Bourbon County Court House
Telecommunications Assessment and Proposal

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This proposal outlines the Bourbon County Courthouse's current telecommunications network situation, assesses the needs and makes recommendations for short-term and long-term plans. Currently, the telephone infrastructure needs immediate attention. Employees are being limited by the current configuration during peak times. There is a need for more phone lines, and a basic voice mail system. Also, the computer situation needs addressing. By providing employees with email accounts, Internet access, and proper training, overall communication and workflow would be greatly enhanced.

Table of Contents

Page

Current State of Telecommunications System: Observations ……. 3

Needs Assessment …….. 6

Short-Term Planning …….. 7

Long-term Planning …….. 9

Implementation: Short-term …….. 10

Implementation: Long-term ……... 11

Conclusion …….. 12

Current State of Telecommunications System: Observations

On May 1, 2000 a thorough examination of the telecommunications equipment within the Bourbon County Courthouse was conducted. Each office was inspected and the types of computer and telephony equipment were recorded. First, the telecommunications closet in the basement of the courthouse was examined. This closet contains a General Datacom 553 SD CSU/DSU (Channel Service Unit/Data [or Digital] Service Unit) interfaced with a Bay Networks Access Node Router. The Datacom CSU/DSU is linked to Frankfort via two Basic Rate ISDN (Integrated Services Digital Network) lines. These ISDN lines provide for a symmetric data throughput of 256kbps. These two pieces of equipment were installed by the State of Kentucky for use with the County Clerk's vehicle and licensing computer system. State officials remotely administer the Datacom CSU/DSU.

The telecommunications closet contains a series of punch-down blocks for all telephones within the courthouse. In addition, a Tie/Communications, Inc. key system is currently installed. It consists of a UMT-34 Key Service Unit, UMT-64 Expansion Cabinet, and power supply. This system appears to be old and outdated. While observing this, I was informed that all offices in the courthouse share 23 phone lines via the key system. Based on this I assume that a single Primary Rate ISDN line is connected to the key system.

Next, the County Clerk's office downstairs was examined. Ethernet cable from the Bay Networks Access Node located in the communications closet is connected to a BayStack 101 10 Base-T Hub. There are 10 workstations running the AVIS point-of-sale application used for synchronizing vehicle-licensing information with the state.

These workstations are also used for basic word processing and spreadsheet applications and are equipped with limited Internet access provided by the state network. The County Clerk office has two phone lines in the basement office shared between 14 phone sets. In addition, a fax machine has its own telephone line and is not interfaced with the key system.

The section of the County Clerk's office located on the second floor is quite large and consists of a large amount of computer equipment, some of which is outdated and unused. There is a new Dell Pentium 3 workstation networked to the state's vehicle and licensing department. Two Compaq Deskpro Pentium 133mhz machines are connected to the Dell workstation and used for archiving and database purposes. In addition, there are 2 in-house terminals used for managing deeds, titles, mortgages, and taxes. There is a huge vault in this office where records are stored. I was told there are 2 additional terminals located inside the vault. I was unable to verify that these terminals are connected to a mainframe system also inside the vault. This office shares 2 phone lines between 9 telephone sets.

While in the basement I examined the PVA and Planning & Zoning Offices. These 2 offices primarily deal with similar functions of evaluating and assessing properties located in Bourbon County. However, the offices do not effectively share information and databases. The Planning & Zoning office contains 2 stand-alone Pentium 133mhz PCs. These PCs are used for basic record keeping, plotting, maps, and electronic code libraries. These machines are fairly outdated, but seem to be serving their purpose at this time. Two telephone sets in the office share a single phone line.

The PVA office contains 4 Compaq 166mhz Pentium workstations running Windows 95 operating system. These workstations are connected to a Compaq Prosignia 200 file server via a Microsoft Ethernet network. The server stores property information and tax databases. The PVA office also contains 2 Memorex terminals used to retrieve boat and car licensing information from a Frankfort database system. I was unable to determine how these terminals are connected to the state headquarters, but assume it uses the same network as in the County Clerk's office. In addition, there are four telephone sets in the office sharing a single phone line.

