Dialogic®

Application Note

Configuring Dialogic® Host Media Processing Software Release 3.1LIN Software Licenses

Executive Summary

Designing a telephony and/or multimedia system with a software model allows for flexible system designs to match specific customer requirements. Dialogic® HMP Software is an excellent platform to build your solution to the customers' specific requirements.

Knowing how to configure a Dialogic HMP Software runtime license enables you to choose the exact functionality that benefits your customers using Dialogic® Host Media Processing Software Release 3.1LIN, including the support of the Dialogic® HMP Interface Boards that provide PSTN connectivity for building converged TDM and IP solutions.

Table of Contents

Configuring Media and Interface Resources

Dialogic® Host Media Processing Software Release 3.1LIN, has a flexible software license model for resource provisioning rather than the fixed quantities model that is delivered in hardware boards. Choosing a customized "package" of resources for each license based on the types of resources available and the rules for combining them is a relatively straightforward task.

Note: Information in this document is valid for Dialogic HMP Release 3.1. This information is subject to change in future releases of the software.

Types of Resources

The three general classes of resources available in Dialogic HMP Software 3.1 are Media, Interface, and Transcoding.

Media Resources

Media resources are used for voice and video applications such as video mail, video portal, voice mail, or Interactive Voice Response (IVR). The six types of Media resources are as follows:

- Voice for functions such as play/record, tones, call progress, etc.
- Continuous Speech Processing (CSP) as an add-on to voice resources and required for speech enablement. See the *Rules for Combining Resources* section for more information.
- Conference
- Fax Termination
- A Multimedia resource for play/record of H.263 video and audio streams
- Native Play and Record

Access to Media resources is available through the Dialogic® R4 API and Dialogic® MM API.

Network Interface Resources

Interface resources are grouped in three categories:

- Basic RTP Streaming
- IP Call Control
- 3G-324M Multiplexing and Demultiplexing

Basic RTP Streaming Resources

Basic RTP Streaming resources provide the functionality required to stream media between Dialogic HMP Software 3.1 and IP clients using the Real-time Transport Protocol (RTP). Dialogic HMP Software supports digitized RTP and Secure RTP through the Basic RTP Streaming resource.

IP Call Control Resources

The IP Call Control resources are required to access IP Call Control functionality provided through the H.323 and SIP protocol stacks from RADVISION, which are included with Dialogic HMP Software 3.1. Access to call control resources is available through the Dialogic® Global Call API. Both H.323 and SIP are included in a single resource.

The use of the Global Call API is optional, and is enabled when IP Call Control resources are licensed with Dialogic HMP Software 3.1. Alternatively, customers can choose to use their own call control stacks.

IP Call Control resources can be used in two modes: first party call control and third party call control. When used in first-party mode, the IP Call Control resources are directly tied to a corresponding number of RTP connections — each call that is controlled by Dialogic HMP Software 3.1 is routed through the media server. (For example, 60 Basic RTP Streaming connections will require 60 IP Call Control resources.)

Dialogic also supports third party call control, giving developers the ability to set up SIP sessions without RTP media, thus enabling a "back-back" user agent (B2BUA) type application. The RTP media stream goes directly from one SIP endpoint to another. This allows for many more endpoints to be controlled by Dialogic HMP Software 3.1 than media streams passing through the media server itself (see Figure 1). Third-party mode is only available for SIP call control. When licensed in third-party mode, the number of IP Call Control resources must be equal to (and can be greater than) the number of RTP sessions.

