Dialogic®

Dialogic® Multimedia Software for AdvancedTCA Release 2.0

Release Guide

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Contents

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Document Revision History

This revision history summarizes the changes made in each published version of the Release Guide for Dialogic® Multimedia Software for AdvancedTCA Release 2.0, which is a document that may be subject to updates during the lifetime of the release.

Document Rev 04 – published June 2008

Updated for Service Update 89.

In the Release Overview chapter:

- Added capture still image and DVR controls to the list of supported features in Dialogic® Multimedia Software for AdvancedTCA Release 2.0.

In the Features chapter:

- Updated QCELP support in RTP Interface: removed 2 and 3 frames per packet; added QCELP compliance specification.
- Added Channel Density Support section to describe maximum density for audio codecs for RTP.
- Added capture still image and DVR controls support in Multimedia (Audio/Video) Play and Record.
- Added note that multimedia user I/O and multimedia buffer I/O are not currently supported in Multimedia (Audio/Video) Play and Record.

In the Programming Libraries chapter:

- Added capture still image and DVR controls support in Dialogic® Multimedia API Library.
- Added note that multimedia user I/O and multimedia buffer I/O are not currently supported in Dialogic® Multimedia API Library.

In the Documentation chapter:

- Added Documentation Feature Support section to help users learn where a feature or topic is documented.
- Added new Dialogic® Multimedia Programming Guide and API Library Reference (combined document) in Programming Libraries Documentation.

Document Rev 03 – published March 2008

Updated for Dialogic® Multimedia Software for AdvancedTCA Release 2.0 General Availability release.

Document Rev 02 – published February 2008

Updated for Dialogic® Multimedia Software for AdvancedTCA Release 2.0 General Availability release.

Document Rev 01 – published November 2007

Initial version of document for Dialogic® Multimedia Software for AdvancedTCA Release 2.0 Controlled Introduction release.

About This Publication

The following topics provide information about this publication:

- Applicability
- Intended Audience
- How to Use This Publication
- Related Information

Applicability

This document provides information about the features, system requirements, and release documentation for the Dialogic® Multimedia Software for AdvancedTCA Release 2.0, and is applicable to the Dialogic® Multimedia Platform for AdvancedTCA.

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 Software for AdvancedTCA Release 2.0.

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 Software for AdvancedTCA Release Update for information about known problems, resolved problems, and documentation updates associated with this release. Refer to the Release Update for changes or corrections to the release information. Information is intended to be updated in the Release Update, as needed, during the life cycle of the release.

- *http://www.dialogic.com/manuals/* (for Dialogic® product documentation)

- *http://www.dialogic.com/support/helpweb/* (for Dialogic technical support)

- *http://www.dialogic.com/* (for Dialogic® 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 2.0. This release succeeds Dialogic® Multimedia Software for AdvancedTCA Release 1.1.

Dialogic® Multimedia Platform for AdvancedTCA

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 up to 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 multimedia server from a remote agent such as an application server.

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 one of the following:

- A public switched telephone network (PSTN) RTM, which provides 16 spans of E1/T1 (clear channel only) and two Gigabit Ethernet interfaces.
- An IP-only RTM, which provides two Gigabit Ethernet interfaces.

Dialogic® Multimedia Software for AdvancedTCA Release 2.0

The Dialogic® Multimedia Software for AdvancedTCA Release 2.0 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 video formats. 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).

The Dialogic® Multimedia Software for AdvancedTCA Release 2.0 introduces support for MPEG-4, video transcoding, video transrating, image resizing, multimedia (audio/video) conferencing, capture still image, DVR controls, and image overlay, among others.

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 Software for AdvancedTCA Release 2.0. The information is provided in the
following sections:

2.1   Basic Hardware Requirements

The Dialogic® Multimedia Platform for AdvancedTCA (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 or later. As of the date of publication of this document,
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 Dialogic® Multimedia Blade for AdvancedTCA (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 Shelf Managers with the Multimedia Platform, see the
Appendix of the *Dialogic® Multimedia Blade for AdvancedTCA Technical Product
Specification*.

Note: If you are using the Intel NetStructure MPCMM001 Chassis Management Module with the
Multimedia Platform, the CMM firmware must be upgraded to Version 6.1.2.315 or later.
For more information, 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 3
    - Red Hat Enterprise Linux Enterprise Server Release 4.0 with Update 3
- Supported compilers: GNU Compiler Collection (GCC) Versions 3.2 and 3.4.2

Note: Initiating a shutdown via the Shelf Manager or the ejector latch may result in a kernel panic in the OS. To prevent a kernel panic, disable the pciehp driver by adding it to the hotswap blacklist using the following command:

```
echo pciehp >> /etc/hotplug/blacklist
```

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 ringback and video caller ID require a half duplex, early media path (preanswer) to be established between the Multimedia Platform and the calling party or called party. For video caller ID applications, an early media path must be established with the called party, and for video color ringback, 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 ringback 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 ringback 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 ringback 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 Dialogic® IP Media Library API.

