



Broadcom NetXtreme Ethernet Adapter Diagnostic User's Guide

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1 Introduction

This program runs in two modes: Manufacturing mode and Engineering mode. The mode is determined with the command line option or the configuration file. When the program is running in manufacturing mode, it starts to run all tests in the configuration. If it detects an error, it displays an error and exits the program. When the program is in engineering mode, it prompts user to enter commands. The commands are explained in the later chapters. This document provides the information on configuration file specification, command line options and engineering diagnostic commands on Broadcom NetXtreme Ethernet adapter, in particular to check out the functionality of the BCM5700-5705 and its related components. In general, this program has a set of default configuration. It is overwritten by configuration file. The command line option overwrites both default and the configuration files.

2 Prerequisites

The engineering diagnostic is executed under DOS protected mode or under Intel's Extensible Firmware Interface (EFI) on Intel IA64 systems.

OS: Dos 6.22 or EFI V1.10.14.62 and newer

Software: b57diag.exe for DOS and b57diag64.efi for EFI (version 7.45 and newer)

Input File List: The following files should be found in the same location of the b57diag.

ee57xxyy.yy (TX & RX CPUs Firmware file, xx chip type, yy version number)

eeeprom.bin (Serial EEPROM/FLASH config input file)

cpu.bin or cpu05.bin (CPU Instruction test)

cpudiag.bin or cpudg05.bin (CPU Accessing test)

flshdiag.bin or flashdg05.bin

config.sys (not required for EFI)

himem.sys (not required for EFI)

Output File List:

The following file may be generated in run time depending execution option(s).

diagcfg.bin

3 Diagnostic Tests

The tests are divided into four groups: Register Tests, Memory Tests, Miscellaneous Tests, and Data Tests. They numbered as group 'A', 'B', 'C', 'D', and 'E'.

3.1 Test Names

Group A.

- A1. Indirect Register Test
- A2. Control Register Test
- A3. Interrupt Test
- A4. BIST
- A5. PCI Cfg Register Test

Group B.

- B1. Scratch Pad Test
- B2. BD SRAM Test
- B3. DMA SRAM Test
- B4. MBUF SRAM Test
- B5. MBUF SRAM via DMA Test
- B6. External SRAM Test
- B7. CPU GPR SRAM Test

Group C.

- C1. EEPROM Test
- C2. CPU Test
- C3. DMA Test
- C4. MII Test
- C5. VPD Test
- C6. ASF Test
- C7. ROM Expansion Test
- C8. CPU Fetch Test

Group D.

- D1. Mac Loopback Test
- D2. Phy Loopback Test
- D3. RJ45 Loopback Test
- D4. 1G False Carrier Test
- D5. MII Miscellaneous Test
- D6. MSI Test

Group E.

- E1. 1G Wire Open/Short (** ZERO LEN LB RJ45 **) Test

3.2 Error Codes

The Error Codes are presented in Section 9 - ERROR MESSAGES.

3.3 Test Descriptions

3.3.1 A1. Indirect Register Test

Command: regtest -i

Function: Using indirect addressing method, writing increment data into MAC hash Register table and read back for verification. The memory read/write is done 100 times while increment test data.

Default: Test Enabled

3.3.2 A2. Control Register Test

Command: regtest

Function: Each Register specified in the configuration contents read only bit and read/write bit defines. The test writing zero and one into the test bits to insure the read only bits are not changed, and read/write bits are changed accordingly.

Default: Test Enabled.

3.3.3 A3. Interrupt Test

Command: intrtest

Function: This test verifies the interrupt functionality. It enables interrupt and waits for interrupt to occur. It waits for 500ms and reports error if could not generate interrupts.

Default: Enabled

3.3.4 A4. BIST

Command: bist

Function: Hardware Built-In-Self-Test (BIST). This test initiates BIST, and wait for the test result returned by hardware.

Default: Due to the intermittent failure, this test is currently disabled by default

3.3.5 A5. PCI Cfg Register Test

Command: pcicfg

Function: This test verifies the access integrity of the PCI config registers.

3.3.6 B1. Scratch Pad Test

Command: memtest -s

Function: This test tests the scratch pad SRAM on board. The following tests are performed:

Data Pattern Test: Write test data into SRAM, read back to ensure data is correct. The test data used is 0x00000000, 0xffffffff, 0xaa55aa55, and 0x55aa55aa.

Alternate Data Pattern Test: Write test data into SRAM. Write complement test data into next address. Read back both data to insure the data is correct. After the test, the program reads back data one more time to insure the data stays correct. The test data used is 0x00000000, 0xffffffff, 0xaa55aa55, and 0x55aa55aa.

Address Test: Write each address with unique increment data. Read back data to insure data is correct. After fill the entire data with the unique data, the program reads back data again to insure data stays the same.

WalkingOne bit Test: For each address. Data one is written and read back for testing. Then shift the data left one bit, so the data becomes two and do the same test again. It repeats for 32 times until the test bit is shifted out of test data. The same test is repeated for entire test range.

Pseudo Random Data Test: A pre-calculated pseudo random data is used to write a unique data into each test RAM. After the first pass the test, the program reads back one more time to insure data stays correct.

Default: Enabled

3.3.7 B2. BD SRAM Test

Command: memtest -b

Function: This test tests the BD SRAM. This performs exact the same way of testing as described in B1. Scratch Pad Test.

Default: Enabled

3.3.8 B3. DMA SRAM Test

Command: memtest -d

Function: It tests DMA SRAM by performing the tests described in test B1. The Scratch Pad Test.

Default: Enabled

3.3.9 B4. MBUF SRAM Test

Command: memtest -m

Function: It tests DMA SRAM by performing the tests described in test B1. The Scratch Pad Test.

Default: Enabled

3.3.10 B5. MBUF SRAM via DMA Test

Command: memtest -x

Function: Eight test pattern data are used in the test. They are described below. A 0x1000 sized data buffer is used for this test. Before each pattern test, the buffer is initialized and filled with the test pattern. It then, performs size 0x1000 transmit DMA from host buffer to NIC MBUF memory. Verify the data integrity in MBUF against host memory and repeat the DMA for the entire MBUF buffer. Then it performs receive DMA from NIC to host. The 0x1000-byte test buffer is cleared to zero before each receive-DMA. Verify the data integrity and test is repeated for the entire MBUF SRAM range.

Test Pattern	Description
"16 00's 16 FF's"	Full the entire host DMA buffer with 16 bytes of 00's and then 16 bytes of FF's.
"16 FF's 16 0's"	Full the entire host DMA buffer with 16 bytes of 00's and then 16 bytes of FF's.
"32 00's 32 FF's"	Full the entire host DMA buffer with 32 bytes of 00's and then 32 bytes of FF's.
"32 FF's 32 00's"	Full the entire host DMA buffer with 32 bytes of FF's and then 32 bytes of 00's.
"00000000's"	Full the entire host DMA buffer with all zeros.
"FFFFFFFF's"	Full the entire host DMA buffer with all FF's.
"AA55AA55's"	Full the entire host DMA buffer with data 0xAA55AA55.
"55AA55AA's"	Full the entire host DMA buffer with data 0xAA55AA55.

Default: Enabled

3.3.11 B6. External SRAM Test

Command: memtest -e

Function: It tests DMA SRAM by performing the tests described in test B1. The Scratch Pad Test.

Default: Disabled

3.3.12 B7. CPU GPR Test

Command: memtest -b

Function: This test tests the CPU General Purpose Registers. This performs exact the same way of testing as described in B1 over 3 voltages (1.1V, 1.2V, 1.3V).

Default: Enable

3.3.13 C1. EEPROM Test

Command: setest

Function: An increment test data is used in EEPROM test. It fills the test data into the test range and read back to verify the content. After the test, it fills data with zero to clear the memory.

Default: Enabled

3.3.14 C2. CPU Test

Command: cputest

Function: This test opens the file cpu.bin. If file exists and content is good, it loads code to rx and tx CPU and verifies CPU execution.

Default: Enabled

3.3.15 C3. DMA Test

Command: dmatest

Function: Both high and low priorities DMA are tested. It moves data from host memory to NIC SRAM, verifies data, and then moves data back to host memory again to verify data.

Default: Enabled

3.3.16 C4. MII Test

Command: miitest

Function: The function is identical to A2. Control Register Test. Each Register specified in the configuration contents read only bit and read/write bit defines. The test writing zero and one into the test bits to insure the read only bits value are not changed, and read/write bits are changed accordingly.

Default: Test Enabled.

Default Register table

The test will try to read the register configuration file 'miireg.txt' for the register defines. If the file does not exists, the following table is used:

Offset	R/O Mask	R/W Mask
--------	----------	----------

0x00	0x0000	0x7180
0x02	0xffff	0x0000
0x03	0xffff	0x0000
0x04	0x0000	0xffff
0x05	0xffff	0x0000
0x06	0x0001	0x0000
0x07	0x0800	0xb7ff
0x08	0xffff	0x0000
0x09	0x0000	0xff00
0x0a	0x7c00	0x0000
0x10	0x0000	0xffbf
0x11	0x3300	0x0000
0x19	0x001f	0x0000
0x1e	0x0000	0xffff
0x1f	0x0000	0xffff

3.3.17 C5. VPD Test

Command: vpdtest

Function: It saves the content of VPD first before perform the test. Once it is done, it writes one of the five pattern test data, 0xff, 0xaa, 0x55, increment data, or decrement data, into VPD memory. By default, increment data pattern is used. It writes and reads back the data for the entire test range, and then restores the original content.

Default: Disabled

3.3.18 C6. ASF Test

Command: asftest

Function:m

1. Reset test.

Setting reset bit, poll for self-clearing. Verify reset value of registers.

2. Event Mapping Test

Setting SMB_ATTN bit. By changing ASF_ATTN LOC bits, verify the mapping bits in TX_CPU or RX_CPU event bits.

3. Counter Test

Clear WG_TO, HB_TO, PA_TO, PL_TO, RT_TO bits by setting those bits. Make sure the bits clear.

Clear Timestamp Counter. Writing a value 1 into each PL, PA, HB, WG, RT counters. Set TSC_EN bit.

Poll each PA_TO bit and count up to 50 times. Check if PL_TO gets set at the end of 50 times. Continue to count up to 200 times. Check if all other TO bits are set and verify Timestamp Counter is incremented.

3.3.19 C7. ROM Expansion Test

Command: romtest

Function: This function tests the ability to enable/disable/access the expansion rom on the device.

Default: Enabled

3.3.20 C8. CPU Fetch Test

Command: cpufetch

Function: This CPU Instruction fetch logic with 1.1V and 1.3V setting.

Default: Disabled

3.3.21 D1. Mac Loopback Test

Command: pkttest -m

Function: This is internal loopback data transmit/receive test. It initializes MAC into internal loopback mode, and transmits 200 packets. The data should be routed back to receive channel and receive by the receive routine, which verifies the integrity of data. One Giga bit rate is used for this test.

Default: Enabled

3.3.22 D2. Phy Loopback Test

Command: pkttest -p

Function: This test is same as D1. Mac Loopback Test except, the data is routed back via physical layer device. One Giga bit rate is used for this test.

Default: Enabled

3.3.23 D3. RJ45 Loopback Test

Command: pkttest -e

Function: This is external loopback test. From the UUT point of view, no loopback mode is configured. The data expected to be routed back by RJ45 loopback connector. 10M/s, 100M/s, and 1000M/s are used for this test.

Default: Disabled

3.3.24 D4. 1G False Carrier Test

Command: None

Function: This test executes the same procedure as test D3 and tests to see if a *false carrier* was detected at the end of the test. The `-l200`, `-dispgbpkt`, `-disppkt` and `-errlimit` command line options were added to configure a number of operational parameters. The details of the command line options are provided in the “COMMAND LINE OPTION PARAMETERS” section.

Default: Disabled

3.3.25 D5. MII Miscellaneous Test

Command: None

Function: This function tests the auto-polling and phy-interrupt capabilities. These are the functionalities of the phy.

Default: Enabled

3.3.26 D6. MSI Test

Command: msitest

Function: Testing Message Signaled Interrupt Function to see if it handles this interrupt correctly.

Default: Disabled

3.3.27 E1. 1G Wire Open/Short (** ZERO LEN LB RJ45 **) Test

Command: nictest e1

Function: An external loopback test is performed at 10/100/1000 Mbps/s. A zero length loopback connector is placed at the RJ45 connector of the LOM/NIC. After running the loopback test at 1000 Mbps/s the line signal quality is tested order to catch line faults (shorts or opens). This test is used during manufacturing in order to detect board/system build issues on the line/analog side of the Ethernet controller.

Default: Disabled

4 Command line option parameters

When users invoke this program, a set of option parameter can be used to overwrite the configuration file or the default configuration. This section summarizes the options. The options are case sensitive.

-chksecfg <file_p> | <file_s> will enable the NVRAM SecfgTest

Boot code configuration will be checked against input files. The input files are in the same format as EEPROM.TXT. <file_p> is for the primary port and <file_s> is for the secondary port. Software will read command from input files and compare with the boot code configuration and return "Passed" or "Failed" accordingly.

Example:

b57diag -chksecfg file_p.txt (for single port devices)

b57diag -chksecfg file_p.txt file_s.txt (for dual port devices)

-nosz disable storing NVRAM and TPM size in NVRAM

Disable the storing of the TPM and NVRAM size in NVRAM when diagnostics is run from the command prompt. Use the "-nosz" option when repeatedly power cycling a system in order not to exhaust the total NVRAM write cycles.

-smbaddr <hex1> | <hex2>...<hex3> Configure ASF SMBus Addresses.

The option will configure the ASF SMBus Address field in ASF Configuration block.

The option can take multiple parameters in HEX.

Example:

a. -smbaddr 45 (SMB Address = 0x45)

b. -smbaddr 45 6c (SMB Address for 1st device=0x45 and 2nd device = 0x6c)

This option must be used along with -c option. Number of parameters for -smbaddr must be the same as number of devices selected by -c.

Example:

b57diag -c 0 3 6 -smbaddr 6c-6e -t abcd.

b57diag -c 0 -e b57kia -pasf asf.bin -smbaddr 66 -t abcd

-mfct <filename> updates the PCI SSID and SVID

Use this option to modify the PCI SSID and SVID stored in NVRAM. The new SSID and SVID are specified in the file <filename>. The format of <filename> is specified in the "EEPROM.TXT format" section below.

-sil suppresses warning messages of the "-firm" and "-firmall" commands

The warning message, “Boot code file and device type incompatible”, produced by the “-firm” and “-firmall” commands is not displayed when the “-sil” command line parameter is entered before the “-firm” and “-firmall” commands. The “-firm” and “-firmall” commands are described below.

-rf <x> selects a reference device to use during external loopback

Use this option with the external loopback test D3 to select a reference card. During the external loopback test the physical loopback can be provided with a RJ45 loopback plug or a CAT5 cable connected to a reference device (which loops back the data).

-lbe g:h:t define the number of packets to use during external loopback

Selects the number of packets to send during the external loopback test D3 (g ,h ,t are the gigabit, hundred megabit, and ten megabit packet counts respectively) (default values are g=2000, h=1000, t=600). It is mandatory that all packets counts are entered with this command line option.

-ckdev <xy> executes diagnostic only x=chip rev and y=metal rev

If <xy> does not match the device being accessed diagnostics will not execute. Use this option on a production line to verify that only chips of a specific rev are run with diagnostics and all others fail.

-l200 <m200> controls the number of 200 packets to send

This option is used for the D4, “1G False Carrier”, loopback test. During the test packets are sent out in groups of 200. The user specified <m200> value determines the number of 200 packet groups to send out. The default value is <m200> =50 or 50 groups of 200 packets.

-disppkts display the packet count during the progress of the test

This option is used for the D4, “1G False Carrier”, loopback test. On long-term test this option is entered to display the packet count every 20,000 packets to let a user know the test is operating normally and not frozen.

-dispgbend display the packet count at the end of the test

This option is used for the D4, “1G False Carrier”, loopback test. This option is entered to print out the final packet count at the end of the test.

-errlimit <lim> controls the number of errors seen before the test fails

This option is used for the D4, “1G False Carrier”, loopback test. The default value is <lim> =3.

-pktf0 packet data pattern is alternating 64 1's and 0's

This option is used for the D4, “1G False Carrier”, loopback test. The default packet data is an incrementing value per byte. With this option the packet data alternate between 64 1's and 0's that are aligned on a 64-bit PCI bus for maximum transitions.

-dids display chip information such as the PCI DID and VID

The feature outputs the following information: PCI DID, VID, SDID & SVID; MAC address, Firmware revision, PXE, PXESpd, WOL, ASF, MBA, Bond Rev. This information can be used to verify the setup of a chip after a firmware upgrade.

-elog <filename> an error log file <filename> used to log diagnostics failures

The feature is used to log the failure information of the diagnostics run. When an error occurs if the file <filename> exists it is appended to and if it does not exist it is created. If there are no diagnostics failures then the file is not appended or created. A user abort of the diagnostics testing is log to the error log file <filename>.

-firm <filename> used for field upgrade of bootcode firmware

The feature is used to execute a field upgrade of bootcode firmware. The bootcode firmware is programmed into a/the device/s of a system if there is a match of the PCI DID, VID, SDID & SVID of firmware and device.

-firmall <filename> used for field upgrade for entire NVRAM image

The feature is used to execute a field upgrade of entire NVRAM image. The new NVRAM image is programmed into a/the device/s of a system if there is a match of the PCI DID, VID, SDID & SVID of firmware and device. Media Manufact Region and Media VPD Block in NVRAM will be preserved. If the Advance Firmware, such as ASF and IPMI, is present, the Configuration Block of the firmware will also be preserved. Three addition command line parameters, “-updateasfcfg”, “-updatesecfg” and “-sil”, can be used along with “-firmall” command.

-updateasfcfg update the advance firmware configuration block of NVRAM with that of the NVRAM image provided by “-firmall” command

When “-updateasfcfg” command line parameter is entered before “-firmall” command, the Advance Firmware Configuration Block of the NVRAM will not be preserved. It will get updated by the input file of “-firmall” command. The “-firmall” command is described above.

-updatesecfg update the Media Manufact Region and Media VPD Block, of NVRAM with that of the NVRAM image provided by “-firmall” command

When “-updatesecfg” command line parameter is entered before “-firmall” command, the Media Manufact Region and Media VPD Block of the NVRAM will not be preserved. They will get updated by the input file of “-firmall” command. The “-firmall” command is described above.

-pipmi <filename> used for field program of IPMI firmware

The feature is used to execute a field upgrade of NVRAM to add IPMI firmware. The firmware is programmed into a/the device/s specified by “-c” option switch.

-uipmi <filename> used for field program of IPMI firmware

The feature is used to execute a field upgrade of IPMI firmware. The firmware is programmed into a/the device/s specified by “-c” option switch if IPMI firmware is originally loaded in NVRAM

-lbspd <spd> selects the line speeds to run test D3 (external loopback)

The external loopback test, by default, runs line speeds of 10/100/1000 Mbps/s. The user can select to run any combination of the line speeds to run the external loopback via this option. The <spd> parameter specifies the operational speed by using t/h/g for 10/100/1000 Mbps/s respectively. To run test D3 at a 100 Mbps/s line rate the user would enter “b57diag -t abcd -T d3 -lbspd h”. To run test D3 at a 100 Mbps/s and 1 Gbit/s the user would enter “b57diag -t abcd -T d3 -lbspd hg”.

-hlb <spd> puts the UUT into the host loopback mode

All data sent to the device on the line side will be looped back to the line. This setup can be used to test a specific device with an external tester or can be used with the -tr option to perform a requestor-response test. The optional <spd> parameter specifies the operational speed by using 10/100/1000 for 10/100/1000 Mbps/s respectively. The default value is 1000 Mbps/s.

-tr <pkts> <spd> the UUT transmits and receives data

The UUT will transmit the number of packets specified by <pkts>. The default number of packets transmitted is 1,000,000. The UUT will receive all packets sent to it via the line side. Counts of the transmitted and received packets will be presented to the user. This setup can be used to test a specific device with an external tester or can be used with the -hlb option to perform a requestor-response test. The optional <spd> parameter specifies the operational speed by using 10/100/1000 for 10/100/1000 Mbps/s respectively. The default value is 1000 Mbps/s.

-c <num> specify UUT device number

When more than one device is in the system, the devices are numbered starting from zero. For example, if there are three devices detected, the device is numbered as 0, 1, and 2. In this case, by entering the parameter -c 2 will select the last found device as default UUT.

In manufacture testing mode, by default, all devices are tested; however, if this option is used, only that selected device is tested.

