



IPDR Streaming Protocol on the Cisco CMTS Routers

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The Cisco universal broadband router supports the Internet Protocol Detail Record (IPDR) streaming protocol feature that provides high volume data exported from the network equipment to mediation systems such as the Operations Support Systems (OSS) or Business Support Systems (BSS). IPDR provides information about IP-based service usage and other activities that are used by OSS and BSS. This protocol provides a mechanism to collect data from various network elements or equipment using a push model as opposed to the conventional Simple Network Management Protocol (SNMP) polling mechanism.

Based on the DOCSIS 3.0 specifications, the IPDR feature optimizes time and resource efficiency in the transfer of large amounts of performance metrics to the management systems. DOCSIS 3.0 introduces five management features or the FCAPS model. FCAPS represents Fault, Configuration, Accounting, Performance and Security.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the [“Feature Information for IPDR Streaming Protocol” section on page 15](#).

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Prerequisites for Configuring IPDR Streaming Protocol

Table 1 shows the hardware compatibility prerequisites for the IPDR streaming protocol.



Note

The hardware components introduced in a given Cisco IOS Release are supported in all subsequent releases unless otherwise specified.

Table 1 Cable Hardware Compatibility Matrix for the IPDR Streaming Protocol

CMTS Platform	Processor Engine	Cable Interface Line Cards
Cisco uBR10012 Universal Broadband Router	Cisco IOS Release 12.2(33)SCB and later <ul style="list-style-type: none"> • PRE2 • PRE4 	Cisco IOS Release 12.2(33)SCB and later <ul style="list-style-type: none"> • Cisco uBR10-MC5X20U/H Cisco IOS Release 12.2(33)SCC and later <ul style="list-style-type: none"> • Cisco UBR-MC20X20V Cisco IOS Release 12.2(33)SCE and later <ul style="list-style-type: none"> • Cisco uBR-MC3GX60V¹
Cisco uBR7246VXR Universal Broadband Routers	Cisco IOS Release 12.2(33)SCD and later <ul style="list-style-type: none"> • Network Processing Engine G2 (NPE-G2) 	Cisco IOS Release 12.2(33)SCD and later <ul style="list-style-type: none"> • Cisco uBR-MC88V²
Cisco uBR7225VXR Universal Broadband Router	Cisco IOS Release 12.2(33)SCD and later <ul style="list-style-type: none"> • NPE-G2 	Cisco IOS Release 12.2(33)SCD and later <ul style="list-style-type: none"> • Cisco uBR-MC88V

1. Cisco uBR3GX60V cable interface line card is not compatible with PRE2. You must use PRE4 with the Cisco uBR3GX60V cable interface line card.
2. Cisco uBR-MC88V cable interface line card is not compatible with NPE-G1. You must use NPE-G2 with the Cisco uBR-MC88V cable interface line card.

Restrictions for Configuring IPDR Streaming Protocol

- An IPDR exporter can be connected to up to two collectors, but it will only send data to the highest priority operating collector at any given time.
- Each IPDR session can be associated to one active and zero or more standby collector with priority.

Information About IPDR Streaming Protocol

IPDR Streaming Protocol is designed to address the need for a reliable, fast, efficient, and flexible export process of high volume data records such as billing, performance and diagnostic data.

The IPDR/SP process communicates with IPDR collectors. The IPDR streaming protocol supports multiple IPDR sessions. The architecture supports primary and secondary collectors for failover purposes. At any time, data is sent to only one collector. If the exporter to primary collector connection fails due to any reason, the data is sent to the secondary collector. Depending on the network configuration, you can have only one primary collector for each session, while for different sessions, you can have different primary collectors. For example, there may be a billing collector, a diagnostic collector, and so on.

**Note**

IPDR exporter refers to the Cable Modem Termination System (CMTS) and the IPDR collector refers to the network equipment.