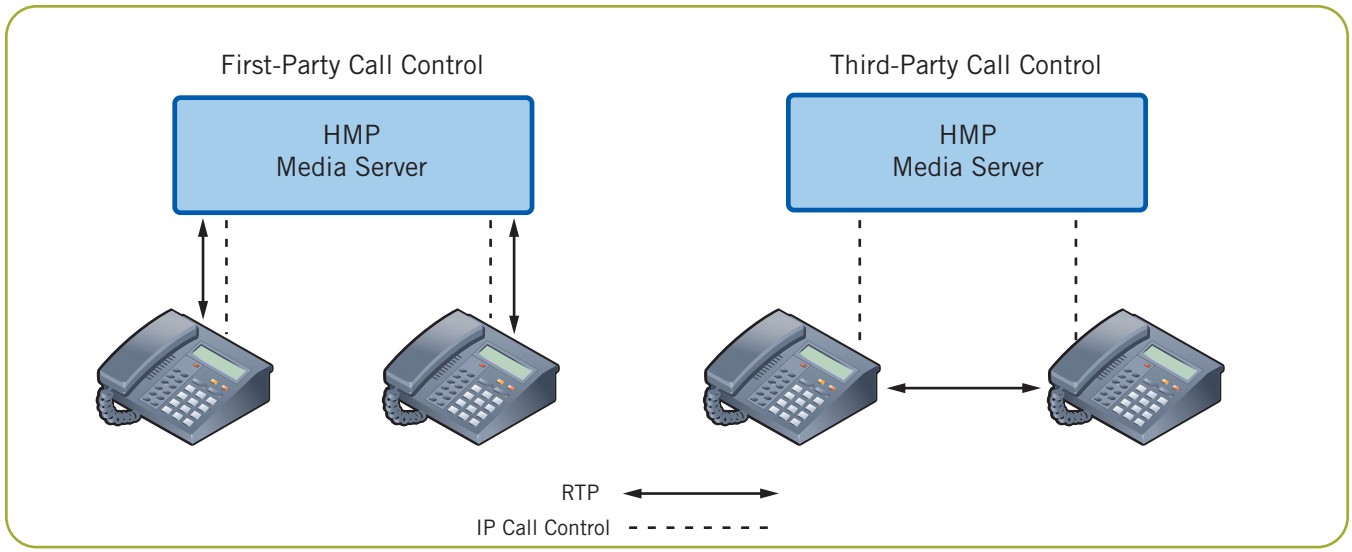

Figure 1. IP Call Control Models

3G-324M Multiplexing and Demultiplexing Resources

The 3G-324M Multiplexing and Demultiplexing resources are required for interfacing with 3G wireless networks. 3G-324M is the 3GPP umbrella protocol for video telephony in 3GPP mobile networks. Dialogic HMP Software 3.1 supports the 3G-324M Release 99 when used with Dialogic® HMP Interface Boards, including the single span Dialogic® DNI/300TEPHMP Digital Network Interface Board, the quad span Dialogic® DNI/600TEPHMP Digital Network Interface Board (T1/E1), and the Octal Span PCIe DNI/2410TEPEHM. Standard coders used with 3G-324M are AMR-NB (mandatory), G.723.1 (optional), and H.263 video coder.

Transcoding Resources

Transcoding resources provide the capability to communicate between different types of IP coders, as well as to perform manipulative media functions. Each of the available resources supports a single channel of transcoding for the following coders:

- G.711, G.726 Coder
- G.729a, G.729b, G.723 Coder
- AMR-NB Coder

Summary of Available Resources

In summary, twelve types of resources are available with Dialogic HMP Software 3.1:

Media

- Voice
- Speech
- Conference
- Fax Termination
- Multimedia
- Native Play and Record

Network Interface

- Basic RTP Streaming
- IP Call Control
- 3G-324M Multiplexing and Demultiplexing

Transcoding

- G.711, G.726 Coder
- G.729a, G.729b, G.723.1 Coder
- AMR-NB Coder

Rules for Combining Resources

Some resources cannot be used alone, and must be combined with other resources. The following table lists the resources and identifies if a resource is required for using it.

Resource	Requires the Resource(s)
Speech	Voice
Voice	G.729, G.723 coder; or G.711, G.726 coder; or AMR-NB coder or a Dialogic® HMP Interface Board
Conferencing	G.729, G.723 coder; or G.711, G.726 coder; or AMR-NB coder or a Dialogic® HMP Interface Board
Native Play Record	Basic RTP Streaming or 3G-324M
G.711, G.726 Coder	Basic RTP Streaming
G.729, G.723 Coder	Basic RTP Streaming or 3G-324M
AMR-NB Coder	Basic RTP Streaming or 3G-324M
3G-324M	Basic RTP Streaming or HMP Interface Board
Multimedia	Basic RTP Streaming or 3G-324M
Fax Termination	Basic RTP Streaming or HMP Interface Board

Note: Voice resources and Conferencing resources used to record a conference would not require a Coder resource.

Combining Resources to Create Basic IP Media Sessions

Dialogic HMP Software 3.1 resources are combined to enable various sessions in an application just as they would if telephony boards were in use. The following are common examples of sessions:

- Multimedia over IP with Video Mail
- Multimedia over 3G-324M Release 99 with Video Mail
- IP Announcement Server with No Transcoding
- IP Voice Mail
- IP Speech-Enabled IVR
- Speech-enabled IVR session
- IP Fax Session fax session

Multimedia over IP with Video Mail Session Example

A single multimedia (audio/video) session using H.263 as the video coder and G.711 as the audio coder along with SIP-based call control using the Global Call API requires:

- A Multimedia resource for play/record of H.263 video and G.711 audio streams
- A Basic RTP Streaming resource
- An IP Call Control resource for SIP call control using the Global Call API

Multimedia over 3G-324M Release 99 with Video Mail Session Example

A single multimedia (audio/video) session using H.263 as the video coder and AMR-NB as the audio coder for a 3G-324M-based video mail solution where the audio coder is AMR-NB but can be picked up by a IP connection later requires:

- A Multimedia resource for play/record of H.263 video and AMR-NB audio streams
- An AMR-NB resource
- A Dialogic® HMP Interface Board that supports 3G-324M
- A 3G-324M resource

IP Announcement Server with No Transcoding Session Example

An announcement server that only requires single protocol with no transcoding requires:

- A Basic RTP resource for media streaming
- A Native Play/Record resource for play/record function with no transcoding
- An IP Call Control resource for Global Call API support of H.323 and SIP

IP Voice Mail Session Example

A single voice mail session using G.729 and the H.323 call control stack requires:

- A Voice resource to provide Media resources for play/record and DTMF detection
- A Basic RTP Streaming resource
- A G.729, G.723 resource for G.729 support
- An IP Call Control resource for Global Call API support of H.323 and SIP

IP Speech-Enabled IVR Session Example

A single speech-enabled IVR session using G.711 and the SIP call control stack requires:

- A Voice resource to provide Media resources for play/record
- A Speech resource for speech enablement via CSP
- A Basic RTP Streaming resource
- A G.711, G.726 resource for G.711 transcoding
- An IP Call Control resource for Global Call API suppor

IP Fax Session Example

A single fax session using the Global Call API requires:

- A Fax resource
- A Basic RTP streaming resource
- An IP Call Control resource for Global Call API support

Combining Resources to Create Sessions for a Call Center

For a call center, two kinds of sessions are basic: RTP sessions in which a customer calls an agent or an agent calls another agent, and IVR or auto-attendant sessions. Global Call API is used in the following examples.

