Dialogic®

Dialogic® Multimedia Platform for AdvancedTCA Software Release 1.1

Release Guide

July 2007

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Contents

Document Revision History

This revision history summarizes the changes made in each published version of the Release Guide for Dialogic® Multimedia Platform for AdvancedTCA, which is a document that may be subject to updates during the lifetime of the release.

Document Rev 03 – published July 2007

Updated for Service Update 30.

In the Features chapter:

- Updated web link to multimedia file conversion utilities in Multimedia (Audio/Video) Play and Record.
- Added Nb UP support in 3G-324M Interface.

In the Programming Libraries chapter:

- In IP Media API Library section, removed note that Nb UP support would be added in a future service update. This support is now available.

Document Rev 02 – published June 2007

Updated for Service Update 29.

In the Features chapter:

- Added support for (1) native RTP hairpinning and (2) native RTP play and record in Multimedia (Audio/Video) Play and Record section.
- Added 3G-324M Interface section.
- Added support for QCELP and revised frames per packet for AMR Narrow Band (previously 1 fpp; now 1, 2, 3, or 4 fpp) in Audio Codecs for RTP section.
- Updated and renamed Play and Record section to Audio (Voice) Play and Record. Moved multimedia information to Multimedia (Audio/Video) Play and Record section.

In the Programming Libraries chapter:

- Added support for DMFL_TRANSCODE_NATIVE flag for native RTP play and record in Device Management API Library section.
- Added support for native RTP hairpinning, native RTP play and record, _NATIVE audio coder types, and QCELP audio coder in IP Media API Library section.
- Added support for native RTP play and record in Multimedia API Library section.

In the Documentation chapter:

- Indicated that new versions of IPML API Library Reference, Device Management API Library Reference, Multimedia API Library Reference, and Multimedia File Conversion Tools User Guide documents are available.
- Added Multimedia File Conversion Tools Documentation section.

Document Rev 01 – published April 2007

Initial version of document.

About This Publication

The following topics provide information about this publication:

Applicability

This document provides information about the features, system requirements, and release documentation for the Dialogic® Multimedia Platform for AdvancedTCA and the Dialogic® Multimedia Software for AdvancedTCA Release 1.1.

Dialogic Multimedia Platform for AdvancedTCA (Multimedia Platform) consists of the Dialogic® Multimedia Blade for AdvancedTCA (Multimedia Blade) and associated Dialogic Multimedia Software for AdvancedTCA (Multimedia Software).

Intended Audience

This document is intended for all users of Dialogic Multimedia Platform for AdvancedTCA and Dialogic Multimedia Software for AdvancedTCA Release 1.1.

How to Use This Publication

The information in this document is organized into the following sections:

- Chapter 1, “Release Overview” describes the highlights of this release.
- Chapter 2, “System Requirements” describes the hardware and software requirements for this release.
- Chapter 3, “Features” describes the features supported in this release.
- Chapter 4, “Programming Libraries” describes the various development software libraries and demonstration programs that are available as part of this release.
- Chapter 5, “Documentation” provides a list of the documents that accompany this release.

Related Information

See the following for additional information:

- Dialogic® Multimedia Platform for AdvancedTCA Release Update for information about known problems, resolved problems, and documentation updates associated with this release. Refer to the Release Update for late-breaking changes or corrections to the release information. Information is updated in the Release Update, as needed, during the life cycle of the release.
- *http://www.dialogic.com/support/helpweb/* (for technical support)
- *http://www.dialogic.com/* (for product information)

Release Overview 1

This chapter provides an overview of Dialogic® Multimedia Platform for AdvancedTCA and introduces the new Dialogic® Multimedia Software for AdvancedTCA Release 1.1.

Multimedia Platform

The Dialogic® Multimedia Platform for AdvancedTCA consists of the Dialogic® Multimedia Blade for AdvancedTCA and associated Dialogic® Multimedia Software for AdvancedTCA (hereinafter referred to as the Multimedia Platform, Multimedia Blade, and Multimedia Software).

The Multimedia Platform provides 500 ports of multimedia processing functionality in a fully compliant PICMG 3.0 AdvancedTCA blade. The software supports two direct APIs: Dialogic® R4 for media processing and Dialogic® Global Call API for call control. A standards-based Media Server Markup Language (MSML) interface is also included, providing a rich set of media management capabilities and allowing media processing on the Media Server (MS) from a remote agent such as an Application Server (AS).

The Multimedia Blade includes an Advanced Mezzanine Card (AdvancedMC) and comes with a Rear Transition Module (RTM). The AdvancedMC, which is pre-installed on the baseboard, has four digital signal processors (DSPs) used for echo cancellation and transcoding offload. The Multimedia Blade can be used with either a PSTN RTM or IP-only RTM:

- The PSTN RTM provides 16 spans of E1/T1 (clear channel only) and two Gigabit Ethernet interfaces.
- The IP-only RTM provides two Gigabit Ethernet interfaces.

