STOCK VIDEO, INC.
ALBANY, NY

TECHNOLOGY PLAN
2004 - 2005

Prepared By:

ISP 523 - Dr. Cortesi
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TABLE OF CONTENTS

I. INTRODUCTION

Stock Video, Incorporated was founded five years ago to accommodate a demand from smaller companies in Albany, New York for stock footage to use in training seminars, television shows, advertisements, and the like. This endeavor has now grown into a large video library that supplies stock footage to a variety of television and video production companies internationally. Stock Video recently requested a technology plan due to a number of changes that have occurred over the last year. This document is a response to that request.

II. BACKGROUND

On account of Stock Video's efficient approach to providing video footage coupled with its rapid response to clients demands, it has recently secured two large scale contracts with prominent corporations. This has resulted in both a phenomenal increase in profit as well as an increase in activity. Furthermore, because the library is located in an urban environment, its headquarters are quite small and Stock Video has had to move a large portion of its collection to an offsite storage facility.

These two factors have forced Stock Video to rethink its information technology infrastructure. This Technology Plan presents an overview of what is necessary for Stock Video to meet the large increase in demands for its services, taking into consideration the changes that have occurred due to the relocation of much of the collection. An analysis of the current workflow and procedures has been utilized to determine what changes in the topology would be most suitable to the operations of Stock Video. Wherever possible, existing infrastructure, including hardware, will be utilized or upgraded.

Facilities

The Stock Video headquarters are located on the third floor of a large office building in downtown Albany. The power and wiring in the building is adequate, however network cabling must be pulled to all of the offices within this space. The new offsite storage facility, located across town, also has adequate power supply and wiring.

There are currently two video preview facilities, one for staff members and one for potential clients. These rooms need access to the collection's catalog as well as to audio-video equipment. Therefore, cable must be pulled to connect the preview facilities to the headquarters. The two preview facilities are each currently equipped with a 30-inch television with a Digital Video (DV) deck, a VHS deck, and a Digital Video Disk (DVD) player.

Hardware

There are currently twenty desktops at the headquarters. Because these were purchased sporadically accordingly to demand, the systems differ greatly. Specifically, there are five workstations equipped with Pentium 60 processors, 64 megabytes (MB) of Random Access Memory (RAM), two gigabytes (GB) of hard disk space, and 15-inch monitors. There are also ten workstations with Pentium III processors, 128 MB of RAM, 10 GB of hard disk space, and 17-inch monitors.

Lastly, there are five workstations with Pentium 4 processors, 512 MB of RAM, 60 GB of hard disk space, and 19-inch monitors. Stock Video also owns three IBM ThinkPad T30 laptops with Intel Pentium 4 processors and 256 MB of RAM.

In terms of peripherals, Stock Video has two network printers, one Ricoh Aficio 1035 high capacity printer and one Xerox Phaser 7700DX. There are also five unnetworked printers connected to individual workstations, including one HP LaserJet, one HP LaserJet III, and three HP LaserJet 2100. There is also one Agfa HID scanner.

Software

Similarly to its acquisition of hardware, Stock Video has acquired various software packages as the need presented itself. In terms of operating systems, there are five workstations running Windows 98, ten running Windows 98 SE, and five running Windows XP Professional. Ten workstations are using Microsoft Office 97, while ten are running Microsoft Office XP Professional. Stock Video also owns one copy each of the following Adobe applications: Photoshop 5.0, Adobe After Effects 5, Adobe Illustrator 9, and Adobe Premiere 6.5. These are installed on the workstations in the staff preview facility and are used for marketing projects.

Connectivity

The Stock Video headquarters currently has a fractional T1 line. All of its workstations are able to access the internet through hubs and switches. These are currently connected to a switch-router and a cable modem. The network is a bus topology which consists of 2base10 Ethernet. The offsite storage facility currently communicates with the headquarters via email using 56K modems connected to two available phone lines. The preview facilities are not connected to the headquarters and do not have Internet access.

Personnel

Stock Video is currently staffed by ten employees. The administrative staff includes the founding director, a financial manager, an office manager, three administrative assistants, and two salespeople. Two information specialists handle the technical processing of the library's collection.

All information technology is outsourced to several small contractors. With the increasing reliance on information technology, it has become essential to incorporate in-house information technology specialists.