RTP Session Using G.729 Example

A single voice call session using G.729 requires:

- A Voice resource to provide a Media resource for the call
- A Basic RTP Streaming
- A G.729, G.723 resource for G.729 support
- An IP Call Control resource for Global Call API support

RTP Session Using G.711 Example

A single voice call session using G.711 requires:

- A Voice resource to provide Media resources for the call
- A Basic RTP Streaming
- A G.711, G.726 resource
- An IP Call Control resource for Global Call API support

IVR/Auto-Attendant Session Using G.711 Example

A single IVR/auto-attendant session using G.711 requires:

- A Voice resource to provide Media resources for the call to the IVR/auto attendant
- A Basic RTP Streaming resource
- A G.711, G.726 resource
- An IP Call Control resource for Global Call API support

Since the IVR/auto attendant is not speech-enabled, only a Voice resource is required.

Combining Resources to Create Sessions for a Conference Server

A conference server usually requires one type of session, but provision for different coders may be needed. In addition, a conference is often recorded. The ability to record a conference requires a single Voice resource and one additional Conference resource.

The following is a list of resources needed for a three-session conference, assuming three endpoints: one using G.711, one using G.723, and one using G.729. The conference also must be recorded.

- A Voice resource to provide a Media resource for recording the conference
- Four Conferencing resources, one for each of the

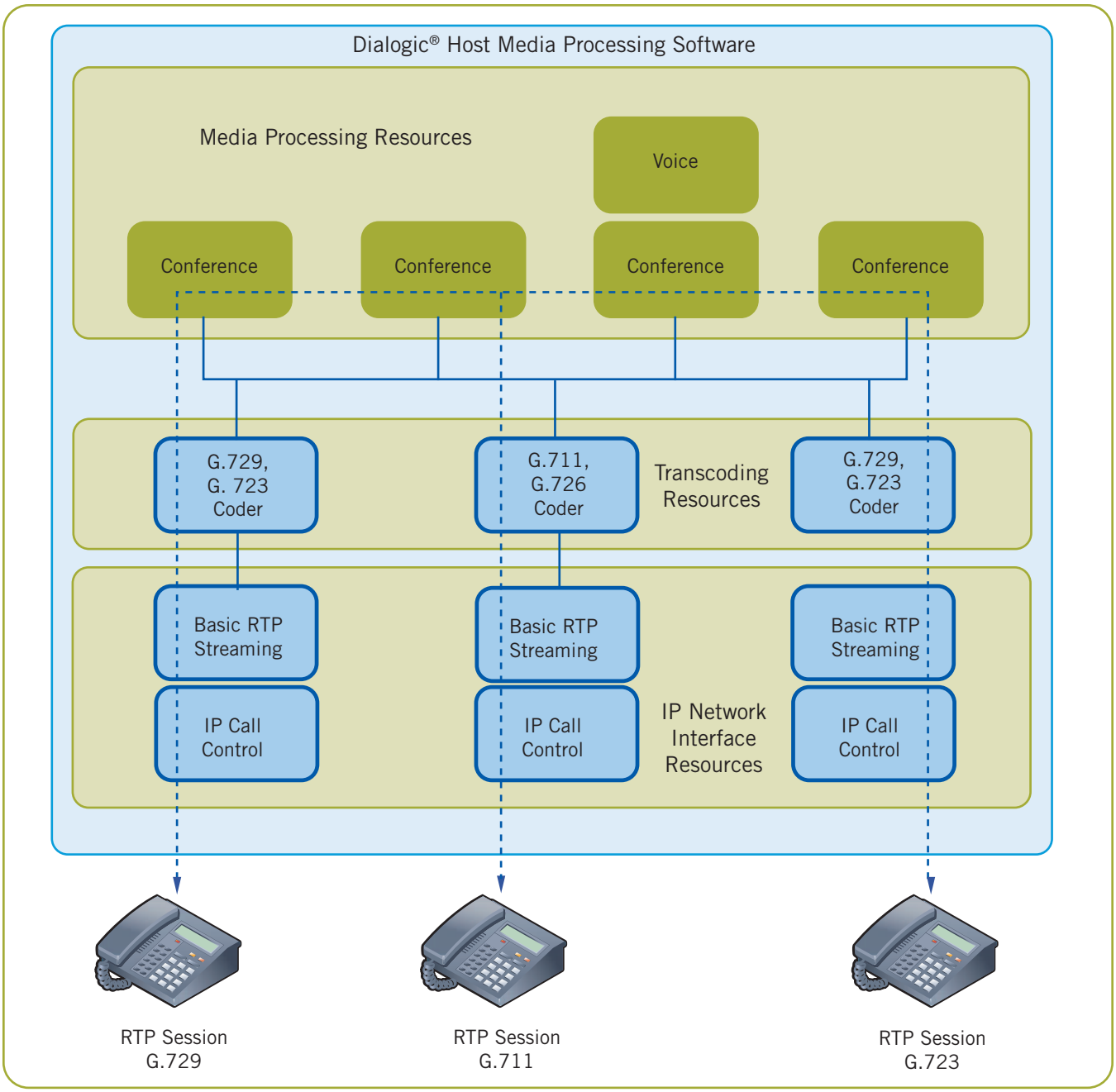

Figure 2. Resources for a Conference Server

three conference participants, plus one to connect the Voice resource to the conference so that it can be recorded

- Three Basic RTP G.711 resources, one for each conferee
- Two G.729, G.723 Coder resources for G.723 and G.729 support
- Three IP Call Control resources for Global Call API support

Figure 2 shows how these resources are grouped.

