

RCONS - A REMOTE CONSOLE PROGRAM FOR
THE NORTHSTAR DISK OPERATING SYSTEM

(C) 1979,1980 BY:
THE MICROSTUF COMPANY
P.O. BOX 33337
DECATUR , GEORGIA 30033
404-491-3787

DESCRIPTION

RCONS IS A MACHINE LANGUAGE PROGRAM DESIGNED TO PROVIDE A LINK BETWEEN THE NORTHSTAR DOS I/O ROUTINES AND THE D.C HAYES ASSOCIATES INC. 80-103A OR MICROMODEM 100 (TM) MODEM BOARDS. IT IS IDEAL FOR USE AS THE BASIS FOR A COMPUTER MESSAGE HANDLING / BULLETIN BOARD SYSTEM.

THE NORTHSTAR VERSION REQUIRES 1K OF MEMORY , AND LOADS AT ADDRESS 0100 HEX. THE SOL VERSION REQUIRES 768 BYTES OF MEMORY , AND LOADS AT ADDRESS C900 HEX. THE ORIGINATE MODE FEATURE HAS BEEN REMOVED FROM THE SOL VERSION IN ORDER TO ALLOW THE PROGRAM TO RESIDE IN THE SOL SCRATCHPAD RAM AREA , THUS ELIMINATING THE NEED FOR LOW MEMORY (BELOW 2000H).

CP/M VERSIONS (EXCEPT SOL) LOAD INITIALLY AT 100H, BUT ARE RELOCATED TO THE NEXT 1K BLOCK OF MEMORY ABOVE THE CP/M SYSTEM SOFTWARE. YOU MUST, THEREFORE, RUN A CP/M SYSTEM 1K SMALLER THAN YOUR MAXIMUM SYSTEM SIZE. SEE YOUR CP/M USER'S GUIDE FOR INFORMATION ON ALTERING SYSTEM SIZE. THE SOL-CP/M VERSION RUNS AT C900H, IN THE SOLOS SCRATCHPAD RAM.

FEATURES

1. PROGRAM HAS NO EFFECT ON NORMAL OPERATION OF THE COMPUTER
2. REMOTE CALLER SHARES CONSOLE 0 (DEFAULT) WITH HOST MACHINE
3. PRINTER OUTPUT NOT SENT TO MODEM
4. AUTOMATIC SELECTION OF PROPER BAUD RATE IN ANSWER MODE
5. NULLS AFTER CARRIAGE RETURN (SELECTABLE FROM 0 TO 9)
6. CALL COUNTER TO KEEP TRACK OF NUMBER OF CALLERS
7. OUTPUT FREEZES ON CONTROL-S
8. SYSTEM RE-BOOT ON LOST CARRIER OR ON CONTROL-D
9. AUTOMATIC ANSWERBACK MESSAGE (CONTROL-E)
10. FORCE ANSWER FUNCTION (FOR TESTING)
11. UPPER-CASE ONLY MODE AVAILABLE.

OPERATION

THE PROGRAM IS VERY EASY TO USE. ALL THAT IS REQUIRED FOR OPERATION IS TO LOAD THE PROGRAM INTO RAM AND EXECUTE IT. THERE ARE A NUMBER OF WAYS TO EXECUTE THE PROGRAM , BUT THE EASIEST IS TO USE A CALL STATEMENT FROM BASIC. AN EXAMPLE IS SHOWN BELOW :

```

100 REM * SAMPLE PHONE ANSWERING PROGRAM *
110 REM * ANY STATEMENTS MAY PRECED OR FOLLOW THE NEXT LINE *
120 B=CALL(256) \ REM * OR B=CALL(51456) FOR SOL VERSION *
130 PRINT "HELLO. THANKS FOR CALLING. PLEASE LOG IN."
140 CHAIN "LOGON" \ REM *RUN USER LOGGING PROGRAM *

