

## Chapter 12

# EIA-530 Interfaces Operational Mode Commands

This chapter describes the show interfaces command you use to monitor and troubleshoot EIA-530 interfaces.

### show interfaces (for EIA-530 Interfaces)

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<b>Syntax</b>	show interfaces <i>se-fpc/pic/port</i> <brief   detail   extensive> <media> <statistics>
<b>Description</b>	Display status information about EIA-530 serial interfaces.
<b>Options</b>	none—Display information about all interfaces.  <i>se-fpc/pic/port</i> —Name of an interface.  brief—(Optional) Display brief interface information.  detail—(Optional) Display detailed interface information.  extensive—(Optional) Display very detailed interface information.  media—(Optional) Display media-specific information about network interfaces.  statistics—(Optional) Display static interface statistics.
<b>Required Privilege Level</b>	view
<b>Sample Output</b>	show interfaces (standard) (for EIA-530 Interfaces) on page 193 show interfaces brief (for EIA-530 Interfaces) on page 193 show interfaces detail (for EIA-530 Interfaces) on page 194 show interfaces extensive (for EIA-530 Interfaces) on page 195 show interfaces statistics (for EIA-530 Interfaces) on page 196
<b>Output Fields at a Glance</b>	Table 23 on page 186 summarizes the information included in the output fields of each show interfaces command option for EIA-530 interfaces. In this table, output fields are listed in alphabetical order. Table 24 on page 189 lists the output fields in more detail in the order in which they are displayed.

**Table 23: EIA-530 Show Interfaces Output Field Summary (Alphabetical Order)**

Options	Field Description
<b>Physical Interface</b>	
All	Active alarms—Defects that can render the interface unable to pass packets.
Interval	Alarms and defects: <i>n</i> —Count of alarms and defects within each 15-minute interval.
Extensive	Bucket Drops—Drops due to traffic load exceeding the interface transmit/receive leaky bucket configuration. The default is off.
All	Clocking—Reference clock source. It can be Internal or External.
Extensive	Drops—Number of packets dropped by the output queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism.
All	Device flags—Information about the physical device. Possible values are described in "Device Flags" on page 7.
Detail Media	Extensive Clocking mode—Clocking used for the transmit clock.
Detail Media	Extensive Control signal—Information about modem control signals. To DCE—Control signals that the EIA-530 PIC sent to the DCE. From DCE—Control signals that the EIA-530 PIC received from the DCE.
Detail Media	Extensive Data signal—Information about the data signal.
Detail Media	Extensive DTR circuit—DTR circuit information. It can be balanced or unbalanced.
Detail Statistics	Extensive Line encoding—Type of line encoding used. It can be one of the following: nrz—Non-return to zero. nrzi—Return to zero invert.
Detail Media	Extensive Loopback—Configured loopback mode for the interface. It can be dce-remote, dce-local, liu, local, or none.
Detail Media	Extensive Resync history—Information about resynchronization events. Sync loss count—Number of times the synchronization was lost.
Detail Media	Extensive Signal polarity—Polarity of the following control signals: DTR—Data Terminal Ready RTS—Request To Send CTS—Clear To Send DCD—Data Carrier Detect DSR—Data Set Ready TM—Test Mode The polarity can be one of the following: +ve—Signal is positive. -ve—Signal is negative.
Detail Media	Extensive Tx clock—Clocking phase of the transmit clock. It can be one of the following: invert—Tx clock polarity is inverted. non-invert—Tx clock polarity is not inverted.
All	Enabled—State of the interface. Possible values are described in "Enabled" on page 7.