Example: -c 2

-l <file> log file

All diagnostic output can be saved in a log file. Type log file name is specified by this option. The default is no log file.

Example: -l logfile.txt

-w <value> enable WOL programming in manufacture mode

After a successful manufacturing testing, the program will program WOL to either enable or disable mode (<value> = 1/0). By default, the WOL is programmed as disable. Entering value=1 will enable WOL.

When -f is entered, software uses eeprom.bin's content for WOL setting.

When -w 1 is entered with -f, software forces WOL enabled.

-x <value> enable PXE in manufacture mode

After a successful manufacturing testing, the program will program PXE to either enable or disable mode (<value> = 1/0). By default, the PXE is programmed as disable. Entering value=1 will enable PXE.

When -f is entered, software uses eeprom.bin's content for PXE setting.

When -x 1 is entered with -f, software forces PXE enabled.

-t <id> disable test**-T <id> enable test**

A certain test is enabled or disabled by default. User can overwrite the enabling status by those options. The test id must start with a letter 'A', 'B', 'C', or 'D' to indication the group and followed by test numbers. Each digit of number represents the sub-test number. For example, if the user wants to disable test A1 and A3. The option -t A13 should be entered. If no test numbers entered, all tests in that group are selected. For the tests not specified, the default setting will be used.

Example -t A15BC1 -T C4 -t D2

This disables A1, A5, B1, B2, B3, B4, B5, B6, C1, D2 and enables C4

Default Setting:

Enabled Tests:

- A1. Indirect Register Test
- A2. Control Register Test
- A3. BIST
- A4. Interrupt Test
- A5. PCI Cfg Register Test
- B1. Scratch Pad Test

B2. BD SRAM Test
B3. DMA SRAM Test
B4. MBUF SRAM Test
B5. MBUF SRAM via DMA Test
C1. NVRAM Test
C2. CPU Test
C3. DMA Test
C4. MII Test
C5. VPD Test
C6. ASF Test
C7. ROM Expansion Test
D1. Mac Loopback Test
D2. Phy Loopback Test
D5. MII Miscellaneous Test
D6. MSI Test

Disabled Tests:

B6. External SRAM Test
D3. RJ45 Loopback Test

-I <num> iteration number

Use this option to specify the number of times the tests to be run. The default is run one time. A number zero indicates loop forever. A control-C or control-break key can be used to break the loop. Any error detected will also stop testing after reporting the error.

Example: -I 5
Run tests five times.

-ver display current version number

If this option is entered, it displays the software version number/silkscreen revision and then exits the program.

-e <code> Encryption Code

This option is required to use option -geneep, -f, -m, -n, -mac and -s.

-geneep <file> Generate eeprom.bin file from eeprom.txt

A password is needed to run this option. With this option, it updates the specified eeprom binary file with the specifications defined in eeprom.txt. Please see Section 5.0 EEPROM.TXT format for detailed argument description.

-bus <bus:dev:func> Test UUT location

If only bus number has been specified, the program will test all the UUTs at the specified bus number.

Example: -bus 2.

If bus number and device number have been specified, the program will test all the UUTs with the specified bus number and device number.

Example: -bus 2:4

If bus number, device number and function number have been specified, the program will only test the UUT with the specified bus number, device number and function number.

Example: -bus 2:4:1

This option should NOT be used along with -c option.

-dpmi Use DPMI memory allocation

Use DPMI memory allocation method to allocate memory instead of malloc() or free()

-f <file> Program eeprom.bin

The program programs the content of the specified file into EEPROM before testing.

-m Program MAC address

If this option is entered, the program will prompt user for a new MAC address to be enter/scan before testing starts.

-mac <mac address> Program MAC address from command line

If this option is entered, the program will retrieve MAC address right after the -mac option is entered. The mac address has to be entered in hex and as shown in the following example:

b57diag -mac 001018010203

-fmac <file> Program MAC address from a file

If this option is entered, the program will retrieve MAC address from the specified file before starts testing. If the test passes, the MAC address from the specified file will be incremented; if not, it will stay unchanged. The text file which contains the MAC address range has the following format and the numbers are in hexadecimal:

mac_addr_pref = xxxxxx => Which is the prefix of the MAC address.

mac_addr_start = xxxxxx => Which is the start of the address range.

mac_addr_end = xxxxxx => Which is the end of the address range.

Example:

mac_addr_pref = 001018

mac_addr_start = 000100

mac_addr_end = 000FFF

Working in conjunction with -f <file> option, this -fmac option is equivalent to option -m.

-n Run program in Manufacturing Loop mode.

With this option, the -I, iteration number option, is ignored. The program will run in manufacturing loop mode. Power on/off is supported. After each test, the program will prompt user to exchange the UUT before starts another testing.

-s Skip eeprom programming process.

With this option, the program will skip the eeprom programming process. However, it will check for the eeprom content and print a warning message if the content is not valid.

The -m and -f combination will create the following behavior:

With both -f and -m:

Program will not validate the eeprom content and go ahead to prompt user for the MAC address. It programs MAC address and EEPROM content and then checks the validity of eeprom content at the end of programming.

```
Loading EEPROM content from eeprom.bin: passed
Programming EEPROM from eeprom.bin....: passed
Checking EEPROM content.....: passed
```

-f only:

Program will check the validity of eeprom. If it is not valid, it will act as a), -f -m option. If it is good, it saves the MAC address from eeprom, program new eeprom binary file content into EEPROM and then restores the original MAC address. It checks the validity of eeprom content once more at the end of programming.

```
Checking EEPROM content.....: passed
Loading EEPROM content from <file>....: passed
Programming EEPROM from <file>.....: passed
Checking EEPROM content.....: passed
```

or

```
Checking EEPROM content.....: invalid
Loading EEPROM content from <file>....: passed
Programming EEPROM from <file>.....: passed
Checking EEPROM content.....: passed
```

-m only:

Program will check the validity of EEPROM. If it is not valid, it will act as a), -f -m option. If it is good, the program will prompt the user for a new MAC address and program the MAC address only. It checks the validity of EEPROM content once more at the end of programming.

```
Checking EEPROM content.....: passed
Programming MAC address.....: passed
Checking EEPROM content.....: passed
```

or

```
Checking EEPROM content.....: invalid
Loading EEPROM content from <file>....: passed
Programming EEPROM from <file>.....: passed
Checking EEPROM content.....: passed
```

d) no -m and -f options

Program will check the validity of EEPROM. If it is not valid, it will act as a), -f -m option. If it is good, it proceeds to normal diagnostics.

```
Checking EEPROM content.....: passed
```

or

```
Checking EEPROM content.....: invalid
Loading EEPROM content from eeprom.bin: passed
Programming EEPROM from eeprom.bin....: passed
Checking EEPROM content.....: passed
```

-pasf <file> Program ASF firmware

This option needs to follow the -e and -c options. User has an option to program the ASF firmware from a single bin file that combined all 3 pieces of ASF bin files or from a specified text file that contain the file names of all 3 pieces of ASF bin files.

The program will detect input file type. If it is a single bin file, software will start programming. If the input file is a text file that contains the file name of the 3 pieces of ASF bin files, the program will retrieve the ASF firmware filenames from the specified text file then it will start programming. A sample asf.txt is provided and it has the following format:

asf_eep_init = asfeinit.bin

asf_eep_cpua = asfecpua.bin

asf_eep_cpub = asfecpub.bin

-ppxe <file> Program PXE firmware

This option needs to follow the `-e` and `-c` options. If this option is entered, the program will retrieve the PXE firmware filename from the command line then it will start programming.

Example:

b57diag -e <code> -c 0 -ppxe b57pxe.bin

-mba <value> Enable/Disable Multiple Boot Agent

A value of 1 will enable Multiple Boot Agent and a 0 will disable.

Example:

b57diag -mba 0 : Disabling mba.

-mbap <value> Select Multiple Boot Agent Protocol

value = 0 : Selecting PXE

value = 1 : Selecting RPL

value = 2 : Selecting BOOTP

Example:

b57diag -mbap 0

-mbas <value> Select Multiple Boot Agent Speed

value = 0 : Selecting Auto

value = 1 : Selecting 10HD

value = 2 : Selecting 10FD

value = 3 : Selecting 100HD

value = 4 : Selecting 100FD

Example:

b57diag -mbas 0 : To select Auto speed mode.

-pxes <value> Select Multiple Boot Agent Speed

value = 0 : Selecting Auto
value = 1 : Selecting 10HD
value = 2 : Selecting 10FD
value = 3 : Selecting 100HD
value = 4 : Selecting 100FD

Example:

b57diag -mbas 0 : To select Auto speed mode.

-h : High Resolution (80x50) Video Mode
-p : Print on error
-q : Quick diagnostic mode
-asf <value> : Enable/Disable (value = 1/0) ASF in manufacture mode
-ipmi <value> : Enable/Disable (value = 1/0) IPMI in manufacture mode
-com <value> : enable com port, value(1..4)
-errctrl <c> : On Error -> a:abort w:wait l:loop c:cont s:skip
-ems <size> : Enter external memory size in HEX to test
-findref : Detect reference device
-lbm <n> : Option to set mac loopback packets
-lbp <n> : Option to set phy loopback packets
**-lbe <n:n:n> : Option to set external loopback packets, Format:
 <1000Mbps:100Mbps:10Mbps>**
-npol : Select Negative Link Polarity in TBI test
-ref : Run test with reference device
-fail2 : On failure offset the failed message printout
-ctpm : Clears TPM data stored in NVRAM

5 EEPROM.TXT format

A set of commands is defined to allow user to change EEPROM.BIN content. To update EEPROM.BIN, user must enter `-e <code> -geneep` options at the command prompt. A password must be entered to run this option. The 5704, Dual MAC, device use one single eeprom.bin to on both MAC channel configuration. Most of the configurations are shared expect the following commands:

PXE
PXE_SPEED
WOL
ASF

The WOL and ASF setting cannot be enabled on both channel at the same time. For example, if the primary WOL is already enabled, and the user try to enable secondary device's WOL, the primary's WOL setting will be disabled with the following message:

**** Warning, primary device WOL is disabled**

By default, all commands configure the primary channel until the command MAC is used to select other channel.

Syntax:

`<Command> = <Argument>`

xx	8-bit hex number
xxxx	16-bit hex number
xxxxxxxx	32-bit hex number
d	decimal number ranges from 0 to 255
string(n)	string of maximum size n.
cc	2 bytes character
n1..n2	a number ranges from n1 to n2.

MAC_PREFIX	= xx:xx:xx
POWER_DISSIPATCHED	= d:d:d:d
POWER_CONSUMED	= d:d:d:d
SYSTEM_VENDOR_ID	= xxxx
SYSTEM_DEVICE_ID	= xxxx
SUBSYSTEM_VENDOR_ID	= xxxx
SUBSYSTEM_DEVICE_ID	= xxxx
PXE	= {enable, disable}
PXE_SPEED	= {auto, 10hd, 10fd, 100hd, 100fd}
WOL	= {enable, disable}
PRODUCT_NAME	= string (48)
PART_NUMBER	= string (16)
ENGINEERING_CHANGE	= string (10)
MANUFACTURING_ID	= string (4)
ASSET_TAG	= string (16)

VOLTAGE_SOURCE = {1.3, 1.8}
FORCE_PCI = {enable, disable}
PART_REVISION = cc
LED_MODE = {Triple_link, link_speed} or {phy_mode1, phy_mode2}
PHY_TYPE = {Copper, Fiber}
PHY_ID = xxxxxxxx
MAX_PCI_RETRY = {0..7, auto}
ASF = {enable, disable}
DUAL_MAC_MODE = {normal, mac0, mac1, xbar, swap, swapxbar}
 normal: Ch.0 and Ch. 1 enabled
 mac0: Ch.0 enabled, Ch.1 disabled
 mac0: Ch.0 disabled, Ch.1 enabled
 xbar: Both MACs shares one function in PCI configuration space
MBA_BOOT_PROTOCOL = { pxe, rpl, bootp}
MBA_BOOTSTRAP_TYPE = {auto, bbs, int18, int19}
MBA_DELAY_TIME = {0..15}
EXPANSION_ROM_SIZE = {64K, 128K, 256K, 512K, 1M, 2M, 4M, 8M, 16M}
DESIGN_TYPE = {nic, lom}
MAC = {0, 1}
VENDOR_SPECIFIC0 = string (16)
VENDOR_SPECIFIC1 = string (16)
DISABLE_POWER_SAVING = {yes, no}
WOL_LIMIT_10 = {yes, no}
FIBER_WOL_CAPABLE = {yes, no}
hide_mba_setup_prompt = {enable, disable}
mbs_setup_hot_key = {Ctrl-S, Ctrl-B}
enable_auto_powerdown = {yes, no}
capacitive_coupling = {enable, disable}

All reserved words are not case sensitive. A ‘;’, ‘//’ can be used at the beginning of line as comment.

Example:

```
; This comment line
// This also can be used as comment line

// Blank line is also allowed

// This is Broadcom's MAC prefix
MAC_PREFIX = 00:10:18
POWER_DISSIPATCHED = 10:0:0:100
POWER_CONSUMED = 10:0:0:100
SUBSYSTEM_VENDOR_ID = 14e4
SUBSYSTEM_DEVICE_ID = 1644
pxe = disable
PXE_Speed = 100fd
WOL = enable
Product_name = Broadcom Gigabit Ethernet Controller
PART_NUMBER = BCM95700A6
ENGINEERING_CHANGE = 106679-15
MANUFACTURING_ID = 14e4
```


Asset_Tag = XYZ1234567
DUAL_MAC_MODE = normal
MBA_BOOT_PROTOCOL = pxe
MBA_BOOTSTRAP_TYPE = bbs
MBA_DELAY_TIME = 6
EXPANSION_ROM_SIZE = 128K
DESIGN_TYPE = nic
; select other channel
MAC = 1
PXE = enable

6 User Interface Commands

The commands are summarized in the following groups: vpd, nvram, cpu, dma, packet, mii, mem, test, power, irq, mac, misc and bridge.

Command Group vpd

vpdwrite	Write VPD Memory
vpdread	Read VPD Memory
vpdinfo	Show VPD Information

Command Group nvram

semode	same as flshmode command
seread	Read NVRAM
sewrite	Write NVRAM
secfg	Configure NVRAM
seprg	Program NVRAM
upgfrm	Upgrade PXE or Boot Code from a File
sever	Display Serial NVRAM Version
sechksum	Check/Update Serial NVRAM checksum
sedump	Dump NVRAM content to a file
asfcfg	Configure ASF in NVRAM
flshmode	Configure NVRAM mode
flshread	same as seread
chkpxe	Check PXE code image
dir	display file directory in NVRAM
erase	erase file from directory in NVRAM
pxeprg	Upgrade PXE from a File
flshdev	Select flash device to access
bitbang	Generate bitbang pattern to seeprom bus
seclock	set NVRAM config1 content value after reset
setorture	NVRAM reset torture test
seinit	Initialize NVRAM block
searb	set/report current NVRAM arbitration bit
seprotect	set gpio pin for NVRAM write protect
selclock	set Legacy EEPROM clock value (bit 16-24 of EEPROM addr reg)
semap	Display NVRAM usage
setwol	Enable/Disable WOL
setpxe	Enable/Disable PXE
setasf	Enable/Disable ASF
setipmi	Enable/Disable IPMI
secomp	compare eeprom content against the file
dreset	double reset test for EEPROM debug
userblock	create a userblock in NVRAM
setmba	Enable Multiple Boot Agent
segenrcr	Append a CRC to the specified block
secfg1	Configure NVRAM Group1
secfg2	Configure NVRAM Group2
secfg3	Configure NVRAM Group3
secfg4	Configure NVRAM Group4

Command Group cpu

loadfw	Load Firmware to Tx/RX CPUs
cpudtt	Dump Debugging Trace of TX CPU
cpudrt	Dump Debugging Trace of RX CPU
cputrace	toggles cpu trace mode
haltcpu	Halt CPU
loadbootcode	execute bootcode from file instead of NVRAM
disasm	Disassemble MIP instructions
step	Step MIP instructions
go	start CPU
showgpr	toggles showing cpu gpr mode
pc	set current CPU PC
breakpoint	set current CPU break point
select	select current CPU
u	Alias of disasm command
trap	trap cpu memory
cpuinfo	display cpu information
cpugprstatus	Display internal CPU GPR test status
cpugprrestart	Restart internal CPU GPR test

Command Group dma

dmaw	DMA from NIC to Host Memory
dmar	DMA from Host to NIC Memory
dma_h	Dump DMA Entries
dma_d	Dump DMA Entries with Decode
dma_alloc	Allocate number of DMAD

Command Group packet

macbpk	Configure MAC loopback
nicstats	Display NIC Statistics
ringindex	Dump Ring Index
blast	Blast Packets in Poll Mode
phyctrl	Configure Speeds/Duplex
txpkt	Transmit Packet
statusblk	Dump Status Block
stsbk	Dump Statistics Block
txcfg	Configure protocol packets for transmission
rxcfg	Configure Rx parameters
tprot	Blast with TPROT Packets
qstat	Get a quick NIC statistic
drvrcfg	configure driver parameters
irt	Test an individual register
macmrd	Test an individual register
miimrd	Test an individual register
pcimrd	Test an individual register

Command Group mii

mwrite	Write PHY registers via MII Management interface
mread	Read PHY registers via MII Management interface
mdev	Select current PHY to be accessed
miimode	Select Auto Mode of MII Access
lbertram	Load data to PHY BIST RAM
dbertram	Dump PHY BIST RAM

bertstats	Dump PHY BIST Statistics
rm	Read MII Registers
mrloop	loop on MII read
phymse	PHY mean square error
initphy	Initialize phy

Command Group mem

memsearch	Search a Data Pattern in Memory
read	Read Memory
write	Write Memory
poll	poll Memory
setbit	Read-Modify Memory by ored with <bits>
clearbit	Read-Modify Memory by anded with ~<bits>
readbit	Read-Modify Memory by ored with <bits>
cread	Read PCI configuration Space of specified device
cwrite	Write PCI configuration Space of specified device

Command Group test

vpdtest	Run VPD Memory Test
regtest	Run Register Test
miitest	Run MII Memory Test
msi	Run MSI Test Manually
memtest	Run Memory Test
setest	Run NVRAM Test
bist	Run BIST
nictest	Run a set of NIC Tests
intrtest	Run Interrupt Test
pktttest	Run Packet Tests
cputest	Run CPU Test
dmatest	Run DMA Test
dmashasta	Run DMA Test for Shasta family of devices
teste	Enable Test
testd	Disable Test
asftest	ASF Test
bustest	PCI Bus Test
sramtest	sram test
msitest	Run MSI Test
romtest	ROM Test
gpiotest	do GPIO test
cpudiag	run diagnostic from internal CPU
pcicfgtest	Run PCI Config. Reg. Test
petest	Perform parity error test on a bridge
errctrl	Configure Error Control Setting
sedvt	Perform NVRAM dvt test
miimiscstest	Run MII Misc. Tests
cpugprtest	Run CPU GPR test

Command Group power

pmdcfg	Dump Power Management Info
pmppcfg	Add/Del Pattern
pmpd	Power Down MAC

Command Group irq

intr	Dump Interrupt Info
------	---------------------

intrctrl	Mask/Unmask Current Interrupt
intt	Interrupt Tracer

Command Group mac

mbuf	Dump Content of Mbufs
loaddrv	Load Driver
unloaddrv	Unload Driver
machalt	Halt MAC Controller
ftq	Dump FTQ
addmc	Add Multicast MAC
delmc	Delete Multicast MAC
txmacdes	Program Destination address to UUT
txmacsrc	Program Source address to UUT
chkldrv	Check to see if driver is loaded
vlangtag	Display/Clear vlanTag information

Command Group misc

reg	register wizard
exit	Exit the System
debug	debug functions
gpiowrite	Write a Value into GPIO pin
gpioread	Read GPIO Value
pxecpy	Load PXE Code to Mbuf Memory
device	Show or Switch Device
version	Display Program Version
help	Display the Commands Available
?	Alternate Help Command
radix	Change System Radix
nolog	Close the Current Logfile
log	Open Logfile
pciinit	Initialize PCI Configuration Registers
pciscan	Scan for All PCI Devices
dos	Execute DOS command
diagcfg	Configure Diagnostics
reset	Reset Chip
quit	Exit the System
smbus	ASF terminal
cls	Clear Screen
loop	loop on command
dbmode	Set DEBUG Mode to On or Off Mode
asf	run asf monitor program with option to Load asf firmware image
new	Display new command available
asfprg	Program asf firmware into NVRAM
sleep	suspense process for Excute command from a file
fillpattern	Fill WOL matching pattern into Misc. Memory Location
inp	input port
outp	output port
switch	Altinate 'device' command
do	Excute command from a file
txfill	Fill tx buffer with pattern and packet length (14-9018)
wbuf	Write tx rx buffer with specified data at offset
rbuf	Read tx rx bistin bistout bistex buffer

cpbuf	Copy the content of rx buffer into tx buffer
echo	echo <string> to screen
pause	Pause for user to hit a key
q	Exit the System, alias name for quit
verbose	change verbose setting
beep	Create a beep sound
var	Display current variables
meminfo	report the memory information
delvar	Delete local variables
regdump	Dump register content to a file
regcomp	Compare register content to a file
regrestore	Restore register content from a file

Command Group bridge

readbr	Read bridge's configuration space
writebr	Write bridge's configuration space
findbridge	Find all bridges in the system
bridge	Switch to specified bridge
pere	Enable parity error response on a bridge.
perd	Disable parity error response on a bridge
peclr	Clear parity error on bridge
pechk	Clear parity error on a bridge

7 Special Instruction

1. Mac register test:

Unload MAC driver before running test.