The number of coder resources governs the number of RTP sessions that will allow the use of coders. The G.729, G.723 coders are low bandwidth coders, while the G.711, G.726 coders are more standard bandwidth. In a total IP solution, the number of coders that can be used simultaneously is equal to or less than the number of Basic RTP streams.

Provisioning Examples

Common types of solutions in which Dialogic HMP Software 3.1 is used include unified messaging servers, IP call centers, hybrid call centers, 3G-324M video portals, and 3G-324M-based video portals with RTSP server. Some hypothetical examples for provisioning such solutions are provided in the following sections.

Unified Messaging Server Example

Table 1 provides the requirements for a unified messaging server and the required Dialogic HMP Software 3.1 resources.

Scenario Requirements	Resource Required
A unified messaging server with 120 sessions: 60 use G.729 or G.723, and 60 use G.711	120 Basic RTP Streaming resources: 60 G.711, G.726 resources, and 60 G.729, G.723 resources
Use of the Dialogic Global Call API	120 IP Call Control resources
A maximum of 30 users of voice applications, such as IVR and voice mail, 10 of which are speech enabled	30 Voice resources and 10 Speech resources
30 conference participants	30 Conference resources
5 sessions	5 Fax resources

Table 1. Unified Messaging Server Requirements

Figure 3 shows how these resources are grouped.

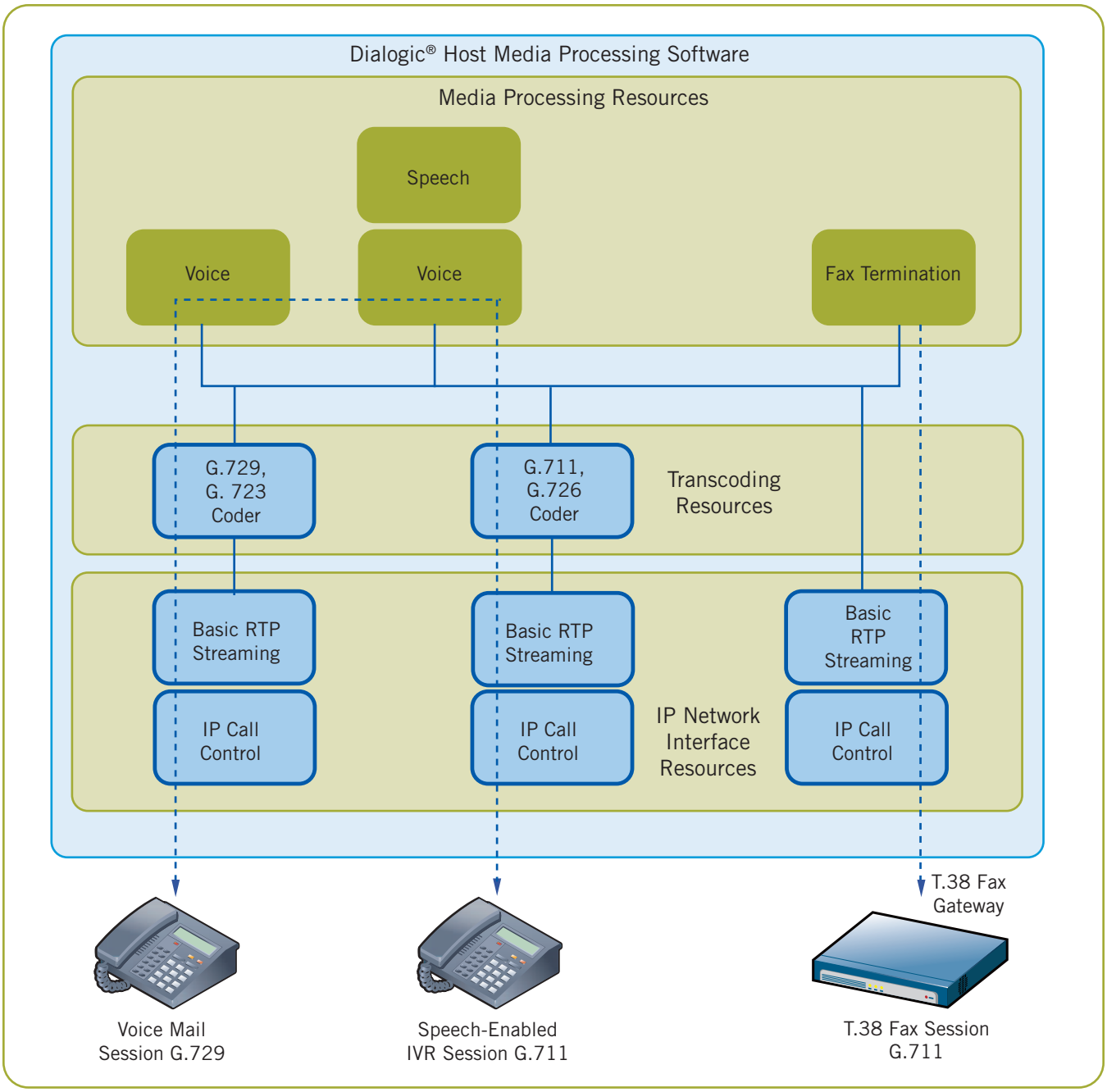

Figure 3. Resources for a Unified Messaging Server

IP Call Center Example

Table 2 provides the requirements for an IP call center and the required Dialogic HMP Software 3.1 resources.

