RESOLUTION NO. 2011-04-30

STATE OF GEORGIA
COUNTY FULTON

A RESOLUTION TO AUTHORIZE THE PURCHASE OF INFORMATION SERVICES INFRASTRUCTURE EQUIPMENT AND CONFIGURATION SERVICES

WHEREAS, the City of Sandy Springs ("City") contracted with InterDev, LLC ("InterDev"), for (a) an assessment of the City's current information systems infrastructure, and (b) design solutions to meet the City's immediate and future needs ("Assessment"); and

WHEREAS, the Assessment, a copy of which is attached to this resolution, detailed findings and issues within the City's information technology environment, an evaluation of the products proposed and alternative solutions, a five (5) year cost analysis, and recommendations for improvements in policy, process, and the proposed solutions; and

WHEREAS, the Assessment recommends the purchase, through Internetwork Engineering, of: (a) primary facility hardware in the amount of $658,721; (b) secondary facility hardware in the amount of $370,090; (c) Microsoft Enterprise Agreement software licenses in the amount of $434,926; and (d) implementation services in the amount of $192,883. The acquisition through Internetwork Engineering will be purchased with a blended one point nine percent (1.9%) financing over five (5) years through Cisco Systems, at an annual cost not to exceed $360,000; and

WHEREAS, the Assessment recommends the purchase of legacy hardware and peripherals from CH2MHill and certain new hardware items from Dell in an amount not to exceed $300,000; and

WHEREAS, the City desires to follow the recommendations set forth in the Assessment;

NOW THEREFORE, BE IT RESOLVED by the City Council of the City of Sandy Springs, Georgia while in regular session on April 5, 2011 at 6:00 p.m. as follows:

1. Pursuant to the recommendations set forth in the Assessment, the City Manager is hereby authorized to purchase the following through Internetwork Engineering:

   (a) primary facility hardware in the amount of $658,721;

   (b) secondary facility hardware in the amount of $370,090;

   (c) Microsoft Enterprise Agreement software licenses in the amount of $434,926; and

   (d) implementation services in the amount of $192,883;

provided the acquisition through Internetwork Engineering will be purchased with one point nine percent (1.9%) financing over five (5) years through Cisco Systems, resulting in an annual cost not to exceed $360,000.

2. Pursuant to the recommendations set forth in the Assessment, the City Manager is hereby authorized to purchase legacy hardware and peripherals from CH2MHill and certain new hardware items from Dell in an amount not to exceed $300,000.

3. The City Manager and appropriate City officials are hereby authorized to take any and all actions necessary to effectuate the intent of this resolution.

APPROVED AND ADOPTED this the 5th day of April, 2011.

Approved:

Eva Galambos, Mayor

Attest:

Michael Casey, City Clerk

(Seal)

INTERDEV

TECHNOLOGY SOLVED.

City of Sandy Springs

Storage and Telephony Plan Assessment

SANDY SPRINGS

GEORGIA

March 28, 2011

City of Sandy Springs
Storage and Telephony Plan Assessment

Executive Summary

The City of Sandy Springs currently outsources The City's Information Technology services to Critigen, a technology support firm managed by CH2M Hill. The termination of this agreement in the early summer of 2011 is the catalyst for the City to look for new systems and solutions to support its growing Information Technology requirements. The City Management Team wants to leverage the advances in the areas of multimedia communications, data processing, and storage management to improve the public safety and services provided to the citizens of Sandy Springs. The City has engaged InterDev to evaluate a unified communications and storage plan. The plan was developed internally by Sandy Springs Police Department's technical resources in conjunction with CISCO and NetApp. The objective was to provide the City with an impartial evaluation of the Unified Communications and Storage Project goals and the hardware, software, and services proposed to support them. InterDev engaged their internal team to investigate the project and make recommendations and observations about what was found. The following report will detail findings and issues uncovered within the City's environment, an evaluation of the products proposed and any alternative solutions, a five year cost analysis, and recommendations for improvements in policy, process, and the proposed solutions.

Statement of Work

The InterDev Statement of Work directed our team to review the current network environment and evaluate the impact and advisability of the proposed enhancements to the City's Technology Infrastructure. In order to accomplish this review the following steps were taken:

- Review Current Network Infrastructure, both physical and by Visio Network Diagrams
- Review and document if needed the proposed new network layout – Visio
- Gather The City's Goals and Requirements for the proposed new network and storage project
- Review the proposed project's purchase list with the generating people/department

The InterDev assessment began by evaluating the current Sandy Springs environment. Because CH2M Hill manages the City's IT needs in a distributed, remote, and multi-tenant environment the true requirements and much of the background information was not readily available. This situation spoke clearly to the need to consolidate and more closely manage The City's infrastructure internally. The summary of Sandy Springs' current environment is broken into three sections:

- Servers & Software
- Communications & Networking
- Storage & Backup

These three areas provide the backbone for all computing efforts in the City. Additional detailed analysis is recommended in each of these areas as the level of assessment required to document answers, not just reveal questions was outside the scope of this evaluation.