Multimedia Software Release 1.1

The Multimedia Software supports the industry-standard Session Initiation Protocol (SIP) for call control, with the Real-time Transport Protocol (RTP) and Real-Time Control Protocol (RTCP) for media streaming and control over IP in various audio formats and one video format. The Multimedia Software provides media features for voice over IP (VoIP) and for PSTN endpoints. OA&M capabilities are provided through an SNMP interface and a Command Line Interface (CLI).

Multimedia Software Release 1.1 introduces support for the 3G-324M API library which provides video telephony capabilities based on the 3GPP 3G-324M specification.

Refer to Chapter 3, “Features” for further information about the supported features in this release.

System Requirements 2

This chapter describes the hardware and software system requirements for the Dialogic® Multimedia Platform for AdvancedTCA. The information is provided in the following sections:

2.1 Basic Hardware Requirements

The Multimedia Platform requires the following hardware:

- PICMG 3.0 compliant chassis with Shelf Management Controller (ShMC) installed and functional

Note: If you are using a **Schroff** chassis, note the following compatibility issues:

The Multimedia Platform has a compatibility issue with Schroff Shelf Manager firmware prior to Version 2.2.0. If an older version is used, the Field Replaceable Unit (FRU) file on the Rear Transition Module (RTM) will be overwritten, making the RTM unusable until the RTM is reprogrammed. Before installing the RTM in a Schroff chassis, update the Shelf Manager firmware to v2.2.0. Downloads are available at the following web site: http://www.schroff.us/home.asp

The Multimedia Platform has a compatibility issue with some revisions of Schroff Shelf Manager boards. When the Multimedia Blade is plugged into a chassis and the chassis is powered up, the BLUE Hotswap LED on the Multimedia Blade will go on and stay on continuously. At this point, the Multimedia Blade is unusable. To correct the problem, the user must remove the Multimedia Blade and plug it back in to the chassis. For more information on using Schroff Shelf Manager with the Multimedia Platform, see the Appendix of the *Dialogic® Multimedia Blade for AdvancedTCA Technical Product Specification*.

2.2 Basic Software Requirements

The following software is supported in this release:

- Supported operating systems:
  - Red Hat Enterprise Linux Advanced Server Release 4.0 with Update 2 or Update 3
  - Red Hat Enterprise Linux Enterprise Server Release 4.0 with Update 2
  - SUSE Linux SLES Release 9 SP3

- Supported compilers: GNU Compiler Collection (GCC) Versions 3.2 and 3.4.2

Note: When using **SUSE Linux**, the SUSE Linux kernel **.config** file should be configured for an Intel Pentium 4 processor (at a minimum) as follows:

- CONFIG_M586 should be disabled and CONFIG_MPENTIUM4 should be enabled, depending on your processor.
- CONFIG_PREEMPT should be enabled.
- CONFIG_HPET_RTC_IRQ should be disabled.

Although the **.config** file can be manually configured, it is recommended that you use the provided configuration script from the web site:
http://resource.intel.com/telecom/support/hmplinux/hmp12/suse/index.htm

2.3 Additional Requirements

The following topics describe additional requirements:

- Early Media Requirements

2.3.1 Early Media Requirements

Note: Early media refers to media (audio and/or video) transfer before a particular session is accepted by the called party.

Applications such as video color ring and video caller ID require a half duplex, early media path (preanswer) to be established between the Multimedia Platform and the calling or called party. For video caller ID applications, an early media path must be established with the called party, and for video color ring, it must be established with the calling party.

The Multimedia Platform does not directly support early media between the Multimedia Server and the calling or called party and is therefore dependent upon other network elements, such as a gateway, to provide this capability. Additionally, video color ring or video caller ID services require video phones that support these services.

In a 3G or IP environment, where the Multimedia Server sits behind a gateway, video color ring or video caller ID applications can be supported without the Multimedia Server directly supporting early media. Early media support can be established by another subsystem in the network, such as by a gateway that supports early media. A full duplex call between the Multimedia Server and the gateway could be established and the Multimedia Server could be provided the IP address and RTP port of the calling or called party, allowing the Multimedia Server to stream the video color ring to the calling party or the video caller ID to the called party. As an alternative approach that doesn't require setting up a SIP call session, you can set up a media stream between the Media Gateway and the Multimedia Server using the IP Media Library.

