



Junos[®] OS

Inline Video Monitoring Feature Guide

Release

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Junos[®] OS Inline Video Monitoring Feature Guide

14.1

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About the Documentation

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Documentation and Release Notes

To obtain the most current version of all Juniper Networks® technical documentation, see the product documentation page on the Juniper Networks website at <http://www.juniper.net/techpubs/>.

If the information in the latest release notes differs from the information in the documentation, follow the product Release Notes.

Juniper Networks Books publishes books by Juniper Networks engineers and subject matter experts. These books go beyond the technical documentation to explore the nuances of network architecture, deployment, and administration. The current list can be viewed at <http://www.juniper.net/books>.

Supported Platforms

For the features described in this document, the following platforms are supported:

- MX Series

Using the Examples in This Manual

If you want to use the examples in this manual, you can use the **load merge** or the **load merge relative** command. These commands cause the software to merge the incoming configuration into the current candidate configuration. The example does not become active until you commit the candidate configuration.

If the example configuration contains the top level of the hierarchy (or multiple hierarchies), the example is a *full example*. In this case, use the **load merge** command.

If the example configuration does not start at the top level of the hierarchy, the example is a *snippet*. In this case, use the **load merge relative** command. These procedures are described in the following sections.

Merging a Full Example

To merge a full example, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration example into a text file, save the file with a name, and copy the file to a directory on your routing platform.

For example, copy the following configuration to a file and name the file **ex-script.conf**. Copy the **ex-script.conf** file to the **/var/tmp** directory on your routing platform.

```
system {
  scripts {
    commit {
      file ex-script.xml;
    }
  }
}
interfaces {
  fxp0 {
    disable;
    unit 0 {
      family inet {
        address 10.0.0.1/24;
      }
    }
  }
}
```

2. Merge the contents of the file into your routing platform configuration by issuing the **load merge** configuration mode command:

```
[edit]
user@host# load merge /var/tmp/ex-script.conf
load complete
```

Merging a Snippet

To merge a snippet, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration snippet into a text file, save the file with a name, and copy the file to a directory on your routing platform.

For example, copy the following snippet to a file and name the file **ex-script-snippet.conf**. Copy the **ex-script-snippet.conf** file to the **/var/tmp** directory on your routing platform.

```
commit {
  file ex-script-snippet.xml; }
```

2. Move to the hierarchy level that is relevant for this snippet by issuing the following configuration mode command:


```
[edit]
user@host# edit system scripts
[edit system scripts]
```

3. Merge the contents of the file into your routing platform configuration by issuing the **load merge relative** configuration mode command:

```
[edit system scripts]
user@host# load merge relative /var/tmp/ex-script-snippet.conf
load complete
```

For more information about the **load** command, see the *CLI User Guide*.

Documentation Conventions

Table 1 on page ix defines notice icons used in this guide.

Table 1: Notice Icons

Icon	Meaning	Description
	Informational note	Indicates important features or instructions.
	Caution	Indicates a situation that might result in loss of data or hardware damage.
	Warning	Alerts you to the risk of personal injury or death.
	Laser warning	Alerts you to the risk of personal injury from a laser.
	Tip	Indicates helpful information.
	Best practice	Alerts you to a recommended use or implementation.

Table 2 on page ix defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the configure command: user@host> configure

Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> show chassis alarms No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none">Introduces or emphasizes important new terms.Identifies guide names.Identifies RFC and Internet draft titles.	<ul style="list-style-type: none">A policy <i>term</i> is a named structure that defines match conditions and actions.<i>Junos OS CLI User Guide</i>RFC 1997, <i>BGP Communities Attribute</i>
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# set system domain-name <i>domain-name</i>
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none">To configure a stub area, include the stub statement at the [edit protocols ospf area area-id] hierarchy level.The console port is labeled CONSOLE.
< > (angle brackets)	Encloses optional keywords or variables.	stub <default-metric <i>metric</i>>;
(pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	broadcast multicast (<i>string1</i> <i>string2</i> <i>string3</i>)
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	rsvp { # Required for dynamic MPLS only
[] (square brackets)	Encloses a variable for which you can substitute one or more values.	community name members [<i>community-ids</i>]
Indentation and braces ({ })	Identifies a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
GUI Conventions		
Bold text like this	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none">In the Logical Interfaces box, select All Interfaces.To cancel the configuration, click Cancel.

Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select Protocols>Ospf .

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can send your comments to techpubs-comments@juniper.net, or fill out the documentation feedback form at <https://www.juniper.net/cgi-bin/docbugreport/>. If you are using e-mail, be sure to include the following information with your comments:

- Document or topic name
- URL or page number
- Software release version (if applicable)

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNASC support contract, or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at <http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

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For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: <http://www.juniper.net/customers/support/>
- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes: <http://www.juniper.net/customers/csc/software/>

- Search technical bulletins for relevant hardware and software notifications:
<http://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum:
<http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://tools.juniper.net/SerialNumberEntitlementSearch/>

Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see <http://www.juniper.net/support/requesting-support.html>.

PART 1

Overview

- [Inline Video Monitoring Overview on page 3](#)

CHAPTER 1

Inline Video Monitoring Overview

- [Inline Video Monitoring Overview on page 3](#)

Inline Video Monitoring Overview

Junos OS supports inline video monitoring using Media Delivery Index (MDI) metrics.

Inline video monitoring is available on MX Series routers using only the following MPCs:

- MPCE1
- MPCE2
- MPC-16XGE

You use the **video-monitoring** statement at the **[edit services]** hierarchy level to specify monitoring criteria for two key indicators of video traffic problems: delay factor and media loss rate (MLR), and to apply these metrics to flows on designated interfaces.

Before you use the inline video monitoring feature, ensure that you understand the following terms:

- **media delivery index**—These metrics facilitate identification of buffering needs for streaming media. Buffering must be adequate to compensate for packet jitter, measured by the MDI delay factor, and quality problems indicated by lost packets, measured by the MDI media loss rate (MLR). By performing measurements under varying load conditions, you can identify sources of significant jitter or packet loss and take appropriate action.
- **delay factor** —Delay factor is the maximum observed time difference between the arrival of media data and the drain of media data. The expected drain rate is the nominal, constant traffic rate for constant bit rate streams or the computed traffic rate of variable rate media stream packet data.

For typical stream rates of 1 megabit per second and higher, an interval of one second provides an adequate sample time. The delay factor indicates how long a data stream must be buffered (delayed) at its nominal bit rate to prevent packet loss.

The delay factor suggests the minimum size of the buffer required at the next downstream node. As a stream progresses, the variation of the delay factor indicates packet bunching or packet gaps (jitter). Greater delay factor values also indicate that

more network latency is needed to deliver a stream due to the need to pre-fill a receive buffer before beginning the drain to guarantee no underflow.

When the nominal drain bit rate at a receiving node is known, the delay factor's maximum indicates the size of buffer required to accommodate packet jitter.

- **Media rate variation (MRV)**—This value is the difference between the expected packet rate and actual packet rate expressed as a percentage of the expected packet rate.
- **Media loss rate (MLR)**—This value is the number of media packets lost over a configurable time interval (*interval-duration*,) where the flow packets are packets carrying streaming application information. A single IP packet can contain zero or more streaming packets. For example, an IP packet typically contains seven 188-byte MPEG transport stream packets. In this case, a single IP packet loss results in seven lost packets counted (if those seven lost packets did not include null packets). Including out-of-order packets is important, because many stream consumer-type devices do not attempt to reorder packets that are received out of order.

To configure the monitoring process, define criteria templates and apply them to the interfaces and flows you want to monitor. Monitoring templates include the following criteria:

- Duration of each measurement cycle
- Flow rate information used to establish expected flow rates
- Threshold levels for media rate variation and media loss rate that trigger desired syslog alerts

For each interface you want to monitor, you can define one or more filters to select flows for monitoring. Flows are designated as input or output flows and are uniquely identified by:

- Source IP address
- Source port
- Destination IP address
- Destination port

Junos OS supports the definition of filters for up to 256 flows, which can consist of input flows, output flows, or a combination of input and output flows. These filters provide criteria for selecting flows for monitoring. If the selection criteria consist of lists of IP addresses or ports, you could exceed the maximum number of match conditions for flows. Video monitoring selects a widely variable number of flows based on flow filters. The total number of flows that can be measured at a time depends on the specific MPC card being used, as shown in [Table 3 on page 5](#).

