasing and paying for Software Assurance annually for all existing Microsoft products. This would provide the City with all of the benefits associated with the Software Assurance program. Additionally, the City would be responsible for purchasing any additional License and Software Assurance products at the time of deployment. This method proves to be much more difficult to manage as you have annual payments for products throughout the year.

*Software Assurance* - Software Assurance is an offering available with Microsoft Enterprise License and as an option to Volume Licensing programs. Software Assurance provides the City with the ability to upgrade to the latest release of any product for which you are licensed. Additional support benefits provided to customers with Software Assurance include: business-hour problem resolution support for covered server products, access to Managed Newsgroups and Online Concierge Chat, and Microsoft's self-paced training courses. Additional support benefits are available through the Microsoft Services Premier/Essential Support program.

*Additional Volume License Options* - When purchasing a Microsoft server, a license is required for each copy of the server software installed. In addition, a client access license ("CAL") is required, for the same server version, for each user or device (or combination of both) that accesses or uses the server software. The only time you do not need a CAL is if:

- access is through the Internet and is un-authenticated
- access is to a server running Windows Server 2003 Web Edition
- access or use is by an external user and External Connector licenses are acquired instead of CALs

Authenticated access is defined as an exchange of user or application credentials between the server software and a user or device. Downgrade rights are available with CALs, so a client license for Windows Server 2003 can be used with Windows Server 2000. However, a client license for Windows Server 2000 cannot be used with Windows Server 2003. With the release of the Windows 2003 Servers, there are now two types of CALs available, a device-based or a user-based CAL. This means you can acquire a Windows CAL for every device (used by any user) accessing your servers, or you can acquire a Windows CAL for



every named user accessing your servers (from any device). Please note that the CALs proposed in this study are device CALs, as the number of devices (2,000 devices) is significantly less than the anticipated users (3,403 users).

After a license type is selected, Device CAL or User CAL, the software can be used in two different modes: Per User/Per Device or Per Server mode. Both modes are available for either type of license.

*Per User/Per Device* - A separate CAL is required for each user or device that accesses or uses the server software on any of the City's servers. The number of CALs required equals the maximum number of users or devices that may access the server software. If you choose this licensing mode, your choice is permanent. The City could, however, reassign a CAL from one device to another device or from one user to another user, provided the reassignment is made either (a) permanently away from the one device or user or (b) temporarily to accommodate the use of the Windows CAL either by a loaner device, while a permanent device is out of service, or by a temporary worker, while a regular employee is absent. This mode tends to be the most economical designation for CALs in distributed computing environments where multiple servers within an organization provide services across most devices or users. For the purpose of this study the Per User/Per Device option was used.

*Per Server Mode* - A separate CAL (of either type) is required for each user or device that accesses or uses the server software on any of your servers. The number of Windows CALs required equals the maximum number of users or devices that may simultaneously access or use the server software installed on a particular server. The CALs you acquire are designated for use exclusively with a particular server. If the City chooses this licensing mode, you have a one-time right to switch to the other licensing mode - Per User/Per Device mode. The City's CALs would then be used in Per User/Per Device mode instead. This mode tends to be the most economical designation for CALs in computing environments where a small number of servers have limited access requirements.

*Microsoft License Estimated Pricing*

Based on a 1:1 migration from Novell to Microsoft Enterprise License Agreement with Software Assurance, the fees would be as shown in the table below. The fees below are representative of both the one time upfront license fee and the annual payment necessary to remain in good standing and legal compliance for both existing and additional licenses necessary to migrate the City's network to current version Microsoft products. In this method, amortization is calculated over a three year period. Furthermore, in the place of individual CALs for various server products it would be in the best interest of the City to make use of the Core CAL available to Enterprise Agreement customers. The Core CAL is a bundle of CALs and provides each device with the right to authenticate multiple products. The current version consists of Client Access Licenses (CALs) for Windows Server, SharePoint Portal Server, Microsoft Exchange Server and Systems Management Server.