Scenario Requirements	Resource Required
An IP call center with 40 agents and 80 trunk lines for incoming calls, agents using G.711 over the LAN, inbound callers using an even mix of G.729, G.723, G.711, and AMR-NB	120 Basic RTP Streaming licenses; 40 G.711, G.726 licenses; 40 G.729, G.723 licenses; 40 AMR-NB licenses
Use of the Dialogic Global Call API	120 IP Call Control resources
A maximum of 80 voice ports to enable playing of prompts or recording messages, with 30 possible speech-enabled sessions	80 Voice resources and 30 Speech resources
30 conferencing sessions for coaching and monitoring	30 Conference resources
120 Call Control resources for call control with the RTSP Server	120 IP Call Control Resources

Table 2. IP Call Center Requirements

Figure 4 shows how these resources are grouped.

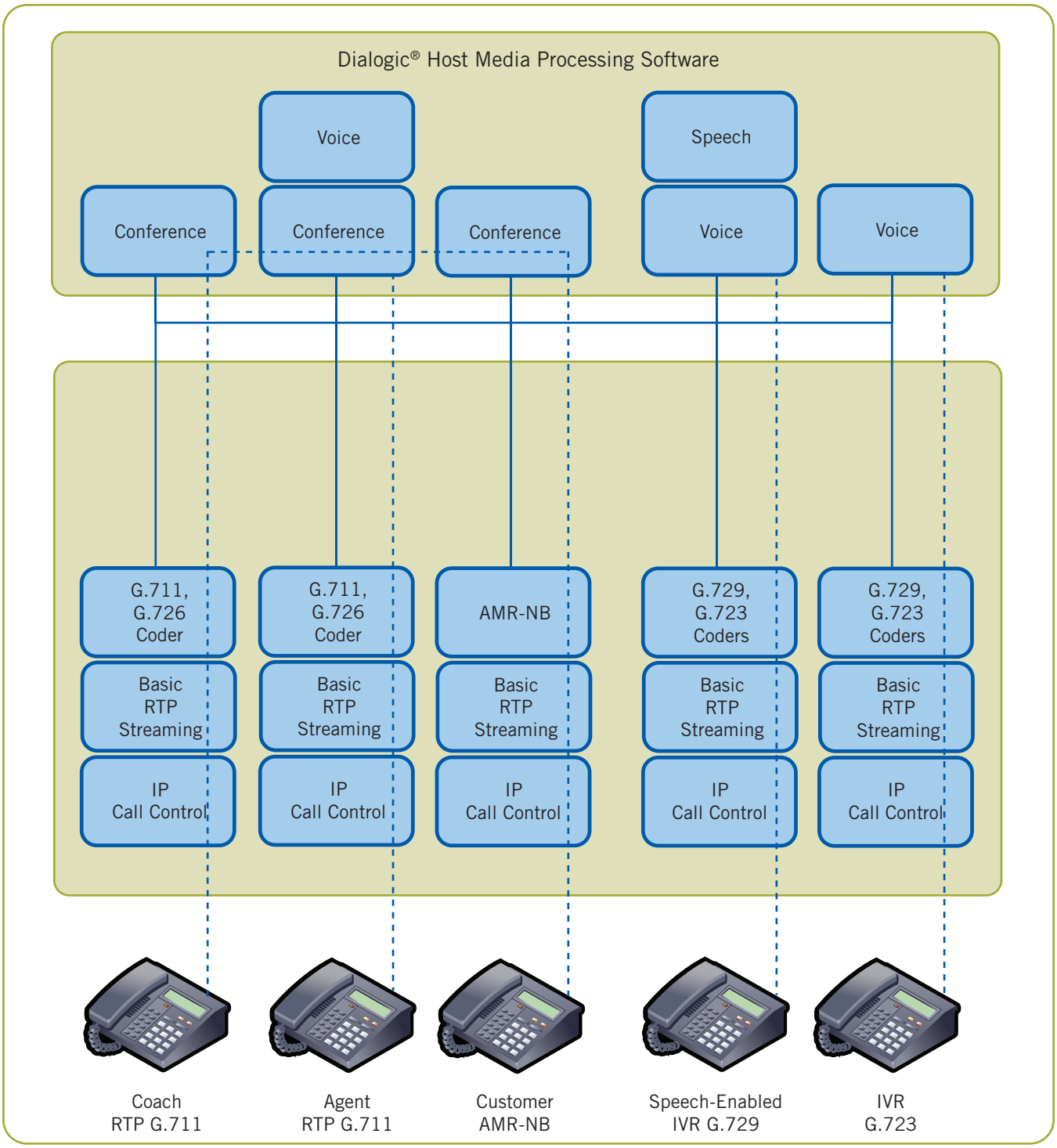

Figure 4. Resources for an IP Call Center

Hybrid Call Center Example

Table 3 provides the requirements for a hybrid call center and the required Dialogic HMP Software 3.1 resources.

Scenario Requirements	Resource Required
A hybrid PBX supporting two E-1 lines for TDM traffic and 30 IP stations	30 G.711, G.726 Coder resources Requires a dual-span digital network interface board to support the TDM traffic
Use of the Dialogic Global Call API	30 IP Call Control resources
A maximum of 60 voice ports to enable playing of prompts or recording messages	60 Voice resources
5 fax ports available for V.17/T.38 Fax Termination or Gateway functionality	5 Fax resources
A maximum of 20 conference ports for agent coaching and monitoring	20 Conference resources

Table 3. Hybrid Call Center Requirements

Figure 5 shows how these resources are grouped.