```

IN THE EXAMPLE , LINE 130 WILL NOT BE EXECUTED UNTIL THE RCONS PROGRAM HAS DETECTED A RING AND CARRIER ON THE LINE, AND ESTABLISHED BAUD RATE FROM THE REMOTE USER. AFTER LINE 120 IS EXECUTED , RCONS ENTERS A LOOP , CHECKING FOR EITHER A RING , OR A CHARACTER TO BE TYPED ON THE LOCAL TERMINAL. A "WAITING FOR RING" MESSAGE IS DISPLAYED ON THE LOCAL TERMINAL WHEN THE PROGRAM IS IN THIS MODE. WHILE RCONS IS WAITING FOR A RING, THERE ARE SEVERAL FUNCTIONS AVAILABLE TO YOU . FIRST , IF YOU HIT THE ESCAPE KEY , LOCAL OPERATION WILL BE RESTORED , AND RCONS WILL RETURN YOU TO THE PROGRAM WHICH CALLED IT (LINE 130 IN THE EXAMPLE).

AFTER ESCAPE IS STRUCK,RCONS IS DISABLED AND THE PHONE WILL NOT BE ANSWERED BY THE PROGRAM.

TYPING "R" WHILE RCONS IS WAITING FOR A RING WILL RESET THE CALL COUNTER TO ZERO.

A CONTROL-A DURING "WAITING FOR RING" WILL FORCE RCONS TO SIMULATE A "RING DETECT", EVEN IF THE PHONE IS NOT ACTUALLY RINGING. THIS IS USEFUL FOR TESTING THE SYSTEM.

A CONTROL-O DURING "WAITING FOR RING" WILL SWITCH TO ORIGINATE MODE. THE PROGRAM WILL ASK FOR A NUMBER TO BE DIALED. ENTER THE NUMBER FOLLOWED BY A CARRIAGE RETURN , AND RCONS WILL DIAL THE NUMBER. NOTE THAT IN ORIGINATE , AS IN ANSWER MODE, RCONS WILL RETURN TO THE PROGRAM WHICH CALLED IT AS SOON AS IT DETECTS CARRIER (OR AFTER BAUD RATE SELECTION IN ANSWER). IF YOU HAD TYPED "GO RCONS" FROM DOS, FOR EXAMPLE , RCONS WOULD RETURN TO DOS AFTER DETECTING CARRIER IN ORIGINATE MODE. ORIGINATE MODE IS USEFUL FOR TRANSFERRING PROGRAMS OR DATA FILES TO ANOTHER SYSTEM , BUT IS NOT INTENDED FOR USE AS A "DUMB TERMINAL" PROGRAM.

NOTE: THE SOL VERSIONS OF THE PROGRAM DO NOT SUPPORT ORIGINATE MODE.

CARRIER DETECTION

IF , AT ANY TIME DURING A TELEPHONE CONNECTION , THE CARRIER FROM THE OTHER END IS LOST , RCONS WILL WAIT TWO SECONDS FOR THE CARRIER TO RE- APPEAR , THEN DISCONNECT AND RE-BOOT. THIS PROVIDES PROTECTION FROM "HUNG LINES" IF THE REMOTE USER HANGS UP OR IF THE PHONE LINE DROPS OUT. NOTE THAT DURING EXECUTION OF BASIC PROGRAMS , CARRIER DETECTION IS PERFORMED ONLY DURING USER INPUT , AND DURING CONTROL-C CHECK.

BAUD RATE SELECTION

AFTER DETECTION OF A RING IN THE ANSWER MODE , RCONS LOOKS FOR A CARRIER ON THE LINE. IF NO CARRIER IS DETECTED IN TWENTY SECONDS, RCONS WILL DISCONNECT AND RE-BOOT THE SYSTEM. IF A CARRIER IS DETECTED, RCONS WILL SEND THE MESSAGE "HIT RETURN" , THEN AWAIT RECEIPT OF TWO CHARACTERS FROM THE PHONE LINE. IF THE CHARACTERS ARE CARRIAGE RETURNS, RCONS SENDS THE ANSWERBACK MESSAGE AND RETURNS TO THE PROGRAM WHICH CALLED IT. IF THE CHARACTERS WERE NOT CARRIAGE RETURNS, RCONS SWITCHES BAUD RATE TO THE OTHER SPEED AND SENDS "HIT RETURN" AGAIN. THIS IS REPEATED UNTIL A CARRIAGE RETURN IS DETECTED.