Options	Field Description
Extensive	Framing errors—Sum of AAL5 packets that have FCS errors, AAL5 packets that have reassembly timeout errors, and AAL5 packets that have length errors.
All	Generation—A unique number for use by Juniper Networks Customer Support only.
Extensive	Giants—Frames received that are larger than the giant threshold.
Detail Extensive	Hold-times—Current interface hold-time up and hold-time down, in milliseconds.
Detail Extensive	Induced error rate—Configured rate at which the bit errors are induced in the BERT pattern.
Extensive	Input errors—Input errors on the interface.
Standard	Input rate, Output rate—Rate of bits and packets received and transmitted on the interface.
All	Interface Flags—Information about the interface. Possible values are described in “Interface Flags” on page 8.
All	Interface index—Physical interface’s index number, which reflects its initialization sequence.
Standard	Keepalive Input, Output—Number of keepalive packets sent and received by PPP and how long ago the last keepalive packets were sent and received.
Detail Extensive	Keepalive settings—Configured settings for keepalives.
Detail Extensive	Keepalive statistics—Number of keepalive packets sent and received by PPP and how long ago the last keepalive packets were sent and received.
All	LCP state—Specific PPP bits. Opened indicates that they have been initialized and opened, which means that the link is healthy.
All	Last flapped—Date, time, and how long ago the interface went from down to up.
Detail Extensive	Line protocol—Serial protocol name. It can be eia530, v.35, or x.21.
All	Link Flags—Information about the link. Possible values are described in “Link Flags” on page 8.
All	Link-level type—Encapsulation being used on the physical interface.
All	Logical interface flags—Information about the logical interface. Possible values are described in “Logical Interface Flags” on page 9.
All	Loopback—Whether loopback is enabled and the type of loopback (either local or remote).
Standard Detail Extensive	Maximum speed—Maximum speed is not configurable and is always 16,384 kbps.
All	MTU—MTU size on the physical interface.
All	NCP state—Specific PPP bits. Opened indicates that they have been initialized and opened, which means that the link is healthy
Extensive	Output errors—Output errors on the interface.
Extensive	Packet Forwarding Engine configuration—Information about how the Packet Forwarding Engine is configured.
All	Physical interface—Name of the physical interface.
All	Physical link—State of the physical interface. It can be Up or Down.
Extensive	Runts—Frames received that are smaller than the runt threshold.
All	SNMP ifIndex—SNMP index number for the physical interface.
All	Speed—Speed at which the interface is running.
Detail Extensive	Statistics last cleared—Time when the statistics for the interface were last zeroed.
Detail Extensive	Traffic statistics—Number and rate of bytes and packets received and transmitted on the physical interface.
<b>Logical Interface</b>	
All	Address flags—Information about the address.
All	Addresses—Addresses associated with the logical interface.

Options		Field Description
All		Destination—IP address of the remote side of the connection.
Detail	Extensive	Destination class—List of the names of destination class usage (DCU) counters per family and per class for this interface. The counters display Packets and Bytes going to designated user-selected prefixes.
All		Encapsulation—Encapsulation on the logical interface.
All		Generation—A unique number for use by Juniper Networks Customer Support only.
All		Family flags—Information about the protocol family flags. Possible values are described in “Family Flags” on page 9.
Detail	Extensive	Filters—Name of the firewall filters to be evaluated when packets are received or transmitted on the interface.
Detail	Extensive	Local statistics—Statistics for traffic received from and transmitted to the Routing Engine.
All		Logical interface, Index, SNMP ifIndex—Name of the logical interface, the logical interface’s index number (which reflects its initialization sequence), and the logical interface’s SNMP interface index number.
All		MTU—MTU size on the logical interface.
Detail	Extensive	Policer—Policers to be evaluated when packets are received or transmitted on the interface.
All		Protocol—Protocol running on the logical interface.
Detail	Extensive	RPF Failures: Packets: <i>xx</i> , Bytes: <i>yy</i> —The amount of incoming traffic (in packets and bytes) that failed a unicast Reverse Path Forwarding (RPF) check on this interface.
Detail	Extensive	Source class—List of the names of source class usage (SCU) counters per family and per class for this interface. The counters display Packets and Bytes arriving from designated user-selected prefixes.
Detail	Extensive	Traffic statistics—Total number of bytes and packets received and transmitted on the logical interface. These statistics are the sum of the local and transit statistics. When a burst of traffic is received, the value in the output packet rate field might briefly exceed the peak cell rate. It takes a while (generally, less than 1 second) for this counter to stabilize.  Input rate—Rate of bits and packets received on the interface.  Output rate—Rate of bits and packets transmitted on the interface.
Detail	Extensive	Transit statistics—Statistics for traffic transiting the router. When a burst of traffic is received, the value in the output packet rate field might briefly exceed the peak cell rate. It takes a while (generally, less than 1 second) for this counter to stabilize.