Current Environment Overview

Servers, Personal Computers, and Software

Server infrastructure –
Much of the current server infrastructure is supported remotely at an off-site data center on shared systems. The multi-tenant environment is safe and secure, but it limits the access and application flexibility of the companies/cities that share this environment. The server and data integrity at this facility was not assessed by InterDev, but is not expected to be an issue. Secure multi-tenancy is a common method of maximizing hardware efficiency and sharing technology resources especially by hosting agencies. We believe moving the data and services off of this shared environment will be a challenge since the servers and storage currently in place and owned by the City are not sufficient to support these needs.

Personal Computer status –
The current standard operating system for the City's PCs is Microsoft Windows XP. This version of the Microsoft Operating System, while still supported by Microsoft, is not current and may not support all of the planned upgrades and increased demand for enhanced voice, video and application services. While individual PC age and longevity was not assessed, it is expected that as many as two-thirds of the installed systems should be replaced over the next 18 months. New systems should be configured with the latest licensed version of the MS Operating System. A proposal for an Enterprise Level Microsoft Licensing Agreement has been provided to the City. A five year cost pricing table has been included at the end of this document.

PC Storage requirements –
This area of assessment was extremely hard to pin down for a number of reasons. The hosted and remote nature of the environment made it very difficult to determine how much data is there and what requirements may be in the future. User data that is not managed and stored (or backed up) by network resources could not be quantified, but control can be enhanced in the future by the infrastructure currently being proposed.

Backup Status and Policies –

The hosted nature of the current environment makes it hard to determine how individual files and servers are being backed up, as well as the total volume, duration and complexity of that backup process. The known backup devices in place include two LTO-4 Tape libraries located in the Police Department and at the City Hall Computer Room. Symantec Backup Exec is the current tape backup management software in use at the City.

Licensing issues –

Because all software and OS licenses are owned by CH2M Hill, issues of software compliance need to be addressed. One of the current proposals submitted by CDW-G quoted the needed Microsoft Licenses. This licensing would provide coverage for all servers and PCs running the Microsoft operating systems and Office software. The latest versions of these applications are recommended to support the proposed unified communications environment within the City. All other software licenses need to be evaluated and potentially relicensed if they are to be continued and used by the City.

Communications & Networking

Defining requirements –

Communications requirements were discussed and a preliminary evaluation was performed. The current CISCO communications and networking appliances are dated and will need to be closely evaluated to ensure that they will support the City's move to Unified Communications. Also, Call Manager Appliances and some network routers/switches may need to be upgraded or replaced to support this growth. Currently, proposals (from Internetwork Engineering - IE) are in place to provide these devices, and the detailed evaluation needed to determine which appliances can be logically redeployed or need to be replaced.

Network Setup and Capacity –

The City's network setup and capacity was reviewed during discussions and examination of the Visio diagrams shared by CH2M Hill. Most of the communications and networking infrastructure is sufficient for current demands; however this infrastructure will not stand up to increased traffic and the multi-media demands requested to support the City's Public Safety departments. Required changes for the current network design and setup were discussed with the City's team to validate that the proposed modifications would support these end goals.

Understanding particular departmental requirements as they relate to specific applications, communications, data management, data retention, and exceptional security policies, etc. needs to be addressed. Global policies for all departments should be established and then specific departmental exceptions deployed. This process has not been undertaken, but the transition to a new support model and new infrastructure increases the need to do so.

The reviewed proposals present a unified networking, virtual server, communications and storage solution for the City of Sandy Springs. The proposed solutions are sized and scoped appropriately for the current needs and growth in data, applications and services expected by the City for the next 5 to 7 years. InterDev will attempt to lay out the solutions, discuss pros and cons of each component, and then review the total solution for the City.

Storage & Backup

The City's data storage like so many other municipalities and corporations is a complex and multi-tiered system. Existing requirements for storage, access, backup and recovery are difficult to accurately determine. The current hosted solutions provided us with little to no access to the storage and application support requirements. There are many islands/silos of information and applications. These applications (ALPR, Officer Video, MS Exchange, plus others) are currently functioning well as standalone solutions, but would better serve the City if they were more fully integrated into the City's communications network. Because these systems have their own internal storage, a consistent and secure backup becomes more complex and may not be happening. However, there is a critical need for a reliable and rapid secondary file storage and backup solution for all user data.

