Monitor Performance

This chapter describes the Performance Monitoring (PM) parameters used in Cisco NCS 2000 SVO and its related tasks.

Note We recommend that you use either single EPNM session in standalone mode or EPNM with two servers in high availability mode. A single PM monitoring session is recommended either through EPNM, TL1, or SNMP.

Threshold Performance Monitoring

Thresholds are used to set error levels for each PM parameter.

During the accumulation cycle, if the current value of a PM parameter reaches or exceeds its corresponding threshold value, the PM details are highlighted with NA or with a change of color for the bucket. When a threshold is crossed, the node continues to count the errors during a given accumulation period. If zero is entered as the threshold value, generation of TCAs is disabled but performance monitoring continues. PM parameters are used by service providers to gather, store, set thresholds, and report performance data for early detection of problems.

Performance Monitoring

The Performance tab displays the PM parameters.

Current Table

The Current PM table lists the parameters of the functioning cards with their current values. The table provides options to change the statistical values displayed.

History Table

The History PM table lists the history of the parameters of the functioning cards with their current and previous values. The table provides options to change the statistical values displayed.

Performance Monitoring Tab

The Performance Monitoring tab consists of:

- The **Refresh** icon manually refreshes the PM parameter values on the table.

- The **Auto-Refresh** drop-down list automatically refreshes the PM parameter values on the table based on the selected time interval. The auto-refresh can be set for several intervals ranging from 15 seconds to 5 minutes.

- The **Interval** drop-down list helps the user set a time interval at which the data would be split to be shown in the table. The two interval options that the user can choose to display the data are 15 minutes or one day.

- The **Interface Type** drop-down list helps the user choose the interface type of the card. The options available are based on the selected card.

- The **Interface** drop-down list helps the user choose the port of the card. The options available are based on the selected card.

- The **Direction** drop-down list helps the user choose the direction of path. The user can choose from one of two options: nearEnd and farEnd.

- The **Clear PM** button sets the PM parameter values on the card to zero. All counters on the card are cleared.

Interface Types

You have one of five options to choose from the interface type drop-down list: EthernetCsmacd, optical channel, OTNOdu, OTNOtu, and OpticalTransport.

Optical Channel PM

The Optical Channel PM lists parameters at the trunk and client side for all optical and control OPT-AMP-C, 400G-XP, MR-MXP, TNC, TNCE, TNCS, TNCS-O, TNCS-2, TNCS-2O cards.

The parameters for the Optical channel are as shown in the following table:

Table 1: Optical Channel PM Parameters

Trunk-Side/Client-Side Optical Channel PM Parameters	Definition
Laser Bias (Avg, %)	Average Laser Bias Current (Laser Bias Avg) is the average percentage of laser bias current during the PM time interval.
Laser Bias (Max,%)	Maximum Laser Bias Current (Laser Bias Max) is the maximum percentage of laser bias current during the PM time interval.
Laser Bias (Min,%)	Minimum Laser Bias Current (Laser Bias Min) is the minimum percentage of laser bias current during the PM time interval.
Link Status	Indicates if the Fibre Channel link is receiving a valid Fibre Channel signal (carrier) from the attached Fibre Channel device. Up indicates present, and down indicates not present.
Rx Optical Pwr (Min,dBm)	Minimum Receive Optical Power (Rx Optical Pwr Min, dBm) is the minimum received optical power during the PM time interval.
Rx Optical Pwr (Avg,dBm)	Average Receive Optical Power (Rx Optical Pwr Avg, dBm) is the average received optical power during the PM time interval.
Rx Optical Pwr (Max,dBm)	Maximum Receive Optical Power (Rx Optical Pwr Max, dBm) is the maximum received optical power during the PM time interval.
Tx Optical Pwr (Min,dBm)	Minimum Transmit Optical Power (Tx Optical Pwr Min, dBm) is the minimum optical power transmitted during the PM time interval.
Tx Optical Pwr (Avg,dBm)	Average Transmit Optical Power (Tx Optical Pwr Avg, dBm) is the average optical power transmitted during the PM time interval.
Tx Optical Pwr (Max,dBm)	Maximum Transmit Optical Power (Tx Optical Pwr Max, dBm) is the maximum optical power transmitted during the PM time interval.
CD (Min,ps/nm)	Minimum Chromatic Dispersion (CD Min, ps/nm) is the minimum chromatic dispersion during the PM time interval. Not supported on 10x10G-LC card.
CD (Avg,ps/nm)	Average Chromatic Dispersion (CD Avg, ps/nm) is the average chromatic dispersion during the PM time interval. Not supported on 10x10G-LC card.
CD (Max,ps/nm)	Maximum Chromatic Dispersion (CD Max, ps/nm) is the maximum chromatic dispersion during the PM time interval.
OSNR (Min,dB)	Minimum Optical Signal to Noise Ratio (OSNR Min, dB) is the minimum optical signal to noise ratio during the PM time interval.
OSNR (Avg,dB)	Average Optical Signal to Noise Ratio (OSNR Avg, dB) is the average optical signal to noise ratio during the PM time interval.

