

## Chapter 29

# Voice Services Interfaces Operational Mode Command

This chapter describes the `show interfaces` command you use to monitor and troubleshoot voice services interfaces.

The Adaptive Services PIC supports the compressed real-time transport protocol (RTP) on the interface type `vsp-fpc/pic/port`. This protocol enables voice over IP (VoIP) traffic to use low-speed links more effectively, by compressing the 40-byte IP/UDP/RTP header down to 2 to 4 bytes in most cases.

### show interfaces (for Voice Services Interfaces)

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<b>Syntax</b>	<code>show interfaces vsp-fpc/pic/port:channel &lt;brief   detail   extensive&gt; &lt;media&gt; &lt;statistics&gt;</code>
<b>Description</b>	Display status information about voice services router interfaces.
<b>Options</b>	<p>none—Display information about all interfaces.</p> <p><code>vsp-fpc/pic/port:channel</code>—Name of a voice services interface.</p> <p>brief—(Optional) Display brief interface information.</p> <p>detail—(Optional) Display detailed interface information.</p> <p>extensive—(Optional) Display extensive interface information.</p> <p>media—(Optional) Display media-specific information about network interfaces.</p> <p>statistics—(Optional) Display static interface statistics.</p>
<b>Required Privilege Level</b>	view
<b>Sample Output</b>	<p>show interfaces brief (for Voice Services Interfaces) on page 385</p> <p>show interfaces detail (for Voice Services Interfaces) on page 385</p> <p>show interfaces extensive (for Voice Services Interfaces) on page 388</p>

**Output Fields at a Glance** Table 53 summarizes information included in the output fields of each show interfaces command option for voice services interfaces. Table 54 on page 382 lists the output fields in more detail in the order in which they are displayed.

**Table 53: Voice Services Show Interfaces Output Field Summary (Alphabetical Order)**

Options		Field Description
<b>Physical Interface</b>		
Detail	Extensive	Assembly exceptions—Information about assembly exceptions. Includes events recorded under Exception Events for each logical interface.
Detail	Extensive	Buffering exceptions—Information about buffering exceptions. Includes events recorded under Exception Events for each logical interface.
All		Device flags—Information about the physical device. Possible values are described in “Device Flags” on page 7.
All		Enabled—State of the interface. Possible values are described in “Enabled” on page 7.
Detail	Extensive	Frame exceptions—Information about framing exceptions. Includes events recorded under Exception Events for each logical interface.
Detail	Extensive	Generation—A unique number for use by Juniper Networks Customer Support only.
Detail	Extensive	Hardware errors—Information about hardware errors.
All		Interface Flags—Information about the interface. Possible values are described in “Interface Flags” on page 8.
Detail	Extensive	Interface index—Physical interface’s index number, which reflects its initialization sequence.
Detail	Extensive	Last flapped—Date, time, and how long ago the interface went from down to up.
All		Link-level type—Encapsulation being used on the physical interface: Multilink-FR-UNI-NNI (default), LinkService, Frame-relay, Frame-relay-ccc, or Frame-relay-tcc.
All		MTU—MTU size on the physical interface.
All		Physical interface—Name of the physical interface.
All		Physical link—State of the physical interface: Up or Down.
Detail	Extensive	SNMP ifIndex—SNMP index number for the interface.
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. All references to traffic direction (input or output) are defined with respect to the router. Input fragments received by the router are assembled into input packets; output packets are segmented into output fragments for transmission out of the router.