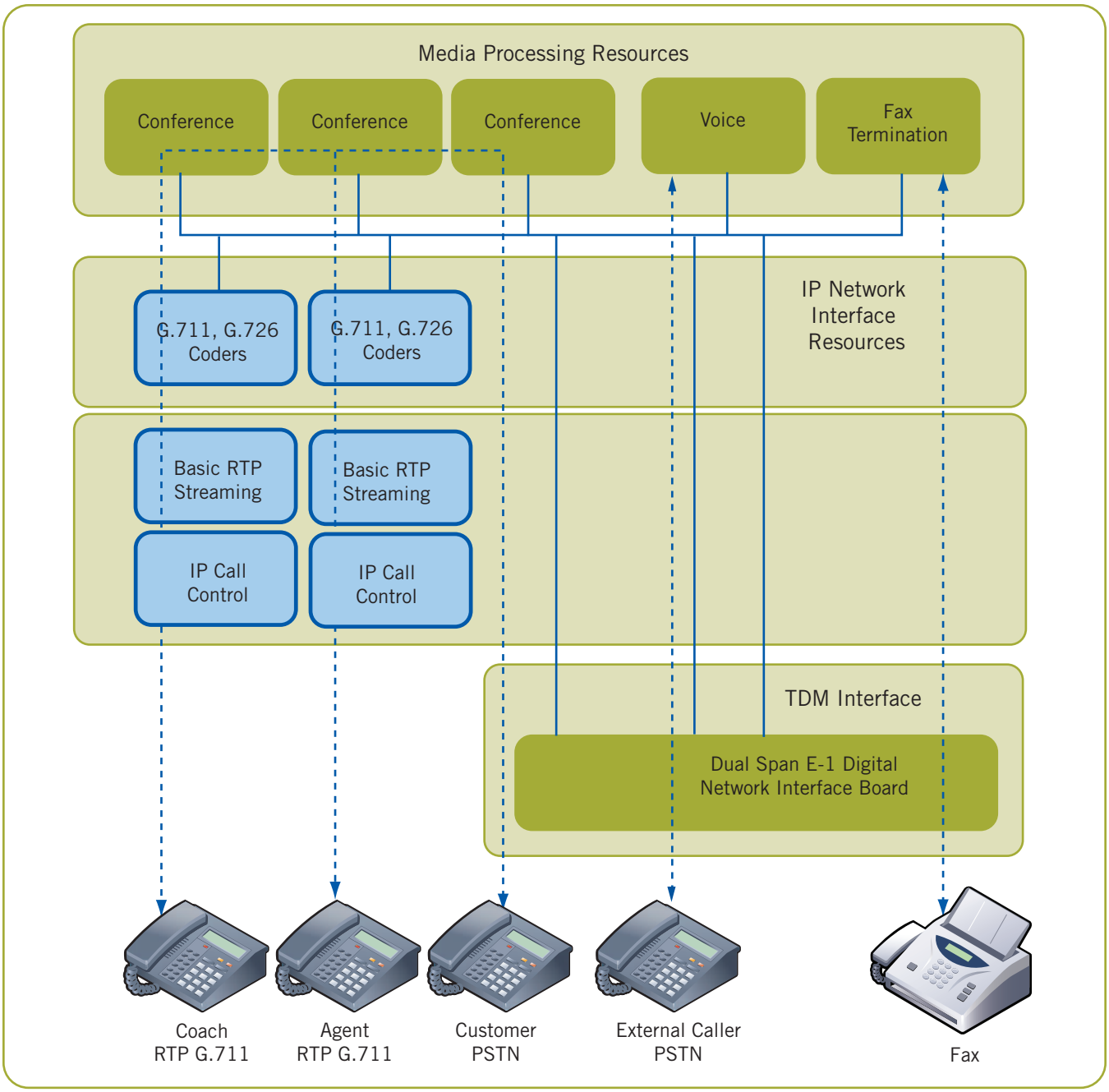

Figure 5. Resources for Hybrid Call Center

3G-324M Video Portal Example

Table 4 provides the requirements for an IP call center and the required Dialogic HMP Software 3.1 resources. A 3G-324M Portal on a 3G-324M network supporting 3GPP Release 99 includes the capability to select and stream videos from a menu. Use RFC2833 or DTMF for menu selection.

Scenario Requirements	Resource Required
3G-324M Portal on a 3G-324M network supporting 3GPP Release 99 Supports 120 simultaneous users	120 3G-324M Resources Dialogic® DNI/1200TEPHMP Digital Network Interface Board for 4E1 connectivity to TDM
120 Multimedia resources to play menu system	120 Multimedia resources

