

Path: mixcom.com!uwm.edu!vixen.cso.uiuc.edu!sdd.hp.com!col.hp.com!csn!csn!scicom  
 From: vern@zebra.alphacdc.COM (Vernon C. Hoxie)  
 Newsgroups: comp.sys.3b1  
 Subject: Re: HDB UUCP and other misc 3B1 questions  
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In article <25uvip\$mrj@Tut.MsState.Edu> pcg2@Isis.MsState.Edu  
 (Patrick C Greer) writes:

>So I guess the basics are:

>

>1) Combo board to Combo board Null modem cable diagram

Null Modem connections:

	Computer A		Computer B
	Shield Ground 1	-----	1 Shield Ground
	Send Data 2	-----	3 Receive Data
	Recieve Data 3	-----	2 Send Data
	Request to Send (RTS) 4	-----	5 Clear to Send (CTS)
	Clear to Send (CTS) 5	-----	4 Request to Send (RTS)
	Signal Ground 7	-----	7 Signal Ground
	Data Set Ready (DSR) 6	--	
	Carrier Detect (CD) 8	--	
		-----	20 Data Terminal Ready (DTR)
			-- 6 Data Set Ready (DSR)
			-- 8 Carrier Detect (CD)
	Data Terminal Ready (DTR) 20	-----	

Note: Do not connect the two grounds in the cable.

>2) Setting up HDB UUCP and getting getty's or uugetty's to work

Before going into a discussion about setting the various options to HDB, I suggest that you acquire ( purchase if you aren't into thievery ) the Nutshell Handbook, 'Managing uucp and Usenet', published by O'Reilly and Associates. This is a big help in setting up the various files which support the 'uucp' process.

----- /usr/lib/uucp/Sysfiles -----

This is the first file which should be referenced. It defines the name of the files referenced by other parts of the uucico process. Key words are "service", "devices" and "dialers". In this example, for the "service" of 'uucico', the files '/usr/lib/uucp/Devices.ACU' and '/usr/lib/uucp/Devices' should be referenced for 'devices' style information. The names of these files can be anything you desire, by convention they start with 'Devices.???'.

Similarly, the names of the files to be searched for 'dialers' style information are entered following the 'dialer=?????' entry. The standard "Devices" file and "Dialers" files give information about how these files may be configured.

Entries here, can be continued from one line to the next using

the '\ ' to "escape" the newline character.

```
service=uucico devices=Devices.ACU:Devices \
                dialers=Dialers:Dialers.SW:Dialers.ACU
service=cu      devices=Devices.hop:Devices \
                dialers=Dialers:Dialers.SW:Dialers.ACU
```

----- /etc/gettydefs -----

From the GETTYDEFS(4) manual page, each entry is one line with five fields delimited by '#'s. The first field is the 'label' and is the term that is referenced by entries in '/etc/inittabs', '/usr/lib/uucp/Systems', and the fourth field of '/usr/lib/uucp/Devices'. The name field can be any name you want to give it.

The second field has the initial flags. These flags are defined in the User's Manual under 'TERMIO(7)'. By default, all the labels for the 'c\_iflag' are ignored. This field is used when establishing communication with the modem. Normally only the speed flag is of concern. See 'GETTYDEFS(4)' in the User's Manual. You can also reference '/usr/include/sys/termio.h' and the manual for your port cards to learn which speeds are available on your machine.

The third field defines the final flags. It is just as well to copy this field from the standard entries. You need ECHO at least if you expect anyone to call in using 'cu'. With ECHO off, they don't get a display of the characters they send.

The fourth field has the login-prompt. It can say anything as long as it ends with "ogin:" for the benefit of calling scripts.

The fifth field is the next label. It searches '/etc/gettydefs' for an entry with the name of whatever is here. For locking the computer at a fixed speed, this should refer back to the label you gave this entry. For autobauding, where the modem will send a 'break' signal if it isn't at the same speed of the computer, you should refer to the entry defining a lower speed.