OSNR (Max,dB)	Maximum Optical Signal to Noise Ratio (OSNR Max, dB) is the maximum optical signal to noise ratio during the PM time interval.
PMD (Min,ps)	Minimum Polarization Mode Dispersion (PMD Min, ps) is the minimum polarization mode dispersion during the PM time interval. Not supported on 400G-XP and 10x10G-LC cards.
PMD (Avg,ps)	Average Polarization Mode Dispersion (PMD Avg, ps) is the average polarization mode dispersion during the PM time interval. Not supported on 400G-XP and 10x10G-LC cards.
PMD (Max,ps)	Maximum Polarization Mode Dispersion (PMD Max, ps) is the maximum polarization mode dispersion during the PM time interval. Not supported on 400G-XP and 10x10G-LC cards.
SOPMD (Min,ps^2)	Minimum Second-order Polarization Mode Dispersion (SOPMD Min,ps^2) is the minimum second-order polarization mode dispersion during the PM time interval. Not supported on 10x10G-LC card.
SOPMD (Avg,ps^2)	Average Second-order Polarization Mode Dispersion (SOPMD Avg,ps^2) is the average second-order polarization mode dispersion during the PM time interval. Not supported on 10x10G-LC card.
SOPMD (Max,ps^2)	Maximum Second-order Polarization Mode Dispersion (SOPMD Max,ps^2) is the maximum second-order polarization mode dispersion during the PM time interval. Not supported on 10x10G-LC card.
PCR (Min,10*rad/s)	Minimum Polarization Change Rate (PCR Min,10*rad/s) is the minimum polarization change rate during the PM time interval. Not supported on 400G-XP and 10x10G-LC cards.
PCR (Avg,10*rad/s)	Average Polarization Change Rate (PCR Avg,10*rad/s) is the average polarization change rate during the PM time interval. Not supported on 400G-XP and 10x10G-LC cards.
PCR (Max,10*rad/s)	Maximum Polarization Change Rate (PCR Max,10*rad/s) is the maximum polarization change rate during the PM time interval. Not supported on 400G-XP and 10x10G-LC cards.
PDL (Min,dB)	Minimum Polarization Dependent Loss (PDL Min,dB) is the minimum polarization dependent loss during the PM time interval. Not supported on 10x10G-LC card.

PDL (Avg,dB)	Average Polarization Dependent Loss (PDL Avg,dB) is the average polarization dependent loss during the PM time interval. Not supported on 10x10G-LC card.
PDL (Max,dB)	Maximum Polarization Dependent Loss (PDL Avg,dB) is the maximum polarization dependent loss during the PM time interval. Not supported on 10x10G-LC card.

OTNOdu/ OTNOtu PM

The OTNOdu and OTNOtu PM pane lists parameters at the trunk and client side for all optical and control 400G-XP, 200G-CK-C, 100G-CK-C, 100GS-CK-C, TNC, TNCE, TNCS, TNCS-O, TNCS-2, and TNCS-2O cards.

