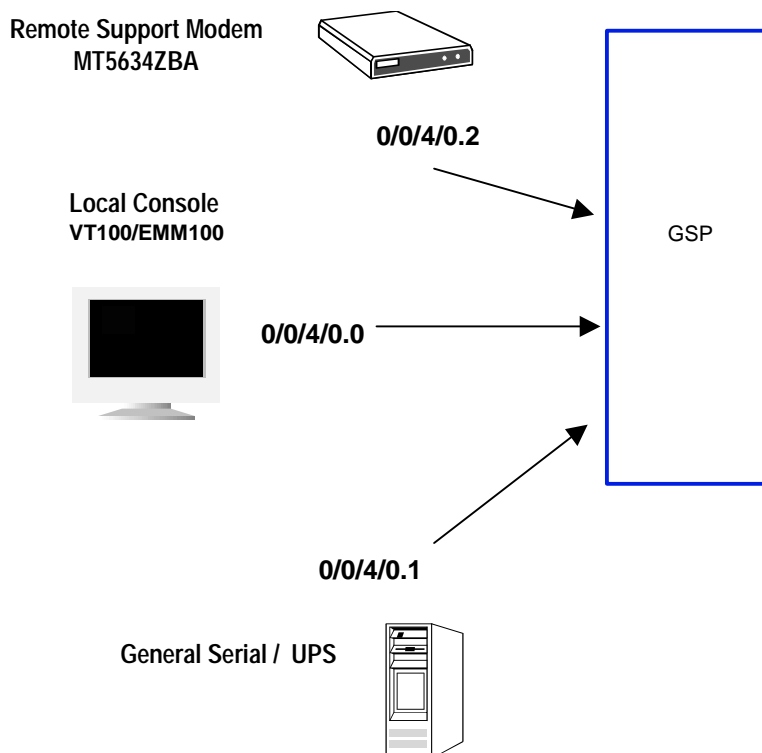


N4000 Updated Information

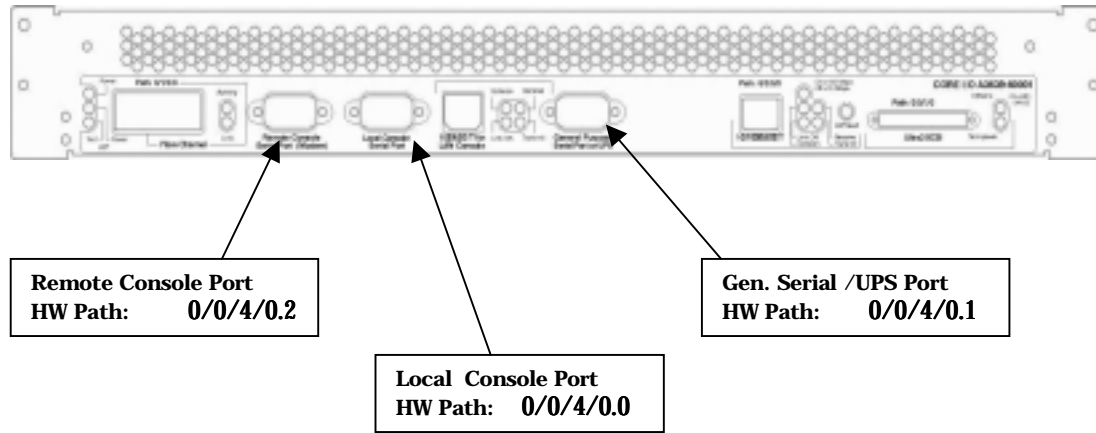
- Serial Port Information
- MT5634ZBA Modem Information
- Console VT100/EMM100 Configuration
- HW Block Diagram with ioscan
- Cable Pin-outs and Part #'s