After setting up '/etc/gettydefs', run "/etc/getty -c /etc/gettydefs" to test for errors ( see GETTY(1) ). Pay particular attention to the length of your login message.

Here are the 'gettydefs' I am using:

NOTE: These should be continuous lines with no carriage returns. I have broken these into separate lines for readability. Backslashes ( \ ) don't work in this file!!

```
T19200# OPOST ONLCR EXTA CS8 CREAD HUPCL CLOCAL # BRKINT IGNPAR OPOST ONLCR
EXTA CS8 CREAD HUPCL ISIG ICANON ECHO ECHOE ECHOK #\nWelcome to 'zebra',
I am an AT&T 3B1.\n\nPlease login: #T19200
                ^^^^^^^
```

NOTE: This will not break out of 19200.

```
N19200# OPOST ONLCR EXTA CS8 CREAD HUPCL CLOCAL # BRKINT IGNPAR ICRNL IXON
! FF IXANY OPOST ONLCR EXTA CS8 CREAD HUPCL ISIG ICANON ECHO ECHOE ECHOK
#a\nRunning at 19200 baud.\n\nPlease login: #T9600
                ^^^^^^^
```

NOTE: This will go to 9600 baud after a break.

```
T9600# OPOST ONLCR B9600 CS8 CREAD HUPCL CLOCAL # BRKINT IGNPAR ICRNL IXON
IXOFF IXANY OPOST ONLCR B9600 CS8 CREAD HUPCL ISIG ICANON ECHO ECHOE ECHOK
#a\nRunning at 9600 baud.\n\nPlease login: #T2400
```

```
T1200# OPOST ONLCR B2400 CS8 CREAD HUPCL CLOCAL # BRKINT IGNPAR ICRNL IXON
IXOFF IXANY OPOST ONLCR B2400 CS8 CREAD HUPCL ISIG ICANON ECHO ECHOE ECHOK
#a\nRunning at 2400 baud.\n\nPlease login: #T1200
```

```
T1200# OPOST ONLCR B1200 CS8 CREAD HUPCL CLOCAL # BRKINT IGNPAR ICRNL IXON
IXOFF IXANY OPOST ONLCR B1200 CS8 CREAD HUPCL ISIG ICANON ECHO ECHOE ECHOK
#a\nRunning at 1200 baud.\n\nPlease login: #B300
```

```
T300# OPOST ONLCR B300 CS8 CREAD HUPCL CLOCAL # BRKINT IGNPAR ICRNL IXON
IXOFF IXANY OPOST ONLCR B300 CS8 CREAD HUPCL ISIG ICANON ECHO ECHOE ECHOK
#a\nRunning at 300 baud.\n\nPlease login: #N19200
```

```
----- /usr/lib/uucp/Devices* -----
```

In the 'Devices' file, the first field can be anything you want but must be referenced in the 'Systems' file by the same name. The second field must be a device from the '/dev' directory. The third field ( - ) is a place holder ( used when separate dialers were installed ). The is an artifact from the days of data communications when modems were unable to dial telephone numbers and a separate port and device was required to perform that function.

The fourth field must be a reference to an entry in '/etc/gettydefs'. The fifth field is any name you want but must be an entry in a 'Dialers\*' file. The '\D' tells 'uucico' to look into a 'Dialers\*' for further information.

