

Alarm survey

General

This document describes the alarms that can be generated by the node controller. Alarms can be viewed using the Element Manager web interface, using the CLI or using SNMP. This document is a complement to the Element Manger User's Guide.

Alarms

An alarm is the reporting of a fault or condition in the system. The alarm is always active or ceased, meaning that an alarm is indicating an actual status. In other words, it should (in theory) always be possible to examine the fault condition, and from this determine whether an alarm exists or not.

Alarm types

Every alarm has an alarm type according to X.733:

- Communication
- Quality of service
- Processing error
- Equipment
- Environmental

Alarm severity levels

An alarm has a severity, which tells how severe the fault condition is. The alarm severities used are according to X.733. Short descriptions are:

Cleared: The cleared severity level indicates the clearing of one or more previously reported alarms.

Critical: The critical severity level indicates that a service affecting condition has occurred and an immediate corrective action is required.

Major: The major severity level indicates that a service affecting condition has developed and an urgent corrective action is required.

Minor: The Minor severity level indicates the existence of a non-service affecting fault condition and that corrective action should be taken in order to prevent a more serious fault.

Warning: The warning severity level indicates the detection of a potential or impending service affection fault, before any significant effects have been felt.

Any fault affecting the traffic in the Nimbra network results in a critical alarm. Faults on a single service that disable the service results in a major alarm. Faults that do not immediately affect the service result in a minor or warning alarm.

Alarms and operational state

The operational state of a resource depends on its desired (administrative) state and its alarms. The administrative state of the resource is set by the operator. With the administrative state set to 'up', the operational state changes from 'up' to 'down' when the resource encounters a fault that results in an alarm with severity major.

A resource shall not have any alarms if the administrative state is 'down', i.e. existing alarms are cleared when the administrative state is set to 'down'