Features 3

This chapter lists and describes the features that are supported by the Dialogic® Multimedia Platform for AdvancedTCA. This information is provided in the following sections:

3.1 AdvancedTCA Hardware Design

The Multimedia Blade was designed following the standards of the Advanced Telecommunications Compute Architecture (AdvancedTCA) Modular Communications Platform Design Guide for high availability, switched network computing.

The AdvancedTCA standards define open architecture modular computing components for carrier-grade, communications network infrastructure.

There are no new AdvancedTCA hardware design features in Multimedia Software Release 1.1.

3.2 Multimedia (Audio/Video) Play and Record

New Features

New multimedia features supported in Multimedia Software Release 1.1 include:

- Native RTP hairpinning.

  The RTP media stream received from one IP media session can be retransmitted to the outgoing RTP media stream of another IP media session without being processed or transcoded by Dialogic® software. The RTP packets remain exactly as received, with packets out of order or even missing; the RTP stream is retransmitted so that the receiving terminating end point can perform necessary packet loss recovery (PLR) activity.

  This feature is implemented in the Device Management API Library and the IP Media API Library. For more information, see Section 4.3, “Device Management API Library”, on page 22 and Section 4.6, “IP Media API Library”, on page 24.

- New proprietary native audio file format used for native RTP play and record. This file format is supported by the Multimedia API Library and the Multimedia File Conversion Utilities. For more information, see Section 4.7, “Multimedia API Library”, on page 25 and the *Multimedia File Conversion Tools User Guide*.

- Native RTP play and record, without runtime control support.

  The RTP data in both incoming and outgoing directions is not processed or transcoded by Dialogic® software. With this feature, the RTP data is stored directly by and retrieved directly from Dialogic® software without application data handling.

  This feature is implemented in the Multimedia API Library. For more information, see Section 4.7, “Multimedia API Library”, on page 25.

- New 3G-324M API library as described in Section 3.10, “Application Programming Interfaces”, on page 18.

- Audio codecs for 3G-324M as described in Section 3.4, “Audio Codecs for 3G-324M”, on page 16.

- Video codec for 3G-324M as described in Section 3.5, “Video Codecs for 3G-324M”, on page 16.

Other Features

Other multimedia features supported since Multimedia Software Release 1.0 include:

- Programming libraries that provide multimedia-related functionality:
  - The multimedia API library records and plays multimedia data using a multimedia device.
  - The device management API library is used to connect the multimedia device to an IP media device.
  - Multimedia record and playback between the Multimedia Platform and remote IP endpoints is accomplished by using both the multimedia and IP media devices.
  - The IP media API library provides IP multimedia session control.

  - The Global Call API library provides IP call control for multimedia using SIP and Session Description Protocol (SDP). The Global Call API library must be used in third party call control (3PCC) mode.

- Record from RTP stream to multimedia file. Play from multimedia file into RTP stream while maintaining synchronization.
- Support for audio codecs for RTP as described in Section 3.6, "Audio Codecs for RTP", on page 17.
- Support for video codec and video picture formats as described in Section 3.7, "Video Codecs for RTP", on page 17.
- Multimedia API video record and playback with basic playback control and synchronized audio and video.
- Multimedia API audio play and record file format
  - Linear PCM (128 kbps): 16-bit, 8 kHz, mono, LSB-MSB ("little-endian")

  Note: Voice API audio files may be used as the audio track in a multimedia session; however, no synchronization between the audio and video file is maintained. In this case, the "ipm" device in a multimedia session listens to the "dxxx" device to which the voice API is playing an audio file. This overrides any audio stream (but not video) from the "mm" device in the multimedia session. For details, see the *Multimedia API Programming Guide*.
- Multimedia API video play and record file formats
  - Dialogic® proprietary format. See the *Multimedia API Programming Guide* and *Multimedia File Conversion Tools User Guide* for more information on this format.
- Multimedia File Conversion Utilities. These utilities provide off-line conversion of multimedia files. They can be downloaded from the following web site (check this web site periodically for updates to the conversion tools and their capabilities): http://www.dialogic.com/support/helpweb/mmpatca/omf/default.htm

  Note: The conversion utilities perform CPU-intensive tasks and should only be used when sufficient CPU capacity is available and when they won't impact other operations on the system.

  - **mmconvert** utility: Converts multimedia data from Audio Video Interleave (AVI) Type-2 files with DVSD and DV25 encoded video in PAL 720 x 576 or NTSC 720 x 480 video format, with PCM mono or stereo audio format, to Dialogic® proprietary multimedia file format.

  Note: The mmconvert utility does not support conversion in the reverse direction (from Dialogic proprietary multimedia file format to AVI file format).