LOWER CASE DISABLE

SINCE RCONS IS EXPECTED TO BE ABLE TO COMMUNICATE WITH ALMOST ANY TERMINAL, PROVISIONS HAVE BEEN PROVIDED TO TRANSLATE LOWER CASE OUTPUT TO UPPER CASE FOR TERMINALS UNABLE TO REPRODUCE LOWER CASE (SUCH AS THE APPLE COMPUTER). THIS FEATURE MAY BE SWITCHED ON OR OFF BY FILLING ADDRESS 1403 (57B HEX) WITH A 1 TO ENABLE LOWER CASE, OR A 0 TO DIABLE IT.

CONTROL CHARACTERS

SEVERAL CONTROL CHARACTERS ARE USED BY RCONS. THEY ARE LISTED BELOW :

- CONTROL-D - UPON RECEIPT OF CONTROL-D , RCONS PRINTS THE MESSAGE "EOT" ON THE LOCAL TERMINAL , DISCONNECTS, AND RE-BOOTS THE SYSTEM.
- CONTROL-E - UPON RECEIPT OF CONTROL-E , RCONS SENDS THE ANSWERBACK MESSAGE TO THE REMOTE USER. THIS IS REQUIRED BY TWX, TELEX, AND MOST OTHER COMMON CARRIER MESSAGE SYSTEMS.
- CONTROL-S - FROM EITHER END OF THE CONNECTION WILL CAUSE OUTPUT TO BE FROZEN UNTIL ANOTHER CONTROL-S IS TYPED. THIS IS USEFUL FOR READING LONG MESSAGES OR PROGRAM LISTINGS.
- CONTROL-N - ALLOWS THE REMOTE USER TO RECEIVE NULLS AFTER EACH CARRIAGE RETURN. UPON RECEIPT OF CONTROL-N, RCONS ASKS "NUMBER OF NULLS (0-9) ? ". THE NEXT CHARACTER TYPED WILL THEN SET THE NUMBER OF NULLS. CONTROL-N MAY BE TYPED AT ANY TIME.

USING RCONS

NORTHSTAR DOS AND BASIC HAVE SEVERAL FEATURES WHICH ALLOW RCONS TO ANSWER THE TELEPHONE IN THE SAME MANNER EACH TIME SOMEONE CALLS IN. THESE FEATURES ARE EASY TO IMPLEMENT, AND ARE DESCRIBED FULLY IN THE NORTHSTAR BASIC / DOS MANUALS. RCONS EXECUTES A JUMP TO E800 HEX AFTER LOSS OF CARRIER OR UPON RECEIVING A CONTROL-D. THIS JUMP TO E800 CAUSES THE SYSTEM TO RE-BOOT THE DOS. DOS CONTAINS PROVISIONS FOR AUTOMATICALLY LOADING AND EXECUTING A PROGRAM FILE, USUALLY BASIC. BASIC HAS A FEATURE WHICH ALLOWS YOU TO STORE A PROGRAM IN THE SAME DISK FILE WITH BASIC, AND FOR EXECUTING THAT PROGRAM WHEN A "GO BASIC" COMMAND IS EXECUTED BY DOS. WE CAN THEN SET UP A CHAIN OF EVENTS WHICH WOULD CAUSE THE FOLLOWING TO HAPPEN EACH TIME ADDRESS E800 IS EXECUTED :

1. ROM AT E800 LOADS AND EXECUTES DOS.
2. DOS LOADS AND EXECUTES BASIC, WHICH HAS A PROGRAM STORED IN IT.
3. BASIC RUNS THE PROGRAM.
4. IF THE PROGRAM CONTAINS A CALL STATEMENT TO THE STARTING ADDRESS OF RCONS, THE RCONS PROGRAM TAKES CONTROL AND WAITS FOR THE PHONE LINE TO RING.