Summary

Due to its rapid development, Stock Video's current infrastructure is a disordered collection of software and hardware that were acquired hurriedly along the way to keep up with increased demands for functionality. Because

the information technology work was contracted out to several vendors, there is

little consistency and continuity along its network. For these reasons, and those

mentioned in the introduction, Stock Video requires a completely upgraded

and reengineered information technology infrastructure. The following section

proposes a comprehensive strategy to meet these needs.

Hardware

In the headquarters itself, the workstations running Pentium 60 processors will be decommissioned. The workstations running Pentium III processors will then be redistributed amongst the administrative staff. This, however, will necessitate the purchase of five new systems, specifically five Dell Precision Workstation 450s.

For the preview facilities, two Dual 2 gigahertz (GHz) PowerPC G5 systems will be deployed and connected to media players. The VHS decks will be connected through a DV conversion box, specifically the Canopus ADVC-100 - Analog/DV Converter. This will allow videos to be screened on these systems.

The three IBM ThinkPad T30 laptops will be moved to the offsite storage facility to enable the personnel to compute within the aisles of the video collection. This will be particularly useful for barcoding. Additionally, two IBM ThinkPad T41 laptops will be purchased for the salespeople to increase their mobility.

This proposal necessitates the purchase of three servers, two for administration, and one to serve as a web-server for Stock Video's website and online catalog. The servers will be dual processor Dell PowerEdge 6600s.

<u>Software</u>

The workstation operating systems will all uniformly be upgraded to Windows XP Professional. The two PowerPC G5 systems will come with OSX preinstalled. All of the workstations will be upgraded to Microsoft Office 2003. The two administrative servers will run Windows Server 2003, and twenty-five client access licenses will be necessary per server. One of the administrative servers will run Retrospect Server for backup, while the other will run SQL Server. The web-server will also run Windows Server 2003 but with only five client access licenses.

The two PowerPC G5 systems will also be outfitted with Final Cut Pro 4 for video editing, digitizing, and processing. Any conversion from analog and digital video to compressed media will take place with the use of this software. The Adobe products in the staff preview facility will be upgraded to Adobe Creativity Suite 1.1.

The old Access 97 database, which currently contains Stock Video's catalog, will be migrated to SQL server, and will be integrated with a barcoding system at the offsite storage facility. SQL server will make the catalog available online in a read-only format. In the storage facility, as well as in the main office, Access 2003 will be used as an interface to SQL Server. This set-up will allow the incorporation of a management information system, which will include accounting and payroll, into the same database system.

The backup system will use Retrospect software and a Sony Digital Linear Tape (DLT) autoloader. These can also be used for digitally archiving footage. Initially, only compressed footage will be stored on the network with a highly compressed copy on the web server for streaming purposes. If streaming activity increases over time, edge serving could be considered using services such as those offered by Akamai.   For now, Windows Media Services will be used for basic streaming to potential clients.

Connectivity

Stock Video will now be composed of a Local Area Network (LAN) and a Wide Area Network (WAN):

1. The Local Area Network
(Please refer to Figure 1: The Local Area Network of the Headquarters below)

To bring the facilities up to date, the network cabling must be upgraded. This entails adding forty-eight Ethernet ports, some of which will be spare ports for the future. Category 5 cabling will be used throughout the headquarters. The current supplies cabinet will be converted to a server room which will house the switches and router. All cables will also terminate in the new server space. The building's central air conditioning is adequate to prevent the servers and other equipment from overheating.

The two administrative servers will be placed behind a firewall and will be connected to optical uplink ports on the switch. The web server will be outside of the firewall, in the "Demilitarized Zone" (DMZ), and will use Remote

Authentication Dial-In User Service (RADIUS) to connect to the other servers. This will offer a good security/access ratio.

The offsite storage facility will have a Cisco Wireless Access Point installed to facilitate laptop connectivity while the personnel are working within the video stacks. The laptops will also be equipped with Cisco Wireless Client Adapters. The wireless network will only be accessible by, and visible to, the three laptops with the proper implementation of security measures. Barcode readers will be attached to the laptops through USB to enable the use of this technology for cataloging the collection.

2. The Wide Area Network
(Please refer to Figure 2: The Wide Area Network below)

Connectivity between the headquarters and offsite storage facility will be enabled by a T1 line provided by an Internet Service Provider (ISP). This subscription will also include high-speed Internet access. There is a second T1 line which connects the preview facilities to the headquarters.