Product	Units	License Fee w/ SA	Extended License Fee
Microsoft Server 2003	119	\$1,028	\$122,332
Microsoft Server 2003 Ent.	6	3,340	20,040
Microsoft Exchange	2	5,723	11,446
Microsoft SMS	2	819	1,638
ISA Server Enterprise	4	8,157	32,628
CORE CAL	2,000	240	480,000



FTEs per 2,000 to 5,000 users. However, this metric should be used only as a baseline. It does not scale proportionately for large enterprises where economies of scale are leveraged. Separately, the infrastructure and business conditions that influence the operational management of an IT environment differ greatly, resulting in differences in FTE allocation.

Based on our discussions with the City's IT management, current staffing is adequate for the proposed environment. However, additional resources will be needed during migration. One additional FTE will help in the facilitation of the migration and is still within industry standards for the number of support staff needed to manage the day-to-day operations.

Based on current wage costs as provided by IT management, an additional FTE including benefits would cost approximately \$91,000.

#### **Server Hardware Costs**

Current hardware deployed by the City is adequate to operate the proposed recommendations. However, during migration, multiple servers will be needed to facilitate the process. Based on our experience with clients of similar size and complexity we recommend at least four servers be added for this purpose and have estimated the cost to be \$30,000. A detailed requirement is attached as Appendix 4.

#### **Consulting Fees**

In addition to the fees associated with licenses, hardware, and full time human resource assets, some consulting fees should be expected during the migration. Depending on the City's involvement, these fees will be wide ranging. For a completely outsourced solution, one in which the City is only involved from a project management standpoint, we estimate consulting fees to range from \$300,000 to \$600,000 for a 3 to 6 month deployment. This would provide the City with four experienced network consultants at an estimated rate of \$150. Variables in this pricing include rate, timeline, tolerance to downtime and strategic vision (open source vs. Microsoft).

#### **Server Summary**

The following tables represent the estimated prices associated with the Novell, Open Source and Microsoft alternatives for server migration. Regardless of the eventual strategy chosen by the City, additional analysis is required to eliminate variables in the total cost of ownership equation.

In an effort to present the City with the most comprehensive view of the potential solutions, we have provided a detailed price analysis of additional software, hardware, consulting, and training costs associated with adopting a standard operating environment and presented a comparative analysis between the total cost of ownership of the existing environment and the potential solutions.

Pricing between Novell and most open source solutions differ fundamentally from the price models available in a Microsoft centric environment. Novell and most open source solutions require a yearly maintenance fee where as Microsoft provides multiple options for acquiring their products. For the purposes of comparative analysis, we have provided costing ranges to incorporate the different pricing levels and options available to the City. We have included two of the various pricing alternatives for acquiring Microsoft licenses to help the City gain an overall understanding of some of the nuances embedded in acquiring and maintaining license compliance with an enterprise wide adaptation of Microsoft products.



**\$668,084**

\*Enterprise pricing provided by GovConnection.

At an annual amortized payment of **\$222,694**, the Enterprise Agreement is marginally more expensive than the existing Novell Netware solution. However the City will realize actual savings from the non-qualitative enhancements this standardized solution will bring. Additional license fees would apply to Microsoft license products already in use at the City that were not included as replacement products for the existing Netware solution including Microsoft SQL server, Microsoft SQL server CALs, Microsoft Project Server, and Microsoft Project Server CALs.

Based on a 1:1 migration from Novell to Microsoft Open Volume License utilizing the Per Device method, the license fees for additional licenses required to create an equivalent Microsoft environment are estimated in the table below. This fee represents the one time upfront payout necessary to acquire all of the licensed products necessary to migrate the City's network to the current Microsoft products and will be amortized over a three year period.

Product	Units	License Fee	Estimated Maintenance Fee*	Extended License Fee
Microsoft Server 2003	30	674	75,000	95,220
Microsoft Server 2003 CALs	2,000	28		56,000
Microsoft SMS	2	553	22,500	23,606
Microsoft SMS CALs	2,000	40		80,000
Microsoft Exchange	2	3,861	45,000	52,722
Microsoft Exchange CALs	2,000	65		130,000
ISA Server Enterprise	2	5,502	<u>7,500</u>	<u>18,504</u>
			<b>\$150,000</b>	<b>\$456,052</b>

\* Base on a "pay as you go" approach, this amount is an estimate of the amount of consulting fees to be incurred over a three year period. This solution is presented in lieu of the more formal Microsoft's Software Assurance option.