When you do not define input or output flow filters for a monitored interfaces, all flows on the interface are subject to monitoring.

Table 3: MPC Flow Monitoring Capacity by Model

MPC Model	Maximum Number of Flows Monitored Simultaneously
MPCE1	1000
MPCE2	2000
MPC-16XGE	4000



NOTE: Junos OS measures both UDP flows (the default) and RTP flows. Junos OS differentiates media traffic over UDP or RTP by inspecting the first byte in the UDP payload. If the first byte of the UDP payload is 0x47 (MPEG2-TS sync byte), the traffic is treated as media traffic over UDP. Traffic is treated as media traffic over RTP if the version field is 2 and the payload type is 33 in the RTP header. When neither of these criteria are met, the packet is not considered for video monitoring.

- Related Documentation
- [Configuring Inline Video Monitoring on page 9](#)
 - [show services video-monitoring mdi stats fpc-slot on page 22](#)
 - [show services video-monitoring mdi errors fpc-slot on page 24](#)
 - [show services video-monitoring mdi flows fpc-slot on page 26](#)

PART 2

Configuration

- [Configuration Tasks on page 9](#)
- [Configuration Statements on page 13](#)

CHAPTER 2

Configuration Tasks

- [Configuring Inline Video Monitoring on page 9](#)

Configuring Inline Video Monitoring

To configure inline video monitoring, perform the following tasks.

- [Configuring Media Delivery Indexing Criteria on page 9](#)
- [Configuring Interface Flow Criteria on page 10](#)

Configuring Media Delivery Indexing Criteria

To configure media delivery indexing criteria:

1. In edit mode, create a named template for video monitoring.

```
user@host# edit services video-monitoring templates template-name
```

For example,

```
user@host# edit services video-monitoring templates t1
```

2. Set the duration for sampling in seconds. Flow media delivery indexing statistics are updated at the end of this interval.

```
[edit services video-monitoring templates t1]  
user@host# set interval-duration 1
```



BEST PRACTICE: If you change the interval duration when a template is being used, you cause a change in the calculated number of expected packets in an measurement interval for the template. We recommend that you do not change the interval duration for a template that is in use.

3. Set the inactivity timeout.

```
[edit services video-monitoring templates t1]  
user@host# set inactivity-timeout 30
```

4. Configure either **media-rate** or **layer3-packet-rate** to establish expected flow rates used to compare to monitored flow rates.



NOTE: The media rate is the configured media bit rate for the stream. The media rate is used to establish *expected packets per second* (pps).

The layer 3 packet rate in packets per second (pps) and is used to establish *expected bits per second* (bps).

```
[edit services video-monitoring templates t1]
user@host# set media-rate 2972400
```

5. Set delay factor thresholds for syslog message levels.

```
[edit services video-monitoring templates t1]
user@host# set delay-factor threshold info 100
user@host# set delay-factor threshold warning 200
user@host# set delay-factor threshold critical 300
```

6. Set media loss rate thresholds for syslog message levels. You can set the threshold based on number of packets lost, or percentage of packets lost.

Or

```
[edit services video-monitoring templates t1]
user@host# set media-loss-rate threshold info percentage 5
user@host# set media-loss-rate threshold warning percentage 10
user@host# set media-loss-rate threshold critical percentage 20
```

7. Set the media rate variation thresholds for syslog message levels. The threshold is based on the ratio of the *difference* between the configured media rate and the monitored media rate to the configured media rate, expressed as a percentage.

```
[edit services video-monitoring templates t1]
user@host# set media-rate-variation threshold info 10
user@host# set media-rate-variation threshold warning 15
user@host# set media-rate-variation threshold critical 20
```

