CHAPTER 9

Traps and Alarm Reporting

The Alarm Arbiter Card (AAC) is mounted at the top of the VCO/4K and serves as the central control for manual and automatic system resets and alarm indications. The AAC also provides a mechanism for the selection of active and standby controllers in systems equipped with A- and B-side controllers.

The AAC is attached to the Alarm Interface Card (AIC). The AIC accepts fault signals from the VCO/4K Power Subsystem, Fan Unit, and Ring Generator, and generates a single fault signal to the AAC.

For network managers using SNMP, the VCO/4K MIB provides traps that report card and system alarms to an NMS. These traps are detailed in the "Alarm Traps" section on page 9-1. The VCO/4K MIB also provides objects which can be queried for alarm data. These objects are listed in the "System Alarm Trap History" section on page 9-5 and the "Additional Alarm Objects" section on page 9-9.

Note The alarm traps described in this chapter are enterprise traps, i.e., traps specific to the VCO/4K SNMP agent and MIB. The VCO/4K SNMP agent also supports the generic level traps coldStart and authenticationFailure as defined in RFC 1215. For more information pertaining to RFC 1215, refer to the IETF web site at www.ietf.org.

Alarm Traps

The VCO/4K MIB provides traps for both system and card alarms. The definitions of these two trap types are as follows:

systemAlarm	**TRAP-TYPE**
Enterprise	summa-four
Variables	systemAlarmCode systemAlarmDesc systemAlarmSeverity systemAlarmOccur
Description	Indicates to the NMS the occurrence of a system alarm

cardAlarm	TRAP-TYPE
Enterprise	summa-four
Variables	cardAlarmCode cardAlarmDescr cardAlarmSeverity cardAlarmSlotIndex cardAlarmCardType cardAlarmDwnldType cardAlarmGroupNum cardAlarmIntfNum
Description	Indicates to the NMS the occurrence of a card alarm

Card Alarm Trap Variables

Card alarm traps report on card alarms as they occur. The following variables are returned:

Note Card alarm trap variables are reported to the NMS in traps and are not intended to be queried separately using SNMP GET operations.

cardAlarmCode

{cardAlarmTrap 1}

Description

Indicates the code of the alarm that occurred. The cardAlarmCode corresponds to the system alarm codes listed in the *Cisco VCO/4K System Messages* manual. (For example, “ALM039: PRI/T1/E1 Carrier Lost” would return an integer value of 39 for cardAlarmCode.)

Object Identifier

1.3.6.1.4.1.886.1.8.1.1

Data Type

Integer

Access Policy

Read only

Status

Mandatory

cardAlarmSlotIndex

{cardAlarmTrap 2}

Description

Indicates the location (rack-level-slot or RLS) of the card where the alarm occurred. To determine the rack-level-slot location from the cardAlarmSlotIndex, refer to the “Card Index” section on page 1-6.

Object Identifier

1.3.6.1.4.1.886.1.8.1.2

Data Type

CardIndex

Access Policy

Read only

Status

Mandatory

cardAlarmDescr

{cardAlarmTrap 3}

Description

Describes the alarm that occurred.

Object Identifier

1.3.6.1.4.1.886.1.8.1.3

Data Type

DisplayString. Length of the DisplayString is from 1 to 80 alphanumeric characters. Possible values are listed in Chapter 5 of the *Cisco VCO/4K System Administrator’s Guide*.

Access Policy

Read only

Status

Mandatory

cardAlarmSeverity

{cardAlarmTrap 4}

Description

Severity of the alarm that occurred.

Object Identifier

1.3.6.1.4.1.886.1.8.1.4

Data Type

Integer. Valid integerValue values and corresponding descriptions are shown in the following table:

Value	Description
1	fatal
2	critical
3	major
4	minor
5	aux 1
6	aux 2
7	nonAlarmEvents

Access Policy

Read only

Status

Mandatory

cardAlarmCardType

{cardAlarmTrap 5}

Description

Specifies the type of card.

Object Identifier

1.3.6.1.4.1.886.1.8.1.5

Data Type

CardType (For a definition of CardType values, refer to the “CardType” section on page 1-14.)

Access Policy

Read only

Status

Mandatory

cardAlarmDwnldType

{cardAlarmTrap 6}

Description

Specifies the download type of the card; in the case of multi-span cards, indicates the type of the span.

Object Identifier

1.3.6.1.4.1.886.1.8.1.6

Data Type

CardType (For a definition of CardType values, refer to Section 1.6.13.)

Access Policy

Read only

Status

Mandatory

cardAlarmGroupNum

{cardAlarmTrap 7}

Description

Specifies the group number of an interface. Group numbers start from 1. This value is zero when there is no group number.

Object Identifier

1.3.6.1.4.1.886.1.8.1.7

Data Type

Integer

Access Policy

Read only

Status

Mandatory

cardAlarmIntfNum

{cardAlarmTrap 8}

Description

Specifies the interface number of an interface. Interface numbers start from zero. This value is only meaningful when cardAlarmGroupNum is not zero.

