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COMMUNICATING BETWEEN THE APPLE AND THE WANG

George W. Barton, Jr.  
Robert Downey

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October 26, 1982

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### Abstract

This manual covers what the beginner needs to know in order to transfer files between an Apple's Microcomputer and a Wang's OIS Word Processor. We have also tried to indicate where the experienced user might want to look for additional details. We cover the use of Apple Writer <sup>1</sup>[], VisiTerm,<sup>3</sup> VisiCalc,<sup>3</sup> and EasyWriter<sup>4</sup> Professional. For us, the two most useful connections are from Applewriter to Wang and from VisiCalc to Wang. From Wang to Apple Writer via Visiterm may have some value. Files can be transferred by VisiTerm to Wang, but they arrive with RETURNS in the middle of words, which have to be edited out, so we do not recommend it. We describe how to go from EasyWriter to Wang, but we do not know how to go from Wang to EasyWriter. We see no reason to go from Wang to VisiCalc, so we haven't thought about it. All instructions are given for a "typical" configuration of the Apple, namely the one on which this manual was composed. It is detailed in the section on "Hardware and Software".

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1. Apple and Apple Writer are trademarks of Apple Computer, Inc., Cupertino, CA.
2. VisiTerm and VisiCalc are trademarks of VisiCorp, San Jose, CA.
3. EasyWriter is a trademark of Cap'n Software, and is marketed by Information Unlimited Software, Inc., Berkeley, CA.
4. Wang is a trademark of Wang Laboratories, Inc., Lowell, MA.

## Introduction

If all you need to do is send files from Apple Writer to the Wang, you only need to read the sections on the "Wang Edit Connections Menu", "Setting the Wang up to Receive a File", and "Apple Writer Print/Program Commands Menu". If you want to send a VisiCalc file, also read "Sending Files from VisiCalc". If you want to send files from the Wang to the Apple, you will need to read, in addition, "VisiTerm OPTIONS Menu", "VisiTerm FTRAN Menu", and "Receiving a File using VisiTerm". There is a section on EasyWriter if you need that.

Hardware and software requirements are covered in the section entitled just that. Your electronics person will need that information.

Note that Apple Writer keeps all its files in Apple DOS format. Thus it can access data files and the results of calculations that are stored as Apple text files, minimizing the chance of transcription error and greatly easing proofreading.

The protocols we recommend are not the only possible ones, but these are the ones we found to result in the cleanest files. Norm Burr of Earth Sciences and Tom Slezak of BioMed have experience with additional packages, and we want to thank them for their help. Call us or them if you want advice on other packages or applications.

---

Wang  
Edit Connections  
Menu

---

You will need to use this procedure only the first time you set up communications or if the system crashes and loses this information.

In order to avoid writing in someone else's library, you must personalize a connection table for your use. To do this:

- 1) Bring up the "Telecommunications" menu, then "Sessions, Logs, Connections", then "Edit a Connection". This menu will prompt for a connection.
- 2) Type in "tty" and press EXECUTE twice. Rename the connection something unique to you like your name with "r", for receive, appended. A valid name is "Helenr". It is limited to eight characters. If you make a mistake, delete characters with the "delete key". Blanks are not allowed in connection names.
- 3) Press RETURN, and correct the Library identification letter to yours. You can change the identifier when setting up a session, but put your most commonly used one here.
- 4) Press EXECUTE twice. If you get the message "Connection Already Exists" STOP! Contact your Wang Coordinator to find out why your desired name is already there. If someone else is already using that name, press CANCEL, choose a new name, and reedit the connection. If you and the Coordinator decide that everything is all right, press EXECUTE to overwrite the old information. You will use this connection table when receiving files from Apple Writer.
- 5) Next, bring up "ttyh" the same way. Give it the same name as before, but with "s" appended (for example, "Helens").

6) Correct the library identifier, and store this connection table away too by pressing EXECUTE. You will use this connection table when sending files to VisiTerm.