HP INTERNAL ONLY

Jesse Jones PCC, RCE Sys Admin
Hewlett Packard

Serial Port Information



- 1) Remote Console Serial Port (Modem)** – Provides a 9-pin (male), D-type connector for 9600 bps RS-232 serial port. The supported configuration and purpose of this port is for Remote Support Modems (Multitech MT5634ZBA) part # 5184-0852 which the customer purchases at the time of contract. The following detailed information is provided as follows:

Hardware Path: 0/0/4/0.2

[note that this path is also the “Remote Session” path for hp-ux]

Modem Information:

Modem Model: Multitech MT5634ZBA modem HP #5184-0852.
Modem Cable: 24542M (9 pin - 25 pin)
Modem Baud: 19200 (shipped to customer set at this baud rate)
Modem Protocol: CCITT
Modem Flow Control: RTS/CTS
Modem Configuration / Check: Uses GSP and Predictive (psconfig)

2) Local Console Serial Port (Terminal) - Provides a 9-pin (male), D-type connector for 9600 bps RS-232 serial port. The supported configuration and purpose of this port is for a HP Console terminal to be attached directly to the system.

Hardware Path: 0/0/4/0.0

Terminal Information:

Terminal Model: 700/96 #C1064WX or C1064GX

Terminal Cable: 24542G

Terminal Speed: 9600 bps, 8/n/1

Terminal Mode: VT100 /EMM100

3) General Purpose Serial Port or (UPS) - Provides a 9-pin (male), D-type connector for 9600 bps RS-232 serial port. The supported configuration and purpose of this port is for HP Powertrust UPS serial monitoring connections. PSP references only two Powertrust UPS models are supported the 5.5 kva and 3.0 kva, both are rackmounted.

NOTE: PORT DOES NOT PROVIDE MODEM SIGNALS.

Hardware Path: 0/0/4/0.1

UPS Information:

UPS Model: Powertrust UPS.

UPS Cable: (9-pin to 9-pin)

UPS port speed: up to 9600 bps

UPS Software: HPUX ups_mond

General Serial Port / UPS

Functional pins and pin assignment

2 RD ----- (receive data)
3 TD ----- (tranmit data)
5 GND ----- (common ground)
7 RTS ----- (ready to send)
8 CTS ----- (clear to send)

Cable Diagrams:

Local Console Port Uses the following cable to connect local consoles to the N4000 (9 - pin serial connection):

24542G 9-pin to 25-pin

CPU (DB-9 F DTE)			Terminal (DB-25 M DCE)	
CD	1	<-----	4	RTS
RD	2	<-----	2	TD *
TD	3	----->	3	RD *
DTR	4	----->	5	CTS
		----->	6	DSR
GND	5	<----->	7	GND *
DSR	6	<-----	20	DTR
CTS	8	<-----		
RTS	7	-----	8	CD

Remote Console Access / Modem Port Uses the following cable to connect the Remote Support Modem (MT5634ZBA) to the N4000 (9 - pin serial connection):

24542M 9-pin to 25-pin

The lines marked with * are usually the ones needed for modem use.

CPU (DB-9 F DTE)			Modem (DB-25 M DCE)	
CD	1	<-----	8	CD *
RD	2	<-----	3	RD *
TD	3	----->	2	TD *
DTR	4	----->	20	DTR *
GND	5	<----->	7	GND *
DSR	6	-----	6	DSR
RTS	7	-----	4	RTS
CTS	8	-----	5	CTS
RI	9	<-----	22	RI

UPS (PowerTrust) to N-Class UPS 9 pin serial cable (9 pin serial connection

part #: 5061-2575

CPU (DB-9 F)			UPS (DB-9 M)	
TD	3	----->	1	RD
RD	2	<-----	2	TD
GND	5	-----	9	GND

MT5634ZBA Configuration:

N4000 Support Link Modem Setup and Console Interface Information

URL: <http://grnd.fc.hp.com/predictive/n4000.htm>

Subject: Additional information about the new Support Link Modem and Console interface on the N4000

This document provides additional information not covered in the manual shipping with this product or covered in the Mulitech MT5634ZBA manual on their web site. Note: this is not the USB version of the modem.