Type	Probable Cause	Text	Severity	Object name	GX4.6.0	GX4.5.0	GX4.4.0	GX4.3.0	One/300 Series	Trunk										Access										600 Series	Trunks (all)	Access		NCB	SWB	Comment
										DS3/E3	OC-3/STM-1	4 x OC3/STM1	OC-12/STM-4	2 x OC-12/STM-4	OC-48/STM-16	IP/Ethernet	1 Gbps Optical	Fast Eth	Gigabit Eth	ASI Transport	8 x ASI Transport	8 x AES/EBU	HD/SD SDI Video	OC3/STM1	DS3/E3	E1/T1	8 x Gigabit Eth	8 x Video								
Communications	Alarm indication signal	AIS, defect detected by ip network interface	Wa	ipt	x	x			x							x																		IP/Ethernet trunkalarm, AIS = Alarm Indication Signal		
Communications	Alarm indication signal	AIS-L, defect detected by upstream SONET/SDH network interface	Wa	sdh	x	x	x	x	x	x	x	x	x	x	x	x												x	x					MS-AIS/AIS-L		
Communications	Alarm indication signal	AIS-P, defect detected by upstream SONET/SDH network interface	Wa	pdh	x	x	x	x	x	x	x	x	x	x	x													x	x					AU-AIS/AIS-P		
Communications	Alarm indication signal	Defect detected by external upstream equipment	Wa	e1 ds1	x	x	x	x	x																									AIS signal is received from external equipment on service interface.		
Communications	Alarm indication signal	Defect detected by upstream PDH network interface	Wa	pdh	x	x	x	x	x	x																										
Communications	Alarm indication signal	Defect detected by upstream service interface	Wa	itso	x	x	x	x	x												x	x	x	x	x	x	x	x			x			AIS. An alarm has been detected on the interface at the source side.		
Communications	Alarm indication signal	Path defect detected by external upstream equipment	Wa	stm1 vc3 vc4	x	x	x	x	x																											
Communications	Bandwidth reduced	Fails to establish DTM control channel [name], trying slot0 instead.	Wa	dtm	x	x	x	x	x			x		x	x	x		x										x	x					There is not enough capacity on the link to be able to establish the control channel. This also happens if the link is down.		
Communications	Call establishment error	Failed to establish [primary/secondary] channel to node [address]. Reason reported by node [address]: [reason]	Mi	itso	x	x	x	x	x												x	x						x			x			Only for 1+1 protected connection: The connection to the node is established, but it is not protected, i.e. only the secondary or primary channel is established.		
Communications	Call establishment error	Failed to establish a connection to node [address]. Reason reported by node [address]: [reason]	Ma	itso ets	x	x	x	x	x									x	x	x	x	x	x	x	x	x	x	x		x	x			Only for unicast connections.		
Communications	Call establishment error	Failed to establish a multicast connection.	Ma	itso ets	x	x	x	x	x									x	x	x	x	x	x	x	x	x	x	x		x	x			Fails to establish the connection for a multicast connection to at least one of the destinations.		
Communications	Communication subsystem failure	Link is in state DownKeep	Ma	dtm/rx dtm/tx	x	x	x	x	x																		x									
Communications	Communication subsystem failure	Link is in state Loopback	Wa	dtm/rx	x	x	x	x	x																		x								This interface is connected to an interface in the same node.	
Communications	Communication subsystem failure	No reliable sync source found	Cr	dtm	x	x	x	x	x	x	x	x	x	x	x		x										x	x						No reliable sync source is found. The whole sync system is unstable.		
Communications	Communication subsystem failure	Sync in holdover	Wa	dtm																							x								Synchronization is traceable, but not locked to an external timing source.	
Communications	Communications protocol error	[Primary/Secondary] channel to node [address] broken. Reason reported by node [address]: [reason]	Mi	itso ets	x	x	x	x	x												x	x					x				x				Only for 1+1 protected connections. One of the channels on a 1+1 protected connection fails. The other channel is still in function.	
Communications	Communications protocol error	Connection to node [address] broken. Reason reported by node [address]: [reason]	Ma	itso ets	x	x	x	x	x									x	x	x	x	x	x	x	x	x	x	x		x	x					
Communications	Communications protocol error	DPCP-IP negotiation failure	Wa	ipt		x			x							x																			IP/Ethernet trunkalarm	
Communications	Communications protocol error	DPCP-IP negotiation failure	Ma	ipt	x				x							x																			IP/Ethernet trunkalarm	
Communications	Communications protocol error	ICMP alarm	Wa	ipt	x	x			x							x																			IP/Ethernet trunkalarm	
Communications	Communications protocol error	Multicast connection broken	Ma	itso ets	x	x	x	x	x									x	x	x	x	x	x	x	x	x	x	x		x	x			The connection is lost to some or all nodes for a multicast connection.		
Communications	Communications protocol error	No DLE Register Response message received from server	Ma	dlec	x	x	x	x	x																											
Communications	Configuration or customization error	Payload type mismatch detected on PDH network interface	Cr	pdh	x	x	x	x	x	x																		x								