When you have finished the editing, the connection edit will look something like this:

---

Connection:	helenr (or helens)	Protocol:	TTY
Library:	M		
Response Timeout:	120 X 0.01 seconds		
Role:	T (or H)	Parity:	N
Baud Rate:	1200	End of line:	OD
Translation Tables:	01	End of Page:	OC
Format Length:	080		

---

See pages 7-7 to 7-9 in the Wang Telecommunications Manual if you want to know what all these things mean.

---

Setting the Wang Up to  
Receive a File

---

When you are ready to receive a file from the Apple, follow this procedure:

- 1) Bring up the telecommunications menu. Select "Begin an Interactive Session" and press RETURN.
- 2) The system will select a session number for you and prompt you:

Connection: -----

Type in the name you selected for receiving. If you make a mistake, use delete. Spaces are not accepted in connection names. Press EXECUTE.

- 3) Your default library will be displayed. Press EXECUTE again. After a short wait while the system loads the telecommunications software, the session menu will come up.
- 4) It should say "Data Set Ready" in the upper right of the screen. If it does not, the cable is not connected, the Apple is not turned on, or there is something more seriously wrong. If it is something serious, call for help. Assuming the data set is ready, press the RECV TO DOC key. (If you do not have the function strip for your station, this is the blank key left of the GO TO PAGE key. The strip is shown on page 3-5 of the Wang manual.)
- 5) The cursor will jump to "Doc Name". Type in the document name and press EXECUTE. If you do not type in a name, the Wang will not save the incoming data, but just display it for you. The cursor will jump to the top of the communication screen and wait for incoming data. Press the RECV TO DOC (Blank) key once more. The message "Recv. Doc. Active" will appear.

- 6) Initiate transmission from the Apple as described in the appropriate section of this manual.
- 7) When the Apple has finished transmitting, either bring up another document to send, or terminate the session.
- 8) To terminate, press CLOSE RCV DOC (the GO TO PAGE key)(2 times). If you are really through, it will display "Not Receiving".
- 9) CANCEL will bring up "Cancel Session?". EXECUTE will return you to the previous menu, after a delay. Another CANCEL returns you to the DOS menu.

Note the document number. You will need it when you bring up the word processing menu.

---

Apple Writer  
Print/Program Commands:  
    Menu

---

- 1) Bring up the menu with "ctrl-P?".
- 2) If you are sending text files, on which you will have the secretary do the final formatting, set the menu to "LM0", "PM0", "RM79", and "PD2". PD0 is print to screen, PD1 is to your local printer, and PD2 is to the communications interface. Be sure you have removed all imbedded print commands. This combination will give you the fastest transfer rate and the least confused Wang file.
- 3) Set the Wang up to receive as described in that section of this manual.
- 4) Start sending by typing "NP" from the Print menu. Apple Writer will transmit even if the Wang is not listening. You can terminate transmission early by pressing RESET. (ctrl-RESET if the switch inside the Apple is turned that way.)

If you are sending tables in which you have done a lot of fancy formatting, the imbedded format commands will be acted on, and the formatted file will be sent to the Wang. If you can avoid it, do not permit the right margin to extend beyond RM79. You will get occasional extra lines which will have to be edited out on the Wang. (We think we know how to send long lines of text for tables which are to be printed sideways on the paper, but we have not tried it. If you need this capability, call George Barton, and we'll try it.)

If you have been transmitting files from Apple Writer and want to print something out on your local printer, don't forget to restore the printer destination with "PD1".

You may wish to save your preferred margin settings permanently. See the instructions on page 72 of the Apple Writer manual.

---

Sending Files from  
VisiCalc

---

Do your calculations in the ordinary fashion. When you are ready to send them to the Wang, the sequence resembles the normal print command.

1) Type:

"/P2" (Don't type the quote marks)

2) VisiCalc will respond:

,S2 RETURN TO CONTINUE

3) Press RETURN and VisiCalc responds:

PRINT: LOWER RIGHT,"SETUP,-,&

Type "--" and then indicate the lower right of the printout in the usual fashion. Transmission is through when the VisiCalc screen returns to normal.