The N Class machine will interact with this modem differently than past modems. There are several things that are different about this modem:

1. Modem Protocol needs to be setup as CCITT when using the CA command in GSP.
2. The HP version of this modem ships set to 19200 (use the CA command set up the modem interface and console speed).
3. There is a new command in GSP called reset modem (MR).
4. Several (most) of the modem commands have changed.

These are covered in more detail below.

1. To configure / check the configuration of the Remote support port on the N4000 use the following example. At the GSP (Guardian Service Processor) type the lower case letters after the prompt.

*****GSP example*****

GSP> ca

This command allow you to modify the asynchronous and modem parameters.

Do you want to modify the asynchronous parameters ? (Y/[N]) **n**

Do you want to modify the modem parameters ? (Y/[N]) **y**

Current Modem Protocol is : **CCITT**

Do you want to modify it ? (Y/[N]) **n**

Current Modem Baud Rate is : **9600 bits/s**

Do you want to modify it ? (Y/[N]) **y**

Enter new Modem Baud Rate (in bits/s) : **19200**

New Modem Baud Rate will be : **19200 bits/s**
Please confirm

(Y/[N]) **Y**

-> **Modem Baud Rate will be updated.**

Current Flow Control is : **Software**

Do you want to modify it ?

(Y/[N]) **y**

Enter new Flow Control (Hardware / [Software]) : **hardware**

New Flow Control will be : **Hardware**

Please confirm

(Y/[N]) : **y**

-> **Flow Control will be updated.**

Sending Configuration Strings to Modem is : **Enabled**

Do you want to modify it ?

(Y/[N])

Modem presence is : **always connected**

Do you want to modify it ?

(Y/[N])

Command execution may take 25 seconds

-> **Parameters have been updated.**

*****END of GSP example*****

NOTE: type 'co' to return to console mode.

2. The HP version of the modem code is set for 19200 on both the digital side and analog side. You will see both \$SB and \$MB speeds set to 19200. Connect a PC to the modem using the cable supplied with the modem. Type at&v to verify the setup of your modem.

You should get the following:

*****Modem example*****

at&v

Option Selection AT Cmd

Comm Standard CCITT B
CommandCharEcho Enabled E
Speaker Volume Medium L
Speaker Control OnUntilCarrier M
Result Codes Enabled Q

Dialer Type Tone T/P
ResultCode Form Text V
ExtendResultCode Disabled X
DialTone Detect Disabled X
BusyTone Detect Disabled X
CDC Action Standard RS232 &C
DTR Action Off=Reset &D
Press any key to continue; ESC to quit.

Option Selection AT Cmd

V22b Guard Tone Disabled &G
Flow Control Software &K
Error Control Mode V42,MNP,Buffer W
Data Compression Disabled %C
DTR Dialing Off \$D
Eleven Bit Off \$EB
Parity Bit Even #P
AutoAnswerRing# 1 S0
AT Escape Char 43 S2
CarriageReturn Char 13 S3
Linefeed Char 10 S4
Backspace Char 8 S5
Press any key to continue; ESC to quit.

Option Selection AT Cmd

Blind Dial Pause 3 sec S6
NoAnswer Timeout 50 sec S7
"," Pause Time 2 sec S8
Remote Config Char 37 S9
No Carrier Disc 2000 msec S10
DTMF Dial Speed 95 msec S11
Escape GuardTime 1000 msec S12
Data Calling Tone Enabled S35
Line Rate 19200 S37
Callback Security Disabled #CBS
Callback Delay 15 sec #CBD
Callback Parity None/Space #CBP
Callback Inactivity 20 min #CBI
Callback Retries 4 #CBA
User Profile Not Stored &W
\$SB Setting 19200 bps \$SB
Press any key to continue; ESC to quit.