Here are my entries for the /usr/lib/uucp/Devices.hop file:

```
ACU3 tty000 - T300 tb300 \D
ACU3M tty000 - T300 tbm300 \D
ACU12 tty000 - T1200 tb1200 \D
ACU12M tty000 - T1200 tbm1200 \D          < Used for calling MNP sites
ACU24 tty000 - T2400 tb2400 \D
ACU24K tty000 - T2400 tbk2400 \D        < Used for sending break
ACU24M tty000 - T2400 tbm2400 \D        < Used for calling MNP sites
ACUTB tty000 - T19200 tbfast \D
```

```
----- /usr/lib/uucp/Dialers* -----
```

The 'Dialers' file ( or any variation defined in 'Sysfiles' ) initiates the connection to the modem. The first field must correspond to a name in 'Devices'. The second field ( =W-, ) translates the obscure HDB symbols for delay ( = ) and pause ( - ) to symbols ( 'W' and ',' ) understood by the modem. From there on is the setup "chat" script, each field is alternately 'expect'ed or 'send'. The first of these ( "" ) means 'expect nothing'. Following are a series of 'A pause' followed by 'AT'. This is to get the attention of the modem in the speed you selected with the reference to a 'gettydefs' entry in the 'Devices' file. The 'OK' is the response from the the modem indicating that it is running at the same speed.

Next are the commands to change the modem from the answer mode you have set into the registers to the configuration to place the call using specific speeds and MNP or not. Now wait for the modem to send 'OK' indicating that the computer and the modem have changed speeds

and are once again talking. 'ATDTW\T' first tells the modem to connect for tone dialing while the '\T' tells 'uucico' to find the number in the 'Systems' file. Finally the response from the modem when it completes the connection. Note the '\s' is to indicate a space without changing from 'expect' to 'send' as would a real space.

These are the entries in my 'Dialers.ACU' file. Again, these can be in any file defined in 'Sysfiles'. On the 3b1, the UA screws up 'Devices' so I use 'Devices.ACU'. Also note that each entry must be one continuous line, I have broken them for easier reading.

```
tb300    =W-,    "" A\da\da\dat OK ATS50=1S51=0S95=0 OK
          ATDTW\T CONNECT\s300
tbm300   =W-,    "" A\da\da\dat OK ATS50=1S51=0S95=1 OK
          ATDTW\T CONNECT\s300/REL
tb1200   =W-,    "" A\pA\pA\pAT OK ATS50=2S51=1S95=0 OK
          ATDTW\T CONNECT\s1200
tbm1200  =W-,    "" A\pA\pA\pAT OK ATS50=2S51=1S95=1 OK
          ATDTW\T CONNECT\s1200/REL
tb2400   =W-,    "" A\pA\pA\pAT OK ATS50=3S51=2S95=0 OK
          ATDTW\T CONNECT\s2400
tbm2400  =W-,    "" A\pA\pA\pAT OK ATS50=3S51=2S95=1 OK
          ATDTW\T CONNECT\s2400/REL
tbk2400  =W-,    "" A\pA\pA\pAT OK ATS50=3S51=2S54=2S95=0 OK
          ATDTW\T CONNECT \K\c
tbfast   =W-,    "" A\pA\pA\pAT OK ATSS50=255S51=5S95=0S111=30 OK
          ATDTW\T CONNECT\sFAST--CONNECT\sFAST
```

The 'CONNECT\sFAST--CONNECT\sFAST' is a procedure to prevent 'uucico' from timing out while waiting for TrailBlazers to switch to FAST mode if the answering machine is set up to answer in PEP last. 'Uucico' will wait for about 30 seconds to receive the first 'CONNECT\sFAST' from the modem, if this has not been received, it then enters the 'uucico' convention prescribed by hyphens.

This convention is that if the string preceding the first '-' is not received in the prescribed time, the string between the '-'s is sent and the systems waits another interval to receive the string following the second '-'. In this example, there is nothing between the '-'s so only a '\r' is sent.

----- /usr/lib/uucp/Systems -----

The first field of the 'Systems' file is the name of the machine you are calling. This is the 'uucp' name the other machine will use in response to a 'uucp' query. A leading '#' is the standard shell symbol for 'comment' and it tells 'uucico' to ignore that entry.