Presently, users are bypassing managed storage (and its secure backup process) due to lack of confidence in the existing systems and the SLOW speed of access and file recovery. A vast amount of data is being stored on individual PCs, laptops, personal USB and flash drives. This data which could include potentially sensitive and confidential information is not being backed up, nor is most of the information being secured or encrypted. As a result, this represents a legal and financial liability for the City with lost data and damaging compliance issues should the wrong data be lost, stolen, or misused. Also, departmental policies and procedures need to be established to ensure the safety and compliance of the City in this respect. Policies and procedures need to be supported by an effective infrastructure so the users do not feel the need to bypass the system and rules in order to perform their jobs.

In addition, there were many problems and complaints by users regarding slow access to network resources and file storage. This is much more than a minor inconvenience – the slow response time has been the driving force for the following issues.

- Because of the slow computer access to required files, once accessed, used, or modified they are not stored back on the proper network resource. Subsequently, they are not backed up consistently, and multiple copies are made – which causes version control issues (what is current/correct/approved), file sharing, and security issues for sensitive files and information.
- The end user's perception is that the slow access and restore speed of networked resources is an indicator of an inadequate system and environment. There is no confidence that doing the right thing (correct file storage etc.) will give them the right results – so users bypass security procedures to get their jobs done.
- Compliance and tracking issues – InterDev did not assess this area, but the situation supports the questions of: Are key, sensitive, or confidential files stored on non-secure – non-backed up devices? How do the right users find these files when needed? What is liability for the City if they are lost or stolen?
- Through our discussions with the City staff, we uncovered a lack of global file retention control or backup management. Also, there is no security or encryption on most user devices. Users are using an external USB or flash drive for file storage, bypassing what backup and security procedures are in place on the City's network. As a result support problems are generated and propagated when users are using non-approved storage devices for work related files. It is difficult for support teams to help users when files, equipment, and performance are varied and there is little standardization.

The City has sizable control and support issues with the current environment. Supporting the future requirements for unified communications and rich media including HD video, voice and data integration will require new infrastructure and systems. The Public Safety benefits for incorporating systems like ALPR (automated license plate reader), in-car and on-officer video, traffic cameras and the ability to patch in school camera feeds among other applications of the technology far outweighs the costs of upgrading the infrastructure and systems to support it. The current versions of these solutions are on standalone servers with individual silos of storage making backup and integration of this important information more complex and costly than necessary. The consolidation of this material by leverage of a comprehensive storage solution will simplify and optimize the efficiency of these applications.

Project Goals

The design goals for the Unified Communications project are the seamless integration of video, telephony, server virtualization and high speed storage. The proposed solutions are carefully matched by the vendors to integrate flawlessly and provide the best infrastructure possible. NetApp and Cisco have collaborated to develop an integrated solution for VMware. This is a pre-validated data center solution built on a flexible, shared infrastructure that can scale easily, be optimized for a variety of mixed application workloads, or be configured for virtual desktop or server infrastructure, secure multi-tenancy, or cloud environments. This setup delivers leading computing, networking, storage, and infrastructure software components to support the City's growth and increased technology demands. The solution incorporates the following features:

- Validated technologies from three industry leaders in computing, storage, networking, and server virtualization.
- A single platform, built from unified computing, fabric, and storage technologies, plus the most popular and trusted software virtualization platform, that lets you scale to meet the largest data center requirements without disruption or architectural changes in the future.
- Integrated components that enable you to centrally manage all your infrastructure pools.
- An open design management framework that can integrate with existing third-party infrastructure management solutions.

The design goals for the storage portion of this project include:

- 7X24 uptime and rapid information access for Police Department, Public Safety and all other City departments.
- Comprehensive backups of all files with fast file restores and recovery if needed.
- Maximize uptime and reliability of all communications and applications provided by the City.
- Build confidence in the systems to minimize workarounds and undocumented storage of City information.
- Support and enforce compliance with policies and procedures set forth by the City and any applicable State & Federal regulations for file retention and security.
- Maximize storage efficiency with deduplication technology. This is the reduction of storage requirements by storing only one copy of duplicated items instead of multiple copies by many users.
- Faster access to stored information including MS Word/Office files, contacts, video, graphics files, GIS files, etc.
- Faster backup and restore processes for servers and end user files as well.

Storage Goals

The storage component of the proposed solution is for a NetApp 3210. This is an industry leading storage solution that will support both traditional storage requirements and the demands of a virtual server environment. The flexibility of the NetApp to support multiple modes of storage, communications, and media make it a single source for all of the City's storage requirements. There are many other Storage Area Network (SAN), and Network Accessed Storage (NAS) solutions on the market, but only NetApp will act as both concurrently. This is important because of the varied needs of the City. Dealing with large GIS files, Video, and Multimedia without negatively impacting more traditional access like MS Exchange, MS Office access, or remote file access would require a much larger more powerful solution from a competitive SAN to offset the access requirements supported by the NetApp solution. Alternatives to the NetApp include DELL's EqualLogic, EMC, HP, and Hitachi.