Stored Phone Numbers

&Z0=
&Z1=
&Z2=
OK

*****End of Modem example*****

To set the serial rate to 19200 type 'at\$SB19200'.
To set the analog rate to 19200 type 'at\$MB19200'.

Note: this modem can transmit at up to 33600 and receive at up to 56k assuming the phone lines will support it!

3. After configuring the modem at the GSP prompt via both the ER and CA commands type MR to have the N4000 set some special straps. Note: the modem will not work correctly until the MR command is used.

Use Caution: The ER command not only can enable the remote modem but enable network access to the system via the SAS. In the example below both are enabled.

*****Enable Remote Example*****

GSP>er

Current console access state is :
Remote Console : **Disabled**
PPP Console : **Disabled**
LAN Console : **Enabled**

Do you want to modify this configuration ? (Y/[N]) **y**

Do you want to Enable the Remote Console ? (Y/[N]) **y**

-> Remote Console will be : **Enabled**

Do you want to Enable the PPP Console ? (Y/[N]) **n**

Command execution may take 25 seconds

New console access state is :
Remote Console : **Enabled**
PPP Console : **Disabled**
LAN Console : **Enabled**

ALERT LEVEL: 0=No failure detected, forward progress
CA:F=display_activity() update - CSA:02=implementation dependent
RET:E=HP-UJX - REID:01
ACTIVITY/COMPLETION LEVEL: 0%

GSP>

*****End of Enable Remote example*****

4. There are several commands that are different.
- a. The atl5, atl6 and atl7 do not work on this modem. Use at&v to see the current configuration.
 - b. To default the modem you will need to type at&w1 to remove a user profile and at&f to set to the factory default.
 - c. See the country code attachment for setting modem country codes.
 - d. See the GSP commands file for a list of GSP commands

last rev 7Apr99 gld

GSP Commands

URL: <http://grnd.fc.hp.com/predictive/gsp.htm>

Revision X.15.00 Mar 23 1999,10:56:22

AC : Alert Display Configuration	PC : Remote Power Control
AR : Config. Automatic System Restart	PS : Power Management Module status
CA : Configure serial port parameters	RP : Reset password configuration
CE : Log repair info in history buffer	RS : System reset through RST signal
CL : Display console history	SE : Activate a system session
CO : Return to Console Mode	SL : Display SPU status logs
DC : Default configuration	SO : Security options & access control
DI : Disconnect remote or LAN console	SS : System's processor status
DR : Disable remote or LAN console	TC : System reset through INIT signal
ER : Enable remote or LAN console	TE : Sends a message to other terms
HE : Display the available commands	VFP : Activates Alert Log Display
IT : Modify SAS inactivity timeouts	WHO : Disp. list of GSP connected users
LC : Configure LAN console	XD : GSP Diagnostics and Reset
LS : Display LAN console status	XU : Upgrade the GSP Firmware
MR : Modem Reset	ZTOGCCD : Toggle Hex/Text logs & alerts
MS : Display the status of the Modem	

Local Console Configuration Steps

VT100 Setup on N4000

URL: <http://grnd.fc.hp.com/predictive/n4000.htm>

It is very important to correctly set the console supplied with an N4000 to vt100 mode.

Exit the session before making these changes to the terminal configuration.

On a 700/96 terminal perform the following steps:

- 1. Press user/system key to get to the config screen.**
- 2. Press f8 (config keys)**
- 3. Press f5 (terminal config)**
- 4. Tab to the Terminal Id field**
- 5. Type VT100 in this field**
- 6. Tab to the TermMode field**
- 7. Press f2 (next choice), EM100 appears in the field**
- 8. Press f1 (save config)**
- 9. Go to the ansi config screen using f8 (config keys)**
- 10. Press f6 (ansi config)**
- 11. Tab to the backspace Def field.**
- 12. Press f2 (next choice).**
- 13. Verify the Backspace Def field now reads BackSpace/Del in the field**
- 14. Tab to the EM100 ID field**
- 15. Press f2 (next choice) to change the EM100 ID field to EM100**
- 16. Press f1 (save config)**

The terminal should now display EM100 below the softkeys.

