

## STEXEUTIL Command Set

### Command List

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- 49. NVMChecksum
- 50. getFWVersion
- 51. getSFPMModule
- 52. list - list all attached interfaces
- 53. help
- 54. quit

## Command Descriptions

1. hello
  - no parameters for this command
2. getVersion
  - No parameters
  - Returns the version number of the driver
3. getState
  - No parameters
  - Returns ring sizes and status

### 4. SetIPV4ChecksumEnable

Number	Parameter	Default	Description
1	ENABLE	1	Enables or disables IPv4 Checksum Offload. A value of 1 disables the offload. A value of 2 enables the offload

- If IPV4 Checksum Offload is enabled, the user must also enable TCP IPV4 Checksum Offload, and UDP Checksum Offload

### 5. GetIPV4ChecksumEnable

- No parameters
- Returns the current setting

### 6. SetTSOipv6Enable

Number	Parameter	Default	Description
1	ENABLE	1	Enables or disables segmentation offload (TSO/LSO) for IPV6. A value of 1 disables the offload. A value of 2 enables the offload

### 7. GetTSOipv6Enable

- No parameters
- Returns the current setting

### 8. SetTSOipv4Enable

Number	Parameter	Default	Description
1	ENABLE	2	Enables or disables segmentation offload (TSO/LSO) for IPV4. A value of 1 disables the offload. A value of 2 enables the offload .

### 9. GetTSOipv4Enable

- No parameters
- Returns the current setting

#### 10. SetTCPipV6ChecksumEnable

Number	Parameter	Default	Description
1	ENABLE	2	Enables or disables TCP Checksum offload for IPV6. A value of 1 disables the offload. A value of 2 enables the offload.

#### 11. GetTCPipV6ChecksumEnable

- No Parameters
- Returns the current setting

#### 12. SetTCPipV4ChecksumEnable

Number	Parameter	Default	Description
1	ENABLE	2	Enables or disables TCP Checksum offload for IPV4. A value of 1 disables the offload. A value of 2 enables the offload

#### 13. GetTCPipV4ChecksumEnable

- No Parameters
- Returns the current setting

#### 14. SetUDPChecksumEnable

Number	Parameter	Default	Description
1	ENABLE	2	Enables or disables UDP Checksum offload for both IPV4 and IPV6. A value of 1 disables the offload. A value of 2 enables the offload

#### 15. GetUDPChecksumEnable

- No parameters
- Returns the current setting

#### 16. SetVLANEnable

Number	Parameter	Default	Description
1	ENABLE	2	Enables or disables VLAN. A value of 1 disables the offload. A value of 2 enables the offload.

#### 17. GetVLANEnable

- No parameters
- Returns the current setting

#### 18. setTimerMsecs

Number	Parameter	Default	Description
1	SIZE	1000	Milliseconds before timer call back. Range: 50-10000

#### 19. getTimerMsecs

- No parameters
- Returns milliseconds for call back loop

#### 20. setTxRingSize

Number	Parameter	Default	Description
1	SIZE	1024	Buffer size in bytes Range: 16-65536

#### 21. getTxRingSize

- No parameters
- Returns the present size of each transmit ring buffer

#### 22. setRxRingCount

Number	Parameter	Default	Description
1	Count	1	Number of rings for Receive Side Scaling. Range 1-14
2	-override	-	Used to override the protection against overrunning the available mbuf pool

- Note that the system will request enough MBUF's to fill each ring to the size specified by setRxRingSize. The number of MBufs available is dependent on the number of NMBClusters specified in the SYSCTL. Allocating more MBufs than available for the system will make the system unstable and subject to Panic.
- The software will not allow the user to set a ring count that would exceed the available MBufs and provides some margin. This feature can be overridden by using the -override option.
- If more rings are needed than allowed due to NMBClusters, this parameter may be set in the SYSCTL.CONF, but will require a reboot for the change to take effect.