THE AUTOMATIC LOAD AND RUN FUNCTIONS OF BASIC ARE CONTROLLED BY MODE BYTES WHICH ARE LOCATED AT THE FOLLOWING ADDRESSES :

| NAME | RELEASE 3 & 4 | RELEASE 5.0 & 5.1 |
|----------------------|---------------|-------------------|
| DOS AUTOS BYTE | 28E5H | 2030H |
| DOS COMMAND BUFFER | 27C0H | 27C0H |
| BASIC AUTOSTART BYTE | 2A0FH | 2D0FH |

RCONS DISKS AS SHIPPED BY MICROSTUF HAVE THESE FEATURES ALREADY IMPLEMENTED. THE OPERATION OF THESE FEATURES ARE DESCRIBED IN DETAIL IN THE NORTHSTAR DISK OPERATING SYSTEM MANUAL.

SUPPORT PROGRAMS

RCONS MAY BE ORDERED WITH A NUMBER OF SUPPORT PROGRAMS. THESE PROGRAMS INCLUDE A MESSAGE PROGRAM, A USER LOGGING PROGRAM (STORED WITH BASIC), A MENU PROGRAM, AND SEVERAL GAMES. THESE PROGRAMS ARE AVAILABLE AS PART OF THE RCONS PROGRAM PACKAGE, OR MAY BE ORDERED SEPARATELY. THEY ARE DOCUMENTED IN A SEPARATE USER'S GUIDE.

| PROGRAM NAME | FUNCTION |
|--------------|---|
| LOGON | LOGS SYSTEM USER'S NAME AND PHONE NUMBER |
| MESS | MESSAGE HANDLING |
| HELP | PROVIDE ASSISTANCE TO UNFAMILIAR USERS |
| MENU | ALLOWS USERS TO RUN SELECTED PROGRAMS |
| PLOG | ALLOWS SYSTEM OPERATOR TO READ LOG FILE |
| READ | ALLOWS SYSTEM OPERATOR TO READ COMMENT FILE |

MODIFYING RCONS

THE CHART BELOW LISTS SOME KEY ADDRESSES IN RCONS.

| NAME | ADDRESS (STD.) | ADDRESS (SQL) | FUNCTION |
|--------|----------------|---------------|----------------|
| ANSBAK | 04FE | CB99 | ANSWERBACK |
| ORIGIN | 0100 | C900 | ENTRY POINT |
| LAST | 057A | CBFF | LAST BYTE USED |
| ESCAPE | 0168 | C963 | ESCAPE CODE |
| BAUD | 0261 | CA61 | BAUD RATE |
| CASE | 057B | - | CASE SWITCH |

PROBLEMS ?

IF YOU HAVE ANY PROBLEMS OR QUESTIONS JUST GIVE US A CALL OR DROP US A LINE. WE ARE ALWAYS WILLING TO HELP. OUR NUMBERS ARE :

| | |
|------------------|----------------------------|
| MICROSTUF OFFICE | 404-491-3787 |
| MICROSTUF SYSTEM | 404-939-1520 (UP 24 HOURS) |

Northstar Computer Message System
User's Manual
Version 2.0
Copyright (C) 1980. All rights reserved.

The Microstuf Company
Post Office Box 33337
Decatur, Georgia 30033
(404) 491-3787

Description :

The Northstar Computer Message System Consists of a group of BASIC language programs, all of which are tailored to make full use of the facilities of Microstuf's RCONS program. RCONS provides the necessary communication between the modem and the DOS (or BASIC), and the Message System provides the message management and program selection functions. A real-time clock option is available.

Error Trapping :

All of the programs have been carefully error-trapped, in order to keep callers from accessing BASIC or DOS directly. Password access to BASIC is available through the MESS program. If you modify any of the programs, be careful to provide proper error trapping routines. All of the user-accessible support programs should chain back to MESS on an error condition.