Options		Field Description
<b>Logical Interface</b>		
Detail	Extensive	Addresses—Addresses associated with the logical interface.
Detail	Extensive	Bandwidth—Bandwidth allotted to the logical interface, in kilobytes per second.
Detail	Extensive	Broadcast—Broadcast address on the logical interface.
Detail	Extensive	Bundle options—Information about configured bundle options.
Detail	Extensive	Destination—IP address of the remote side of the connection.
All		Encapsulation—Encapsulation type for the interface.
Detail	Extensive	Filters—Name of the firewall filters to be evaluated when packets are received or transmitted on the interface.
All		Flags—Information about the one of the following: The logical interface. Possible values are described in “Logical Interface Flags” on page 9. The protocol family flags. Possible values are described in “Family Flags” on page 9. The address flags. Possible values are described in “Address Flags” on page 10.
Detail	Extensive	Generation—A unique number for use by Juniper Networks Customer Support only.
Detail	Extensive	Index, SNMP ifIndex—The logical interface’s index number (which reflects its initialization sequence), and the logical interface’s SNMP interface index number.
Detail	Extensive	Link—Information about links used in the multilink operation.
Detail	Extensive	Local—IP address of the logical interface.
All		Logical interface—Name of the logical interface.
Detail	Extensive	MTU—MTU size on the logical interface.
Detail	Extensive	Protocol—Protocol running on the logical interface.
Detail	Extensive	Route table—Number of the route table used by the logical interface.
Detail	Extensive	Statistics, Bundle—Information about fragments and packets received and sent by the router. All references to traffic direction (input or output) are defined with respect to the router. Input fragments received by the router are assembled into input packets; output packets are segmented into output fragments for transmission out of the router.
Extensive		Statistics, CRTP—Information about compressed real-time protocol (RTP) sessions and packets received and sent by the router. All references to traffic direction (input or output) are defined with respect to the router.

**Table 54: Voice Services 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: 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.
Link-level type	Encapsulation being used on the physical interface: Multilink-Frame-Relay-UNI-NNI (default), LinkService, Frame-relay, Frame-relay-ccc, or Frame-relay-tcc.
MTU	Maximum transmission unit size on the physical interface.
Device flags	Information about the physical device. Possible values are described in “Device Flags” on page 7.
Interface flags	Information about the interface. Possible values are described in “Interface Flags” on page 8.
Last Flapped	Date, time, and how long ago the interface went from down to up. The format is Last flapped: <i>year-month-day hours:minutes:seconds timezone (days hours:minutes ago)</i> . For example, Last flapped: 2002-04-26 10:52:40 PDT (1d 33:20 ago).
Statistics last cleared	Time when the statistics for the interface were last zeroed.
Traffic statistics	Number and rate of bytes and packets received and transmitted on the physical interface. All references to traffic direction (input or output) are defined with respect to the router. Input fragments received by the router are assembled into input packets; output packets are segmented into output fragments for transmission out of the router.
Frame exceptions	Information about framing exceptions. Includes events recorded under Exception Events for each logical interface. <ul style="list-style-type: none"> <li>Oversized frames—Number of frames received that exceed maximum frame length. Maximum length is 4500 Kb.</li> <li>Errored input frames—Number of input frame errors.</li> <li>Input on disabled link/bundle—Number of frames received on disabled links. These frames can result either from an inconsistent configuration, or from a bundle or link being brought up or down with traffic actively flowing through it.</li> <li>Output for disabled link/bundle—Number of frames sent for a disabled or unavailable link. These frames can result either from an inconsistent configuration, or from a bundle being brought up or down with traffic actively flowing through it.</li> <li>Queuing drops—Number of frames dropped in queuing errors.</li> </ul>
Buffering exceptions	Information about buffering exceptions. Includes events recorded under Exception Events for each logical interface. <ul style="list-style-type: none"> <li>Packet data buffer overflow—Indicates that the packet buffer memory is full. This overflow can occur when the aggregate data rate exceeds PIC capacity.</li> <li>Fragment data buffer overflow—Indicates that the fragment buffer memory is full. This overflow can occur when excessive differential delay is experienced across the links within a single bundle, or when the aggregate data rate exceeds PIC capacity. Check the logical interface exception event counters to determine which bundle is responsible.</li> </ul>

