ASID Specification

(Audio Software Information Delivery)

Version 1.0

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IFPI

Recording Industry Association of America (RIAA)

Recording Industry Association of Japan (RIAJ)

Contents

1. Introduction

This document describes a structure of Audio Software Information Delivery (ASID) and a format of data elements of Software Information stored and delivered on supporting media and transmission protocols. ASID is a concept developed by the worldwide recording industry[1] to ensure that a wide variety of Software Information is transported in association with any audio content regardless of its distribution channels, supporting applications or transmission protocols. ASID specifies a standard format for Software Information provided by content owners for the use of their audio content, while keeping extensibility of the format in accordance with the future needs of parties concerned and consumers.

ASID is capable of providing benefits to consumers as well as content owners. By transporting an extensible set of value-added information, ASID will expand experiences of consumers who want to have access to quality music. While ensuring them doing so, ASID will provide owners of audio content with an environment that enables them to accurately manage and effectively protect Intellectual Property (IP) Rights involved in their content.

This document was produced by efforts made within the worldwide recording industry, therefore, ASID is considered as a ***recording industry standard*** at this present stage. However, by gaining an inter-industry consensus at some appropriate body, the worldwide recording industry strongly desires to get it standardized internationally to ensure that all consumer audio devices and applications can successfully deliver and interpret Software Information.

[1] Three organizations; IFPI, RIAA and RIAJ represent the worldwide recording industry.

2. Scope

This document describes a structure of ASID and a format of data elements of Software Information that is carried on distribution media and transmitted across interfaces/buses by certain protocols.

On the other hand, ASID does not specify any implementation that should be individually specified by each interest group[2] so that they can accommodate transportation of Software Information on their platforms. Such specific implementation may involve, for examples, specific technologies for the transportation of Software Information (e.g. capsulation, watermarking) and particular rules for implementing ASID (e.g. which data element is mandatory or optional for transportation).

However, to maintain high level compliance with the purpose of ASID, this document addresses technical recommendations widely applicable to any applications and transmission protocols implementing ASID. Appendixes of this document also provide normative adaptation to specific applications or transmission protocols respectively. On the other hand, annexes of this document provide useful information as well as possible examples for implementation, as informative part.

ASID is intended to provide information applicable only to pure audio content, and not applicable to audio-visual content such as motion pictures. However, by further consideration, the scope of ASID could be extended to cover music video content, such as music clips, which is a sort of audio-visual content. At the time of consideration, it is recommended that the scope of music video content that ASID covers should comply with that of ISRC defined in the ISO 3901 document.

3. Normative References

The following normative documents contain provisions which, through reference in this text, constitute provisions of this document. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this document are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For updated references, the latest edition of the normative documents referred to apply.

IEC 60908: 1999, Audio recording – Compact disc digital audio system

IEC 60958-1: 1999, Digital audio interface – Part 1: general

IEC 60958-2 TR: 1994, Digital audio interface – Part 2: Software information delivery mode

[2] For example, a particular consortium or group of hardware/software application vendors, protocol vendors or content distributors; or relevant standardizing body.

IEC 60958-3: 1999, Digital audio interface – Part 3: Consumer applications

IEC 61119-6: 1992, Digital audio tape cassette system (DAT) – Part 6: Serial Copy Management System

ISO 3901 FDIS: 2001, Information and documentation – International Standard Recording Code (ISRC)

SDMI Portable Device Specification Part 1, Version 1.0: 1999

4. Terms and Definitions

For the purpose of this document, the following terms and definitions apply.

[Term] (In alphabetical order)	[Definition]
ASID	Audio Software Information Delivery
Baseline Information	A minimum set of Software Information determined by the ASID Baseline Format, which shall be associated with audio content in any event.
Extended Information	A set of extensive Software Information other than the Baseline Information.
Software Information	A set of content-associated information defined by ASID for identification, description and other purposes related to the use of sound recordings (, which forms part of ***metadata***). It consists of Baseline Information and Extended Information.

5. Structure of ASID

This clause defines the structure of ASID illustrated by the Fig. 1 below.

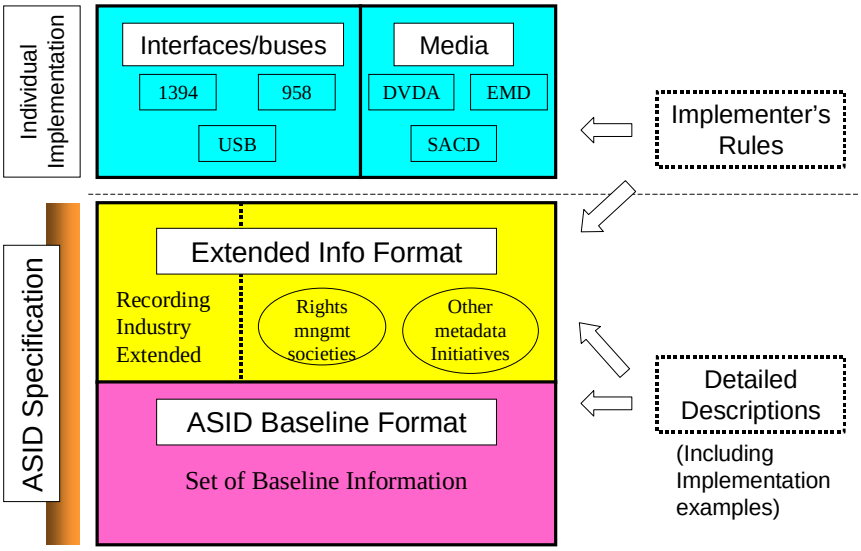


Fig. 1: Structure of ASID

The ASID Specification (this document) defines a hierarchy in the structure of ASID and it comprises two layers of data formats, one is the ASID Baseline Format and another is the Extended Information Format.