  - **hmp3gp** utility: Converts multimedia data from Dialogic proprietary multimedia file format to 3rd GenerationPartnership Project (3GPP) file format conforming to 3GP Release 4 file format (.3gp), conforming to 3GPP specifications.
- Play to and record from SIP devices, depending upon capability of device (audio or audio/video). Play video only if no audio is required. Play audio only for non-video devices.
- Support for existing Quality of Service (QoS) audio alarms through the IPML API for the audio portion of multimedia stream.

  Note: QoS alarms and events are not supported for video streams.

3.3 3G-324M Interface

The 3G-324M technical specification is an umbrella protocol produced by the 3rd Generation Partnership Project (3GPP) standards body. An extension to the ITU-T H.324 Recommendation for 3G mobile phone conferencing, the 3G-324M specification includes H.245 for session control; H.223 for bit streams to data packets multiplexer/demultiplexer; H.223 Annex A and B for error handling of low and medium bit error rate (BER) detection, correction, and concealment; and H.324 with Annexes A and C for operating in a wireless environment.

This release supports 3G-324M multimedia sessions over PSTN as defined in 3GPP Release 99; up to 248 ports are supported. This release supports 3G-324M multimedia sessions over IP using the Nb UP protocol as defined in 3GPP Release 4; up to 250 ports are supported. For more information on Nb UP, see Section 4.6, “IP Media API Library”, on page 24.)

For more information, see Section 4.1, “New 3G-324M API Library”, on page 21.

3.4 Audio Codecs for 3G-324M

Supported audio codecs for the new 3G-324M interface include:

- G.723.1 – 5.3 and 6.3 kbps, 30 ms frames, and 1 or 2 frames per packet
- AMR Narrow Band – 20 ms frames, 1 frame per packet

3.5 Video Codecs for 3G-324M

Supported video codecs for the new 3G-324M interface include:

- H.263 (profile 0, level 30) video codec
  - Level 10 – Support of QCIF and sub-QCIF resolution decoding, capable of operation with a bit rate up to 64000 bits per second, with a picture decoding rate up to (15000)/1001 pictures per second.
- RTP video data is compliant with Internet Engineering Task Force RFC 2190: “RTP Payload Format for H.263 Video Streams.”
- Video picture formats:
  - Quarter Common Intermediate Format (QCIF) picture size (PAL 176 pixels by 144 pixels)
  - Sub-QCIF picture size (PAL 128 pixels by 96 pixels) at 30, 15, 10, or 6 frames/second, used for mobile handsets

Usage Guidelines

For 3G-324M connections, the available bandwidth is limited to 64 kbps. In order for the 3G endpoint to receive reasonable audio and video quality, it is recommended that the

peak bit rate for the video stream being played not exceed 30 kbps when the audio codec is AMR-NB and not exceed 35 kbps when the audio codec is G.723.1.

Several parameters can affect the bit rate of a given video stream. Depending on the content creation tool, you can typically control the following parameters that trade off bit rate versus quality:

- Image Size: it is recommended that the image size be limited to QCIF or smaller.
- Frame Rate: it is recommended that the frame rate be set to less than 10 frames/sec.
- Bit Rate: as documented above.
- Maximum Packet (or Frame) Size: if this option is available, it is recommended that the maximum frame or packet size be 1000 bytes.

3.6 Audio Codecs for RTP

Supported audio codecs for RTP encoding/decoding include:

- G.711 – 64 kbps format, mu-law and A-law, and 10, 20, and 30 ms frames
- G.723.1 – 5.3 and 6.3 kbps, 30 ms frames, and 1 or 2 frames per packet
- G.726 – 16, 24, 32 and 40 kbps
  - 10 ms frame size, 1, 2, 3 or 4 frames per packet
  - 20 ms frame size, 1, 2 or 3 frames per packet
- G.729A (compatible with G.729 format) – 8 kbps, 10 ms frames, and 1, 2, 3, or 4 frames per packet
- G.729AB (compatible with G.729B format) – 8 kbps, 10 ms frames, and 1, 2, 3, or 4 frames per packet
- AMR Narrow Band – 20 ms frames, 1, 2, 3 or 4 frames per packet
- EVRC – 4.8 and 9.6 kbps, 20 ms frames, 1 frame per packet
- GSM EFR – 20 ms frames, 1 frame per packet
- QCELP – 8 and 13 kbps, 20 ms frames, and 1, 2, or 3 frames per packet

3.7 Video Codecs for RTP

Supported video codecs and video picture formats for RTP include:

- H.263 (profile 0, level 30) video codec.
  - Level 30 supports CIF, QCIF, and sub-QCIF resolution decoding. It is capable of operation with a bit rate up to 6 x (64,000) = 384,000 bits per second, with a picture rate up to (30,000)/1001 pictures per second.
- RTP video data is compliant with Internet Engineering Task Force RFC 2190: “RTP Payload Format for H.263 Video Streams.”
- Video picture formats:
  - Common Intermediate Format (CIF) picture size (PAL 352 pixels by 288 pixels)

– Quarter Common Intermediate Format (QCIF) picture size (PAL 176 pixels by 144 pixels)
– Sub-QCIF picture size (PAL 128 pixels by 96 pixels) at 30, 15, 10, or 6 frames/second, used for mobile handsets

3.8 IP Signaling

The Multimedia Platform provides the industry-standard Session Initiation Protocol (SIP).