#### 23. getRxRingCount

- No parameters
- Returns the present count of each receive ring buffer

#### 24. setRxRingSize

Number	Parameter	Default	Description
1	SIZE	1024	Buffer size in bytes Range: 16-65536

#### 25. getRxRingSize

- No parameters
- Returns the present size of each receive ring buffer

#### 26. setTxIntrThrottle

Number	Parameter	Default	Description
1	DELAY	16000	Quarter microsecond intervals Range: 100-80000

- Minimum interrupt interval specified is 2.048  $\mu$ s units at 1 GbE and 10 GbE link. At 100 Mb/s link speed the interval is specified in 20.48  $\mu$ s units.
- Interrupt moderation delay

#### 27. getTxIntrThrottle

- No parameters
- Reports the present setting for the transmit interrupt moderation delay

#### 28. setRxIntrThrottle

Number	Parameter	Default	Description
1	DELAY	8000	Quarter microsecond intervals Range: 100-80000

- Minimum interrupt interval specified is 2.048  $\mu$ s units at 1 GbE and 10 GbE link. At 100 Mb/s link speed the interval is specified in 20.48  $\mu$ s units.
- Interrupt moderation delay

#### 29. getRxIntrThrottle

- No parameters
- Reports the present setting for the receive interrupt moderation delay

#### 30. setOtherIntrThrottle

Number	Parameter	Default	Description
1	DELAY	10000	Quarter microsecond intervals Range: 100-80000

- Interrupt moderation for interrupts other than transmit or receive

#### 31. getOtherIntrThrottle

- No parameters
- Reports the present setting for other interrupts

#### 32. setTxGapTimer

Number	Parameter	Default	Description
1	DELAY	3	Pacing Speed. See x540 Datasheet section 3.6.6 and table 3-28 Range: 0-255

#### 33. getTxGapTimer

- No parameters
- Reports the current setting for the IPG control timer

#### 34. setTraceMask

Number	Parameter	Default	Description
1	MASK	1	Sets the debug trace mask Range: 1-65536

- Setting 1 reports all errors. Setting 3 reports errors and initialization messages

#### 35. getTraceMask

- No parameters
- Reports the current mask

#### 36. getProps

- No parameters
- Reports several key properties

#### 37. getStats

Number	Parameter	Default	Description
1	-clear	optional	Clears all stats at the completion of the command
2	-printall	optional	Prints all the transmit/receive stats to the terminal

#### 38. getRegs

- No parameters
- Returns the values of several important registers

#### 39. readMacRgtrs

Number	Parameter	Default	Description
1	start address	none	Starting register address to read
2	end address	optional	Ending register address. Default is one 32 bit register at the starting address

#### 40. writeMacRgtr

Number	Parameter	Default	Description
1	start address	none	Starting register address to write
2-n	data	optional	Data to be written. Each data entry is a 32 bit hexadecimal number

#### 41. dumpRxRing

Number	Parameter	Default	Description
1	start descriptor	optional	Starting Descriptor within the ring to start dump. If not Starting Descriptor is provided, the entire Receive Ring will be provided.
2	end descriptor	optional	Ending Descriptor within the ring to terminate the dump. If no End Descriptor is provided, only the Starting Descriptor is provided.

- Note addresses reference 64 bit unsigned integers

#### 42. dumpTxRing

Number	Parameter	Default	Description
1	start descriptor	optional	Starting Descriptor within the ring to start dump. If not Starting Descriptor is provided, the entire Transmit Ring will be provided.
2	end descriptor	optional	Ending Descriptor within the ring to terminate the dump. If no End Descriptor is provided, only the Starting Descriptor is provided.