2. Memory test:

Unload MAC driver before running test.

3. DMA test:

Unload MAC driver before running test.

4. TX RX packets:

TX sides need to be configured (txcfg).

RX sides need to be configured (rxcfg).

Configure MAC and PHY loop back.

Call txpkt to transmit packets.

5. The following tests need to setup test configuration before running.

To setup test configuration, run "diagcfg". Diag config can be saved in system for future use.

Test:

Memory test

NIC test

6. Unload driver before power down NIC card.

7. Load driver after power up NIC card.

8. Blast Test:

Load MAC driver before running test.

8 Same System Send/Respond Test

During a send/respond test two Broadcom Ethernet devices in the same system are connected via a CAT5 (RJ45) cable and data is transmitted and received across the cable. In the above setup one device is the device under test (DUT) and the other is the reference device. Any Broadcom device that is supported by diagnostics can be used as the DUT or the reference device.

8.1 Identifying a reference device

A reference device needs to be identified in order to test a DUT against the reference device. The user can use the “b57diag –dids” command to display all the devices in the system. Each device is assigned a number that is displayed on the screen in the first column just before the device type. A user selects the number of the device that is to be used as the reference and uses this number to test the DUT as described in the next section.

8.2 Testing the DUT against the reference device

After identifying the reference device, as described in the previous section, the user can test the DUT by running “b57diag –rf 0 –c 1 –t abcd –T d3”. Each of the previous options are described in the table below (details of each option are provided in the “Command line option parameters” section above).

-rf 0	Identifies the reference device as device 0.
-c 1	Identifies the DUT as device 1.
-t abcd	Disables all tests (Disable all tests in group a, b, c, and d).
-T d3	Perform the external loopback test that will transmit data from the DUT to the reference device, via the CAT5 cable, then the reference device will receive the data and transmit it back, via the CAT5 cable, to the DUT which will verify the received data.

8.3 Other Options for the Send/Respond test

The following options can be used with the send/respond test (details of each option are provided in the “Command line option parameters” section above).

-lbspd t/h/g	Selects any combination of line speed to run the loopback test (by default runs all line speeds).
-lbe g:h:t	Selects the number of packets to send during the loopback test (g, h & t are the 1000/100/10 megabit packet counts respectively) (default values are g=2000, h=1000, t=600). It is mandatory that all packets counts are entered with this command line switch.

9 Test and Functions Description

9.1 vpdwrite

cmd: vpdwrite

Description: Write data to VPD storage.

Syntax: vpdwrite <start[-end | len] value> | <filename>

File format:

Address range: 0x00 – 0xFF

num_bytes: 256 (max)

If only one argument is entered, filename is assumed. Otherwise, 'start [len] value' format must be used.

9.2 vpdread

cmd: vpread

Description: Read data from VPD storage

Syntax: vpdread start[-end | len]

Address range : 0x00 – 0xFF

num_byte : 256 (max)

9.3 vpdinfo

cmd: vpdinfo

Description: Show VPD Information

Syntax: vpdinfo

9.4 semode

cmd: semode

Description: Configure NVRAM Mode.

Syntax: semode [auto | passthru | legacy | new]

Example:

1. Set Serial EEPROM mode to Auto.

```
0:> semode auto
```

2. Display Current mode

```
0:> semode
```

**Current mode : New NVRAM Access, Auto
device: Flash – ATMEL (with buffer)**

9.5 seread

cmd: seread

Description: Read NVRAM

Syntax: seread start[-end | len]

Note: Use “semode” command to configure the interface mode.

Example:

1. Set number base to hex, then read and display serial eeprom locations from 0x00 to 0x20

```
0:> radix 16
0:> seread 0-20
*** Dump Serial EEPROM (Auto Mode) ***
000000: 669955aa 08000000 00000069 00000200 d97b07d0 00000000 00000000 00000000
000020: 00000000
```

2. Set number base to hex then read location 0x18 of serial eeprom.

```
0:> radix 16
0:> seread 18 1
*** Dump Serial EEPROM (Auto Mode) ***
000018: 000000ff
```

9.6 sewrite

cmd: sewrite

Description: Write NVRAM

Syntax: sewrite start[-end | len] data

Note: Use “semode” command to configure the interface mode.

Example:

1. Set number base to hex, write 0x55AA to serial eeprom from locations 0x30 to 0x35

```
0:> radix 16
0:> sewrite 30-35 55AA
*** Write Serial EEPROM (Auto Mode) ***
```

2. Set number base to hex, write 0x2 to serial eeprom location 0x25

```
0:> radix 16
0:> sewrite 25 2
*** Write Serial EEPROM (Auto Mode) ***
```

9.7 secfg

cmd: secfg

Description: Configure NVRAM

If selected program with defaults (-f=1), eeprom.bin must be found in the same directory of b57diag.exe.

Syntax: secfg

Options:

-v<n> : verbose level (0,1,2) (def=0)

-f : force to program with defaults

Example:

1 Program Serial EEPROM with defaults value and set verbose level to 0.

0:> secfg

Reading current NVRAM ... OK

Validating content...

```
1. MAC Address : 00:10:18:04:1a:36
2. Power Dissipated (D3:D2:D1:D0) : 10:0:0:100
3. Power Consumed (D3:D2:D1:D0) : 10:0:0:100
4. Vendor ID : 14E4
5. Vendor Device ID : 1653
6. Subsystem Vendor ID : 14E4
7. Subsystem Device ID : 1653
8. PXE (does not apply to PXE in system ROM)
   { Enable(1), Disable(2) } : Disable
9. PXE Link Speed { Auto(0),10HD(1),10FD(2)
                  100HD(3),100FD(4) } : Auto
10. Magic Packet WoL { Enable(1), Disable(2) } : Disable
11. Product Name : Broadcom NetXtreme Gigabit Ethernet Controller
12. Part Number : BCM95705A50
13. Engineering Change : 106679-15
14. Serial Number : 0123456789
15. Manufacturing ID : 14e4
16. Asset Tag : XYZ01234567
17. Part Revision : A0
18. Voltage { 1.3V(0), 1.8V(1) } : 1.8V
19. Force PCI Mode { Enable(1),Disable(2) } : Disable
20. PHY Type { Copper(1),Fiber(2) } : Copper
21. Led Mode { Mac Mode(0), Phy Model (1), Phy Mode2 (2),
             Shasta Mac Mode (3), SharedTraffic (4),
             Wireless Combo (5)} : Phy Model
22. PHY ID ([PHY#2][PHY#3]) : 00206160
23. Max PCI Retry {0-7, 8=auto} : 8
24. Advanced firmware feature (ASF/IPMI)
   { Enable(1), Disable(2) } : Disable
25. Dual MAC mode {Normal(0), MAC_B only(1)
   MAC_A only(2), XBAR(3), swap(4), swapXBAR(7)} : 0
26. MBA Boot Protocol {PXE(0), RPL(1), BOOTP(2)} : 0
27. MBA Bootstrap Type
   {Auto(0), BBS(1), Int18(2), Int19(3)} : 0
28. MBA Delay Time (0-15) : 0
29. Expansion ROM size (does not apply to PXE in system ROM)
   { 64k(0), 128k(1), 256k(2),512k(3), 1M(4), 2M(5),
     4M(6), 8M(7), 16M(8) } : 0
30. Design Type: {NIC(0), LOM(1)} : NIC
31. Read only VPD Vendor Specific Data (V0) :
32. Read/Write VPD Vendor Specific Data (V1) :
33. Reversed Nway {No(0), Yes(1)} : No
34. Limit WoL Speed to 10 {No(0), Yes(1)} : No
35. Fiber WoL Capable {No(0), Yes(1)} : No
36. Clock-Run Setting {Disable(0), Enable(1)} : Disable
37. Enable PHY Auto Powerdown {No(0), Yes(1)} : No
38. Disable PowerSaving capability {No(0),Yes(1)} : No
39. Hide MBA Setup Prompt {Disable(0), Enable(1)} : Disabled
40. MBA Setup Hot Key {Ctrl-S(0), Ctrl-B(1)} : 0
41. Capacitive Coupling (5705 only)
   {Disable(0), Enable(1)} : Disabled
```

Enter your choice (option=paramter/save/cancel) ->

Description of above parameters:

To enter the 'secfg' menu shown above a user type in 'secfg' at the diagnostics command line. A menu is present to the user showing the 'secfg' options shown above. A user can change the 'secfg' parameter by entering the option number, followed by an equal sign, and then followed by the parameter selected. To enable ASF (option 24) a user would enter "24=1" at the diagnostics 'secfg' command line, which would look like the following:
 "Enter your choice (option=parameter/save/cancel) -> 24=1".

The tables below provide details for each parameter of the 'secfg' options. The top right of each table has the word "Configure" or "Reference". "Configure" signifies that the option is used to configure the operating characteristics of the device or default values of registers in the device. "Reference" signifies that the option is used for display purposes and does not affect the operating characteristics of the device or default values of registers in the device.

1	MAC Address	Configure
Description: MAC address of the device.		
2	Power Dissipated (D3:D2:D1:D0)	Reference
Description: Power dissipated in D3-0 states.		
3	Power Consumed (D3:D2:D1:D0)	Reference
Description: Power consumed in D0-2 states.		
4	Vendor ID	Configure
Description: PCI Vendor ID. Default 0x14e4.		
5	Device ID	Configure
Description: PCI Device ID.		
6	Subsystem Vendor ID	Configure
Description: PCI Subsystem PCI Vendor ID.		
7	Subsystem Device ID	Configure
Description: PCI Subsystem PCI Device ID.		
8	PXE	Configure
Description: Enable the Pre-Boot Execution Environment (PXE) by using this option. This option does not apply to PXE in system ROM. Options 8,9, 26 - 29 and 39-40 configure the boot protocol behavior.		
Enable(1)	When PXE is enable the expansion ROM enable bit in the PCI configuration space is set for system boot up. The user has to make sure the PXE code is loaded into the non-volatile memory by using the "loadpxe" command.	
Disable(2)	When PXE is disable the expansion ROM enable bit in the PCI configuration space is cleared for system boot up. The PXE code does NOT have to be loaded into the non-volatile memory of the device.	

9	PXE Link Speed	Configure
Description: Pre-Boot Execution Environment line configuration is specified using the parameters below. Options 8,9, 26 - 29 and 39-40 configure the boot protocol behavior.		
Auto(0)	PXE auto detects the link configuration.	
10HD(1)	PXE uses a 10 Mbits/s, half duplex line configuration.	
10FD(2)	PXE uses a 10 Mbits/s, full duplex line configuration.	
100HD(3)	PXE uses a 100 Mbits/s, half duplex line configuration.	
100FD(4)	PXE uses a 100 Mbits/s, full duplex line configuration.	
10	Magic Packet WoL	Configure
Description: A system can be configured to power-on when a Magic Packet is received.		
Enable(1)	The device will assert the pme signal, to power on the system, when a magic packet is received.	
Disable(2)	Magic packets are ignored.	
Note: A driver can setup the WoL behavior of a device and the value programmed into this location is ignored.		
11	Product Name	Reference
Description: VPD Produce description string.		
12	Part Number	Reference
Description: VPD part number..		
13	Engineering Change	Reference
Description: VPD engineering change.		
14	Serial Number	Reference
Description: VPD serial number.		
15	Manufacturing ID	Reference
Description: VPD manufacturing ID.		
16	Asset Tag	Reference
Description: VPD asset tag.		
17	Part Revision	Reference
Description: VPD part revision.		
18	Voltage	Configure
Description: Device voltage source.		
1.3V(0)	Selects a 1.3V source.	
1.8V(1)	Selects a 1.8V source.	
19	Force PCI Mode	Configure
Description: PCI bus operational mode configuration.		

Enable(1)	When enabled the device uses PCI mode, instead of PCI-X, independent of the capabilities of the slot the device is plugged into.
Disable(2)	When disabled the device uses the PCI mode of the slot the device is plugged into; if the device is capable of operating in the required mode.

20	PHY Type {option no longer supported}	Configure
Description: PHY line type configuration.		
Copper(1)	The communication medium is copper.	
Fiber(2)	The communication medium is fiber.	

21	Led Mode	Configure												
Description: A device can be configured to use one LED to indicate speed and activity or three LEDs.														
Mac Mode (0)	The LEDs are controlled by the value in the Mac LED Control Register.													
Phy Mode1 (1)	Three LEDs are used for 10/100/1000 Mbits/s and each is driven individually by the device.													
Phy Mode2 (2)	<p>One LED is used for 10/100/1000 Mbits/s and is connected as described below.</p> <p>5700/01 – The Link10 line will indicate link for all speeds. Link100 and Link1000 will encode the line speed as show in the following table:</p> <table border="1"> <thead> <tr> <th>Link 100</th><th>Link 1000</th><th>Speed</th></tr> </thead> <tbody> <tr> <td>0</td><td>0</td><td>10 Mbits/s</td></tr> <tr> <td>1</td><td>0</td><td>100 Mbits/s</td></tr> <tr> <td>0</td><td>1</td><td>1000 Mbits/s</td></tr> </tbody> </table> <p>For all other 57xx devices the three link lines operate in an open drain configuration and can be tied together with a pull up resistor to control a LED.</p>		Link 100	Link 1000	Speed	0	0	10 Mbits/s	1	0	100 Mbits/s	0	1	1000 Mbits/s
Link 100	Link 1000	Speed												
0	0	10 Mbits/s												
1	0	100 Mbits/s												
0	1	1000 Mbits/s												
SharedTraffic (3)	Mode specific to the 575x and 572x chips. The link LED performs a dual role: solid when there is a link and blinks when there is activity.													
Shasta Mac Mode (4)	Mode specific to the 575x and 572x chips. The link LED blinks only when traffic is for Shasta.													
Wireless Combo (5)	Mode specific to the 575x and 572x chips. When link is lost the LEDs are driven by inputs pins that are connected to the LED signals of a wireless link.													

22	PHY ID	Reference
Description: Only for display purposes not used in software.		
[PHY#2][PHY#3]		

23	Max PCI Retry	Configure
Description: The maximum number of time to retry an aborted PCI operation.		
0-7	The number of MAX PCI retries is force by the users configuration.	
8=auto	The MAX PCI retry field is selected dynamically by firmware based on PCI bus type detected.	

24	Advanced firmware feature (ASF/IPMI)	Configure
Description: Advanced firmware feature such as Alert Standard Format (ASF) or IPMI is enabled by this option.		
Enable(1)	If the ASF/IPMI code is loaded in NVRAM it is loaded and executed by the device.	
Disable(2)	No ASF/IPMI functionality is provided when disable.	

25	Dual MAC mode	Configure
Description: This option is only valid for a dual port device such as a 5704. The physical ports will be named MAC_A and MAC_B for the discussion below.		
Normal(0)	MAC_A and MAC_B are available and are supported as PCI function 0 & 1.	
MAC_B only(1)	MAC_B is available and is supported as PCI function 0. MAC_A is disable.	
MAC_A only(2)	MAC_A is available and is supported as PCI function 0. MAC_B is disable.	
XBAR mode(3)	MAC_A and MAC_B are available and are supported as PCI function 0. MAC_A is the primary device and MAC_B is mapped in the space of MAC_A. To the OS and BOIS this looks like one port. The driver will trunk the two ports together as one logical port which allows for load balancing, failover/recovers, turbo-teaming, etc.	
swap(4)	Physical port MAC_A and MAC_B are available and are supported as PCI function 1 and 0 respectively.	
swapXBAR(7)	MAC_A and MAC_B are available and are supported as PCI function 0. MAC_B is the primary device and MAC_A mapped in the space of MAC_B. To the OS and BOIS this looks like one port. The driver will trunk the two ports together as one logical port which allows for load balancing, failover/recovers, turbo-teaming, etc.	

26	MBA Boot Protocol	Configure
Description: Select a Multiple Boot Agent. Options 8,9, 26 - 29 and 39-40 configure the boot protocol behavior.		
PXE(0)	PreBoot Execution Environment (PXE) is the boot protocol.	
RPL(1)	Remote Program Load (RPL) is the boot protocol.	
BOOTP(2)	Boot Protocol (BOOTP) is the boot protocol.	

27	MBA Bootstrap Type	Configure
Description: The BIOS bootstrap methods listed below are supported. Options 8,9, 26 - 29 and 39-40 configure the boot protocol behavior.		
Auto(0)	Automatically configured use one of the methods below.	
BBS(1)	A BIOS that supports the BIOS Boot Specification (BBS) can initiate the bootstrap method via the expansion ROMs Bootstrap Entry Vector.	
Int18(2)	A INT18 is used to initiate the bootstrap method.	
Int19(3)	A INT19 is used to initiate the bootstrap method.	

28	MBA Delay Time	Configure
Description: The amount of time the MBA boot message is displayed, in order to give a user the option to enter the BOOT parameter configuration screen.		
0-15	The number of seconds the MBA banner is displayed.	

29	Expansion ROM size	Configure
Description: This value determines the size of the expansion ROM. This option does not apply to PXE in system ROM. Options 8,9, 26 - 29 and 39-40 configure the boot protocol behavior.		
64k(0)	Advertises 64k expansion ROM size.	
128k(1)	Advertises 128k expansion ROM size.	
256k(2)	Advertises 256k expansion ROM size.	
512k(3)	Advertises 512k expansion ROM size.	
1M(4)	Advertises 1M expansion ROM size.	

2M(5)	Advertises 2M expansion ROM size.
4M(6)	Advertises 4M expansion ROM size.
8M(7)	Advertises 8M expansion ROM size.
16M(8)	Advertises 16M expansion ROM size.

30	Design Type	Configure
Description: Select NIC or LOM based Ethernet controller.		
NIC(0)	Option selected for a plug in network interface card.	
LOM(1)	Option selected for a LAN on motherboard.	
Note: The firmware and the drivers use this to determine the operational characteristics of a device. For example, on a LOM GPIO2 is tied to the SEEPROM write protect pin and on a NIC GPIO 1 and 2 is used to switch between main and auxiliary power for wake on LAN functionality.		

31	Read only VPD Vendor Specific Data (V0)	Reference
Description: VPD V0 value. Data field provided for the customer.		

32	Read/Write VPD Vendor Specific Data (V1)	Reference
Description: VPD V1 value. Data field provided for the customer.		

33	Reversed Nway	Configure
Description: Nway Negotiation.		
0	(default) Auto-negotiation is done from 1000->100->10 Mbits/s.	
1	Auto-negotiation is done from 10->100->1000 Mbits/s.	
Note: A user could set the chip for option 1 when running a laptop on battery power. The chip would auto-negotiate starting at a lower speed and lower power. The chip would only go to higher line rates and higher power if the lower line rates were unavailable.		

34	Limit WoL Speed to 10	Configure
Description: Limit Wake on LAN (WoL) line speed.		
No(0)	10 or 100 Mbits/s is used for WoL.	
Yes(1)	Only 10 Mbits/s is used for WoL.	

35	Fiber WoL Capable	Configure
Description: Fiber Wake on LAN (WoL) Capable enable.		
No(0)	Disable Fiber WoL.	
Yes(1)	Enable Fiber WoL.	

36	Clock-Run Setting	Configure
Description: Enable Clock-Run on mini-PCI/cardbus systems. This parameter is valid only for the 5705 A0-A2.		
Enable(1)	Sets the clock mode register bit 22 which will assert (active low) the clock run signal on the bus prior to any PCI configuration space activity.	
Disable(0)	The above is not performed.	