NetApp is a comprehensive solution for Enterprise storage – known for speed and reliability. The proposal provided by Internetwork Engineering is sized to handle current and future storage and networking requirements. This product will scale upwardly for much larger capacity and speed without major upgrade costs. The cost per performance ratio for the NetApp paired with the requirements put forth by the City make the NetApp a good investment that should last the City 7-10 years with minimal upgrades. NetApp has had remarkable success in the state and local government and education markets including City of Raleigh, City of West Palm, State of Alaska, and Morgan County Schools (GA) etc. Cisco and NetApp have partnered closely to provide the solution proposed to the City. Products for both companies were closely developed and designed to provide the users with the highest performance, the most scalability, and greatest reliability possible. The system supports multiple modes of operation – SAN and NAS, and multiple levels of security partitioning and compartmentalization. The highly secure partitioning will allow the City to manage departmental datasets in separate environments based on the security and file retention requirements of each department or group within the city. For example the Police Department has certain security and file retention standards across the department, but the Internal Affairs department would likely increase these requirements to an even higher level due to the sensitive nature of their material.

As previously mentioned, alternatives to the NetApp solution include products from EqualLogic, EMC, HP, Hitachi and others. One of the commonly compared SAN infrastructures in this size and market space is the DELL EqualLogic. For evaluation purposes this document will compare some of the feature sets found on this appliance with the City's known requirements. The DELL EqualLogic solution is known for high price-performance ratio. The product has excellent scalability so it is easy to increase capacity and speed with a minimum of cost and reconfiguration. The solution is relatively easy to manage and maintain. The DELL solution is compatible and can be configured to work with most typical severs and drives. While the DELL solution has as some similar capabilities in snapshot and replication, it is not as mature of a product as the NetApp and does not perform some functions as well, such as de-duplication and provisioning.

The EqualLogic networking connections are limited to iSCSI and the device can only operate as a SAN. The server connection in this configuration may act as a bottleneck for some applications and file transfers while other highly transactional applications require a direct connection to the storage in order to function properly. The goal is to move all storage for applications and users to the centralized

storage. The flexibility in configuration of the NetApp limits the number of standalone silos of information which cause complexity in the backup and securing of the data. This networking and configuration restriction limits the choices of the City to the NetApp solution.

The price comparison as provided by Dyntek (Tallahassee, FL) shows the DELL EqualLogic with comparable drive capacity, speed, and connectivity shows higher costs for less flexibility. Some other area of comparison between the DELL EqualLogic and the NetApp are:

- The DELL solution is potentially less efficient with storage space – space lost due to how disk space is allocated to particular jobs (over allocation not always allowed or supported.) The NetApp supports a thin provisioning model that allows for over allocation and dynamic sizing of space requirements.
- The DELL solution may make it easier to find a backup option. There are more alternatives as this is a more generic SAN solution. Backup targets can go to tape or to disk or some combination of the two. The best solution for EqualLogic is to replicate data to a matching second appliance. But this means you have just doubled the costs and support needed to have a backup solution. If the City chose this route it will require an extension/purchase of the Symantec Backup Exec licenses (or similar) currently used by CH2M Hill in the backup process.
- There is a marked increase in the complexity of the configuration and backup process which can lead to large vulnerabilities in the event of a problem. Mirrored DELL units may have to be the same size and configuration to perform as a "hot backup" for VM Servers. NetApp options are more open and scalable because the backup and mirroring solutions are part of the NetApp licensing package and the same operating system runs on all versions of the product.
- The multi-party DELL EqualLogic backup solution dictates that the support and maintenance come from multiple vendors with varying costs and support levels. This results in a more complex backup and restore environment which is harder to support especially in the case of an emergency. Version upgrades for products and software do not always happen hand in hand resulting in incompatibilities and potential problems. Testing must be performed after each upgrade to ensure the backup and restore process works on both new and previous media. The NetApp appliances all run the same backup and restore software regardless of size.

Subsequently the support, maintenance, and backup/restore process is the same across all platforms. A second NetApp appliance allows for use as a backup and Disaster Recovery solution. This solution supports a "sandbox" model to enable true testing of the City's DR plan – not just rely on the theory of "this ought to work…" The ability to actually test a Disaster Recovery scenario is extremely important. Most environments are so complex that the testing of these systems is too disruptive and too expensive to actually perform the test. The NetApp has the ability to leverage a smaller box to support a DR site and still have full functionality of the device to act as active local storage for applications running at this site. The appliance can act as a storage device for local users and as a vault for main DC. The second appliance can work as smaller, but fully functional secondary site in the event of disaster. This provides nearly immediate uptime for all virtual server applications and their stored file systems and data. Long term (multi-year) backup and storage can be kept on the appliance by adding higher capacity disks or by the offloading of archive data to one of the LTO-4 tape libraries currently in use by the City. This direct

streaming to tape is part of the NetApp software so licensing issues may be reduced. The bundled NetApp solution covers maintenance and support for five years.