Table 24: EIA-530 Show Interfaces Output Field Summary (Order of Appearance)

Output Field	Output Field Description
<b>Physical Interface</b>	
Physical interface	Name of the physical interface.
Enabled	State of the interface. Possible values are described in “Enabled” on page 7.
Physical link	State of the physical interface. It can be Up or Down.
Interface index	Physical interface’s index number, which reflects its initialization sequence.
SNMP ifIndex	SNMP index number for the physical interface.
Generation	A unique number for use by Juniper Networks Customer Support only.
Link-level type	Encapsulation being used on the physical interface.
MTU	MTU size on the physical interface.
Clocking	Reference clock source. It can be Internal or External.
Maximum speed	Maximum speed is not configurable and is always 16,384 kbps.
Speed	Speed at which the interface is running.
Loopback	Whether loopback is enabled and the type of loopback (local or remote).
Device flags	Information about the physical device. Possible values are described in “Device Flags” on page 7.
Interface flags	Information about the interface.
Link flags	Information about the link. Possible values are described in “Link Flags” on page 8.
Hold-times	Current interface hold-time up and hold-time down, in milliseconds.
Keepalive Input, Output	(Standard output only) Number of keepalive packets sent and received by PPP and how long ago the last keepalive packets were sent and received.
Keepalive settings	Configured settings for keepalives. interval <i>seconds</i> —The time in seconds between successive keepalive requests. The range is 10 seconds through 32,767 seconds, with a default of 10 seconds. down-count <i>number</i> —The number of keepalive packets a destination must fail to receive before the network takes a link down. The range is 1 through 255, with a default of 3. up-count <i>number</i> —The number of keepalive packets a destination must receive to change a link’s status from down to up. The range is 1 through 255, with a default of 1.
Keepalive statistics	Information about keepalive packets. Input—Number of keepalive packets received by PPP. (last seen 00:00:00 ago)—Time since the last keepalive packet was received in the format <i>hh:mm:ss</i> . Output—Number of keepalive packets sent by PPP and how long ago the last keepalive packets were sent and received. (last seen 00:00:00 ago)—Time since the last keepalive packet was sent in the format <i>hh:mm:ss</i> .
LCP state	Specific PPP bits. Opened indicates that they have been initialized and opened, which means that the link is healthy.
NCP state	Specific PPP bits. Opened indicates that they have been initialized and opened, which means that the link is healthy.
Statistics last cleared	Time when the statistics for the interface were last zeroed.
Last Flapped	Date, time, and how long ago the interface went from down to up. The format is Last flapped: <i>year-month-day hour:minute:second timezone (hour:minute:second ago)</i> . For example, Last flapped: 2002-04-26 10:52:40 PDT (04:33:20 ago).