Features 3

This chapter lists and describes features that are supported by Dialogic® Multimedia Software for AdvancedTCA Release 2.0. Features and functionality that are new since Dialogic® Multimedia Software for AdvancedTCA Release 1.1 are identified.

3.1 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 also 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 information about the 3G-324M API library, see Section 4.2, "3G-324M API Library", on page 24.

New Features

New 3G-324M interface features introduced in Dialogic® Multimedia Software for AdvancedTCA Release 2.0 include:

New video codec for 3G-324M
   MPEG-4 is supported with these characteristics:
   • Simple Profile (SP) – Level L0
   • Video picture format – QCIF
   • Frame rate – Up to 15 frames per second (fps)
   • Bit rate – Up to 64 kbps

Video transcoding, video transrating, and image resizing
   Video transcoding enables applications to record incoming video in a different format than what is being received from the network and to play back outgoing video in a different format than that of the locally stored file. Transcoding involves decoding and decompressing the original data to a raw intermediate format (YUV format).

   Video transrating adjusts the number of video frames per second (and bitrate of the video) between two endpoints to suit the requirements of the device at each endpoint.

   Image resizing converts video from one image size to another (for example, from CIF to QCIF) between two endpoints to suit the requirements of the device at each endpoint.

   These features are available on H.263 and MPEG-4.

   Note: In this document, the term "video transcoding" encompasses video transcoding, video transrating, and image resizing.

Other Features

Other features previously supported since Dialogic® Multimedia Software for AdvancedTCA Release 1.1 include:

Audio codecs for 3G-324M
   Other supported audio codecs are as follows:
   • G.723.1 – 6.3 kbps, 30 ms frames, 1 frame per packet
   • AMR Narrow Band – 20 ms frames, 1 frame per packet

Video codec for 3G-324M
   H.263 is supported with these characteristics:
   • Profile and level – Profile 0, level 10
   • Video picture formats – QCIF and sub-QCIF
   • Frame rate – Up to 15 frames per second (fps)
   • Bit rate – Up to 64 kbps

   RTP video data is compliant with Internet Engineering Task Force RFC 2190: "RTP Payload Format for H.263 Video Streams."

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.

3.2   RTP Interface

Audio Codecs for RTP

Supported audio codecs for RTP 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 – 32 kbps
    - 10 ms frame size, 1, 2, or 3 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 frame per packet
- EVRC – 20 ms frames, 1, 2, or 3 frames per packet
- GSM EFR – 20 ms frames, 1 frame per packet
- QCELP – 8 and 13 kbps, 20 ms frames, and 1 frame per packet

  QCELP data is compliant with Service Option 60 (SO 60 - Header Removal) of 3GPP2 C.S0047-0, VoIP Link-Layer Assisted Service Options.

Video Codecs for RTP

New video codec for RTP introduced in Dialogic® Multimedia Software for AdvancedTCA Release 2.0 includes:

MPEG-4 video codec
    MPEG-4 is supported with these characteristics:

    Simple Profile (SP), Levels L0, L1
    - Video picture formats – Sub-QCIF, QCIF
    - Frame rate – Up to 15 fps

- Bit Rate – Up to 64 kbps

Simple Profile (SP), Level L2
- Video picture formats – Sub-QCIF, QCIF
- Frame rate – Sub-QCIF abd QCIF up to 30 fps; CIF up to 15 fps
- Bit Rate – Up to 128 kbps

Simple Profile (SP), Level L3
- Video picture formats – Sub-QCIF, QCIF, CIF
- Frame rate – Up to 30 fps
- Bit Rate – Up to 384 kbps

RTP video data is compliant with Internet Engineering Task Force RFC 3016: "RTP Payload Format for MPEG-4 Audio/Visual Streams."

Other supported video codecs for RTP include:

H.263 video codec
   H.263 is supported with these characteristics:

   Profile 0, Level 10
   - Video picture formats – Sub-QCIF, QCIF
   - Frame rate – Up to 15 fps
   - Bit rate – Up to 64 kbps

   Profile 0, Level 20
   - Video picture formats – Sub-QCIF, QCIF, CIF
   - Frame rate – Sub-QCIF and QCIF up to 30 fps; CIF up to 15 fps
   - Bit rate – Up to 128 kbps

   Profile 0, Level 30
   - Video picture formats – Sub-QCIF, QCIF, CIF
   - Frame rate – Up to 30 fps
   - Bit rate – Up to 384 kbps

   RTP video data is compliant with Internet Engineering Task Force RFC 2190: "RTP Payload Format for H.263 Video Streams."

