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[CAPROCK PIPE & SUPPLY, L.P. – TECHNOLOGY PROJECT REPORT]

**Project:** Caprock Pipe & Supply, L.P. - Technology Implementation

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## Caprock Pipe & Supply, L.P. - Lovington, NM

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## Executive Summary

Caprock Pipe & Supply (CPS) has prospered for the last 20+ years with minimum technologies such as dial up internet and stand alone computers. None the less, reoccurring telephony issues, the inability to share information, and a DOS based accounting system from the early 1990's was beginning to show limitations. Over the course on several months American Technology Systems (ATS) implemented several solutions to combat the ever growing company and technology issues.

Utilizing technology to establish a platform for additional growth possibilities was an important concept for CPS and is at the core of ATS solutions. Any solution chose needed to be reliable, scalable and cost effective. An entire overhaul of the cabling infrastructure was performed. A dedicated circuit for voice and internet was installed. Cisco VoIP phones were installed in addition to new Cisco switches, router, and firewall. QuickBooks Enterprise Edition was chose to resolve accounting issues, and a biometric time and attendance solution was installed to increase efficiency.

The systems installed at CPS provided a solid base for the company to develop and adapt quickly as new technologies emerge. Costly downtime is limited with the use of quality products and tested solutions. ATS was delighted to provide expert solutions for CPS and we look forward to further projects and installations.

## Objectives & Solutions

Caprock Pipe & Supply (CPS) presented several technological objects. American Technology Systems (ATS) consulted and assessed each object to determine the best solutions available in the current market place. The overall objective of this project was to facilitate the progression of CPS from a non-technological environment to a technological reliant environment. The basis for each objective was to utilize technology for growth positioning capabilities, efficiency and cost reduction. Each solution chosen was required to be reliable, redundant, and adaptable to emerging technologies of the future.

### Primary Objectives

- Utilize Technology to Establish Growth Positioning Capabilities
- Repair & Utilize Existing Infrastructure
- Create Reliable Technology Solutions - Computers / Network / Internet / Telephony
- Recommend Software Solutions for Back-office & Operations Optimization

### Solutions Summary

- Repair & Expand Existing Fiber Network
- Cat5e & Copper Infrastructure in all Building
- T-1 Implementation - Internet / Dial-tone
- Cisco Network Infrastructure Installation
- Server Implementation
  - Email Communications
  - Central File Storage
  - Central Security Authentication
  - Website
- Backup Solution
- New Computers
  - Basic Computer Programs & Training
- Cisco VoIP Implementation
- VoIP Paging Solution
- New Accounting Software
- Time & Attendance Solution
- Future Recommended Projects
  - Redundant Fiber Ring
  - IP Video Surveillance

## Solutions & Installation Details

### Cabling Infrastructure

To facilitate the use of current fiber optic cabling ATS recommended several solutions. After our initial assessment ATS determined the use of existing fiber would only be possible if re-terminated and correctly installed. A copper line over a road between the Welding Shop and the Mechanic's building was replaced with a 6-strand overhead fiber cable; as well an underground cable was installed between the Mechanic's building and the Coupling Shop. These installations allowed for the transmission of voice, data, and video between each building and were required for proper reliability. All cabling was installed in racks or cabinets for protection and organization.

#### Network Infrastructure Prerequisites

- Installation of equipment rack in the Main Office
- Installation of wall mount cabinets at each remote building to enclose and protect all network cabling and future equipment

#### Fiber Cabling

- Re-termination of all fiber into rack mount enclosures within each wall mount cabinet
- Testing of all fiber
- Future plans involve the installation of a link between the Main Office and the Large Thread Shop to achieve a redundant fiber ring

#### Copper Cabling

- Two Cat5e cables were installed into each room drop in the Main office
- One Cat3 cable was installed in each drop for analog communications
- Coax was also installed as needed for future TV use
- All wiring was labeled and installed in patch panels and racks or cabinets
- All remote buildings followed similar guidelines

## Cisco Network Infrastructure

Cisco was the obvious choice to achieve the quality and reliability CPS required. The Main Office received a 24 port POE switch and all remote buildings received 24 port non-POE switches, as the need for POE equipment was cost prohibitive. A Cisco PIX 501 firewall was installed to secure the network. Two wireless access points were installed providing wireless coverage in and around the main office.

### Cisco 2621XM Router

- Use: Voice Router
- SmartNET Warranty: Next Business Day

### Cisco Pix 501 - 50 User License

- Use: Voice & Data Firewall
- SmartNET Warranty: Next Business Day

### Cisco WS-C3550-24PWR-SMI

- Use: Main Office POE Switch
- SmartNET Warranty: Next Business Day

### 4 - Cisco 2500 switches

- Use: Switches in Remote Buildings
- SmartNET Warranty: Next Business Day

### 2 - Cisco 1200 Series Wireless Access Point

- Main Office / Outside Main Office
- Use: Wireless Data & Voice
- SmartNET Warranty: Next Business Day



## T1 Implementation

CPS is located in a rural area leaving the only options for internet as wireless or DSL. CPS has previously utilized both these services and neither was reliable. The installation of a dedicated circuit by the local provider proved to be a reliable internet and voice solution to complement this reliability of CPS's network infrastructure. The T1 provided 10 simultaneous voice channels and up to 768 kbps of synchronous internet connectivity. The consolidation of fax lines was also performed, reducing the number of analog lines from seven (7) to four (4).