The ASID Baseline Format defines a definitive set of the Baseline Information that is minimum elements which all media and interfaces/buses implementing ASID shall transport in any event. Data elements of the Baseline Information shall be transmitted in fixed length fields.

The Extended Information Format defines a set of extensive Software Information, excluding the Baseline Information, having variable length fields that should be transported as well in association with the audio content. This Format allows extension in accordance with the needs of parties concerned and will be revised upon a consensus among them. This Format may involve a variety of data elements that not only the recording industry but also other parties concerned or other metadata initiatives recommend to transport in association with audio content.

On the other hand, implementation on each medium or interface/bus is out of the scope of ASID and should be individually defined by each interest group. Such implementation may involve, for example, bit mapping on a carriage, payload structure and technological means to associate Software Information with audio content. A means to implement the technical recommendations, addressed in the clause 9 of this document, and particular rules for implementing ASID should also be individually defined. To facilitate implementation by each interest group, possible examples for implementation (e.g. payload structure) are provided in informative annexes of this document.

6. ASID Baseline Format

This clause specifies a format of the Baseline Information that all media and interfaces/ buses implementing ASID are required to transport on specified fixed-length fields.

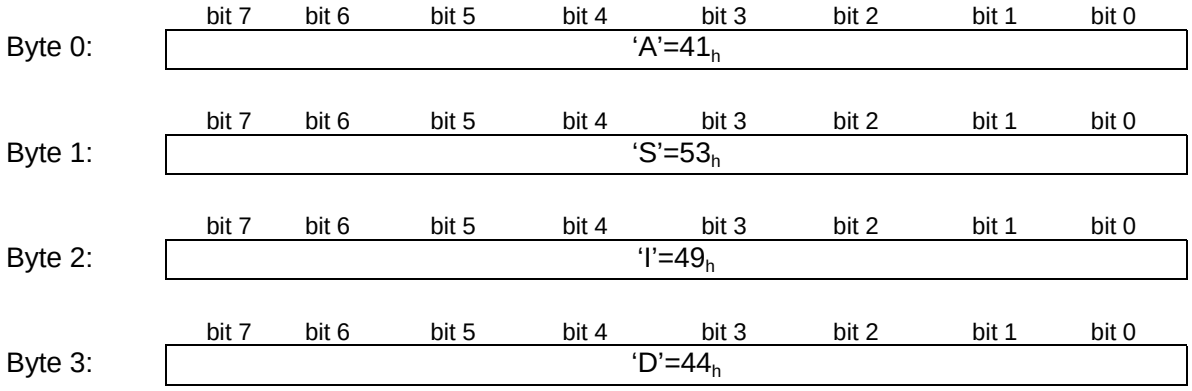
All of the reserved bits indicated in this clause are set at 0_b unless further defined.

6.1 ASID Header ID

The ASID Header ID identifies that the following table is the beginning of the Baseline Information. This table may be necessary to identify and signify the information field preceding audio data in the case that the Baseline Information is transmitted in part of a lengthy header field of a data packet.

This ASID Header ID is not required to store on media and allowed to generate on devices as required in transmission.

The ASID Header ID shall consist of the following four (4) bytes of information encoded using the ASCII (American Standard Code for Information Interchange) format:

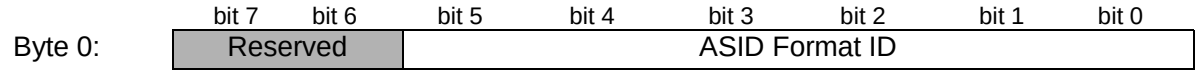


6.2 ASID Format ID

The ASID Format ID identifies the structure of Software Information. In the event the Extended Information is transported on a medium or an interface/bus, an assigned number of the ASID Format ID corresponding to the given set of the Extended Information shall be transported as part of the Baseline Information. The details of this information are to be defined in the clause 8 of this document.

The ASID Format ID shall consist of one (1) byte of information occupying six (6) binary bits, the bit 0 through the bit5 representing numbers 0 through 63. The remaining two bits (the bit 6 and the bit 7) are reserved for the future use.

In the event only the Baseline Information is transported on a medium or an interface/bus, the ASID Format ID shall be set at 00_h. The other states will be reserved until further defined.