The offsite storage facility will be using Virtual Private Network (VPN) to connect to the main office. The salespeople will also use VPN to connect to the main office when they are on the road, using the free dial-up service provided by the ISP.

Personnel
The enormous changes that have occurred within Stock Video, both in terms of business practice and the use of information technology, necessitate

some changes to the personnel. This technology proposal requires two new hires: a Systems Administrator and a Web/Database Developer.

The new Systems Administrator will be responsible for the smooth running of the LAN and the WAN. The Web/Database Developer will add more functionality to the website by building a database backend so that the administration has adequate access to the servers, and will be able to update information, including catalog records, as needed.

Over the last year, the responsibilities of the three administrative assistants have changed dramatically with a parallel increase in workload. These personnel should be promoted to managerial positions: one will become the Assistant Office Manager, the second will become the Public Relations Specialist, and the third will become the Manager of the Offsite Storage Facility. This employee restructuring is important to the technology plan as it will help to implement changes as smoothly as possible.

Cisco 1721

DMZ

Catalyst
2950SX-24

Service Provider
Router / Modem

Internet

Wired Clients
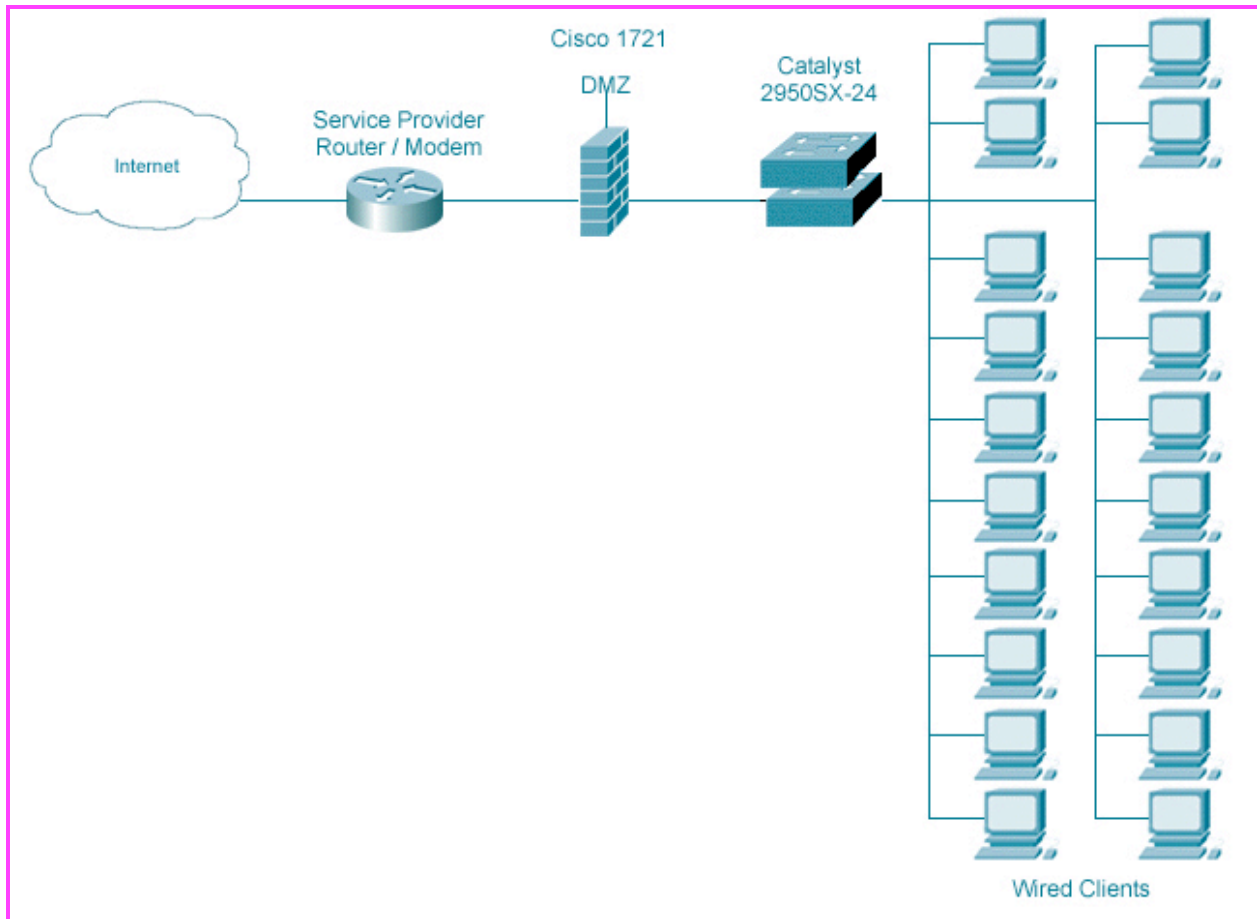
Figure 1: The Local Area Network of the Headquarters *(diagram generated using the Cisco "Small Business Network Designer" online tool. Available: http://www.ciscoretail.com/sbnd/index.html)*
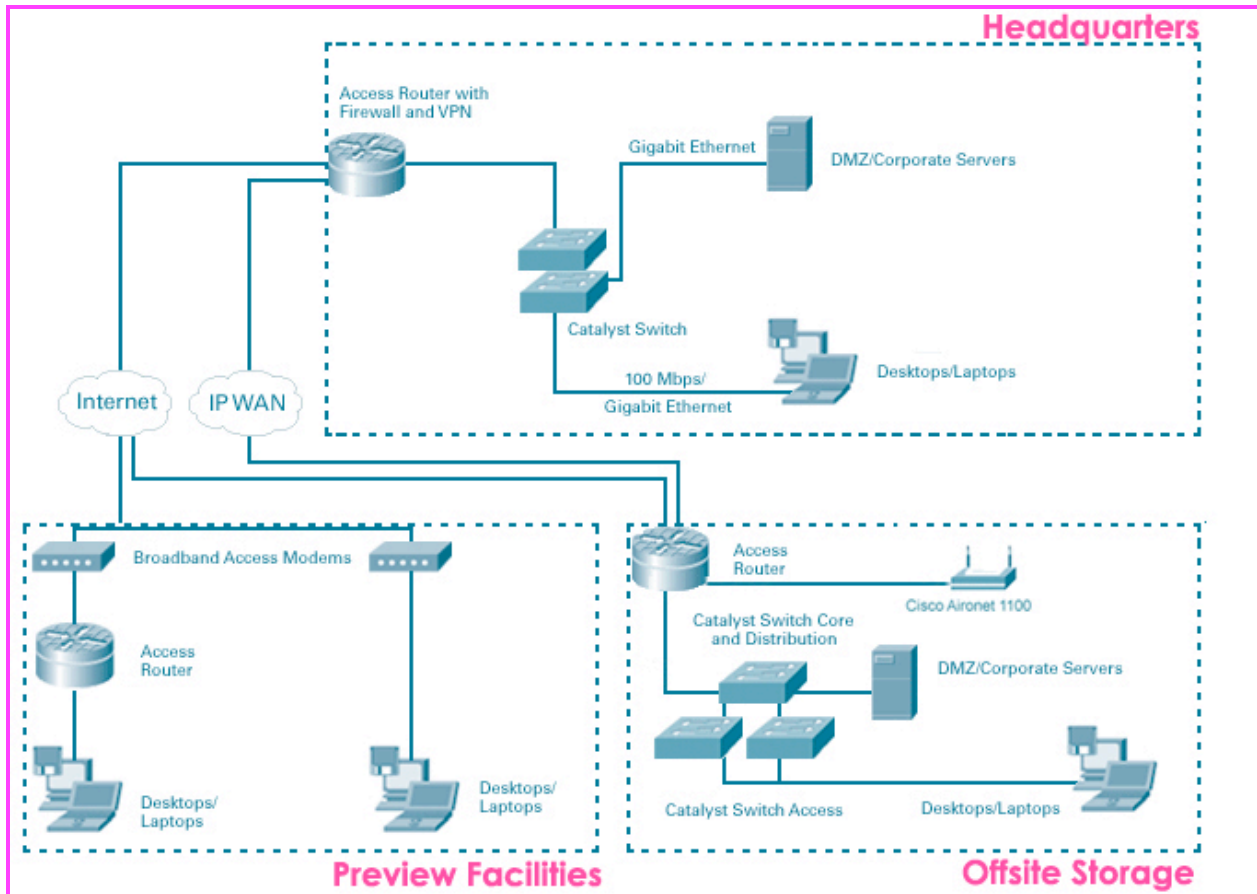
Figure 2: The Wide Area Network *(diagram generated using the Cisco "Solution Designer" online tool. Available: http://www.ciscowebtools.com/designer/)*

