Network Working Group
Request for Comments: 4723
Category: Informational

T. Kosonen
Nokia
T. White
MMA

December 2006

Registration of Media Type audio/mobile-xmf

Status of This Memo

Copyright Notice

Abstract

The MIDI Manufacturers Association (MMA) and the Association of Musical Electronics Industry (AMEI) have produced the Mobile XMF standard, which was developed particularly for mobile MIDI applications. Mobile XMF is a very compact media type providing high-quality synthetic audio content for music downloading and messaging applications that require MIME registration. This document registers the media type audio/mobile-xmf.

1. Introduction

MIDI content is used commonly in the Internet. Typically, MIDI data is stored in the Standard MIDI File (SMF) format [8]. This MIME type registration uses the Mobile XMF file format for the encapsulation of SP-MIDI [3,4] and Mobile DLS (Downloadable Sounds) [2] data.

The MIDI Manufacturers Association (MMA) and the Association of Musical Electronics Industry (AMEI) have produced the Mobile XMF standard [1], which was developed particularly for mobile MIDI [7] applications.

2. Registration of audio/mobile-xmf

Type name: audio

Subtype name: mobile-xmf

Required parameters: none

Optional parameters:

revision: Mobile XMF file type revision ID

revision is the Mobile XMF file type revision ID number from the XmfFileTypeRevisionID field of the XMF Meta File format 2.00. revision is encoded in hex in US-ASCII.

prl: Playback resource list

prl contains the playback resources included in all Content Description MetaDataItems of the Mobile XMF file. prl contains two-digit hexadecimal numbers representing data bytes from the Content Description Meta Data. Each resource is listed exactly once. A playback resource contains two parts: a prefix and data. prl is a sequence of two-digit hexadecimal numbers encoded in US-ASCII. Thus, prl has an even number of hexadecimal digits.

Example: If the file includes Playback Resource Lists such as [00h 01h 00h 02h] and [00h 01h 00h 03h], the corresponding prl is 000100020003 containing playback resources 01, 02, and 03 each with the prefix 00.

minimum-pr: Minimum playback requirements

minimum-pr contains the Maximum Instantaneous Resource (MIR) values from the first row of all MIR Count Tables corresponding to the playback resources listed in prl. Only the largest value from the values of the same resource is chosen. minimum-prl is a sequence of two-digit hexadecimal numbers encoded in US-ASCII. Thus, minimum-prl has an even number of hexadecimal digits.

minimum-pr requires the use of prl, and the values in minimum-pr must be in the same order as the resources in prl. minimum-pr is the more important of minimum-pr and total-pr, because it defines the minimum playback requirements.

Example: If the file includes the first rows of MIR Count Tables such as [02h 00h] and [01h 01h] corresponding to the above Playback Resource Lists, the corresponding minimum-pr is 020001. (02 is the largest of 2 and 1, 00 is the largest of 0, and 01 is the largest of 1.)

total-pr: Total playback requirements

total-pr contains the MIR values from the last row of all MIR Count Tables corresponding to the playback resources listed in prl. Only the largest value from the values of the same resource is chosen. total-pr is a sequence of two-digit hexadecimal numbers encoded in US-ASCII. Thus, total-pr has an even number of hexadecimal digits.

total-pr requires the use of prl, and the values in total-pr must be in the same order as the resources in prl.

Example: If the file includes the last rows of MIR Count Tables such as [05h 02h] and [06h 01h] corresponding to the above Playback Resource Lists, the corresponding total-pr is 060201. (06 is the largest of 5 and 6, 02 is the largest of 2, and 01 is the largest of 1.)

Encoding considerations:

mobile-xmf data is binary data and must be encoded for non-binary transport; Base64 [9] is suitable for Email.