ASID Format ID:

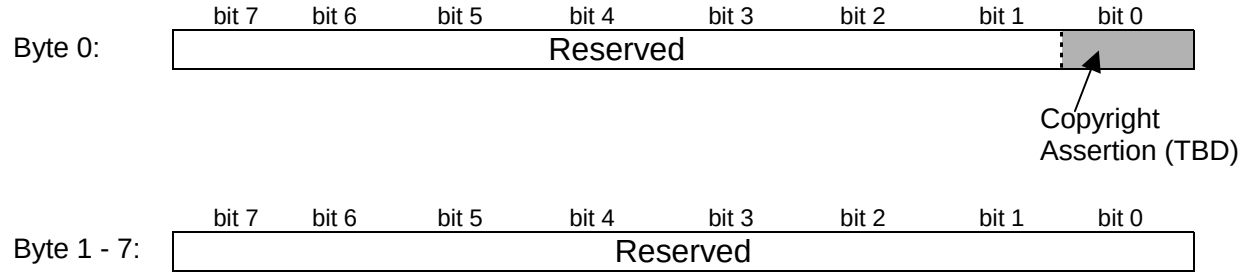
00_h	Only the Baseline Information is transported.
Other states	Reserved

6.3 Content Usage Information

The purpose of this field is to reserve a certain amount of bit space commonly usable for content protection schemes to transport their usage rules information. At the moment, this document does not identify any specific usage rules information transported on this field.

It is still under consideration that delivery of a bit for assertion of copyright is useful. The figure below contains assignment for this bit, however, this bit shall not be made effective and shall be set at 0_b until practical usage for this bit is further defined in a later version of this document or a separate documentation.

The number of bytes capable of reserving for this information will vary among media and interfaces/buses. However, it is recommended that each interest group reserve at least eight (8) bytes of information space as shown below.



6.4 UPC/EAN and ISRC

UPC[3] (Universal Product Code) and EAN[4] (European Article Number) are product identifiers, thirteen (13) digits in length, encoded using a Binary Coded Decimal (BCD) format.

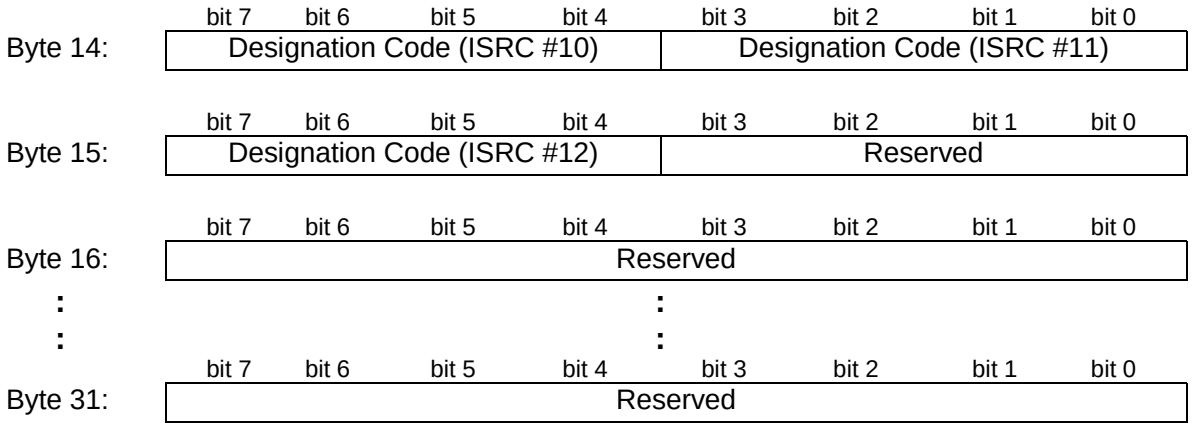
ISRC[5] (International Standard Recording Code) is a coding scheme standardized by ISO to uniquely identify a sound recording (sometimes a music video recording as well). It consists of alphanumeric 12 characters, using Arabic numerals 0-9 and letters of the Roman alphabet.

[3] http://www.uc-council.org/
[4] http://www.ean-int.org/
[5] http:///www.ifpi.org/technology/isrc_what.html

To facilitate identification of the validity of these two codes, four (4) bits of Validity Information shall precede the information field for them.

This field shall consist of thirty-two (32) bytes of information occupying sixteen (16) bytes as defined below. The remaining sixteen (16) bytes are reserved for the future extension of the ISRC format and other purposes.

	bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
Byte 0:	Validity Information				UPC/EAN #1			
Byte 1:	UPC/EAN #2				UPC/EAN #3			
Byte 2:	UPC/EAN #4				UPC/EAN #5			
Byte 3:	UPC/EAN #6				UPC/EAN #7			
Byte 4:	UPC/EAN #8				UPC/EAN #9			
Byte 5:	UPC/EAN #10				UPC/EAN #11			
Byte 6:	UPC/EAN #12				UPC/EAN #13			
Byte 7:	Reserved		Country Code (ISRC #1)					
Byte 8:	Reserved		Country Code (ISRC #2)					
Byte 9:	Reserved		Registrant Code (ISRC #3)					
Byte 10:	Reserved		Registrant Code (ISRC #4)					
Byte 11:	Reserved		Registrant Code (ISRC #5)					
Byte 12:	Year of Reference (ISRC #6)				Year of Reference (ISRC #7)			
Byte 13:	Designation Code (ISRC #8)				Designation Code (ISRC #9)			



Validity Information:

0000_b	All data invalid
1000_b	UPC/EAN valid
0100_b	ISRC valid
1100_b	Both UPC/EAN and ISRC valid
Other states	reserved

ISRC

ISRC #1 - #2	Country code
ISRC #3 - #5	Registrant code
ISRC #6 - #7	Year of reference
ISRC #8 - #12	Designation code

UPC/EAN #1 through #13 and ISRC #6 through #12 shall be encoded using the BCD format. ISRC #1 through #5 shall be encoded as shown in the Table 1 below.

