AudioCodes™ SIP Products

VoIP Mediant™ Media Gateways

Multi-Service Business Gateways

# Technical Note Configuring the Syslog Feature



# Version 6.2

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Technical Note Notices

#### **Notice**

This document describes AudioCodes Syslog feature.

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# **Abbreviations and Terminology**

Each abbreviation, unless widely used, is spelled out in full when first used.



**Note:** Throughout this document and unless otherwise specified, the term *device* denotes AudioCodes product.



# **Reader's Company**

Technical Note 1. Introduction

# 1 Introduction

Syslog is an event notification protocol that enables a device to send event notification messages across IP networks to event message collectors, also known as Syslog servers. The device contains an embedded syslog client, which sends error reports / events that it generates to a remote Syslog server using the IP / UDP protocol. This information is a collection of error, warning, and system messages that records every internal operation of the device.



#### **Notes:**

- For a detailed description of the Syslog feature, refer to the SIP Product Reference Manual and the device's User's Manual.
- This document is applicable to the following products: MediaPack series (MP-11x and MP-124), Mediant 600, Mediant 1000, Mediant 800 MSBG, Mediant 1000 MSBG, Mediant 2000, and Mediant 3000.



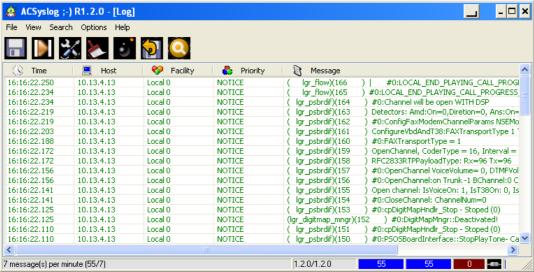
## **Reader's Notes**

# 2 Available Syslog Servers

For receiving Syslog messages generated by the device, you can use any of the following Syslog servers:

ACSyslog Program: AudioCodes proprietary Syslog server, supplied with your device. The figure below displays an example of received Syslog messages in the ACSyslog program.

Figure 2-1: AudioCodes Proprietary Syslog Server - ACSyslog



- **Embedded Syslog Server:** The device provides an embedded Syslog server, which is accessed through the Web interface. This provides limited Syslog server functionality. For a detailed description of this Syslog server, see Section 3.4.
- **Wireshark:** Third-party network protocol analyzer (http://www.wireshark.org).
- Third-party, Syslog server. A typical Syslog server program enables filtering of messages according to parameters such as priority, IP sender address, time, and date.



## **Reader's Notes**

# 3 Syslog Message Format

The Syslog message is transmitted from the device to a Syslog server as an American Standard Code for Information Interchange (ASCII) message. Syslog servers use User Datagram Protocol (UDP) as its underlying transport layer. By default, UDP port 514 is assigned to Syslog. This port can be changed using the *SyslogServerPort* parameter.

Syslog generates the following types of messages:

- **Error:** indicates a problem has been identified that requires immediate handling
- Warning: indicates an error might occur if measures are not taken to prevent it
- Notice: indicates an unusual event has occurred
- Info: indicates an operational message
- Debug: messages used for debugging

When using the device's embedded Syslog server, these message types are color coded (as explained in Section 3.4).



**Note:** Info and Debug Syslog messages are required only for advanced debugging. Therefore, they are not sent by default.

Syslog messages received from the SIP application level are sequentially numbered. A leap in the sequence of messages indicates a loss of SIP message packets. For example, in the below Syslog message generation, SIP messages 622 through 629 were not received, in other words, nine Syslog messages were lost (the sequential numbers are indicated below in **bold** font).

```
18:38:14. 52 : 10.33.45.72 : NOTICE: (lgr psbrdex)(619) recv <--
DIGIT(0) Ch:0 OnTime:0 InterTime:100 Direction:0 System:1 [File:
Line:-1]

18:38:14. 83 : 10.33.45.72 : NOTICE: (lgr flow)(620) #0:DIGIT EV
[File: Line:-1]

18:38:14. 83 : 10.33.45.72 : NOTICE: (lgr flow)(621) |
#0:DIGIT_EV [File: Line:-1]

18:38:14.958 : 10.33.45.72 : NOTICE: (lgr flow)(630) |
#0:DIGIT_EV [File: Line:-1]
```



**Note:** When Network Time Protocol (NTP) is enabled, a timestamp string **[hour:minutes:seconds]** is added to all Syslog messages (for information on NTP, refer to the device's *User's Manual*).