The second field gives the times that you may call. The most common entry is "Any" ( note the capital 'A'). Other accepted entries are "Never" ( for systems which will only call in, needed to provide uucp spooling ), "Wk", "Sat" and "Sun". These last three may be followed by a time span such as '2300-0800'. See a manual for a full description of options.

The third field is an entry in a 'Devices' file. The name can be anything you want but must be defined in one of the 'Devices' files.

The fourth is an entry in the 'gettydefs' file.

The fifth is the telephone number.

Next are another series of 'expect' and 'send' fields. ( "" ) means 'expect nothing'. The series of '\r\d' or '\r\p' are carriage returns which tell the 'uugetty' on the other machine that you are calling in. They also tell your 'uugetty' to get off the line, I'm calling out.

You then expect a string of characters which invite you to "Please Login:". This is from the other machines 'gettydefs' file.

Your response will be the name of 'uucp' account on the other machine. Most machine maintain an open account called 'nuucp' without a passord. The administrator of the other machine may assign you a special account name with a password. The ( -- ) works in the same manner as the ( -- ) described above.

NOTE: These must be continuous lines for each entry.

```
quagga Any ACUTB T19200 5551234 "" \r\d\r ogin:--ogin: mama sword: baby
quagga Any ACU24 T2400 5551235 "" \r\d\r ogin:--ogin: mama sword: baby
quagga Any ACU24M T2400 5551236 "" \r\d\r ogin:--ogin: mama sword: baby
quagga Any ACU12 T1200 5551237 "" \r\p\r\p\r ogin:--ogin: mama sword: baby
quagga Any ACU12M T1200 5551238 "" \r\d\r ogin:--ogin: mama sword: baby
#quagga Any ACU3 T300 5551239 "" \r\d\r\d\r\d ogin:--ogin: mama sword: baby
#quagga Any ACU3M T300 5551230 "" \r\d\r\d\r\d ogin:--ogin: mama sword: baby
```

This sequence of entries will first try to login to the machine 'quagga' anytime using an entry in a Devices file labeled 'ACUTB'. It will use the 'gettydefs' entry labeled 'T19200' and will dial '5551234'. The '\r\d\r' sequence are the "getty kickers". We will wait for two consecutive intervals to receive the message endig with 'ogin:'.

If it is received, we will send the login name 'mama' and will expect a return message ending in 'sword:'. The full message is usually, "Please enter password:".

If 'uucico' cannot login as 'mama' after two tries using the 5551234 telephone number, it will go to the next entry for 'quagga' and make two tries using the number '5551235'. The indicated speed is different in the example but can be the same. We could also have different account names and passwords.

----- /usr/lib/uucp/Permissions -----

This is probably the least understood file of the 'uucico' suite but it is the most important as far as security is concerned.

NOTE: These must be continuous lines but may be broken with the back slash. Believe me -- omitting a back slash can create problems.

```
LOGNAME=uucp:nuucp \
REQUEST=no SENDFILES=no \
READ=/usr/spool/uucppublic WRITE=/usr/spool/uucppublic \
COMMANDS=/bin/rmail
```

```
MACHINE=OTHER REQUEST=no READ=/usr/spool/uucppublic \
WRITE=/usr/spool/uucppublic SENDFILES=no \
COMMANDS=ALL
```

The LOGNAME is the name of the uucp account which OTHER machines will use to login on your machine. It denies them the ability to REQUEST files from you and they cannot SENDFILES to you except to and from the '/usr/spool/uucppublic' directory tree. They can 'uuxqt' only the '/bin/rmail' command on your machine.

The MACHINE entry specifies what you can do when you have logged into OTHER machines. The entry in the example allows you to 'uuxqt' ALL commands on their machine. However, these will be denied if their machine has restrictions about what you can do there.