37	Enable PHY Auto Powerdown	Configure
Description: Enable GPHY auto-power down.		

No(0)	The PHY will not auto power down.
Yes(1)	The PHY will auto power down when there is no link.

38	Disable Power Saving capability	Configure
Description: Disable Power Saving capability		
No(0)	Power-saving capability active.	
Yes(1)	Power-saving capability inactive.	

39	Hide MBA Setup Prompt	Configure
Description: During the MBA boot, the MBA setup prompt is displayed to provide the user the option to setup and configure various MBA parameters. Options 8,9, 26 - 29 and 39-40 configure the boot protocol behavior.		
Disable (0)	Hide the MBA Setup Prompt. The user is NOT give the option to change the MBA boot parameters.	
Enable (1)	Show the MBA Setup Prompt. The user is given the option to change the MBA boot parameters.	

40	MBA Setup Hot Key	Configure
Description: Hot Key used to enter the MBA Setup. Options 8,9, 26 - 29 and 39-40 configure the boot protocol behavior.		
Ctrl-S (0)	MBA Setup entered via ctrl-s.	
Ctrl-B (1)	MBA Setup entered via ctrl-b.	

41	Capacitive Coupling	Configure
Description: Enable/Disable the PHY to operate with capacitors as line isolators for the 5705 family.		
Disable (0)	Disable capacitive coupling.	
Enable (1)	Enable capacitive coupling.	

9.8 seprg

cmd: seprg

Description: Program NVRAM and ASF firmware

Syntax: seprg <file_name>

Input file need to be found in the same location as b57diag.exe.

Options:

- d Do not perform device check
- f<string> filename
- l<HEX> length in bytes (Default = size of input file)
- m Do not restore original MAC address
- o<HEX> offset of serial nvram (def=00000000)

-s	Do not restore original Serial Number
-a	Program ASF firmware

Example:

1. Program NVRAM with contents of input file seprg.bin

0:> seprg seprg.bin

0:>seprg asffirmware.bin -a

9.9 upgfrm

cmd: upgfrm

Description: Upgrade PXE or Boot Code from a File. This command reads code from a file and program into pxe or boot area. Both parameter, the programming target 'pxe' or 'boot' and filename, must be specified.

Syntax: upgfrm <pxe | boot> filename

Options:

-b	Upgrade boot code
-d	Do not perform device check
-f<string>	Input file
-p	Upgrade PXE code

9.10 sever

cmd: sever

Description: Display Serial NVRAM Version

Syntax: sever

9.11 sechksum

cmd: sechksum

Description: Check/Update Serial NVRAM checksum

Syntax: sechksum

Options:

-v<DEC> verbose level (0,1) (def=1)

9.12 sedump

cmd: sedump

Description: Dump NVRAM content to a file

Syntax: sedump <filename> [HexLen]

Options:

-a<string> no Atmel Flash address translation

-f<string> filename

-l<DEC> file length, use 0 for entire NVRAM image (def=8192)

9.13 asfcfg

cmd: asfcfg

Description: Configure ASF in NVRAM

Syntax: asfcfg [filename]

If [filename] is provided the file is used to configure the ASF configuration information in NVRAM. If asfcfg is entered by it self a menu is present the user and the options of the items listed in the menu are described below.

0	Save to file	
Description: Use this menu option save the network adapter's ASF configuration table to a binary file.		
1	ASF Settings	
Description: Provides the sub menu with the options described below.		
	0	Return to previous menu.
	1	Enable/Disable Remote Management Control Protocol (RCMP)
	2	Enable/Disable the transmission of Platform Event Trap (PET) messages.
	3	Enable/Disable transmission of periodic system heartbeat messages.
	4	Interval in seconds between transmitted heartbeat messages.
	5	PET messages (except the system heartbeat) are retransmitted three times. This entry allows the user to specify, in seconds, the interval of time between these transmissions.
	6	Client IP address used for communication.
	7	Management console IP address to which communication is directed.
	8	Gateway IP address used when client and management console are on different subnets.
	9	Subnet mask used to determine client and management console subnets.

	10	Configures link speed for ASF operation when the OS is not present.
	11	Unique value used to by ASF. Usually setup by an OS based configuration utility, based on the SMBIOS system information structure.
	12	Configure the polling interval, in seconds, which legacy SMBus devices are monitored (such as the chassis intrusion sensor).
	13	Specifies, in seconds, the amount of time to wait before polling the first legacy SMBus device.
	14	SMBus address of this device (i.e. the NIC card SMBus interface).
	15	Enable/Disable the system to wake up from a low power states when the system receives ASF or RMCP traffic.
	16	Feature is not currently supported.
	17	SNMP community name.

2	ASF Alert Info
3	ASF Alert Data for Legacy Devices
4	ASF Remote Control Data
5	ASF Capabilities Supported
6	ASF SMBus Addresses
<p>Description:</p> <p>These menu options may be used to override values in the network adapter's ASF Configuration Table that correlate to the following records in the system's "ASF! Description Table":</p> <p>ASF_INFO ASF_ALRT ASF_RCTL ASF_RMCP ASF_ADDR</p> <p>The values in these records are normally copied from the system's "ASF! Description Table" (using the ACPI System Description Table architecture) into the ASF Configuration Table in the network adapter's non-volatile memory by the Broadcom ASF Configuration Utility (ASFConfig). See the Alert Standard Format (ASF) Specification v2.0 for detailed descriptions of these records.</p>	

7	Reserved
<p>Description:</p> <p>Reserved</p>	

8	SMBus Init Data
<p>Description:</p> <p>Not to be used by customers. For Broadcom internal use only.</p>	

9	Save and Exit
<p>Description:</p> <p>Saves the modified ASF Configuration Table to the network adapter's non-volatile memory and exists.</p>	

10	Exit without Saving
<p>Description:</p> <p>Exits without saving any changes to the ASF Configuration Table.</p>	

9.14 flshmode

cmd: flshmode

Description: Configure ASF in NVRAM

Syntax: flshmode [auto | passthru | legacy | new]

9.15 flshread

cmd: flshread

Description: Same as seread

Syntax: flshread start[-end | len]

9.16 chkpxe

cmd: chkpxe

Description: Check PXE code image

Syntax: chkpxe <filename>

9.17 dir

cmd: dir

Description: display file directory in NVRAM

Syntax: dir

9.18 erase

cmd: erase

Description: erase file from directory in NVRAM

Syntax: erase <entry> | all

Options:

-y do not ask for conformation

9.19 pxeprg

cmd: pxeprg

Description: display file directory in NVRAM. This command reads PXE code from a file and program into NVRAM

Syntax: pxeprg <filename>

9.20 flshdev

cmd: flshdev

Description: Select flash device to access

Syntax: flshdev seeprom | atmelflash | sstflash

9.21 bitbang

cmd: bitbang

Description: Generate bitbang pattern to seeprom bus. Enter hex numbers to be written to seeprom bus. For serial eeprom, use 's' for start, 'p' for stop condition, 'x' with '1..9' specifies how many residual bits to send. For flash, use 's' for chipSelect, 'p' for cancel chipSelect 'r' with a number specifies how many bytes to read.

Syntax: bitbang <data>

9.22 seclock

cmd: seclock

Description: set NVRAM config1 content value after reset.

Syntax: seclock <32bitNewValue>

9.23 setorture

cmd: setorture

Description: NVRAM reset torture test

Syntax: setorture

Options:

-c	Continue on Error
-i<DEC>	Initial Delay in ms (def=0)
-m<DEC>	Maximum Delay in ms (def=3000)
-n<DEC>	iteration (def=1)
-p	Power reset

-r Random delay

-s<DEC> Delay incremental time (us) (def=1)

9.24 seinit

cmd: seinit

Description: Initialize NVRAM block.

Syntax: seinit

Options:

-i<DEC> do not restore NVRAM clock default value (def=0)

9.25 searb

cmd: searb

Description: set/report current NVRAM arbitration bit. Valid arbitraion number is 0..3.

Syntax: searb [n]

9.26 seprotect

cmd: seprotect

Description: set gpio pin for NVRAM write protect. Use 'none' to disable write protect feature.

Syntax: seprotect [0|1|2|none]

9.27 selclock

cmd: selclock

Description: set Legacy EEPROM clock value (bit 16-24 of EEPROM addr reg)

Syntax: selclock <8bitNewValue>

9.28 semap

cmd: semap

Description: Display NVRAM usage

Syntax: semap

9.29 setwol

cmd: setwol

Description: Enable/Disable WOL

Syntax: setwol [e/d]

Options:

-d Disable WOL

-e Enable WOL

9.30 setpxe

cmd: setpxe

Description: Enable/Disable PXE

Syntax: setpxe

Options:

-d Disable PXE

-e Enable PXE

-s<DEC> Specify PXE Speed (def=0), 0. auto, 1. 10HD, 2. 10FD, 3. 100HD, 4. 100FD

9.31 setasf

cmd: setasf

Description: Enable/Disable ASF

Syntax: setasf

Options:

-d Disable ASF

-e Enable ASF

9.32 secomp

cmd: secomp

Description: compare eeprom content against the file

Syntax: secomp

Options:

-c	continue on error
-f<string>	filename
-l<HEX>	length (def=00000000)
-o<HEX>	offset (def=00000000)

9.33 dreset

cmd: dreset

Description: double reset test for EEPROM debug

Syntax: dreset

9.34 userblock

cmd: userblock

Description: create a userblock in NVRAM

Syntax: userblock

9.35 setmba

cmd: setmba

Description: Enable Multiple Boot Agent

Syntax: setmba

Options:

-d	Disable MBA
-e<DEC>	Enable MBA Protocol (def=0), 0. PXE, 1. RPL, 2. BOOTP
-s<DEC>	Specify MBA Speed (def=0), 0. auto, 1. 10HD, 2. 10FD, 3. 100HD, 4. 100FD

9.36 segencrc

cmd: segencrc

Description: Append a CRC to the specified block

Syntax: segencrc <start-end> | <start length>

9.37 secfg1

cmd: secfg1

Description: Configure NVRAM Group 1

Syntax: secfg1

Options:

-m	Mac address xx:xx:xx:xx:xx:xx
-r	Power Dissipated D3:D2:D1:D0
-c	Power Consumed D3:D2:D1:D0
-v	Vendor ID
-d	Vendor Device ID
-s	SubSystem Vendor ID
-i	SubSystem Device ID
-p	PXE 1:Enable 2:Disable
-x	PXE SP 0:Auto 1:10HD 2:10FD 3:100HD 4:100FD 6:1000FD (TBI)
-w	Magic Packet WOL 1:Enable 2:Disable

9.38 secfg2

cmd: secfg2

Description: Configure NVRAM Group 2

Syntax: secfg2

Options:

-p	Product Name
-n	Part Number

-e	Engineering Change
-s	Serial Number
-m	Manufacturing ID
-a	Asset Tag
-r	Part Rev
-v	Voltage
-f	Force PCI Mode 1:Enable 2:Disable

9.39 secfg3

cmd: secfg3

Description: Configure NVRAM Group 3

Syntax: secfg3

Options:

-l	Led Mode 0:Mac 1:Phy1 2:Phy2 3:S Traffic 4:Shasta Mac 5:Wireless Combo
-r	Max PCI Retry 0-7, 8:Auto
-a	ASF 1:Enable 2:Disable
-d	Dual Mac 0:Norm 1:MacB 2:MacA 3:XBAR 4:Swap 7:SwapXBAE
-m	MBA Boot Protocol 0:PXE 1:RPL 2:BOOTP
-b	MBA Bootstrap Type 0:Auto 1:BBS 2:Int18 3:Int19
-t	MBA Delay Time 0-15
-e	Exp ROM 0:64K 1:128K 2:256K 3:512K 4:1M 5:2M 6:4M 7:8M 8:16M
-n	Design Type 0:NIC 1:LOM

9.40 secfg4

cmd: secfg4

Description: Configure NVRAM Group 4

Syntax: secfg4

Options:

-v	Read VPD Vendor Data V0
-w	Read/Write VPD Vendor Data V1
-n	Reversed Nway 0:No 1:Yes
-s	Limit WOL Speed to 10 0:No 1:Yes
-f	Fiber WOL Capable 0:No 1:Yes
-c	Clock-Run 0:Disable 1:Enable
-p	Enable Phy Auto Power Down 0:No 1:Yes
-d	Disable Power Saving 0:No 1:Yes
-h	Hide MBA Setup Prompt 0:Disable 1:Enable
-k	MBA Setup Hot Key 0:Ctrl-S 1:Ctrl-B
-i	Capacitive Coupling 0:Disable 1:Enable

9.41 setipmi

cmd: setipmi

Description: Enable/Disable IPMI

Syntax: setipmi

Options:

-d	Disable IPMI
-e	Enable IPMI

9.42 loadfw

cmd: loadfw

Description: Load Firmware to Tx/RX CPUs

Syntax: loadfw

Options:

-b<HEX> set breakpoint (0=off) (def=00000000)

-d<HEX>	data pattern to be used for memory init. (def=00000000)
-f<string>	filename (for bcmediag compatibility)
-I	don't initialize memory before loading, def=yes
-m	don't turn on CPU Trace (def=on)
-s	don't start cpu
-t	load to tx cpu, def=rxpcu
-v	disable verbose

9.43 cpudtt

cmd: cpudtt

Description: Read and display TX CPU trace (not valid for 5705)

Syntax: cpudtt <begin_addr>[- end_addr | num_bytes]

Address range: 0x00 – 0x80

Example:

1. Read and display TX CPU trace from location 0x00 to 0x04.

```
0:> cpudtt 0-5
000 t0000002f c0000000 00000000 00000000 00000000 00000000
001 t00000000 00000000 00000000 00000000 00000000 00000000
002 t00000000 00000000 00000000 00000000 00000000 00000000
003 t00000000 00000000 00000000 00000000 00000000 00000000
004 t00000000 00000000 00000000 00000000 00000000 00000000
```

2. Read and display 4 locations of TX CPU trace from start from location 0x00.

```
0:> cpudtt 0 5
000 MainCpuB t0000002f c0000000 00000000 00000000 00000000 00000000
001 t00000000 00000000 00000000 00000000 00000000 00000000
002 t00000000 00000000 00000000 00000000 00000000 00000000
003 t00000000 00000000 00000000 00000000 00000000 00000000
```

9.44 cpudrt

cmd: cpudrt

Description: Read and display RX CPU trace (not valid for 5705)

Syntax: cpudrt <begin_addr>[- end_addr | num_bytes]

Address range: 0x00 – 0x80

Example:

1. Read and display RX CPU trace from location 0x00 to 0x04.

```
0:> cpudrt 0-5
000 MainCpuA t00000030 164414e4 e1000004 00000000 164414e4 00000000
001 *BUpCpuA t00000032 00000000 08000034 00440400 00001c40 00000000
002 *BUpCpuA t00000001 00000001 08000034 00440000 00000000 00000000
003 t00000000 00000000 00000000 00000000 00000000 00000000
004 t00000000 00000000 00000000 00000000 00000000 00000000
```

2. Read and display 4 locations of RX CPU trace from start from location 0x00.

```
0:> cpudrt 0 5
000 t00000030 164414e4 e1000004 00000000 164414e4 00000000
001 t00000032 00000000 08000034 00440400 00001c40 00000000
002 t00000001 00000001 08000034 00440000 00000000 00000000
003 t00000000 00000000 00000000 00000000 00000000 00000000
```

9.45 cputrace

cmd: cputrace

Description: toggles cpu trace mode

Syntax: cputrace [1|0]

9.46 haltcpu

cmd: haltcpu

Description: Halt CPU

Syntax: haltcpu

9.47 loadbootcode

cmd: loadbootcode

Description: execute bootcode from file instead of NVRAM

Syntax: loadbootcode <filename>

Options:

-d<HEX>	data pattern to be used for memory init. (def=00000000)
-f<string>	filename
-i	don't initialize memory before loading, def=yes
-m	don't turn on CPU Trace (def=on)

-s	don't start cpu
-t	load to tx cpu, def=rxpcu
-v	disable verbose

9.48 disasm

cmd: disasm

Description: Disassemble MIP instructions

Syntax: disasm [address [line]]

9.49 step

cmd: step

Description: Step MIP instructions

Syntax: step

9.50 go

cmd: go

Description: start CPU

Syntax: go

9.51 showgpr

cmd: showgpr

Description: toggles showing cpu gpr mode

Syntax: showgpr 1|0

9.52 pc

cmd: pc

Description: set current CPU PC

Syntax: pc

9.53 breakpoint

cmd: breakpoint

Description: set current CPU breakpoint

Syntax: breakpoint

9.54 select

cmd: select

Description: select current CPU

Syntax: select <r|t>

9.55 u

cmd: u

Description: Alias of disasm command

Syntax: u [address [line]]

9.56 trap

cmd: trap

Description: trap cpu memory

Syntax: trap <low> <high> | off

9.57 cpuinfo

cmd: cpuinfo

Description: display cpu information

Syntax: cpuinfo [r|t]

9.58 cpugprstatus

cmd: cpugprstatus

Description: Display internal CPU GPR test status

Syntax: cpugprstatus

9.59 cpugprrestart

cmd: cpugprrestart

Description: Restart internal CPU GPR test

Syntax: cpugprrestart

9.60 cpufetch

cmd: cpufetch

Description: Test CPU Instruction fetch logic with 1.1V and 1.3 V setting

Syntax: cpufetch

9.61 dmaw

cmd: dmaw

Description: DMA from NIC to Host Memory

Syntax; dmaw

Options:

- | | |
|------------|---|
| -3 | Force to use 32-bit bus |
| -4 | Allocate 4k-aligned buffers |
| -a<HEX> | NIC address to DMA data from (def=00000000) |
| -b | byte swap |
| -c | Continously dma data |
| -d<HEX> | delay poll dma done polling (def=00000000) |
| -f<string> | filename |
| -h | Use high priority DMA Write |
| -l<HEX> | Length of DATA in bytes to DMA (def=00000100) |
| -n<DEC> | iteration |
| -o<HEX> | Buffer offset (def=00000000) |
| -p<HEX> | Pattern of Data. 0 - byte increment ; 1- byte decrement
2 - FF's ; 3 - 00's ; 4- AA 55 ... ; 5 - 55 AA ...
6 - FFFFFFFF 00000000 FFFFFFFF 00000000
7 - FFFFFFFFFFFFFFFFFF 0000000000000000
FFFFFFFFFFFFFFFF
8 - FFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFF 00000000000000...
9 - 00000000000000000000000000000000 FFFFFFFFFFFFF... |

a - Word Increment ; b - Dword Increment
c - Word Decrement ; d - Dword Decrement
e - ffffffff00000000 00000000ffffffbf
f - 00000000ffffffbf fffffffb00000000
10 - 64-bit-pattern 0000000000000000 64-bit-pattern ...
11 - 64-bit-pattern ffffffffffffffff 64-bit-pattern ... (def=00000000)

-q<HEX> low 32-bit of 64-bit pattern (def=FFFFFFFF)

-v<DEC> Verbose (1..2) (def=2)

-w word swap

-x<HEX> high 32-bit of 64-bit pattern (def=FFFFFFFF)

-K<HEX> DMA write to absolute address and hang the system
(def=00000000)

Example:

1. Setup DMA NIC Memory to HOST memory. Using low priority DMA Read and disable byte swap and enable detail display.

```
1:> dmaw -a=0 -l=10
Device 1
Host Address : 0x0068bb38
NIC Address  : 0x00000000
Length       : 0x0010
Priority      : Low
Byte Swap    : No
Word Swap    : No

Dev 1: DMA SRAM 00000000 to Host 0068BB38
```

9.62 dmar

cmd: dmar

Description: DMA from Host to NIC Memory

Syntax: dmar

Options:

-w word swap

-3 Force to use 32-bit

-4 Allocate 4k-aligned buffers

-a<HEX> NIC address to DMA data to (def=00000000)

-b	Byte Swap
-c	Continuously dma
-d<HEX>	delay poll dma done polling (def=00000000)
-f<string>	File name of file that contains <length,patterns>
-h	Use high priority DMA Read
-l<HEX>	Length of DATA to do DMA (def=00000100)
-n<DEC>	iteration
-o<HEX>	Buffer offset (def=00000000)
-p<HEX>	Pattern of Data 0 - byte increment ; 1- byte decrement 2 - FF's ; 3 - 00's ; 4- AA 55 ... ; 5 - 55 AA ... 6 - FFFFFFFF 00000000 FFFFFFFF 00000000 7 - FFFFFFFF FFFFFFFF 00000000 00000000 FFFFFFF FFFFFFFF 8 - FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF 00000000 00000000... 9 - 00000000 00000000 00000000 00000000 FFFFFFFF FFFFFFFF... a - Word Increment ; b - Dword Increment c - Word Decrement ; d - Dword Decrement (def=00000000)
-q<HEX>	low 32-bit of 64-bit pattern (def=FFFFFFFF)
-v<DEC>	Verbose (1..2) (def=2)
-w	Word Swap
-x<HEX>	high 32-bit of 64-bit pattern (def=FFFFFFFF)
-K<HEX>	DMA read from absolute address (def=00000000)

Example:

1. Sup DMA host memory to NIC memory. Using low priority DMA Read and disable byte swap.

```
1:> dmar -a=0 -l=100
Device 1
Host Address : 0x0068bb38
NIC Address  : 0x00000000
Length       : 0x0100
Priority      : Low
Byte Swap    : No
Word Swap    : No
```

Dev 1: DMA Host 0068BB38 to SRAM 00000000

9.63 dma_h

cmd: dma_h

Description: Dump DMA Entries

Syntax: dma_h <start> <end>

9.64 dma_d

cmd: dma_d

Description: Dump DMA Entries with Decode

Syntax: dma_d <start> <end>

9.65 maclpk

cmd: maclpk

Description: Configure MAC loopback, 0 to disable, otherwise enable MAC loopback

Syntax: maclpk <n>

0 to disable. Otherwise enable

Example:

1. Driver must be loaded before configure.

```
0:> loaddrv
```

2. Enable MAC loop back.

```
0:> mcaclpb 1
Enabling MAC loopback ... OK
```

2. Disable MAC loop back.

```
0:> maclpb 0
Disabling MAC loopback ... OK
```

9.66 blast

cmd: blast

Description: Blast Packets in Poll Mode and display statistics. Load MAC driver before running the test.