Backup and Disaster Recovery

The original proposal for the Unified messaging, virtual servers, and storage was lacking an adequate backup scenario. The Vendors and resellers were instructed to limit the costs and narrow the scope of the project. While instructed to provide the best overall integration of telephony, multimedia, and virtual server performance in the base configuration everyone recognized that a backup and disaster recovery plan was lacking. The InterDev team has requested and received an excellent Disaster Recovery solution from the NetApp and IE teams. The drawing below shows the backup and failover model. All of the City's servers and data files are to be backed up to the main NetApp device (FAS3210-R5) located in the City Hall computer room.

The City's computer room has been built out with an adequate UPS, diesel generator (outside), raised floor, moisture sealed ceiling, and redundant cooling. There are redundant communications lines for internet and networks with 24 pairs of fiber optic cable available for the City's sole use. The NetApp and CISCO UCS configuration is housed in a single rack minimizing cabling problems and cooling concerns. This local device has all the necessary infrastructure speed and capability needed to back up all the servers both virtual and standalone. This NetApp can also provide very fast file restores from its snapshot images. The MS Exchange Mailbox option drives this restore capability down to the individual message level for Outlook users. This quick restore of files and planned daily, weekly, monthly backup strategy will provide a secure data environment for the City, consolidating all of the data and backups in the same room.

The disaster recovery component of this plan will leverage the fiber optic link to the 911 Center located 4 miles down GA400. While the distance (less than 12 miles) and the geography are not ideal for a disaster recovery site there are great benefits to this site. The fiber link to the 911 center eliminates the need for very costly dedicated high-speed comm lines at the DR site. The building is very secure and it already houses some of the City's higher demand server infrastructure. The DR plan is to place a smaller NetApp FAS2040 in this facility to serve primarily as a mirrored backup device for the larger FAS 3210 at City Hall. NetApp uses an optimized and deduplicated backup strategy between appliances, which will reduce traffic and increase backup speed between the sites.

The second smaller NetApp device will also serve as a local storage and backup device for some of the higher demand server applications housed at the 911 center. The data stored on this FAS2040 appliance is then backed up to a secure partition to the larger FAS3210 located at City Hall. This redundant solution will provide for an extremely rapid and secure restart of servers and services in the event of a "disaster" at one facility or the other.

In the event there is a problem at one of the facilities, the other appliance can start up as a temporary primary server and data location for the City. Consideration should also be given to partnering with other local municipalities to investigate shared hosting of backups and Disaster Recovery Plans. There are other local city and county governments situated on the G.D.O.T. fiber network that would be ideal candidates. The high speed fiber connections and existing infrastructure would help cut networking,

communications, and hosting costs to nearly zero. Partnering with like-minded entities would increase the likelihood of success for the long term.

Networking and Telephony

The CISCO networking portion of the proposal is really the backbone of the solution. The proposed devices provide high speed communications paths for all types of traffic. The City will have a phone and communications system that will support the integration of clear voice communications, enhanced video, and data access. The proposed solution incorporates existing infrastructure and appliances and leverages fiber optic cables between sites. The resulting communications will have voice, voicemail, integrated video conferencing, video feeds, and exceptionally high speed application and data access at the desktop. For example, the Police Chief or City Manager could setup a conference call with officers at the scene of an incident, link in a video feed to see the situation, and potentially link into any other needed resources right from the phone on the desk. This functionality is also there for a City Project or Public Works manager or any other City staffer. The network is scalable to accommodate future growth and additional functionality as needed. The exceptional longevity and reliability of the CISCO network appliances make them the best choice for building the City's technology groundwork.

In addition, please note, the CISCO IPICS compatibility was another driver in the determination of the network and communications choices surrounding the proposed Network/SAN decision. IPICS is a solution from CISCO that enables the City Public Safety workers to communicate across phones, radios, smartphones, and VoIP phones through CISCO's unified communications. The IPCS solution bridges the gaps found in most communications solutions between the UHF – radio world and the desktop-phone communications area. The links with the City's radio communications can also be connected to other local resources like hospitals, local or state Public Safety departments or the military. This is the only non-proprietary hardware and software solution to tie in Public Safety Officer Radios into the rest of the communications network in the City. Seamless communications is the result - regardless of the device or the manufacturer of that device. Other solutions required the purchase or upgrade of their proprietary radio hardware and softphones to support this functionality. With IPICS an officer can take a call on a radio in a car or handheld unit, and patch into the communications/phone network to speak with the needed resource. This solution *was not* a part of the SAN/Network investigation performed by InterDev but serves as an excellent example of the expansion potential when the right infrastructure is in place at the start.

