Cyclone Microsystems

PCIe Chassis Monitor

User's Manual

P/N CM026

Revision 0.2

23-May-12

Overview

The Cyclone PCIe Chassis Monitor system is comprised of 2 parts: an intelligent monitor board and a set of I2C-based monitor devices which are installed as part of the PCIe expansion board hardward design. Using the I2C devices, the monitor board can perform the following:

- monitor the temperature from 5 different locations on the expansion board
- monitor the fan speed of the 4 system fans
- monitor the state of the +12V, +5V, +3.3V, +2.5V, and +1V
- monitor the state of the PCIe cable present signal
- detect the PCB revision of the expansion board
- monitor the state of the PWR_OK signal from the ATX power supply interface

Data about the monitored system is available in 2 different, mutually exclusive, formats. When configured in HTTP mode, the monitor board runs as a web server, making the data available through a CGI enabled web page. When configured in SNMP mode, the monitor board's Management Information Base (MIB) can be queried from an SNMP management station and traps about events can be sent to the SNMP management station(s).

Prior to being used to monitor an active system, the software needs to be configured by the user. Items which require configuration are: Operating Mode (HTTP or SNMP), the static IPv4 address of the monitor board and, for SNMP mode, one or more IPv4 addresses to which SNMP traps are to be sent.

Temperature Sensor Locations

The following table shows the corresponding physical locations of temperature sensors numbers 1 through 4 as they relate to PCIe slots on the board:

Expansion Board	Temperature Sensor #1	Temperature Sensor #2	Temperature Sensor #3	Temperature Sensor #4
PCIe-428	Near J2	Near J6	Near J12	Near J18
PCIe-429	Near J2	Near J6	Near J12	Near J18
PCIe-460	Near J2	Near J8	Near J12	Near J18

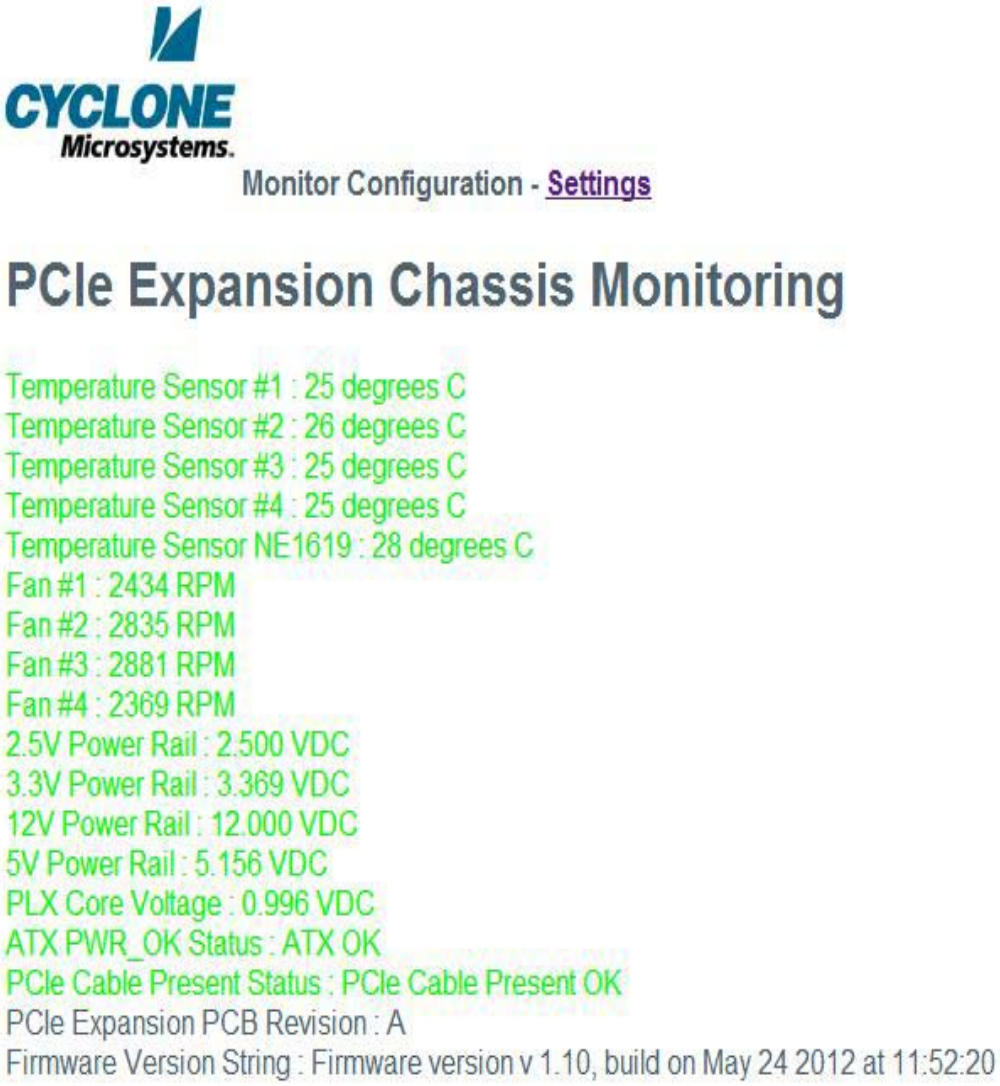
Configuring Monitor Operation using the Web Page