Note: Session Description Protocol (SDP) information is exposed for media capabilities exchanges when the Global Call API is configured in third party call control (3PCC) mode (SIP only).

3.9 Tone Management

Tone management support includes:

- In-Band DTMF detection and generation
- RFC 2833 DTMF detection and generation

3.10 Application Programming Interfaces

New Features

The following new API is introduced in Multimedia Software Release 1.1:

- 3G-324M – Support for a standards-compliant interface that enables conversational multimedia communication services to mobile handsets and terminals over circuit-switched networks and packet-switched networks. This API is based on the 3GPP 3G-324M specification.

Other Features

Other APIs supported since Multimedia Software Release 1.0 are:

- IP Media Library (IPML) – Support for IP media session control (audio only, video only, or multimedia) when using a third party stack or the Global Call library for SIP in third party call control (3PCC) mode.
- Global Call API Library for call control – Third party call control (3PCC) mode, in which call control is managed by the Global Call library and media exchange is managed by the IP Media Library. Global Call supports multimedia call control over IP when using SIP and SDP.

  Note: To play/record multimedia with the multimedia API, you must configure and use the Global Call library for 3PCC mode. In this mode, the application is responsible for capability negotiation by accessing and manipulating the SDP contents passed with call control exchanges.

- Device management library for multimedia connection and audio codec reservation.
- R4 APIs for media processing:
  - Multimedia (audio/video)
  - Voice
  - Conferencing (CNF)
  - Fax
- Standard Runtime Library for event handling.

3.11 Remote Media Control Interface

The Media Server Markup Language (MSML) is an XML-based media resources control protocol that is gaining industry acceptance. MSML is used to control the media resources of the Multimedia Platform over a network connection using SIP messages as the media control and event/status message transport mechanism. For example, an application server (referred to as a client) can use MSML to issue media file playback commands to the Multimedia Platform media server (the server) and receive events and status back.

The decision to use MSML is optional. A customer can still choose to host their application on the Multimedia Platform runtime environment (which has been the only choice in the past). In this setup the application couples programmatically with the Global Call API, R4 API and other Dialogic® API libraries. An alternative setup is to have the application reside in a runtime environment distinct from the Multimedia Platform with the MSML software module activated. The system administrator can choose between the first setup option (no MSML) or the other setup option (with MSML) during deployment by using the OA&M interfaces provided with the Multimedia Platform.

In the current release, MSML functionality is limited (relative to the Global Call API and R4 API functionality) to audio playback, audio record, tone generation and detection features both for VoIP and PSTN terminal endpoints. Dialogic intends to continue to extend and enhance MSML functionality in subsequent releases to include audio conferencing, video playback and record, video conferencing, and fax.

3.12 Audio (Voice) Play and Record

Supported voice play and record features include:

- Voice API audio play and record capability
  - Playing and recording files in all supported encoding formats, with or without wave headers
  - Indexed play
  - Streaming to board (streams data to the network interface in real time)
  - Transaction record
- Voice API audio play and record file formats
  - G.711 mu-law and A-law (48 kbps and 64 kbps)
  - OKI ADPCM (24 kbps and 32 kbps)

– G.726 (16 kbps and 32 kbps)
– Linear PCM (88 kbps)
– Linear PCM (128 kbps)

For information about multimedia play and record, see Section 3.2, “Multimedia (Audio/Video) Play and Record”, on page 14.

3.13 Audio Conferencing

Audio conferencing features supported include:

- Asynchronous programming model support
- Support for conferees from multiple sources
- Conference bridging
- Coach/pupil feature
- DTMF digit detection
- Volume control
- DTMF tone clamping
- Automatic gain control (AGC)
- Active talker
- Conference monitoring
- Echo cancellation
- Tariff tone

3.14 Administration via CLI and SNMP

Users have a choice of two interfaces for configuring and monitoring the Multimedia Blade: Command Line Interface (CLI) and Simple Network Management Protocol (SNMP). They both have access to the same configuration and monitoring data. SNMP is MIB-based, and CLI is text command line-based.

For information about using CLI and SNMP, see the *Dialogic® Multimedia Blade for AdvancedTCA Technical Product Specification*.

For information about a CLI script for automating repetitive tasks, see New Command Line Interface (CLI) Script topic in Section 4.10, “Demonstration Programs”, on page 26.