# 3.1 Unique Device Identification in Syslog Messages

For MSBG and Mediant 3000 devices, the Syslog messages include a unique string to identify these devices:

Mediant 800 MSBG and Mediant 1000 MSBG: Syslog messages relating to VoIP functionality are marked with "host"; those relating to Data Routing are marked with "DATA".

```
12/12 12:46:40.921 : 10.8.5.70 : NOTICE : host: 10.8.5.78 (sip_stack)(24) Resource SIPMessage deleted - #267 11/24 08:14:09.311 : 10.3.2.100 : WARNING : DATA: Failed to set device eth0 netmask: Cannot assign requested address
```

■ **Mediant 3000:** High Availability (HA) main operations and events are sent to the Syslog with the prefix, "M3K\_HA". All Syslog messages and events of the redundant TP-6310 blade are sent to the Syslog by the active TP-6310 blade with the "Redundant module message" message prefix.

# 3.2 Identifying AudioCodes Syslog Messages using Facility Levels

The Facilities of the device's Syslog messages are numerically coded with decimal values. Facility may use any of the "local use" facilities (0 through 7), according to RFC 3164. This is useful, for example, if you collect the device's and other equipments' Syslog messages, on one single server. The device's Syslog messages can easily be identified and distinguished from other Syslog messages by its Facility level. Therefore, in addition to filtering Syslog messages according to IP address, the messages can be filtered according to Facility level, using the *SyslogFacility* parameter, which provides the following options:

Numerical Value	Facility Level
16 (default)	local use 0 (local0)
17	local use 1 (local1)
18	local use 2 (local2)
19	local use 3 (local3)
20	local use 4 (local4)
21	local use 5 (local5)
22	local use 6 (local6)
23	local use 7 (local7)

Table 3-1: Syslog Facility Levels

Messages start with a leading less-than character ('<'), followed by a number, which is followed by a greater-than character ('>'). This is optionally followed by a single ASCII space. The number is known as the *Priority* and represents both the Facility level and Severity level. A Syslog message with Facility level 16 is shown below:

```
Facility: LOCALO - reserved for local use (16)
```

# 3.3 SNMP Alarms in Syslog Messages

SNMP is a protocol that alerts you when a network-attached device requires attention. SNMP alerts are sent to the Syslog server using the following formats:

Raised Alarms: RAISE-ALARM: <Alarm Name>; Textual Description: <Textual Description>; Severity <Alarm Severity>; Source <Alarm Source>; Unique ID: <Alarm Unique ID >.

If additional information exists in the alarm, then these are also added: Additional Info1:/ Additional Info2:/ Additional Info3

The Messages' Severity is as follows:

**Table 3-2: Syslog Message Severity** 

ITU Perceived Severity (SNMP Alarm's Severity)	AudioCodes' Syslog Severity
Critical	RecoverableMsg
Major	RecoverableMsg
Minor	RecoverableMsg
Warning	Notice
Indeterminate	Notice
Cleared	Notice

■ Cleared Alarms: CLEAR-ALARM: <Alarm Name>; Textual Description: <Textual Description>; Severity <Alarm Severity>; Source <Alarm Source>; Unique ID: <Alarm Unique ID >; If exists Additional Info1:/ Additional Info2:/ Additional Info3:



# 3.4 Syslog Message Display in the Web Interface

The Web interface's Message Log page displays Syslog messages sent by the device.