Configuring Interface Flow Criteria

To configure monitoring of flows for interfaces:

1. In edit mode, identify an interface for monitoring .

```
user@host# edit services video-monitoring interfaces interface-name
```

2. Identify input flows for monitoring. Flows are uniquely identified by source IP address, source port, destination IP address, and destination port. You can restrict flow measurement by specifying values for these identifiers. You can specify individual addresses or ports or lists of addresses and ports. If you do not specify any identifiers, all flows on the interface are monitored.

```
[edit services video-monitoring interfaces interface-name]
user@host# set input-flows input-flow-name
user@host# set input-flows input-flow-name source-address address
user@host# set input-flows input-flow-name source-port port
user@host# set input-flows input-flow-name destination-address address
user@host# set input-flows input-flow-name destination-port port
```



NOTE: You can configure a maximum of 256 flow definitions. If your flow definitions contain lists of addresses and ports, you may exceed the number of match conditions. When you exceed the limits for flows or match conditions, you receive the following constraint message when you commit:

```
'interfaces xe-0/2/2.0'
  Number of flows or Number of match condition under flows exceeded
  limit
error: configuration check-out failed
```

3. Identify output flows for monitoring, using the same options listed in Step 2.
4. Identify the template used to monitor the flows on the interface.

```
[edit services video-monitoring interfaces interface-name]
set template t1
```

**Related
Documentation**

- [Inline Video Monitoring Overview on page 3](#)
- [templates on page 15](#)
- [interfaces on page 14](#)

CHAPTER 3

Configuration Statements

- [interfaces \(Video Monitoring\) on page 14](#)
- [templates on page 15](#)
- [video-monitoring on page 17](#)

interfaces (Video Monitoring)

```
Syntax interfaces {
    interface-name {
        family {
            inet {
                input-flows {
                    input-flow-name {
                        source-address [ address ];
                        destination-address [ address ];
                        source-port [ port ];
                        destination-port [ port ];
                        template template-name;
                    }
                }
                output-flows {
                    output-flow-name {
                        source-address [ address ];
                        destination-address [ address ];
                        source-port [ port ];
                        destination-port [ port ];
                        template template-name;
                    }
                }
            }
        }
    }
}
```

Hierarchy Level [edit services [video-monitoring](#)]

Release Information Statement introduced in Junos OS Release 14.1.

Description Define video monitoring for specified input or output flows on selected interfaces.

Options *interface-name*—Name of the interace to monitor.

address—Source or destination IPv4 address or prefix value.

port—Port number.

Range: 0 through 65,535

template-name—Name of the template used to monitor flows on an interface.

The remaining statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation

- [Configuring Inline Video Monitoring on page 9](#)

templates

```
Syntax  templates {
        template-name {
            interval-duration interval-duration;
            inactive-timeout inactive-timeout;
            rate {
                (layer3 layer3-packets-per-second | media media-bits-per-second);
            }
            delay-factor {
                ;
                threshold {
                    (info | warning | critical) delay-factor-threshold;
                }
            }
            media-loss-rate {
                disable;
                threshold {
                    (info | warning | critical) percentage mlr-percentage | packet-count mlr-packet-count;
                }
            }
            media-rate-variation {
                disable;
                threshold {
                    (info | warning | critical) mrsv-variation;
                }
            }
            media-packets-count-in-layer3 media-packets-count-in-layer3;
            media-packet-size media-packet-size;
        }
    }
```

Hierarchy Level [edit services [video-monitoring](#)]

Release Information Statement introduced in Junos OS Release 14.1.

Description Configure the media delivery index template containing the measurement parameters for video monitoring.

Options **delay-factor**—Define delay factor syslog threshold levels.

delay-factor-threshold—Delay factor threshold in milliseconds. When the threshold is exceeded, a syslog message is generated.

Default: 0—Do not generate syslogs.

Range: 0 though 65535 milliseconds

disable—Disable logging for the threshold.

inactive-timeout—Number of seconds of flow inactivity after which time media delivery index statistics collection for a flow is terminated.