Output Field	Output Field Description
Assembly exceptions	<p>Information about assembly exceptions. Includes events recorded under Exception Events for each logical interface.</p> <p>An assembly exception does not necessarily indicate an operational problem with the PIC itself. If multilink-encapsulated traffic is dropped or reordered after a sequence number has been assigned, the assembling interface records one or more exception events. The interface can drop multilink-encapsulated fragments itself as a result. Any multilink packets or fragments dropped by the PIC result in packet or fragment drop counts on individual logical interfaces. If the logical interface drop counts are zero, but exception events are seen, the most likely cause is a problem with the individual link interfaces. Even if the logical interface fragment drop counts are nonzero, excess differential delay or traffic losses on individual interfaces can be the root cause.</p> <p>Fragment timeout—The drop timer expired while a fragment sequence number was outstanding. Occurs only if the drop timer is enabled. This timeout can occur if the differential delay across the links in a bundle exceeds the drop-timer setting, or if a multilink packet is lost in transit while the drop timer is enabled. These events do not necessarily indicate any problem with the operation of the PIC, but can occur when one or more individual links drop traffic. Check the logical interface exception event counters to determine which bundle is responsible.</p> <p>Missing sequence number—A gap was detected in the sequence numbers of fragments on a bundle. These events do not necessarily indicate any problem with the operation of the PIC, but can occur when one or more individual links drop traffic. Check the logical interface exception event counters to determine which bundle is responsible.</p> <p>Out-of-order sequence number—Two frames with out-of-order sequence numbers within a single link. This event indicates that an individual link within a bundle reordered traffic, making the multilink interface unable to correctly process the resulting stream. Check the logical interface exception event counters to determine which bundle is responsible.</p> <p>Out-of-range sequence number—Received a frame with an out-of-range sequence number. These events can occur when a large amount of multilink-encapsulated traffic is lost or the multilink peer is reset, so that a large jump in sequence numbers results. A small number of these events can occur when the far end of a bundle is taken down or brought up. Check the logical interface exception event counters to determine which bundle is responsible.</p>
Hardware errors	<p>Information about hardware errors.</p> <p>Data memory error—A memory error was detected on the interface DRAM. Indicates possible hardware failure. Contact Juniper Networks Customer Support.</p> <p>Control memory error—A memory error was detected on the interface DRAM. Indicates possible hardware failure. Contact Juniper Networks Customer Support.</p>

Output Field	Output Field Description
<b>Logical Interface</b>	
Logical interface, index, SNMP ifIndex	Name of the logical interface, the logical interface index number (which reflects its initialization sequence), and the logical interface SNMP interface index number.
Flags	Logical interface flags—Information about the logical interface. Possible values are described in “Logical Interface Flags” on page 9.
Encapsulation	Encapsulation for the logical interface. Multilink Point-to-Point Protocol (MLPPP) is the only encapsulation type supported on voice services interfaces.
Bandwidth	Bandwidth allotted to the logical interface, in kilobytes per second.
Bundle options	Information about configured bundle properties: <p>MRRU—Configured size of the maximum received reconstructed unit (MRRU): 1500 through 4500 bytes. The default is 1524 bytes.</p> <p>Drop timer period—Drop timeout value to provide a recovery mechanism if individual links in a voice services bundle drop one or more packets: 1 through 127 milliseconds (ms). Values less than 5 ms are not recommended. The default setting is 0, which disables the timer.</p> <p>Sequence number format—Short sequence number header format</p> <p>Fragmentation threshold—Configured fragmentation threshold: 128 through 16,320 bytes, in integer multiples of 64 bytes. The default setting is 0, which disables fragmentation.</p> <p>Links needed to sustain bundle— Minimum number of links to sustain the bundle: 1 through 8.</p> <p>Interleave fragments—State of the process that interleaves long packets with high-priority ones. Only Disabled is currently supported.</p>
Statistics, Bundle	Information about fragments and packets received and sent by the router. All references to traffic direction (input or output) are defined with respect to the router. Input fragments received by the router are assembled into input packets; output packets are segmented into output fragments for transmission out of the router.
Statistics, CRTP	Information about compressed real-time protocol (RTP) sessions and packets received and sent by the router. All references to traffic direction (input or output) are defined with respect to the router. All packet totals are listed by number of frames, frames per second, bytes, and bytes per second. For more information on packet types, see RFC 2508, <i>Compressing IP/UDP/RTP Headers for Low-Speed Serial Links</i> . <p>CRTP sessions—Number of sessions.</p> <p>CRTP packets—Number of compressed RTP packets.</p> <p>CUDP/CNTCP packets—Number of compressed User Datagram Protocol (UDP) or compressed non-Transmission Control Protocol (TCP) packets.</p> <p>Cstate packets—Number of context state packets.</p> <p>Full header packets—Number of full header packets (uncompressed, with compression context ID and 4-bit sequence number).</p> <p>Normal packets—Number of normal uncompressed packets.</p> <p>Discard packets—Number of discard packets.</p>
Protocol	Protocol running on the logical interface.
MTU	MTU size on the logical interface.
Generation	Protocol generation. A unique number for use by Juniper Networks Customer Support only.
Route table	Number of the route table used by the logical interface.
Flags	Information about the protocol family flags. Possible values are described in “Family Flags” on page 9.
Addresses	Addresses associated with the logical interface.
Flags	Information about the address flags. Possible values are described in “Address Flags” on page 10.
Destination	IP address of the remote side of the connection.