#### Notes:

- It's not recommended to keep a Message Log session open for a prolonged period. This may cause the device to overload. For prolonged (and detailed) debugging, use an external Syslog server.
- Syslog message display through the Web interface is currently not supported on the Mediant 800 MSBG and Mediant 1000 MSBG devices.
- To view Syslog messages in the Web interface:
- 1. Enable the device's Syslog feature and configure the Syslog parameters (see Section 4).
- Open the Message Log page (Status & Diagnostics tab > System Status menu > Message Log); the Message Log page is displayed and the Syslog is activated.

Figure 3-1: Viewing Syslog Messages in the Web Interface

```
Log is Activated
lid:14h:43m:9s ( lgr_flow) (2662

lid:14h:43m:9s ( lgr_flow) (2664

lid:14h:43m:9s ( lgr_psbrdif) (2665

lid:14h:43m:9s ( lgr_psbrdif) (2666

lid:14h:43m:9s ( lgr_psbrdif) (2667

lid:14h:43m:9s ( lgr_psbrdif) (2668

lid:14h:43m:9s ( lgr_psbrdif) (2668

lid:14h:43m:9s ( lgr_psbrdif) (2668

lid:14h:43m:9s ( lgr_psbrdif) (2668
                                                             ) recv <-- ON HOOK Ch:1
                                                             ) #1:ON_HOOK_EV
                                                                              #1:ON_HOOK_EV
                                                        ) #1:cpDigitMapHndlr_Stop - Stoped (0)
                                                                  #1:CloseChannel: ChannelNum=1
                                                           ) Open channel: IsVoiceOn: 1, IsT38On: 1, IsVbdOn: 0, I:
) #1:OpenChannel:on Trunk -1 BChannel:1 CID=1 with Voice
) #1:OpenChannel VoiceVolume= 0, DTMFVolume = -11, Input
                                                             ) OpenChannel, CoderType = 15, Interval = 4, M = 1
 11d:14h:43m:9s (
                           lgr_psbrdif) (2670
                            lgr_psbrdif) (2671
 11d:14h:43m:9s (
                                                             ) #1:FAXTransportType = 1
 11d:14h:43m:9s ( lgr_psbrdif)(2672
11d:14h:43m:9s ( lgr_psbrdif)(2673
                                                            ) #1:ConfigFaxHodemChannelParams NSEHode=0, CNGDetHode=
) Detectors: Amd:0, Ans:0 En:0 IBScmd:0xa1
                           lgr_psbrdif) (2674
                                                             ) #1:PSOSBoardInterface::StopPlayTone- Called
 11d:14h:43m:9s (
 11d:14h:43m:9s ( lgr_psbrdex) (2675
                                                                  recv <-- OFF_HOOK Ch:1
                          lgr_flow) (2676
lgr_flow) (2677
 11d:14h:43m:9s (
                                                                  #1:OFF_HOOK_EV
 11d:14h:43m:9s (
                                                                              #1:OFF_HOOK_EV
                                                                  UpdateChannelParams, Channel 1
 11d:14h:43m:9s (
                           lgr_psbrdif) (2678
                                                                  #1:ConfigFaxModemChannelParams NSEMode=0, CNGDetMode
 11d:14h:43m:9s (
                           lgr_psbrdif) (2679
                           lgr psbrdif) (2680
                                                                  ActivateDigitMap for channel : 1, MaxDialStringLength
11d:14h:43m:9s (
```

The displayed logged messages are color coded as follows:

- Yellow error messages
- Blue recoverable error messages
- Black notice messages
- 3. To clear the Syslog messages, open a different page and then re-access the Message Log page (see Step 2); the page is cleared and new messages begin to appear.
- To stop the Message Log:
- Close the Message Log page by accessing any another page in the Web interface.

# 4 Configuring the Syslog Feature

The Syslog client, which is embedded in the device sends error reports/events generated by the device to a Syslog server using IP/UDP protocol. The Syslog can be configured using the Web interface, EMS, or *ini* file. The main configuration of the Syslog feature includes enabling the Syslog client, defining the Syslog server's IP address, and then selecting the debug level.

The procedure below describes how to configure Syslog for receiving SIP messages through the Web interface.