Table 4. 3G-324M Portal Requirements

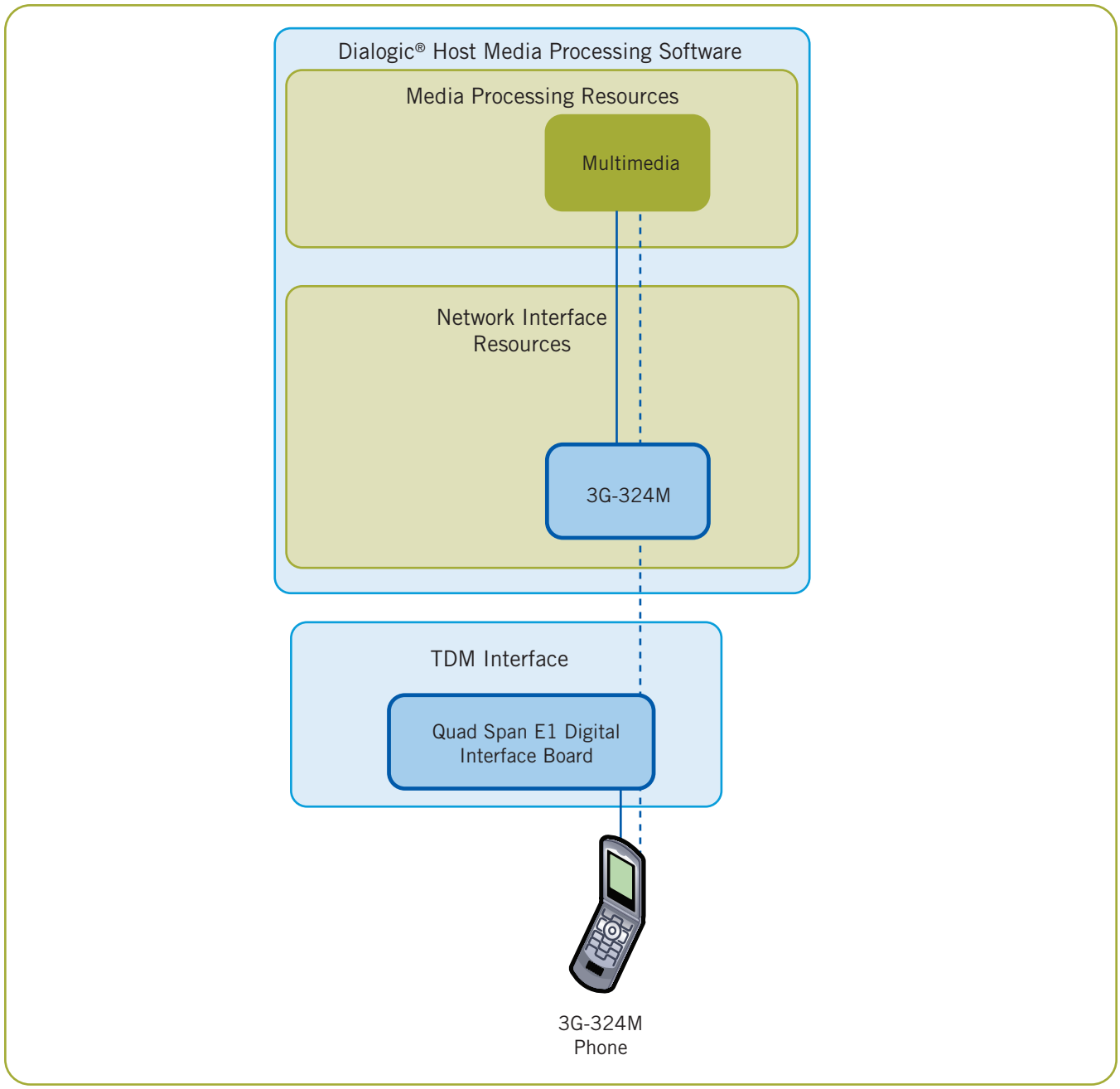

Figure 6. Resources for 3G-324M Portal

Figure 6 shows how these resources are grouped.

3G-324M-Based Video Portal with RTSP Server Example

Table 5 provides the requirements for a 3G-324M Gateway/streaming portal. This system is used to provide a portal application to 3G-324M networks that allows them to select a program to watch from an external 3G-324M server. Dialogic HMP Software 3.1 in this case acts as a Gateway between the streaming sever and the 3G-324M network.