- Note addresses reference 64 bit unsigned integers

#### 43. setTso

Number	Parameter	Default	Description
1	SIZE	55296	Buffer size in bytes Range: 1500-65536

- Problems have been recorded with the 82599 chip and values > 55296

#### 44. getTso

- No parameters
- Reports the current TSO size

#### 45. dumpFtrc

- No parameters
- Reports the fast trace buffer

#### 46. saveConfig

- No parameters
- Saves the present configuration to the plist file loaded each time the driver is initialized
- Each port is reset with a Down and then Up. Consecutive calls to saveConfig, will pause to allow the previous reset to complete

#### 47. readNVM

Number	Parameter	Default	Description
1	start address	none	Starting NVM address to read. Addresses are to 16 bit words.
2	length	optional	How many 16 bit words are to be read. By default one 16 bit word is read

#### 48. writeNVM

Number	Parameter	Default	Description
1	start address	none	Starting NVM address to read. Addresses are to 16 bit words.
2-n	data	optional	Data to be written. Each data entry is a 16 bit hexadecimal number

- successive data will be written to sequential word addresses

#### 49. NVMChecksum

- No parameters
- The command updates the EEPROM checksum based on the values presently found in the EEPROM.
- No data is returned

#### 50. getFWVersion

- No parameters
- Returns the PCI version and the flash code version

#### 51.getSFPModule

- No parameters
- Returns the type of SFP module installed on the port from the following list

da_cu
sr
lr
da_cu_core0
da_cu_core1
srlr_core0
srlr_core1
da_act_lmt_core0
da_act_lmt_core1
1g_cu_core0
1g_cu_core1
1g_sx_core0
1g_sx_core1
1g_lx_core0
1g_lx_core1
er_core0
er_core1
not_present
unknown

#### 52.list

- No parameters
- List all attached interfaces along with the respective MAC address

#### 53.help

- No parameters
- provides a list of available commands

#### 54.quit

- No parameters
- Exits sanlinkutil (has no effect for command line operation)

## Examples

### getProps

The expected output:

```
timerMsecs=1000
txRingSize=1024
rxRingSize=512
traceMask=0x00000001
```

### getStats

The expected output:

```
nic stats:
CRC Errors                      0x00000000 (0)
Illegal Byte Errors            0x00000000 (0)
Error Bytes                    0x00000000 (0)
MAC Short Packets Discarded    0x00000000 (0)
Missed Packets                 0 0x00000000 (0)
Missed Packets                 1 0x00000000 (0)
Missed Packets                 2 0x00000000 (0)
Missed Packets                 3 0x00000000 (0)
Missed Packets                 4 0x00000000 (0)
Missed Packets                 5 0x00000000 (0)
Missed Packets                 6 0x00000000 (0)
Missed Packets                 7 0x00000000 (0)
MAC Local Faults               0x00000003 (3)
MAC Remote Faults              0x00000002 (2)
Receive Length Errors          0x00000000 (0)
Link XON Transmitted           0x00000000 (0)
Link XON Received              0x00000000 (0)
Link XOFF Transmitted          0x00000000 (0)
Link XOFF Received             0x00000000 (0)
Priority XON Transmitted        0 0x00000000 (0)
Priority XON Transmitted        1 0x00000000 (0)
Priority XON Transmitted        2 0x00000000 (0)
Priority XON Transmitted        3 0x00000000 (0)
Priority XON Transmitted        4 0x00000000 (0)
Priority XON Transmitted        5 0x00000000 (0)
Priority XON Transmitted        6 0x00000000 (0)
Priority XON Transmitted        7 0x00000000 (0)
Priority XON Received           0 0x00000000 (0)
Priority XON Received           1 0x00000000 (0)
Priority XON Received           2 0x00000000 (0)
Priority XON Received           3 0x00000000 (0)
Priority XON Received           4 0x00000000 (0)
Priority XON Received           5 0x00000000 (0)
Priority XON Received           6 0x00000000 (0)
Priority XON Received           7 0x00000000 (0)
Priority XOFF Transmitted        0 0x00000000 (0)
Priority XOFF Transmitted        1 0x00000000 (0)
Priority XOFF Transmitted        2 0x00000000 (0)
Priority XOFF Transmitted        3 0x00000000 (0)
Priority XOFF Transmitted        4 0x00000000 (0)
Priority XOFF Transmitted        5 0x00000000 (0)
```