- > To configure Syslog for receiving SIP message events:
- Open the Syslog Settings page (Configuration tab > System menu > Syslog Settings).

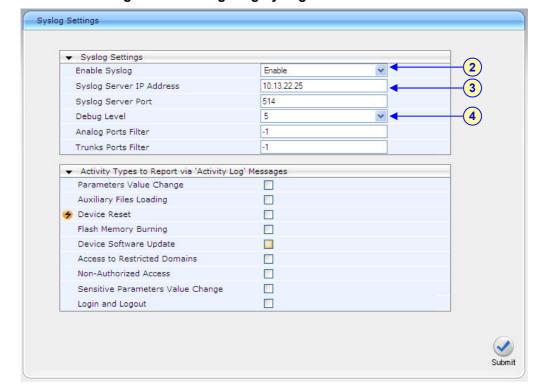


Figure 4-1: Configuring Syslog in the Web Interface

- 2. From the 'Enable Syslog' drop-down list, select Enable.
- 3. In the 'Syslog Server IP Address' field, enter the IP address of the Syslog server (or the computer on which the Syslog server is running).
- 4. From the 'Debug Level' drop-down list, select 5.
- 5. Click the **Submit** button to apply your settings.



In addition to the settings described in the procedure above, the device provides additional, optional Syslog configuration parameters. The following table describes these additional parameters as well as the ones that you configured above (Web interface and corresponding *ini* file and EMS parameters):

**Table 4-1: Syslog Parameters Description** 

Parameter	Description	
Web: Enable Syslog EMS: Syslog enable [EnableSyslog]	Sends the logs and error message generated by the device to the Syslog server.	
	• [0] Disable = Logs and errors are not sent to the Syslog server (default).	
	• [1] Enable = Enables the Syslog server.	
	Notes:	
	<ul> <li>If you enable Syslog, you must enter an IP address of the Syslog server, using the SyslogServerIP parameter.</li> </ul>	
	<ul> <li>You can configure the device to send Syslog messages implementing Debug Recording, by using the SyslogOutputMethod parameter. For a detailed description on Debug Recording, refer to the <i>Product Reference Manual</i>.</li> </ul>	
	<ul> <li>Syslog messages may increase the network traffic.</li> </ul>	
	<ul> <li>To configure Syslog SIP logging levels, use the GwDebugLevel parameter.</li> </ul>	
	<ul> <li>By default, logs are also sent to the RS-232 serial port. For information on establishing a serial communications link with the device, refer to the device's <i>Installation Manual</i>.</li> </ul>	
Web/EMS: Syslog Server IP Address [SyslogServerIP]	The IP address of the computer on which the Syslog server is running. The Syslog server is an application designed to collect the logs and error messages generated by the device.	
	The default IP address is 0.0.0.0.	
Web: Syslog Server Port	Defines the UDP port of the Syslog server.	
EMS: Syslog Server Port Number [SyslogServerPort]	The valid range is 0 to 65,535. The default port is 514.	
Web/EMS: Debug Level	Syslog debug logging level.	
[GwDebugLevel]	• [0] 0 (default) = Debug is disabled.	
	• [1] 1 = Flow debugging is enabled.	
	• [5] 5 = Flow, device interface, stack interface, session manager, and device interface expanded debugging are enabled.	
	• [7] 7 = This option is recommended when the device is running under "heavy" traffic. In this mode:	
	<ul> <li>The Syslog debug level automatically changes between level 5, level 1, and level 0, depending on the device's CPU consumption so that VoIP traffic isn't affected.</li> <li>Syslog messages are bundled into a single UDP packet, after which they are sent to a Syslog server (bundling size is determined by the MaxBundleSyslogLength parameter). Bundling reduces the number of UDP Syslog packets, thereby improving CPU utilization.</li> </ul>	
	Note that when this option is used, in order to read Syslog messages with Wireshark, a special plug-in (i.e., acsyslog.dll) must be used. Once the plug-in is installed, the Syslog	