Range: 30 through 300 seconds

info | warning | critical—Level of syslog message generated when a threshold is exceeded.

interval-duration—Number of seconds after which time media delivery index flow monitoring statistics for the interval are reported.

Range: 1 through 50

layer3-packets-per-second—Layer 3 packet rate in IP packets per second.

Range: 0 through 4,294,967,295 pps

media-bits-per-second—Media bit rate for the stream in bits per second.

media-loss-rate—Define media loss rate syslog threshold levels.

media-packets-count-in-layer-3—Number of media packets in an IP packet.

Range: 1 through 32

media-packet-size—Size of media packet in bits.

Default: 188

Range: 1 through 2048

media-rate-variation—Define delay factor syslog threshold levels.

mlr-packet-count—Media loss rate threshold expressed as the number of packets dropped. When the threshold is exceeded, a syslog message is generated.

mlr-percentage—Media loss rate threshold expressed as the percentage of total packets dropped. When the threshold is exceeded, a syslog message is generated.

Range: 0 through 100

mrv-variation—Media rate variation threshold. The variation is the ratio of actual media rate to the configured media rate, expressed as a percentage.

template-name—Name of the template containing media delivery index measurement criteria. The template can be assigned to an interface.

Required Privilege Level	interface—To view this statement in the configuration.
	interface-control—To add this statement to the configuration.

Related Documentation	<ul style="list-style-type: none"> • Configuring Inline Video Monitoring on page 9
------------------------------	---

video-monitoring

```
Syntax video-monitoring {
  templates {
    template-name {
      interval-duration interval-duration;
      inactive-timeout inactive-timeout;
      rate {
        (layer3 layer3-packets-per-second | media media-bits-per-second);
      }
      delay-factor {
        disable;
        threshold {
          (info | warning | critical) delay-factor-threshold;
        }
      }
      media-loss-rate {
        disable;
        threshold {
          (info | warning | critical) percentage mlr-percentage | packet-count
            mlr-packet-count;
        }
      }
      media-rate-variation {
        ;
        threshold {
          (info | warning | critical) mrw-variation;
        }
      }
      media-packets-count-in-layer3 media-packets-count-in-layer3;
      media-packet-size media-packet-size;
    }
  }
  interfaces {
    interface-name {
      family {
        inet {
          input-flows {
            input-flow-name {
              source-address [ address ];
              destination-address [ address ];
              source-port [ port ];
              destination-port [ port ];
              template template-name;
            }
          }
          output-flows {
            output-flow-name {
              source-address [ address ];
              destination-address [ address ];
              source-port [ port ];
              destination-port [ port ];
              template template-name;
            }
          }
        }
      }
    }
  }
}
```

```

    }
  }
}

```

Hierarchy Level [edit services]

Release Information Statement introduced in Junos OS Release 14.1.

Description Define the options for video monitoring using media delivery index options for metrics. The remaining statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

Related Documentation • [Configuring Inline Video Monitoring on page 9](#)

PART 3

Administration

- [Operational Commands on page 21](#)
- [Syslog Messages on page 33](#)

CHAPTER 4

Operational Commands

- `show services video-monitoring mdi stats fpc-slot`
- `show services video-monitoring mdi errors fpc-slot`
- `show services video-monitoring mdi flows fpc-slot`
- `clear services video-monitoring mdi statistics fpc-slot`
- `clear services video-monitoring mdi errors fpc-slot`

show services video-monitoring mdi stats fpc-slot

Syntax	<code>show services video-monitoring mdi stats fpc-slot <i>fpc-slot</i></code>
Release Information	Command introduced in Junos OS Release 14.1.
Description	Display inline video monitoring statistics.
Options	<i>fpc-slot</i> —Number of the fpc slot for which statistics are displayed.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> Inline Video Monitoring Overview on page 3
List of Sample Output	show services video-monitoring mdi stats fpc-slot on page 23
Output Fields	Table 4 on page 22 lists the output fields for the show services video-monitoring mdi stats fpc-slot <i>fpc-slot</i> command. Output fields are listed in the approximate order in which they appear.