Although this may be the least expensive method for acquiring the necessary licensing at **\$152,017** annually amortized over three years, it is also more difficult to manage. Without the advantages of Software Assurance, the City is responsible for their own support. Options do exist however, arrangements can be made to utilize the Premier/Essential Support Program, or the City could contract with an authorized Microsoft Certified Solution Provider for emergency services. In the above example, we have estimated \$50,000 per year for emergency services necessary to help the City through traditional support issues. Additionally, CALs and licensed products are for a specific version and would need to be repurchased in the event of an enterprise wide upgrade.

The method for acquiring additional licensing differs between Open Volume and Enterprise Agreement customers. For Open Volume licensed products, the City would purchase new licenses as needed. For Enterprise Agreement licensed products, the amortization method is removed and the City is responsible for paying for the license and software assurance at the end of each year.

*Training*

Training costs are the most significant indirect cost of migrating to a uniform environment. Additional training will be required in the areas of Active Directory design and deployment, Exchange Server design and deployment, SMS design and deployment, and ISA server design and deployment.

Vendor	Course Title	Cost	# of	Total
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<b>Attendees</b>				
Microsoft	Planning, Implementing & Maintaining a MS Win Server 2003 Active Dir. Infrastructure	\$2,125	2	\$4,250
Microsoft	Designing a MS Win Server 2003 Active Directory and Network Infrastructure	2,125	2	4,250
Microsoft	Designing and Planning a Microsoft Exchange Server 2003 Organization	850	2	1,700
Microsoft	Implementing and Managing Microsoft Exchange 2000	2,125	2	4,250
Microsoft	Designing and Managing Internet Security and Acceleration	1,275	2	2,550
Microsoft	Deploying and Managing MS Internet Security and Acceleration Server 2004	1,700	2	3,400
Microsoft	Planning and Deploying Systems Management Server 2003	1,275	2	2,550
Microsoft	Systems Management Server 2003	2,125	2	<u>4,250</u>
				<b>\$27,200</b>

\*Course costs are estimates provided by local training solutions provider Techsherpas.

Additionally, end user training will also be necessary to ensure a smooth transition from the Netware environment. We estimate that the City can expect to expend approximately \$150,000 on documentation and in-house instruction of end users. This training would predominantly cover the changes in authentication procedures and e-mail client usage. Included in this estimate are the costs associated with documenting these changes and writing a one day training curriculum as well as the cost of setting up the lab with a simulated City network environment. Fees for leasing lab space for twenty days are also included at an estimated \$650 a day. The City would be required to supply instructors.

**Spam Filtering**

Migrating away from the current mixed mode environment will require a retooling of the Spam filtering solution. Currently the City utilizes GeeWiz which is a Groupwise specific application. Spam filtering is a challenge that can be addressed in many ways. There are very good open source solutions like spam assassin. Application service providers have made great strides in their ability to seamlessly integrate spam filtering into any organizations e-mail system. Proprietary software solutions also provide viable and robust solutions. We estimate, that the City will expend up to \$20,000 to provide an alternate spam filtering solution.

**Virus Protection**

Additional expense for virus protection will be based on the additional licenses necessary to cover additional Microsoft Server systems under the existing Norton Anti-Virus solution. We estimate, an additional 30 server licenses for a total expenditure not to exceed \$2,000.

**Resources**

Determining the number of full-time equivalents (FTEs) to manage a network or an e-mail system poses many challenges to IS organizations. The "simple" answer to how many FTEs are needed is one to two



The below table represents estimated expenditures for the first year of operation under the open source solution and Microsoft solution as compared to the fiscal year 2005 budget numbers provided by the City. For this purpose, license fees have been amortized over a three-year period to most accurately reflect the cost to the City.