In its default configuration, the monitor board boots with the following parameters:

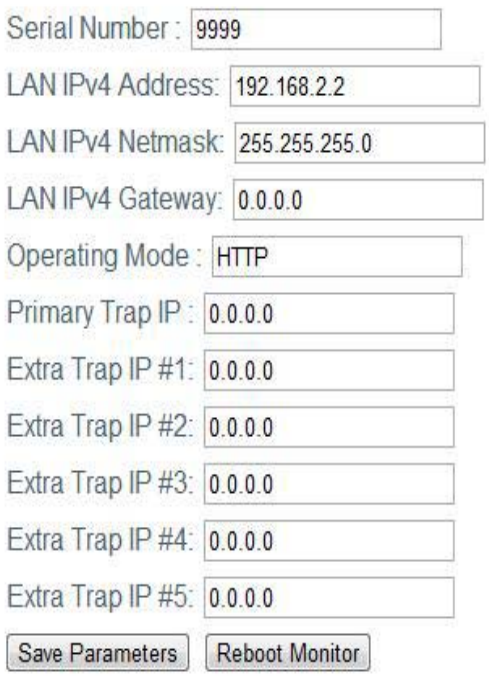
Serial Number	9999
LAN IPv4 Address	192.168.2.2
LAN IPv4 Netmask	255.255.255.0
LAN IPv4 Gateway	0.0.0.0 (not configured)
Operating Mode	HTTP

At any time, the monitor can be returned to its default state with the above parameters by holding the parameter reset switch in continuously for at least two seconds. When the firmware recognizes that the switch has been held in, the default parameters are restored and the monitor board is reset.

Point your browser window to 192.168.2.2 (if the monitor board is configured with default parameters) or to the previously assigned IP address. Note that if the default IP address is not on the same network as the machine that you are running the web browser from, you may need to temporarily re-configure your machine's IP address to allow the monitor web page to be accessible. The machine will need an address on the same subnet. For example, setting your machine's IPv4 address to 192.168.2.3 with a netmask of 255.255.255.0 would be sufficient to allow direct communication with the monitor board when in its default state.



Click on the “Settings” Link near the top of the page to access the boot parameters of the monitor board.



The Serial Number parameter should match the number on the sticker from the monitor board's I/O panel. Enter valid information for LAN IPv4 Address, Netmask, and Gateway. Select the proper operating mode, HTTP or SNMP. If the monitor board is being configured for SNMP operation and the use of traps is desired, enter valid information for the Primary Trap IP and optionally the Extra Trap IP Addresses. If the Primary Trap IP Address is configured as 0.0.0.0, SNMP Trap support will be disabled and any configured Extra Trap Addresses will be ignored. Note that entering a value of 0.0.0.0 for any of the Extra Trap Addresses will cause that entry to be ignored by the SNMP network configuration on the monitor board. When configuration is complete, click the button titled "Save Parameters". When the save operation completes, the new parameters will reload. After the reload operation, clicking the button labeled "Reboot Monitor" will restart the board using the new parameters. Any web pages will need to be reloaded and/or pointed at the new IP address. Depending on the machine

and OS, there may be a delay in the pages reloading as the new parameters may affect the MAC address and ARP cache of the machine.

Configuring for HTTP Operation using the Serial Port

The boot time user interface is used to configure the monitor card for HTTP operation. Please see the following dialog. Please note when entering the parameters that the serial number can be found on a sticker on the monitor board I/O panel should it get accidentally overwritten from its factory setting:

```
************************************************************
**         Cyclone PCIe Chassis Sensor Configuration       **
** Firmware Version                              v 1.10      **
** Built On                   May 24 2012 at 11:52:20       **
************************************************************

SERIAL NUMBER               : 9999
OPERATING MODE              : HTTP
NETWORK INTERFACE PARAMETERS:
  LAN0 IP address             192.168.2.2
  LAN0 Subnet mask            255.255.255.0
  LAN0 Gateway                0.0.0.0

To change any of this, press any key within 5 seconds.

(M)odify any of this or (C)ontinue? [M] m

For each of the following questions, you can press <Return> to select the
value shown in braces, or you can enter a new value.

Serial number? [9999] 41

Operating mode? [1:HTTP] (1=HTTP, 2=SNMP) 1


LAN0 IP address? [192.168.2.2] 10.0.126.2


LAN0 subnet mask? [255.255.255.0] 255.255.0.0


LAN0 Gateway? [0.0.0.0]



************************************************************
```

```
**         Cyclone PCIe Chassis Sensor Configuration       **
** Firmware Version                              v 1.10       **
** Built On                    May 24 2012 at 11:52:20       **
************************************************************

SERIAL NUMBER               : 41
OPERATING MODE              : HTTP
NETWORK INTERFACE PARAMETERS:
  LAN0 IP address             10.0.126.2
  LAN0 Subnet mask            255.255.0.0
  LAN0 Gateway                0.0.0.0

(M)odify any of this or (C)ontinue? [M] c

Storing new configuration parameters ... OK
Reading boot parameters from Flash...
LAN IP: 10.0.126.2
LAN Subnet Mask: 255.255.0.0
LAN Gateway: 0.0.0.0
Operating Mode: HTTP
Primary Trap IP: 0.0.0.0
Extra Trap IP #1: 0.0.0.0
Extra Trap IP #2: 0.0.0.0
Extra Trap IP #3: 0.0.0.0
Extra Trap IP #4: 0.0.0.0
Extra Trap IP #5: 0.0.0.0
Checking IP parameters...
Sensor serial_number = 41
MAC addres = [ 0x00:0x80:0x4d:0x1a:0x00:0x29 ]
Set master mode ...
I2C0 bus speed = 357142
I2C0 bus speed exceeds maximum. Reducing bus speed.
I2C0 reduced bus speed = 89285
Initializing AMC6821 Unit 0...
```