Output Field	Output Field Description
Traffic statistics	Number and rate of bytes and packets received and transmitted on the physical interface. Input bytes, Output bytes—Number of bytes received and transmitted on the interface. Input packets, Output packets—Number of packets received and transmitted on the interface.
Input rate, Output rate	(Standard output only) Rate of bits (in bps) and packets (in pps) received and transmitted on the interface.
Input errors	(Extensive output only) Input errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:  Errors—Sum of the incoming frame aborts and FCS errors.  Drops—Number of packets dropped by the output queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism.  Invalid VCs—Number of cells that arrived for a nonexistent VC.  Framing errors—Sum of AAL5 packets that have FCS errors, AAL5 packets that have reassembly timeout errors, and AAL5 packets that have length errors.  Bucket Drops—Drops due to traffic load exceeding the interface transmit/receive leaky bucket configuration. The default is off.  Giants—Frames received that are larger than the giant threshold.  Runts—Frames received that are smaller than the runt threshold.  Policed discards—Frames that the incoming packet match code discarded because they were not recognized or of interest. Usually, this field reports protocols that the JUNOS software does not handle, such as CDP.  L3 incompletes—Increments when the incoming packet fails Layer 3 (usually IPv4) sanity checks of the header. For example, a frame with less than 20 bytes of available IP header would be discarded and this counter would increment.  L2 channel errors—This counter increments when the software could not find a valid logical interface for an incoming frame.  L2 mismatch timeouts—Count of malformed or short packets that cause the incoming packet handler to discard the frame as unreadable.  SRAM errors—This counter increments when a hardware error has occurred in the SRAM on the PIC. The value in this field should always be 0. If it increments, the PIC is broken.  HS link FCS errors—Number of errors on the high-speed links between the ASICs responsible for handling the router interfaces.
Output errors	(Extensive output only) Output errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:  Carrier transitions—Number of times the interface has gone from down to up. This number should not increment quickly, increasing only when the cable is unplugged, the far-end system is powered down and up, or a similar problem occurs. If it increments quickly (perhaps once every 10 seconds), then either the cable, the far-end system, or the PIC is broken.  Errors—Sum of the outgoing frame aborts and FCS errors.  Drops—Number of packets dropped by the output queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism.  Aged packets—Number of packets that remained in shared packet SDRAM for so long that the system automatically purged them. The value in this field should never increment. If it does, it is most likely a software bug or possibly broken hardware.
Serial media information	Display information about physical media.
Line protocol	Serial protocol name. It can be eia530, v.35, or x.21.

Output Field	Output Field Description
Data signal	Information about the data signal. (for x.21 and v.35 only) Rx Clock—Receive clock status. It can be one of the following: OK—DTE is receiving the receive clock signal. Not detected—Receive clock signal is not being received.
Resync history	Information about resynchronization events. Sync loss count—Number of times the synchronization was lost.
Control signals	Information about modem control signals. To DCE—Control signals that the EIA-530 PIC sent to the DCE. DTR—Data Terminal Ready. It can be up or down. RTS—Request To Send. It can be up or down. From DCE—Control signals that the EIA-530 PIC received from the DCE. CTS—Clear To Send. It can be up or down. DCD—Data Carrier Detect. It can be up or down. DSR—Data Set Ready. It can be up or down. TM—Test Mode. It can be up or down.
Clocking mode	Clocking used for the transmit clock. It can be one of the following: dte—Tx clock is generated by DTE. dce—Tx clock from the DCE is looped back as the Tx clock. loop-timed—Rx clock from the DCE is looped back as the Tx clock.
Signal polarity	Polarity of the following control signals. DTR—Data Terminal Ready RTS—Request To Send CTS—Clear To Send DCD—Data Carrier Detect DSR—Data Set Ready TM—Test Mode The polarity can be one of the following: +ve—Signal is positive. -ve—Signal is negative.
Loopback	Configured loopback mode for the interface. It can be dce-remote, dce-local, liu, local, or none.
Tx clock	Clocking phase of the transmit clock. It can be one of the following: invert—Tx clock polarity is inverted. non-invert—Tx clock polarity is not inverted.
Line encoding	Type of line encoding used. It can be one of the following: nrz—Non-return to zero. nrzi—Return to zero invert.
DTR circuit	DTR circuit information. It can be balanced or unbalanced.