### IVDS T1 Circuit

- 10 Voice Channels
- 12 Data Channels
- 22 DIOD Numbers

### Adtran 624

- Use: Divides Voice & Data T1 for Internal Use

### 4 - Fax Lines

- One in Yard
- Three in Office



## Server Implementation

ATS installed a custom built rack mount Small Business Server to support Microsoft Exchange email, a web site, network printing, central computer authentication and provide redundant converged storage for data. The data was backed up nightly to a 1TB storage unit located in another building on-site.

### Windows 2003 Small Business Server

- Windows 2003 SBS - 20 user license
- Dual AMD 2133 MHz Processor
- 2,048 MB RAM
- 220 GB Redundant Hard Drive
- Running Exchange Email Server
- Converged File Storage
- Central Computer Authentication



### LaCie 1TB Ethernet Disk Backup storage unit

- On-Site Backup Solution

## Computers & Printers

American Technology Systems implemented many custom built desktop computers capable of keeping pace with technology for 3 to 6 years. The installed computers were proficient to run any program required by CPS; from advanced programs such as AutoCAD to standard programs such as Microsoft Office. AntiVirus software was installed protecting each computer and the server from viruses. A workgroup printer was installed in addition to a dedicated printer for the Accounts Payable Department.

### Software

- Symantec Antivirus
- Windows 2000 Pro - Site License



### HP OfficeJet 9120

- Location: Front Office
- Use: Main Office Fax / Printer / Scanner
- Warranty: 3 Year Next Business Day

### HP OfficeJet 6110 All-in-one

- Location: Accounts Payable Department
- Use: Private Fax / Printer / Scanner
- Warranty: 3 Year Next Business Day



### HP Business InkJet 1100

- Location: Accounts Payable Department
- Use: Dedicated AP Check Printer
- Warranty: 3 Year Next Business Day



## Cisco VoIP Installation

Cisco VoIP phones are feature rich and reliable, with the ability to link remote buildings via the internet saving hundreds of dollars in long-distance costs. This also allows remote offices and workers to just be an extension away. Simple, yet highly advanced provisioning tasks are now capable of being performed with minimum training. Moving or installing a phone once involved a call to the local phone company and \$100's of dollars in additional charges. Now with a few mouse clicks the phone is active in just minutes, with no additional charges to CPS. Adding a new phone number is a simple task and does not involve any additional monthly fees. Simply stated, Caprock has allowed them self to govern equipment and services instead of relying on slow and unpredictable outside sources.

- **Cisco CallManager MCS 7800**
  - System Brain
  - Manages Calls and Phones
- **Unity Voicemail System MCS 7800**
  - Voicemail Server



## Valcom VoIP Paging System

Working in conjunction with the Cisco VoIP phone system the Valcom VoIP paging system is seamless. Users are able to dial an extension to page any combination of locations needed. Voice traffic flows across the installed fiber network just as with a phone call on the Cisco VoIP system.

### 1- VIP-810 Interface Unit

- Use: Interface to VoIP Phone System

### 4- VIP-800 Paging Unit

- Mechanic's Shop
- Small Thread Shop
- Large Thread Shop
- Large Inspection Shed



## QuickBooks

ATS investigated and concluded the accounting software used by CPS was highly outdated and cumbersome. The software relied on old computers and printers and required almost 4 hours just to print 50 Accounts Payable checks. Additionally, basic reporting needs were not possible resulting in expenses to CPS's or long hours of manually compiling data in Microsoft Excel.

ATS recommended Intuit's QuickBooks Enterprise Edition. CPS has now migrated from a 10 year old DOS based accounting system to a modern Windows based system. Printing Accounts Payable checks now only takes minutes and creating a financial analysis report just involves a few clicks of the mouse.

### QuickBooks Enterprise Edition

- 10 Concurrent Users
- Data Located on Server & Backed Up Nightly



## TimeForce by Qquest Software Systems

ATS discovered an employee of CPS was spending each Sunday afternoon adding 75 employees' time cards by hand and painfully manually calculating overtime and other pay policies. CPS investigated solutions and recommended TimeForce by Qquest Software Systems as the best choice. Needless to say, this employee now has her Sundays free.

TimeForce is a biometric time clock system capable of automatically calculating overtime and numerous other custom policies. Employees use a finger print to validate the punches preventing "buddy-punching" and "fudged" timecards.

### Qquest Time Clock System

- TimeForce - 75 Employee Licenses
- Warranty: Next Business Day



## Future Recommended Projects

### Redundant Fiber Ring

With the current fiber installation one possible problem was exposed; the solution is not redundant. ATS recommended that CPS install and additional fiber cable between the Main office and the Large Thread Shop to create a redundant loop. At the time of this publication CPS has chosen to postpone this project.

- **(Update 7/15/07) – CPS Installs Fiber to Create Redundant Backbone**

### IP Video Surveillance

ATS designed the CPS infrastructure to facilitate IP video surveillance. CPS has decided to move forward with this project at a later date.

- **(Update 7/15/07) – CPS Installs IP Video Surveillance**