Table 1: Character Code (binary) for ISRC

Character	Code	Character	Code	Character	Code
0	000000	C	010011	O	011111
1	000001	D	010100	P	100000
2	000010	E	010101	Q	100001
3	000011	F	010110	R	100010
4	000100	G	010111	S	100011
5	000101	H	011000	T	100100
6	000110	I	011001	U	100101
7	000111	J	011010	V	100110
8	001000	K	011011	W	100111
9	001001	L	011100	X	101000
A	010001	M	011101	Y	101001
B	010010	N	011110	Z	101010

7. Extended Information Format (TBD)

This clause is prepared to describe the Extended Information Format. Data elements included in this format are to be composed of variable length fields and the details are to be defined at a later date when the recording industry reaches a more solid understanding of their requirements on metadata. Since this format will not be populated until such time, the worldwide recording industry recommends that potential implementers of ASID reserve adequate and effective spaces for transporting the Extended Information on their media and protocols without defining its format.

Even after the initial data elements are defined for this format, it retains the future extensibility in accordance with the needs of parties concerned and consumers.

Each interest group implementing ASID may tailor the configuration of data elements defined in this format as far as they comply with the Dynamic Structure Concept described in the clause 8 of this document.

8. Dynamic Structure Concept (TBD)

This clause is prepared to define a common mechanism that allows particular interest groups to individually tailor the configuration of data elements defined in the Extended Information Format. The mechanism for this purpose is tentatively called the Dynamic Structure Concept. The details of this mechanism are to be determined by further consideration.

9. Technical Recommendations

The ASID Specification does not identify any specific technology (e.g. encryption) for the transportation of Software Information, which should be individually determined by each interest group implementing ASID, however, it addresses technical recommendations for implementation. The recommendations aim to ensure that Software Information, retaining its integrity, is successfully delivered to consumer devices and applications. It is recommended that each interest group implement ASID with technologies that satisfy the recommendations in this clause.

9.1 Transmission

It is recommended that a certain set of Software Information should be transmitted repeatedly during streaming of a sound track to ensure that they are successfully delivered to a receiver whenever it starts receiving of the stream. The certain set should involve the full set of the Baseline Information and may involve some selected elements of the Extended Information. The recommended transmission interval is real time period of approximately 0.5 second of the stream unless otherwise specified in normative appendixes.

It is possible to transmit Software Information by a variety of technological means, but it is recommended that the Baseline Information should be transmitted on a header of a data packet as a minimum adoption.

9.2 Protection of Software Information

It is recommended that Software Information should be transported in a protected manner to maintain its integrity. In case that Software Information is transmitted in clear text, each interest group should provide a receiver with a means to verify the integrity of Software Information. The delivery of the Baseline Information on a header is a possible example for the clear-text transmission and an example of payload structure to achieve this verification is provided in the informative Annex B. It is recommended that each device or application implementing ASID should not use the delivered Software Information if the integrity of the information cannot be verified.

Whether Software Information needs protection or not depends on the type of each data element and what purpose it is used for. Therefore, it is recommended that interest groups implementing ASID should build a system on which content owners may selectively determine in which form they provide each data element;

- In protected form;
- In clear-text form or;
- In both the forms.

Appendix A (NORMATIVE)

Specification of the ASID Adaptation Layer to the IEEE1394 Audio and Music Data Transmission Protocol

A.1 Scope

This appendix defines the Adaptation Layer applied to the IEEE 1394 Audio and Music Data Transmission Protocol (hereafter the A/M Protocol). Devices and modules employing the 1394 A/M Protocol are able to implement ASID by adopting corresponding specifications issued by the 1394 Trade Association (1394TA[6]), in conjunction with this appendix.

At the moment, the ASID Specification has only defined the ASID Baseline Format and has not defined any further format including the Extended Information Format. Therefore, this appendix only defines the Adaptation Layer of the ASID Baseline Format. That of the Extended Information Format will be specified at a later date when the worldwide recording industry defines its format.

A.2 Normative References

In addition to the documents referred in the clause 3, the following normative documents are references to this appendix. For updated references, the latest edition of the normative documents referred to apply.

1394TA Document 2001003 – Audio and Music Data Transmission Protocol 2.0

A.3 Terms and Definitions

Terms and definitions in this appendix follow the clause 4, except those related to the A/M Protocol that should be referred to corresponding 1394TA specifications.

A.4 Adaptation to the A/M Protocol

This clause defines adaptation to the IEEE 1394 A/M Protocol for delivering the Baseline Information.