Output Field	Output Field Description
Local	IP address of the logical interface.
Broadcast	Broadcast address on the logical interface.
Generation	Address generation. A unique number for use by Juniper Networks Customer Support.

## show interfaces brief (for Voice Services Interfaces)

```

user@host> show interfaces vsp-1/0/0 brief
Physical interface: vsp-1/0/0, Enabled, Physical link is Up
Link-level type: LinkService, MTU: 1504
Device flags : Present Running
Interface flags: Point-To-Point SNMP-Traps

Logical interface vsp-1/0/0.0
Flags: Point-To-Point SNMP-Traps Encapsulation: Multilink-PPP
inet 2.2.2.1/24

```

## show interfaces detail (for Voice Services Interfaces)

```

user@host> show interfaces vsp-1/0/0 detail
Physical interface: vsp-1/0/0, Enabled, Physical link is Up
Interface index: 142, SNMP ifIndex: 65, Generation: 75
Link-level type: LinkService, MTU: 1504
Device flags : Present Running
Interface flags: Point-To-Point SNMP-Traps
Last flapped : 2004-02-21 19:37:21 PST (1d 19:57 ago)
Statistics last cleared: Never
Traffic statistics:
Input bytes :          41472          0 bps
Output bytes :         41352          0 bps
Input packets:         543          0 pps
Output packets:        541          0 pps
Frame exceptions:
Oversized frames      0
Errored input frames  0
Input on disabled link/bundle  0
Output for disabled link/bundle  0
Queuing drops        0
Buffering exceptions:
Packet data buffer overflow  0
Fragment data buffer overflow  0
Assembly exceptions:
Fragment timeout      0
Missing sequence number  0
Out-of-order sequence number  0
Out-of-range sequence number  0
Hardware errors (sticky):
Data memory error     0
Control memory error  0

```

```

Logical interface vsp-1/0/0.0 (Index 90) (SNMP ifIndex 66) (Generation 56)
Flags: Point-To-Point SNMP-Traps Encapsulation: Multilink-PPP
Bandwidth: 1536kbps
Bundle options:
  MRRU                1504
  Drop timer period    0
  Sequence number format    long (24 bits)
  Fragmentation threshold  0
  Links needed to sustain bundle  1
  Interleave fragments    Disabled
Statistics      Frames    fps    Bytes    bps
Bundle:
Fragments:
  Input :      0      0      0      0
  Output:      0      0      0      0
Packets:
  Input :     17      6    1020    3280
  Output:      0      0      0      0
CRTP:
CRTP sessions:
  Input : 0
  Output: 0
CRTP packets:
  Input :      0      0      0      0
  Output:      0      0      0      0
CUDP/CNTCP packets:
  Input :      0      0      0      0
  Output:      0      0      0      0
Cstate packets:
  Input :      0      0      0      0
  Output:      0      0      0      0
Full header packets:
  Input :      0      0      0      0
  Output:      0      0      0      0
Normal packets:
  Input :      0      0      0      0
  Output:      0      0      0      0
Discard packets:
  Input :      0      0      0      0
  Output:      0      0      0      0
Protocol inet, MTU: 1502, Generation: 106, Route table: 0
Flags: None
Addresses, Flags: Is-Preferred Is-Primary
  Destination: 2.2.2/24, Local: 2.2.2.1, Broadcast: Unspecified, Generation: 85
    
```

```

Logical interface vsp-1/0/0.1 (Index 91) (SNMP ifIndex 67) (Generation 57)
Flags: Hardware-Down Point-To-Point SNMP-Traps Encapsulation: Multilink-PPP
Bandwidth: 0
Bundle options:
  MRRU                1504
  Drop timer period   0
  Sequence number format    long (24 bits)
  Fragmentation threshold  0
  Links needed to sustain bundle  1
  Interleave fragments    Disabled
Statistics      Frames    fps    Bytes    bps
Bundle:
Fragments:
  Input :      0    0    0    0
  Output:      0    0    0    0
Packets:
  Input :      0    0    0    0
  Output:      0    0    0    0
CRTP:
CRTP sessions:
  Input : 0
  Output: 0
CRTP packets:
  Input :      0    0    0    0
  Output:      0    0    0    0
CUDP/CNTCP packets:
  Input :      0    0    0    0
  Output:      0    0    0    0
Cstate packets:
  Input :      0    0    0    0
  Output:      0    0    0    0
Full header packets:
  Input :      0    0    0    0
  Output:      0    0    0    0
Normal packets:
  Input :      0    0    0    0
  Output:      0    0    0    0
Discard packets:
  Input :      0    0    0    0
  Output:      0    0    0    0
Protocol inet, MTU: 1500, Generation: 107, Route table: 0
Flags: None
Addresses, Flags: Dest-route-down Is-Preferred Is-Primary
  Destination: 3.3.3/24, Local: 3.3.3.1, Broadcast: Unspecified, Generation: 87