Data Collection Methodologies

IPDR is the data generated or collected for various performance related metrics such as billing information, diagnostics, network topology, signal quality monitoring, and other management data. These data are based on the FCAPS model (Fault, Configuration, Accounting, Performance and Security.)

The IPDR client application communicates with the IPDR exporter using the IPDR_GET_SESSIONS message to identify the streams provided by the exporter, and the exporter sends responses to the client using the IPDR_GET_SESSIONS_RESPONSE message. This data collection method is based on the *Operations Support System Interface Specification (CM-SP-OSSIV3.0-I13-101008)*.

Beginning with Cisco IOS Release 12.2(33)SCE, the IPDR_GET_SESSIONS_RESPONSE message includes the SessionBlock.reserved attribute to identify the IPDR session ID. This attribute helps the Cisco CMTS router define an IPDR session ID for each data collection mechanism supported for each IPDR service definition. This attribute was not used in Cisco IOS Releases earlier to Cisco IOS Release 12.2(33)SCE.

**Note**

You must use a Cisco CMTS router running Cisco IOS Release 12.2(33)SCE or later, if your IPDR client application looks for the SessionBlock.reserved attribute in the IPDR_GET_SESSIONS_RESPONSE message.

The IPDR feature defines methods for the collectors or network elements to collect data from the CMTS. Below is the list of collection methodologies:

Time Interval Session: In this method, the CMTS follows a schedule based session to stream data on a periodic time interval. A time interval is the time gap between two adjacent sessions' start messages. This method is managed by the CMTS in controlling a session's start and stop operations. The time interval session terminates once the CMTS exports the records.

**Note**

During the course of one time interval when the CMTS is streaming records, if another time interval is expected, the CMTS will ignore the new time interval and continue exporting the data until the previous time interval ends.

Event-based Session: In this method, the CMTS can export records at any time, as long as the session is open. In other words, this method consists of an open-ended session. The collector has the ability to create documents based on size, number of records received, or timestamps (to simulate Time Interval Sessions.)

Ad-hoc Session: In this method, the CMTS creates a session, allows data streaming, and closes the session when the data export is complete or when a closing command is generated. However, the CMTS creates the session only when the Collector sends a request (FLOW_START message) to export data within the CMTS. Hence this method is known as the Ad-hoc session.

**Note**

Collector sends a FLOW_START message to the CMTS that triggers the creation of an ad-hoc session. CMTS starts exporting data when it receives the FINAL_TEMPLATE_ACK message. When the data export is in progress, other FLOW_START messages are treated as subsequent triggers for ad hoc sessions and will not break the current export process.

How to Configure IPDR Streaming Protocol

This section describes the configuration tasks that are performed when using the IPDR streaming protocol feature on the Cisco CMTS platforms.

- [Configuring the IPDR Session, page 4](#) (required)
- [Configuring the IPDR Type, page 5](#) (required)
- [Configuring the IPDR Collector, page 6](#) (required)
- [Configuring the IPDR Associate, page 7](#) (required)
- [Configuring the IPDR Template, page 8](#) (required)
- [Configuring the IPDR Exporter, page 9](#) (required)

**Note**

Use **no ipdr** command to remove the IPDR configuration.

Configuring the IPDR Session

To enable the CMTS application to add a session to the IPDR exporter, use the **ipdr session** command in global configuration mode.

Use the **no** form of the command to remove the IPDR session.

Restrictions

- The session ID must be unique.
- To remove an active session, you must deactivate it before removing it.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ipdr session *session_id session_name session_descr***

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	ipdr session <i>session_id session_name session_descr</i> Example: Router(config)# ipdr session 1 samis_sxn test	Enables the CMTS application to add a session to the IPDR exporter. <ul style="list-style-type: none"> • <i>session_id</i>—The unique IPDR session ID. • <i>session_name</i>—The session name. The name should not contain blank spaces. • <i>session_descr</i>—The description of the session. The description can contain spaces.

