digital application note

Combining Scientific Data Processing and Word Processing Needs

This Application Note describes how you can use different Digital products to help you solve your laboratory data processing and word processing needs. The products discussed in this Note are: MINC, MiniMINC, a host system, a Digital word processing system, and a network file transfer kit. The Note describes how these products can be linked to perform the following operations:

- Send data acquired at a MINC or MiniMINC to a host system running DECnet.
- Process data at a host system.
- Send data to a Digital word processing system.
- Print a data analysis report at a Digital word processing system.

For example, you would use either a MINC or MiniMINC to acquire data from laboratory instruments or process data using standard MINC BASIC programming techniques. After storing the data in files on a MINC or MiniMINC, you use the network file transfer capabilities of MINC NFT (Network File Transfer) to send the data files to the host system running DECnet.

At the host system you can perform additional processing and formatting of the data.

Next, you send the summary data to the word processing system where the data combines with a document form. The word processing system then prints the final document on the word processing printer.
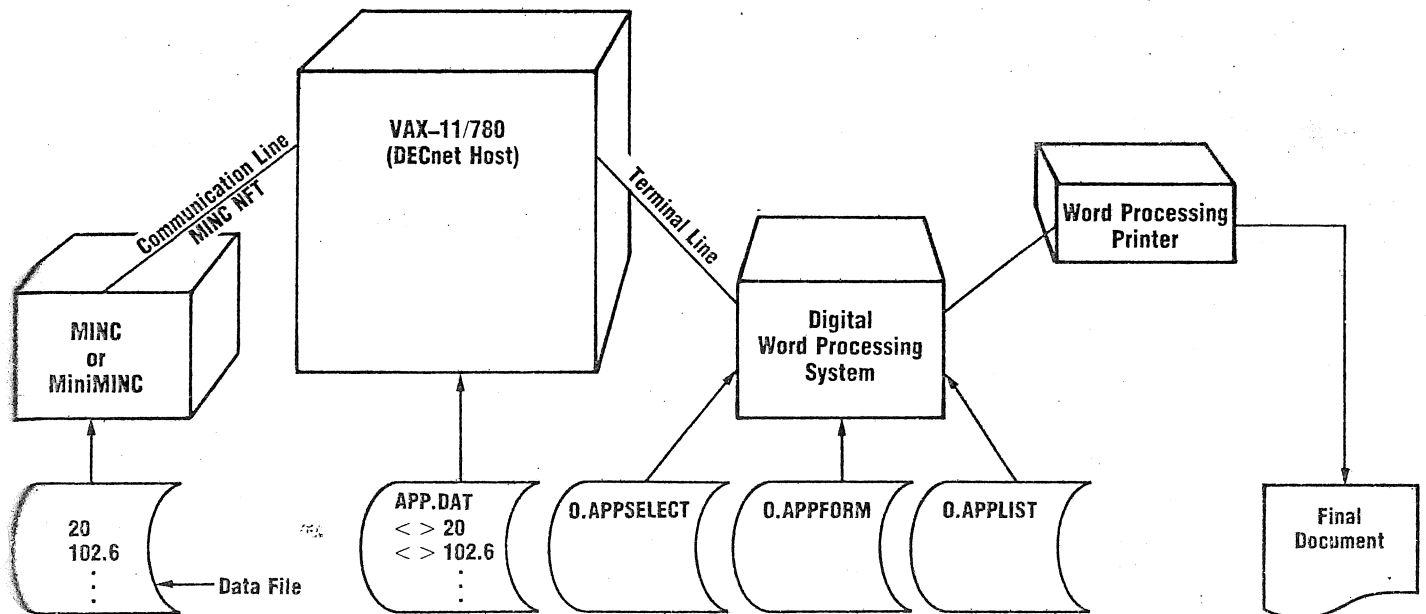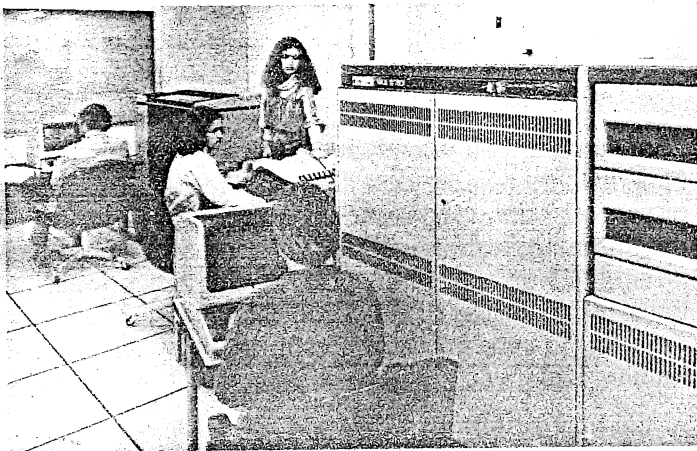
Hardware Components

The application requires the following hardware components:

- MINC or MiniMINC.
- Host computer capable of supporting standard DECnet with RSX–11M, IAS (PDP–11), or VAX/VMS.
- Digital word processing equipment.
- Communications hardware to connect the MINC or MiniMINC to the host computer.
- Communications hardware to connect the host system to the word processing system.