Programs Provided :

The following is a list of program names and functions :

| Program Name | Program Function |
|-----------------|---|
| LOGON | performed on cold boot ; checks to see if RCONS is loaded into memory ; loads RCONS if not already present ; re-starts clock ; waits for ring ; sends greeting message ; logs user in ; passes command to MESS program |
| <u>MESS</u> | <u>Handles all message related functions ; allows chaining to HELP, MENU and other support programs via the MENU program ; provides password access to BASIC for system operator or designated users ;</u> |
| MENU | Allows users to run other programs, but remain under program control. Any program chained from MENU should be error trapped to return to MESS on any error. (Northstar BASIC treats Control-C as an error) Several games are provided as an example of error trapping . |

HELP Provides new users with information on system usage. This program uses several disk files which are provided only as dummy files. A crude text editor program, REWRITE, is provided as a means of entering text into the HELP disk files. You may wish to use your own text editor program instead.

REWRITE

LOGLIST Allows users to read the system log files. Note that two log files are maintained, one weekly and one daily. You may wish to keep only one or the other.

The following programs are provided for system maintenance :

LOGPRINT Provides a means of printing the contents of the and log files, as well as erasing the files.

READ Similar to LOGPRINT, but used to read the user comments file.

PACK Allows packing of the message and index files to remove "dead" messages and recover the disk space they occupied. Note that this program changes most of the message numbers and should be used sparingly.

SETTIME SETTIME provides a means of setting the time kept and by the real-time clock option. READTIME is provided to show how the time is read. It is (clock numbered starting at 10000 to provide for option) appending it onto programs as a subroutine.

Disk files:

The system requires the following disk files to exist. They are all currently set up to be on drive one, but may be moved simply by changing the references to them in the appropriate program. The table also shows what is required to properly initialize the file.

| File name | Function | Init. value |
|-----------------|--|-------------|
| <u>MESSAGES</u> | Contains text of messages. Should be at least 256 blocks to allow room for 100 average sized messages. Indexing is maintained in INDEX file. | NONE |
| <u>INDEX</u> | Stores total of number of messages contained in MESSAGES file, and contains the starting address of each message. A message address of 0 is given for deleted messages. Numbers are stored as normal numeric data (5 bytes/rec.), with the message count first, followed by the address of each message. | 0.1 |

| File Name | Function | Init. Value |
|-----------------------------------|---|------------------|
| INDEX (cont.) | Note that message number one starts at disk address 1 (zero is reserved for "dead" messages.) | |
| <u>BUFFER</u> | <u>This is a buffer file used for temporary storage of messages while they are being edited by the users.</u> | none |
| USER | Contains name of currently logged-in user and the time he first logged into system. | none |
| LOGFILE and TEMPLOG | LOGFILE is the weekly user log file, TEMPLOG is the daily file and should be cleaned out daily. | blank strings |
| <u>COMMENTS</u> | <u>Contains user comments left at end of message session.</u> | blank strings |
| DATE | Contains the date the Weekly log was last cleared. | date strings |
| HELPPFILE MESSFILE CHARFILE | Files used by HELP program to explain system operation. Supplied dummy files to be written over by REWRITE program. | none |

Games :

The following games are provided as an example of chaining and error-trapping programs to return to MESS after execution. Note : Not all of the games are provided with single density orders due to lack of disk space.

| Program name | Object of game |
|--------------|--|
| STARTREK | Kill the dreaded Klingons before they take over the galaxy ! |
| SWORDS | Try to make it to the dungeon, rescue the princess, and get back out again. Make sure you pick up some gold on the way out ! |
| ADVENT | A poor man's ADVENTURE. You have to find the treasure and get it out before the pirate comes and takes it back. |
| PETALS | An interesting number game. Either you'll figure it out right away, or you never will. |
| DRBOB | The old "ELIZA" program - originally written to demonstrate artificial intelligence. |

Starting up your system :

The very first thing you should do before you do anything else is **MAKE A COPY OF THE DISK !!!** Then, put the original disk away and work from the copy. The few minutes spent copying the disk take far less time than waiting for a replacement disk to come all the way from Georgia.

The original disks as shipped from us are set up for immediate use, but you will probably want to make some changes before putting your system "on the air".