Programming Libraries 4

This chapter describes the various development libraries and demonstration programs that are supported by the Dialogic® Multimedia Platform for AdvancedTCA.

4.1 New 3G-324M API Library

The 3G-324M API library is new in Multimedia Software Release 1.1.

The 3G-324M API library provides a standards-compliant interface that enables conversational multimedia communication services to mobile handsets and terminals over circuit-switched networks and packet-switched networks (3GPP Release 99).

The 3G-324M technical specification is an umbrella protocol produced by the 3rd Generation Partnership Project (3GPP) standards body. An extension to the ITU-T H.324 Recommendation for 3G mobile phone conferencing, the 3G-324M specification includes H.245 for session control; H.223 for bit streams to data packets multiplexer/demultiplexer; H.223 Annex A and B for error handling of low and medium bit error rate (BER) detection, correction, and concealment; and H.324 with Annexes A and C for operating in a wireless environment.

The 3G-324M API library can be used in conjunction with other API libraries to develop multimedia services such as video conferencing, video-on-demand, surveillance, and multimedia entertainment services.

Refer to the *3G-324M API Library Reference* for more information about this API library.

Features

The 3G-324M API library provides the following capabilities:

- Ability to control and manage 3G-324M multimedia sessions

  Note: It does not include a call session control protocol such as SS7 ISUP for establishing a bearer channel connection between 3G-324M endpoints.
- Ability to initiate/terminate a 3G-324M session
- Ability to interconnect/disconnect H.223 multiplex inputs and outputs (through device management API library functions)
- Ability to initiate/terminate an H.245 session
- Support for G.723.1 and AMR Narrow Band (AMR-NB) audio codecs
- Support for H.263 video codec

  Note: While MPEG-4 capability exchange is supported in the 3G-324M API library, MPEG-4 video transcoding is not currently supported.

4.2 Conferencing (CNF) Library

The conferencing (CNF) API library supports development of conferencing applications. The conference can take place over an IP network and/or over traditional PSTN lines. This API library does not support video conferencing.

The conferencing software includes library functions, device drivers, and firmware.

Refer to the *Conferencing API Library Reference* and the *Conferencing API Programming Guide* for more information.

Note: This conferencing (CNF) API is distinct from and incompatible with the conferencing (CNF) API that was previously released in Dialogic® System Release 6.0 on PCI for Windows.

There are no new conferencing features in Multimedia Software Release 1.1.

4.3 Device Management API Library

The device management API library provides run-time control and management of configurable system devices, including functions to reserve resources and to manage the connections between devices for communication. More specifically, the functions enable connections between IP media and multimedia devices on the Multimedia Software, providing the ability for multimedia (audio/video) communication over IP connections.

The API also includes functions to reserve codecs for an IP media device on Multimedia Software.

Refer to the *Device Management API Library Reference* for more information.

New Features

The device management API library provides the following new capabilities in Multimedia Software Release 1.1:

- Enhanced device connection capabilities, enabling a connection between one or more transmit ports and one or more receive ports, using the following new API functions:
  - **dev_GetTransmitPortInfo( )**
  - **dev_GetReceivePortInfo( )**
  - **dev_PortConnect( )**
  - **dev_PortDisconnect( )**
- Support for native RTP play and record, using the DMFL_TRANSCODE_NATIVE flag in DM_PORT_CONNECT_INFO data structure.

For more information on this new capability, see *Device Management API Library Reference*.

4.4 Fax API Library

The fax API library supports development of a wide variety of fax applications such as fax mail, fax broadcast, and fax-on-demand. The fax software includes library functions, device drivers, firmware, and demonstration programs.

Refer to the *Fax Software Reference* for more information.

There are no new fax features in Multimedia Software Release 1.1.

4.5 Global Call API Library

The Global Call API library provides a uniform call control interface for developing applications for multiple network interface technologies.

The Global Call API library:

- Supports SIP protocols
- Provides a consistent application interface for the various signaling protocols and technologies
- Can be run in third party call control (3PCC) mode (SIP only)

The generic functionality of the Global Call library is documented in the *Global Call API for Host Media Processing Library Reference* and *Global Call API for Host Media Processing on Linux Programming Guide*. Functionality specific to the Multimedia Software is documented in the *Global Call IP for Host Media Processing Technology Guide*.

New Features

The Global Call API library provides the following new feature in Multimedia Software Release 1.1:

- The configuration of transparent mode on a PSTN channel basis at runtime via the **gc_SetConfigData( )** function. When transparent mode is enabled, there is no transcoding on the front end data coming in from the network before it is passed to the TDM bus.

For more information on this new capability, see the Documentation Updates chapter of the *Release Update*.