The parameters for the OTNOdu/OTNOtu PM channel are as shown in the following table:

Table 2: OTBOdu/OTNOtu PM Parameters

Parameter	Definition
BBE-SM	Section Monitoring Background Block Errors (BBE-SM) shows the number of background block errors recorded in the OTN section during the PM time interval.
BBER-SM	Section Monitoring Background Block Errors Ratio (BBER-SM) shows the background block errors ratio recorded in the OTN path during the PM time interval.
ES-SM	Section Monitoring Errored Seconds (ES-SM) shows the errored seconds recorded in the OTN section during the PM time interval.
ESR-SM	Section Monitoring Errored Seconds Ratio (ESR-SM) shows the severely errored seconds ratio recorded in the OTN section during the PM time interval.
FC-SM	Section Monitoring Failure Counts (FC-SM) shows the failure counts recorded in the OTN section during the PM time interval.
SES-SM	Section Monitoring Severely Errored Seconds (SES-SM) shows the severely errored seconds recorded in the OTN section during the PM time interval.
SESR-SM	Section Monitoring Severely Errored Seconds Ratio (SESR-SM) shows the severely errored seconds ratio recorded in the OTN section during the PM time interval.

UAS-SM	Section Monitoring Unavailable Seconds (UAS-SM) shows the unavailable seconds recorded in the OTN section during the PM time interval.

Ethernet PM

The SVO provides Ethernet port performance information, including line-level parameters, port bandwidth consumption, and historical Ethernet statistics.

The parameters for the Ethernet PM channel are as shown in the following table:

Table 3: Ethernet Statistics Parameters

Parameter	Definition
Time Last Cleared	A time stamp indicating the previous time statistics were reset.
ifInOctets	Number of bytes received since the last counter reset.
rxTotalPks	Number of received packets.
ifInUcastPkts	Number of unicast packets received since the last counter reset.
ifInMulticastPkts	Number of multicast packets received since the last counter reset.
ifInDiscards	The number of inbound packets that are chosen to be discarded even though no errors are detected to prevent their being deliverable to a higher-layer protocol. One possible reason for discarding such a packet is to free buffer space.
ifOutOctets	Number of bytes transmitted since the last counter reset.
txTotalPkts	Number of transmitted packets.
ifOutMulticastPkts	Number of multicast packets transmitted.
ifOutBroadcastPkts	Number of broadcast packets transmitted.
ifOutDiscards	Number of outbound packets that are chosen to be discarded even though no errors are detected to prevent their transmission. A possible reason for discarding such packets is to free up buffer space.
ifOurErrors	Number of outbound packets or transmission units that cannot be transmitted because of errors.
dot3StatsAlignmentErrors	A count of frames received on a particular interface that are not an integral number of octets in length and do not pass the FCS check.

Parameter	Definition
dot3StatsFCSErrors	A count of frames received on a particular interface that are an integral number of octets in length but do not pass the FCS check.
dot3StatsFrameTooLong	A count of frames received on a particular interface that exceed the maximum permitted frame size.
etherStatsUndersizePkts	The total number of packets received that are less than 64 octets long (excluding framing bits, but including FCS octets) and are otherwise well formed.
etherStatsFragments	The total number of packets received that are less than 64 octets in length (excluding framing bits but including FCS octets) and has either a bad FCS with an integral number of octets (FCS Error) or a bad FCS with a nonintegral number of octets (Alignment Error).
etherStatsPkts64Octets	The total number of packets (including bad packets) received that are 64 octets in length (excluding framing bits but including FCS octets).
etherStatsPkts65to127Octets	The total number of packets (including bad packets) received that are between 65 and 127 octets in length inclusive (excluding framing bits but including FCS octets).
etherStatsPkts128to255Octets	The total number of packets (including bad packets) received that are between 128 and 255 octets in length inclusive (excluding framing bits but including FCS octets).
etherStatsPkts256to511Octets	The total number of packets (including bad packets) received that are between 256 and 511 octets in length inclusive (excluding framing bits but including FCS octets).
etherStatsPkts512to1023Octets	The total number of packets (including bad packets) received that are between 512 and 1023 octets in length inclusive (excluding framing bits but including FCS octets).
etherStatsPkts1024to1518Octets	The total number of packets (including bad packets) received that are between 1024 and 1518 octets in length inclusive (excluding framing bits but including FCS octets).
etherStatsBroadcastPkts	The total number of good packets received that are directed to the broadcast address. Note that this does not include multicast packets.
etherStatsMulticastPkts	The total number of good packets received that are directed to a multicast address. Note that this number does not include packets directed to the broadcast address.