Syntax: blast

Options:

-a<DEC>	IP total length (def=0)
-c<DEC>	Number of Tx buffer (def=100)
-d<DEC>	Interpacket GAP in microseconds (def=0)
-e<DEC>	Upper Limit of Tx buffer in incremental packet size (def=1514)
-f<string>	Sniffer file containing contents of Tx packets
-g<DEC>	Rx Threshold (def=5)
-h	Enable Host Loopback
-I	Increment length
-j	Regenerate CRC-32 in host loopback mode
-k	Applies CRC-32 check on Rx path
-l<DEC>	Length of Tx packet (def=60)
-m	Generate TPROT packets
-n<DEC>	Number of packets to be transmitted (def=0)
-o<DEC>	Number of Rx Rings (def=1)
-p	Send protocol packets configured with txcfg command.
-q	Use software CRC-32 on Tx Path
-r	Enable Rx
-s	Stop on Failure
-t	Enable Tx
-w<DEC>	Low watermark max RxFrame value (0-65535)
-x	Check length of received packet
-z<DEC>	Tx Threshold (def=5)
-P	Pause
-R	Enable RS232 statistic update

-S TCP segment test

-T<DEC> Packet Type, 0:None, 1:Eth2, 2:802.3, 4:SNAP

-W Check DMA_Write error status

Example:

1. Load MAC driver and enable transmission.

```
0:packet> loaddrv
Reinitializing PCI Configuration Space
Bus Number      : 1
Device/Funtion   : 11/0
Base Address     : 0xfb010000
IRQ             : 9
Bringing up MAC driver ... OK
PHY calculated ID: 60008162
BCM5702/03 Internal Phy Rev#2
Configuring BCM54xx ... Done
Determining Link Speed ... 1000Base-T Full Duplex
0:packet> blast -t
PageUP/PageDN to scroll. Ins/Del toggles refresh. ESC to exit
```

	Total	Rate
	=====	=====
Txed Packets (Ring#0) :	1007609	507523
Txed Packets (Ring#1) :	0	0
Txed Packets (Ring#2) :	0	0
Txed Packets (Ring#3) :	0	0
Tx Packets Enqed (Ring#0) :	0	0
Tx Packets Enqed (Ring#1) :	0	0
Tx Packets Enqed (Ring#2) :	0	0
Tx Packets Enqed (Ring#3) :	0	0
Rxed Packets (Ring#00) :	0	0
Rxed Packets (Ring#01) :	0	0
Rxed Packets (Ring#02) :	0	0
Rxed Packets (Ring#03) :	0	0
Rxed Packets (Ring#04) :	0	0
Rxed Packets (Ring#05) :	0	0
Rxed Packets (Ring#06) :	0	0
Rxed Packets (Ring#07) :	0	0
Rxed Packets (Ring#08) :	0	0
Rxed Packets (Ring#09) :	0	0

PageUP/PageDN to scroll. Ins/Del toggles refresh. ESC to exit

9.67 nicstats

cmd: nicstats

Description: Display NIC Statistics

Syntax: nicstats <-c>

-c : Clear Statistics

Example: Load driver if driver is not loaded.

```
0:> loaddrv
Reinitializing PCI Configuration Space
Bus Number      : 1
```

```

Device/Funtion   : 11/0
Base Address     : 0xfb010000
IRQ              : 9
Bringing up MAC driver ... OK
PHY calculated ID: 60008162
BCM5702/03 Internal Phy Rev#2
Configuring BCM54xx ... Done
Determining Link Speed ... 1000Base-T Full Duplex
0:> nicstats

```

	Total	Rate
	=====	=====
Txed Packets (Ring#0) :	0	0
Txed Packets (Ring#1) :	0	0
Txed Packets (Ring#2) :	0	0
Txed Packets (Ring#3) :	0	0
Tx Packets Enqed (Ring#0) :	0	0
Tx Packets Enqed (Ring#1) :	0	0
Tx Packets Enqed (Ring#2) :	0	0
Tx Packets Enqed (Ring#3) :	0	0
Rxed Packets (Ring00) :	0	0
Rxed Packets (Ring01) :	0	0
Rxed Packets (Ring02) :	0	0
Rxed Packets (Ring03) :	0	0
Rxed Packets (Ring04) :	0	0
Rxed Packets (Ring05) :	0	0
Rxed Packets (Ring06) :	0	0
Rxed Packets (Ring07) :	0	0
Rxed Packets (Ring08) :	0	0
Rxed Packets (Ring09) :	0	0

PageUP/PageDN to scroll. Ins/Del toggles refresh. ESC to exit

Total	Rate
=====	=====
Rxed Packets (Ring#10) :	0
Rxed Packets (Ring#11) :	0
Rxed Packets (Ring#12) :	0
Rxed Packets (Ring#13) :	0
Rxed Packets (Ring#14) :	0
Rxed Packets (Ring#15) :	0
Rxed CRC-32 Errors :	0
Out of Memory :	0
Too Many Frag Pkt :	0

PageUP/PageDN to scroll. Ins/Del toggles refresh. ESC to exit

CHIP Statistics

ifHCInOctets :	0	etherStatsFragments :	0
ifHCInUcastPkts :	0	ifHCInMulticastPkts :	0
ifHCInBroadcastPkts :	0	d3StatsFCSErrors :	0
d3StatsAlignmentErrors :	0	xonPauseFramesReceived :	0
xoffPauseFramesReceived :	0	macControlFramesReceived :	0
xoffStateEntered :	0	dot3StatsFramesTooLong :	0
etherStatsJabbers :	0	etherStatsUndersizePkts :	0
inRangeLengthError :	0	outRangeLengthError :	0
etherStatsPkts64Octets :	0	etherStatsPkts65-127 :	0
etherStatsPkts128-255 :	0	etherStatsPkts256-511 :	0
etherStatsPkts512-1023 :	0	etherStatsPkts1024-1522 :	0
etherStatsPkts1523-2047 :	0	etherStatsPkts2048-4095 :	0
etherStatsPkts4096-8191 :	0	etherStatsPkts8192-9022 :	0


```

ifHCOutOctets      :      0  etherStatsCollisions      :      0
outXonSent         :      0  outXoffSent               :      0
flowControlDone    :      0  d3StatsIntlMacTxErrors    :      0
d3StatsSingleColFrames :      0  d3StatsMultipleColFrames :      0
dt3StatsDeferredTx  :      0  d3StatsExcessiveCol      :      0

```

PageUP/PageDN to scroll. Ins/Del toggles refresh. ESC to exit

CHIP Statistics

```

=====
d3StatsLateCol      :      0  d3Collided2Times        :      0
d3Collided3Times    :      0  d3Collided4Times        :      0
d3Collided5Times    :      0  d3Collided6Times        :      0
d3Collided7Times    :      0  d3Collided8Times        :      0
d3Collided9Times    :      0  d3Collided10Times       :      0
d3Collided11Times   :      0  d3Collided12Times       :      0
d3Collided13Times   :      0  d3Collided14Times       :      0
d3Collided15Times   :      0  ifHCOutUcastPkts       :      0
d3StatsCarSenseErrors :      0  ifOutDiscards        :      0
COSIfHCInPkts[00]   :      0  COSIfHCInPkts[01]   :      0
COSIfHCInPkts[02]   :      0  COSIfHCInPkts[03]   :      0
COSIfHCInPkts[04]   :      0  COSIfHCInPkts[05]   :      0
COSIfHCInPkts[06]   :      0  COSIfHCInPkts[07]   :      0
COSIfHCInPkts[08]   :      0  COSIfHCInPkts[09]   :      0
COSIfHCInPkts[10]   :      0  COSIfHCInPkts[11]   :      0
COSIfHCInPkts[12]   :      0  COSIfHCInPkts[13]   :      0
COSIfHCInPkts[14]   :      0  COSIfHCInPkts[15]   :      0
COSFrmsDxDueToFilters :      0  nicDmaWriteQueueFull :      0
nicDmaWrHiPQFull    :      0  nicNoMoreRxBDs       :      0

```

PageUP/PageDN to scroll. Ins/Del toggles refresh. ESC to exit

PageUP/PageDN to scroll. Ins/Del toggles refresh. ESC to exit

CHIP Statistics

```

=====
ifInDiscards        :      0  ifInErrors          :      0
nicRecvThresholdHit :      0  nicDmaReadQueueFull :      0
COSIfHCOutPkts[00]  :      0  COSIfHCOutPkts[01]  :      0
COSIfHCOutPkts[02]  :      0  COSIfHCOutPkts[03]  :      0
COSIfHCOutPkts[04]  :      0  COSIfHCOutPkts[0    :      0
Rxd Packets (Ring#05) :      0
Rxd Packets (Ring#06) :      0
Rxd Packets (Ring#07) :      0
Rxd Packets (Ring#08) :      0
Rxd Packets (Ring#09) :      0

```

PageUP/PageDN to scroll. Ins/Del toggles refresh. ESC to exit

9.68 ringIndex

cmd:

Description: Dump Ring Index. Load Mac driver before running.

Syntax: ringindex t | r

Options:

-n<DEC> Number of Rx Ring to dump (Default=1) (def=1)

-r Dump Rx Ring Index

-t Dump Tx Ring Index

Example:

1 Load MAC driver and display TX and RX Ring Index.

```
0:> loaddrv
Bus Number      : 1
Device/Funtion   : 11/0
Base Address     : 0xfb010000
IRQ              : 9
Bringing up MAC driver ... OK
PHY calculated ID: 60008162
BCM5702/03 Internal Phy Rev#2
Configuring BCM54xx ... Done
Determining Link Speed ... 1000Base-T Full Duplex
0:> ringindex rt
```

	Mailbox	RBDI	RBDC	HC	StsBlk	Driver
	=====	=====	=====	=====	=====	=====
RxStdPidx	100	100	100	---	---	100
RxStdCidx	---	---	---	000	000	000
RetRPidx#00	---	---	---	000	---	---
RetRCidx#00	000	---	---	---	---	000

	Mailbox	SBDI	SBDSEL	HC	StsBlk	Driver
	=====	=====	=====	=====	=====	=====
SendHostPidx#00	000	000	---	---	---	000
SendHostCidx#00	---	---	000	000	000	000
SendHostPidx#01	000	000	---	---	---	000
SendHostCidx#01	---	---	000	000	000	000
SendHostPidx#02	000	000	---	---	---	000
SendHostCidx#02	---	---	000	000	000	000
SendHostPidx#03	000	000	---	---	---	000
SendHostCidx#03	---	---	000	000	000	000

9.69 phyctrl

cmd: phyctrl

Description: Configure Phy Speed

Syntax: phyctrl

Options:

-f<string> file contains initialization scripts

-h force half duplex

-r reset PHYs

-s<HEX> 0:10 Mbps, 1:100 Mbps, 2:1000 Mbps, 3 - Auto (def=00000002)

9.70 txpkt

cmd: txpkt

Description: Transmit Packets. Driver must be loaded.

Syntax: txpkt

Options:

- a<DEC> Specify number of IP fragment count (def=0)
- b<DEC> Burst length (def=0)
- c Clear Statistics (always on: kept for bcmediag compatibility)
- d<DEC> Interpacket delay in microseconds (def=txcfg)
- e Insert raw checksum into the packet
- f<DEC> Max number of fragments (def=1)
- g<HEX> Tx Flags (def=txcfg)
- h<DEC> Specifies IP total length (Default: correct IP length)
- I Incremental length
- j Random number of fragments
- k Use random packet length
- l<DEC> Start packet length (def=txcfg)
- m Use multiple Tx ring test (def=txcfg)
- n<DEC> Number of packet to transmit (def=0)
- o<HEX> Buffer Offset (def=00000000)
- p<DEC> Number of Tx rings to use in multiple ring test (def=txcfg)
- q<DEC> Number of Packets per ring (def=txcfg)
- r<DEC> Tx ring number (def=txcfg)
- v Insert fragment count and fragment size into the packet

-x	Display Statistics (always on: kept for bcmediag compatibility)
-u	Standard Fragmentation
-w<DEC>	Low watermark max RxFrame value (0-65535)
-z<DEC>	Minimum fragment size, -1=disable (def=-1)
-A	Use static buffer
-L	Don't initialize packets
-R	Enable RS232 statistic update
-S	TCP segmentation test

9.71 statusblk

cmd: statusblk

Description: Display Status Block

Syntax: statusblk

Example:

```
0:> statusblk

***** STATUS Block @ 0x0027c040 *****
Status : 0x0000
Rx Standard CIdx : 0      Rx Jumbo CIdx : 0      Rx Mini CIdx : 0
Rx PIdx[00] : 0          Send CIdx[00] : 0
Rx PIdx[01] : 0          Send CIdx[01] : 0
Rx PIdx[02] : 0          Send CIdx[02] : 0
Rx PIdx[03] : 0          Send CIdx[03] : 0
Rx PIdx[04] : 0          Send CIdx[04] : 0
Rx PIdx[05] : 0          Send CIdx[05] : 0
Rx PIdx[06] : 0          Send CIdx[06] : 0
Rx PIdx[07] : 0          Send CIdx[07] : 0
Rx PIdx[08] : 0          Send CIdx[08] : 0
Rx PIdx[09] : 0          Send CIdx[09] : 0
Rx PIdx[10] : 0          Send CIdx[10] : 0
Rx PIdx[11] : 0          Send CIdx[11] : 0
Rx PIdx[12] : 0          Send CIdx[12] : 0
Rx PIdx[13] : 0          Send CIdx[13] : 0
Rx PIdx[14] : 0          Send CIdx[14] : 0
Rx PIdx[15] : 0          Send CIdx[15] : 0
```

9.72 stsblk

cmd: stsblk

Description: Display Statistics Block.

Syntax: stsblk

Example:

```

0:> stsbk
***** STATISTICS Block @ 0x0027c0c0 *****
ifHCInOctets      :      0 etherStatsFragments      :      0
ifHCInUcastPkts   :      0 ifHCInMulticastPkts      :      0
ifHCInBroadcastPkts :      0 d3StatsFCSErrors      :      0
d3StatsAlignmentErrors :      0 xonPauseFramesReceived :      0
xonPauseFramesReceived :      0 macControlFramesReceived :      0
xonStateEntered    :      0 dot3StatsFramesTooLong :      0
etherStatsJabbers   :      0 etherStatsUndersizePkts :      0
inRangeLengthError  :      0 outRangeLengthError :      0
etherStatsPkts64Octets :      0 etherStatsPkts65-127 :      0
etherStatsPkts128-255 :      0 etherStatsPkts256-511 :      0
etherStatsPkts512-1023 :      0 etherStatsPkts1024-1522 :      0
etherStatsPkts1523-2047 :      0 etherStatsPkts2048-4095 :      0
etherStatsPkts4096-8191 :      0 etherStatsPkts8192-9022 :      0
ifHCOutOctets      :      0 etherStatsCollisions :      0
outXonSent         :      0 outXoffSent         :      0
flowControlDone     :      0 d3StatsInt1MacTxErrors :      0
d3StatsSingleColFrames :      0 d3StatsMultipleColFrames :      0
dt3StatsDeferredTx   :      0 d3StatsExcessiveCol :      0
d3StatsLateCol       :      0 d3Collided2Times :      0
d3Collided3Times     :      0 d3Collided4Times :      0
d3Collided5Times     :      0 d3Collided6Times :      0
d3Collided7Times     :      0 d3Collided8Times :      0
d3Collided9Times     :      0 d3Collided10Times :      0
d3Collided11Times    :      0 d3Collided12Times :      0
d3Collided13Times    :      0 d3Collided14Times :      0
d3Collided15Times    :      0 ifHCOutUcastPkts :      0
d3StatsCarSenseErrors :      0 ifOutDiscards :      0
COSIfHCInPkts[00]    :      0 COSIfHCInPkts[01] :      0
COSIfHCInPkts[02]    :      0 COSIfHCInPkts[03] :      0
COSIfHCInPkts[04]    :      0 COSIfHCInPkts[05] :      0
COSIfHCInPkts[06]    :      0 COSIfHCInPkts[07] :      0
COSIfHCInPkts[08]    :      0 COSIfHCInPkts[09] :      0
COSIfHCInPkts[10]    :      0 COSIfHCInPkts[11] :      0
COSIfHCInPkts[12]    :      0 COSIfHCInPkts[13] :      0
COSIfHCInPkts[14]    :      0 COSIfHCInPkts[15] :      0
COSFrmsDxDueToFilters :      0 nicDmaWriteQueueFull :      0
nicDmaWrHiPQFull     :      0 nicNoMoreRxBDs :      0
ifInDiscards         :      0 ifInErrors :      0
nicRecvThresholdHit   :      0 nicDmaReadQueueFull :      0
COSIfHCOutPkts[00]    :      0 COSIfHCOutPkts[01] :      0
COSIfHCOutPkts[02]    :      0 COSIfHCOutPkts[03] :      0
COSIfHCOutPkts[04]    :      0 COSIfHCOutPkts[05] :      0
COSIfHCOutPkts[06]    :      0 COSIfHCOutPkts[07] :      0
COSIfHCOutPkts[08]    :      0 COSIfHCOutPkts[09] :      0
COSIfHCOutPkts[10]    :      0 COSIfHCOutPkts[11] :      0
COSIfHCOutPkts[12]    :      0 COSIfHCOutPkts[13] :      0
COSIfHCOutPkts[14]    :      0 COSIfHCOutPkts[15] :      0
nicDmaRdHPQueueFull   :      0 nicSendDataCompQueueFull :      0
nicRingSetSdPIIdx     :      0 nicRingStatusUpdate :      0
nicInterrupts         :      0 nicAvoidedInterrupts :      0
nicSendThresholdHit    :      0
Phy CRC counter       :      0

```

9.73 txcfg**cmd:** txcfg**Description:** Configure protocol packets for transmission**Syntax:** txcfg**Example:**

0:> txcfg

```
1. Source MAC : 10:11:12:13:14:15
2. Destination MAC : 00:01:02:03:04:05
3. Length (14-65535) : 1514
4. Packet Type {Non(0),EthV2(1),802.3(2),SNAP(3)}: Ethernet II
5. Protocol Field {Non(0),IP(1),ARP(2),BRM(3)} : IP
6. Source IP : 10.2.1.1
7. Destination IP : 10.2.1.2
8. IP Protocol Field { UDP(17), TCP(6) } : UDP
   80. Source Port : 100
   81. Destination Port : 200
9. IP Option Length (32-bit Words) : 0
10. TCP Option Length (32-bit Words) : 0
11. Pattern { As-is(0), Inc(1), Random(2), 0s(3), FFs(4),
    AA55(5), 55AA(6),IP_Iden-Inc(7),Load from file(8)
    00ff8(9) 00ff16(10), 00ff32(11), 00ff(12)} : Increment (00,01,02 ...)
12. IP Checksum Offload{ YES(1), NO(0) } : NO
13. TCP/UDP Checksum Offload { YES(1), NO(0) } : NO
14. TCP/UDP Pseudo Checksum Only { YES(1), NO(0) } : NO
15. Insert VLAN Tag { YES(1), NO(0) } : NO
16. VLAN Tag : 1
17. Random IP header field { YES(1), NO(0) } : NO
18. Random TCP/UDP header field { YES(1), NO(0) } : NO
0. Exit
```

Enter your choice (option=paramter) ->

9.74 rxcfg

cmd: rxcfg

Description Configure RX parameters.