Priority XOFF Transmitted	6 0x00000000 (0)
Priority XOFF Transmitted	7 0x00000000 (0)
Priority XOFF Received	0 0x00000000 (0)
Priority XOFF Received	1 0x00000000 (0)
Priority XOFF Received	2 0x00000000 (0)
Priority XOFF Received	3 0x00000000 (0)
Priority XOFF Received	4 0x00000000 (0)
Priority XOFF Received	5 0x00000000 (0)
Priority XOFF Received	6 0x00000000 (0)
Priority XOFF Received	7 0x00000000 (0)
Packets Received (64 Bytes)	0x0000000b (11)
Packets Received (65-127 Bytes)	0x00000005 (5)
Packets Received (128-255 Bytes)	0x00000002 (2)
Packets Received (256-511 Bytes)	0x00000006 (6)
Packets Received (512-1023 Bytes)	0x00000000 (0)
Packets Received (1024+ Bytes)	0x00000008 (8)
Good Packets Received	0x00000020 (32)
Broadcast Packets Received	0x0000000b (11)
Multicast Packets Received	0x00000015 (21)
Good Packets Transmitted	0x00000179 (377)
Good Octets Received	0x00003692 (13970)
Good Octets Transmitted	0x000249dd (149981)
Receive No Buffers	0 0x00000000 (0)
Receive No Buffers	1 0x00000000 (0)
Receive No Buffers	2 0x00000000 (0)
Receive No Buffers	3 0x00000000 (0)
Receive No Buffers	4 0x00000000 (0)
Receive No Buffers	5 0x00000000 (0)
Receive No Buffers	6 0x00000000 (0)
Receive No Buffers	7 0x00000000 (0)
Received Undersize	0x00000000 (0)
Received Fragment	0x00000000 (0)
Received Oversize	0x00000000 (0)
Received Jabber	0x00000000 (0)
Management Packets Received	0x00000000 (0)
Management Packets Dropped	0x00000000 (0)
Management Packets Transmitted	0x00000000 (0)
Total Octets Received	0x000043ae (17326)
Total Packets Received	0x0000002b (43)
Total Packets Transmitted	0x00000179 (377)
Packets Transmitted (64 Bytes)	0x00000012 (18)
Packets Transmitted (65-127 Bytes)	0x0000005e (94)
Packets Transmitted (128-255 Bytes)	0x00000069 (105)
Packets Transmitted (256-511 Bytes)	0x00000048 (72)
Packets Transmitted (512-1023 Bytes)	0x00000006 (6)
Packets Transmitted (1024+ Bytes)	0x00000052 (82)
Multicast Packets Transmitted	0x00000102 (258)
Broadcast Packets Transmitted	0x00000077 (119)
XSUM Errors	0x00000000 (0)
FC CRC Error Count	0x00000000 (0)
FCoE Rx Packets Dropped Count	0x00000000 (0)
FC Last Error Count	0x00000000 (0)
FCoE Packets Received Count	0x00000000 (0)
FCoE DWord Received Count	0x00000000 (0)
FCoE Packets Transmitted Count	0x00000000 (0)