Before you start up your system, take the time to run through all of the programs and familiarize yourself with them. Since you probably have a dual drive system, you may want to move the message and log files to drive 2 in order to have more space. In any event, you will need to personalize the "help" files to suit your application. We strongly suggest you change the BASIC access password in the message program, since all copies of the program leave here with the same password. Here are a few keys to modifying MESS and LOGON to suit your needs :

| PROGRAM | LINE # | CHANGE : |
|---------|--------|----------|
|---------|--------|----------|

| | | |
|------|-----|---|
| MESS | 101 | Contains system access password |
| MESS | 104 | Contains the "command" strings. All of the valid commands to the message program are represented by a letter in the command strings. To add new commands, simply add them in to the end of the command strings, and add the line number of the new command onto the end of the ON-GOTO statement in line 170. |
| MESS | 105 | Contains name of index file |
| MESS | 106 | Contains name of message file NOTE : for best access times, we suggest that you keep index file and message file on different drives. This gives the advantage of being able to use both disk buffers. |
| MESS | 107 | Contains name of BUFFER file. This file should be at least 20 blocks long, since it gets formatted into 80 character blocks. |
| MESS | 108 | Contains the name of the user comments file. |
| MESS | 109 | Contains the name of the "USER" file, which contains the name and logon time of the current user. You may use the information in this file to call a user by name, or to keep tabs on how long he has been on line. You may wish to add a routine which limits the allowable amount of time on the system. |

| PROGRAM | LINE # | Change : |
|---------|--------|--|
| LOGON | 170 | Contains disk address of RCONS. If you move RCONS to another address on the disk, this value must be changed in order for the system to be able to recover from a power failure by itself. |
| LOGON | 250 | Address 1403 contains a flag to determine whether the user can receive lower case letters. The program is set up to answer in the upper-case-only mode. To answer in upper/lower case mode, change the 0 to a 1. |
| LOGON | 340 | Address 609 contains a number representing the baud rate. The program is set to answer at 300 baud. To answer at 110, change the 255 to a 0. |
| LOGON | 390 | You may add additional welcome messages here if you wish. |

If you ordered the real-time clock option to the Message system software, the following jumper must be installed on the Horizon motherboard :

| | |
|------------|--------------------------|
| /----- | |
| /1 14 | |
| 2-----13 | |
| 3 12 | |
| 4 11 | 14 PIN DIP HEADER IN |
| 5 10 | "REAL TIME CLOCK" SOCKET |
| 6 9 | LOCATION 10-A |
| 7 8 | ON HORIZON MOTHERBOARD |
| ----- | |

The Jumper will not affect any other operation of the computer, and may be left installed permanently. The clock program itself resides in memory from address 0 to F0 hex, and may be used as a stand-alone program. See lines 60000 to 60060 in the MESS program for an example of how to read the time into a string. The program READTIME shows another way to display the time.

Additions / Enhancements :

You will probably wish to add enhancements to the basic message system software, depending on your desired use of the system. Since the programs are written in BASIC, they are easily modified. Some possible enhancements are listed below. When adding to an existing program, be careful not to "trash" any variables which are already used by the program. This is particularly important in the MESS program.

Possible Enhancements :

Password-only access to system
Limited time system access
Disallowing games after a certain amount of time on system
Disallowing games for 110 baud callers
Storing bad password attempts to comments file
Printing system activity to printer (RCONS does not pass printer data to modem)

Updates :

We periodically update our products to add new features or to improve old ones. If you have any suggestions you would like to see implemented, please let us know. When we do make updates, the new version is made available to current users for a nominal charge to cover shipping. We do require, however, that you return the ORIGINAL diskette.

Our message system :

We operate the second busiest computer message system in the country. (CBBS Chicago is the busiest.) If you want to tell the world that you are operating a computer message system, our system is one of the best places to advertise. We average over 100 callers per day, most of them from outside of Georgia. If you don't want to tell the world about your system we'd still like to hear from you. We are always experimenting with new ideas and adding new features to the software, so it would be worth your time to call in once in a while. The system is up 24 hours a day, seven days a week. Give us a call ! The number is : (404) 939-1520. If you need to speak to us in person, call us at the number on page 1. We'll be glad to answer any questions you may have.