A.4.1 AM824 LABEL

[6] http://www.1394ta.org/

As ASID is intended to be a scheme applicable to any audio content, the Baseline Information shall be transmitted in such a manner that all devices and modules can have common access to it regardless of their types. To achieve such purpose of ASID, the Baseline Information shall be transported across the entity for the Common Ancillary Data assigned by the AM824 LABEL.

The A/M Protocol 2.0 specification has assigned a unique AM824 LABEL with the value **$C0_h$** to ASID, within the range for the Common Ancillary Data.

A.4.2 SUBLABEL

A data payload for delivering the Baseline Information shall incorporate a SUBLABEL of 8-bit length in its structure, as defined in the A/M Protocol 2.0 specification.

The Table 1 below defines a unique range of SUBLABELs for each applicable element of the Baseline Information.

SUBLABEL	Definitions	
00_h - $0F_h$	Baseline Format	UPC/EAN and ISRC
10_h - $1F_h$		Content Usage Information
The other states	Reserved	

Table 1. SUBLABEL Definition

A.4.3 Elements of the Baseline Information

This subclause defines adaptation of each data element of the Baseline Information.

A.4.3.1 ASID Header ID

The purpose of the Header ID is to identify the beginning of the ASID Baseline Information in some lengthy header field. However, on the A/M Protocol, the allocation of a unique AM824 LABEL for ASID can fully meet the purpose of the Header ID and it can be replaced by this allocation. Therefore, the A/M Protocol does not need to implement the Header ID.

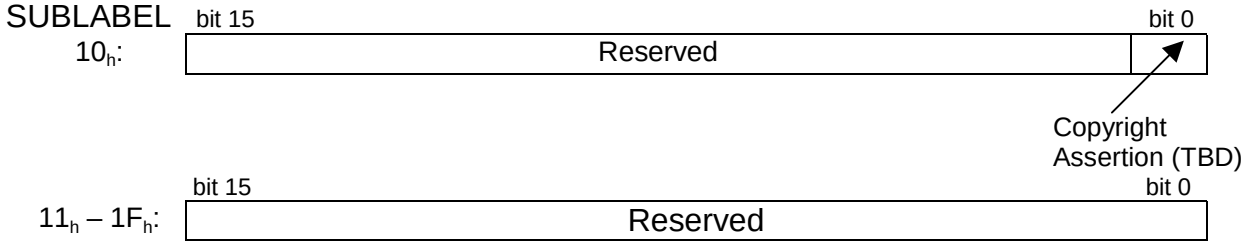
A.4.3.2 ASID Format ID

The purpose of the Format ID is to identify the configuration of transported data elements of the Extended Information. However, the Extended Information Format has not been defined yet and the Format ID is currently fixed at 00_h, meaning that the transported information contains only the Baseline Information. Therefore, it is adequate at the moment if the SUBLABELs can identify the Baseline Information being delivered. Therefore, the A/M Protocol does not need to implement the Format ID at the moment.

When the Extended Information Format is defined, a means to deliver the ASID Format ID is to be added to this appendix.

A.4.3.3 Content Usage Information

Content Usage Information shall be delivered on the Common Ancillary Data as defined below.

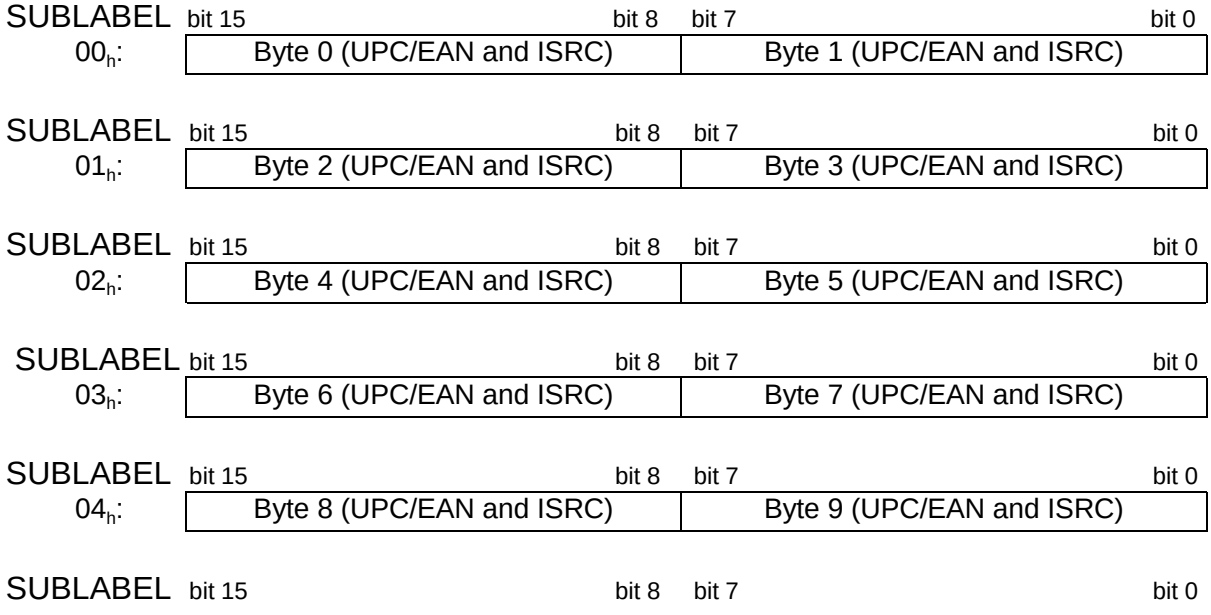


A.4.3.4 UPC/EAN and ISRC

UPC/EAN and ISRC information shall be transmitted in such a way that modules can interpret the information in a compliant manner as defined in the subclause 6.4.