<b>2005 Projected Expenditure Categories</b>	<b>FY05</b>	<b>Open Source</b>	<b>Microsoft</b>
Server Software License/Support Fees	\$179,624	\$0-74,950	\$152,017-222,694
Server Migration Cost	0	300,000-600,000	300,000-600,000
Server Training	42,500	154,736	27,200
End User Training	0	150,000	150,000
Spam Filtering	2,000	0	0-20,000
Virus Protection	28,000	0	30,000
Human Capital	0	91,000	91,000
Server Hardware	0	30,000	30,000
	<b>\$252,124</b>	<b>\$725,736-1,100,686</b>	<b>\$ 780,217- 1,170,894</b>

The expenditures associated with each alternative vary depending on the services and components that may be chosen in the final selection. As such, the table above depicts cost within a range rather than an absolute amount. In an effort to show the costs for each alternative over an extended period of time (6 years) the below table takes into account the following assumptions:

- Licensing, Support, and Maintenance fees will increase annually at a rate of 5%
- Cost for an additional FTE will increase annually at a rate of 3.5%
- Initial server migration costs will cost \$300,000
- Spam Filtering in the first year will cost \$20,000

Novell	\$252,124	\$220,105	\$231,110	\$242,666	\$254,799	\$267,539
Open Source	800,686	172,883	180,114	187,657	195,527	203,737
Microsoft Open	1,004,252	196,685	202,606	208,775	215,200	221,894
Microsoft Enterprise	870,894	369,379	375,300	392,603	399,029	405,722

Appendix 5 further illustrates the cost over the next 6 years graphically by comparing annually expenditures for all the alternatives starting in year 2.



## Desktop Standardization

Desktop Operating Systems and Office packages are currently Microsoft products and are replaced or updated as needed. The current method of attrition is sufficient to successfully carry out the proposed migrations; however since all desktops will have to be physically re-imaged during migration, now is an excellent time to look at desktop standardization. Below is a brief overview of Desktop standardization and some of the associated benefits and costs.

### *Standardization of Desktops*

A standardized disk image on every computer can have two significant advantages for an IT department:

- Improved support for both remote and local users
- Reduced total costs of ownership

A standard desktop reduces costs across job functions in an organization. A standard desktop can reduce support calls, improve repair times, and lower migration costs. Also, a standard desktop can reduce software licensing fees and enhance licensing negotiations with software vendors.

The goal of setting a desktop standard is to reduce costs without sacrificing the end-users' access to applications that they need. However, the same desktop standard for everyone in the organization may not be practical. Desktop standards may need to be established according to job function.

To find out which applications should be part of the standard, the City will need to perform an inventory. Once all inventory and usage information has been gathered, IT management can decide which applications will use the standard desktop.

### *Enforcing Desktop Standards*

The most effective method for enforcing standards is a complete lockdown of the desktop. Market estimates indicate that a complete PC lockdown can reduce PC operational costs by 10 percent and reduce pure help desk costs by as much as 25 percent. A standard, locked-down desktop can also speed technology initiatives because implementation can be thoroughly tested in circumstances that are not changing from day-to-day. There are various applications that can be used to help maintain a "standardized" environment.

### **Standardization Costs**

Moving to standardized desktops accelerates costs that would be incurred through normal attrition. We recommend at least two standardized desktop configurations to lessen the initial cost impact and to allow for future staged migrations to newer operating systems.

### *Microsoft Desktop Licensing*

For any potential desktop standardization initiative based on the Microsoft platform, the City would need to purchase Microsoft Licenses for the following products. These licenses would bring all of the City's desktops to the current version. As with the server licensing, the City is faced with the decision to purchase either Open Volume licensing or Enterprise licensing. Many of the same features and benefits are available



including Software Assurance. For the purposes of comparative analysis, we have provided both the Open Volume Licensing pricing and the Enterprise Agreement pricing.

The table below represents the licensing and fees associated with purchasing the Open Volume Licenses required to bring the City's desktop operating environment to the current version for standardization. These prices do not include software assurance. As with server licensing, the Open Volume License program provides a cheaper solution; however, it does not provide the added benefits of software assurance or the manageability of an Enterprise Agreement.

Product	# of Upgrades	License Fee	Extended Cost
Windows XP - Upgrade	778	\$180	\$140,040
Office 2003 - Upgrade	1,656	319	<u>528,264</u>
			<b>\$668,304</b>

The table below represents the licensing and fees associated with purchasing the Enterprise Agreement Licenses required to bring the City's desktop operating environment to the current version for standardization. These prices include software assurance. In this model, the City is required to re-license all existing desktops. Fees are paid over a three year period and entitle the City to all features and services provided under the Software Assurance program.