4.6 IP Media API Library

The IP media library (IPML) API is used to control media on IP devices. The IPML API is primarily used for:

- Developing Voice over IP (VoIP) applications that use IP signaling stacks other than those supplied with Dialogic products
- Controlling audio and multimedia sessions when the Global Call library is running in third party call control (3PCC) mode

  Note: IP call control with multimedia is provided only when using the Global Call library in 3PCC mode.

IP media library functionality is documented in the *IP Media Library API for Host Media Processing Library Reference* and the *IP Media Library API for Host Media Processing Programming Guide*.

New Features

The IP media API library provides the following new capabilities in Multimedia Software Release 1.1:

- Ability to connect an internal media device to an external IP network device using the 3GPP narrowband interface user plane (Nb UP) protocol. The Nb UP protocol is a packet-based interface, which is available as an alternative transport for bearer traffic between media gateways in the core network. In this case the Nb UP is intended to transport one or more 3G-324M payloads and each 3G-324M payload is the same as that used with PSTN TDM links (such as E1) except that the underlying transport technology is based on the Internet Protocol stack.
- Native RTP hairpinning. The RTP media stream received from one IP media session can be retransmitted to the outgoing RTP media stream of another IP media session. The RTP media stream in both incoming and outgoing directions is not processed or transcoded by Dialogic® software.
- Native RTP play and record. The RTP media stream in both incoming and outgoing directions is not processed or transcoded by Dialogic® software. With this feature, the

RTP data is stored directly by and retrieved directly from software without application data handling.

- New audio coder types to support native RTP play and record. Audio coder types that include _NATIVE as part of the value name have been added to the IPM_AUDIO_CODER_INFO structure in the IPML API library.
- QCELP 8 and 13 kbps codec support. QCELP audio coder types have been added to the IPM_AUDIO_CODER_INFO structure in the IPML API library.

For more information on these new capabilities, see the *IP Media Library API for Host Media Processing Library Reference*. See also the Documentation Updates chapter of the *Release Update*.

4.7 Multimedia API Library

The multimedia (MM) API is used to play and record digitized multimedia in support of video-enabled applications providing enhanced multimedia services, such as video mail, video color ring, and video caller ID.

The multimedia API is documented in the *Multimedia API Library Reference* and the *Multimedia API Programming Guide*.

New Features

The multimedia API library provides the following new capabilities in Multimedia Software Release 1.1:

- New proprietary native audio file format used for native RTP play and record. Several new defines are added to MM_AUDIO_CODEC structure. For more information on these new defines, see the Documentation Updates section of the *Release Update*. For more information on the proprietary native audio format, see the *Multimedia File Conversion Tools User Guide*.

4.8 Standard Runtime API Library

The Standard Runtime Library (SRL) API provides a common interface for event handling and other functionality common to all Dialogic® devices. The Standard Runtime Library provides the framework for implementing the supported programming models and serves as the central dispatcher for events that occur on all devices. Through the Standard Runtime Library, events are handled in a standard manner.

Refer to the *Standard Runtime Library API Programming Guide* and the *Standard Runtime Library API Library Reference* for more information.

There are no new Standard Runtime Library API features in Multimedia Software Release 1.1.

4.9 Voice API Library

The voice API library provides a rich set of features for building high-density call processing applications such as voice messaging, interactive voice response, telemarketing/call center, operator services, and more. Features include tone signaling, global tone detection and generation, call progress analysis, and a variety of voice encoding algorithms selectable on a channel-by-channel basis.

Refer to the *Voice API for Host Media Processing Library Reference* and the *Voice API for Host Media Processing Programming Guide* for more information.

There are no new voice API features in Multimedia Software Release 1.1.

4.10 Demonstration Programs

Demonstration programs are provided to demonstrate product functionality and features, and serve as examples of application programming using the supported API libraries. All demo programs are supplied as source code that users may modify to explore other capabilities of the products.

The demo programs are located in */usr/dialogic/demos*.

Note: Only the Multimedia Demo program provided in the demos directory can be run as distributed on the Multimedia Platform. The other demos will require modification.

Multimedia Demo Program

The multimedia demo processes a multimedia (audio and video) IP call with SIP endpoints. It uses the following APIs to accomplish the audio/video streaming:

- Device management library API to connect the multimedia device with an IP media device
- Multimedia API to record and play audio/video data
- IPML API for media session control and RTP stream manipulation
- Global Call API in 3PCC mode for SIP call control

New 3G-324M Multimedia Gateway Demo Program

The 3G-324M multimedia gateway demo is composed of two parts:

- The m3g-sip_gateway demo application, which demonstrates 3G mobile connectivity to a remote 3G-324M endpoint using the 3G-324M API library. The demo starts a 3G call session and bridges 3G calls to a SIP endpoint.
- The multimedia demo application, when configured to work with the m3g-sip_gateway demo application, provides multimedia streaming to a remote 3G mobile endpoint.