3.3 Channel Density Support

The following table lists the maximum channel density for supported audio codecs for RTP in Dialogic® Multimedia Software for AdvancedTCA Release 2.0.

Audio Codec for RTP	Maximum Density
G.711 (10 ms frames)	480
G.711 (20 and 30 ms frames)	500
G.723.1	360
G.726	480
G.729A / G.729AB	400
AMR Narrow Band	300
EVRC	272
GSM EFR	300
QCELP	272

The following table lists the maximum channel density for supported video codecs for RTP in Dialogic® Multimedia Software for AdvancedTCA Release 2.0.

Video Codec for RTP	Picture Format	Frame Rate (sec)	Bit Rate (Kbps)	Maximum Density
H.263 / MPEG-4	Sub-QCIF	15	64	60
H.263 / MPEG-4	QCIF	15	64	60
H.263 / MPEG-4	CIF	15	64	15

3.4 Multimedia (Audio/Video) Play and Record

New Features

New multimedia features supported in Dialogic® Multimedia Software for AdvancedTCA Release 2.0 include:

WAVE file support
    The play and record capabilites in the Dialogic® Multimedia API Library are enhanced to support WAVE file format.

Play a still image over a video stream
    Only JPEG- and YUV-4:2:0 formatted source material are supported for playing a still image. This feature is implemented in the Dialogic® Multimedia API Library.

Record or capture a still image from a video stream
> This feature provides the ability to capture a frame after a video stream has been paused and save it as an image. This feature is implemented in the Dialogic® Multimedia API Library.

Digital Video Recorder (DVR) controls
> These controls enable the user to pause, resume, and seek during video and audio playback. This feature is implemented in the Dialogic® Multimedia API Library.

New proprietary video file formats
> Used with video transcoding (including transrating and resizing), the proprietary file formats are supported by the Dialogic® Multimedia API library and the Dialogic® Multimedia File Conversion Utilities. For more information, see Section 4.8, "Dialogic® Multimedia API Library", on page 28 and the *Dialogic® Multimedia File Conversion Tools User Guide*.

Runtime control support in native RTP play and record
> 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. Previously, runtime control was not supported.
>
> > **Note:** Multimedia (mm) devices do not support EVRC and QCELP as audio coders.
>
> This feature is implemented in the Dialogic® Multimedia API Library.

Multimedia user I/O
> This feature enables applications to directly play and record RTP data via user I/O buffers. This feature is implemented in the Dialogic® Multimedia API library.
>
> > **Note:** This feature is currently not supported. It will be supported in an upcoming Service Update.

Multimedia buffer I/O
> This feature enables applications to directly play and record RTP data via memory. This feature is implemented in the Dialogic® Multimedia API library.
>
> > **Note:** This feature is currently not supported. It will be supported in an upcoming Service Update.

Multimedia runtime control
> This feature allows multimedia play and record functions to be terminated on certain conditions such as digits received. This feature is implemented in the Dialogic® Multimedia API library.

Other Features

Other multimedia features previously supported since Dialogic® Multimedia Software for AdvancedTCA Release 1.1 include:

Multimedia File Conversion Utilities
> These utilities provide off-line conversion of multimedia files and can be downloaded from the following web site. Check this web site periodically for any updates to the

conversion tools and for any corresponding updates to the documentation:
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 that the mmconvert utility does not support conversion in the reverse direction (from Dialogic proprietary multimedia file format to AVI file format).

> *Note:* The mmconvert utility is no longer recommended; it is supported for H.263 video and linear PCM audio only. Instead, use the hmp3gp utility.

- **hmp3gp** utility: Converts multimedia data from Dialogic proprietary multimedia file format to 3rd Generation Partnership Project (3GPP) file format conforming to 3GP Release 4 and Release 5 file format (.3gp), conforming to 3GPP specifications. The reverse direction is also supported.

Quality of Service (QOS)

Support for existing QoS audio alarms through the Dialogic® IP Media Library API for the audio portion of a multimedia stream.

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

3.5   Multimedia (Audio/Video) Transcoding

Multimedia transcoding includes both audio transcoding and video transcoding. Video transcoding is newly supported in Dialogic® Multimedia Software for AdvancedTCA Release 2.0.

Multimedia transcoding features are described as follows:

Video transcoding, video transrating, and image resizing

Video transcoding enables applications to record incoming video in a different format than what is being received from the network and to play back outgoing video in a different format than that of the locally stored file. Transcoding involves decoding and decompressing the original data to a raw intermediate format (YUV format).

Video transrating adjusts the number of video frames per second (and bitrate of the video) between two endpoints to suit the requirements of the device at each endpoint.