HTTP Web Server Overview

When configured for HTTP mode, the user's web browser may be pointed to the monitor card's previously configured IPv4 address. In the previous configuration example, the IPv4 address would be 10.0.126.2. The following web page will then be displayed. When a sensor reading is within design limits, the color of the reading will be displayed as Green. When a sensor reading is outside of design limits, the color of the reading will be displayed as Red.

Status Page for System Within Design Limits

CYCLONE Microsystems.

Monitor Configuration - Settings

PCIe Expansion Chassis Monitoring

Temperature Sensor #1 : 25 degrees C
Temperature Sensor #2 : 26 degrees C
Temperature Sensor #3 : 25 degrees C
Temperature Sensor #4 : 25 degrees C
Temperature Sensor NE1619 : 28 degrees C
Fan #1 : 2434 RPM
Fan #2 : 2835 RPM
Fan #3 : 2881 RPM
Fan #4 : 2369 RPM
2.5V Power Rail : 2.500 VDC
3.3V Power Rail : 3.369 VDC
12V Power Rail : 12.000 VDC
5V Power Rail : 5.156 VDC
PLX Core Voltage : 0.996 VDC
ATX PWR_OK Status : ATX OK
PCIe Cable Present Status : PCIe Cable Present OK
PCIe Expansion PCB Revision : A
Firmware Version String : Firmware version v 1.10, build on May 24 2012 at 11:52:20

Status Page for System With Fan #2 Outside of Design Limits

Monitor Configuration - Settings

PCIe Expansion Chassis Monitoring

Temperature Sensor #1 : 25 degrees C
Temperature Sensor #2 : 26 degrees C
Temperature Sensor #3 : 25 degrees C
Temperature Sensor #4 : 25 degrees C
Temperature Sensor NE1619 : 29 degrees C
Fan #1 : 2442 RPM
Fan #2 : 2805 RPM
Fan #3 : 1455 RPM
Fan #4 : 2362 RPM
2.5V Power Rail : 2.500 VDC
3.3V Power Rail : 3.369 VDC
12V Power Rail : 12.000 VDC
5V Power Rail : 5.156 VDC
PLX Core Voltage : 0.996 VDC
ATX PWR_OK Status : ATX OK
PCIe Cable Present Status : PCIe Cable Present OK
PCIe Expansion PCB Revision : A
Firmware Version String : Firmware version v 1.10, build on May 24 2012 at 11:52:20

Configuring for SNMP Operation using the Serial Port

The boot time user interface is used to configure the monitor card for SNMP operation. Please see the following dialog. Please note when entering the parameters that the serial number can be found on a sticker on the monitor board I/O panel should it get accidentally overwritten from its factory setting:

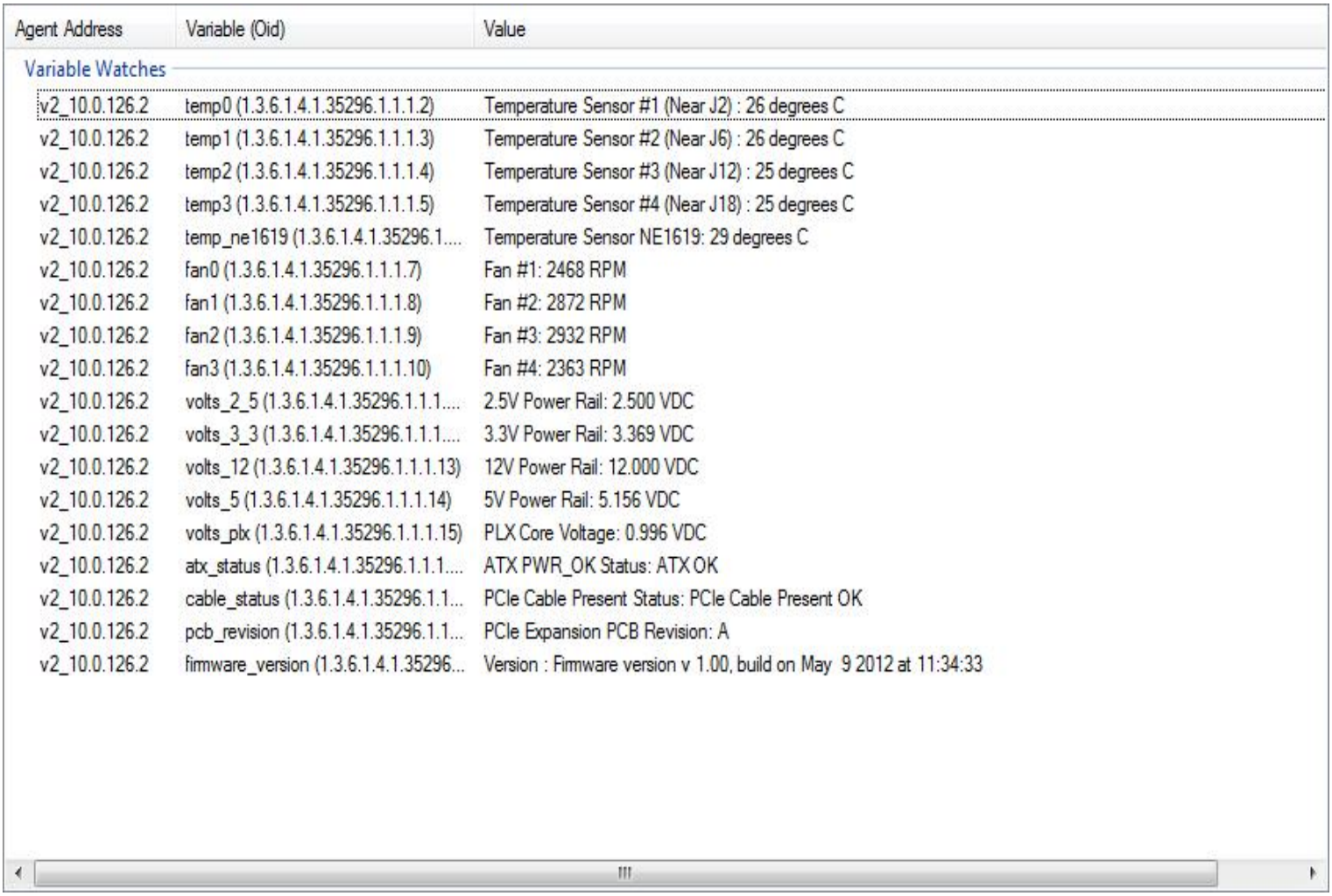
```
************************************************************
**         Cyclone PCIe Chassis Sensor Configuration       **
** Firmware Version                              v 1.10      **
** Built On                   May 24 2012 at 11:52:20      **
************************************************************

SERIAL NUMBER               : 9999
OPERATING MODE              : HTTP
NETWORK INTERFACE PARAMETERS:
  LAN0 IP address             192.168.2.2
  LAN0 Subnet mask            255.255.255.0
  LAN0 Gateway                0.0.0.0

To change any of this, press any key within 5 seconds.
 2
 1
(M)odify any of this or (C)ontinue? [M] m

For each of the following questions, you can press <Return> to select the
value shown in braces, or you can enter a new value.

Serial number? [9999] 41

Operating mode? [1:HTTP] (1=HTTP, 2=SNMP) 2


LAN0 IP address? [192.168.2.2] 10.0.126.2


LAN0 subnet mask? [255.255.255.0] 255.255.0.0


LAN0 Gateway? [0.0.0.0]


Primary Trap IP address? [0.0.0.0] 10.0.56.4
```

```
Do you wish to view/modify the Extra Trap host list? [N] n



************************************************************
**         Cyclone PCIe Chassis Sensor Configuration       **
** Firmware Version                              v 1.10      **
** Built On                   May 24 2012 at 11:52:20       **
************************************************************

SERIAL NUMBER               : 41
OPERATING MODE              : SNMP
NETWORK INTERFACE PARAMETERS:
  LAN0 IP address             10.0.126.2
  LAN0 Subnet mask            255.255.0.0
  LAN0 Gateway                0.0.0.0
  Primary Trap IP             10.0.56.4

  *** Extra Trap Host List Invalid ***


(M)odify any of this or (C)ontinue? [M] c

Storing new configuration parameters ... OK
Reading boot parameters from Flash...
LAN IP: 10.0.126.2
LAN Subnet Mask: 255.255.0.0
LAN Gateway: 0.0.0.0
Operating Mode: SNMP
Primary Trap IP: 10.0.56.4
Extra Trap IP #1: 0.0.0.0
Extra Trap IP #2: 0.0.0.0
Extra Trap IP #3: 0.0.0.0
Extra Trap IP #4: 0.0.0.0
Extra Trap IP #5: 0.0.0.0
Checking IP parameters...
Sensor serial_number = 41
MAC addres = [ 0x00:0x80:0x4d:0x1a:0x00:0x29 ]
Set master mode ...
I2C0 bus speed = 357142
I2C0 bus speed exceeds maximum. Reducing bus speed.
I2C0 reduced bus speed = 89285
Initializing AMC6821 Unit 0...
Configuring SNMP with Traps (non-zero primary trap IP address)
Sensor SNMP started, wait...
```

SNMP task for Cyclone PCIe Expansion Chassis Sensor started.