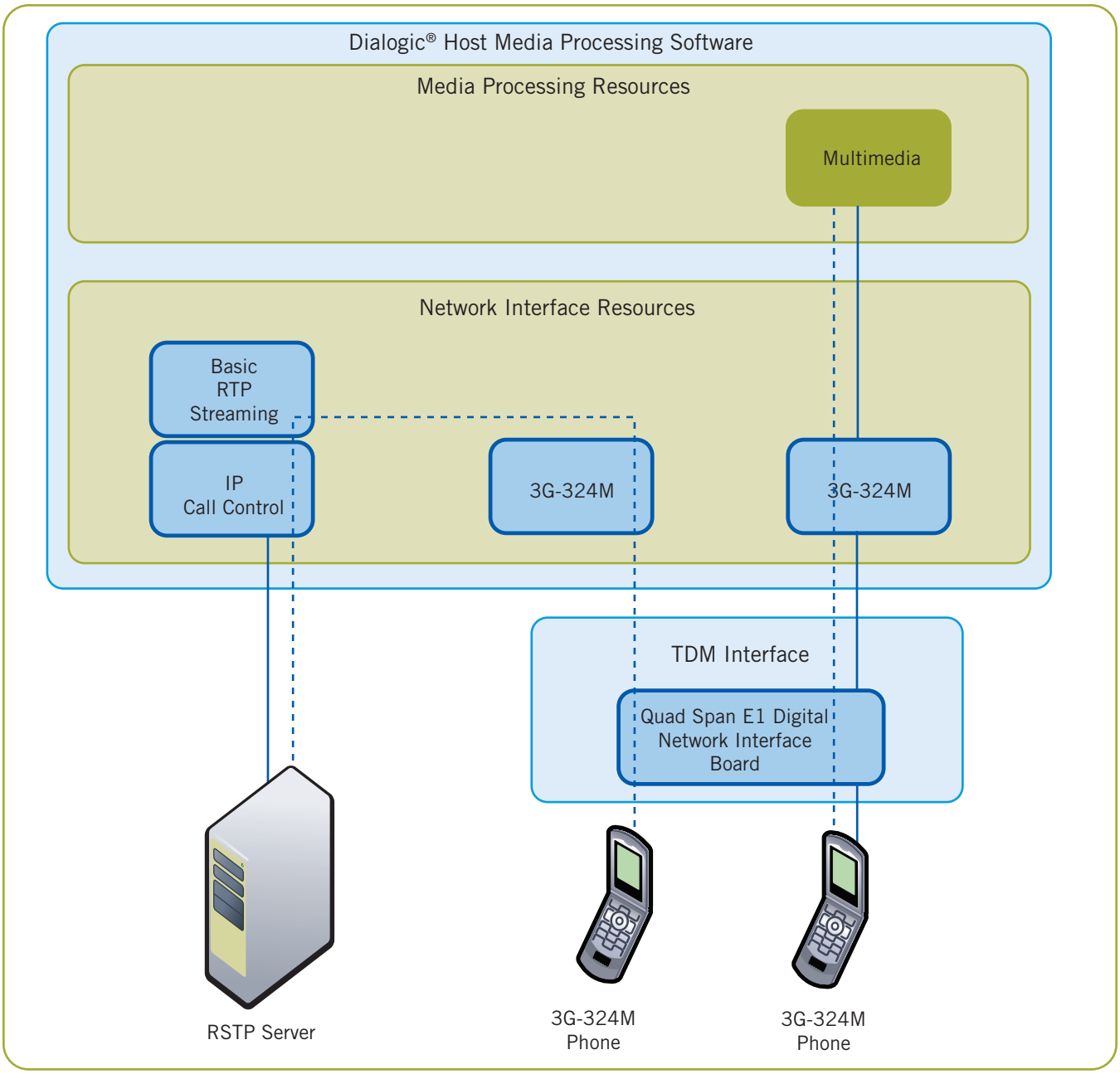

Figure 7. Requirements for 3G-324-Based Video Portal with RTSP Server

120 user 3G-324M portal that provides a menu system to allow users to watch streaming video	120 3G-324M resources Dialogic® DNI/1200TEPHMP Digital Network Interface Board for 4E1 connectivity to TDM
Ability to select from a menu a streaming video that is accessible to 50% of the channels	60 Multimedia resources
Capability to accept up to 120 streams of multimedia content from the RTSP Server	120 Basic RTP Streaming resources
Call Control	120 IP Call Control resources for SIP call control

Table 5. 3G-324-Based Video Portal with RTSP Server Requirements

Figure 7 shows how these resources are grouped.

Summary of Dialogic HMP Software 3.1 Resources

Table 6 provides a summary of the information required for configuring licenses for Dialogic HMP Software 3.1, which has different licensing limitations based on which release is in use; these limitations are also detailed in Table 6.

Resource Type	Dialogic HMP Software 3.1 Limits	Notes
Basic RTP Streaming	1000 maximum	Total number of streaming IP sessions on a single server
G.711, G.726 Coder	1000 maximum	Must be equal to or less than the number of Basic RTP Streaming resources
G.729, G.723 Coder	480 maximum	Each resource can transcode one channel of G.729a, G.729b, or G.723.1 A G.729ab channel requires a Basic RTP Streaming Resource A G.723.1 requires either a 3G-324M resource or a Basic RTP Streaming resource
IP Call Control	2000 maximum	Select up to 2000 IP Call Controls Supports first party or third party call control enabling one entity to create, modify, or terminate a media session between two or more endpoints Third party call control signaling and media exchange are independently managed First party call control supports signaling and media integration An IP Call Control resource is required for the use of MSML for both PSTN and IP Media; therefore, the number of IP Call Control resources on an MSML deployment should equal the number of simultaneous IP and PSTN devices
Voice	1000 maximum	Equal to the number of play or record sessions Requires use of a Dialogic® HMP Interface Board or Coder for recording a streaming function, or can record a conference by adding another conference resource
Speech	240 maximum	Equal to the number of Voice sessions that can be speech-enabled; must be equal to or less than the number of Voice resources
Conference	600 maximum	Requires the use of a Dialogic® HMP Interface Board or Coder To record a conference, include a Voice resource and an additional Conference resource
Fax	120 maximum	Requires a Basic RTP Streaming for T.38 or a Dialogic® HMP Interface Board for V.17
Multimedia	480 maximum	480 H.263 multimedia in half-duplex or 120 full duplex play/record Requires a Basic RTP streaming or a 3G-324M license
3G-324M	250 maximum	Requires a Basic RTP Streaming or a Dialogic® HMP Interface Board
AMR-NB	480 maximum	Requires a Basic RTP Streaming or a 3G-324M license
Native Play/Record	1000 maximum	Requires a Basic RTP Streaming or a 3G-324M license

Table 6. Summary Table of HMP Release 3.1

For More Information

Dialogic® Host Media Processing Software Release 3.1LIN documentation, including configuration guides and release updates — http://www.dialogic.com/manuals/hmp31lin/default.htm

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