Image resizing converts video from one image size to another (for example, from CIF to QCIF) between two endpoints to suit the requirements of the device at each endpoint.

These features are available on H.263 and MPEG-4.

> *Note:* In this document, the term "video transcoding" encompasses video transcoding, video transrating, and image resizing.

Device support for video transcoding

Video transcoding is supported between these devices: 3G-324M (M3G), IP media (IPM), and multimedia (MM) devices.

Device support for audio transcoding

> Audio transcoding is supported between these devices: 3G-324M (M3G), conferencing (CNF), digital network interface (DTI), IP media (IPM), multimedia (MM), and voice (DX) devices.
>
>> *Note:* Multimedia (MM) devices do not support EVRC and QCELP as audio coders.

Audio Codecs for Transcoding

Supported audio codecs for transcoding include:

- G.711
- G.723.1
- G.726
- G.729A
- G.729AB
- AMR Narrow Band
- EVRC
- GSM EFR
- QCELP

Video Codecs for Transcoding

Supported video codecs for transcoding include:

- H.263
- MPEG-4

3.6 Multimedia (Audio/Video) Conferencing

Multimedia (audio/video) conferencing is introduced in Dialogic® Multimedia Software for AdvancedTCA Release 2.0.

Multimedia conferencing allows a real-time video session between two or more participants in two or more locations. The multimedia conference can occur over the IP network or the PSTN.

Participants in a multimedia conference can be audio only, video only, or audio and video. Multimedia transcoding must be applied for all participants of a conference; apply audio transcoding for audio participants and video transcoding for video participants. For more information on transcoding, see Section 3.5, "Multimedia (Audio/Video) Transcoding", on page 18.

Users decide on the format of the output screen, and select who will be displayed on the output screen. The number of participants displayed depends on the video layout applied to the conference. Participants may be persistent or may be determined by the active talker algorithm based on user selection.

Multimedia conferencing is implemented in the Dialogic® Conferencing (CNF) API library and video layout is created using the Dialogic® Media Toolkit API library. For more information, see Section 4.3, "Dialogic® Conferencing (CNF) API Library", on page 25 and Section 4.1, "New Dialogic® Media Toolkit API Library", on page 23.

3.7   Image Overlay

Image overlay is introduced in Dialogic® Multimedia Software for AdvancedTCA Release 2.0.

The image overlay feature allows you to place an image (bitmap, YUV or JPEG) over a streaming video. You create a template of the image and define the area on the video screen in which the image will be displayed.

Image overlay is implemented in the Dialogic® Media Toolkit API library. For more information, see Section 4.1, "New Dialogic® Media Toolkit API Library", on page 23.

3.8   Native RTP Hairpinning

Native RTP hairpinning is supported in Dialogic® Multimedia Software for AdvancedTCA Release 2.0.

Native RTP hairpinning enables applications to form RTP media stream connections between IP media streams, allowing the RTP media stream received from one IP media session to be retransmitted to the outgoing RTP media stream of another IP media session. This is done without processing or transcoding the RTP payload. The RTP packets that are hairpinned may be hairpinned as received, with packets out of order or even missing as long as the RTP stream is retransmitted so that the receiving terminating endpoint can perform necessary packet loss recovery type functions.

Native RTP hairpinning is supported for both audio and video RTP streams.

In addition to IPM to IPM connections, native hairpinning connections may also be formed between 3G-324M and IPM devices.

Connections between devices are made using the Dialogic® Device Management API library.

Use cases for native RTP hairpinning include switching type applications, such as an IP-PBX, or streaming data to an external speech server. Benefits of using native RTP hairpinning include increasing achievable system densities, reducing latencies, and improving voice quality by eliminating an additional decode/encode operation.

3.9   Tone Management

There are no new tone management features in Dialogic® Multimedia Software for AdvancedTCA Release 2.0.

Tone management support includes:

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

3.10   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 Dialogic® Multimedia Platform for AdvancedTCA (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 had been the only choice prior to introduction of the Multimedia Platform). In this setup, the application couples programmatically with the Dialogic® Global Call 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.

For information on supported MSML functionality, see the *MSML Media Server Software User's Guide.*

3.11   Administration via CLI and SNMP

Users have a choice of two interfaces for configuring and monitoring the Dialogic® Multimedia Blade for AdvancedTCA: 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 demo that can be used for automating repetitive tasks, see Dialogic® Command Line Interface (CLI) Demo topic in Section 4.11, "Dialogic® Demonstration Programs", on page 31.

New administration features supported in Dialogic® Multimedia Software for AdvancedTCA Release 2.0 include:

Automatic and manual modes for starting the system

Users can specify automatic mode or manual mode using a new CLI subcommand (conf system ipmedia start-mode). Automatic mode means that Dialogic services and Media services are started via dlstart. Manual mode means that Dialogic services are started but Media services are not started via dlstart; to start Media services, users login to CLI and specify "conf system ipmedia start" command.