Parameter	Definition
etherStatsOversizePkts	The total number of packets received that are longer than 1518 octets (excluding framing bits, but including FCS octets) and are otherwise well formed. Note that for tagged interfaces, this number becomes 1522 bytes.
etherStatsJabbers	The total number of packets received that are longer than 1518 octets (excluding framing bits, but including FCS octets), and has either a bad FCS with an integral number of octets (FCS Error) or a bad FCS with a nonintegral number of octets (Alignment Error).
etherStatsOctets	The total number of octets of data (including those in bad packets) received on the network (excluding framing bits but including FCS octets.
etherStatsCRCAlignErrors	The total number of packets received that has a length (excluding framing bits, but including FCS octets) of between 64 and 1518 octets, inclusive, but had either a bad FCS with an integral number of octets (FCS Error) or a bad FCS with a nonintegral number of octets (Alignment Error).

ITU G.709 Threshold PM

The ITU G.709 section monitoring trunk-side PM parameters are shown in the following table.

Table 4: ITU G.709 Section Monitoring PM Definitions

Paramaters	Definition
BBE-SM	Section Monitoring Background Block Errors (BBE-SM) shows the number of background block errors recorded in the OTN section during the PM time interval.
BBER-SM	Section Monitoring Background Block Errors Ratio (BBER-SM) shows the background block errors ratio recorded in the OTN path during the PM time interval.
ES-SM	Section Monitoring Errored Seconds (ES-SM) shows the errored seconds recorded in the OTN section during the PM time interval.
ESR-SM	Section Monitoring Errored Seconds Ratio (ESR-SM) shows the severely errored seconds ratio recorded in the OTN section during the PM time interval.
FC-SM	Section Monitoring Failure Counts (FC-SM) shows the failure counts recorded in the OTN section during the PM time interval.

Paramaters	Definition
SES-SM	Section Monitoring Severely Errored Seconds (SES-SM) shows the severely errored seconds recorded in the OTN section during the PM time interval.
SESR-SM	Section Monitoring Severely Errored Seconds Ratio (SESR-SM) shows the severely errored seconds ratio recorded in the OTN section during the PM time interval.
UAS-SM	Section Monitoring Unavailable Seconds (UAS-SM) shows the unavailable seconds recorded in the OTN section during the PM time interval.

The ITU G.709 path monitoring trunk-side PM parameters are shown in the following table.

Table 5: TU G.709 Path Monitoring PM Definitions

Parameter	Defintion
BBE-PM	Path Monitoring Background Block Errors (BBE-PM) shows the number of background block errors recorded in the OTN path during the PM time interval.
BBER-PM	Path Monitoring Background Block Errors Ratio (BBER-PM) shows the background block errors ratio recorded in the OTN path during the PM time interval.
ES-PM	Path Monitoring Errored Seconds (ES-PM) shows the errored seconds recorded in the OTN path during the PM time interval.
ESR-PM	Path Monitoring Errored Seconds Ratio (ESR-PM) shows the severely errored seconds ratio recorded in the OTN path during the PM time interval.
FC-PM	Path Monitoring Failure Counts (FC-PM) shows the failure counts recorded in the OTN path during the PM time interval.
SES-PM	Path Monitoring Severely Errored Seconds (SES-PM) shows the severely errored seconds recorded in the OTN path during the PM time interval.
SESR-PM	Path Monitoring Severely Errored Seconds Ratio (SESR-PM) shows the severely errored seconds ratio recorded in the OTN path during the PM time interval.
UAS-PM	Path Monitoring Unavailable Seconds (UAS-PM) shows the unavailable seconds recorded in the OTN path during the PM time interval.