Product	# of Upgrades	License Fee	Extended Cost
Windows XP	2,000	\$180	\$360,000
Office 2003 Professional	2,000	588	<u>1,176,000</u>
			<b>\$1,536,000</b>

*Linux Desktop Licensing*

For any potential desktop standardization initiative based on the Linux platform, the City would have the option to purchase support for the following products. As with the server licensing, the City is faced with the decision to purchase support or to adopt a "pay as you go" philosophy toward open source support.

The table below represents the licensing and fees associated with purchasing the Red Hat Enterprise Linux support agreement required to bring the City's desktop operating environment to the current version for standardization.

Product	# of Upgrades	License Fee	Extended Cost
Red Hat Enterprise Linux WS	2,000	\$179	\$358,000
OpenOffice	2,000	0	<u>0</u>
			<b>\$358,000</b>

Additional end user training would be required for the open source solution to desktop standardization. The City would not be able to leverage the current knowledge base of the desktop operating system or office suite; therefore, an additional \$150,000 should be budgeted for an additional end user training session for all City employees.



*Hardware*

Desktop hardware requirements for a standard build should meet the following minimum requirements:

- CPU – 600MHZ – 324 machines do not meet this requirement
- RAM – 512MB – 1,337 machines do not meet this requirement
- HD – 10GB – 364 machines do not meet this requirement

The city has several workstations that do not meet the minimum requirements for a standard PC build. The most effective method for upgrading the RAM would be during the initial rollout of any standard image. 512MB of RAM can be purchased for approximately \$65 for a total estimated expense of \$65,000 to upgrade the machines that would remain in production. The workstations with less than 600 MHz CPUs are, for the most part, the machines with less than 10GB of storage capacity. This would fit with the City's past trend of replacing approximately 300 workstations a year from attrition.

*Human Resources*

We have found the cost of migrating desktops based on recent experience to be approximately \$185 to \$200 per device. However, this cost could vary depending on the level of involvement of the City's IT department. For the purposes of this study we used the lower end of the estimate which resulted in total expected cost of \$370,000 (\$185 x 2,000 desktops). This fee would provide the City with two disk images and the human resource needs necessary to deploy the new images to all 2000 desktops in the City as well as installing additional memory upgrades.

**Desktop Summary**

The following tables represent the estimated prices associated with the Open Source and Microsoft alternatives for desktop standardization. Regardless of the eventual strategy chosen by the City, additional analysis is required to eliminate variables in the total cost of ownership equation.

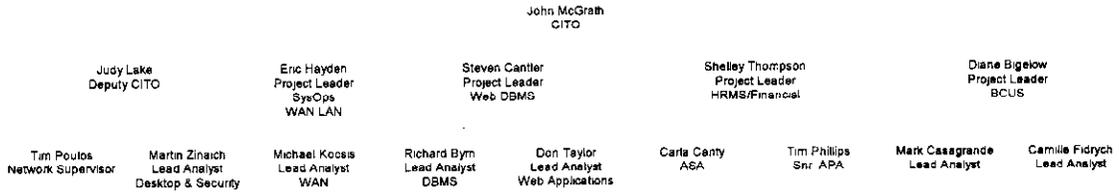
The following table represents estimated expenditures for the first year of operation under the open source solution and Microsoft solution as compared to the fiscal year 2005 budget numbers provided by the City. For this purpose, license fees have been amortized over a three year period to most accurately reflect the cost to the City.

<b>2005 Projected Expenditure Categories</b>	<b>FY05</b>	<b>Open Source</b>	<b>Microsoft</b>
Desktop License/Support Fees	\$0	\$0-358,000	\$222,768-512,000
Desktop Hardware	13,950	65,000	65,000
Desktop Migration Cost/Consulting Fees	41,950	370,000	370,000
End User Training	<u>0</u>	<u>150,000</u>	<u>0</u>
	<b>\$55,900</b>	<b>\$585,000-943,000</b>	<b>\$ 657,768-947,000</b>



# Appendix 1

## Organizational Chart of City Personnel Involved in the Study





## Appendix 2

To develop a baseline for comparison and for overall evaluation we compiled a listing of the various Operating Systems running on the City's servers and desktops. In addition, we totaled the desktop Office packages (Standard Desktop Products) currently deployed. The results are as follows:

<b>Desktop Operating Systems</b>	<b>Count</b>
Windows XP	1,176
Windows 98	752
Windows 2000	35
Windows 95	25
NT 4 Workstation	2
Windows ME	<u>1</u>
Total	<b>1991</b>

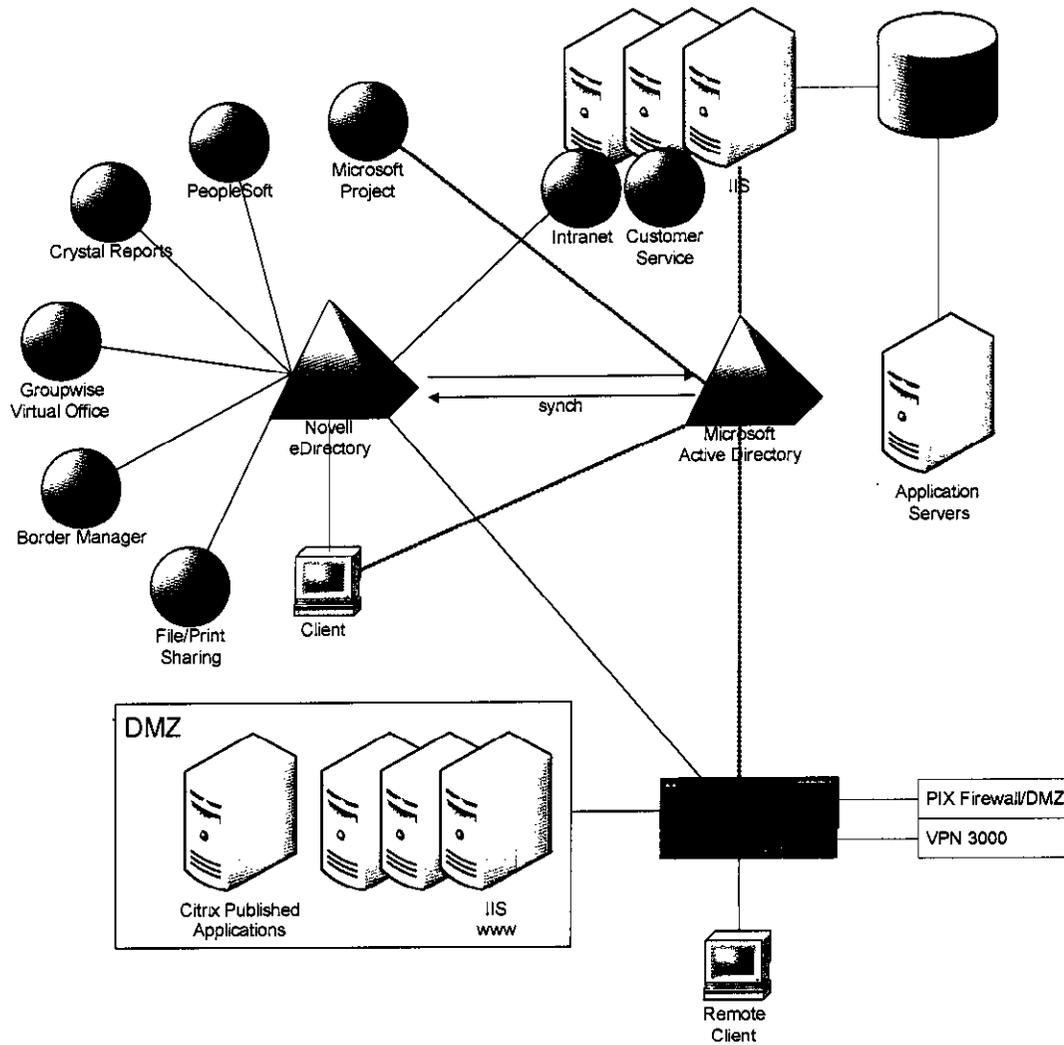
<b>Server Operating Systems</b>	<b>Count</b>
Windows 2000 Server	50
Windows Server 2003	39
Windows Server 2003 Enterprise	6
Novel Netware	<u>30</u>
Total	<b>125</b>

<b>Office Products</b>	<b>Count</b>
Office 97	1,505
Office 2000	334
Other	<u>151</u>
Total	<b>1,990</b>



# Appendix 3

The following is a high level depiction of the City's network and server layout in its current configuration:





## Appendix 4

To estimate the cost of additional hardware, we used the following build description. It is estimated that the City will require a minimum of four additional servers during its migration plan. Based on this build price, four servers will cost the City approximately \$30,000. However, these servers can be used subsequently for other purposes.