```

## show interfaces extensive (for Voice Services Interfaces)

```

user@host> show interfaces vsp-1/0/0 extensive
Physical interface: vsp-1/0/0, Enabled, Physical link is Up
Interface index: 142, SNMP ifIndex: 65, Generation: 75
Link-level type: LinkService, MTU: 1504
Device flags : Present Running
Interface flags: Point-To-Point SNMP-Traps
Last flapped : 2004-02-21 19:37:21 PST (1d 19:57 ago)
Statistics last cleared: Never
Traffic statistics:
Input bytes :          41972          232 bps
Output bytes :          41852          232 bps
Input packets:           549           0 pps
Output packets:          547           0 pps
Frame exceptions:
Oversized frames          0
Errored input frames      0
Input on disabled link/bundle  0
Output for disabled link/bundle 0
Queuing drops             0
Buffering exceptions:
Packet data buffer overflow 0
Fragment data buffer overflow 0
Assembly exceptions:
Fragment timeout          0
Missing sequence number   0
Out-of-order sequence number 0
Out-of-range sequence number 0
Hardware errors (sticky):
Data memory error         0
Control memory error      0

Logical interface vsp-1/0/0.0 (Index 90) (SNMP ifIndex 66) (Generation 56)
Flags: Point-To-Point SNMP-Traps Encapsulation: Multilink-PPP
Bandwidth: 1536kbps
Bundle options:
MRRU                      1504
Drop timer period         0
Sequence number format    long (24 bits)
Fragmentation threshold   0
Links needed to sustain bundle 1
Interleave fragments      Disabled
Statistics      Frames    fps    Bytes    bps
Bundle:
Fragments:
Input :          0    0    0    0
Output:          0    0    0    0
Packets:
Input :          23    2   1520   1336
Output:          0    0    0    0

```

```
C RTP:
CRTP sessions:
  Input : 0
  Output: 0
CRTP packets:
  Input :    0    0    0    0
  Output:    0    0    0    0
CUDP/CNTCP packets:
  Input :    0    0    0    0
  Output:    0    0    0    0
Cstate packets:
  Input :    0    0    0    0
  Output:    0    0    0    0
Full header packets:
  Input :    0    0    0    0
  Output:    0    0    0    0
Normal packets:
  Input :    0    0    0    0
  Output:    0    0    0    0
Discard packets:
  Input :    0    0    0    0
  Output:    0    0    0    0
Protocol inet, MTU: 1502, Generation: 106, Route table: 0
Flags: None
Addresses, Flags: Is-Preferred Is-Primary
  Destination: 2.2.2/24, Local: 2.2.2.1, Broadcast: Unspecified, Generation: 85
```