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Communications	Configuration or customization error	Payload type mismatch detected on SONET/SDH network interface	Cr	sdh	x	x	x	x	x			x		x	x												x	x					PLM
Communications	Configuration or customization error	Two external sync sources have the same priority	Wa	dtm	x	x	x	x	x	x	x	x	x	x	x		x										x	x					
Communications	Congestion	DTM channel capacity exceeds service interface capacity. Data will be lost	Ma	itsi	x	x	x	x	x											x	x	x	x	x	x	x	x			x			The terminating DTM channel's capacity is greater than what can be utilized by the service interface. This could happen if there is an internal error. It can also occur if there are network sync problems.
Communications	Congestion	No bandwidth in source /intermediate node, reported by node xxxxx (www.www.www.www.www.www)	Ma	ets itso	x				x									x	x	x	x	x	x	x	x	x	x			x	x		
Communications	Congestion	Not using primary source route to destination(s)	Wa	itso, ets	x	x	x		x									x	x	x	x	x	x	x	x	x	x			x	x		
Communications	Congestion	Service interface capacity exceeds DTM channel capacity. Data will be lost	Mi	asi	x	x	x	x	x											x	x									x			The input stream on the source side ASI interface is greater than the capacity of the DTM channel. The connection is configured with too low capacity.
Communications	Degraded signal	Signal degraded on ip network interface	Cr	ipt	x	x			x							x																	IP/Ethernet trunkalarm
Communications	Degraded signal	Signal degraded on PDH network interface	Cr	pdh	x	x	x	x	x	x																							
Communications	Degraded signal	Signal degraded on SONET/SDH network interface	Cr	sdh	x	x	x	x	x		x	x	x	x	x												x	x					DEG
Communications	Degraded signal	Sync free running	Ma	lclock																							x						Synchronization is no longer traceable to an external timing source.
Communications	Framing error	Loss of Multiframe detected on ip network interface	Cr	ipt	x	x			x							x																	IP/Ethernet trunkalarm
Communications	Framing error	Loss of Pointer detected on ip network interface	Cr	ipt	x	x			x							x																	IP/Ethernet trunkalarm
Communications	Framing error	Loss of Pointer detected on SONET/SDH network interface	Cr	sdh	x	x	x	x	x		x		x	x	x												x	x					LOP
Communications	Framing error	Loss of Pointer detected on SONET/SDH service interface	Mi	stm1	x	x	x	x	x															x									
Communications	Loss of frame	No frame detected on 8b10b network interface	Cr	8b10b	x	x	x	x	x								x																LOF
Communications	Loss of frame	Unable to align data frame	Mi	asi sdi	x	x	x	x	x											x	x	x	x		x		x				x		
Communications	Loss of frame	Unable to align frame	Ma	itsi	x	x	x	x	x											x	x	x	x		x		x						
Communications	Loss of frame	Unable to align ip frame	Cr	ipt	x	x			x							x																	IP/Ethernet trunkalarm
Communications	Loss of frame	Unable to align PDH frame	Cr	pdh	x	x	x	x	x	x																							
Communications	Loss of frame	Unable to align SONET/SDH frame	Cr	sdh	x	x	x	x	x		x	x	x	x	x												x	x					LOF
Communications	Loss of signal	No data present on DTM channel	Ma	itsi	x	x	x	x	x											x	x	x	x	x	x	x	x			x			The sink TTP does not receive data on the terminating DTM channel.
Communications	Loss of signal	No signal detected on 8b10b network interface	Cr	8b10b	x	x	x	x	x								x																LOS
Communications	Loss of signal	No signal detected on SONET/SDH network interface	Cr	sdh	x	x	x	x	x		x	x	x	x	x												x	x					LOS
Communications	Loss of signal	No signal detected on ethtrunk interface	Cr	ethtrunk	x	x			x							x																	IP/Ethernet trunkalarm