In principle, this information shall be delivered on the Common Ancillary Data as defined below, except the following cases:

- In the case that the whole data stream sent out from a transmitter is encrypted by a specific bus-protection scheme and the transmitter has technological difficulties in sending the Common Ancillary Data, UPC/EAN and ISRC information may alternatively be delivered on the Application-Specific Ancillary Data by a proprietary means required by the scheme.



05_h:	Byte 10 (UPC/EAN and ISRC)	Byte 11 (UPC/EAN and ISRC)

SUBLABEL	bit 15 – bit 8	bit 7 – bit 0
06_h:	Byte 12 (UPC/EAN and ISRC)	Byte 13 (UPC/EAN and ISRC)

SUBLABEL	bit 15 – bit 8	bit 7 – bit 0
07_h:	Byte 14 (UPC/EAN and ISRC)	Byte 15 (UPC/EAN and ISRC)

SUBLABEL	bit 15 – bit 0
08_h – $0F_h$:	Reserved (follows the same order as the above)

In case that a content distribution medium fully implements the reserved fields (the Byte 16 through the Byte 31 as defined in the subclause 6.4), devices and modules shall transmit all of the data fields (SUBLABEL 00_h through $0F_h$) and receive all of them to maintain future compliance with expected revisions of the ISRC syntax.

The Byte 0 field carries the Validity Information as defined in the subclause 6.4. In the case that the Validity Information on the media indicates the state 0000_b or no corresponding information is conveyed on the media, the playing devices may not transmit this element fulfilled with zero bits.

A.4.4 Transmission

A.4.4.1 Update of Information

The Baseline Information transmitted shall change only in accordance with the updates in its information source. Devices and modules shall be designed in such a way that payloads transmitted from them appropriately represent these updates in the source.

In the event that the information source is updated, transmitted payloads shall represent these updates at an earliest transmission event.

A.4.4.2 Timing Issues

The full set of the Baseline Information shall be repeatedly transmitted in approximately every 0.5 seconds during streaming of a sound track.

There are cases that a distribution medium repeatedly and simultaneously records the full information set along with the content stream. The playing devices and modules may transmit such recorded information as it is so long as the interval of the recorded information sets reasonably satisfies the above definition and complies with the adaptation set forth in the subclause A.4.3.3 and A.4.3.4.

Implementers of ASID may choose either of the following ways to execute transmission of events for the Baseline Information:

- Transmit the full set of the information in one event (one block)

- Divide the full set of the information into units and transmit them at random timings within the transmission period required above

A.4.4.3 A Guide on Transmission of Clear-Text Information

This appendix has defined the format of the Baseline Information transmitted as part of the Common Ancillary Data. To enable access from any device and module in a common manner, it is considered appropriate that, in general, the Baseline Information on the Common Ancillary Data is delivered in clear text with providing a means to verify its integrity.

However, some bus-protection schemes for 1394 (e.g. 5CDTCP[7]) are designed to keep the whole data stream (i.e. audio content stream including Ancillary Data) encrypted. Then, the Common Ancillary Data will be encrypted as well, and no clear-text Baseline Information is available on such an encrypted bus.

Even if the case, there might be some possible means to transmit the clear-text Baseline Information along with the encrypted stream on the same bus. However, serious concerns from the security aspect have been raised against such design because sending clear-text information, that is duplicated in encrypted portion of the data stream, may potentially jeopardize the security of the bus protection. A malicious attacker could destroy the security of the bus protection by some comparative analysis method.

Therefore, the security consideration shall be prioritized if an implementer of ASID has an intention to design their devices and modules to transmit clear-text information in such way.

[7] http://www.dtcp.com/

Annex A (informative)

Detailed Descriptions

INA.1 Rationale for the ASID Proposal

The recent innovation of technologies for music distribution, especially EMD (Electronic Music Distribution), has brought excellent experiences to consumers by offering easy access to quality music. Consumers have become able to have access to a wide variety of audio contents via network media (e.g. Internet) and broadcast media (e.g. DAB, cables) as well as packaged media existing (e.g. CD) and emerging (e.g. DVD-Audio, SACD). Easy access to these media has been being offered by not only consumer electronics devices but also personal computers, set top boxes, portable flash-memory music players and, in the near future, portable phones.

While plenty of technology vendors are trying to develop infrastructures to deliver audio content, the recording industry is concerned about whether they can ensure that an adequate set of information related to the content (i.e. metadata) is successfully transported throughout such infrastructures. A content delivery chain essentially consists of content creation and production, a distribution channel (medium), end-point consumer devices/applications and interfaces/buses (protocols) connecting each other. The recording industry believes that some standard set of copyright information and other information related to the use of the content must be successfully transported throughout all content delivery chains in association with any audio content.