FEC Threshold PM

The 100G-LC-C, 100GS-CK-LC , 200G-CK-LC, and 100G-CK-C card FEC PM parameters are shown in the following table.

Table 6:

Parameter	Definition
Bit Errors	Bit Errors are the number of bit errors corrected.
FEC (NE)	FEC enables correction and detection of errors along the optical links where OTN and FEC are provisioned. FEC uses Reed Solomon code RS (255,239) encoding. The FEC field is found in Rows 1 to 4 and Columns 3835 to 4080. It contains either the Reed-Solomon RS(255,239) codes, or if FEC is disabled, fixed stuff bytes (zeros).
UNC-Words	Uncorrectable Words (UNC-Words) occur when FEC detects and corrects errors to deliver a 7 to 8 dB improvement in the signal-to-noise ratio (also called margin). For ITU G.709, the FEC code used is Reed-Solomon RS (255, 239).

RMON PM

The 100G-LC-C, 100G-CK-C, 100GS-CK-LC , 200G-CK-LC, and 10x10G-LC full RMON statistics PM parameters are shown in the following table.

Table 7: RMON PM Definitions

Parameter	Definition
dot3StatsFCSErrors	The number of frames with frame check errors.
dot3StatsFrameTooLong	The number of packets at least 64 octets long, without a bad Frame Check Sequence (FCS), where the 802.3 length or type field does not match the computed DATA field length.
etherStatsBroadcastPkts	The number of broadcast packets, excluding multicast packets, that are 64-16376 octets in length, and have a valid FCS.
etherStatsCRCAlignErrors	The number of packets that are 64-1518 octets in length without an integral number of octets, or with a bad FCS.
etherStatsFragments	The number of packets less than 64 octets long that do not have an integral number of octets or that have a bad FCS.

Parameter	Definition
etherStatsJabbers	The number of octets of data, including bad packets, that are received on the network.
etherStatsMulticastPkts	The number of multicast packets, excluding broadcast packets, that are 64-16376 octets in length, and have a valid FCS.
etherStatsOctets	The number in bytes of received packets, including bad packets and excluding framing bits except for FCS bytes.
etherStatsOversizePkts	The number of packets more than 16376 octets long that have a valid FCS.
etherStatsPkts64Octets	The number of packet received, including error packets, that are 64 octets in length.
etherStatsPkts65to127Octets	The number of packets received, including error packets, that are 65-127 octets in length.
etherStatsPkts128to255Octets	The number of packets received, including error packets, that are 128-255 octets in length.
etherStatsPkts256to511Octets	The number of packets received, including error packets, that are 256-511 octets in length.
etherStatsPkts512to1023Octets	The number of packets received, including error packets, that are 512-1023 octets in length.
etherStatsPkts1024to1518Octets	The number of packets received, including error packets, that are 1024-1518 octets in length.
etherStatsUndersizePkts	The number of packets less than 64 octets long that have a valid FCS.
fcStatsLinkRecoveries	The number of link recoveries.
fcStatsRxCredits	The number of current receive buffer to buffer credits.
fcStatsTxCredits	The number of current transmit buffer to buffer credits.
fcStatsZeroTxCredits	This is a count that increments when the FC/FICON Tx credits go from a nonzero value to zero.
gfpStatsLFDRaised	The number of loss of frame delineation (LFD) raised.
gfpStatsRoundTripLatencyUSe	Round trip delay for the end-to-end Fibre Channel transport in microseconds.
gfpStatsRxCRCErrors	The number of packets received with a payload FCS error.
gfpStatsRxCSFRaised	Received GFP loss of client character synchronization (LOCCS).
gfpStatsRxDistanceExtBuffers	The number of receive buffer credit for GFP-T (valid only if distance extension is enabled)