Type	Probable Cause	Text	Severity	Object name	GX4.6.0	GX4.5.0	GX4.4.0	GX4.3.0	One/300 Series	Trunk										Access										800 Series	Trunks (all)	Access		NCB	SWB	Comment
										DS3/E3	OC-3/STM-1	4 x OC3/STM1	OC-12/STM-4	2 x OC-12/STM-4	OC-48/STM-16	IP/Ethernet	1 Gbps Optical	Fast Eth	Gigabit Eth	ASI Transport	8 x ASI Transport	8 x AES/EBU	HD/SD SDI Video	OC3/STM1	DS3/E3	E1/T1	8 x Gigabit Eth	8 x Video								
Communications	Loss of signal	No signal detected on iptrunk interface	Cr	ipt	x	x			x							x																		IP/Ethernet trunkalarm		
Communications	Loss of signal	No signal detected on PDH network interface	Cr	pdh	x	x	x	x	x	x																										
Communications	Loss of signal	No signal detected on service interface	Wa	eth			x	x	x									x	x									x		x				The physical Ethernet interface is in administrative state up, but no signal is detected. The interface is most likely not connected.		
Communications	Loss of signal	No signal detected on service interface	Mi	asi sdi e1 ds1 stm1	x	x	x	x	x												x	x	x	x	x	x	x	x			x			No signal is detected on the service interface. The interface is most likely not connected.		
Communications	Loss of Signal	No signal detected on service interface	Mi	eth	x	x			x									x	x									x		x				New Ethernet config model. Raised on physical Ethernet interfaces when no Ethernet link can be established.		
Communications	Multiplexer problem	Unequipped PDH path	Mi	pdh	x	x	x	x	x	x																										
Communications	Multiplexer problem	Unequipped SONET/SDH path	Mi	sdh	x	x	x	x	x				x		x	x										x	x							UNEQ. Not available on E3 interface		
Communications	Remote defect indication	Defect detected by downstream PDH network interface	Wa	pdh	x	x	x	x	x	x																										
Communications	Remote defect indication	Path defect detected by external downstream equipment	Wa	stm1 vc3 vc4	x	x	x	x																												
Communications	Remote defect indication	RDI, defect detected by downstream ip network interface	Wa	ipt	x	x			x								x																	IP/Ethernet trunkalarm, RDI = Remote Defect Indication		
Communications	Remote defect indication	RDI-L, defect detected by downstream SONET/SDH network interface	Wa	sdh	x	x	x	x	x				x	x	x	x	x										x	x						MS-RDI/RDI-L		
Communications	Remote defect indication	RDI-P, defect detected by downstream SONET/SDH network interface	Wa	sdh	x	x	x	x	x				x	x	x	x	x										x	x						HP-RDI/RDI-P		
Communications	Response time excessive	Peering node is in state NoControl or is not responding.	Ma	dtm	x	x	x	x	x																	x								The peering node has stopped responding to DLSP communication, but the DTM link is still up.		
Communications	Test mode entered	Interface is configured in loopback	Wa	ipt					x								x																	IP/Ethernet trunkalarm		
Communications	Threshold crossed	15 minute parameter threshold(s) exceeded	Wa	itsi	x	x	x	x	x											x	x	x	x	x	x	x	x				x			G.826 type performance monitoring alarm.		
Communications	Threshold crossed	15 minute parameter threshold(s) exceeded	Wa	sonet/sdh ipt	x	x	x	x	x	x	x	x	x	x	x	x	x	x								x	x							G.826 type performance monitoring alarm.		
Communications	Threshold crossed	24 hour parameter threshold(s) exceeded	Wa	itsi	x	x	x	x	x											x	x	x	x	x	x	x	x				x			G.826 type performance monitoring alarm.		
Communications	Threshold crossed	24 hour parameter threshold(s) exceeded	Wa	sonet/sdh ipt	x	x	x	x	x	x	x	x	x	x	x	x	x	x								x	x							G.826 type performance monitoring alarm.		
Communications	Threshold crossed	Frequency out of range	Mi	sdi	x	x	x	x	x																	x										
Communications	Threshold crossed	Sync quality below expected value	Mi	nclock																						x								QL (Quality Level) of the clock is lower than a threshold defined by the operator. The alarm is generated by the node clock that is master in the network.		
Communications	Threshold crossed	Sync source unstable	Wa	dtm	x	x	x	x	x	x	x	x	x	x	x	x	x									x	x							The sync source has changed multiple times, which could be due to a problem		