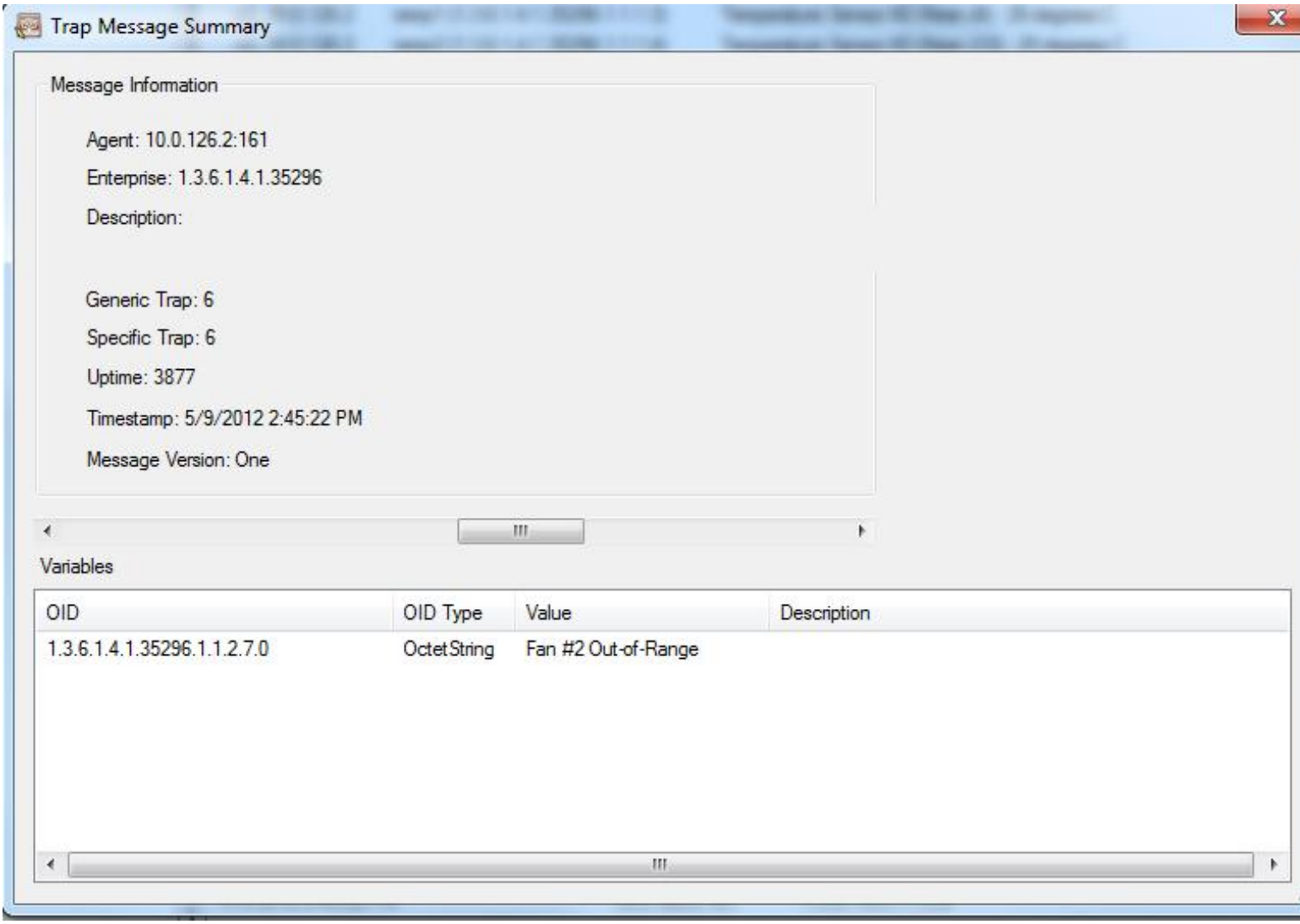
SNMP Overview

When configured for SNMP mode, an SNMP Manager may be pointed at the monitor card's previously configured IPv4 address. In the previous configuration example, the IPv4 address would be 10.0.126.2. The Cyclone Microsystems Private Enterprise Number is 35296. The following diagram illustrates the SNMP variables that can be queried:

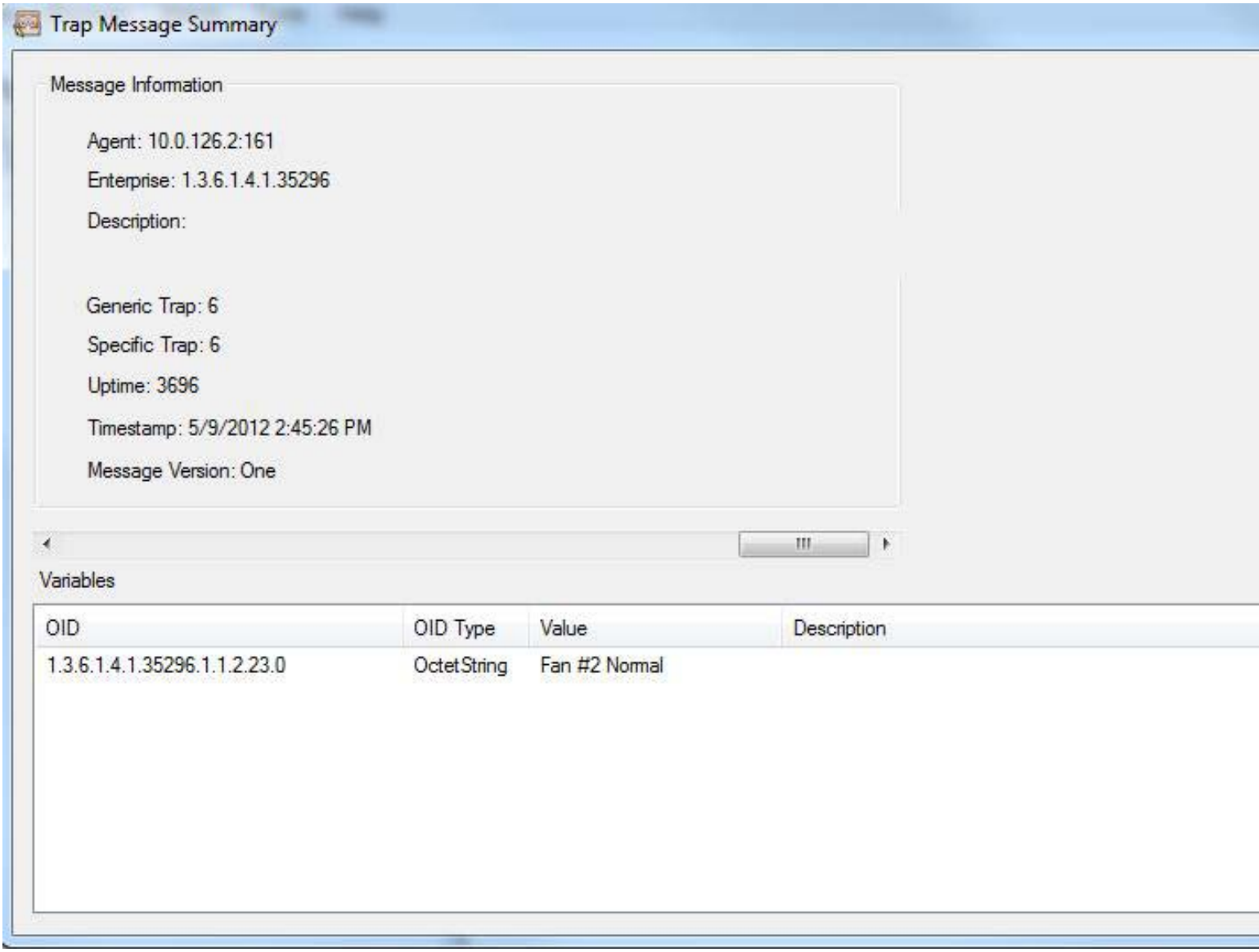


Agent Address	Variable (Oid)	Value
Variable Watches		
v2_10.0.126.2	temp0 (1.3.6.1.4.1.35296.1.1.1.2)	Temperature Sensor #1 (Near J2) : 26 degrees C
v2_10.0.126.2	temp1 (1.3.6.1.4.1.35296.1.1.1.3)	Temperature Sensor #2 (Near J6) : 26 degrees C
v2_10.0.126.2	temp2 (1.3.6.1.4.1.35296.1.1.1.4)	Temperature Sensor #3 (Near J12) : 25 degrees C
v2_10.0.126.2	temp3 (1.3.6.1.4.1.35296.1.1.1.5)	Temperature Sensor #4 (Near J18) : 25 degrees C
v2_10.0.126.2	temp_ne1619 (1.3.6.1.4.1.35296.1....	Temperature Sensor NE1619: 29 degrees C
v2_10.0.126.2	fan0 (1.3.6.1.4.1.35296.1.1.1.7)	Fan #1: 2468 RPM
v2_10.0.126.2	fan1 (1.3.6.1.4.1.35296.1.1.1.8)	Fan #2: 2872 RPM
v2_10.0.126.2	fan2 (1.3.6.1.4.1.35296.1.1.1.9)	Fan #3: 2932 RPM
v2_10.0.126.2	fan3 (1.3.6.1.4.1.35296.1.1.1.10)	Fan #4: 2363 RPM
v2_10.0.126.2	volts_2_5 (1.3.6.1.4.1.35296.1.1.1....	2.5V Power Rail: 2.500 VDC
v2_10.0.126.2	volts_3_3 (1.3.6.1.4.1.35296.1.1.1....	3.3V Power Rail: 3.369 VDC
v2_10.0.126.2	volts_12 (1.3.6.1.4.1.35296.1.1.1.13)	12V Power Rail: 12.000 VDC
v2_10.0.126.2	volts_5 (1.3.6.1.4.1.35296.1.1.1.14)	5V Power Rail: 5.156 VDC
v2_10.0.126.2	volts_plx (1.3.6.1.4.1.35296.1.1.1.15)	PLX Core Voltage: 0.996 VDC
v2_10.0.126.2	atx_status (1.3.6.1.4.1.35296.1.1.1....	ATX PWR_OK Status: ATX OK
v2_10.0.126.2	cable_status (1.3.6.1.4.1.35296.1.1...	PCIe Cable Present Status: PCIe Cable Present OK
v2_10.0.126.2	pcb_revision (1.3.6.1.4.1.35296.1.1...	PCIe Expansion PCB Revision: A
v2_10.0.126.2	firmware_version (1.3.6.1.4.1.35296...	Version : Firmware version v 1.00, build on May 9 2012 at 11:34:33