---

VisiTerm  
OPTIONS Menu

---

Reach the OPTIONS menu from Terminal mode (the startup condition) by pressing ESC, then !. From modes other than terminal, the command is 0. When set up for communications to the Wang, it should look like this:

---

COMM SLOT	#2 CCS
COMM SPEED	AS SET (Set it to 1200 baud)
DATA FORMAT	7+EVEN+1
BREAK LENGTH	0.20 SEC
EOB CHAR	\$0D RET
ACK CHAR	\$0A <J>
AUTO ACK	4
STOP CHAR	\$13 <S>
START CHAR	\$11 <Q>
SWITCH TO A	NONE
SWITCH TO B	NONE
CURSOR WIDTH	4
VERT SPACING	10
SCROLL LINE	25
SCROLL STEP	10
KEY TICK VOL	16
EOL WARNING	72
HORIZ TABS	1

---

VisiTerm changes menu values by using the left and right arrows. It changes edit fields when SPACE or RETURN are pressed. All these settings are described on pages 3-4 to 3-14 in the VisiTerm manual, but the only ones important here are COMM SLOT through AUTO ACK.

---

VisiTerm Settings  
FTRAN Menu

---

The file transport menu is reached from the Options menu by pressing F.

---

FILENAME:	your selection
DRIVE:	2 for two drives, 1 for one.
PROTOCOL:	EOB-ACK
BLOCK CHARS:	INCLUDE
BLOCK SIZE:	80 (receive) 79 (transmit)
EOF CHAR:	NONE

---

These options are changed by use of the arrow keys, just as on the OPTIONS menu. FILENAME cycles through the disk index. You can also press ESC and type in your desired name. If you want a detailed discussion of the FTRAN menu, see pages 3-14 to 3-17 in the VisiTerm manual.

When first powering up, use the S command on the OPTIONS menu to SAVE the default character set under the name OLDEFAULT, and the G command to GET the set called MONO-SPACE. After making the settings in the OPTIONS and FTRAN menus, SAVE them all under the name DEFAULT. Put the write protect tab on the diskette. These settings will then come up each time hence. See the discussion of SAV on page 3-13 in the VisiTerm manual.

---

Receiving a File  
Using VisiTerm

---

- 1) Set VisiTerm up to receive before starting transmission from the Wang. From Terminal mode, go to Options mode with ESC!, and then to Ftran mode.
- 2) Position the highlight on FILENAME, press ESC, and type in the filename you want to use on the Apple.
- 3) Press R for receive. If that file already exists, the display will read:

APPEND REPLACE CANCEL

- 4) Choose your desired option by typing the initial letter. For APPEND and REPLACE. The display will say

ESC 2 STOP RECEIVING

- 5) Now, start up the Wang, and watch the file come in. Unfortunately, the Wang does not automatically indicate an end-of-file. You will have to put something at the end that you will recognize, such as the phrase, "END-OF-FILE".
- 6) When you are through with a session, type ESC, then 2.

Receiving a file with VisiTerm is much slower than sending one. The Wang just sends out a line of characters, waits 1.2 seconds, and sends another line. The reason it has to wait so long is that VisiTerm stops listening every 250 or so characters, and writes its buffer area to the diskette. Although it does this only every third line or so, we have to allow time for this after every line.

The received file can be viewed with Apple Writer. You will find each line starts with a reverse J. These can be quickly removed with the ctrl-F command. Type ctrl-B to get you to the beginning of file, then ctrl-F. The display will read:

[F]ind :

Type in /ctrl-J//a and press RETURN. Use the ctrl-J keys, don't spell it out. They will all be removed, leaving you with a nice clean files.

---

Sending from  
VisiTerm

---

This is not recommended for text files. VisiTerm breaks up its blocks without regard to space between words. The received file requires heavy editing. If you want to send a file from VisiTerm:

- 1) First set the Wang up to receive, as described in that section of this manual.
- 2) Then, initialize VisiTerm. It will come up in terminal mode.
- 3) You will probably want to be in half-duplex mode. If the line at the bottom of the screen says FULL, press ESC, then " to display HALF.
- 4) Next, press ESC, then ! which will put you in the OPTIONS menu.
- 5) Press F to get to the FTRAN menu. Choose your file either by pressing ESC and typing in the name, or by use of the arrow keys.
- 6) Then press S to send. The STATUS line changes to SENDING. The command line changes to read:

SPACE STOP SENDING RETURN ACK/START

If you press the SPACE bar while sending, transmission will stop and the command line will display:

ABORT      CONTINUE

-14-

Press either A or C. When the complete file has been sent, the message

<END OF FILE>

will appear. You can now go to Terminal, Options, or Send or Receive.