Table 4: show services video-monitoring mdi stats fpc-slot Output Fields

Field Name	Field Description
FPC Slot	Slot number of the monitored FPC
Active Flows	Number of active flows currently monitored. active flows = inserted flows - deleted flows.
Total Inserted Flows	Number of flows initiated under video monitoring.
Total Deleted Flows	Number of flows deleted due to inactivity timeout.
Total Packets Count	Number of total packets monitored.
Total Bytes Count	Number of total bytes monitored.
DF Alarm Count	Number of delay factor alarms at each of the following levels: <ul style="list-style-type: none"> Info level Warning level Critical level

Table 4: show services video-monitoring mdi stats fpc-slot Output Fields (*continued*)

Field Name	Field Description
MLR Alarm Count	Number of media loss rate (MLR) alarms at each of the following levels: <ul style="list-style-type: none"> • Info level • Warning level • Critical level
MRV alarm count	Number of media rate variation (MRV) alarms at each of the following levels: <ul style="list-style-type: none"> • Info level • Warning level • Critical level

Sample Output

show services video-monitoring mdi stats fpc-slot

```

user@host> show services video-monitoring mdi stats fpc-slot 2
MDI Stats Information
FPC Slot: 2
Active Flows: 1, Total Inserted Flows: 1, Total Deleted Flows: 0
Total Packets Count: 746284, Total Bytes Count: 1013453672
DF alarm count: 0, Info level: 0, Warning level: 0, Critical level: 0
MLR alarm count: 0, Info level: 0, Warning level: 0, Critical level: 0
MRV alarm count: 0, Info level: 0, Warning level: 0, Critical level: 0

```

show services video-monitoring mdi errors fpc-slot

Syntax	<code>show services video-monitoring mdi errors fpc-slot <i>fpc-slot</i></code>
Release Information	Command introduced in Junos OS Release 14.1.
Description	Display video monitoring error statistics.
Options	<i>fpc-slot</i> —Number of the fpc slot for which statistics are displayed.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> Inline Video Monitoring Overview on page 3
List of Sample Output	show services video-monitoring mdi errors fpc-slot on page 24
Output Fields	Table 5 on page 24 lists the output fields for the show services video-monitoring mdi errors fpc-slot <i>fpc-slot</i> command. Output fields are listed in the approximate order in which they appear.

Table 5: show services video-monitoring mdi errors fpc-slot Output Fields

Field Name	Field Description
FPC slot	Slot number of the monitored FPC.
Flow Insert Error	Number of errors during new flow insert operations.
Flow Policer Drops	<p>Number of packets dropped by flow policer process.</p> <p>NOTE: New flows usually arrive within a very short time interval (1.5 microseconds). These errors do not represent the loss of entire flows, because subsequent packets in the flow can establish the flow. All packets are monitored after a flow has been established. Packet forwarding occurs independently of the video monitoring, and packets are not dropped due to video monitoring errors.</p>
Unsupported Media Packets Count	Number of packets dropped because they are not media packets or they are unsupported media packets.
PID Limit Exceeded	<p>Number of packets unmonitored because the process identifier (PID) limit exceeded has been exceeded.</p> <p>NOTE: The current PID limit is 6.</p>

Sample Output

show services video-monitoring mdi errors fpc-slot

```
user@host> show services video-monitoring mdi errors fpc-slot 2
```