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Communications	Threshold crossed	Time transfer excess deviation: PPS time deviation= [time] ns	Mi	dtm					x																								The incoming time deviates more than 2 microseconds from the established time.			
Communications	Unavailable	Service unavailable due to persistent (> 10 sec) severe errors	Wa	itsi	x	x	x	x	x												x	x	x	x	x	x	x			x		G.826 type performance monitoring alarm.				
Communications	Unavailable	Service unavailable due to persistent (> 10 sec) severe errors	Wa	sonet/sdh	x	x	x	x	x	x	x	x	x	x	x	x											x	x					G.826 type performance monitoring alarm.			
Communications	Underlying resource unavailable	Board is unavailable or does not contain this gpio-pin.	Mi	gpio	x	x	x	x																			x									
Communications	Underlying resource unavailable	Board is unavailable or VLAN isn't configured.	Ma	ets	x	x	x	x	x									x	x								x		x				There is no VLAN cnfigured for this TTP. The alarm is also raised if the a VLAN is configured, but the device (i.e. physical board) is absent.			
Communications	Underlying resource unavailable	Failure on underlying physical network interface	Mi	dtm	x	x	x	x	x		x		x	x	x	x	x										x	x					Underlying physical interface has a severe fault. The physical interface is not functioning, and is not possible to use for DTM traffic. There shall be an alarm on the underlying interface that describes its fault.			
Communications	Underlying resource unavailable	No external sync source available	Ma	dtm	x	x	x	x	x		x		x	x	x	x	x										x	x								
Communications	Underlying resource unavailable	Required physical network interface is absent	Mi	dtm	x	x	x	x	x	x	x	x	x	x	x	x	x										x	x					There is no physical interface present.			
Communications	Underlying resource unavailable	Required service interface in local node is absent	Ma	itsi itso	x	x	x	x	x											x	x	x	x	x	x	x	x			x			The physical interface associated with a TTP is absent.			
Communications	Underlying resource unavailable	Service interface in local node is busy	Ma	itso																													The alarm is raised when the connection is attempted to be established, but the interface is already in use by another TTP. This can happen if the connection is configured as 'unestablished', and a scheduler establishes the connection at a later point.			
Environmental	Temperature unacceptable	Excessive temperature	Cr	Thermometer	x	x	x	x	x																		x						The temperature is dangerously high, above 55 °C, where operation is compromised and/or the system is damaged. The alarm is cleared with a 2 °C hysteresis, i.e. when the temperature drops below 53 °C.			
Environmental	Temperature unacceptable	High temperature	Mi	Thermometer	x	x	x	x	x																		x						Temperature is above the maximum operating temperature, 40 °C. The alarm is cleared with a 2 °C hysteresis, i.e. when the temperature drops below 38 °C.			
Environmental	Temperature unacceptable	Low temperature	Mi	Thermometer	x	x	x	x	x																		x						Temperatur is below the minium operating temperature, 5 °C. The alarm is cleared with a 2 °C hysteresis, i.e. when the temperature increases above 7 °C.			
Environmental	Temperature unacceptable	Too low temperature	Ma	Thermometer	x	x	x	x	x																		x						The temperature is dangerously low, below -5 °, where operation is compromised, and/or the system is damaged. The alarm is cleared with a 2 °C hysteresis, i.e. when the temperature increases above -3 °C.			

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Equipment	Adapter error	Connector transmitter failure	Wa	stm1	x	x	x	x	x															x										Failure in transmitter indicated by SFP. The service may still function. In case of a problem, an error is reported on the receiver side.		
Equipment	Adapter error	Incompatible priority configured	Ma	ets	x	x	x	x	x									x	x							x		x								
Equipment	Adapter error	Interface absent	Ma	eth	x	x	x	x	x									x	x							x		x						The device that this interface is implemented on is missing or no SFP has been detected		
Equipment	Adapter error	Interface absent	Ma	stm1	x	x	x	x	x															x										No SFP detected, i.e. the physical interface is absent.		
Equipment	Adapter error	Interface absent	Ma	sdh	x	x	x	x	x	x		x	x	x	x	x										x	x							No SFP detected, i.e. the physical interface is absent.		
Equipment	Adapter error	Interface absent	Ma	eth					x								x																		IP/Ethernet trunkalarm	
Equipment	Adapter error	Interface transmitter failure	Ma	sdh	x	x	x	x	x	x			x	x	x	x											x	x							Failure in transmitter indicated by SFP	
Equipment	Adapter error	Interface transmitter failure	Ma	eth	x	x			x										x							x		x							New Ethernet config model. Failure in a transmitter indicated by SFP	
Equipment	Adapter error	Interface transmitter failure	Ma	eth					x								x																		IP/Ethernet trunkalarm	
Equipment	Adapter error	No signal detected on service interface	Mi	eth					x								x																		IP/Ethernet trunkalarm	
Equipment	Adapter error	Unsupported connector type detected	Wa	stm1	x	x	x	x	x															x											An unsupported type of SFP has been detected. The service may still function. In case of a problem, an error is reported on the receiver side.	
Equipment	Adapter error	Unsupported interface type detected	Ma	eth					x								x																		IP/Ethernet trunkalarm	
Equipment	Adapter error	Unsupported interface type detected	Ma	eth	x	x	x	x	x									x	x								x		x						An unsupported type of SFP has been detected. The alarm is only raised if the interface is in administrative state up	
Equipment	Configuration or customization error	Illegal name	Wa	.system.name	x	x	x	x	x																		x								The system name (hostname) does not comply to Internet standards.	
Equipment	Configuration or customization error	Installed board does not match configuration	Mi	eth	x	x			x										x	x							x		x						New Ethernet config model. Raised when a new board is detected that cannot support the current configuration in O&M. Further information can be found in the errorMessage variable for each object configured pn the board.	
Equipment	Configuration or customization error	Network interface does not match configured interface	Mi	dtm	x	x	x	x	x		x		x	x	x	x		x									x	x							The configuration describes an interface that is of the wrong type, or the configuration is in some other way invalid.	
Equipment	Configuration or customization error	Object is not correctly configured	Wa	ets eth ff	x	x			x										x	x							x		x						New Ethernet config model. Specified in the errorMessage variable	
Equipment	Configuration or Customization Error	Object is not correctly configured	Wa	ipt	x	x			x								x																		IP/Ethernet trunkalarm	
Equipment	Configuration or Customization Error	Object is not correctly configured.	Wa	eth	x	x			x								x																		IP/Ethernet trunkalarm	
Equipment	Heating/ Ventilation/ Cooling	Fan failure	Mi		x	x	x	x	x																		x								The fan or fan units have failed.	
Equipment	I/O device error	Backplane is malfunctioning	Cr	<pos>	x	x	x	x	x																										A fault has been detected on the backplane. The complete system (chassis) will restart. Note that the alarm will never be cleared by the system. However, after a restart, the system will start with no alarms.	
Equipment	I/O device error	Board is malfunctioning	Ma	<pos>	x	x	x	x	x																										A fault has been detected on the PIU (plug-in unit) while operating.	