Parameter	Description
	messages are decoded as "AC SYSLOG" and are dispalyed using the 'acsyslog' filter instead of the regular 'syslog' filter  Notes:  Usually set to 5 if debug traces are required. However, in cases
	of heavy traffic, option 7 is recommended.
Web: Activity Types to Report via Activity Log Messages [ActivityListToLog]	<ul> <li>Options 2, 3, 4, and 6 are not recommended for use.</li> <li>The Activity Log mechanism enables the device to send log messages (to a Syslog server) for reporting certain types of Web operations according to the following user-defined filters:</li> </ul>
	<ul> <li>[pvc] Parameters Value Change = Changes made on-the-fly to parameters.</li> </ul>
	<ul> <li>[afl] Auxiliary Files Loading = Loading of auxiliary files.</li> </ul>
	<ul> <li>[dr] Device Reset = Reset of device via the Maintenance Actions page.</li> </ul>
	<ul> <li>[fb] Flash Memory Burning = Burning of files or parameters to flash, in the Maintenance Actions page.</li> </ul>
	<ul> <li>[swu] Device Software Update = cmp file loading via the Software Upgrade Wizard.</li> </ul>
	<ul> <li>[ard] Access to Restricted Domains = Access to restricted domains, which include the following Web pages:</li> <li>(1) ini parameters (AdminPage)</li> <li>(2) 'General Security Settings'</li> <li>(3) 'Configuration File'</li> <li>(4) 'IPSec/IKE' tables</li> <li>(5) 'Software Upgrade Key'</li> <li>(6) 'Internal Firewall'</li> <li>(7) 'Web Access List'</li> <li>(8) 'Web User Accounts'</li> </ul>
	<ul> <li>[naa] Non Authorized Access = Attempt to access the Web interface with a false or empty user name or password.</li> </ul>
	<ul> <li>[spc] Sensitive Parameters Value Change = Changes made to sensitive parameters:</li> <li>(1) IP Address</li> <li>(2) Subnet Mask</li> <li>(3) Default Gateway IP Address</li> <li>(4) ActivityListToLog</li> <li>[II] Login and Logout = Every login and logout attempt</li> <li>For example: ActivityListToLog = 'pvc', 'afl', 'dr', 'fb', 'swu', 'ard', 'naa', 'spc'</li> </ul>

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Parameter	Description
Syslog Facility Number [SyslogFacility]	Facility level (0 through 7) for the device's Syslog messages, according to RFC 3164. This allows you to identify Syslog messages generated by the device. This is useful, for example, if you wish to collect the device, and other equipments' Syslog messages, at one single server. The device's Syslog messages can easily be identified and distinguished from other Syslog messages by its Facility level. Therefore, in addition to filtering Syslog messages according to IP address, the messages can be filtered according to Facility level.
	• [16] = local use 0 (local0) - default
	• [17] = local use 1 (local1)
	• [18] = local use 2 (local2)
	• [19] = local use 3 (local3)
	• [20] = local use 4 (local4)
	• [21] = local use 5 (local5)
	• [22] = local use 6 (local6)
	• [23] = local use 7 (local7)
[SyslogOutputMethod]	Determines the method used for Syslog messages.
	<ul> <li>[0] = Send all Syslog messages to the defined Syslog server (default).</li> </ul>
	<ul> <li>[1] = Send all Syslog messages using the Debug Recording mechanism.</li> </ul>
	• [2] = Send only Error and Warning level Syslog messages using the Debug Recording mechanism.
[MaxBundleSyslogLength]	The maximum size (in bytes) threshold of logged Syslog messages bundled into a single UDP packet, after which they are sent to a Syslog server.  The valid value range is 0 to 1220 (where 0 indicates that no bundling occurs). The default is 1220.
	<b>Note:</b> This parameter is applicable only if the GWDebugLevel parameter is set to 7.
[FacilityTrace]	Enables ISDN traces of Facility Information Elements (IE) for ISDN call diagnostics. This allows you to trace all the parameters contained in the Facility IE and view them in the Syslog.
	[0] Disable (default)
	• [1] Enable
	Note: For this feature to be functional, you must enable the GWDebugLevel parameter (i.e., set it to level 1, at least).