Object Identifier

1.3.6.1.4.1.886.1.8.1.8

Data Type

Integer

Access Policy

Read only

Status

Mandatory

System Alarm Trap History

The following trap variables are returned for system alarms:

- systemAlarmCode
- systemAlarmDescr
- systemAlarmSeverity
- systemAlarmOccur

The system alarm table also provides an alarm history of system alarm traps in a running system and can be queried using SNMP GET requests. (The system alarm history is not persistent across system reboots.)

The following descriptions provide further information concerning system alarm trap variables and the system alarm table.

systemAlarmTable

{alarm 2}

Description

The system alarm table.

Object Identifier

1.3.6.1.4.1.886.1.8.2

Data Type

Sequence of SystemAlarmEntry

Access Policy

Not accessible

Status

Mandatory

systemAlarmEntry

{systemAlarmTable 1}

Description

An entry in the systemAlarmTable.

Object Identifier

1.3.6.1.4.1.886.1.8.2.1

Data Type

SystemAlarmEntry

Access Policy

Not accessible

Status

Mandatory

Index

{systemAlarmCode, systemAlarmSeverity}

SystemAlarmEntry

Sequence

systemAlarmCode	Integer
systemAlarmSeverity	Integer
systemAlarmDescr	DisplayString
systemAlarmOccur	Integer

systemAlarmCode

{systemAlarmEntry 1}

Description

Specifies the code or index of the alarm that occurred. This code is the same as the "ALM" number listings in the *Cisco VCO/4K System Messages* document. (For example, "ALM039: PRI/T1/E1 Carrier Lost" would return an integer value of 39 for systemAlarmCode.)

Object Identifier

1.3.6.1.4.1.886.1.8.2.1.1

Data Type

Integer

Access Policy

Read only

Status

Mandatory

systemAlarmSeverity

{systemAlarmEntry 2}

Description

Specifies the type of system alarm that occurred. Alarms are ranked by severity.

Object Identifier

1.3.6.1.4.1.886.1.8.2.1.2

Data Type

Integer. Valid integer values and corresponding descriptions are shown in the following table:

Value	Description
1	fatal
2	critical
3	major

Value	Description
4	minor
5	aux 1
6	aux 2
7	nonAlarmEvents

Access Policy

Read only

Status

Mandatory

systemAlarmDescr

{systemAlarmEntry 3}

Description

Gives a textual description of the alarm that occurred.

Object Identifier

1.3.6.1.4.1.886.1.8.2.1.3

Data Type

DisplayString. Length of the DisplayString is from 1 to 80 alphanumeric characters. Possible values and their meanings are shown in the ALM messages listed in the *Cisco VCO/4K System Messages* document. However, the values returned for systemAlarmDescr do not include the “ALM” precursor. (For example, “ALM039: PRI/T1/E1 Carrier Lost” would return the string value “PRI/T1/E1 Carrier Lost”.)

Access Policy

Read only

Status

Mandatory

systemAlarmOccur

{systemAlarmEntry 4}

Description

Indicates the number of times that this alarm has occurred.

Object Identifier

1.3.6.1.4.1.886.1.8.2.1.4

Data Type

Integer

Access Policy

Read only

Status

Mandatory

Additional Alarm Objects

The traps listed above are used to notify an NMS of card and system alarm events. In addition, an NMS can query alarm objects relevant to the specific component in the card slot location. These alarm objects are described in their relevant locations in this document as shown in the following list:

- brcAlarm (See Chapter 7, “Communication Card Group”)
- dniCardAlarm (See Chapter 8, “Single-Span Service Circuit Card Group”)
- dtgCardAlarm See (Chapter 8, “Single-Span Service Circuit Card Group”)
- hostAlarm (See Chapter 2, “System Configuration Group”)
- iccAlarm (See Chapter 12, “ICC Card Group”)
- isdnCardAlarm (See Chapter 6, “Single-Span ISDN Card Group”)
- lcAlarm (See Chapter 3, “Line Card Group”)
- nbcAlarm (See Chapter 7, “Communication Card Group”)
- ptcAlarm (See Chapter 5, “Programmable Trunk Card Group”)
- rcAlarm (See Chapter 8, “Single-Span Service Circuit Card Group”)
- spcAlarm (See Chapter 13, “SPC Card Group”)
- sscAlarm (See Chapter 8, “Single-Span Service Circuit Card Group”)
- subrateFailAlarm (See Chapter 8, “Single-Span Service Circuit Card Group”)
- subrateRedundAlarm (See Chapter 8, “Single-Span Service Circuit Card Group”)
- tcAlarm (See Chapter 4, “Trunk Card Group”)

Alarm-related Feature Settings

The VCO/4K includes a number of alarm features which can be enabled or disabled from either the system administration master console or by SNMP set commands. These include the following MIB objects:

- featureNoCardAlarmStatusAtInit
- featureEnableAllPortsDeactivatedAlarm
- featureOutputPeriodicAlarmReports
- sysHostNoAlarmReportAtInit

Additional information on these objects can be found in Chapter 2, “System Configuration Group.”