The above procedure has set the following:

- * terminal id to vt100,**
- * termmode to em100,**
- * correctly mapped the backspace and delete keys**
- * em100 id to EM100**

The terminal is now ready to correctly operate in vt100 mode.

Rev 7Apr99 gdl

Country Codes:

- Modems shipping outside of the United States will need to have the country code set during installation. This will only need to be done once and only during EMSP. The kit you received contains a modem cable to be used both to connect the the N4000 system and to configure the modem using a PC or terminal. Below are the numeric codes for the countries supported in the modem code. Some of the defined codes have been placed there by the manufacturer.
- The fact that a country appears on this list does not indicate that we have approval for the modem in that country. The '0x' preceding each code is to indicate that these are hex values.

```
#define AUSTRALIA 0x01
#define BELGIUM 0x02
#define DENMARK 0x03
#define FINLAND 0x04
#define FRANCE 0x05
#define GERMANY 0x06
#define NETHERLANDS 0x07
#define ITALY 0x08
#define NEWZEALAND 0x09
#define NORWAY 0x0A
#define SPAIN 0x0B
#define SWEDEN 0x0C
#define SWITZERLAND 0x0D
#define UK 0x0E // United Kingdom
#define AUSTRIA 0x0F
#define JAPAN 0x10
#define PRC 0x11 // Peoples Republic of China
#define KOREA 0x12
#define MALAYSIA 0x13
#define SINGAPORE 0x14
#define TAIWAN 0x15
#define THAILAND 0x16
#define INDONESIA 0x17
#define PORTUGAL 0x18
#define NA 0x19 // North America (USA)
#define IRELAND 0x1a
#define HONGKONG 0x1b #define CANADA 0x1c
#define MEXICO 0x1d #define INDIA 0x1e
#define VIETNAM 0x1f
#define PHILIPPINES 0x20
#define GREECE 0x21
#define HUNGARY 0x22
#define TURKEY 0x23
#define SOUTHAFRICA 0x24
#define CZECH 0x25
#define POLAND 0x26
#define ISRAEL 0x27
#define SLOVAK 0x28
#define SLOVENIA 0x29
#define CHILE 0x2A
#define INTERNATIONAL 0x30
#define PANEUROPEAN 0x34
```