The details of sending are described on pages 2-59 to 2-61 of the VisiTerm manual.

---

Setting the Wang Up  
to Send to VisiTerm

---

- 1) Bring up the communications menu as described in the section "Setting the Wang up to receive a File". The connection will be the name you chose for sending.
- 2) Provide the document ID. The Wang will provide the name of that document and prompt "DOC Name OK?". If it is, press EXECUTE. Transmission will start immediately.

The only way we have successfully received text is through VisiTerm. It is much slower than sending from the Apple. Be sure VisiTerm is set up to receive before transmission is started, because the Wang will send even if no one is listening. There is no indication when the transmission is finished except that the last line of the document is displayed.

## Configuring EasyWriter Professional for Communications.

EasyWriter, unlike Apple Writer, does not keep its files in an Apple DOS format index. While one of the nibble programs can undoubtedly read the file for transmission, transmitting directly from EasyWriter is straightforward. These instructions will be given for a typical configuration, namely, the one on which this manual is being composed.

- 1) Each time you have to go from the printer to communications, or return to the printer, you must configure the master disk. So, first remove the write-protect sticker. With the master disk in drive 6, slot 1, power up the Apple.
- 2) The first message you will see is on the 40-column output:

SLOT= 6 DRIVE= 1

SLOT= 6 DRIVE= 2

OK?

If correct, press RETURN.

3) Still on the 40-column output, you will see:

VER. #4

TYPE C TO CONFIGURE, 'CR' TO CONTINUE

Since you are changing the printer output destination, type C.

4) The next menu is:

THANK YOU FOR PURCHASING EasyWriter

- A. DOUBLEVISION
- B. SUP-R-TERM
- C. VIDEX
- D. SMARTERM

WHICH 80 COL VIDEO CARD  
DO YOU HAVE?

For Sup'R'Terminal, press B.

PLEASE CONNECT THE VIDEO CABLE  
will be added to the display.

5) Switch to the 80-column output, where you will see:

INSERT MASTER DISKETTE, THEN PRESS RETURN

Unless you have removed it, it is still there, so press RETURN.

6) Next:

PRINTER SLOT:

Answer 2 to go to communications, 1 to go back to your own printer.

7) The next set of questions and answers come up in sequence, so they will be shown together with each appropriate response.

- 1 - DIABLO/QUME
- 2 - SPINWRITER
- 3 - PROPORTIONAL
- 4 - OTHER
- 5 - SPINWRITER ( 5530 )

CHOOSE: 4

AUTO LINEFEED: N

FORMFEED: Y

BI-DIRECTIONAL: N

SHIFT MOD: Y

PARITY: N

8) A new menu will come up:

PRINTER CARD CHOICES

- 0 - SERIAL
- 1 - PARALLEL
- 2 - COM
- 3 - CCS
- 4 - CUSTOM

CHOOSE:

Answer 3 for communications, 1 for the EPSON APL printer interface.

9) The screen goes blank and you will see:

INSERT STORAGE DISK THEN PRESS RETURN

10) Remove your Master Disk now, and replace it with the appropriate Storage Disk. This is most important, since your Master Disk is not write protected, and you could destroy it by formatting it as a Storage Disk.

11) Press RETURN and continue in the usual EasyWriter mode. The only difference is that if you have chosen communications mode, your output will go to the Wang whenever you execute a print command.

---

Hardware and Software

---

The following hardware and software are necessary for the ASCII data transfer.

WANG

Wang must install a hardware interface. They must also install the telecommunications software. This will increase the monthly charge by about \$75.

APPLE

These instructions have been tested on an Apple ][ plus with language card in slot 0, Epson APL card in slot 1, California Computer Systems (CCS) Model 7710 (\$180) asynchronous interface in slot 2, MPR Sup'R'Terminal in slot 3, and the Apple disk interface in slot 6.

