

OAM Link Monitoring Feature

The router performs link monitoring by sending periodic Information OAM PDUs to advertise OAM mode, configuration, and capabilities. Link monitoring uses the Event Notification OAM PDU and sends events to the remote OAM entity when problems are observed on the link. You can configure the OAM application to track frame and symbol errors on the link to analyze the overall health and quality of the link. Frame errors include `frameTooLong`, `lengthError` (runts), `alignmentError`, and `frameCheckSequence` errors.

You can monitor frame and symbol errors by setting up a monitoring period or window and a threshold value. If the number of errors observed during the window meets or exceeds the configured low threshold, an Event Notification PDU (in the appropriate TLVs) is generated and sent to the peer. Alternatively, if you configure a high threshold value on the local OAM peer, the OAM function attempts to alter the operational state of the link whenever the high threshold value is exceeded. The monitoring of the link continues with a new window or period as long as the operational state of the link is up. When the number of errors observed during the window equals or goes below the configured low threshold value, the OAM application attempts to reverse the operational state of the link to up.

Supported Error Events for Tracking Link Faults

The OAM application maintains an updated cumulative count of frame and symbol errors and also an updated summation of events generated as a result of a threshold exception. Both these sums are displayed in the appropriate link event TLVs and in the output of the **show ethernet oam** commands.

Because certain MAC devices on the IOAs might not support a symbol error statistic, enabling the monitoring of symbol errors is benign and no events are raised for that link.

The following error events are supported for configuration on Ethernet interfaces:

- Error Symbol Period (error symbols per second)—The number of symbol errors that occurred during a specified period exceeded a threshold. These errors are coding symbol errors.
- Error Frame (error frames per second)—The number of frame errors observed during a specified period exceeded a threshold.
- Error Frame Seconds Summary (error seconds per *n* seconds)—The number of error seconds (1-second intervals with at least one frame error) within the last *n* seconds has exceeded a threshold.

Because IEEE 802.3ah OAM does not provide a guaranteed delivery of any OAM PDU, the event notification OAM PDU might be sent multiple times to reduce the probability of a lost notification. A sequence number is used to distinguish among duplicate events.

Actions Performed on Exceeding Threshold Values

You can configure the OAM application to influence the operational state of the link, when a link quality threshold is exceeded or a critical event PDU is received from the peer, or both. You can configure either of the following actions to be taken when a high threshold value is exceeded or when a failure condition is communicated by the remote peer:

- **Disable**—OAM unconditionally attempts to influence the operational state of the interface to down. If the interface is a member link of a LAG bundle and at least one other viable link (redundant member or another active/up link) is present, OAM attempts to influence the operational state of the link to down. Otherwise, no action is taken.
- **Failover**—On GE-2 and GE-HDE line modules that are paired with GE-2 SFP I/O modules with physical link redundancy, this action attempts to transition the link from active to redundant.

By default, no action is performed on the link. The operational status displayed in the output of the **show** commands for interfaces is down if the OAM session is marked as down/nonfunctional after the configured action is taken on the link.

- Related Topics**
- OAM Feature Overview
 - Guidelines for Configuring 802.3ah OAM Link-Fault Management
 - OAM Messages
 - Monitoring OAM Link-Fault Management Configuration for an Interface
 - Monitoring OAM Link-Fault Management Statistics for an Interface
 - ethernet oam lfm high-threshold
 - ethernet oam lfm link-monitor frame-seconds
 - ethernet oam lfm link-monitor frame-seconds-summary
 - ethernet oam lfm link-monitor symbol-period
 - show ethernet oam lfm status
 - show ethernet oam lfm statistics

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