# 5 Call Detail Record Reporting

The Call Detail Record (CDR) contains important statistic information on calls made from the device. The device can be configured to generate and report CDRs for various stages of the call (beginning, initial connection, and end of the call). Once generated, the CDR logs are sent to a user-defined Syslog server.

The CDR Syslog message complies with RFC 3161 and is identified by Facility = 17 (local1) and Severity = 6 (Informational).

# 5.1 Configuring CDR

The procedure below describes how to configure CDR reporting.



**Note:** For CDR reporting, you must also enable the Syslog feature (refer to Section 4).

#### To configure CDR:

- 1. Open the 'Advanced Parameters' page (Configuration tab > VolP menu > SIP Definitions submenu > Advanced Parameters).
- Under the CDR and Debug group, perform the following:
  - a. In the 'CDR Server IP Address' field, enter the IP address of the CDR server to where the device sends the CDR logs.



**Note:** If no IP address is defined, the CDR logs are sent to the Syslog server (as defined in Section 4).

- **b.** From the 'CDR Report Level' drop-down list, select when the CDR's are generated and sent to the CDR server:
  - [0] None = CDRs are not used (default).
  - [1] End Call = CDR is sent to the Syslog server at the end of each call.
  - [2] Start & End Call = CDR report is sent to Syslog server at the start and end of each call.
  - [3] Connect & End Call = CDR report is sent to the Syslog server at connection and at the end of each call.
  - [4] Start & End & Connect Call = CDR report is sent to the Syslog server at the start, at connection, and at the end of each call.



Advanced Parameters Basic Parameter List 🔺 ^ Enable Fax Re-Routing Disable ▼ CDR and Debug CDR Server IP Address 10.13.22.15 CDR Report Level Start & End & Connect Call Debug Level ▼ Misc. Parameters Progress Indicator to IP Not Configured Enable X-Channel Header Disable Enable Early 183 Disable Enable Busy Out Disable

Figure 5-1: Configuring CDR Reporting in the Web Interface

3. Click Submit.

# 5.2 CDR Fields

The following table lists the supported CDR fields.

**Table 5-1: Supported CDR Fields** 

Field Name	Description
ReportType	Report for either Call Started, Call Connected, or Call Released
Cid	Port Number
Callid	SIP Call Identifier
Trunk	Physical Trunk Number
BChan	Selected B-Channel
Conld	SIP Conference ID
TG	Trunk Group Number
ЕРТур	Endpoint Type
Orig	Call Originator (IP, Tel)
Sourcelp	Source IP Address
DestIp	Destination IP Address
TON	Source Phone Number Type
NPI	Source Phone Number Plan
SrcPhoneNum	Source Phone Number
SrcNumBeforeMap	Source Number Before Manipulation
TON	Destination Phone Number Type
NPI	Destination Phone Number Plan
DstPhoneNum	Destination Phone Number
DstNumBeforeMap	Destination Number Before Manipulation
Durat	Call Duration
Coder	Selected Coder
Intrv	Packet Interval
Rtplp	RTP IP Address
Port	Remote RTP Port
TrmSd	Initiator of Call Release (IP, Tel, Unknown)
TrmReason	Termination Reason
Fax	Fax Transaction during the Call
InPackets	Number of Incoming Packets
OutPackets	Number of Outgoing Packets
PackLoss	Local Packet Loss
RemotePackLoss	Number of Outgoing Lost Packets



Field Name	Description
Uniqueld	unique RTP ID
SetupTime	Call Setup Time
ConnectTime	Call Connect Time
ReleaseTime	Call Release Time
RTPdelay	RTP Delay
RTPjitter	RTP Jitter
RTPssrc	Local RTP SSRC
RemoteRTPssrc	Remote RTP SSRC
RedirectReason	Redirect Reason
TON	Redirection Phone Number Type
MeteringPulses	Number of Generated Metering Pulses
NPI	Redirection Phone Number Plan
RedirectPhonNum	Redirection Phone Number

## **Reader's Notes**



# **Technical Note**

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