Summary

In summary, the exceptionally close integration of the three major components of this proposal (NetApp Storage, CISCO Unified Communications, and VMWare server virtualization) will provide an excellent base for all of the present and future computing needs of the City. The solution will address all storage requirements with respect to speed of access and security of data. Combined with the proposed additions made by InterDev, this solution will also simplify the disaster recovery process. The virtual servers give the City the flexibility to reconfigure systems as needed to improve performance and services with the need to add in extra expensive standalone servers dedicated to just one job. This total solution eliminates the silos of information that complicate the backup process and limit the integration into the rest of the City's computing resources. Most importantly the CISCO Unified Communications solution provides the best foundation for all combined communications for the City. Voice, data, and video can all be controlled, routed and used effectively by City staff and citizens as required. The levels of services and the increase in Public Safety will be measureable. This is all accomplished by the exceptional level of integration of the NetApp, CISCO, and VMWare solutions. The City benefits from this solution with increased efficiency and the ability to provide enhanced public safety and the highest level of services to the residents of Sandy Springs.

Total Cost of Ownership over 5 years

		Primary Facility (City Hall Complex)			
QTY	**Item**	**Description**	**Common Name**	**Price**	**Extended Mntc Yr 4&5**
1	FAS3210-R5	**NetAPP Storage Appliance**	NetAPP (primary)	$ 218,670	$ 39,021
		(39TB storage - 2 controllers, 2 disk shelves, bundled software & support for primary secure Storage and local backup)			
1	WS-C4507	**CISCO Core Switch**	Primary Core Switch	$ 79,238	$ 8,421
1	Cisco UCS	Cisco Unified Comm Licenses	CISCO Licenses	$ 105,798	$ 13,429
3	Nexus	CISCO Nexus Virtual Switches	Virtual Switch (QOS)	$ 11,143	$ 3,967
		(Quality of Service Monitoring)			
1	Cisco UCS	**CISCO Unified Communications Server Cabinet**	UCS Communications Hardware	$ 59,182	$ 3,576
		(Voice & Unified Comm on VMWare--4 X B200 Blade Servers, Controller, Chassis for up to 8 blades, Drives)			
2	UCS B200	**Cisco UCS Blade Servers**	Blade Servers	$ 23,702	$ 969
		(+2 Blades for MS Exchange & Active Dir)			
2	MDS9148	CISCO SAN Switch	SAN Connector	$ 12,525	$ 2,067
4	VMWare	**VMWare Software**	VMWare	$ 63,302	$ 12,765
6	Fiber Conn	Fiber Cables and Jumpers	Cabling	$ 946	
			Primary Site Total	**$ 574,506**	
		Extended Maintenance and Support (Year 4&5)			$ 84,215