Security considerations:

Many synthetic audio compositions have associated intellectual property rights. It is conceivable that the rights owners of mobile-xmf content will want to protect their rights by applying security mechanisms that prohibit the rendering of the content without a legally acquired license to do so. These mechanisms would be applied externally to the Content-Type defined here; mobile-xmf content itself is not encrypted internally. mobile-xmf streams do not contain executable content. Mobile XMF players are robust against corrupted mobile-xmf content, because Mobile XMF players ignore unidentified content. prl, minimum-pr, and total-pr parameters can be used to represent Mobile DLS playback memory requirements for protecting against the excessive usage of playback memory.

Interoperability considerations:

Mobile XMF is a Musical Instrument Digital Interface (MIDI) specification developed by MMA and AMEI. Mobile XMF is based on the XMF Meta File Format Specification v2.00 [5,6], which standardizes a meta file format for the electronic distribution of music. mobile-xmf data is stored in XMF file format [5,6].

Published specification:

Mobile XMF Content Format Specification, MMA specification v1.0., RP-42, Los Angeles, CA, USA. 2004.

Specification is available from:
http://www.midi.org/about-midi/specshome.shtml

Applications which use this media type:

mobile-xmf is a synthetic audio format for the flexible presentation of SP-MIDI and Mobile DLS instrument data on a wide range of playback devices, particularly portable appliances such as mobile phones, PDAs, and palmtop computers.

Additional information:

Magic number(s):

First twelve bytes:
\130\115\106\137\062\056\060\060\000\000\000\002

File extension(s): mxmf

Macintosh File Type Code(s): mxmf

Person & email address to contact for further information:

Timo Kosonen
Email: timo.kosonen@nokia.com

Intended usage: COMMON

Restrictions on usage: none

Authors:

Timo Kosonen
Email: timo.Kosonen@nokia.com

Tom White
Email: twhite@midi.org

Change controller:

MIDI Manufacturers Association
P.O. Box 3173
La Habra, CA 90632-3173
Tel (714) 736-9774
Fax (714) 736-9775
Point of contact:
Tom White
Email: twhite@midi.org

3. Security Considerations

Security considerations are specified in the MIME subtype registration contained in Section 2.

4. IANA Considerations

Section 2 of this document registers one MIME subtype.

5. Normative References

[1] Mobile XMF Content Format Specification, MMA specification v1.0., RP-42, Los Angeles, CA, USA. 2004.

[2] Mobile DLS, MMA specification v1.0., RP-41, Los Angeles, CA, USA. 2004.

[3] Scalable Polyphony MIDI Specification. December 2001, RP-034, The MIDI Manufacturers Association, Los Angeles, CA, USA.

[4] Scalable Polyphony MIDI Device 5-24 Note Profile for 3GPP, December 2001, RP-035, The MIDI Manufacturers Association, Los Angeles, CA, USA.

[5] Specification for XMF Meta File Format, Version 1.00b. The MIDI Manufacturers Association, Los Angeles, CA, USA, 2001.

[6] XMF Meta File Format 2.00, RP-043, MIDI Manufacturers Association, Los Angeles, CA, USA, 2004

[7] MIDI 1.0 Detailed Specification, Document Version 4.2. February 1996, In 'The Complete MIDI 1.0 Detailed Specification, Document Version 96.1.' The MIDI Manufacturers Association., Los Angeles, CA, USA.

[8] Standard MIDI Files 1.0, In 'The Complete MIDI 1.0 Detailed Specification, Document Version 96.1.' The MIDI Manufacturers Association., Los Angeles, CA, USA.

[9] Josefsson, S., "The Base16, Base32, and Base64 Data Encodings", RFC 4648, October 2006.

Authors' Addresses

Timo Kosonen
Nokia
P.O. Box 100
33721 Tampere
Finland

Tel: +358 5048 35206
Fax: +358 7180 35899
EMail: timo.kosonen@nokia.com

Tom White
MIDI Manufacturers Association
P.O. Box 3173
La Habra, CA 90632-3173
USA

Tel: (714) 736-9774
Fax: (714) 736-9775
EMail: twhite@midi.org

Full Copyright Statement

Intellectual Property

Acknowledgement

Funding for the RFC Editor function is currently provided by the Internet Society.