Parameter	Definition
gfpStatsRxMBitErrors	The received multibit errored core header count (cHEC).
gfpStatsRxSBitErrors	The received single-bit errored cHEC.
gfpStatsRxSblkCRCErrors	The number of packets received with a payload FCS error. Sblk stands for super block in the GFP payload.
gfpStatsRxTypeInvalid	Received GFP frames with invalid type (these are discarded). For example, receiving GFP frames that contain Ethernet data when we expect Fibre Channel data.
gfpStatsTxDistanceExtBuffers	The number of transmit buffer credit for GFP-T (valid only if distance extension is enabled).
ifInUcastPkts	The number of packets, delivered by this sub-layer to a higher (sub-)layer, which are not addressed to a multicast or broadcast address at this sub-layer.
ifInMulticastPkts	The number of packets, delivered by this sub-layer to a higher (sub-)layer, which are addressed to a multicast address at this sub-layer. For a MAC layer protocol, this includes both Group and Functional addresses.
ifInBroadcastPkts	The number of packets delivered to a higher sublayer and addressed to a broadcast address at this sublayer.
ifInDiscards	The number of inbound packets that are chosen to be discarded even though no errors are detected, to prevent them from being deliverable to a higher-layer protocol. One possible reason for discarding such a packet is to free buffer space.
ifInErrors	The number of inbound packets (or transmission units) that contain errors preventing them from being delivered to a higher-layer protocol.
ifInErrorBytePkts	The number of received packets with an error symbol detected.
ifInFramingErrorPkts	The number of received packets with a control symbol other than an error detected.
ifInJunkInterPkts	The number of interpacket gaps between valid start symbols during which a symbol other than idle is detected, including packets of length 1-8 octets.
ifInMulticastPkts	The total number of multicast frames received error-free.
ifInOctets	The number of bytes received since the last counter reset.

Parameter	Definition
ifOutBroadcastPkts	The number of packets requested by higher-level protocols and addressed to a broadcast address at this sublayer, including those not transmitted.
ifOutDiscards	The number of outbound packets that were chosen to be discarded even though no errors had been detected to prevent their being transmitted. One possible reason for discarding such a packet could be to free buffer space.
ifOutMulticastPkts	The number of multicast frames transmitted error-free.
ifOutOctets	The number of bytes transmitted since the last counter reset.
InvalidCRCError	A count of invalid cyclic redundancy checks (CRCs).
mediaIndStatsRxFramesBadCRC	The number of received frames with a CRC error.
mediaIndStatsRxFramesTooLong	The number of received frames that are too long.
Running Disparity Count	A count of errors that affect the disparity of the received data stream.
rxControlFrames	The number of MAC control packets that are type 0x8808 and contain at least 64 octets in length.
rxFrames	count of the number of frames received without errors.
rxLinkReset (Only for FC Mode)	A count of the received link resets.
rxPauseFrames	The number of received 802.x paused frames.
rxTotalPkts	The number of received packets.
rxUnknownOpcodeFrames	Number of packets of at least 64 octets in length ad type 0x8808, with opcode not equal to 1.
Time Last Cleared	A time stamp indicating the previous time statistics were reset.
txBytes	A count of the number of bytes transmitted from the frame since the last counter reset.
txFrames	A count of the number of transmitted frames.
txTotalPkts	The number of transmitted packets.
dot3StatsFCSErrors	A count of frames received on a particular interface that are an integral number of octets in length but do not pass the FCS check.
dot3StatsFrameTooLong	A count of frames received on a particular interface that exceed the maximum permitted frame size.
dot3StatsInPauseFrames	A count of frames received on this interface with an opcode indicating the PAUSE operation.