MDI Errors Information

FPC Slot: 2

Flow Insert Error: 0, Flow Policer Drops: 0

Unsupported Media Packets Count: 0, PID Limit Exceeded: 202995

show services video-monitoring mdi flows fpc-slot

Syntax	<pre>show services video-monitoring mdi flows fpc-slot <i>fpc-slot</i> <brief> <count> <destination-address> <destination-port> <detail> <input> <interface-name> <output> <rtp> <source-address> <source-port> <template-name> <udp></pre>
Release Information	Command introduced in Junos OS Release 14.1.
Description	Display inline video monitoring flow statistics.
Options	<p>fpc-slot—Number of the slot for which flows are reported.</p> <p>brief—(Optional) Display brief output(default).</p> <p>count—(Optional) Display the number of flows.</p> <p>destination-address—(Optional) Filter output by destination address.</p> <p>destination-port—(Optional) Filter output by destination port.</p> <p>detail—(Optional) Display output in detailed format including media delivery index records.</p> <p>input—(Optional) Filter output by flow direction input.</p> <p>interface-name—(Optional) Filter output by logical interface name.</p> <p>output—(Optional) Filter output by flow direction output.</p> <p>rtp—(Optional) Filter output by flow type rtp.</p> <p>source-address—(Optional) Filter output by source IP address.</p> <p>source-port—(Optional) Filter output by source port.</p> <p>template-name—(Optional) Filter output by media delivery index template name.</p> <p>udp—(Optional) Filter output by flow type MPEG-TS.</p>
Required Privilege Level	view

Related Documentation

- [Inline Video Monitoring Overview on page 3](#)

List of Sample Output

[show servicesvideo-monitoring mdi flows fpc-slot brief on page 27](#)
[show services inline-video-monitoring mdi flows detail on page 28](#)

Output Fields

[Table 6 on page 27](#) lists the output fields for the **show services inline-video-monitoring mdi flows fpc-slot fpc-slot** command. Output fields are listed in the approximate order in which they appear.

Table 6: show services mdi flows Output Fields

Field Name	Field Description
SIP	Source IP address
DIP	Destination IP address
SP	Source port
DP	Destination port
Di	Direction (I=Input, O=Output)
Ty	Type of flow
Last DF:MLR	Delay factor and media loss rate value of last media delivery index record
Avg DF:MLR	Average value of delay factor and media loss rate
Last MRV	Media rate variation value of last media delivery index record
Avg MRV	Average value of media rate variation
IFL	Interface name on which flow is receiving
Template Name	Name of template associated with flow

Sample Output

[show servicesvideo-monitoring mdi flows fpc-slot brief](#)

```
user@host> show services inline-video-monitoring mdi flows fpc-slot 2 brief
```

Sno	SIP	SP	DIP	DP	Di	Ty	Last DF:MLR	Avg
DF:MLR		Last MRV	Avg MRV	IFL			Template Name	
1	20.0.0.2	1024	30.0.0.2	2048	I	UDP	70.90:1	
92.15:8205		-7.09	-9.36		xe-2/2/1.0		t1	

Sample Output

show services inline-video-monitoring mdi flows detail

```
user@host> show services inline-video-monitoring flows fpc-slot 2 detail count 19
```

Format for RTP flows:

```
Source Address: 20.0.0.2, Source Port: 1024
Destination Address: 30.0.0.2, Destination Port: 2048
Last DF:MLR: 3.58:0, Avg DF:MLR: 3.60:0
Last MRV: 0.00, Avg MRV: 0.00
Interface Name: xe-2/2/1.0, Template Name: t1
Flow Direction: Input, Flow Type: RTP, MDI Records Count: 10
```

Rec No	DF	MLR	MRV
1	3.58	0	0.00
2	3.62	0	0.00
3	3.59	0	0.00
4	3.63	0	0.00
5	3.60	0	0.00
6	3.64	0	0.00
7	3.61	0	0.00
8	3.57	0	0.00
9	3.62	0	0.00
10	3.58	0	0.00

Format for MPEG2-TS over UDP flows:

```
Source Address: 20.0.0.2, Source Port: 1024
Destination Address: 30.0.0.2, Destination Port: 2048
Last DF:MLR: 3.63:0, Avg DF:MLR: 3.61:4097
Last MRV: 0.00, Avg MRV: 0.00
Interface Name: xe-2/2/1.0, Template Name: t1
Flow Direction: Input, Flow Type: UDP, MDI Records Count: 10
```