FCoE DWord Transmitted Count	0x00000000 (0)
driver stats:	
intr	0x0000010f (271)
linkStateChange	0x00000002 (2)
Management	0x00000000 (0)
PackBufError	0x00000000 (0)
DescErr	0x00000000 (0)
TCPTimer	0x00000000 (0)
Other	0x00000000 (0)
rxUpdate	0x00000018 (24)
txQueueSync	0x00000000 (0)
txUpdate	0x000000f5 (245)
noMbufs	0x00000000 (0)
mbuf_pullupFailed	0x00000000 (0)
mbuf_pullup	0x00000000 (0)
maxRxRestock	0x00000020 (32)
spuriousInterrupts	0x00000000 (0)
maxTxCount	0x00000007 (7)
rx_udp_tcp_calculated	0x00000000 (0)
rx_l4_calculated	0x00000000 (0)
rx_ipv4_calculated	0x00000000 (0)
rx_udp_valid	0x00000000 (0)
txQueueStall	0x00000000 (0)
spuriousInterrupts	0x00000000 (0)
maxTxRingUsed	0x00000004 (4)
linkStatusChange	0x00000002 (2)
timeout	0x0000058c (1420)
txBuffersHandled	0x000003c2 (962)
TSOSetup	0x00000000 (0)
NormalContextSetup	0x00000160 (352)
outputFinalizeFree	0x000000f5 (245)
outputCompletion	0x00000179 (377)
rxZeroLen	0x00000000 (0)
largestSegCnt	0x00000007 (7)
txpkt_coalesce	0x00000000 (0)
Ring:00 rxringintr[i]	0x00000000 (0)
Ring:00 rxringpkttotal[i]	0x00000020 (32)
Ring:00 rxringpktsuccess[i]	0x00000020 (32)
Ring:01 rxringintr[i]	0x00000000 (0)
Ring:01 rxringpkttotal[i]	0x00000000 (0)
Ring:01 rxringpktsuccess[i]	0x00000000 (0)
Ring:02 rxringintr[i]	0x00000000 (0)
Ring:02 rxringpkttotal[i]	0x00000000 (0)
Ring:02 rxringpktsuccess[i]	0x00000000 (0)
Ring:03 rxringintr[i]	0x00000000 (0)
Ring:03 rxringpkttotal[i]	0x00000000 (0)
Ring:03 rxringpktsuccess[i]	0x00000000 (0)
Ring:04 rxringintr[i]	0x00000000 (0)
Ring:04 rxringpkttotal[i]	0x00000000 (0)
Ring:04 rxringpktsuccess[i]	0x00000000 (0)
Ring:05 rxringintr[i]	0x00000000 (0)
Ring:05 rxringpkttotal[i]	0x00000000 (0)
Ring:05 rxringpktsuccess[i]	0x00000000 (0)
Ring:06 rxringintr[i]	0x00000000 (0)

Ring:06	rxringpkttotal[i]	0x00000000	(0)
Ring:06	rxringpktsuccess[i]	0x00000000	(0)
Ring:07	rxringintr[i]	0x00000000	(0)
Ring:07	rxringpkttotal[i]	0x00000000	(0)
Ring:07	rxringpktsuccess[i]	0x00000000	(0)
Ring:08	rxringintr[i]	0x00000000	(0)
Ring:08	rxringpkttotal[i]	0x00000000	(0)
Ring:08	rxringpktsuccess[i]	0x00000000	(0)
Ring:09	rxringintr[i]	0x00000000	(0)
Ring:09	rxringpkttotal[i]	0x00000000	(0)
Ring:09	rxringpktsuccess[i]	0x00000000	(0)
Ring:10	rxringintr[i]	0x00000000	(0)
Ring:10	rxringpkttotal[i]	0x00000000	(0)
Ring:10	rxringpktsuccess[i]	0x00000000	(0)
Ring:11	rxringintr[i]	0x00000000	(0)
Ring:11	rxringpkttotal[i]	0x00000000	(0)
Ring:11	rxringpktsuccess[i]	0x00000000	(0)
Ring:12	rxringintr[i]	0x00000000	(0)
Ring:12	rxringpkttotal[i]	0x00000000	(0)
Ring:12	rxringpktsuccess[i]	0x00000000	(0)
Ring:13	rxringintr[i]	0x00000000	(0)
Ring:13	rxringpkttotal[i]	0x00000000	(0)
Ring:13	rxringpktsuccess[i]	0x00000000	(0)

## getRegs

The expected output:

MAC Registers:

```
CTRL0 [0x0000]: 0x00000000
CTRL1 [0x0004]: 0x00000000
STATUS [0x0008]: 0x00080000
CTRL_EXT [0x0018]: 0x00010000
LEDCTL [0x0200]: 0x45044140
TDBAL [0x6000]: 0x00035000
TDBAH [0x6004]: 0x00000001
TDLEN [0x6008]: 0x00004000
TDH [0x6010]: 0x00000001
TDT [0x6018]: 0x00000001
TXDCTL [0x6028]: 0x02080000
TDWBAL [0x6038]: 0x00000000
TDWBAH [0x603c]: 0x00000000
RDBAL [0x1000]: 0x00033000
RDBAH [0x1004]: 0x00000001
RDLEN [0x1008]: 0x00002000
RDH [0x1010]: 0x00000000
RDT [0x1018]: 0x000001f8
RXDCTL [0x1028]: 0x42000000
SRRCTL [0x2100]: 0x02000204
RXPBSIZE [0x3c00]: 0x00060000
RAL[0] [0x5400]: 0x56781234
RAH[0] [0x5404]: 0x80000000
EITR[0] [0x0820]: 0x000000f0
EITR[1] [0x0824]: 0x000001e8
EITR[2] [0x0828]: 0x00000180
EITR[3] [0x082c]: 0x00000000
EITR[4] [0x0830]: 0x00000000
EITR[5] [0x0834]: 0x00000000
EITR[6] [0x0838]: 0x00000000
IVAR[0] [0x0900]: 0x80818081
IVAR[1] [0x0904]: 0x80818081
IVAR[2] [0x0908]: 0x80818081
IVAR[3] [0x090c]: 0x80818081
IVAR[4] [0x0910]: 0x80818081
IVAR[5] [0x0914]: 0x80818081
IVAR[6] [0x0918]: 0x80818081
IVAR[7] [0x091c]: 0x80818081
IVAR[8] [0x0920]: 0x80818081
IVAR[9] [0x0924]: 0x80818081
IVAR[10] [0x0928]: 0x80818081
IVAR[11] [0x092c]: 0x80818081
IVAR[12] [0x0930]: 0x80818081
IVAR[13] [0x0934]: 0x80818081
IVAR[14] [0x0938]: 0x80818081
```

```

IVAR[15] [0x093c]: 0x80818081
IVAR[16] [0x0940]: 0x80818081
IVAR[17] [0x0944]: 0x80818081
IVAR[18] [0x0948]: 0x80818081
IVAR[19] [0x094c]: 0x80818081
IVAR[20] [0x0950]: 0x80818081
IVAR[21] [0x0954]: 0x80818081
IVAR[22] [0x0958]: 0x80818081
IVAR[23] [0x095c]: 0x80818081
IVAR[24] [0x0960]: 0x80818081
    GPIE [0x0898]: 0x000000800
    HLREG0 [0x4240]: 0x08012fff
    HLREG1 [0x4244]: 0x000000181
    MSCA [0x425c]: 0x04070010
    MSRWD [0x4260]: 0x9d019d01
    MHADD [0x4268]: 0x233a0000
    PCSS1 [0x4288]: 0xdeadbeaf
    PCSS2 [0x428c]: 0xdeadbeaf
    XPCSS [0x4290]: 0xdeadbeaf
    MACS [0x429c]: 0xdeadbeaf
    AUTOC [0x42a0]: 0xdeadbeaf
    LINKS [0x42a4]: 0x30000008
    AUTOC2 [0x42a8]: 0xdeadbeaf
    ANLP1 [0x42b0]: 0xdeadbeaf
    ANLP2 [0x42b4]: 0xdeadbeaf
    ANLNP1 [0x42d4]: 0xdeadbeaf
    ANLNP2 [0x42d8]: 0xdeadbeaf
    CORECTL [0x4800]: 0xdeadbeef
PCIEANACTL [0x11040]: 0x00000000
    FACTPS [0x10150]: 0x000000186

```

### getRxRingCount

The expected output is:

Port ID	Tx Rings	Rx Rings	Total
en6	2	1	3
en5	2	1	3

Rings Avail: 22   Rings Assigned: 6