Parameter	Definition
dot3StatsOutPauseFrames	A count of MAC Control frames transmitted on this interface with an opcode indicating the PAUSE operation.
etherStatsUndersizePkts	The total number of packets received that are less than 64 octets long (excluding framing bits, but including FCS octets and are otherwise well formed.
medialndStatsTxFramesTooLong	Total number of transmitted data frames that are less than 5 bytes. This value is a part of HDLC and GFP port statistics.
medialndStatsTxFramesTruncated	Number of transmitted data frames that exceed the MTU. This value is part of HDLC and GFP port statistics.
pcs49RxErrBer	Total number of 125uSec periods where BER is detected. BER is a condition where one or more errors are detected or counted on the PCS layer.
pcs49RxErrDec	Total number of invalid blocks received. 64 bits of data are transmitted as 66-bit code blocks on the PHY layer with the 64-bit or 66-bit encoder or decoder. The 66-bit code block has an initial 2-bit Sync Header, that can assume only the values 01 (data only) or 10 (data or control). The block is counted as invalid if the Sync Header bits assume invalid values.
gfpStatsRxFrame	Total number of received data frames.
gfpStatsTxFrame	Total number of transmitted data frames.
gfpStatsRxOctets	Total number of GFP data octets received.
gfpStatsTxOctets	Total number of GFP data octets transmitted.
gfpRxCmfFrame	—
gfpTxCmfFrame	—

Performance Monitoring of SVO Card

This section lists the PM parameters that are supported by the SVO card.

Ethernet Counter PM

The Ethernet Counter PM tab lists the Ethernet counter parameters for the SVO card.

Table 8:

Parameter	Definition
goodOctetsRcv	Number of Ethernet frames received that are not bad Ethernet frames or MAC control packets.
pkts128to255Octets	Total number of received and transmitted undamaged and damaged frames that are 128 to 255 bytes in size. This does not include MAC control frames.
brdcPktsSent	Total number of good packets sent that have a broadcast destination MAC address. This does not include 802.3 flow control packets, packets dropped due to excessive collision, or packets with a Tx error.
jabberPkts	Number of jabber packets received.
badOctetsRcv	Sum of lengths of all the bad Ethernet frames received.
pkts256to511Octets	Total number of received and transmitted undamaged and damaged frames that are 256 to 511 bytes in size. This does not include MAC control frames.
fcSent	Number of flow control frames sent.
macRcvError	Number of Rx error events seen by the receive side of the MAC address.
macTransmitErr	Number of frames not transmitted correctly or dropped due to internal MAC Tx error.
pkts512to1023Octets	Total number of received and transmitted undamaged and damaged frames which are 512 to 1023 bytes in size. This does not include MAC control frames.
goodFcRcv	Number of good flow control frames received.
badCrc	Number of CRC error events.
brdcPktsRcv	Total number of undamaged packets received that are directed to the broadcast address.
pkts1024toMaxOctets	Total number of received and transmitted undamaged and damaged frames that are more than 1024 bytes in size. This does not include MAC control frames.
dropEvents	Number of instances that the port are unable to receive packets due to insufficient bandwidth.
collisions	Total number of collisions seen by the MAC address.
mcPktsRcv	Total number of undamaged packets received that are directed to a multicast address.

Parameter	Definition
goodOctetsSent	Sum of lengths of all the good Ethernet frames sent from this MAC address. This does not include 802.3 flow control packets, packets dropped due to excessive collision, or packets with a Tx error.
undersizePkts	Number of undersize packets received.
lateCollisions	Total number of late collisions seen by the MAC address.
pkts64Octets	Total number of received and transmitted undamaged and damaged frames that are 64 bytes in size. This does not include MAC control frames.
excessiveCollisions	Number of frames dropped in the transmit MAC address due to excessive collisions.
fragmentsPkts	Number of fragments received.
ucPktsSent	Number of good frames sent that have a unicast destination MAC address.
pkts65to127Octets	Total number of received and transmitted undamaged and damaged frames that are 65 to 127 bytes in size. This does not include MAC control frames.
mcPktsSent	Total number of good packets sent that have a multicast destination MAC address. This does not include 802.3 flow control packets, packets dropped due to excessive collision, or packets with a Tx error.
oversizePkts	Number of oversize packets received.

Optics PM

The Optics PM tab lists the optics PM parameters for the SVO card.

Table 9: Optics PM Parameters

Optics PM Parameters	Definition
Laser Bias (%)	Laser Bias (Laser Bias) is the percentage of laser bias optical during the PM time interval.
Rx Power (dBm)	Receive Power (Rx Pwer dBm) is the received optical power during the PM time interval.
Tx Power (dBm)	Transmit Power (Tx Power dBm) is the transmitted optical power during the PM time interval.