Rec No	DF	MLR	MRV	PID-0	PID-1	PID-2
	PID-3	PID-4		PID-5		
MLR	Val	MLR	Val	MLR	Val	MLR
1	3.63	0	0.00	0x1f40	0	0x1f41
0	0x1f54	0	0x11	0	0x1020	0
2	3.59	0	0.00	0x1f40	0	0x1f41
0	0x1f54	0	0x11	0	0x1020	0
3	3.64	0	0.00	0x1f40	0	0x1f41
0	0x1f54	0	0x11	0	0x1020	0
4	3.60	0	0.00	0x1f40	0	0x1f41
0	0x1f54	0	0x11	0	0x1020	0
5	3.64	0	0.00	0x1f40	0	0x1f41
0	0x1f54	0	0x11	0	0x1020	0
6	3.61	0	0.00	0x1f40	0	0x1f41
0	0x1f54	0	0x11	0	0x1020	0
7	3.57	0	0.00	0x1f40	0	0x1f41
0	0x1f54	0	0x11	0	0x1020	0
8	3.62	0	0.00	0x1f40	0	0x1f41
0	0x1f54	0	0x11	0	0x1020	0

9	3.58	40977	0.00	0x1f40	40977	0x1f41	0	0x12
0	0x1f54	0	0x11	0	0x1020	0		
10	3.63	0	0	0.00	0x1f40	0	0x1f41	0
0	0x1f54	0	0x11	0	0x1020	0		

clear services video-monitoring mdi statistics fpc-slot

Syntax	clear services video-monitoring mdi statistics fpc-slot <i>fpc-slot</i>
Release Information	Command introduced in Junos OS Release 14.1.
Description	Clear all media delivery index statistics counters except for active flows.
Options	fpc-slot —Number of the fpc slot.
Required Privilege Level	clear
Related Documentation	<ul style="list-style-type: none"> • show services video-monitoring mdi stats fpc-slot on page 22

clear services video-monitoring mdi errors fpc-slot

Syntax	clear services video-monitoring mdi errors fpc-slot <i>fpc-slot</i>
Release Information	Command introduced in Junos OS Release 14.1.
Description	Clear all media delivery index error counters.
Options	fpc-slot —Number of the fpc slot.
Required Privilege Level	clear
Related Documentation	<ul style="list-style-type: none">• show services video-monitoring mdi stats fpc-slot on page 22

CHAPTER 5

Syslog Messages

- [Inline Video Monitoring Syslog Messages on page 33](#)

Inline Video Monitoring Syslog Messages

The following examples show the syslog messages produced when configured video monitoring thresholds are exceeded.

`/var/log/messages`

```
Mar 11 18:36:25 tstrtr01 fpc2 [MDI] DF: 56.71 ms, exceeded threshold for
flow(src:20.0.0.2 dst:30.0.0.2 sport:1024 dport:2048) ingressing at interface
xe-2/2/1.0 with template t1.
Mar 11 18:36:25 tstrtr01 fpc2 [MDI] MLR : 112, exceeded threshold for flow
(src:20.0.0.2 dst:30.0.0.2 sport:1024 dport:2048) ingressing at interface
xe-2/2/1.0 with template t1.
Mar 11 18:36:25 tstrtr01 fpc2 [MDI] MRV : -5.67, exceeded threshold for flow
(src:20.0.0.2 dst:30.0.0.2 sport:1024 dport:2048) ingressing at interface
xe-2/2/1.0 with template t1.
```

Console Messages

```
NPC2(tstrtr01 vty)# [Mar 12 01:40:58.411 LOG: Critical] [MDI] MLR : 420, exceeded
threshold for flow (src:20.0.0.2 dst:30.0.0.2 sport:1024 dport:2048) ingressing
at interface xe-2/2/1.0 with template t1.
[Mar 12 01:40:58.411 LOG: Critical] [MDI] MRV : -14.89, exceeded threshold for
flow (src:20.0.0.2 dst:30.0.0.2 sport:1024 dport:2048) ingressing at interface
xe-2/2/1.0 with template t1.
[Mar 12 01:40:59.412 LOG: Critical] [MDI] DF: 141.74 ms, exceeded threshold for
flow(src:20.0.0.2 dst:30.0.0.2 sport:1024 dport:2048) ingressing at interface
xe-2/2/1.0 with template t1.
```

- Related Documentation**
- [Configuring Inline Video Monitoring on page 9](#)

PART 4

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