The private system environment module (ipmsSysEnv) MIB now supports automatic and manual modes for starting the system.

Programming Libraries 4

This chapter describes the development libraries that are available in Dialogic®
Multimedia Software for AdvancedTCA Release 2.0.

4.1 New Dialogic® Media Toolkit API Library

The Dialogic® Media Toolkit API (MTK) library consists of general-purpose structures and
attribute templates as well as API functions for building and manipulating media-related
items, such as video layouts and bitmaps. The library also includes functions that allow for
the integration of these templates and media-related items with existing Dialogic®
libraries. Generally, templates represent properties of a media-related item, such as a
media file or a video layout, and are referenced when setting attributes of a media stream
or a video conference.

The Dialogic® Media Toolkit API library includes a main library (mtk) and several sub-
libraries as follows: layout builder (lb), overlay builder (ob), and stream manipulation (sm).
Each library encapsulates a given type of functionality.

The layout builder functions allow the user to specify the video layout of a video
conference or multimedia conference. These functions can be used in conjunction with the
Dialogic® Conferencing (CNF) API to develop multimedia conferencing applications.

For more information about this API library, see the *Dialogic® Media Toolkit API Library
Reference*.

Features

The Media Toolkit API library provides the following functionality in Dialogic® Multimedia Software for AdvancedTCA Release 2.0:

Media toolkit (mtk) functions
> Used to create templates for images (bitmap, YUV or JPEG) and frames.
>> *Note:* Only YUV 4:2:0 format is currently supported.
>> *Note:* Image file size should not exceed 148 kbytes.

Layout builder (lb) functions
> Used to specify the video layout of a video conference or multimedia conference.
>> • Several layout types are supported including one region (full screen), four regions, six regions, and nine regions. Custom layout types are also supported.
>> • Display modes for a participant or party include still image and live streaming.
>> • Selection modes supported include active talker and user-selected.

Overlay builder (ob) functions
> Used to define an overlay template to be applied to a streaming device. Attributes of an overlay template include size and position of the bounding frame, overlay fill style, and duration for the overlay to be played.

Stream manipulation (sm) functions
> Used to manage overlays on a streaming device; that is, add overlays to a device and remove overlays from a device. An overlay can be applied to IPM, MM or M3G device types.

For more information about these features, see the *Dialogic® Media Toolkit API Library Reference*.

4.2   3G-324M API Library

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.

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.

For more information about this API library, see the *3G-324M API Library Reference*.

New Features

The 3G-324M API library provides the following new capabilities in Dialogic® Multimedia Software for AdvancedTCA Release 2.0:

New video codec
>   MPEG-4 is supported.

 Video transcoding, video transrating, and image resizing
>   To support these video features, the M3G_OCTET_STRING structure is added to the library, and M3G_MPEG4_OPTIONS and M3G_PARM_INFO structures are updated. For more information on video transcoding, see Section 3.5, "Multimedia (Audio/Video) Transcoding", on page 18.

Connecting audio device and DTI or voice device
>   The audio device type (m3gB1Tn:AUDIO1) in the 3G-324M endpoint can be connected to a digital network interface device (dtiBxTy) or a voice device (dxxxBxCy) through the **dev_Connect( )** and **dev_Disconnect( )** functions.

For more information about these updates, see the *3G-324M API Library Reference*.

4.3   Dialogic® Conferencing (CNF) API Library

The Dialogic® Conferencing (CNF) API library supports development of conferencing applications. The conference can take place over an IP network and/or over traditional PSTN lines.

For more information, see the *Dialogic® Conferencing API Programming Guide* and the *Dialogic® Conferencing API Library Reference*.

New Features

The Dialogic® Conferencing (CNF) API library provides the following new capability in Dialogic® Multimedia Software for AdvancedTCA Release 2.0:

Multimedia (audio/video) conferencing
>   Provides the ability to combine images from conference participants into a single image viewed by the conference participants. Several functions and data structures are added to support multimedia conferencing, including **cnf_SetVideoLayout( )**, **cnf_GetVideoLayout( )**, **cnf_SetVisiblePartyList( )**, and **cnf_GetVisiblePartyList( )**.

>   The design of the video layout is created through the layout builder functions of the Dialogic® Media Toolkit API (see Section 4.1, "New Dialogic® Media Toolkit API Library", on page 23). This layout is then set or applied to a multimedia conference using **cnf_SetVideoLayout( )**.

For more information about these updates, see the *Dialogic® Conferencing API Library Reference*.

4.4   Dialogic® Device Management API Library

The Dialogic® 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.