Output Field	Output Field Description
Packet Forwarding Engine configuration	(Extensive output only) Information about the configuration of the Packet Forwarding Engine: Destination slot—FPC slot number. PLP byte—Packet Level Protocol byte. Stream number—Stream used by the ASIC on the FPC. CoS transmit queue—The queue number and its associated user-configured forwarding class name. Bandwidth %—Percentage of bandwidth allocated to the queue. Bandwidth bps—Bandwidth allocated to the queue (in bps). Buffer %—Percentage of buffer space allocated to the queue. Buffer Bytes—Number of bytes allocated to the queue. This value is only nonzero if the buffer size is configured in terms of time. Priority—Queue priority. Possible values are low and high. Limit—Displayed if rate limiting is configured for the queue. Possible values are none and exact. If exact is configured, the queue will only transmit up to the configured bandwidth, even if there is excess bandwidth available. If none is configured, the queue will transmit beyond the configured bandwidth if there is bandwidth available.
<b>Logical Interface</b>	
Logical interface, Index, SNMP ifIndex	Name of the logical interface, the logical interface's index number (which reflects its initialization sequence), and the logical interface's SNMP interface index number.
Flags	Information about the logical interface. Possible values are described in "Logical Interface Flags" on page 9.
Protocol	Protocol running on the logical interface, such as iso, inet6, mpls.
Encapsulation	Encapsulation on the logical interface.
Traffic statistics	Total number of bytes and packets received and transmitted on the logical interface. These statistics are the sum of the local and transit statistics. When a burst of traffic is received, the value in the output packet rate field might briefly exceed the peak cell rate. It takes a while (generally, less than 1 second) for this counter to stabilize. Input rate—Rate of bits and packets received on the interface. Output rate—Rate of bits and packets transmitted on the interface.
Local statistics	Statistics for traffic received from and transmitted to the Routing Engine. When a burst of traffic is received, the value in the output packet rate field might briefly exceed the peak cell rate. It takes a while (generally, less than 1 second) for this counter to stabilize.
Transit statistics	Statistics for traffic transiting the router. When a burst of traffic is received, the value in the output packet rate field might briefly exceed the peak cell rate. It takes a while (generally, less than 1 second) for this counter to stabilize.
MTU	MTU size on the logical interface.
Flags	Information about the interface. Possible values are described in "Interface Flags" on page 8.
Generation	A unique number for use by Juniper Networks Customer Support only.
Filters	Name of the firewall filters to be evaluated when packets are received or transmitted on the interface. The format is Filters: Input: <i>input-filter-name</i> , Output: <i>output-filter-name</i> .
RPF Failures: Packets: <i>xx</i> , Bytes: <i>yy</i>	The amount of incoming traffic (in packets and bytes) that failed a unicast Reverse Path Forwarding (RPF) check on this interface.
Policer	Policers to be evaluated when packets are received or transmitted on the interface. The format is Policer: Input: <i>type-fpc/pic/port-in-policer</i> , Output: <i>type-fpc/pic/port-out-policer</i> .
Addresses	Addresses associated with the logical interface.

Output Field	Output Field Description
Flags	Information about the protocol family flags. Possible values are described in “Family Flags” on page 9.
Destination	IP address of the remote side of the connection.
Local	IP address of the logical interface.

### show interfaces (standard) (for EIA-530 Interfaces)

```

user@host> show interfaces se-5/1/0
Physical interface: se-5/1/0, Enabled, Physical link is Down
Interface index: 140, SNMP ifIndex: 50
Type: Serial, Link-level type: PPP, MTU: 1504, Clocking: Internal,
Maximum speed: 16384kbps
Device flags : Present Running Down
Interface flags: Hardware-Down Point-To-Point
Link flags   : Keepalives
Last flapped : 2003-03-14 13:43:37 PST (00:00:11 ago)
Input rate   : 0 bps (0 pps)
Output rate  : 0 bps (0 pps)

```

### show interfaces brief (for EIA-530 Interfaces)

```

user@host> show interfaces se-5/1/0 brief
Physical interface: se-5/1/0, Enabled, Physical link is Down
Type: Serial, Link-level type: PPP, MTU: 1504, Clocking: Internal
Device flags : Present Running Down
Interface flags: Hardware-Down Point-To-Point
Link flags   : Keepalives