The CCS card requires one minor modification. The trace into integrated circuit U3, Pin 6 must be cut and a jumper installed from Pin 6 to J2, Pin 11. This will qualify the REQUEST TO SEND line, something Wang does not do.

SOFTWARE

The software that has been used to transfer data from Apple to Wang is the word processing Apple Writer ][ (an Apple product at \$150). VisiTerm (\$90), by VISICORP, will transfer data in both directions; however, VisiTerm when it reaches the end of a line, or block, will break a word and continue it on the next line, Apple Writer ][ does not.

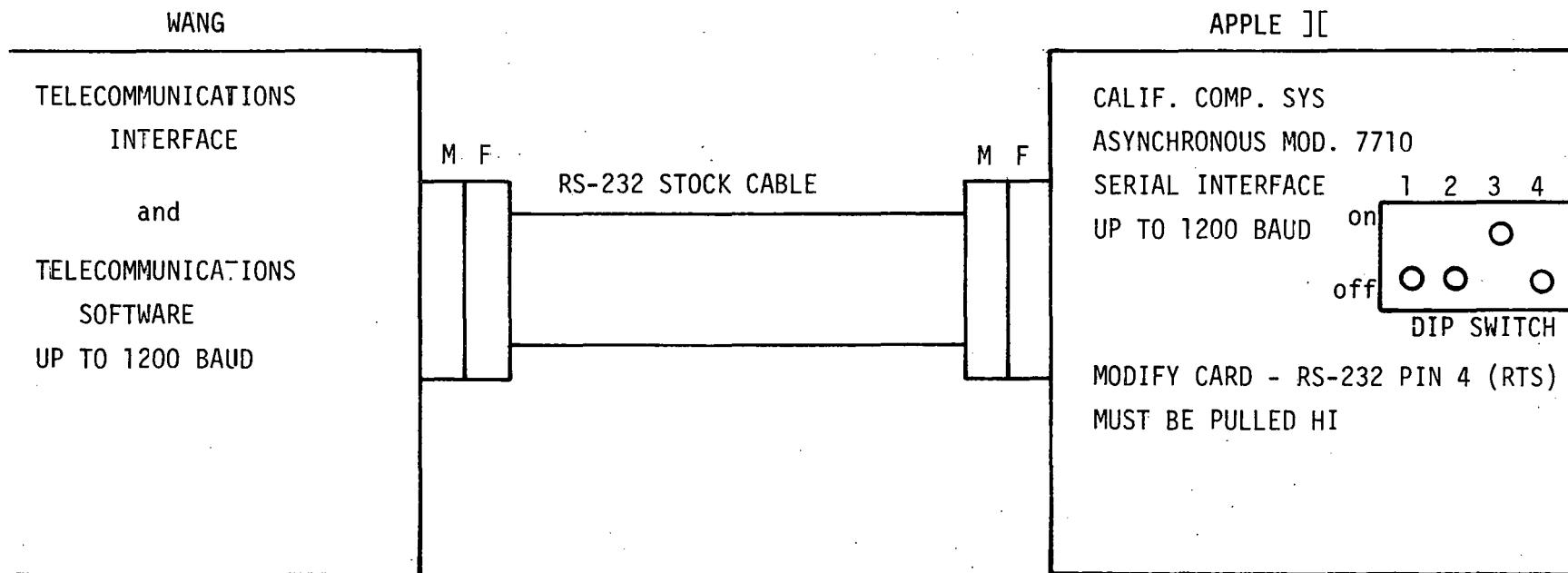
Note 1: Format Length in the TTY Protocol is typically 80 characters per line (or block). When transferring data to Wang, whether from Apple Writer ][] or VisiTerm, be sure to set the block size in Apple Writer ][] or VisiTerm at 1 less than the Wang Format Length. This will allow Wang to see the end of block character (carriage return), which is appended to the block of data being transferred.