VAX–11/780

Software Components

The application requires the following software components:

- MINC BASIC to acquire/process data.
- MINC NFT to transfer data from MINC or MiniMINC to the host system.
- Host operating system running DECnet to store and process data.
- Digital word processing system to create report form, merge data with form, and print final document.

MINC–11
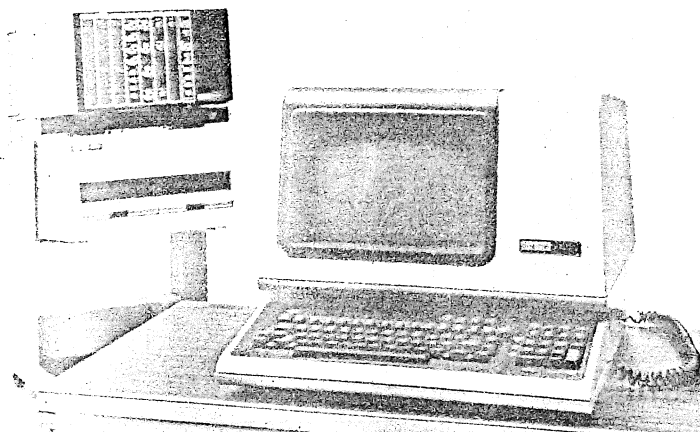
Linking The Components

MINC NFT uses a standard DECnet link between the MINC or MiniMINC and the host DECnet system. The link can be local using a direct connection (null modem) or remote using modems. A PDP–11 host will accept an asynchronous or synchronous link, but a VAX–11/780 host requires a synchronous link.

The line between the word processing system and the host must be connected to one of the host's terminal ports. The cable at the word processing system connects to the primary communication port. The connection can be local using a null modem or remote using a dial-up line.

Ensure the terminal speeds are the same at both ends of the line.

MiniMINC
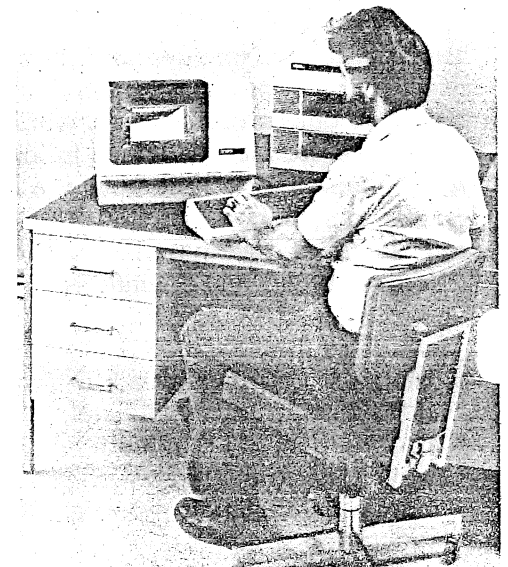
MINC or MiniMINC to VAX–11/780 Link

This example demonstrates how you can transfer a data file from a MINC or MiniMINC to a VAX–11/780 host system.

The example assumes you have acquired data using a MINC or MiniMINC and you have appended the word processing field identifiers to the raw data. The file containing the data and identifiers is APP.DAT and it resides on a diskette in drive 1 of your MINC or MiniMINC system.

The next step is to transfer APP.DAT from the MINC or MiniMINC to the VAX–11/780 host system using the network file transfer software MINC NFT.

Before you transfer the file, ensure the VAX–11/780 is running DECnet, the node is on, and the line connecting the MINC or MiniMINC to the host is on.

To transfer APP.DAT do the following:

- Insert a MINC NFT system diskette in drive 0 of the MINC or MiniMINC. Ensure the NFT system

has been configured to connect to the VAX–11/780.

- Boot the MINC NFT system.
- After NFT READY appears on the MINC or MiniMINC terminal screen, type:

COPY DK1:APP.DAT REMOTE::⟨RET⟩

- If you have not entered accounting information, MINC NFT will prompt you to enter a username and password.

After NFT READY appears on the MINC or MiniMINC terminal screen, APP.DAT resides at the VAX–11/780 in the directory associated with the username and password you specified.

VAX–11/780 to WS78 Link

The following example demonstrates how you can:

- Transfer a file from a VAX–11/780 to a WS78 single-terminal word processing system.
- Merge the file with a form stored on the WS78.
- Print the final document (merged file and form) on the WS78 printer.

WS78

The example assumes you have a data file containing ASCII representation of raw data and word processing field identifiers stored on the VAX–11/780. The example also assumes you have created the document form and select specification. Both are stored on the WS78.

The example uses the following files:

- APP.DAT exists on the VAX–11/780 and contains the data with field identifiers.
- 0.APPFORM exists on drive 0 diskette of the WS78 and contains the document form.

- 0.APPSELECT exists on drive 0 diskette of the WS78 and contains the select specification.
- 0.APPLIST will exist on the word processing system and will contain the data originally stored on the VAX–11/780. APPLIST is called the list document.