Syntax: rxcfg

Example:

```
0:> rxcfg
1. Host Loopback { Enable(1), Disable(0) } : Disable
2. Modify Rx Packet { Enable(1), Disable(0) } : Disable
3. Dump Rx Packet { None(1),Hex(2), Decode(3) } : None
4. Dump Rx Length : 64
5. Tx Fragment Length : 1518
6. Tx Flags : 0000
7. Tx VLAN Tag : 0000
8. Tx Ring Number : 0
9. Tx Generate CRC { Enable(1), Disable(0) } : Enable
10. Capture Rx Pacpkt { Enable(1), Disable(0) } : Enable
11. Rx Mask
0. Exit
```

Enter your choice (option=paramter) ->

9.75 tprot

cmd: tprot

Description: Blast with TPROT Packets. This command is same as command 'blast -trm'

Syntax: tprot

Options:

-d<DEC> Interpacket gap in microseconds (def=10)

9.76 qstat

cmd: qstat

Description: Get a quick NIC statistic. [qstat string] used to select specific statistic.

Syntax: qstat [qstat string]

Options:

-c Clear statistic

-l List all qstat string

9.77 drvrcfg

cmd: drvrcfg

Description: configure driver parameters

Syntax: drvrcfg

Options:

-a<DEC> Turn on/off autolink capability (def=0)

-q<DEC> Configure Rx ring size (def=0)

-r<DEC> Turn on/off rxflow capability (def=0)

-t<DEC> Turn on/off txflow capability (def=0)

-x<DEC> Configure Tx ring size (def=0)

9.78 irt

cmd: irt

Description: Test an individual register. Test an individual register with a specified number of reads/writes.

Syntax: irt

Options:

-n<DEC> Number of read/write accesses (def=1)

-r<string> Register offset

9.79 macmrd

cmd: macmrd

Description: Test an individual register. Test an individual register with a specified number of reads/writes.

Syntax: macmrd

Options:

-d<DEC> Delay in uS (def=0)

-n<DEC> Number of read/write accesses (def=1)

-r<string> Register offset

9.80 miimrd

cmd: miimrd

Description: Test an individual register. Test an individual register with a specified number of reads/writes.

Syntax: miimrd

Options:

-d<DEC> Delay in uS (def=0)

-n<DEC> Number of read/write accesses (def=1)

-r<string> Register offset

9.81 pcimrd

cmd: pcimrd

Description: Test an individual register. Test an individual register with a specified number of reads/writes.

Syntax: pcimrd

Options:

- d<DEC> Delay in uS (def=0)
- n<DEC> Number of read/write accesses (def=1)
- r<string> Register offset

9.82 mwrite

cmd: mwrite

Description: Write PHY registers via MII Management interface

Syntax: mwrite <addr> <data>

Address range: 0x00 – 0x1F

Example:

1. Write 0x15 to MII register 2

```
0:> mwrite 2 15
```

9.83 mread

cmd: mread

Description: Read PHY registers via MII Management interface

Syntax: mread <begin>[-<end> | <len>]

Address range: 0x00 – 0x1F

Example:

1. Read MII register 0

```
0:> mread 0
00: 1100
```

- 2 Read MII registers 0 to 10

```
0:> mread 0-10
00: 1100 7949 0020 6051 01e1 0000 0004 2001
08: 0000 0300 0000 0000 0000 0000 0000 3000
10: 0002
```

3. Read 5 MII registers start from register 0

```
0:> mread 0 5
00: 1100 7949 0020 6051 01e1
```

9.84 mdev

cmd: mdev

Description: Select current PHY to be accessed. The default device ID is 0x01. If no parameter is entered, it displays current phy address setting.

Syntax: mdev [<phy_id>]

Example:

```
0:> mdev 1
Phy Address = 1
```

9.85 miimode

cmd: miimode

Description: Select Auto Mode of MII Access. 0:disable, 1:enable

Syntax: miimode <1|0>

Example:

```
0:> miimode 0
Setting MII auto mode to OFF
0:> miimode 1
Setting MII auto mode to ON
0:> miimode
```

9.86 lbertram

Command: lbertram

Description: Load data to PHY BIST RAM

Syntax: lbertram [filename]

Options:

- c<DEC> channel number (def=0)
- e enable BIST
- f<string> File name containing BIST data

9.87 dbertram

Command: dbertram

Description: Dump PHY BIST RAM

Syntax: dbertram

Options:

- b<HEX> Begin of BIST RAM (def=00000000)

- c<DEC> channel number (def=0)
- e<HEX> End of BIST RAM (def=000000FF)
- r Dump Rx BIST RAM
- t Dump Tx BIST RAM

9.88 bertstats

Command: bertstats

Description: Dump PHY BIST statistics

Syntax: bertstats

9.89 rm

Command: rm

Description: Read MII Registers

Syntax: rm

9.90 mrloop

Command: mrloop

Description: loop on MII read. This is special test routine for MII read. It loops on MII register read until user abort or if value is zero.

Syntax: mrloop <addr>

9.91 phymse

Command: phymse

Description: PHY mean square error.

Syntax: phymse

Options:

- p Polling continuously at 100ms interval

9.92 initphy

Command: initphy

Description: Initialize phy.

Syntax: initphy

9.93 memsearch

Command: memsearch

Description: Search a Data Pattern in Memory. The default, begin address = 0, and len = 0x20000. The data pattern must be specified.

Syntax: memsearch begin[-end | len] data

9.94 read

cmd: read

Description: Read Memory

Syntax: read [!#*\$~^!ImSsxX]<begin> [-end | len]

! = Configuration space (32)

S = Configuration space (16)

X = Configuration space (8)

= Registers (32) (default)

* = SRAM (32)

\$ = NVRAM (SEEPROM/FLASH) (32)

m = MII registers (16)

~ = VPD Access (32)

I = indirect access (32)

^ = internal scratchpad (32)

l = direct access (32)

s = direct access (16)

x = direct access (8)

Example:

1. Read from Configuration space

```
0:> read !10
```

```
000010: f4000004
```

2. Read from Register

```
0:> read #10
000010: f4000004
```

3. Read from SRAM

```
0:> read *10
000010: 00010001
```

4. Read from internal scratchpad

```
0:> read ^00
000000: 000312ae
```

9.95 write

cmd: write

Description: Write Memory

Syntax: write [!#*\$~^IImSsxX]<address> [-end | len] data

! = Configuration space (32)

S = Configuration space (16)

X = Configuration space (8)

= Registers (32) (default)

* = SRAM (32)

\$ = NVRAM (SEEPROM/FLASH) (32)

m = MII registers (16)

~ = VPD Access (32)

I = indirect access (32)

^ = internal scratchpad (32)

l = direct access (32)

s = direct access (16)

x = direct access (8)

Example:

1. Write to configuration space.

```
0:> write !10 f4000004
```

2. Write to register.

```
0:> write #10 f4000004
```

3. Write to SRAM

```
0:> write *10 10001
```

4. Write to internal scratchpad

```
0:> write ^10 f4000004
```

9.96 poll

cmd: poll

Description: poll Memory

Syntax: poll [!#*\$~^lImSsxX]<addr> [[!#*\$~^lImSsxX]<addr>...]

! = Configuration space (32)

S = Configuration space (16)

X = Configuration space (8)

= Registers (32) (default)

* = SRAM (32)

\$ = NVRAM (SEEPROM/FLASH) (32)

m = MII registers (16)

~ = VPD Access (32)

I = indirect access (32)

^ = internal scratchpad (32)

l = direct access (32)

s = direct access (16)

x = direct access (8)

Options:

-n<DEC> Number of changes to print before stop (def=0)

9.97 setbit

cmd: setbit

Description: Read-Modify Memory by ored with <bits>

Syntax: setbit [!#*\$~^lImSsxX]<addr> <bit#> [<bit#>] ...

! = Configuration space (32)

S = Configuration space (16)

X = Configuration space (8)

= Registers (32) (default)

* = SRAM (32)

\$ = NVRAM (EEPROM/FLASH) (32)

m = MII registers (16)

~ = VPD Access (32)

I = indirect access (32)

^ = internal scratchpad (32)

l = direct access (32)

s = direct access (16)

x = direct access (8)

9.98 clearbit

cmd: clearbit

Description: Read-Modify Memory by anded with ~<bits>

Syntax: clearbit [!#*\$~^lImSsxX]<addr> <bit#> [<bit#>] ...

! = Configuration space (32)

S = Configuration space (16)

X = Configuration space (8)

= Registers (32) (default)

* = SRAM (32)

\$ = NVRAM (EEPROM/FLASH) (32)

m = MII registers (16)

~ = VPD Access (32)

I = indirect access (32)

^ = internal scratchpad (32)

l = direct access (32)

s = direct access (16)

x = direct access (8)

9.99 readbit

cmd: readbit

Description: Read the bit specified by <bit#>

Syntax: readbit [!#*\$~^lImSsxX]<addr> <bit#>

! = Configuration space (32)

S = Configuration space (16)

X = Configuration space (8)

= Registers (32) (default)

* = SRAM (32)

\$ = NVRAM (EEPROM/FLASH) (32)

m = MII registers (16)

~ = VPD Access (32)

I = indirect access (32)

^ = internal scratchpad (32)

l = direct access (32)

s = direct access (16)

x = direct access (8)

9.100 cread

Command: cread

Description: Read PCI configuration Space of specified device. default - 32 bits read, S - 16 bits read, X - 8 bits read

Syntax: cread <bus> <dev> <func> [S|X]<begin> [-end | len]

9.101 cwrite

Command: cwrite

Description: Write PCI configuration Space of specified device. default - 32 bits read, S - 16 bits read, X - 8 bits read

Syntax: cwrite <bus> <dev> <func> [S|X]<begin> [-end | len] data

9.102 vpdtest

cmd: vpdtest

Description: Run VPD Memory Test. Write designed pattern to VPD storage. Then read back and compare with designed pattern.

Syntax: vpdtest

Options:

- d Force destructive test
- n<DEC> iteration
- p<DEC> Pattern to test (def=0)
0 - Increment; 1 - Decrement ; 1 - 0's 2 - FF's ; 3 - AA55; 4 - 55AA
- r Random address test
- w Force write test enable

9.103 regtest

cmd: regtest

Description: MAC registers read/write test. Driver must be unloaded.

Syntax: regtest [<iteration>]

Options:

- i Also run indirect memory test
- n<DEC> iteration (The default iteration is 1. 0 means run forever)

- r<DEC> repeat count for each register test (def=1)
- I Do not perform reset before test

9.104 miitest

cmd: miitest

Description: Run MII Memory Test. PHY registers read write test

Syntax: miitest [iteration]

Options:

- n<DEC> iteration (The default iteration is 1. 0 means run forever)

9.105 msi

cmd: msi

Description: Run MSI Test Manually

Syntax: msi

Options:

- c<HEX> message count (2 to powered of c) (def=00000003)
- d option removed, kept for bcmediag compatibility
- I initializing MSI block
- o<DEC> offset (def=0)

9.106 memtest

cmd: memtest

Description: Test memory blocks such as scratch pad, BD sram, DMA sram, Mbuf, external SRAM. Running “diagcfg” can configure memory block ranges. See “diagcfg” for detail. Driver must be unloaded.

Syntax: memtest [iteration]

Options:

- b Test BD SRAM
- c Test MBUF special
- d Test DMA SRAM

-e	Test External Memory
-m	Test MBUF SRAM
-n<DEC>	iteration (The default iteration is 1. 0 means run forever)
-p	Test CPU GPRs
-s	Test Scratch Pad
-x	Test MBUF SRAM via DMA

9.107 setest

cmd: setest

Description: Run NVRAM Test

Syntax: setest [iteration]

Options:

-e	extensive test
-d<HEX>	ending offset (with -e option) (def=FFFFFFFF)
-n<DEC>	iteration
-q	quiet mode
-r	read only test
-s<HEX>	start offset (with -e option) (def=00000000)

9.108 bist

cmd: bist

Description: Run BIST. The default iteration is 1. 0 means run forever.

Syntax: bist [iteration]

9.109 nicetest

cmd: nicetest

Description: Run a set of NIC Tests. NIC test can include memory test, serial eeprom test, interrupt test, packet exchange, MAC registers test, Mii registers test, cpu test, dma test.

This test can to be configured by running “diagcfg”. See “diagcfg” for details. If a “test list” is not entered below then a set of default tests are run.

Syntax: nictest [test list]

abcd -- runs all tests

b -- runs all test in group B

a3 b1 -- runs test a3 and b1 only

a124b2 -- runs test a1,a2,a4 and b2

Options:

-e run NVRAM verification also

-n<DEC> iteration

9.110 intrtest

cmd: intrtest

Description: Interrupt Test

Syntax: intrtest [iteration]

Options:

-n<DEC> iteration (The default iteration is 1. 0 means run forever.)

9.111 pkttest

Command: pkttest

Description: Perform MAC and/or PHY loopback test. This test will send 100 packets in incremental length and check for contents of loopbacked packets.

Syntax: pkttest [<iteration>]

Options:

-e run external loopback test

-m run mac loopback test

-n<DEC> iteration (The default iteration is 1. 0 means run forever.)

-p run phy loopback test

9.112 cputest

cmd: cputest

Description: TX / RX CPU Test. This test needs an input CPU file in the same location as b57diag.exe. The default file name is cpu.bin or cpu05.bin unless specified by -f option.

Syntax: cputest [iteration]

Options:

- f<string> input filename
- n<DEC> iteration (The default iteration is 1. 0 means run forever)

9.113 dmatest

cmd: dmatest

Description: DMA Test

Syntax: dmatest [iteration]

Options:

- 4 Allocate 4k-aligned buffers
- a<HEX> NIC address (def=00002100)
- d Display DMA info.
- f Force to use 32-bit bus
- l<HEX> Length of DATA to do DMA (def=00000400)
- n<DEC> iteration
- o<HEX> Buffer offset (def=00000000)

9.114 teste

Command: teste

Description: The command enables tests. It effects nictest, regtest, pkttest, and memtest commands. The test must starts with test group alpha (a-d). If no number is entered, all tests in that group are enabled.

Syntax: teste [<tests> [<tests>...]]

Example: **teste a12bc** -- Enable test a1, a2, all tests in group b and c
 teste ab cd -- Enables all tests
 teste -- Display enabled tests

9.115 testd

Command: testd

Description: The command disables tests. It effects nictest, regtest, pkttest, and memtest commands. The test must starts with test group alpha (a-d). If no number is entered, all tests in that group are disabled.

Syntax: testd [<tests> [<tests>...]]

Example: **testd a12bc** -- Disable test a1, a2, and all tests in group b and c.
 testd ab cd -- Disables all tests.
 testd -- Display disabled tests.

9.116 asftest

cmd: asftest

Description: ASF Test

Syntax: asftest

Options:

 -n<DEC> iteration

9.117 bustest

Command: bustest

Description: PCI Bus Test

Syntax: bustest

Options:

 -a<HEX> NIC address to DMA data to. (def=00002100)

 -d<HEX> delay poll dma done polling (def=00000000)

 -e<DEC> End of test case (def=259)

 -g Insert debugging information

 -h<DEC> Maxmum length (def=1024)

-i<DEC> Number of transactions per pattern (def=10)
-l<DEC> Minimum length (def=256)
-n<DEC> iteration
-o<DEC> Number of consecutive patterns (def=1)
-p<DEC> DMA priority (def=0)
-s<DEC> Start of test case (def=0)
-t<DEC> Transient fixed pattern (def=0)
-v<DEC> Verbose level (0..2) (def=1)
-L Loop

There are total 260 test cases (258 unique tests cases) which are described as follows:

Test case#	Pattern
=====	=====
0	ffffffff ffffffff 00000000 00000000
1	ffffffff ffffffff 00000000 00000000
2	ffffffff ffffffff 00000000 00000000
.	.
.	.
.	.
64	7ffffffff ffffffff 00000000 00000000
65	00000000 00000000 ffffffff ffffffff
66	00000000 00000000 ffffffff ffffffff
67	00000000 00000000 ffffffff ffffffff
.	.
.	.
.	.
129	00000000 00000000 7ffffffff ffffffff
130	00000000 00000000 ffffffff ffffffff (repeat)
131	00000000 00000001 ffffffff ffffffff
132	00000000 00000002 ffffffff ffffffff
.	.
.	.
.	.
194	80000000 00000000 ffffffff ffffffff

```
195          ffffffff ffffffff 00000000 00000000 (repeat)
196          ffffffff ffffffff 00000000 00000001
197          ffffffff ffffffff 00000000 00000002
.            .
.            .
.            .
259          ffffffff ffffffff 80000000 00000000
```

If you run bustest command without any parameters, it will perform DMA testing on all 260 patterns with 10 iterations per pattern and different data length in each iteration. First eight bytes of data are used to store the following info for debug:

```
byte 0-4 : length
byte 5-6 : iteration#
byte 6-7 : test case#
```

9.118 sramtest

cmd: sramtest

Description: SRAM Test

Syntax: sramtest <begin> [<len> |<-end>]

9.119 msitest

cmd: msitest

Description: MSI Test

Syntax: msitest

Options:

```
-c<HEX>    message count (2 to powered of c) (def=00000003)
-I          initializing MSI block
-n<DEC>     iteration
```

9.120 romtest

cmd: romtest

Description: ROM Test

Syntax: romtest

Options:

-n<DEC> iteration

9.121 gpiotest

cmd: gpiotest

Description: do GPIO test

Syntax: gpiotest

Options:

-n<DEC> iteration

9.122 cpudiag

cmd: cpudiag

Description: run diagnostic from internal CPU

Syntax: cpudiag

Options:

-b Test BD SRAM (0x0000-0x0fff and 0x4000-0x7fff)

-d Test DMA SRAM (0x2000-0x3fff)

-m Test MBUF SRAM (0x8000-0x00000005)

-n<DEC> Iteration

-r Register Test

-T Test with Tx CPU

-R Test with Rx CPU

9.123 pcicfgtest

cmd: pcicfgtest

Description: Run PCI Config. Reg. Test

Syntax: pcicfgtest

Options:

- I Do not perform reset before test
- r<DEC> repeat count for each register test (def=1)
- n<DEC> iteration

9.124 petest

cmd: petest

Description: Perform parity error test on a bridge

Syntax: petest <bridge>

9.125 errctrl

cmd: errctrl

Description: Configure Error Control Setting

Syntax: errctrl [w|c|a|l|s]

- w - Wait on Error
Program will pause and wait for user's action (eng. default)
- c - Continue on Error
Program will continue even if the error is detected
- a - Abort on Error (Manufacturing default)
Program stops
- l - Loop on Error
Program will retry the same test
- s - Skip on Error
Program will skip the rest of the present test

9.126 sedvt

cmd: sedvt

Description: Perform NVRAM dvt test. When 'init' subcommand is entered, the NVRAM is initialized into pseudo random pattern. The original content is DESTROYED.

Syntax: sedvt [init]

Options:

- a Access test
- e Erase with reset
- f force
- l<HEX> size (def=00000100)
- n<DEC> iteration (def=0)

-p	pause
-r	Read Test with reset
-s	skip checking entire NVRAM
-w	Read/Write Test with reset

9.127 miimisctest

cmd: miimisctest

Description: Run MII Misc. Tests.

Syntax: miimisctest

Options:

-n<DEC>	iteration
---------	-----------

9.128 cpugprtest

cmd: cpugprtest

Description: Run CPU GPR test.

Syntax: cpugprtest

Options:

-r	run rx_cpu only
-t	run tx cpu only
-u	run Address Up

9.129 dmashasta

cmd: dmashasta

Description: DMA Test

Syntax: dmashasta

Options:

-r	Disable the read DMA test
-w	Disable the write DMA test

- e Disable the chip reset execution before each DMA test
- l<HEX> Number of BD sot DMA on read (0x1-0x79) (def=0xA)

9.130 binchksum

cmd: binchksum

Description: Verify the checksum of each piece of firmware in the input file that contains a complete NVRAM image.