Configuring the IPDR Type

To configure the IPDR session type, use the **ipdr type** command in global configuration mode. The IPDR session types that can be defined using this command are event type, time-interval type, and the ad hoc type.

Use the **no** form of the command to reset the session type to the default "event" type.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ipdr type *session_id* [ad-hoc | event | time-interval *value*]**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	ipdr type session_id [ad-hoc event time-interval value] Example: Router(config)# ipdr type 1 time-interval 15	Enables the CMTS application to configure an IPDR session type. <ul style="list-style-type: none"> <i>session_id</i>—The unique IPDR session ID. Range is from 1 to 255. ad-hoc—(Optional) The ad hoc session type. event—(Optional) The event session type. This is the default type. time-interval value—(Optional) The time-interval session type. Interval range is from 15 to 1440 minutes.

**Note**

Once the IPDR session type is configured, only the templates supported by this IPDR type are allowed be associated with it. Also, the console provides information about those templates that are not supported by this IPDR session type when the type is changed.

Configuring the IPDR Collector

To configure the IPDR collector details, use the **ipdr collector** command in global configuration mode. The port number is used when an exporter creates an active connection.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ipdr collector collector_name ip_addr [port]**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	ipdr collector collector_name ip_addr [port] Example: Router(config)# ipdr collector federal 192.168.6.5	Enables the CMTS application to configure an IPDR collector and authenticate the IPDR protocol. <ul style="list-style-type: none"> • <i>collector_name</i>—The collector name. The name should not contain blank spaces. • <i>ip_addr</i>—The collector IP address. • <i>port</i>—(Optional) The collector port value. The default port number will be considered if the value is not entered.

Configuring the IPDR Associate

To associate the collector with a session, use the **ipdr associate** command in global configuration mode.

Prerequisites

- You must deactivate the session before configuring the associate.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ipdr associate session_id collector_name priority**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	ipdr associate <i>session_id</i> <i>collector_name</i> <i>priority</i> Example: Router(config)# ipdr associate 1 federal 1	Associates the collector with a session. <ul style="list-style-type: none"> • <i>session_id</i>—The unique IPDR session ID. • <i>collector_name</i>—The collector name. The name should not contain blank spaces. • <i>priority</i>—The priority value between the session and the collector. The value range is 1 to 10. A value of 1 indicates the highest priority.

Configuring the IPDR Template

To add an IPDR template to the IPDR session, use the **ipdr template** command in global configuration mode. The template list can be viewed by entering a “?” at the command prompt.

Restrictions

- You can add only the system-supported templates.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ipdr template** *session_id* *template_name*

DETAILED STEPS

	Command or Action	Purpose
Step 1	<code>enable</code> Example: Router> enable	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	<code>configure terminal</code> Example: Router# configure terminal	Enters global configuration mode.
Step 3	<code>ipdr template session_id template_name</code> Example: Router(config)# ipdr template 1 SAMIS	Adds an IPDR template to the IPDR session. <ul style="list-style-type: none"> • <i>session_id</i>—The unique IPDR session ID. • <i>template_name</i>—The template name.

Configuring the IPDR Exporter

To enable the CMTS application to start the IPDR exporter process to connect the exporter and the collector, use the **ipdr exporter start** command in global configuration mode.

Use the **no** form of the command to deactivate all IPDR sessions and stop the exporter process.

**Note**

Starting Cisco IOS Release 12.2(33)SCE, the default value for DataAckTimeInterval is 60 seconds and the default value for DataAckSequenceInterval is 200 seconds.

SUMMARY STEPS

1. `enable`
2. `configure terminal`
3. `ipdr exporter start`

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	ipdr exporter start Example: Router(config)# ipdr exporter start	Enables the CMTS application to start the IPDR exporter process to connect the exporter and the collector.

Configuration Examples for IPDR Streaming Protocol

This section describes a sample configuration example for configuring IPDR Streaming Protocol.