However, unfortunately, there has been no inter-industry scheme that has already succeeded in the standardization of a format for metadata because it takes a longer time to gain a consensus on the format among parties concerned. In the meantime, there are a considerable number of media and protocols that have been, or are being, designed without consideration of transporting such information. The recording industry is greatly concerned about that because, even though we desire to transport such information once its format is fixed, we may face a problem that no adequate and effective space is left on them for the transportation.

Consequently, the worldwide recording industry decided to start development of a format for metadata (part of which is the ASID Specification) in a short term by inner-industry efforts. However, we are still in the process of defining data elements and our work needs more and more discussion even within the industry.

Therefore, we have decided that we would first define a limited set of Software Information (the ASID Baseline Format) and ask potential implementers of ASID to first implement it on their media and devices. Then we would encourage them to reserve adequate and effective spaces for transporting a broader range of Software Information (i.e. the Extended Information) coming later. The ASID Baseline Format consists of minimum essential data elements of which transportation should be achieved at an early date. Once the Extended Information Format is finalized by inner-industry discussion, we will try to gain an inter-

industry consensus on the implementation of ASID at some appropriate body and get the specification standardized internationally.

INA.2 Content Usage Information

Only a content owner has the right to determine usage rules to govern copy, playback and/or distribution of his/her audio content on consumer devices and applications. To make this control effective, this field for Content Usage Information is prepared to transport a variety of data elements providing usage rules, in association with the audio content.

The most popular copy control scheme for audio content is the legacy SCMS (Serial Copy Management System), and it has been widely adopted on consumer digital audio recording devices, such as MiniDisc, CD-R. On the IEC 60958 interfaces, a control signal to govern the SCMS functionality is conveyed by two–bit information between players and recorders to prevent consumers from making any second-generation copy (a copy of a copy) while allowing them to make multiple first-generation copies (copies of the original). Such control signal could be considered as a sort of Content Usage Information.

However, such information recently developed is normally subject to particular content protection schemes that have been proprietarily developed by specific technology vendors, and the details of the information dealing will not be disclosed for those who have not acquired a license from the vendors. Furthermore, it is up to individual negotiation among parties concerned to determine what protection scheme they exclusively adopt on a specific medium and devices.

Therefore, this specification does not define any data element subject to a specific content protection scheme, except one bit of information asserting the ownership of copyright. Parties concerned should agree upon the adoption of a content protection scheme on a specific media, and *this agreement is obviously out of the scope of ASID*.

The following is nothing other than examples possible to consider as Content Usage Information:

- **Copy control information**

Information could be transported on this field to effectively govern the capability of making copies of the audio content on compliant recorders, in accordance with the discretion of the content owner.

- **Check In/Check Out**

Check In/Check Out is a functionality that enables a content owner to entirely control the number of copies made by consumers, defined by the SDMI Portable Device Specification. Information to govern this functionality could be comprised of two components, the number of allowed copies and the number of copies completed. The content owner or distributor assigns the former information, and a functionality processing, updating, and storing the latter information needs to be devised by a medium.

- **Data to Control Valid Period for Playback/Copy**

This data would provide a restricted or non-restricted condition when a content owner has an intention to apply valid-period control for playback and/or copying of the content. This control could be achieved by transporting information asserting whether valid period is restricted or not and information of specific time periods determined by the content owner or distributor.

INA.3 Extended Information Format

The Extended Information Format could consist of, but not limited to, such kind of Software Information as follows:

- Data for identification of various musical elements (e.g. identification of musical works)
- Data for description of the content (e.g. text information)
- Data for references (e.g. URL links)
- Data for indication of the attributes of the content delivery (e.g. encrypted or not)
- Data for professional (studio and manufacturing) purposes

INA.4 Protection of Software Information

As described in the normative text, this specification recommends that interest groups implementing ASID should build a system on which content owners can selectively determine whether they provide each element of Software Information in protected form or not. This determination of the content owner depends on the type of each data element and what purpose it is used for.

The reason for this recommendation is because ASID will provide not only value-added information that should be protected from tampering but also instructive and useful information that should be kept open for any receivers. If the latter one is encrypted and the access to it is restricted, the purpose of providing such information will not be accomplished. For example, as a simple case, a recipient may need to know what the content is before proceeding with the procedure to purchase it. Therefore, such information should be delivered in clear-text from.

On the other hand, the value-added information or information that is supposed to provide incentives for hackers, e.g. copy management information, must be robustly protected from malicious attacks.

ISRC is an expected example that may be transported in both protected form and clear-text form. One possible usage of ISRC is to identify a sound track that a recipient wants to have access to. The recipient may retrieve the sound track by a given ISRC. For this purpose, ISRC should be in clear text. On the other hand, ISRC will be used for monitoring the use of content and collecting a charge from a recipient. ISRC for this purpose will greatly provide

incentives for hackers to alter or tamper with it. Therefore, the same information as the clear-text ISRC will need to be transported separately in protected form.