The following tables illustrate the budget items that are necessary for this

technology plan by category:

PERSONNEL				
Description	Quantity	Unit Price	One Time Purchase Total	Annual Expense Total
Systems Administrator	1			$60,000.00
Web/Database Developer	1			$60,000.00

HARDWARE -PCs				
Description	Quantity	Unit Price	One Time Purchase Total	Annual Expense Total
Apple Dual 2 GHz PowerPC G5	2	$3,000.00	$6,000.00	
Apple 23" Cinema HD Displays (Power PCs G5s)	2	$2,000.00	$4,000.00	
Dell PowerEdge 6600 Server	3	$15,000.00	$45,000.00	
Dell Precision Workstation 450	5	$1,800.00	$9,000.00	
IBM ThinkPad T41 Laptop	2	$1,500.00	$3,000.00	

HARDWARE - NETWORKING COMPONENTS				
Description	Quantity	Unit Price	One Time Purchase Total	Annual Expense Total
Cisco 1721Firewall VPN/K9 Router	1	$1,800.00	$1,800.00	
Cisco Catalyst 24 Switch	2	$600.00	$1,200.00	
Cisco Wireless Access Point Aironet 1100	1	$400.00	$400.00	
Cisco Wireless Client Adapter AIR-PCI352	2	$100.00	$200.00	

HARDWARE - PERIPHERALS				
Description	Quantity	Unit Price	One Time Purchase Total	Annual Expense Total
Canopus ADVC-100 - Analog/DV Converter	1	$300.00	$300.00	
CCD-200 USB Barcode Scanner/Reader	1	$250.00	$250.00	
Sony 0.8/2.08 TB StorStation AIT-3 8-Slot External Ultra 160 Wide LVD/SE SCSI Tape Autoloader	1	$5,000.00	$5,000.00	

SOFTWARE - CLIENT				
Description	**Quantity**	**Unit Price**	**One Time Purchase Total**	**Annual Expense Total**
Adobe Creative Suites Premium 1.1	1	$1,000.00	$1,000.00	
Final Cut Pro 4	2	$1,000.00	$2,000.00	
Office Professional 2003	20	$300.00	$6,000.00	
Windows XP Professional Upgrade	15	$180.00	$2,700.00	

SOFTWARE - SERVER				
Description	**Quantity**	**Unit Price**	**One Time Purchase Total**	**Annual Expense Total**
Microsoft SQL Server 2000 Standard Edition (10-client)	1	$1,900		$1,900
Retrospect Multi Server Value Package v6.5	1	$3,500.00		$3,500.00
SQL Server Device Client Access License	10	$135		$1,350
Windows Server 2003 Enterprise Edition with 25 Client Access Licenses (for 2 administrative servers)	2	$4,000		$8,000
Windows Server 2003 Standard Edition with 5 Client Access Licenses (for web server)	1	$1,000		$1,000

CONNECTIVITY				
Description	Quantity	Unit Price	One Time Purchase Total	Annual Expense Total
48 Network Drops (including Cat 5 Cabling)	48	$100	$4,800	
T1 Line (included in ISP subscription)	2 Lines/ Month	$1,000		$12,000

TOTALS	
One Time Purchase Total	Annual Expense Total
$92,650.00	$147,750.00

With an initial investment of $92,650.00 and the hiring of two additional staff, the information technology infrastructure of Stock Video will be completely transformed. The offsite storage facility will now be dynamically connected to the headquarters, allowing tapes to be automatically added to the catalog with a barcode system connected to a secure wireless network.

The preview facilities will now be equipped to handle digitization, editing, and processing of video. Furthermore, the web-server set-up will allow video streaming from the preview facility, and will make the catalog accessible online. The administrative staff of Stock Video will all have completely upgraded workstations with access to the servers, while the salespeople will have laptops from which they can access the headquarters while they are on the road.

In sum, this technology plan will help Stock Video meet the challenges it is facing in terms of increased demand for services and managing several locations. With the implementation of this technology plan, Stock Video can expect further success in terms of the services they provide.

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