- [Configuring the IPDR Session: Example, page 10](#)
- [Configuring the IPDR Type: Example, page 10](#)
- [Configuring the IPDR Collector: Example, page 11](#)
- [Configuring the IPDR Associate: Example, page 11](#)
- [Configuring the IPDR Template: Example, page 11](#)
- [Configuring the IPDR Exporter: Example, page 11](#)

Configuring the IPDR Session: Example

The following example shows how to configure the IPDR session.

```
Router> enable
Router# configure terminal
Router(config)# ipdr session 1 test no_descr
```

Configuring the IPDR Type: Example

The following example shows how to configure the IPDR “time-interval” session type for a time interval of 15 minutes.

```
Router> enable
Router# configure terminal
Router(config)# ipdr type 1 time-interval 15
```

Configuring the IPDR Collector: Example

The following example shows how to configure the IPDR collector.

```
Router> enable
Router# configure terminal
Router(config)# ipdr collector federal 209.165.200.225
```

Configuring the IPDR Associate: Example

The following example shows how to associate the collector with a session.

```
Router> enable
Router# configure terminal
Router(config)# ipdr associate 1 federal 1
```

Configuring the IPDR Template: Example

The following example shows how to add an IPDR template to the IPDR session.

```
Router> enable
Router# configure terminal
Router(config)# ipdr template 1 SAMIS
```

Configuring the IPDR Exporter: Example

The following example shows how to configure the IPDR exporter process to connect the exporter and the collector.

```
Router> enable
Router# configure terminal
Router(config)# ipdr exporter start
```

Verifying IPDR Streaming Protocol

This section describes the commands used for verification of the IPDR streaming protocol feature on the Cisco CMTS platforms.

- [Verifying the IPDR Collector, page 11](#)
- [Verifying IPDR exporter, page 12](#)
- [Verifying IPDR session, page 12](#)
- [Verifying IPDR Session Collector, page 12](#)
- [Verifying IPDR Session Template, page 13](#)

Verifying the IPDR Collector

The **show ipdr collector** command displays the collector information, message statistics and event for all the sessions that are associated with the collector

The following example shows the sample output for the `show ipdr collector` command.

```
Router#show ipdr collector federal
Collector Name: federal, IP: 192.0.2.0, Port: 0
2001-07-05T19:28:22 Collector in session 1 Statistics:
  Transmitted 12658 Acknowledged 12658 Enqueued 12658 Lost 0
  Last Event: Event Id 1 IPDR_EVENT_SERVER_CONNECTED - INCOMING
Router(config)#
```

Verifying IPDR exporter

The `show ipdr exporter` command displays information about the IPDR Exporter state. The information displayed indicates the Exporter states that are listed below.

- started
- not started
- not initialized

The following example shows the sample output for the `show ipdr exporter` command:

```
Router#show ipdr exporter
IPDR exporter is started.
```

Verifying IPDR session

The `show ipdr session` command displays the session details such as the session ID, description, and the session state for all sessions as well as for a specific session.

The following example shows the sample output for the all option for the `show ipdr session` command.

```
Router#show ipdr session all
Session ID: 1, Name: utilsta, Descr: test, Started: False
```

The following example shows the sample output for the `session_id` option for the `show ipdr session` command.

```
Router#show ipdr session 1
Session ID: 1, Name: utilsta, Descr: test, Started: False
2001-07-05T19:36:28 Statistics:
  Transmitted 0 Acknowledged 0 Enqueued 0 Lost 0
  queuedOutstanding 0 queuedUnacknowledged 0
  1 Collectors in the session:
  Name: federal, IPAddr: 192.0.2.0, Port: 0, Priority: 1
```

Verifying IPDR Session Collector

The `show ipdr session collector` command displays the details of a collector that is associated with a specific session. Since there can be multiple collectors associated to a session, this command is used to show a specific session-collector pair.