For more information, see the *Dialogic® Device Management API Library Reference*.

New Features

The Dialogic® Device Management API library provides the following new capabilities in Dialogic® Multimedia Software for AdvancedTCA Release 2.0:

Video transcoding, video transrating, and image resizing
    The device management API library provides the ability to connect devices together, as a native connection or for transcoding. Transcoding is invoked when connections are formed. Use the DMFL_TRANSCODE_ON flag in the DM_PORT_CONNECT_INFO structure to enable transcoding.

    For more information on video transcoding, see Section 3.5, "Multimedia (Audio/Video) Transcoding", on page 18.

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.

    For more information on native RTP hairpinning, see Section 3.8, "Native RTP Hairpinning", on page 20.

4.5   Dialogic® Fax API Library

The Dialogic® 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, and firmware files.

See the *Dialogic® Fax Software Reference* for more information.

New Features

No new features have been added since Dialogic® Multimedia Software for AdvancedTCA Release 1.1.

4.6   Dialogic® Global Call API Library

The Dialogic® Global Call API library provides a uniform call control interface for developing applications for multiple network interface technologies. The Global Call API library supports a variety of protocols.

The Dialogic® Global Call API library has the following characteristics:

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

Call control is managed by the Global Call API library and media exchange is managed by the IP Media Library. The Global Call API library supports multimedia call control over IP when using SIP and SDP.

The generic functionality of the Global Call API library is documented in the *Dialogic® Global Call API Library Reference* and the *Dialogic® Global Call API Programming Guide*. Functionality specific to the IP technology is documented in the *Dialogic® Global Call IP Technology Guide.*

New Features

The Dialogic® Global Call API library provides the following new capabilities in Dialogic® Multimedia Software for AdvancedTCA Release 2.0:

Echo cancellation per channel
    Setting the echo canceller on a PSTN channel is supported using **gc_SetConfigData( )** and the new CCPARM_ECHOCANCEL parameter ID. For more information, see the Documentation Updates chapter of the Release Update.

4.7   Dialogic® IP Media API Library

The Dialogic® IP Media Library API (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 Dialogic® Global Call library is running in third party call control (3PCC) mode

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

For more information, see the *Dialogic® IP Media Library API Library Reference* and the *Dialogic® IP Media Library API Programming Guide*.

New Features

The Dialogic® IP Media Library API provides the following new capabilities in Dialogic® Multimedia Software for AdvancedTCA Release 2.0:

New video codec
    MPEG-4 is supported.

Video transcoding, video transrating, and image resizing
    To support these video features, the IPM_VIDEO_CODER_INFO_EX structure is added to the library. This structure specifies video codec information for H.263 and MPEG-4. Updates were made to IPM_VIDEO_CODER_INFO structure and a new header file, *videodefs.h*, was introduced for video-related features.

    Use the DMFL_TRANSCODE_ON flag in the DM_PORT_CONNECT_INFO structure of the device management API library to enable transcoding.

    For more information on video transcoding, see Section 3.5, "Multimedia (Audio/Video) Transcoding", on page 18.

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.

    For more information on native RTP hairpinning, see Section 3.8, "Native RTP Hairpinning", on page 20.

I-Frame update
    The application can send a request for the IPM device to transmit an I-Frame update (video fast update) to the remote terminal as needed using the new **ipm_GenerateIFrame( )** function.

For more information on these features, see the *Dialogic® IP Media Library API Library Reference*.

Usage Guidelines

For 250 channel licenses, the **ipm_StartMedia( )** and **ipm_GetLocalMediaInfo( )** functions return an invalid state error if a coder is not reserved prior to calling **ipm_GetLocalMediaInfo( )**. All audio and/or video coders must be reserved using the **dev_ReserveResourceEx( )** Device Management Library function. However, this restriction does not apply when using a fax (T.38) media type.

4.8   Dialogic® Multimedia API Library

The Dialogic® Multimedia API library is used to play and record digitized multimedia in support of applications providing video services, such as video mail, video color ring, video caller ID, and video location-based services.

For more information, see the *Dialogic® Multimedia Programming Guide and API Library Reference*.

New Features

The Dialogic® Multimedia API library provides the following new capabilities in this release:

New video codec
    MPEG-4 is supported.

Video transcoding, video transrating, and image resizing
To support these video features, the MM_VIDEO_CODEC structure is updated with new fields and associated enumerated values. A new header file, *videodefs.h*, is introduced for video-related features.

For more information on video transcoding, see Section 3.5, "Multimedia (Audio/Video) Transcoding", on page 18.

Audio transcoding
To support audio transcoding, the following library changes are made: a new MM_AUDIO_CODEC_OPTIONS_INFO structure is added to the library; the MM_AUDIO_CODEC structure is updated with an audio coder option field and associated enumerated values.