In this case, the integrity of the clear-text ISRC could be verified by comparing it with the protected ISRC.

INA.5 Particular Rules for Implementing ASID

This document does not specify any particular technologies and rules for the implementation of ASID, and these should be determined by each interest group in negotiation with the recording industry. The following is examples of particular rules:

- Which data element is in use, or not in use
- Which data element is mandatory, or optional
- What is particular functionality in response to specific element, if necessary

INA.6 Dynamic Structure Concept

As the ASID implementation is not confined to a particular transport medium or end-point consumer device, some mechanism to provide vendor flexibility may need to be adopted in this document. There may be some cases that several data elements defined in the Extended Information Format are invalid on a particular distribution medium because of the uniqueness of its business model. To meet unique requirements of particular interest groups, this document needs to define a common mechanism that allows them to individually tailor the configuration of data elements defined in the Extended Information Format.

It may be reasonable to consider that the mechanism will require some registration authority that approves and manages variations of registered formats. It will also assign a unique ASID Format ID to an individual format registered. To provide receivers of audio content with capability to identify the configuration of the Extended Information, an assigned number of the ASID Format ID corresponding to the given configuration will be delivered as part of the Baseline Information.

Annex B (informative)

Example of a Payload Structure for ASID

It is possible to transmit Software Information in two separate components – a clear-text "Information Header" and an encrypted "Information Block." (see Fig. 2 below)

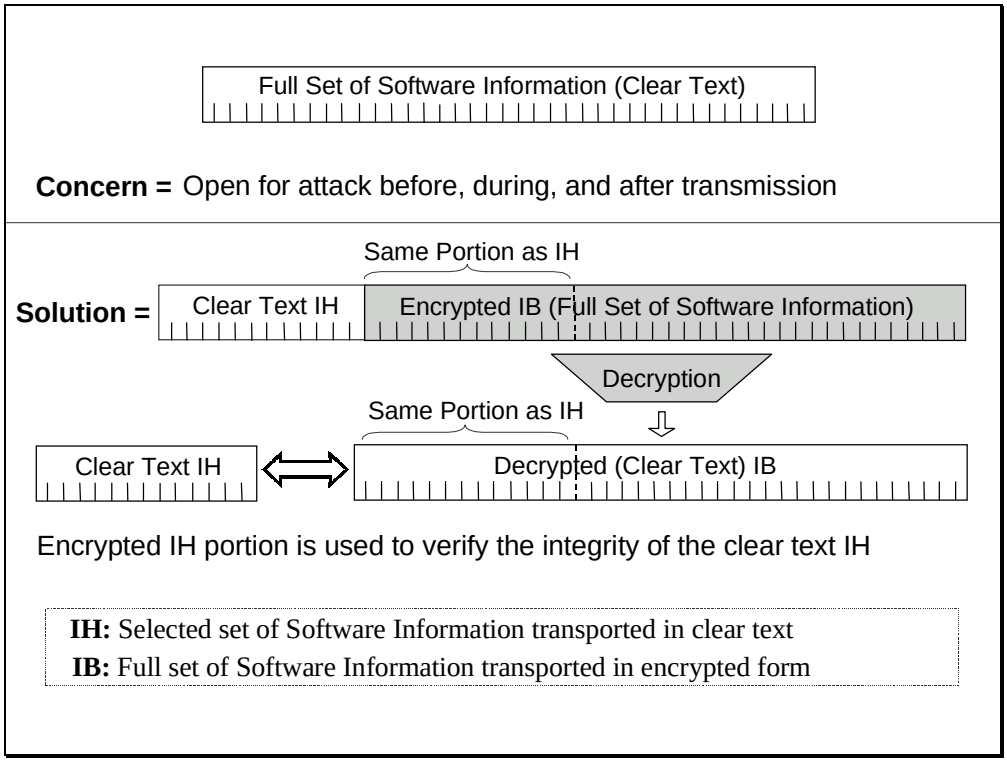


Fig. 2: Example of a Payload Format to Protect Software Information

INB.1 ASID Information Header (clear text)

The ASID Information Header (IH) could consist of data elements that allow access from any receivers to let them widely know the basic attributes of the audio content. This field could be transmitted in a fixed-length header of the audio data packet. Possible examples for elements transmitted in this field are as follows:

- Full set of Baseline Information
- Some appropriate elements involved in the Extended Information Format

INB.2 ASID Information Block (encrypted)

The ASID Information Block (IB) could consist of the whole Software Information (full set of the Baseline Information and the Extended Information) in an encrypted form, including a

second instance or copy of the information transmitted on the ASID IH. This information could be transmitted in a content file as an XML tag, for example.

Inclusion of the second copy of the IH would provide an opportunity to verify the integrity of the clear-text IH. The receiver is able to identify whether the IH has been tampered or not by comparing it with the corresponding elements included in the protected IB. In case that it has been determined the IH was tampered or altered, subsequent use of the audio content should be prohibited as described in the normative text. Possible examples of a logic flow to control content access can be found in the next annex.

The secondary advantage of including the second copy would be an ability to allow the original ASID IH to be removed from active storage of the receiver devices.

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