If the monitor card has been previously configured to generate traps, the SNMP Manager should receive trap messages on a warm Start condition (i.e. when the SNMP software on the monitor cards starts up) and when any of the monitored parameters are outside of design limits. In addition, traps will also be generated whenever a parameter reading, which was previously outside of design limits, returns to the normal range. The monitor card generates both Message Version 1 and Message Version 2 traps. The following diagram illustrates a trap message when the Fan #2 reading has gone outside the normal range:


Trap Message Summary
Message Information
Agent: 10.0.126.2:161
Enterprise: 1.3.6.1.4.1.35296
Description:
Generic Trap: 6
Specific Trap: 6
Uptime: 3877
Timestamp: 5/9/2012 2:45:22 PM
Message Version: One
Variables
OID
OID Type
Value
Description
1.3.6.1.4.1.35296.1.1.2.7.0
Octet String
Fan #2 Out-of-Range

The following diagram illustrates a trap message when the Fan #2 reading has returned to the normal range:



Adding Additional Trap Hosts

In addition to the Primary Trap IP address, the monitor can support up to 5 additional IPv4 addresses to which traps will be sent. Additional trap addresses are entered through the startup configuration dialog. Note that to effectively delete a trap host, set its address to 0.0.0.0. Please see the following example:

…

```
Do you wish to view/modify the Extra Trap host list? [N] y
Modify contents of the Extra Trap Host List
Extra Trap Host List Contains 0 Valid Entries
==================================================

(M)odify, (S)ave, or (E)xit? [M] m
Enter the Trap Host ID to add/modify [1..5]: 1

Modify Trap Host Entry
========================
Host IP address [0.0.0.0] 10.0.58.1



Extra Trap Host List Contains 1 Valid Entries
==================================================
Host 0: IP address [10.0.58.1]


(M)odify, (S)ave, or (E)xit? [M] m
```

```
Enter the Trap Host ID to add/modify [1..5]: 2

Modify Trap Host Entry
=======================
Host IP address [0.0.0.0] 10.0.58.2



Extra Trap Host List Contains 2 Valid Entries
=====================================================
Host 0: IP address [10.0.58.1]
Host 1: IP address [10.0.58.2]

(M)odify, (S)ave, or (E)xit? [M] m
Enter the Trap Host ID to add/modify [1..5]: 3

Modify Trap Host Entry
=======================
Host IP address [0.0.0.0] 10.0.58.3



Extra Trap Host List Contains 3 Valid Entries
=====================================================
Host 0: IP address [10.0.58.1]
Host 1: IP address [10.0.58.2]
Host 2: IP address [10.0.58.3]
```

(M)odify, (S)ave, or (E)xit? [M] sExtra Trap host list modified, changes will be saved

```
************************************************************
**         Cyclone PCIe Chassis Sensor Configuration       **
** Firmware Version                          v 1.10       **
** Built On                  May 24 2012 at 11:52:20       **
************************************************************

SERIAL NUMBER               : 41
OPERATING MODE              : SNMP
NETWORK INTERFACE PARAMETERS:
  LAN0 IP address             10.0.126.2
  LAN0 Subnet mask            255.255.0.0
  LAN0 Gateway                0.0.0.0
  Primary Trap IP             10.0.56.4

  Host 0: 10.0.58.1
  Host 1: 10.0.58.2
  Host 2: 10.0.58.3

To change any of this, press any key within 5 seconds.
 0 Reading boot parameters from Flash...
LAN IP: 10.0.126.2
```

LAN Subnet Mask: 255.255.0.0

LAN Gateway: 0.0.0.0

Operating Mode: SNMP

Primary Trap IP: 10.0.56.4

Extra Trap IP #1: 10.0.58.1

Extra Trap IP #2: 10.0.58.2

Extra Trap IP #3: 10.0.58.3

Extra Trap IP #4: 0.0.0.0

Extra Trap IP #5: 0.0.0.0

Checking IP parameters...

Sensor serial_number = 41

MAC addres = [0x00:0x80:0x4d:0x1a:0x00:0x29]

Configuring SNMP with Traps (non-zero primary trap IP address)

Sensor SNMP started, wait...