LOGNAME and MACHINE entries can be entered together as in:

```
LOGNAME=daddy MACHINE=quagga \  
  REQUEST=yes SENDFILES=yes \  
  READ=/ WRITE=/ \  
  COMMANDS=ALL
```

Here, when I login to 'quagga' I can request or sendfiles, I can READ or WRITE to any directory below the root directory ( / ) and I can 'uuxqt' any command. Similarly, when they login as 'daddy', they can do the same on my machine. This is for highly trusted machines.

----- /etc/inittab -----

Refer to 'INITTAB(4)' in the User's Manual for a complete explanation of the entries in this file. Also see INIT(1).

Comments in this file have the first character on the line equal to ':'. With this in the leftmost position, the rest of the line is ignored. Often, the leftmost position must be a space for active entries.

The colon is also used as a field delimiter.

For 'uucp' applications, the first field is the name of a device listed in the '/dev' directory. The second field is the "user level" at which this command should be active. The term "respawn" tells your 'init' process to restart the command if it is not running.

The last field is the full path name to the command along with its command line options. The '-r' option tells 'ugetty' to run in bidirectional mode otherwise it will function for only incoming calls exactly as 'getty' does. The '-t60' sets the time out period for 'ugetty' to establish an incoming call at 60 seconds. The rest of the command line says to open '/dev/tty000' using the 'T19200' entry in '/etc/gettydefs'.

```
000:2:respawn:/usr/lib/uucp/ugetty -r -t60 tty000 T19200  
:001:2:respawn:/usr/lib/uucp/ugetty -r -t60 tty001 T19200  
:002:2:respawn:/usr/lib/uucp/ugetty -r -t60 tty002 T19200
```

Note: The first character for the '000' entry is a space. This is the only active entry in the example. The others are comments.

----- Final Notes -----

When setting up modems, restrict their echoing capabilities to only emit local responses. These are basically the "OK"s during the initialization phase. Indications such as "RING" for when the modem

senses an incoming ring signal must be avoided. These are received by the 'uugetty' and since they are in uppercase only, the 'uugetty' interprets them to be coming from a dumb terminal which has only uppercase capability, it changes the "Please login:" to "PLEASE I IN:". Since the other machine is looking for 'ogin:' in lowercase, the connection will never get established.

Uucico maintains a group of files in '/usr/spool/uucp' with leading '.'s in their names. Among them are log files for reporting uucp activities. The time stamp entered in these files may be confusing at times. This is because incoming calls do not have the environmental variable, TZ, set. There is a wrapper available for uucico to set this variable to local time. Mail a request to me if you don't want the default Eastern US time zone in your log entries.

Uucico is the actual transportation media for all the uucp functions such as 'uucp', 'uuxqt' and 'uux'. All of these interact with uucico to perform their specify function.

There are several utilities for keeping track of 'uucico' activities. There are 'uusched' and the various 'uudemon's. Normally, these are run by entries in the 'crontab' file. They will have 'uucico' attempt to complete connections which failed or they prevent the .Log files from getting to large. The normal scheduling is for these to run during the night, this is one reason that unix machines are on contiuously.

For testing a connection, use 'Uutry -r -x5 -s <system>' for testing a connection. The '-r' resets the call again interval to zero. The '-x5' sets debugging level in 'uucico' to the fifth level. Level '9' debugging in the highest and is a pain if you happen to have large files queued. Also be cautious of the other systems disk capacity. 'Uucico' running in the debug mode writes to the other systems /usr/spool/uucp/.Admin directory. This can be a tool to the other systems administrator to monitor what his system is doing in response to your call in. 'Uutry' writes to '/tmp/<system>' and displays the contents with 'tail(1)'. To break out of 'tail(1)', use the Del key ( <shift> Esc ).

When 'Uutry' is run with a user login, passwords and some other things are displayed a '???''. When run with the root login, the actual passwords and dialer phone numbers are displayed.

>3) Figuring out why the Linux machine seems to be dropping the  
> connection.

You will have to ask the Taylor uucp group about that. Maybe there is a more recent version of Tuucp you can use. It is still evolving.

Good luck!

vern

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