See the PROCEDURE insert.

Data File 0.APPLIST. It is the same as APP.DAT. The VAX–11/780 added the trailing $. Note the field identifiers to the left of the data.

```
<TITLE>Rabbit/Virus Injection Data
<NAME>Howard
<DATE>27–NOV–79
<c1>Hours after
<c3>Injection
<c2>Temperature
<c4>(F)
<d1>20
<d2>102.6
<d3>31
<d4>104.9
<d5>49
<d6>107.2
<d7>55
<d8>107.0
<d9>70
<d10>102.9
<d11>79
<d12>102.8
<d13>95
<d14>101.9
<>
$
```

Form 0.APPFORM created at the word processing system. Note the location of the field identifiers.

```
Experiment Title: <TITLE>
Investigator's Name: <NAME>
Date: <DATE>
   <c1>                    <c2>
   <c3>                    <c4>
   _____
   <d1>                    <d2>
   <d3>                    <d4>
   <d5>                    <d6>
   <d7>                    <d8>
   <d9>                    <d10>
   <d11>                   <d12>
   <d13>                   <d14>
```

Final Document printed on the word processing printer.

Experiment Title: Rabbit/Virus Injection Data
Investigator's Name: Howard
Date: 27–NOV–79

Hours after Injection	Temperature (F)
20	102.6
31	104.9
49	107.2
55	107.0
70	102.9
79	102.8
95	101.9

The following procedure assumes you have a working knowledge of both the VAX–11/780 command language and the WS78. The procedure has two parts.

The first, General Instructions, describes what you must do before transferring the data file, APP.DAT, from the host to the word processing system.

The second, Detailed Instructions, describes how to transfer the file, merge it with the document form, and print the form at the WS78.

General Instructions

1. Insert the word processing system diskette in drive 0 of the WS/78.

2. Boot the system.

3. Create the document form. Store the form in 0.APPFORM.

4. Create the select specification. Store the select specification in 0.APPSELECT.

Detailed Instructions

You are now ready to transfer the file APP.DAT to the word processing system. All information you enter is underlined.

1. To invoke the character transmission communications option, type:

   CX⟨RET⟩

2. WS78 displays the Communications Menu.

3. To communicate with the host, press:

   ⟨RET⟩

4. After Username: appears on the screen, log on to the VAX–11/780.

5. After a $ appears on the screen, type:

   TYPE⟨SP⟩APP.DAT\R

   The \R does not echo on your terminal screen. Do not press ⟨RET⟩ after typing the line. Assume that APP.DAT is in your default directory.

6. WS78 displays the Communications Menu.

7. Note the line

   KH HS

   at the bottom left hand side of the screen.

8. Type:

   ⟨SP⟩HD⟨RET⟩

9. WS78 displays the prompt:

   Type the name of the document to be modified and press RETURN
   OR Press Gold MENU to recall the Main Menu.

10. To transfer the file APP.DAT on the host to 0.APPLIST on the word processing system, type:

    0.APPLIST⟨RET⟩

11. Press:

    ⟨RET⟩

12. The data file appears on the screen and transfers into the file 0.APPLIST. Wait a few seconds for the data transfer to finish. Note the $ at the bottom left hand side of the terminal screen.

13. Type:

    \R

The \R does not echo on your terminal screen. Do not press ⟨RET⟩ after typing \R. You are now ready to merge the list document 0.APPLIST with the form stored in 0.APPFORM.

14. WS78 displays the Communications Menu.

15. Press:

    Gold MENU

16. WS78 displays the Main Menu.

17. To invoke the List Processing Package, type:

    LP⟨RET⟩

18. To merge the 0.APPLIST with 0.APPFORM and print the final document, type:

    P⟨RET⟩

19. WS78 displays the following list document prompt:

    Type the name of the LIST document to be used and press RETURN
    OR Press Gold MENU to recall the Main Menu.

20. To enter the name of the list document, type:

    0.APPLIST⟨RET⟩

21. WS78 displays the following select specification prompt:

    Type the name of the SELECTION SPECIFICATION to be used and press RETURN
    OR Press Gold MENU to recall the Main Menu.

22. To enter the select specification, type:

    0.APPSELECT⟨RET⟩

23. WS78 displays the following document form prompt:

    Type the name of the FORM with which you wish to merge the list and press RETURN
    OR Press Gold MENU to recall the Main Menu.

24. To enter the name of the form, type:

    0.APPFORM⟨RET⟩

25. WS78 displays the Print Menu which contains current settings for printing the document. You may change them if they are not correct.

26. If the settings are correct, type:

    OK⟨RET⟩

27. WS78 displays the List Processing Start Menu.

28. Type:

    GO⟨RET⟩

29. WS78 prints the final document.

30. Ignore the following error message which may appear on the screen:

    Record number (N) has text before the first '<'.

    The error may appear because of the $ placed at the end of 0.APPLIST.

31. Press Gold MENU to return to the WS78 Main Menu.