Adding Extra Trap Host 0: 10.0.58.1

Adding Extra Trap Host 1: 10.0.58.2

Adding Extra Trap Host 2: 10.0.58.3

SNMP task for Cyclone PCIe Expansion Chassis Sensor started.

Appendix A: Cyclone Sensor SNMP MIB

```
SENSOR-MIB DEFINITIONS ::= BEGIN

    DisplayString ::= OCTET STRING

    cyclone_microsystems OBJECT IDENTIFIER ::= { enterprises 35296 }

    cyclone_snmp_sensor OBJECT IDENTIFIER ::= { cyclone_microsystems 1 }

    sensor1         OBJECT IDENTIFIER ::= { cyclone_snmp_sensor 1 }

    data            OBJECT IDENTIFIER ::= { sensor1 1 }

    hello_string OBJECT-TYPE
            SYNTAX DisplayString
            ACCESS read-only
            STATUS mandatory
            DESCRIPTION
                    ""
            ::= { data 1 }

    temp0 OBJECT-TYPE
            SYNTAX DisplayString
            ACCESS read-only
            STATUS mandatory
            DESCRIPTION
                    ""
            ::= { data 2 }

    temp1 OBJECT-TYPE
            SYNTAX DisplayString
            ACCESS read-only
            STATUS mandatory
            DESCRIPTION
                    ""
            ::= { data 3 }

    temp2 OBJECT-TYPE
            SYNTAX DisplayString
            ACCESS read-only
            STATUS mandatory
            DESCRIPTION
                    ""
            ::= { data 4 }

    temp3 OBJECT-TYPE
            SYNTAX DisplayString
            ACCESS read-only
            STATUS mandatory
            DESCRIPTION
                    ""
            ::= { data 5 }

    temp_ne1619 OBJECT-TYPE
            SYNTAX DisplayString
            ACCESS read-only
            STATUS mandatory
            DESCRIPTION
                    ""
```

```
        ::= { data 6 }

fan0 OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { data 7 }

fan1 OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { data 8 }

fan2 OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { data 9 }

fan3 OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { data 10 }

volts_2_5 OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { data 11 }

volts_3_3 OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { data 12 }

volts_12 OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { data 13 }

volts_5 OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
```

```
                ""
        ::= { data 14 }

volts_plx OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { data 15 }

atx_status OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { data 16 }

cable_status OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { data 17 }

pcb_revision OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { data 18 }

sysUpTime OBJECT-TYPE
        SYNTAX INTEGER
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { data 19 }

firmware_version OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { data 20 }

traps           OBJECT IDENTIFIER ::= { sensor1 2 }

trapmsg1b OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 1 }

trapmsg2b OBJECT-TYPE
        SYNTAX DisplayString
```

```
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 2 }

trapmsg3b OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 3 }

trapmsg4b OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 4 }

trapmsg5b OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 5 }

trapmsg6b OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 6 }

trapmsg7b OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 7 }

trapmsg8b OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 8 }

trapmsg9b OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 9 }

trapmsg10b OBJECT-TYPE
```

```
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 10 }

trapmsg11b OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 11 }

trapmsg12b OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 12 }

trapmsg13b OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 13 }

trapmsg14b OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 14 }

trapmsg15b OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 15 }

trapmsg16b OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 16 }

trapmsg1g OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 17 }
```

```
trapmsg2g OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 18 }

trapmsg3g OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 19 }

trapmsg4g OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 20 }

trapmsg5g OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 21 }

trapmsg6g OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 22 }

trapmsg7g OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 23 }

trapmsg8g OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 24 }

trapmsg9g OBJECT-TYPE
        SYNTAX DisplayString
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION
                ""
        ::= { traps 25 }
```

```
    trapmsg10g OBJECT-TYPE
            SYNTAX DisplayString
            ACCESS read-only
            STATUS mandatory
            DESCRIPTION
                    ""
            ::= { traps 26 }

    trapmsg11g OBJECT-TYPE
            SYNTAX DisplayString
            ACCESS read-only
            STATUS mandatory
            DESCRIPTION
                    ""
            ::= { traps 27 }

    trapmsg12g OBJECT-TYPE
            SYNTAX DisplayString
            ACCESS read-only
            STATUS mandatory
            DESCRIPTION
                    ""
            ::= { traps 28 }

    trapmsg13g OBJECT-TYPE
            SYNTAX DisplayString
            ACCESS read-only
            STATUS mandatory
            DESCRIPTION
                    ""
            ::= { traps 29 }

    trapmsg14g OBJECT-TYPE
            SYNTAX DisplayString
            ACCESS read-only
            STATUS mandatory
            DESCRIPTION
                    ""
            ::= { traps 30 }

    trapmsg15g OBJECT-TYPE
            SYNTAX DisplayString
            ACCESS read-only
            STATUS mandatory
            DESCRIPTION
                    ""
            ::= { traps 31 }

    trapmsg16g OBJECT-TYPE
            SYNTAX DisplayString
            ACCESS read-only
            STATUS mandatory
            DESCRIPTION
                    ""
            ::= { traps 32 }

END
```