The following example shows the sample output for the `show ipdr session collector` command.

```
Router#show ipdr session 1 collector federal
Session ID: 1, Name: utilsta, Descr: test, Started: False
Collector Name: federal, IP: 192.0.2.0, Port: 0
2001-07-05T19:38:02 Collector in session 1 Statistics:
  Transmitted 0 Acknowledged 0 Enqueued 0 Lost 0
  Last Event: Event Id 0 WRONG_EVENT_ID
```

Verifying IPDR Session Template

The **show ipdr session template** command displays the list of all active templates supported by a specific session.

The following example shows the sample output for the show ipdr session template command.

```
Router#show ipdr session 1 template
Template ID: 2, Name: , Type: DOCSIS-Type, KeyNumber: 22
Session 1 has totally 1 templates.
```

Additional References

The following sections provide references related to configuring the IPDR streaming protocol feature.

Related Documents

Related Topic	Document Title
CMTS Command Reference	<i>Cisco IOS CMTS Cable Command Reference</i> http://www.cisco.com/en/US/docs/ios/cable/command/reference/cbl_book.html
Cisco uBR10012 Universal Broadband Router Documentation	<i>Cisco uBR10012 Universal Broadband Router Hardware Installation Guide</i> http://www.cisco.com/en/US/docs/cable/cmts/ubr10012/installation/guide/hig.html <i>Cisco uBR10012 Universal Broadband Router Software Configuration Guide</i> http://www.cisco.com/en/US/docs/cable/cmts/ubr10012/configuration/guide/scg.html Cisco uBR10012 Universal Broadband Router Release Notes http://www.cisco.com/en/US/products/hw/cable/ps2209/prod_release_notes_list.html
IPDR/SP 2.1	<i>IPDR/SP Protocol Specification Version 2.1</i> http://www.ipdr.org

Standards

Standard	Title
DOCSIS 3.0 OSSSI	<i>Data-Over-Cable Service Interface Specifications DOCSIS 3.0 Operations Support System Interface Specification CM-SP-OSSSIv3.0-I13-101008</i> http://www.cablelabs.com

MIBs

MIB	MIBs Link
None	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
RFC 1014 XDR	<i>XDR: External Data Representation Standard</i>

Technical Assistance

Description	Link
<p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p>	<p>http://www.cisco.com/support</p>

Feature Information for IPDR Streaming Protocol

[Table 2](#) lists the features in this module and provides links to specific configuration information. Only features that were introduced or modified in Cisco IOS Release 12.2(33)SCB or a later release appear in the table.

Not all commands may be available in your Cisco IOS software release. For release information about a specific command, see the command reference documentation.

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Note

[Table 2](#) lists only the Cisco IOS software release that introduced support for a given feature in a given Cisco IOS software release. Unless noted otherwise, subsequent releases of that Cisco IOS software release also support that feature.

Table 2 **Feature Information for IPDR Streaming Protocol**

Feature Name	Releases	Feature Information
IPDR Streaming Protocol	12.2(33)SCB	<p>The Cisco universal broadband router supports the IPDR streaming protocol feature that enables efficient and reliable delivery of high volume data records from the service elements to any systems, such as mediation systems and BSS/OSS.</p> <p>The following sections provide information about this feature:</p> <ul style="list-style-type: none"> • Configuring the IPDR Session, page 4 • Configuring the IPDR Collector, page 6 • Configuring the IPDR Associate, page 7 • Configuring the IPDR Template, page 8 • Configuring the IPDR Exporter, page 9
Data Collection Methodologies and DOCSIS 3.0 IPDR Schema	12.2(33)SCD2	<p>This feature was introduced in this release</p> <p>The following sections provide information about this feature:</p> <ul style="list-style-type: none"> • Configuring the IPDR Type, page 5 • Additional References, page 14 <p>The following command was introduced:</p> <p>ipdr type</p>

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