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Equipment	I/O device error	Failed to identify board	Ma	<pos>	x	x	x	x	x																								The PIU (plug-in unit) at the board slot could not be identified. The system has detected a PIU, but fails to determine what type of PIU. The system will try to restart the PIU a couple of times.			
Equipment	I/O device error	Network interface has invalid MAC address	Ma	dtm	x	x	x	x	x	x	x	x	x	x	x	x		x															The MAC address supplied by the PIU for the DTM interface is not a valid Net Insight MAC address.			
Equipment	I/O device error	No matching driver	Ma	<pos>	x	x	x	x	x																								The system has failed to find a matching driver for the PIU (plug-in unit). This is probably because the board is of an unsupported type of version.			
Equipment	I/O device error	Unexpected removal of board	Mi	<pos>	x	x	x	x	x																								The PIU (plug-in unit) at the board slot was removed without the "remove" indicator on the PIU being illuminated. It is cleared when a PIU is inserted, or when the administrative status of the board position is set to down.			
Equipment	Power problem	Power supply failure	Mi		x	x	x	x	x																								At least one of the power supply output voltages is failing. On Nimbra One, the alarm is raised if only one power supply unit is mounted.			
Equipment	Replaceable Unit Missing	Board is missing	Mi		x	x	x	x																							x	x	Raised for a board that has adminStatus up and operStatus absent. (A fan is considered to always have adminStatus up.)			
Equipment	Replaceable Unit Problem	A board has failed	Ma		x	x	x	x																							x	x	Raised for an ncb or swb that has adminStatus up and operStatus Down when there is no other board of the same type that has redundancyRole Active. Also raised for trunk and access-boards that have adminStatus Up and operStatus Down.			
Equipment	Replaceable Unit Problem	A redundant board has failed	Mi		x	x	x	x																							x	x	Raised for an ncb or swb that has adminStatus up and operStatus Down when there is another board of the same type that has redundancyRole Active.			
Equipment	Replaceable Unit Problem	A Standby board is Degraded	Mi		x	x	x	x																							x	x	Raised for an ncb or swb that has adminStatus up, redundancyRole Standby and operStatus Degraded.			
Equipment	Replaceable Unit Problem	An Active board is Degraded	Ma		x	x	x	x																							x	x	Raised for an ncb or swb that has adminStatus up, redundancyRole Active and operStatus Degraded.			