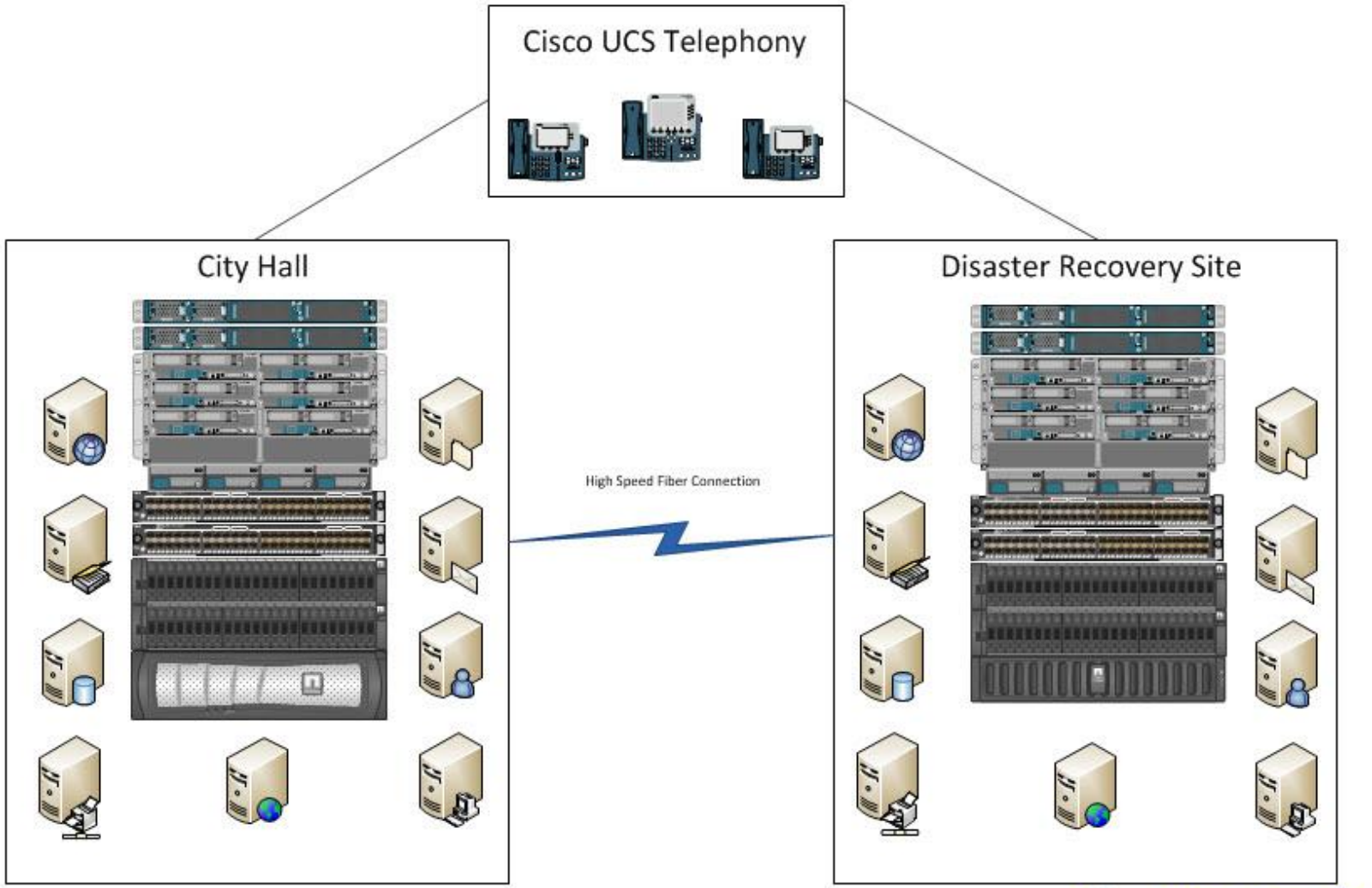
		Microsoft Software Licenses			
QTY	**Item**	**Description**	**Common Name**	**Years 1-3**	**Years 4-5**
300	Microsoft	MS Enterprise License - CALs	User Licenses		
300	Microsoft	MS Office Pro	Office Apps		
300	Microsoft	MS Window Pro Upgrade	Windows		
1	Microsoft	Exchange Server	Server OS		
1	Microsoft	Lync Server	Server OS		
1	Microsoft	SQL Server	Server OS		
1	Microsoft	Visio Standard	Technical Drawing SW		
1	Microsoft	Windows Server Data Center License	Windows OS for dist.		
		Microsoft Licensing Requirements Totals		**$ 298,912**	$ 136,014

		Failover / Disaster Recovery Site (ChatComm Center)			
QTY	**Item**	**Description**	**Common Name**	**Price**	**Extended Mntc Yr 4&5**
1	FAS2040	**NetAPP Storage Appliance**	NetAPP (secondary)	$ 170,626	$ 25,961
		(39TB storage - 2 controllers, 2 disk shelves, bundled software & support for Offsite Backup and Disaster Recovery)			
1	WS-C3750	**CISCO Core Switch**	Secondary Core Switch	$ 22,288	$ 3,467
3	Nexus	CISCO Nexus Virtual Switches	Virtual Switch (QOS)	$ 7,439	$ 2,645
		(Quality of Service Monitoring)			
1	Cisco UCS	**CISCO Unified Communications Server Cabinet**	UCS Communications Hardware	$ 59,182	$ 1,630
		(Voice & Unified Comm on VMWare--4 X B200 Blade Servers, Controller, Chassis for up to 8 blades, Drives)			
1	MDS9148	CISCO SAN Switch	SAN Connector	$ 4,377	$ 718
4	VMWare	**VMWare Software**	VMWare	$ 55,488	$ 16,072
		(Site Recovery Manager Software)			
	Fiber Conn	Fiber Cables and Jumpers	Cabling	$ 197	
			Secondary Site Total	**$ 319,597**	
		Extended Maintenance and Support (Year 4&5)			$ 50,493

		Implementation Services		
QTY	**Item**	**Description**	**Years 1-3**	**Years 4-5**
1		AD/Exchange/VMware Implementation Services	$29,000	
1		SAN/Storage Implementation Services	$33,000	
1		IT Assessment – Hardware Evaluation Services	$31,330	
1		Installation and Implementation Services (UCS)	$30,553	
		Implementation Services Totals	**$ 123,883**	$