WAVE file support
The **mm_Play( )** and **mm_Record( )** functions support the WAVE file format. The MM_MEDIA_AUDIO, MM_MEDIA_VIDEO, MM_PLAY_RECORD_INFO structures are updated.

Play a still image over a video stream
The **mm_Play( )** function supports playing a still image. The MM_MEDIA_IMAGE structure is added and several structures are updated to support this feature.

Record or capture a still image from a video stream
The new **mm_Capture( )** function provides the ability to capture a still image. Several structures are added to support this feature.

Digital Video Recorder (DVR) controls
The new **mm_Seek( )**, **mm_Pause( )**, **mm_Resume( )**, **mm_GetDuration( )**, and **mm_GetElapsedTime( )** functions are added to support DVR controls. Several structures are added and others updated to support this feature.

Proprietary audio and video file formats
This format is used with RTP play and record. The MM_AUDIO_CODEC structure and MM_VIDEO_CODEC structure are updated with enumerated values. For more information on the proprietary file formats, see the *Dialogic® Multimedia File Conversion Tools User Guide*.

Multimedia user I/O
This feature enables applications to directly play and record RTP data via user I/O buffers.
Note: This feature is currently not supported. It will be supported in an upcoming Service Update.

Multimedia buffer I/O
This feature enables applications to directly play and record RTP data via memory.
Note: This feature is currently not supported. It will be supported in an upcoming Service Update.

Multimedia runtime control
This feature allows multimedia play and record functions to be terminated on certain conditions such as digits received. These conditions are specified in the MM_RUNTIME_CONTROL data structure.

New functions and data structures
> Functions and data structures have been added to support native RTP play and record, multimedia user I/O, multimedia buffer I/O. Functions include: **mm_StreamClose( )**, **mm_StreamGetStat( )**, **mm_StreamOpen( )**, **mm_StreamRead( )**, **mm_StreamReset( )**, **mm_StreamSetWaterMark( )**, and **mm_StreamWrite( )**.

Inline functions
> Inline functions are added to the *mmlib.h* header file to initialize various data structures. For example, INIT_MM_MEDIA_AUDIO and INIT_MM_MEDIA_VIDEO inline functions are added for MM_MEDIA_AUDIO and MM_MEDIA_VIDEO structures, respectively. These inline functions **must be used** to initialize the structures.

Note: Multimedia (mm) devices do not support EVRC or QCELP as audio codecs for audio transcoding or for native play and record.

For more information on the updates, see the *Dialogic® Multimedia Programming Guide and API Library Reference*.

4.9   Dialogic® Standard Runtime API Library

The Dialogic® 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.

For more information, see the *Dialogic® Standard Runtime Library API Programming Guide* and the *Dialogic® Standard Runtime Library API Library Reference*.

New Features

No new features have been added since Dialogic® Multimedia Software for AdvancedTCA Release 1.1.

4.10   Dialogic® Voice API Library

The Dialogic® Voice API library provides a rich set of features for building a wide range of 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.

For more information, see the *Dialogic® Voice API Library Reference* and the *Dialogic® Voice API Programming Guide*.

New Features

No new features have been added since Dialogic® Multimedia Software for AdvancedTCA Release 1.1.

4.11   Dialogic® Demonstration Programs

No new demonstration programs have been added since Dialogic® Multimedia Software for AdvancedTCA Release 1.1.

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 choose to modify to explore other capabilities of the products.

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

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

Dialogic® Multimedia Demo Program

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

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

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.

Dialogic® Command Line Interface (CLI) Demo

The CLI demo is a script that can be used to automate repetitive tasks, such as issuing commands to the CLI. The CLI demo 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 demo, 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.

A sequence of CLI commands can be placed into a text file residing on a remote platform, which can then run those commands on the Multimedia Platform by executing the perlscript locally and using telnet to transmit them to the Multimedia Platform.

4.12 Dialogic® API Functions Not Supported

The following sections identify Dialogic® API functions that are not supported by Dialogic® Multimedia Software for AdvancedTCA Release 2.0.

The functions are grouped alphabetically by API library.

Dialogic® Audio Conferencing (DCB) API Functions

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

Dialogic® Continuous Speech Processing (CSP) API Functions

CSP API functions are not supported.

Dialogic® Fax API Functions

The following fax API functions are not supported:

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

Dialogic® Standard Runtime Library API Functions

The following Standard Runtime Library API function is not supported:

- **sr_getboardcnt( )**

Note: Use the SRL Device Mapper functions to return information about the structure of the system such as a list of boards and devices.

Documentation 5

This chapter lists all of the documents that are provided with the Dialogic® Multimedia Software for AdvancedTCA Release 2.0. 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 life cycle of the release.

