VT320 TERMINAL EMULATOR

GRADUATE PROJECT THESIS

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ABSTRACT

This project is the design and implementation of a terminal emulator using Digital Equipment Corp. (DEC) VT320 protocol. Communication between the client and host computers is either through direct serial connection or through modem dialup. The emulator software running on the client parses data coming from the host, separating VT320 control functions from characters to be displayed, and acts on the control functions accordingly. It maps the VT320 keyboard onto the client keyboard and features a popup window that shows the location of the special VT320 keys. Binary and text file uploading and downloading between host and client is integrated in the emulator. A scripting language allows automation of dialup and login procedures. In addition to general help screens, VAX application-specific help screens are available.
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CHAPTER 1 - INTRODUCTION

1.1 Background

The Advanced Film Division of International Resistive Company, Inc. (IRC) located in Corpus Christi, Texas, manufactures high-tech electronic components, primarily resistors. Toward the goal of delivering high-quality products on time to their customers, the company uses MAXCIM, an MRP-II manufacturing and accounting software package running on a Digital Equipment Corp. VAX-4505A computer. Users of the VAX computer system interface with the software through character-cell terminals speaking VT320 protocol. Many of these same people also require personal computers (PCs) to do other aspects of their jobs. Thus, they are required to have both a PC and a VT320-class terminal on their desks.

While communication with a VAX can be achieved through a serial connection with a PC or through modem dial-up on a PC, the low-end, default communication software packages that come with PC operating systems do not understand VT320 protocol. As a result, the terminal window can't handle the VT320 control functions necessary to properly display the text. In addition, the PC keyboard doesn't transmit the proper codes nor have all of the specialized keys found on a VT320 keyboard. Communication software packages that have VT320 terminal emulation or dedicated VT320 terminal emulators can be quite expensive, especially if a large number of licenses are required.

In an effort to eliminate the terminals from the desks of those who also have personal computers, commercial terminal-emulator software packages were analyzed several years ago. A viable product, Attachmate's KEA!, was identified and an initial site license for ten users was
purchased. As more MAXCIM users have been provided with personal computers, an additional six KEA! licenses were purchased.

1.2 Rationale

While the KEA! emulator does the job for which it was purchased, problems were identified:

- Training people to use the software is difficult, as many of the special keystrokes required in MAXCIM are not easy to locate on some PC keyboards.

- The KEA! product was written to be compatible with a broad range of disparate company's uses. As a result, there are many features that are not only not used at IRC, but make using the remaining features difficult.

- IRC was notified in the second quarter of 1997 that Attachmate had released a new version of their software. In order for the company to order additional licenses, they have to pay a fee of $100 per license to upgrade all of their existing licenses to the current version. Any new licenses would then cost $250 each. As IRC has been purchasing more personal computers to supplement the terminals of VAX users, the upgrade cost and the increased cost of new licenses would be prohibitive.

- Because of this cost and the growing need for emulators, eighteen additional users have since been provided with another emulator, PowerTerm 525, which was an add-on product to our DEC Pathworks LAN software. Thus, IRC is now faced with supporting multiple emulators.

As a result of these problems, IRC was looking into alternatives. The alternative of writing a terminal emulator in-house was attractive. It would remove current and future concerns about the costs of purchasing and upgrading licenses for commercial emulators. The software could be greatly simplified by eliminating many features that are not used. PC keyboard mapping could be
made more specific to the software running on the VAX, thus making training easier. By using this single emulator, the problem of supporting multiple emulators would be eliminated.

1.3 Environment

This project was designed and built for International Resistive Co., Inc. It is run on Pentium-class personal computers running the Microsoft Windows 95 or Windows 98 operating systems. It was written using Microsoft Visual Basic Professional Edition 5.0. The database table was designed and built using Microsoft Access 97. Data communications take place either through direct serial connection or through 28.8K baud or faster modems. The host computer is a Digital Equipment Corp. VAX-4505A.

The primary users of this program are in the sales and accounting departments. They use PCs to do many aspects of their jobs, but also need a terminal interface with MAXCIM to do sales order entry and maintenance, sales analysis and accounting functions.