Syntax: binchksum -f<filename>

9.131 pmdcfg

cmd: pmdcfg

Description: Display Power Management Info

Syntax: pmdcfg

Options:

- a<HEX> 0 to add a pattern; otherwise delete (def=00000000)
- l<HEX> length (def=00000000)
- p<HEX> pattern. 0 - Increment; 1 - Increment (def=00000000)

9.132 pmpd

cmd: pmpd

Description: Power Down MAC. Input file wol.txt should be found in the same location of b57diag.exe. The input file contains patterns. If the file name is not specified, data zero will be used.

Syntax: pmpd [filename]

Options:

- a<HEX> 1 enables ACPI Packet Match (def=00000000)
- c<HEX> 0 to add a pattern; otherwise delete (def=00000000)
- f<string> File name which contains patterns
- m<HEX> 1 enables Magic MAC detection (def=00000000)

-o<HEX> offset (def=00000000)

-v<HEX> Versbose level (default=0) (def=00000000)

9.133 intr

cmd: intr

Description: Dump Interrupt Info

Syntax: intr

Example:

```
0:> intr
Interrupt Count      : 48337
IPC MASK             : 0xb8 0x0c
IPC IS1 IS2          : 0x00 0x00
IPC IRR1 IRR2        : 0x18 0x00
IPC ILCR1 ILCR2       : 0x20 0x0e
Worst Intr. Latency  : 54476 CPU clocks/50 uS
```

9.134 intrctrl

cmd: intrctrl

Description: Control Interrupt Controller

Syntax: intrctrl u|m

u : unmask current interrupt
m : mask current interrupt

Example:

1. Mask current interrupt

```
0:irq> intrctrl m
Masking Interrupt 10
```
2. Unmask current interrupt

```
0:irq> intrctrl u
Unmasking Interrupt 10
```

9.135 intt

cmd: intt

Description: Interrupt Tracer. This is special function to monitor interrupt functions.

Syntax: intt

9.136 mbuf

cmd: mbuf

Description: Dump Content of MBUFs. The display command must be specified by -c option or 'chain', 'info', 'cluster', 'hdr', and 'ckhdr'.

Syntax: mbuf [chain|info|cluster|hdr|ckhdr]

Options:

-c<HEX> command

- 0 - displays a MBUF
- 1 - displays a MBUF chain
- 2 - displays general MBUF information
- 3 - displays MBUF Cluster
- 4 - Check MBUF header corruption
- 5 - Dump all MBUF headers

-m<HEX> display mode, 0: decode, 1: in hex (def=00000000)

-n<DEC> MBUF number to display/decode (def=256)

-w MBUF workaround

Example:

1. Display MBUF chain.

```
0:> mbuf chain
->143->144->145->146->147->148->149->14a->14b->14c->14d->14e->14f->150
->151->152->153->154->155->156->157->158->159->15a->15b->15c->15d->15e
->15f->160->161->162->163->164->165->166->167->168->169->16a->16b->16c
->16d->16e->16f->170->171->172->173->174->175->176->177->178->179->17a
```

9.137 loaddrv

cmd: loaddrv

Description: Load Driver

Syntax: loaddrv

Options:

-4<HEX> Enable 4k-aligned memory (def=00000000)

-o<HEX> Allocate memory with specified offset (def=00000000)

-j Allocate memory for Jumbo packet

-t Allocate memory for TCP Segmentation

Example:

```
0:> loaddrv
Reinitializing PCI Configuration Space
Bus Number      : 1
Device/Funtion   : 11/0
Base Address     : 0xfb010000
IRQ             : 9
Bringing up MAC driver ... OK
PHY calculated ID: 60008162
BCM5702/03 Internal Phy Rev#2
Configuring BCM54xx ... Done
Determining Link Speed ... 1000Base-T Full Duplex
```

9.138 unloaddrv

cmd: unloaddrv

Description: Unload NIC driver

Syntax: unloaddrv

Example:

```
0:> unloaddrv

Unloading MAC driver ... OK
```

9.139 machalt

cmd: machalt

Description: Halt MAC controller

Syntax: machalt

Example:

```
0:> machalt
Halting MAC ... OK
```

9.140 ftq

cmd: ftq

Description: Dump FTQ

Syntax: ftq

Example:

```
0:> ftq

***** Dump FTQ Peak/Write (Control,Full Counter, Write/Peak) *****
DMA Read FTQ (1)      : 00000000 00000000 20000000
DMA High Read FTQ (2) : 00000000 00000000 60002160
DMA Write FTQ (6)     : 00000000 00000000 20000000
DMA High Write FTQ (7) : 00000000 00000000 20000000
```

```
DMA Complete Dx FTQ (3)      : 00000000 00000000 20000000
Send BD Comp. FTQ (4)       : 00000000 00000000 20000000
Send Data Init FTQ (5)      : 00000000 00000000 20000000
Send Data Comp. FTQ (9)     : 00000000 00000000 20000000
Rx BD Complete FTQ (13)     : 00000000 00000000 60002160
Rx Data Complete FTQ (16)   : 00000000 00000000 20000000
S/W Type 1 FTQ (8)          : 00000000 00000000 20000000
Host Coalescing FTQ (10)    : 00000000 00000000 2000:00000000
MAC TX FTQ (11)             : 00000000 00000000 2000:00000000
Mbuf Cluster Free FTQ (12)  : 00000000 00000000 2000:00000000
RX List Placement FTQ (14)  : 00000000 00000000 2000:00000000
RX Data Initiator FTQ (15)  : 00000000 00000000 2000:00000000

S/W Type 2 FTQ (17)         : 00000000 00000000 2000:00000000
```

9.141 addmc

cmd: addmc

Description: Add Multicast MAC

Syntax: addmc <xx:xx:xx:xx:xx:xx>

Example:

```
0:> addmc FF:FF:00:0A:00:00
```

9.142 delmc

cmd: delmc

Description: Delete Multicast MAC

Syntax: delmc <xx:xx:xx:xx:xx:xx>

Example:

```
0:> delmc FF:FF:00:0A:00:00
```

9.143 txmacdes

cmd: txmacdes

Description: Program Destination address to UUT

Syntax: txmacdes <xx:xx:xx:xx:xx:xx>

9.144 txmacsrc

cmd: txmacsrc

Description: Program Source address to UUT

Syntax: txmacsrc <xx:xx:xx:xx:xx:xx>

9.145 chklldrv

cmd: chklldrv

Description: Check to see if driver is loaded. Returns 1 if driver is loaded, returns 0 otherwise.

Syntax: chklldrv

9.146 vlantag

cmd: vlantag

Description: Display/Clear vlanTag information.

Syntax: vlantag

Options:

-c clear vlanTag info

9.147 reg

cmd: reg

Description: register wizard. This command allows user to view edit registers.

Syntax: reg [pci|mii] [offset]

9.148 exit

cmd: exit

Description: Exit System

Syntax: exit

9.149 debug

cmd: debug

Description: Display debugs information

Syntax: debug <n>

1: Dump TX / RX Stats

2: Dump Clock Scale info

3: Clear worst interrupt latency

4: Toggle indirect access flag

5: Toggle PCI-X workaround

Example:

1. Display debug information.

```
0:> debug 1
Tx Packets Enqueued      :      0
Tx Packet Complete       :      0
Tx Packet Complete Error :      0
Rx Packets                :      0
Rx Unknown Packets       :      0
Rx Bad Packets           :      0
Rx Good Packets          :      0
```

9.150 gpiowrite

cmd: gpiowrite

Description: Write a Value into GPIO pin

Syntax: gpiowrite <GPIO_num> <value>

Valid value for <GPIO_num> is 0-2, <value> is 0 or 1.

Example:

1. Write 1 to GPIO#1 Pin

```
0:> gpiowrite 1 1

Writing 1 to GPIO#1
```

9.151 gpioread

cmd: gpioread

Description: Read GPIO Value

Syntax: gpioread

Example:

1. Read GPIO Pins

```
0:> gpioread
GPIO#0 : 1
GPIO#1 : 1
GPIO#2 : 0
```

9.152 pxeepy

cmd: pxeepy

Description: Load PXE Code to MBUF Memory. The file name must be specified in the parameter.

Syntax: pxeepy <file>

Options:

-f<string> filename

9.153 device

cmd: device

Description: Show or Switch Device. If no parameter is entered, it will display all device available.

Syntax: device <dev>

Options:

-n<HEX> Device Number (def=00000000)

-r Remove all current devices and re-scan available devices

-s Silent mode - do not display devices

9.154 version

cmd: version

Description: Display Program Version

Syntax: version

9.155 help

cmd: help

Description: Enter command group for the list of available commands. If no parameter is entered, all commands are displayed. Example: help vpd. For each command help, type the command and then '?'. Example: memtest ?

Syntax: help [vpd|nvram|cpu|dma|packet|mii|mem|test|power|irq|mac|misc]

9.156 ?

cmd: ?

Description: Alternate Help Command. This is same command as 'help' command.

Syntax: ? [vpd|nvram|cpu|dma|packet|mii|mem|test|power|irq|mac|misc]

9.157 radix

cmd: radix

Description: Change System Radix. Radix must be 2-16. Radix used for number entry. 16 means enter number in hex, and 10 means in decimal.

Syntax: radix <2 | 8 | 10 | 16>

9.158 nolog

cmd: nolog

Description: Close the Current Logfile

Syntax: nolog

9.159 log

cmd: log

Description: Save all output to log file

Syntax: log

Options:

-f<string> filename (for bcmediag compatibility only)

-a Append to existing file

9.160 pciinit

cmd: pciinit

Description: Initialize PCI configuration registers

Syntax: pciinit

9.161 pciscan

cmd: pciscan

Description: Scan for all PCI Devices

Syntax: pciscan

Example:

```
0:> pciscan
Scanning PCI devices ...
Bus Dev Func  Vendor ID Device ID      Class      Base/IO Address      IRQ
=== ===
0 0 0      8086      7190      06:00:00      00000000:F8000008      0
0 1 0      8086      7191      06:04:00      00000000:00000000      0
0 7 0      8086      7110      06:01:00      00000000:00000000      0
0 7 1      8086      7111      01:01:80      00000000:00000000      0
0 7 2      8086      7112      0C:03:00      00000000:00000000      9
0 7 3      8086      7113      06:80:00      00000000:00000000      0
0 14 0     12AE      0003      02:00:00      00000000:F4000004     10
1 0 0      1002      4742      03:00:00      00009001:F5000000     11
```

9.162 dos

cmd: dos

Description: Execute DOS command. If no parameter is entered, DOS shell is entered. This command is not supported by EFI.

Syntax: dos <dos command>

9.163 diagcfg

cmd: diagcfg

Description: Configure diagnostics parameter for Memory tests and Manufacturing test (NIC test).

Syntax: diagcfg

Example:

```
0:misc> diagcfg
```

Diagnostics Configuration Menu

1. Memory Test Configuration Menu
2. Test Configuration Menu
3. Driver Configuration Menu
4. Abort On Failure is enabled
5. Save Configuration

Enter your choice or ESC to exit -> 1

Memory Test Configuration Menu

1. SRAM BD1 Start (0x00000000-0x00000fff) : 00000000
2. SRAM BD1 End (0x00000000-0x00000fff) : 00000fff
3. SRAM BD2 Start (0x00004000-0x00007fff) : 00004000
4. SRAM BD2 End (0x00004000-0x00007fff) : 00007fff
5. SRAM DMA Start (0x00002000-0x00003fff) : 00002000
6. SRAM DMA End (0x00002000-0x00003fff) : 00003fff
7. SRAM MBUF Start (0x00008000-0x00015fff) : 00008000
8. SRAM MBUF End (0x00008000-0x00015fff) : 00000000
9. SRAM SPAD Start (0x00030000-0x00037fff) : 00030000
10. SRAM SPAD End (0x00030000-0x00037fff) : 00037fff
11. Ext. SRAM Start (0x00020000-0x00ffffff) : 00020000
12. Ext. SRAM End (0x00020000-0x00ffffff) : 00ffffff
13. MBUF Bank (1 - Odd ; 2 - Even ; 3 - Both) : 3
0. Exit to previous menu

Enter your choice (option=paramter) -> 0

Diagnostics Configuration Menu

1. Memory Test Configuration Menu
2. Test Configuration Menu
3. Driver Configuration Menu
4. Abort On Failure is enabled
5. Save Configuration

Enter your choice or ESC to exit -> 2

Test Configuration Menu

- A1. Indirect Register.....: Enabled
- A2. Control Register.....: Enabled
- A3. Interrupt.....: Enabled
- A4. Built In Self.....: Enabled
- A5. PCI Cfg Register.....: Enabled
- B1. Scratch Pad.....: Enabled
- B2. BD SRAM.....: Enabled
- B3. DMA SRAM.....: Enabled
- B4. MBUF SRAM.....: Enabled
- B5. MBUF SRAM via DMA.....: Enabled
- B6. External SRAM.....: Disabled
- B7. CPU GPR.....: Enabled
- C1. NVRAM.....: Enabled
- C2. CPU.....: Enabled
- C3. DMA.....: Enabled
- C4. MII.....: Enabled
- C5. VPD.....: Enabled
- C6. ASF Miscellaneous.....: Enabled
- C7. Expansion ROM.....: Enabled
- D1. MAC Loopback.....: Enabled
- D2. PHY Loopback.....: Enabled
- D3. External Loopback.....: Disabled
- D5. MII Miscellaneous.....: Enabled
- D6. MSI.....: Enabled

Enter test number to toggle or ESC to exit ->

Diagnostics Configuration Menu

1. Memory Test Configuration Menu

2. Test Configuration Menu
3. Driver Configuration Menu
4. Abort On Failure is enabled
5. Save Configuration

Enter your choice or ESC to exit -> 3

Driver Configuration Menu

- | | |
|--|------------|
| 1. Rx Coalescing Ticks | : 1000 |
| 2. Rx Coalescing Ticks During Intr | : 0 |
| 3. Rx Coalescing Frames | : 1 |
| 4. Rx Coalescing Frames During Intr | : 0 |
| 5. Tx Coalescing Ticks | : 1000 |
| 6. Tx Coalescing Ticks During Intr | : 0 |
| 7. Tx Coalescing Frames | : 1 |
| 8. Tx Coalescing Frames During Intr | : 0 |
| 9. Statistics Coalescing Ticks | : 1000000 |
| 10. Tx Packet Descriptor Count | : 50 |
| 11. Rx Standard Packet Count | : 100 |
| 12. Rx Jumbo Packet Count | : 50 |
| 13. Enable Mini Ring {Yes(1),No(0)} | : 1 |
| 14. Mini Ring Packet Size (64-512) | : 64 |
| 15. External Memory Exists {Yes(1), No(0)} | : 0 |
| 16. MBUF Base | : 0x008000 |
| 17. MBUF Length | : 0x018000 |
| 18. Tx Flow Control { Enable(1),Disable(2) } | : Disable |
| 19. Rx Flow Control { Enable(1),Disable(2) } | : Disable |
| 20. Auto Link Speed { Enable(1),Disable(2) } | : Enable |
| 21. Send Ring Size { 32, 64, 128, 256, 512 } | : 512 |
| 22. Rx Ring Size { 32, 64, 128, 256, 512 } | : 512 |
| 0. Exit to previous menu | |

Enter your choice (option=paramter) -> 0

Diagnostics Configuration Menu

1. Memory Test Configuration Menu
2. Test Configuration Menu
3. Driver Configuration Menu
4. Abort On Failure is enabled
5. Save Configuration

Enter your choice or ESC to exit ->

9.164 reset

cmd: reset

Description: Reset Chip

Syntax: reset

Options:

- | | |
|----|--|
| -c | Simulate cold reset |
| -t | Display time from reset to firmware invert signature |

-w Wait for firmware signature

9.165 quit

cmd: quit

Description: Exit System

Syntax: quit

9.166 smbus

cmd: smbus

Description: ASF terminal. Run this command to access SMBus, the parameter a1 and a2 are one byte value to specify the NIC SMBus Addresses. It sets to 0 by default.

Syntax: smbus [a1 a2]

Options:

-s Run in slave mode

9.167 cls

cmd: smbus

Description: Clear Screen.

Syntax: cls

9.168 loop

cmd: loop

Description: loop on command.

Syntax: loop [iteration] <cmd> [<parameter> ...]

9.169 dbmode

cmd: dbmode

Description: Set DEBUG Mode to On or Off Mode.

Syntax: dbmode on|off

9.170 asf

cmd: asf

Description: run asf monitor program with option to Load asf firmware image. This routine loads firmware images into CPU memory and execute the RXCPU. The default files names are asfinit.bin, asfcputa.bin, and asfcpub.bin, which can be over written by parameters.

Syntax: asf [init_img [rx_img [tx_img]]]

Options:

-l	Load firmware only
-m	Enter asf mode only
-w	Simulate warm boot

9.171 new

cmd: new

Description: Display new command available. The default parameter for [n] is 10

Syntax: new [n]

9.172 asfprg

cmd: asfprg

Description: Program asf firmware into NVRAM. The default files names are asfinit.bin, asfcputa.bin, and asfcpub.bin, which can be over written by parameters.

Syntax: asfprg [init_img [rx_img [tx_img]]]

Options:

-v<HEX> verbose level (0,1,2) (def=00000001)

9.173 sleep

cmd: sleep

Description: suspense process for Excute command from a file

Syntax: sleep [miliseconds]

9.174 fillpattern

cmd: fillpattern

Description: Fill WOL matching pattern into Misc. Memory Location.

Syntax: fillpattern [filename]

Options:

- e<HEX> (end address + 1) of the first block (def=00020000)
- f<string> filename which contains data pattern
- o<HEX> sram first block offset to be loaded (def=00000000)
- s<HEX> sram second block offset to be loaded (def=00000000)

9.175 inp

cmd: inp

Description: input port (not supported for EFI)

Syntax: inp <addr>

Options:

- l long word size
- w word size

9.176 outp

cmd: outp

Description: input port (not supported for EFI)

Syntax: outp <addr> <value>

Options:

- l long word size
- w word size

9.177 switch

cmd: switch

Description: Alternate 'device' command. If no parameter is entered, it will display all device available.

Syntax: switch <dev>

Options:

- n<HEX> Device Number (def=00000000)
- r Remove all current devices and re-scan available devices
- s Silent mode - do not display devices

9.178 do

cmd: do

Description: Excute commands from a file.

Syntax: do <filename> [with <parameter1>, ...]

Options:

- c continue on error
- e echo command
- p<DEC> pause between each command. If a value is entered, it delays for # of ms (def=0)

9.179 txfill

cmd: txfill

Description: Fill tx buffer with pattern and packet length (14-9018).

Syntax: txfill [-f=<file>] [-x=<load length>] [-p=<pattern>] [-l=<packet length>]

Options:

- f<string> filename
- l<DEC> packet length in bytes (14-9018) (def=1514)
- p<DEC> pattern selection (0-8) (def=0)
- x<DEC> length to load in bytes (default to EOF)

Pattern:

0. Use buffer as is

1. Increment data
2. Random
3. all 0
4. all FF
5. AA55
6. 55AA
7. IP_Iden-Inc
8. Load from file
9. 8 bytes of 0 and f
10. 16 bytes of 0 and f
11. 32 bytes of 0 and f
12. 64 bytes of 0 and f

9.180 wbuf

cmd: wbuf

Description: Write tx|rx buffer with specified data at offset. Only works with static buffer selection -A.

Syntax: wbuf tx|rx <offset> <data>

9.181 rbuf

cmd: rbuf

Description: Read tx|rx|bistin|bistout|bistex buffer. Read tx|rx|bistin|bistout|bistex buffer with specified at offset with a specified length. Only works with static buffer selection -A.

Syntax: rbuf tx|rx|bistin|bistout|bistex <offset> <len>

9.182 cpbuf

cmd: cpbuf

Description: Copy the content of rx buffer into tx buffer. Only works with static buffer selection -A.

Syntax: cpbuf <offset> <length>

9.183 echo

cmd: echo

Description: echo <string> to screen.