```

## show interfaces detail (for EIA-530 Interfaces)

---

```
user@host> show interfaces se-5/1/0 detail
Physical interface: se-5/1/0, Enabled, Physical link is Down
Interface index: 140, SNMP ifIndex: 50, Generation: 24
Type: Serial, Link-level type: PPP, MTU: 1504, Clocking: Internal,
Maximum speed: 16384kbps
Device flags : Present Running Down
Interface flags: Hardware-Down Point-To-Point
Link flags   : Keepalives
Hold-times   : Up 0 ms, Down 0 ms
Hold-times   : Up 0 ms, Down 0 ms
Last flapped : 2003-03-14 13:43:37 PST (00:00:18 ago)
Statistics last cleared: Never
Traffic statistics:
Input bytes :          0          0 bps
Output bytes :          0          0 bps
Input packets:          0          0 pps
Output packets:          0          0 pps
Serial media information:
Line protocol: v.35
Resync history:
  Sync loss count: 0
Data signal:
  Rx Clock: Not Detected
Control signals:
  To DCE : DTR: up, RTS: down
  From DCE: CTS: down, DCD: down, DSR: down
Clocking mode: dte
Signal polarity:
  DTR +ve, RTS +ve, DCD +ve, DSR +ve, CTS +ve
DTR circuit mode: balanced
Loopback: none
Tx clock: non-invert
Line encoding: nrz
```

## show interfaces extensive (for EIA-530 Interfaces)

---

```

user@host> show interfaces se-5/1/0 extensive
Physical interface: se-5/1/0, Enabled, Physical link is Down
Interface index: 140, SNMP ifIndex: 50, Generation: 24
Type: Serial, Link-level type: PPP, MTU: 1504, Clocking: Internal,
Maximum speed: 16384kbps
Device flags : Present Running Down
Interface flags: Hardware-Down Point-To-Point
Link flags   : Keepalives
Hold-times   : Up 0 ms, Down 0 ms
Hold-times   : Up 0 ms, Down 0 ms
Last flapped : 2003-03-14 13:43:37 PST (00:00:20 ago)
Statistics last cleared: Never
Traffic statistics:
Input bytes :          0          0 bps
Output bytes :          0          0 bps
Input packets:          0          0 pps
Output packets:          0          0 pps
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0,
Policed discards: 0
Output errors:
Carrier transitions: 6, Errors: 0, Drops: 0
Serial media information:
Line protocol: v.35
Resync history:
Sync loss count: 0
Data signal:
Rx Clock: Not Detected
Control signals:
To DCE : DTR: up, RTS: down
From DCE: CTS: down, DCD: down, DSR: down
Clocking mode: dte
Signal polarity:
DTR +ve, RTS +ve, DCD +ve, DSR +ve, CTS +ve
DTR circuit mode: balanced
Loopback: none
Tx clock: non-invert
Line encoding: nrz
Packet Forwarding Engine configuration:
Destination slot: 5, PLP byte: 1 (0x00)
CoS transmit queue      Bandwidth      Buffer Priority Limit
      %      bps      bytes
0 best-effort      95 15564800      0 low      none
3 network-control   5  819200          0 low      none

```

## show interfaces statistics (for EIA-530 Interfaces)

---

```
user@host> show interfaces se-5/1/0 statistics  
Physical interface: se-5/1/0, Enabled, Physical link is Down  
Interface index: 140, SNMP ifIndex: 50  
Type: Serial, Link-level type: PPP, MTU: 1504, Clocking: Internal,  
Maximum speed: 16384kbps  
Device flags : Present Running Down  
Interface flags: Hardware-Down Point-To-Point  
Link flags   : Keepalives  
Last flapped : 2003-03-14 13:43:37 PST (00:00:26 ago)  
Statistics last cleared: Never  
Input rate   : 0 bps (0 pps)  
Output rate  : 0 bps (0 pps)  
Input errors: 0, Output errors: 0
```