For more information on the 3G-324M multimedia gateway demo, see the documentation accompanying the source code in the demo program directory.

New Command Line Interface (CLI) Script

The CLI script can be used as a tool to automate repetitive tasks, such as issuing commands to the CLI. The CLI script can only be used to automate CLI commands. The following files are provided:

- *cte.pl* file, the PERL script which handles CLI session, command parsing/processing, and logging
- **.cfg* files, which represent the basic configuration commands and should be modified to suit your operating environment
- *cte_readme.txt*, which provides instructions for using the *cte.pl*

Note: Before using the CLI script, the Net-Telnet package and the PERL binary itself must be installed. On most Linux distributions, the PERL binary is installed with a regular OS install, but it is not part of the basic package install. On Windows, the PERL binary is not part of the OS install, and must be installed separately.

4.11 API Functions Not Supported

The following sections identify API functions that are not supported by the Multimedia Software.

The functions are grouped alphabetically by API library.

Audio Conferencing (DCB) API Functions

DCB API functions are not supported. The CNF API is used for conferencing.

Continuous Speech Processing (CSP) API Functions

CSP API functions are not supported.

Device Management API Functions

The following device management API functions are not supported:

- **dev_GetResourceReservationInfo( )**
- **dev_ReleaseResource( )**
- **dev_ReserveResource( )**

Instead, the following functions are used to reserve/unreserve coders:

- **dev_GetResourceReservationInfoEx( )**
- **dev_ReleaseResourceEx( )**

- **dev_ReserveResourceEx( )**

Fax API Functions

The following fax API functions are not supported:

- **fx_getxmitslot( )**
- **fx_listen( )**
- **fx_unlisten( )**

IP Media Library (IPML) API Functions

The following IPML API functions are not supported:

- **ipm_ModifyMedia( )**
- **ipm_ReceiveDigits( )**
- **ipm_SendDigits( )**

Standard Runtime Library API Functions

The following Standard Runtime Library API function is not supported:

- **sr_getboardcnt( )**

Documentation 5

This chapter lists all of the documents that are provided with the Dialogic® Multimedia Platform for AdvancedTCA. The documentation is divided into the following categories:

Note: For documentation updates, check the Release Update. Information is updated in the Release Update, as needed, during the lifecycle of the release.

5.1 Release Documentation

The following system documentation is provided for this release:

- *Dialogic® Multimedia Platform for AdvancedTCA Release Guide* (this document) †
- *Dialogic® Multimedia Platform for AdvancedTCA Release Update* †

Note: A dagger (†) next to a document title indicates that the document is new or has been updated since Dialogic Multimedia Software for AdvancedTCA Release 1.0.

5.2 Technical Product Specification (Includes Installation and Configuration)

The following technical product specification is provided for this release:

- *Dialogic® Multimedia Blade for AdvancedTCA Technical Product Specification* †

Note: A dagger (†) next to a document title indicates that the document is new or has been updated since Dialogic Multimedia Software for AdvancedTCA Release 1.0.

5.3 Programming Libraries Documentation

The following development software documentation is provided for this release:

- *3G-324M API Library Reference* †
- *Conferencing API Library Reference*
- *Conferencing API Programming Guide*
- *Device Management API Library Reference* †

- *Fax Software Reference for Linux and Windows*
- *Global Call API for Host Media Processing Library Reference*
- *Global Call API for Host Media Processing on Linux Programming Guide*
- *Global Call IP for Host Media Processing Technology Guide*
- *IP Media Library API for Host Media Processing Library Reference* †
- *IP Media Library API for Host Media Processing Programming Guide*
- *Multimedia API Library Reference* †
- *Multimedia API Programming Guide*
- *Standard Runtime Library API for Linux and Windows Operating Systems Library Reference*
- *Standard Runtime Library API for Linux Operating Systems Programming Guide*
- *Voice API for Host Media Processing Library Reference*
- *Voice API for Host Media Processing Programming Guide*

Note: A dagger (†) next to a document title indicates that the document is new or has been updated since Dialogic Multimedia Software for AdvancedTCA Release 1.0.

5.4 MSML Remote Control Interface Documentation

The following MSML remote control interface documentation is provided for this release:

- *MSML/MOML Media Server Software User's Guide*

5.5 Multimedia File Conversion Tools Documentation

The following documentation is provided for this release:

- *Multimedia File Conversion Tools User Guide* †

Note: A dagger (†) next to a document title indicates that the document is new or has been updated since Dialogic Multimedia Software for AdvancedTCA Release 1.0.