<b>Description:</b>	PowerEdge 2650 PowerEdge 2650, Intel Xeon 2.8GHz, 512K Cache, 533MHz Front Side Bus
<b>Cost:</b>	\$7,115.99
<b>PowerEdge 2650:</b>	PowerEdge 2650, Intel Xeon 2.8GHz, 512K Cache, 533MHz Front Side Bus 265285 - [ 221-2654 ]
<b>OPERATING SYSTEM:</b>	NO/OS Other NOOS/O - [ 310-1261 ] [ 420-4106 ]
<b>Additional Processors:</b>	2nd Processor, Xeon, 2.8GHz, 512K Cache, 533MHz Front Side Bus 2P285 - [ 311-2724 ]
<b>Memory:</b>	4.0GB DDR, 266MHz, 2x2GB DIMMS 4GB2D5 - [ 311-2738 ]
<b>Keyboard:</b>	Standard Windows Keyboard, Gray S - [ 310-1676 ]
<b>Monitor:</b>	No Monitor Option N - [ 320-0058 ]
<b>First Hard Drive:</b>	36GB 10K RPM Ultra 320 SCSI Drive 3610320 - [ 340-7919 ]
<b>Primary Controller:</b>	PERC3-QC, 128MB, 1 Internal, 3 External Channels P3Q128I - [ 340-2439 ]
<b>Diskette Drive:</b>	1.44MB Diskette Drive FD - [ 340-3961 ]
<b>Mouse:</b>	Logitech PS/2 2-button Mouse with Scroll L2M - [ 310-4405 ]
<b>First Network Adapter:</b>	Dual On-Board NICS OBNICS - [ 430-8991 ]
<b>CD ROM or DVD ROM:</b>	24X IDE CD-RW/DVD ROM Drive for PowerEdge Servers, All OS COMB24B - [ 313-1999 ]
<b>Bezel:</b>	Active Bezel Option for Dell PowerEdge 2650 BEZEL - [ 310-1487 ]
<b>Hard Drive Backplane:</b>	5 Bay (1x5) Hot Plug SCSI Hard Drive Backplane 1X5BKPL - [ 340-3932 ]
<b>Cables:</b>	Mouse/Keyboard Cable MKCABL - [ 310-5567 ]
<b>Documentation:</b>	Users Manual, Installation and Trouble Shooting Guide on CD EDOCS - [ 310-1989 ]
<b>Second Hard Drive:</b>	36GB 10K RPM Ultra 320 SCSI Drive 3610320 - [ 340-7919 ]
<b>Hard Drive Configuration:</b>	On-Board RAID 5, 3 to 5 drives connected to on-board RAID MR5 - [ 340-3946 ]
<b>Chassis Configuration:</b>	Rack Chassis w/Rapid Rails for Dell, HPQ or other Square Hole Racks, PE2650 RPDRAIL - [ 310-1482 ]
<b>Hardware Support Services:</b>	3Yr GOLD Support, 4Hr Onsite, S/W Support, TAM Service GOLD4U - [ 310-3785 ] [ 950-0117 ] [ 950-0138 ] [ 960-3029 ] [ 960-4130 ] [ 960-4132 ] [ 970-0237 ]
<b>Installation Support Services:</b>	No Installation Assessment NOINSTL - [ 900-9997 ]
<b>Power Supplies:</b>	Redundant Power Supply, without Y-cord REDPWNY - [ 310-4719 ]
<b>Third Hard Drive:</b>	36GB 10K RPM Ultra 320 SCSI Drive 3610320 - [ 340-7919 ]
<b>Cluster Status:</b>	INFO, NO CLUSTER, STANDALONE NOCLUS - [ 461-1306 ]



# Appendix 5

The table below represents a comparison of estimated annual expenditures per alternative over a 6 year period.