Next, I examined the County Attorney and Domestic Violence offices. In the County Attorney's office there are 2 Pentium based workstations running the Windows 95 operating system. The workstations are not networked, and do not have Internet access. They are used for data entry applications and various law programs. Another workstation sits practically unused, however it is connected to the Circuit Clerk's computer systems. In this office, 5 telephone sets share 3 lines. The Domestic Violence office located within the County Attorney's quarters contains a new Pentium 3 workstation running the Windows 98 operating system. It has Internet access via a 56k modem and outside phone line that is not part of the key system. This office has a single telephone set and line connected to the key system.

Upstairs, I visited the Treasurer's office. Out of all the offices in the building, it is the most up-to-date and properly configured. Three Compaq workstations are running the Windows NT operating system. They are connected to an 8-port 10 Base -T hub. An Ethernet network is in place to connect the workstations to a Windows NT file server. The server has CD-Rom and tape backup drives for archiving, storing, and accessing

files. These workstations must be of a high quality because they are used for maintaining the county's financial records, tax and budget programs, check and balances, and employee attendance. This office shares 1 phone line between 2 telephone sets.

The County Judge Executive's office is located across the hall from the Treasurer. In this office, there are 2 Pentium based workstations running the Windows 95 operating system. These machines are stand-alone which does not allow for any type of file sharing, nor do they have Internet access. There is a single fax machine with its own dedicated line outside of the key system. This office has 2 phone sets and 2 telephone lines. A key system control box is located at the secretary's desk. This box allows complete control of all key functions and access to all telephone lines.

In addition to the 23 regular phone lines, a single phone line is shared by all offices and dedicated to long distance calls. Each office has access to the line via the key system. The key system also provides an intercom system for employees to communicate inter and intra-office.

Needs Assessment

The most significant need is for an enhanced telephone system with more telephone lines and a voice mail system. Many employees expressed dissatisfaction with the current system. At peak times it is difficult to get a free line. The current telephone sets are fairly old and clunky. The telephone sets have a built-in intercom function, however it is somewhat difficult to use properly, therefore it is rarely used. A voice mail system is not currently in place. Workers cannot receive messages when

they are away or unavailable to take calls. A simple voice mail system is needed to store messages when workers are unavailable. This would increase public relations and telephone efficiency. Also, another telephone line dedicated to long distance calls is needed to allow more simultaneous long distance communication.

The current computer situation is, unorganized, insufficient, and outdated. All employees need access to a workstation linked to the Internet with e-mail capabilities. An email server should be purchased and installed on the premises. Each employee could be issued an e-mail account. In addition, file sharing between some offices is necessary to improve work and communication flows. A Local Area Network (LAN) should be constructed within the courthouse to allow file sharing between offices that perform related work, such as the PVA and Planning and Zoning. On a much larger scale, a countywide intranet linking all government organizations would be ideal. This intranet would make communication more effective within government organizations, provide access to necessary forms and databases, and eliminate a considerable amount of paper processing and telephone calls.

Short-Term Planning

The current key telephone system is being used at its maximum capacity. No more telephone lines can be added with the current configuration. The short-term goals are to provide employees with more phone lines and to network a few offices together to provide file and database sharing.

Installing a new telephone switching system is recommend. The Lucent Technologies Definity One Communications System would be an ideal choice for the

courthouse environment. It is a self-contained digital communications server capable of filling all voice and data needs. It has a maximum of 168 ports to accommodate any combination of stations and trunks and to allow for future expansion. The Definity One runs the Windows NT operating system and has on-board Ethernet connectivity, which allows it to be administered like any other point in a Local Area Network (LAN). The Definity One has pre-installed applications, including a voice-mail system. It works with a wide variety of Lucent telephone sets to accommodate each office with the functions they need most. Upon installation of this system, each office will be required to use new telephone sets.