5.1   Documentation Feature Support

The following table lists topics and features associated with Dialogic® Multimedia Software for AdvancedTCA Release 2.0 and the user documentation that contains information on these features.

Documentation Feature Support

Topic or Feature	Dialogic® Multimedia Software for AdvancedTCA Release 2.0 Documentation
Release overview, features, API libraries, and system requirements	• Release Guide
Known issues, limitations, new developments, documentation corrections	• Release Update
Software installation, configuration, and administration	• Technical Product Specification
License activation	• Technical Product Specification
Resource licenses	• Contact your Dialogic sales representative or authorized Dialogic distributor
3G-324M interface	• 3G-324M API Library Reference

Documentation Feature Support (Continued)

Topic or Feature	Dialogic® Multimedia Software for AdvancedTCA Release 2.0 Documentation
Conferencing (CNF)	• Dialogic® Conferencing API Library Reference • Dialogic® Conferencing API Programming Guide • Dialogic® Media Toolkit API Library Reference
Event handling	• Dialogic® Standard Runtime Library API Library Reference • Dialogic® Standard Runtime Library API Programming Guide
Fax using Global Call API	• Dialogic® Global Call IP Technology Guide • Dialogic® Fax Software Reference
Fax using Third-Party Stack	• Dialogic® IP Media Library API Library Reference • Dialogic® IP Media Library API Programming Guide • Dialogic® Device Management API Library Reference • Dialogic® Fax Software Reference
Image overlay	• Dialogic® Multimedia Programming Guide and API Library Reference • Dialogic® Media Toolkit API Library Reference
IP call transfer	• Dialogic® Global Call API Library Reference • Dialogic® Global Call IP Technology Guide
IP multicast	• Dialogic® IP Media Library API Library Reference • Dialogic® IP Media Library API Programming Guide
Multimedia capture and play still image	• Dialogic® Multimedia Programming Guide and API Library Reference
Multimedia Digital Video Recorder (DVR) controls	• Dialogic® Multimedia Programming Guide and API Library Reference
Multimedia (audio/video) play and record	• Dialogic® Multimedia Programming Guide and API Library Reference • Dialogic® Device Management API Library Reference • Dialogic® Multimedia File Conversion Tools User Guide (available with the multimedia file conversion tools download)

Documentation Feature Support (Continued)

Topic or Feature	Dialogic® Multimedia Software for AdvancedTCA Release 2.0 Documentation
Multimedia (audio/video) transcoding	• Dialogic® Multimedia Programming Guide and API Library Reference • Dialogic® Device Management API Library Reference • Dialogic® IP Media Library API Library Reference
Remote media control interface	• Dialogic® MSML Media Server Software User's Guide
SIP call control using Global Call API	• Dialogic® Global Call API Library Reference • Dialogic® Global Call API Programming Guide • Dialogic® Global Call IP Technology Guide
SIP call control using third-party stack	• Dialogic® IP Media Library API Library Reference • Dialogic® IP Media Library API Programming Guide • Dialogic® Device Management API Library Reference
Voice (audio) features: play and record, file formats, transaction record	• Dialogic® Voice API Library Reference • Dialogic® Voice API Programming Guide

5.2 Release Documentation

The following system documentation is provided for this release:

- *Dialogic® Multimedia Software for AdvancedTCA Release Guide* (this document) †
- *Dialogic® Multimedia Software 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 1.1.

5.3 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 1.1.

5.4   Programming Libraries Documentation

The following development software documentation is provided for this release:

- *3G-324M API Library Reference* †
- *Dialogic® Conferencing API Library Reference* †
- *Dialogic® Conferencing API Programming Guide*
- *Dialogic® Device Management API Library Reference* †
- *Dialogic® Fax Software Reference*
- *Dialogic® Global Call API Library Reference*
- *Dialogic® Global Call API Programming Guide* †
- *Dialogic® Global Call IP Technology Guide*
- *Dialogic® IP Media Library API Library Reference* †
- *Dialogic® IP Media Library API Programming Guide*
- *Dialogic® Media Toolkit API Library Reference* †
- *Dialogic® Multimedia Programming Guide and API Library Reference* †

    Note: The Programming Guide and Library Reference, previously two documents, are now combined into one document.

- *Dialogic® Standard Runtime Library API Library Reference* †
- *Dialogic® Standard Runtime Library API Programming Guide* †
- *Dialogic® Voice API Library Reference* †
- *Dialogic® Voice API 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 1.1.

5.5   MSML Remote Control Interface Documentation

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

- *MSML Media Server Software User's 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 1.1.

5.6   Multimedia File Conversion Tools Documentation

The following documentation is provided for this release:

- *Dialogic® 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 1.1.