Sensor Data PM

A temperature sensor helps the user manage the system and diagnoses malfunctions. The temperature is measured in degrees of Celsius, and it can be negative. There are several temperature sensors available in the device. The device raises an interrupt when the temperature exceeds a certain threshold.

View PM Parameters

Use this task to view the current and historical PM counts of a card.

Before you begin

- Log into the SVO Web Interface

- Open the Card View

Procedure

Step 1 Perform 1.a, on page 17 to view current PMs or 1.b, on page 17 to view historical PMs.

a) Click the **Performance** > **Current PM** tabs.

You can view the parameter names in the **Parameter** column and the corresponding PM values in the **Current Reading** column.

b) Click the **Performance** > **History PM** tabs.

You can view the parameter names in the **Parameter** column and the corresponding PM values in the **Current Reading** and **Prev-n** (previous) columns.

Step 2 Select the **Interval**, **Interface Type**, **Interface**, and **Direction** from their respective drop-down lists.

Note The options available are based on the card that is selected.

Step 3 Click **Refresh**.

The values are displayed in the table. If a complete count for the specified interval is not possible, the value appears against a yellow background. An incomplete or incorrect count can be caused by monitoring for less than the specified interval after the counter starts, replacing a card, resetting a card, or changing port service states. When the problem is corrected, the subsequent specified interval appears against a white background.

Step 4 (Optional) If you want to set an auto-refresh interval, select a value from the **Auto Refresh** drop-down list.

Depending on the selected autorefresh interval, the displayed PM counts automatically update when each refresh interval completes. When the autorefresh interval is set, the **Refresh** button is automatically disabled. If the autorefresh interval is set to None, the PM counts that appear are not updated unless you click **Refresh**.

Step 5 (Optional) To clear the current reading values, click **Clear PM**.

A confirmation message is displayed. Click **Confirm** to proceed.

Note The **Clear PM** button is not available in the History PM tab.

View PM Parameters of SVO Card

Use this task to view the PM counts of the SVO card.

Before you begin

- Log into the SVO Web Interface

- Open the Card View

Procedure

Step 1   Click the **Performance** tab.

Step 2   Perform these steps, as needed.

     a) To view the ethernet counter PM parameters, perform these steps:

         1. Click the **Ethernet Counter** tab.

         2. From the drop-down list, choose a specific port or **ALL**.

         3. Click **Refresh** to view the updated PM values.

         4. (Optional) To clear the current reading values, click **Clear**.

            A confirmation message appears.

         5. Click **Confirm** to proceed.

     b) To view the sensor data PM parameters, perform these steps:

         1. Click the **Sensor Data** tab.

         2. Click **Refresh** to view the updated PM values.

     c) To view the Optics PM parameters, perform these steps:

         1. Click the **Optics PM** tab.

         2. Click **Refresh** to view the updated PM values.

Export PM Data of SVO Card

Table 10: Feature History

Feature Name	Release Information	Feature Description
Export PM Data for SVO Card	Cisco NCS 2000 Release 12.3.1	From this release onwards, you can download the complete PM data for an SVO card through the SVO Web User Interface. This data can be used offline for device monitoring. The downloaded data is in an Excel format and is collated for the past 15 minutes and 1-day time duration. This feature eliminates the need for individually accessing data for each PM parameter separately.

Export PM Data of SVO Card

Use this task to export the complete PM data for the SVO card. The PM data will be downloaded as an Excel sheet in your system after performing the following steps.

Before you begin

- Log into the SVO Web Interface

- Open the Card View

Procedure

Step 1   Click the **Performance** > **Performance Monitoring** tabs.

Step 2   Click **Export to Excel with nested data**.

The Excel sheet contains complete PM data for all the ports and interface type showing current and previous readings for the SVO card.

Note   The downloaded Excel sheet contains PM data for 15 minutes and 1-day interval.