In addition to the Difinity One Communications System, an additional Primary Rate ISDN line is needed to provide more phone lines and data access (for the Internet). This line can be split accordingly to provide 23 phone lines or dynamically divided to provide up to 1.5 mbps of symmetric data transfers (see long-term plans).

The Planning and Zoning office needs access the PVA's property database in order to provide a more efficient means of determining property ownership. Additional fields should be added to the database to allow the recording of property zones. To accomplish this, a workstation should be added to the P&Z office and linked to the file server located in the PVA office. This can easily be accomplished since the PVA office has an existing Ethernet LAN.

Long-term Planning

The long-term plan for the telecommunications infrastructure includes creating a courthouse-wide Local Area Network (LAN) to allow offices to share files, applications, and peripheral devices. A high-performance file and e-mail server will be necessary. This server should run the Windows 2000 Server operating system in order to be consistent with the Lucent Difinity Communications Center and other servers within the building. Microsoft Exchange server is the email application of choice. It is recommend purchasing a well-known brand of workgroup server such as Dell, Compaq, or Hewlett Packard. These companies provide high quality equipment along with above average customer service and excellent warranties on their products.

The server will interface with the Lucent Communications Center and use a section of the ISDN line for data (Internet) transmission. This Internet service must be acquired from an Internet Service Provider (ISP). It may be beneficial to obtain this service from Bell South or one of the local service providers such as KIH.net or KYK.net. In order to connect all available workstations to the Ethernet network, a hub will be needed. Each workstation will be wired directly to the hub. Due to the limited range of Ethernet, placing Linksys or Cisco brand 24-port 10/100 Base-T hubs on each floor of the courthouse is recommended.

Some new workstations will need to be purchased to replace outdated and incompatible ones. These workstations can most likely be acquired from the same vendor who is supplying the server. It may be possible to obtain price discounts by buying in bulk quantities. Dell Computers, Inc. caters to governmental and educational needs and offers special price rates (www.dell.com).

Implementation: Short-term

In order to implement the short-term plans, the County should outsource most of the technical installation work to experienced companies. After the technology is in place, there will be a need for continuous administration and maintenance. It is recommended that a full-time technology coordinator be hired. The Technology Coordinator would be responsible for administering and maintaining the County's complete telecommunications network as well as developing educational programs that teach employees to use the new technology in an efficient manner.

The Lucent Communication Center should be compatible with most of the existing voice wiring within the building. Some minor changes and rewiring may be necessary. Another ISDN line will need to be installed by the phone company (Bell South). After the Lucent switch is in place, new telephone sets will need to be installed in place of the old ones. This cutover period will be disruptive to business-as-usual and should therefore be planned accordingly. This installation may be best suited for a long weekend or period when many workers will be out of their offices. Training sessions should be devised before the cutover period to inform and prepare workers for the new system and to educate them on the proper usage.

Implementation: Long-term

Creating a Local Area Network within the courthouse building will require a considerable amount of wiring and time. It will probably be best to outsource this work to an experienced company.

- Areas on the second and third floors will need to be designated to contain the Ethernet hubs that each workstation will interface.
- The e-mail and file server will require software installation and configuration.
- New Ethernet cards and software must be installed in existing workstations that are compatible with the network design protocols.
- New workstations must be installed where needed and configured for Email and Internet services.
- A full-time technology coordinator will be needed to maintain all hardware and software.
- Steps should be taken to develop an Intranet for all county government organizations.

At this stage, training and education for the employees is very important. In order for workers to gain maximum efficiency from the technology, they must learn how to use the basic functions of the email and Internet software. In addition to training, an acceptable use policy should be developed in order to ensure that employees do not misuse or abuse the technology.

Conclusion

The Bourbon County Courthouse is currently limited in the amount of work its employees can accomplish. The entire communications infrastructure needs upgrading to meet the demands of today's, high-tech world. Telecommunications should not be viewed as a major cost center, but as a way to improve business practices and communications between everyone associated with the organization. A considerable investment in Information Technology would pay for itself in a short time, considering the gains in employee productivity.