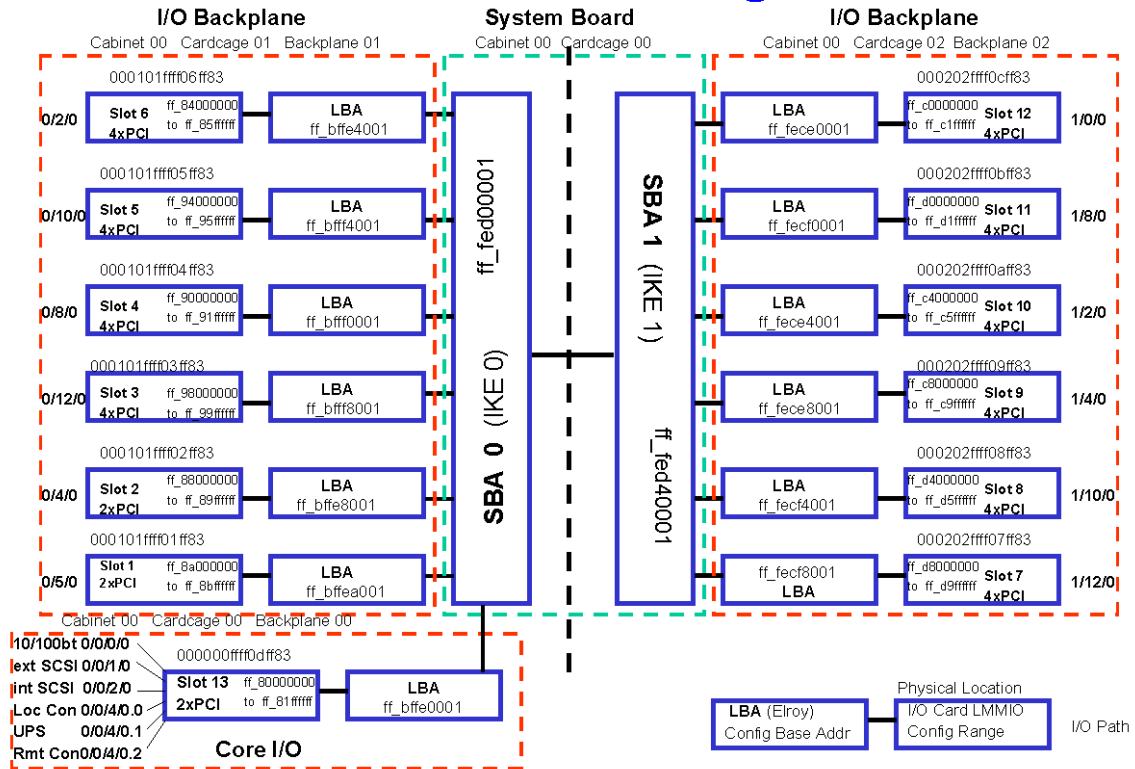
- The command to program the country code is 'AT%T19,0,nn<cr>' where nn stands for the country code that you are to program into the modem. Enter the hex value for the country code when programming with this command.
- The country code that a modem is set to may be viewed by using the 'AT%T20,0<cr>' command.

N4000 Updated Block Diagram

URL: <http://hprfes.rose.hp.com/~eroseme/Diagrams/>

August 30, 1999

N4000 I/O Block Diagram



IOSCAN -KFN SHOWED THE FOLLOWING:

```

tty      0  0/0/4/0      asio0 CLAIMED INTERFACE      PCI
Serial (103c1048)  /dev/GSPdiag1 /dev/mux0      /dev/tty0p1
                  /dev/diag/mux0 /dev/tty0p0    /dev/tty0p2

tty      1  0/0/5/0      asio0 CLAIMED INTERFACE      PCI
Serial (103c1048)  /dev/GSPdiag2 /dev/mux1      /dev/tty1p1
                  /dev/diag/mux1 /dev/tty1p0
    
```

Predictive Configuration / Setup for MT5634ZBA Remote Support Modem

http://grnd.fc.hp.com/predictive/prelude_modem.html

Note: The Term *Prelude* is for internal use only please refer to N-Class when referencing this system to external customers

Configuring the new modem (MT5634ZBA) on an N4000 for Predictive

1. logon as root
2. cd /opt/pred/bin
3. ./psconfig
4. select item **3 "TRANSFER data menu"**
5. select item **5 "CONFIGURE transfer Information menu"**
6. Select item **1 "PRIMARY transfer method"** set it to "modem"
7. select item **4**, and set to the proper Response Center phone number
8. Select item **9 "SETUP modem port"**
 1. wait until "Scanning current system configuration..." completes
 2. if there is a current configuration, answer 'n' to the question "set up modem port with these values?"
 3. enter **1** to setup the **Callout device file**
 4. wait until "Scanning current system configuration..." completes
 5. select **1 "Select hardware address and port"**
 6. a list of possible hardware addresses will be presented. select the number associated with path "0/0/4/0"
 7. Enter port number **2** for the *Remote Console port*
 8. answer 'n' to the question "set up modem port with these values?"
 9. select item **3** for "**Dialer name**" and enter number **9** for "**ps_mt1932_tone**"
 10. before answering **y** to the question "set up modem port with these values?" insure that the configuration looks like the following:

```
1 - Callout device file      [cu10p2]   Type [MUX]
   Hardware address         [0/0/4/0]   port [2]
3 - Dialer name             [ps_mt1932_tone]
4 - Automatic transfer      [y]
5 - CCITT modem             [n]
6 - Maximum modem speed    [2400]
7 - Callin enabled         [n]
```