		Project Totals		
QTY	**Item**	**Description**	**Years 1-3**	**Years 4-5**
		Storage, Telephony, Networking - City Hall (Primary Site)	**$ 574,506**	$ 84,215
		Storage, Telephony, Networking - ChatCom/911 Ctr (Secondary Site)	**$ 319,597**	$ 50,493
		Microsoft Licenses (Servers, PC, MS Office)	**$ 298,912**	$ 136,014
		Implementation Services Totals	**$ 192,883**	
		Sandy Springs SAN & Telephony Project Total	**$ 1,385,898**	**$ 270,722**
		0% Financing for Years 1-3 over 5 years	**$ 277,180**	

Preferred Disaster Recovery Option



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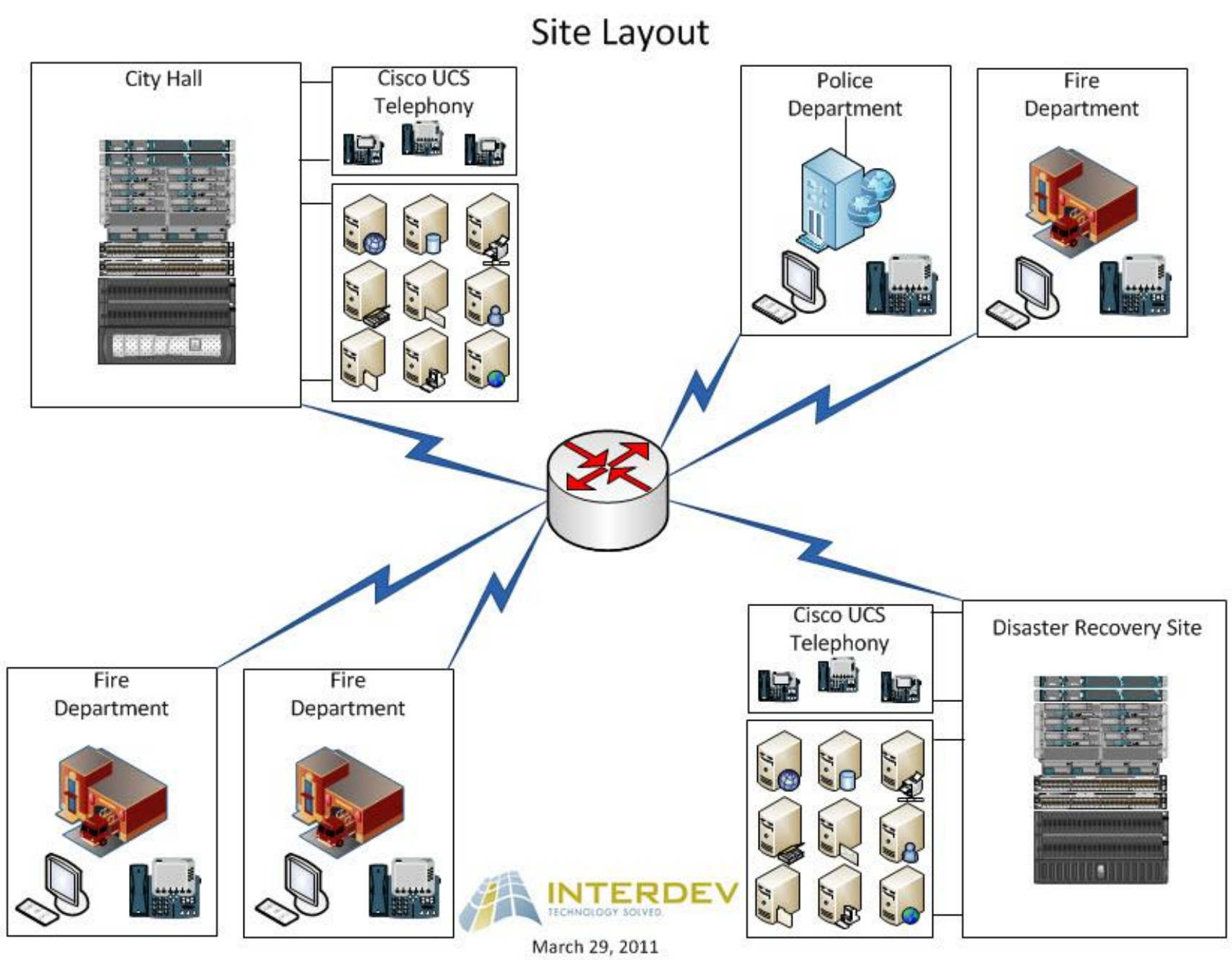
TECHNOLOGY SOLVED.

March 29, 2011


Site Layout
City Hall
Cisco UCS Telephony
Police Department
Fire Department
Fire Department
Fire Department
Cisco UCS Telephony
Disaster Recovery Site
INTERDEV
TECHNOLOGY SOLVED.
March 29, 2011