Note 2: Response Timeout is a wait interval between records (or blocks) being transferred from Wang. VisiTerm reads in the blocks (or lines). When it has received about 250 characters it writes them out to disk. If the interval is too short between records, VisiTerm will miss the first few characters of the next record while it is writing to disk. A Response Timeout of 1.2 seconds appears to work for VisiTerm.

#### CABLING

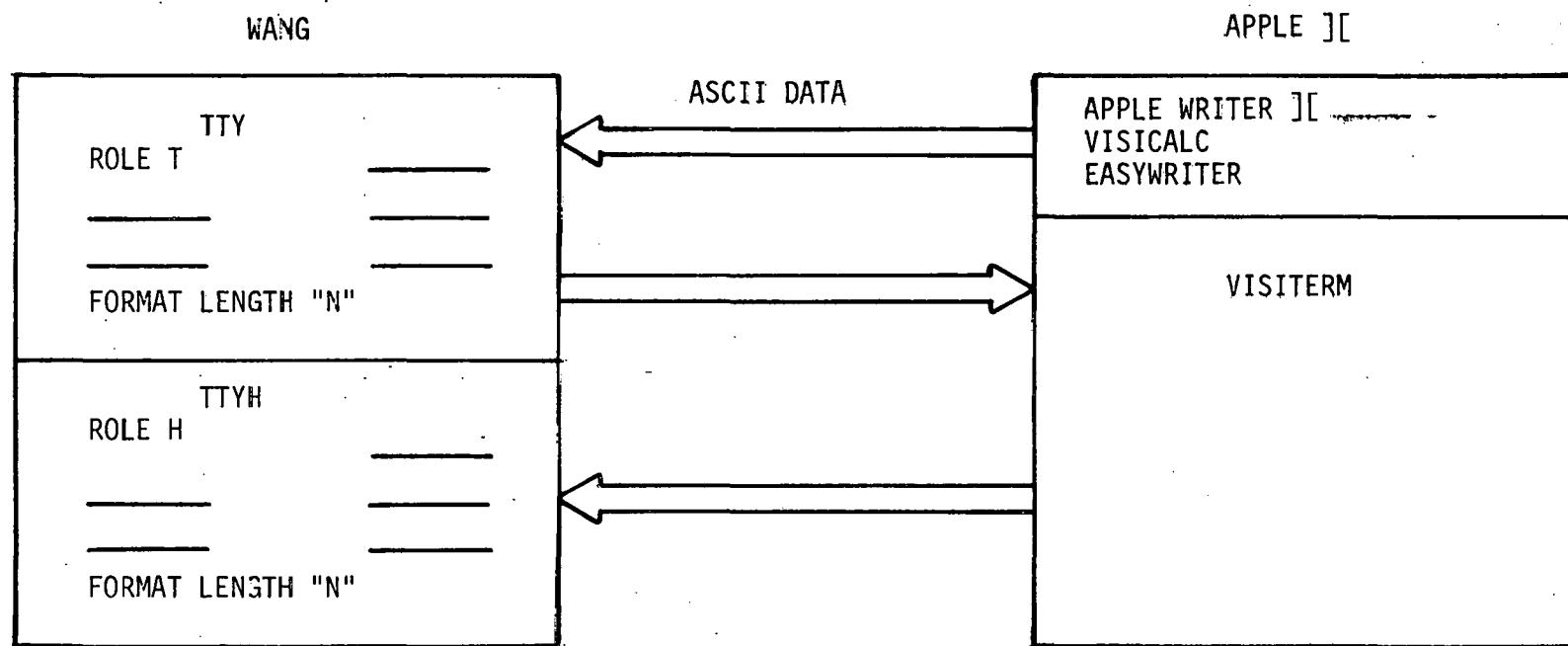
Cabling the two systems together can be accomplished using ILLNL stock RS-232 cables. Be sure to use a MALE-FEMALE cable of suitable length, #5995-66085 (10 ft. \$25), #5995-66086 (25 ft. \$37). Connected as described here, do not use a NULL MODEM, contrary to what it says in the Wang Manual.

WANG  $\longleftrightarrow$  APPLE ][  
HARDWARE INTERCONNECT



WANG  $\longleftrightarrow$  APPLE ] [

SOFTWARE INTERCONNECT



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