11. for any items that need to be changed answer "n" to the question "set up modem port with these values?" and enter the item number and new value. When all configuration options match the above example, enter "y" to the question "set up modem port with these values?"
12. You should see the following messages:

```
Verifying that the specified port is not in use...
```

```
Configuring the predictive Support modem port...
```

```
Created device: /dev/cu10p2
Created device: /dev/ttyd0p2
```

Created device: /dev/cua0p2

Updated /etc/uucp/Devices with entries for the
Predictive Support modem

Press RETURN to continue

13. press the return key to continue
14. select item 7 for "TRANSFER data menu"
*WARNING: BE SURE AND ANSWER "Y" TO THE QUESTION:
"Do you wish to save these values (Y/N)?"
IF YOU DO NOT ANSWER "Y" THEN YOU WILL LOSE THE CHANGES YOU
JUST MADE*
9. Select item 2 "TEST" and perform a test transfer to the Response center

GSP Guardian Service Processor

URL: <http://hphwec07.cup.hp.com/cpu.html>

GSP Internal Port Security on N-4000

A problem has been discovered with security on the GSP Internal Port on the N-Class. The problem is really an HP-UX problem which is exposed because the GSP uses a special device file which is accessed via the "cu" or "kermit" commands.

The problem is that ANY USER (root or nonroot) can access the GSP Internal Port if the special file /dev/tty1p0 is left on the system, **REGARDLESS OF PERMISSIONS ON THAT FILE.**

This comes about because both of the HP-UX commands "cu" and "kermit" run with the sticky bit on, and carry their root access privileges when opening device files.

As a result, the device file /dev/tty1p0 should be removed when it is not needed. It requires root access to create the device file, so as long as the device file does not exist, there is no security problem.

This device file should not be created unless it is needed to access the internal port, and should be removed immediately following its use to access the internal port (i.e. if the administrator password is forgotten for the GSP). The GSP will not require any password for access via the internal port.

A procedure "Accessing Guardian Service Processor Internal Port" is included for information and reference ONLY !,

**THIS INFORMATION IS NOT
CUSTOMER VIEWABLE which INCLUDES
CHANNEL PARTNERS**

N4000 PREDICTIVE / MT5634ZBA

Error "NO DIAL TONE" Resolution Outline

DATE: September 10, 1999

SUBJECT: N4000 Predictive Modem Problem Resolution after getting "no dial tone"

RESPONSIBLE INDIVIDUALS: Paul Pesut, NAET
Bruce Stiver, HP CE
Jesse Jones, PCC RCE

The following information is provided to assist in resolving future Predictive modem issues that involve the N4000 and CCITT protocol, as well as updating the current dialers entry being used for the MT5634ZBA modem. The process below is what was used to determine and correct the problem.

1) Checked to see if kermit was able to connect to modem.

```
#kermit> set line /dev/ttyd0p2
#kermit> set speed 19200
#kermit> set flow xon/xoff
#kermit> connected
```

Was able to connect and issue an **AT** with the modem responding with an **okay**. Went thru the at&v output insuring that the init strings where still configured, the only item that did not have the same value as the modem guide recommends is the User profile not stored &W, this just meant that the last init strings where stored in the non-volatile memory.

I did notice that the **\$SB19200** was set, and so was the **\$MB19200**. After checking the modem configuration, we disconnected from kermit. Then proceeded to check the predictive configuration as outlined by the Predictive MT5634ZBA configuration whitepaper located at the following website:

http://grnd.fc.hp.com/predictive/prelude_modem.html

2) Checked to see if all the configurable parameters for psconfig had been set.

```
1 - Callout device file :      (cul0p2)  Type : (mux)
2 - Hardware address:      (0/0/4/0)  Port : (2)
3 - Dialer Name:          (ps_mt1932_tone)
4 - Automatic transfer:    (y)
```


- 5 - CCITT modem: (n)
- 6 - Maximum modem speed : (2400)
- 7 - Callin enabled: (n)

After reviewing that these had been set according to MT5634ZBA Predictive sheet, we initiated another TRANSFER, getting the same response “**NO DIAL TONE**”, this led me to believe the problem existed in either psconfig setup or the HP-UX operating system.