Syntax: echo <string>

9.184 pause

cmd: pause

Description: Pause for user to hit a key. If no parameter is entered, 'press any key to continue...' will be displayed

Syntax: pause < message>

9.185 q

cmd: q

Description: Exit System

Syntax: q

9.186 verbose

cmd: verbose

Description: change verbose setting

Syntax: verbose

Options:

-c	toggles CONSOLE
-e	toggles ERROR
-i	toggles IO
-d	toggles DEBUG
-p	toggles PRINTER
-w	toggles WARNING
-r	toggles Interrupt Verbose

9.187 beep

cmd: beep

Description: Create a beep sound. The default to beep once. If parameter 'n' is entered, it beeps n times

Syntax: beep [<n> | on | off]

9.188 var

cmd: var

Description: Display current variables

Syntax: var

9.189 meminfo

cmd: meminfo

Description: report the memory information

Syntax: meminfo

9.190 delvar

cmd: delvar

Description: Delete local variables

Syntax: delvar

9.191 regdump

cmd: regdump

Description: Dump register content to a file

Syntax: regdump

Options:

- c PCI Config Reg.
- f<string> filename
- m MII Registers
- r<DEC> Mac Registers (def=1)

9.192 regcomp

cmd: regcomp

Description: Compare register content to a file. This command may be used together with regdump to find out any register got changed.

Syntax: regcomp <filename>

Options:

- c PCI Config Reg.
- f<string> filename
- m MII Registers
- r<DEC> Mac Registers (def=1)

9.193 regrestore

cmd: regrestore

Description: Restore register content from a file. This command may be used together with regdump to restore register got changed.

Syntax: regrestore <filename>

Options:

- c PCI Config Reg.
- f<string> filename
- m MII Registers
- r<DEC> Mac Registers (def=1)

9.194 nvsize

cmd: nvsize

Description: Programs the NVRAM and TPM size in Kbyte to NVRAM. If [NVRAM] & [TPM] options are entered, they are programmed to NVRAM. If [NVRAM] & [TPM] options are NOT entered, calculated values are programmed. Use a zero value for [NVRAM] & [TPM] to erase the programmed values.

Syntax: nvsize [NVRAM] [TPM]

Options:

- d Display Present Size Programmed Into NVRAM
- D Specify [NVRAM] & [TPM] size in decimal (dflt. hex)

9.195 dids

cmd: dids

Description: The feature outputs the following information: PCI DID, VID, SDID & SVID; MAC address, Firmware revision, PXE, PXESpd, WOL, ASF, MBA, Bond Rev. This information can be used to verify the setup of a chip after a firmware upgrade.

Syntax: dids

9.196 serial

cmd: serial

Description: Compares the serial number to defaults or the provided values. This PCI capability testing is only applicable to Shasta C stepping (i.e. BCM5752Cx) family.

Syntax: serial <dwordLo> <dwordHi>

9.197 power

cmd: power

Description: Verify the power function of PCI capability. This PCI capability testing is only applicable to Shasta C stepping (i.e. BCM5752Cx) family.

Syntax: power

9.198 readbr

cmd: readbr

Description: Read bridge's configuration space.

Syntax: readbr

9.199 writebr

cmd: writebr

Description: Write bridge's configuration space.

Syntax: writebr

9.200 findbridge

cmd: findbridge

Description: Find all bridges in the system.

Syntax: findbridge

9.201 bridge

cmd: bridge

Description: Switch to specified bridge.

Syntax: bridge

9.202 pere

cmd: pere

Description: Enable parity error response on a bridge. Defaults to current bridge.

Syntax: pere <bridge>

9.203 perd

cmd: perd

Description: Disable parity error response on a bridge. Defaults to current bridge.

Syntax: perd <bridge>

9.204 peclr

cmd: peclr

Description: Clear parity error on bridge. Defaults to current bridge.

Syntax: peclr <bridge>

9.205 pechk

cmd: pechk

Description: Check parity error on bridge. Defaults to current bridge.

Syntax: pechk <bridge>

10 ERROR MESSAGES

```
/* NO_ERROR                0 */ "",
/* ERR_IND_REG_ERR         1 */ "Got 0x%08X @ 0x%08X. Expected 0x%08X",
/* ERR_CHIP_RUNNING       2 */ "Cannot perform task while chip is running",
/* ERR_BAD_NIC            3 */ "Invalid NIC device",
/* ERR_READ_ONLY_CLEAR    4 */ "Read only bit %s got changed after writing zero at
offset 0x%X",

/* ERR_READ_ONLY_SET      5 */ "Read only bit %s got changed after writing one at
offset 0x%X",
/* ERR_READ_WRITE_NOT_CLEAR 6 */ "Read/Write bit %s did not get cleared after writing
zero at offset 0x%X",
/* ERR_READ_WRITE_NOT_SET 7 */ "Read/Write bit %s did not get set after writing one at
offset 0x%X",
/* ERR_BIST               8 */ "BIST failed",
/* ERR_INTERRUPT          9 */ "Could not generate interrupt",

/* CMD_ABORT             10 */ "Aborted by user",
/* ERR_DMA_TXDATA        11 */ "Tx DMA:Got 0x%08X @ 0x%08X. Expected 0x%08X",
/* ERR_DMA_RXDATA        12 */ "Rx DMA:Got 0x%08X @ 0x%08X. Expected 0x%08X",
/* ERR_TXDMA             13 */ "Tx DMA failed",
/* ERR_RXDMA             14 */ "Rx DMA failed",

/* ERR_MEM              15 */ "Data error, got 0x%08X at 0x%08X, expected 0x%08X",
/* ERR_MEM2             16 */ "Second read error, got 0x%08X at 0x%08X, expected
0x%08X",
/* ERR_EEP_WRITE        17 */ "Failed writing NVRAM at 0x%04X",
/* ERR_EEP_READ         18 */ "Failed reading NVRAM at 0x%04X",
/* ERR_EEP_DATA         19 */ "NVRAM data error, got 0x%08X at 0x%04X, expected
0x%08X",

/* ERR_FILE_OPEN        20 */ "Cannot open file %s",
/* ERR_BAD_CPU_CFG      21 */ "Invalid CPU image file %s",
/* ERR_IMAGE_SIZE       22 */ "Invalid CPU image size %d",
/* ERR_MALLOC           23 */ "Cannot allocate memory for size %d",
/* ERR_CPU_RESET        24 */ "Cannot reset %cX CPU",

/* ERR_CPU_NO_RESP     25 */ "%cx CPU does not respond",
/* ERR_CPU_TEST        26 */ "%cx CPU test failed",
/* ERR_DMA_RANGE       27 */ "Invalid Test Address Range\nValid NIC address is
0x%08X-0x%08X and exclude 0x%08X-0x%08X",
/* ERR_DMA_DATA        28 */ "DMA:Got 0x%02X @ 0x%08X. Expected 0x%02X\nSRAM
data=0x%02X @ 0x%08X",
/* ERR_PHY_ID          29 */ "Unsupported PhyId %04X:%04X",

/* ERR_PHY_TOO_MANY_REG 30 */ "Too many registers specified in the file, max is %d",
/* ERR_VPD_WRITE        31 */ "Cannot write to VPD address %04X",
/* ERR_VPD_DATA         32 */ "VPD data error, got %08X @ 0x%04X, expected %08X",
/* ERR_NO_LINK          33 */ "No good link! Check Loopback plug",
/* ERR_DATA_TX          34 */ "Cannot TX Packet!",

/* ERR_DATA_TX_MISSING  35 */ "Requested to Tx %d. Only %d is transmitted",
/* ERR_DATA_RX_MISSING  36 */ "Expected %d packets. Only %d good packet(s) have been
received\n%d unknown packets have been received.\n%d bad packets have been received.",
/* ERR_INVALID_TEST     37 */ "%c%d is an invalid Test",
/* ERR_EEPROM_CHECKSUM  38 */ "NVRAM checksum error",
/* ERR_READING_WOL_PXE  39 */ "Error in reading WOL/PXE",

/* ERR_READING_WOL_PXE  40 */ "Error in writing WOL/PXE",
/* ERR_NO_EXT_SRAM      41 */ "No external memory detected",
/* ERR_DMA_LEN          42 */ "DMA buffer %04X is too large, size must be less than
%04X",
/* ERR_FILE_TOO_BIG     43 */ "File size %d is too big, available space is %d",
/* ERR_INVALID          44 */ "Invalid %s",

/* ERR_WRITE            45 */ "Failed writing 0x%x to 0x%x",
/* CMD_QUIT             46 */ "",
/* ERR_CPU_MEM_ERR      47 */ "%s CPU access error @ %08X, expected %08X but got
%08X",
/* ERR_ENDIF            48 */ "",
/* ERR_ROM_D_DATA       49 */ "ROM disable error, data returned while disabled",
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/* ERR_CHIP_NOT_RUNNING      50 */ "Cannot perform task while chip is not running. (need
driver)",
/* ERR_NO_REG_DEF            51 */ "Cannot open register define file or content is bad",
/* ERR_ASF_RST               52 */ "ASF Reset bit did not self-cleared",
/* ERR_ASF_ATTN_LOC          53 */ "ATTN_LOC %d cannot be mapped to %cX CPU event bit %d",
/* ERR_ASF_RST_VAL           54 */ "%s Register is not cleared to zero after reset",

/* ERR_ASF_PA_TIMER          55 */ "Cannot start poll_ASF Timer",
/* ERR_ASF_PA_CLEAR          56 */ "poll_ASF bit did not get reset after acknowledged",
/* ERR_ADF_NO_STAMP          57 */ "Timestamp Counter is not counting",
/* ERR_ADF_NO_TIMER          58 */ "%s Timer is not working",
/* ERR_ASF_EVENT             59 */ "Cannot clear bit %s in %cX CPU event register",

/* ERR_EEP_FILESIZE          60 */ "Invalid %s file size, expected %d but only can read %d
bytes",
/* ERR_MAGIC_VALUE           61 */ "Invalid magic value in %s, expected %08x but found
%08x",
/* ERR_EEP_FMT               62 */ "Invalid manufacture revision, expected %c but found
%c",
/* ERR_EEP_BOOTVER           63 */ "Invalid Boot Code revision, expected %d.%d but found
%d.%d",
/* ERR_EEP_CANNOT_WRITE      64 */ "Cannot write to NVRAM",

/* ERR_EEP_CANNOT_READ       65 */ "Cannot read from NVRAM",
/* ERR_BAD_CHECKSUM          66 */ "Invalid Checksum",
/* ERR_BAD_MAGIC_VALUE       67 */ "Invalid Magic Value",
/* ERR_MAC                   68 */ "Invalid MAC address, expected %02X-%02X-%02X-%02X-%02X-
%02X",
/* ERR_BUS                   69 */ "Slot error, expected an UUT to be found at location
%02X:%02X:00",

/* ERR_SPEC_MEM              70 */ "Adjacent memory has been corrupted while testing block
0x%08x-0x%08x\nGot 0x%08x @ address 0x%08x. Expected 0x%08x",
/* ERR_NOT_SUPPORT           71 */ "The function is not Supported in this chip",
/* ERR_BAD_CRC               72 */ "Packets received with CRC error",
/* ERR_MII_ERR_BITS_SET      73 */ "MII error bits set: %04x",
/* ERR_INIT_MAC              74 */ "CPU does not initialize MAC address register
correctly",

/* ERR_FW_FILE_FORMAT        75 */ "Invalid firmware file format",
/* ERR_RESET_TX_CPU          76 */ "Resetting TX CPU Failed",
/* ERR_RESET_RX_CPU          77 */ "Resetting RX CPU Failed",
/* ERR_INVALID_MAC_ADDR      78 */ "Invalid MAC address",
/* ERR_MAC_REG               79 */ "Mac address registers are not initialized correctly",

/* ERR_BOOTCHECKSUM          80 */ "NVRAM Bootstrap checksum error",
/* ERR_VPD_READONLY          81 */ "Write operation changed VPD read only data from %08X to
%08X at %04X",
/* ERR_VPD_READ              82 */ "Cannot read data from VPD address %04X",
/* ERR_MEM_READ              83 */ "Memory read and compare error",
/* ERR_MEM_WRITE             84 */ "Memory write error", /* no longer in use */

/* ERR_PXE_PGM               85 */ "PXE Programming Error",
/* ERR_PXE_VFY               86 */ "PXE Verification Error",
/* ERR_EXT_MEM_EXE_TIMEOUT    87 */ "Cannot execute code from external memory, pc=%08X",
/* ERR_EXT_MEM_SIZE           88 */ "External memory size detection error",
/* ERR_RESET_TIMEOUT         89 */ "Reset Time",

/* ERR_MSI_ERR_NOTCLEAR      90 */ "MSI Error bits are not cleared after reset",
/* ERR_MSI_DATA              91 */ "MSI expected %04X, but read %04X at %08X",
/* ERR_MEM_INIT              92 */ "mem pool initialization failed",
/* ERR_MEM_UNINIT            93 */ "mem pool un-initialization failed",
/* ERR_PCI_REGS_WIDTH         94 */ "Read/Write PCI regs width %d affects wider than
expected at offset 0x%X",

/* ERR_LINK_STATUS           95 */ "Link status error in auto-polling mode",
/* ERR_PHY_INTERRUPT         96 */ "Phy interrupt did not happen",
/* ERR_EEP_BIT_BANG          97 */ "EEProm test fails in bit-bang mode at address %X",
/* ERR_ROM_SIZE              98 */ "ROM size error\nExpected %08X but read %08X at\nROM Bar
(0x30) register with %d written to ROM size reg.(0x88)",
/* ERR_ROM_DATA              99 */ "Data Error\nExpected %08X but read %08X at %08X",

/* ERR_ROM_ENABLE            100 */ "Expansion ROM Desired bit is not set after loading
firmware",
/* ERR_GPIO                  101 */ "GPIO%d Error, write=%d, read=%d",
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/* ERR_GPIO5704          102 */ "Dev:%d Expected GPIO 0/1/2 = %d/%d/%d, but read as
%d/%d/%d",
/* ERR_BIST_NOT_DONE      103 */ "Bist test did not complete internally",
/* ERR_BIST_DATA_MISCOMP  104 */ "Bist data miscompared at bit: %d out: %d exp: %d",

/* ERR_CPU_NO_RESPONSE    105 */ "No Response from firmware",
/* ERR_CPU_ERR_CODE       106 */ "%s CPU returned result %d, key = %d",
/* CMD_LOOP               107 */ "",
/* CMD_SKIP               108 */ "",
/* CMD_ELSE,             109 */ "",

/* CMD_ELSEIF,           110 */ "",
/* CMD_BREAK,            111 */ "",
/* CMD_ENDWHILE,         112 */ "",
/* ERR_BYTE,             113 */ "Byte access error: expected %02x at %08x but got %02x",
/* ERR_WORD,             114 */ "Wrd acc err: exp %04x at %08x but got %04x (need
flshdg5x.bin v2.3 or newer)",

/* ERR_NO_LINK_DOWN      115 */ "No link down found",
/* ERR_MISMATCHED_DEVICEID 116 */ "bootcode Image file belongs to %d family, does not
match with board %d",
/* ERR_INVALID_DATA_SIZE 117 */ "Invalid data size",
/* ERR_MAC_ADDR_ENDED     118 */ "Runs out of Mac Address",
/* ERR_ILLEGAL_MAC_ADDR   119 */ "Illegal Mac Address",

/* ERR_BIST_DATA_INVALID 120 */ "Invalid bist data from buffer at %d",
/* ERR_INVALID_BOND_ID    121 */ "Invalid bond id",
/* ERR_BAD_CPU_RESET      122 */ "CPU reset failed, register 5034 is 0x%x",
/* ERR_INCORRECT_VERSION  123 */ "Incorrect version",
/* ERR_MISMATCH_CFG_VERSION 124 */ "Mismatched CFG and FW Image version",
/* ERR_NOT_SUPP_CFG_BW    125 */ "Current ASF_T_VERSION is not backward compatible",
/* ERR_POST_1G_LB         126 */ "1G Tx/Rx Lines Have A Short/Open",
/* ERR_DRIVER             127 */ "Driver %d.%d.%d or later is required to run this
function",
/* ERR_TXDMA_OVERFLOW     128 */ "TxDMA Overflow",
/* ERR_RXDMA_OVERFLOW     129 */ "RxDMA Overflow",
/* ERR_DRIVER_BAD_STATUS  130 */ "Driver returned error status=%d",
/* ERR_INVALID_HANDLE     131 */ "Invalid Handle",
/* ERR_SOCKET             132 */ "Socket open error%d %s",
/* ERR_SIOCGIFINDEX       133 */ "ioctl(): SIOCGIFINDEX failed",
/* ERR_BIND               134 */ "bind() failed: %s",
/* ERR_SETSOCKOPT          135 */ "setsockopt() failed:%d %s",
/* ERR_FCNTL              136 */ "fcntl() failed:%d %s",
/* ERR_SEND               137 */ "send() failed (cnt=%d): %d %s",
/* ERR_RECEIVE            138 */ "recvfrom() failed (cnt=%d): %d %s",
/* ERR_FALSE_CARRIER     139 */ "Error! False Carrier Detected During The Test",
/* ERR_INV_OPT            140 */ "Invalid Options",
/* ERR_INV_DEV            141 */ "Found Rv = %s, Expected Rv = %s due to -ckdev value",
/* ERR_IRQ                142 */ "Invalid IRQ %d",
/* ERR_TIMEOUT            143 */ "Timeout",
/* ERR_PKT_DATA           144 */ "Packet data error at offset %d, expected %02X but
received %02X",
/* ERR_MAC_ZERO           145 */ "Zero Mac Address in Mac Register",
/* ERR_MAC_MIS_REG        146 */ "Mac Address MisMatch: Got %02X-%02X-%02X-%02X-
%02X.",
/* ERR_CPU_ACC            147 */ "%cx CPU failed on %s bit access to address %08X",
/* ERR_CPU_MEM            148 */ "%cx CPU failed on memory pattern %08X at address %08X",
/* ERR_CPU_INSTR          149 */ "%cx CPU Instruction test failed",
/* ERR_BUS_LINK           150 */ "PCI-E Bus Link Error",
/* ERR_ASF_FILE_VER       151 */ "ASF File versions Error",
/* ERR_ASF_VS_DEV         152 */ "ASF VS Device Error",
/* ERR_MISMATCHED_DEVICEID_1 153 */ "bootcode Image file belongs to unknown family, does
not match with board %d",
/* ERR_MISMATCHED_DEVICEID_2 154 */ "bootcode Image file belongs to %d family, does not
match with unknown board",
/* ERR_CPU_FETCH          155 */ "CPU Fetch Test Error: Breakpoint reads %x",
/* ERR_UMPLB             156 */ "UMP loopback failed, Total Good packet %d",
/* ERR_UMPCTRL           157 */ "Error: UMPCtrl 0x5F0 = %x",
/* ERR_REG_TABLE          158 */ "Error: Unable to create Reg Table",
/* ERR_FW_IMAGE_SIZE      159 */ "Error: Firmware image size (%d) larger than NVRAM
size (%d)",
/* ERR_MISS_PXE           160 */ "Error: %s firmware cannot be found in %s",
/* ERR_MISS_ASF           161 */ "Error: %s firmware cannot be found in %s",
/* ERR_NVRAM_DIR          162 */ "Error: NVRAM Directory",
/* ERR_MISS_UMP           163 */ "Error: %s firmware cannot be found in %s",

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/* ERR_CPU_MEM2          164 */ "%s CPU memory error @ %08X, expected %08X but got
%08X",
/* ERR_SERIAL1          165 */ "PCIE Serial Device Number Capability Not Found.",
/* ERR_SERIAL2          166 */ "PCIE Serial Device Number Match Failure.",
/* ERR_POWER1           167 */ "PCIE Power Budget Capability Not Found.",
/* ERR_POWER2           168 */ "PCIE Power Budget Error (ad=%d, saw=%x, exp=%x).",
/* ERR_UMP_VS_DEV        169 */ "UMP VS Device Error",
/* ERR_HM_BR_LANES       170 */ "HM Bridge Lanes Error: %d PCI-E lanes are actually
linked and running, expected %d.",
/* ERR_BRIDGE           171 */ "Invalid bridge.",
/* ERR_NO_LINK10        172 */ "No good link at 10 Mbits/s! Check Loopback plug",
/* ERR_NO_LINK100       173 */ "No good link at 100 Mbits/s! Check Loopback plug",
/* ERR_NO_LINK1000      174 */ "No good link at 1000 Mbits/s! Check Loopback plug",
/* ERR_DMA_SHASTA        175 */ "\nFailed! Saw=%x @ %x, Exp=%x from %x\n",
/* ERR_SECFG_CONT        176 */ "SECFG Config Error. Line %d",
/* ERR_SECFG_INVALID     177 */ "Invalid Argument in SECFG Config File at Line %d",
/* ERR_NV_SELFBOOT       178 */ "NVRAM is SELFBOOT",
/* ERR_PART_NUM          179 */ "Error Part Number Check Failed"
```