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Revision of
SMPTE ST 2071-1:2014

SMPTE STANDARD

Media Device Control Framework (MDCF)

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Foreword

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SMPTE ST 2071-1:2016 was prepared by Technology Committee 34CS.

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At the time of publication no notice had been received by SMPTE claiming patent rights essential to the implementation of this Engineering Document. However, attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. SMPTE shall not be held responsible for identifying any or all such patent rights.

Introduction

This section is entirely informative and does not form an integral part of this Engineering Document.

Since the inception of media devices there has been a continual need for a standardized means of controlling them. This need led to the initial creation of protocols such as de-facto, manufacturer based, serial RS-422 control on a 9-pin "D" connector, and later VDCP. But, unfortunately as technologies advanced and media devices became attached to Internet Protocol networks these methods were replaced with proprietary solutions. This Media Device Control suite of standards is intended to address this issue and deliver the same level of interoperability as its predecessors, using Internet Protocol, with provisions for extensibility and adaptability. Both device and media control standardization are included in this document. This suite of standards presents media in a fashion similar to that of a POSIX file system, allowing media to be searched and manipulated without regard to its physical location.

This document contains the specification of the core Media Device Control Framework (MDCF) and is part 1 of a series of documents that define the complete Media Device Control over IP specification. All subsequent documents describe applications of or extensions to this framework, such as the wire protocols and/or additional device interfaces.

The diagrams below depict how a client interacts with the MDC system to play media. Figure 1 – Using MDC Directories to Play Media illustrates the flow a client would follow to search for devices and media, while Figure 2 – Directly Connecting to the Play device depicts a client that has implicit knowledge about a device and accesses the device directly, without the use of the directories.

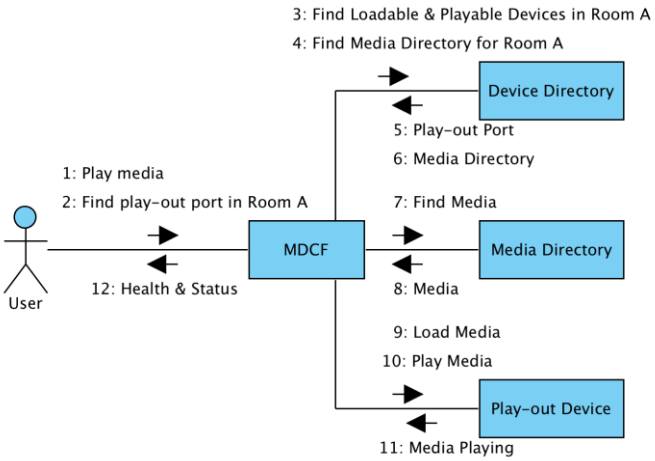

Figure 1 - Using MDC Directories to Play Media

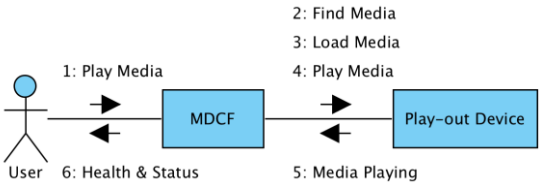

Figure 2 - Directly Connecting to the Play Device

1 Scope

This document is Part 1 of a series of documents that specify the concepts, data structures and operations required to control modern media devices. This document presents a platform agnostic model that can in turn be adapted to any protocol, platform and/or architecture, for the purpose of machine level control of media devices on Internet Protocol networks. Further documents in this series will supply protocol and platform specific adaptations of this model.

The Media Device Control (MDC) suite of standards addresses the low level, atomic operations needed to control media devices over the Internet Protocol, in a deterministic, low-latency manner. MDC is designed to bridge the gap between workflow level interfaces and the physical hardware and is intended for use on private networks, with sufficient bandwidth and bounded latency. While the control of devices over the Internet may be inherently supported, it is not recommended for low-latency applications, due to the unpredictable nature of public, general-purpose, networks.

2 Conformance Notation

Normative text is text that describes elements of the design that are indispensable or contains the conformance language keywords: "shall", "should", or "may". Informative text is text that is potentially helpful to the user, but not indispensable, and can be removed, changed, or added editorially without affecting interoperability. Informative text does not contain any conformance keywords.

All text in this document is, by default, normative, except: the Introduction, any section explicitly labeled as "Informative" or individual paragraphs that start with "Note:"

The keywords "shall" and "shall not" indicate requirements strictly to be followed in order to conform to the document and from which no deviation is permitted.

The keywords, "should" and "should not" indicate that, among several possibilities, one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required; or that (in the negative form) a certain possibility or course of action is deprecated but not prohibited.

The keywords "may" and "need not" indicate courses of action permissible within the limits of the document.

The keyword “reserved” indicates a provision that is not defined at this time, shall not be used, and may be defined in the future. The keyword “forbidden” indicates “reserved” and in addition indicates that the provision will never be defined in the future.

A conformant implementation according to this document is one that includes all mandatory provisions ("shall") and, if implemented, all recommended provisions ("should") as described. A conformant implementation need not implement optional provisions ("may") and need not implement them as described.

Unless otherwise specified, the order of precedence of the types of normative information in this document shall be as follows: Normative prose shall be the authoritative definition; Tables shall be next; followed by formal languages; then figures; and then any other language forms.