3) After the transfer failed I decided to see if the cu command was in fact working, we added the proper /etc/uucp/Devices entry for using the cu command. Tried to cu to the device and ran into problems with accessing the device ?

4) So, we checked the device files located in /dev, there we found that the following was in place:

```

/dev/cul0p2  permissions 644 bin      bin
/dev/ttyd0p2 permissions 600 uucp     bin
/dev/cua0p2  permissions 644 bin      bin

```

It appears that the ttyd0p2 device file was not correct, had Bruce (HPCE) change it to mirror the other device files. Next, I also checked to insure /etc/uucp/Devices file had the correct permissions, found that the owner was **root bin**, had this changed to **bin bin**. After checking to insure all permissions and owners where correct, we once again initiated the psconfig transfer test, and again ended with the same “**NO DIAL TONE**” error from predictive.

5) After thinking about the configuration and what process might be causing the modem to look for the dial tone, I went into the /etc/uucp/Dialers file, to review the init strings that are initiated when psconfig is called. I knew that the CCITT protocol, that this modem is configured with was having problems identifying the normal telecom tones since it is using European protocol (CCITT), this is why I started to review the dialers entry looking for an **ATX4** in the initialization string, and sure enough it was being used in the ps_mt1932_tone dialers entry, I had Bruce change the **ATX4** to **ATX3** (blind dialing) which allows for bypassing the tone checks we normally use with BELL modems. After changing this init command, we reinitiated the predictive test and completed with success.

6) After reviewing the dialers entry being used I consulted with Dennis Parks, and Rob Brown Predictive engineers, informed them of the fix and the problem coming from the use of the ps_mt1932_tone dialers entry, I also mentioned that in this dialers entry there is a **\$BA1**, which if set will only use the \$MB19200 and \$SB19200 settings for connecting speeds, if predictive is configured at 2400 baud this may cause predictive to error, and could explain the recent speed sensing errors that the Predictive team is encountering.

7) Conclusion: The use of CCITT protocol in US based modems will cause a problem if the modem is programmed to verify tone prior to dialing, The DTR will not be raised unless the modem receives the correct tone and verifies it, this was the case above, so providing a blind dial init command worked, there are other available options that can also be used, such as increase the delay before initiating blind dialing (init command set in modem). The final outcome on site is that predictive is functioning with the configuration changes I recommended and provided. There is follow-up testing needed to insure that the CCITT protocol setting, dialers strings, and internal modem init settings are correct and that all the various uses of the modem (i.e. Remote Console, predictive) are functioning correctly after this change. The MT5634ZBA modem needs to have its own dialer entry for predictive instead of using the ps_mt1932_tone dialer.

URLS: Listed below are the url's utilized to assist in compiling this document.

http://bearcat.rose.hp.com/support_modems/html/56k_modem_support_link_config_guide..htm

<http://info.fc.hp.com/hpux/systems/#nclass>

<http://info.fc.hp.com/hpauthorized/nclass/NCLASScd/framens.htm> (linked by the one above)

http://grnd.fc.hp.com/predictive/prelude_modem.html

http://bearcat.rose.hp.com/support_modems/Default.htm

<http://slick2.atl.hp.com/hwrcweb/modems/Default.htm>

<http://grnd.fc.hp.com/predictive/n4000.htm>

<http://grnd.fc.hp.com/predictive/vt100.htm>

<http://grnd.fc.hp.com/predictive/modem1.htm>

<http://grnd.fc.hp.com/predictive/gsp.htm>

<http://www.multitech.com/support/manuals/>

