

STANDARDS AND INFORMATION DOCUMENTS

Call for comment on DRAFT AES Information Document AES74 Conformance Questionnaire

This document was developed by a writing group of the Audio Engineering Society Standards Committee (AESSC) and has been prepared for comment according to AES policies and procedures. It has been brought to the attention of International Electrotechnical Commission Technical Committee 100. Existing international standards relating to the subject of this document were used and referenced throughout its development.

Address comments by E-mail to standards@aes.org, or by mail to the AESSC Secretariat, Audio Engineering Society, PO Box 731, Lake Oswego OR 97034. **Only comments so addressed will be considered.** E-mail is preferred. **Comments that suggest changes must include proposed wording.** Comments shall be restricted to this document only. Send comments to other documents separately. Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

This document will be approved by the AES after any adverse comment received within **six weeks** of the publication of this call on <http://www.aes.org/standards/comments/>, **2020-08-14** has been resolved. Any person receiving this call first through the *JAES* distribution may inform the Secretariat immediately of an intention to comment within a month of this distribution.

Because this document is a draft and is subject to change, no portion of it shall be quoted in any publication without the written permission of the AES, and all published references to it must include a prominent warning that the draft will be changed and must not be used as a standard.



The AES Standards Committee is the organization responsible for the standards program of the Audio Engineering Society. It publishes technical standards, information documents and technical reports. Working groups and task groups with a fully international membership are engaged in writing standards covering fields that include topics of specific relevance to professional audio. Membership of any AES standards working group is open to all individuals who are materially and directly affected by the documents that may be issued under the scope of that working group.

Complete information, including working group scopes and project status is available at <http://www.aes.org/standards>. Enquiries may be addressed to standards@aes.org

The AES Standards Committee is supported in part by those listed below who, as Standards Sustainers, make significant financial contribution to its operation.



audio-technica



CLAIR



WEISS



LAWO



This list is current as of 2020/7/30

DRAFT

AES Information Document

AES74 Conformance Questionnaire

Published by
Audio Engineering Society, Inc.
Copyright ©2020 by the Audio Engineering Society

Abstract

This document is a call for comment on a draft non-normative survey instrument that assesses the conformance of a given media network directory scheme to AES standard AES74-2019, "Requirements for Media Network Directories and Directory Services". The purpose of this call for comment is to confirm that the questions in the questionnaire are clear and accurate representations of the requirements specified in AES74.

Comments received will be used to create a final copy of the survey instrument, which will be used for an AES study to analyze the AES74 conformance of current media network directory schemes. The study will survey both standards-based and non-standards-based directory/discovery systems, and will publish a summary of the results in an AES Report.

The study will be done collaboratively with the proponents of the various schemes surveyed.

The questions below apply equally to public standards, industry specifications, and proprietary products. In every case, the document seeks to analyze functional details of the surveyed scheme's stated functions, to determine where those functions do and do not fulfill the requirements stated in AES74-2019.

The questionnaire does not assess quality of concepts or implementations - the focus is completely on functional conformance.

An AES standards information document implies a consensus of those directly and materially affected by its provisions who have approved it as representing the views of their AESSC subcommittee but not of the AES as a whole. It is intended as a guide to aid the manufacturer, the consumer, and the general public. The existence of an AES information document does not in any respect preclude anyone, whether or not he or she has approved the document, from manufacturing, marketing, purchasing, or using products, processes, or procedures not in agreement with it. Publication does not assume any liability to any patent owner, nor does it assume any obligation whatever to parties using the document. This document is subject to periodic review and users are cautioned to obtain the latest edition.

Contents

- 1. **Scope**..... 4
- 2. **References** 4
- 3. **Definitions** 4
- 4. **The questionnaire**..... 4
 - 4.1. Summary description..... 4
 - 4.2. Specific questions..... 5

Foreword

A media network contains two primary sets of services: (1) a *media transport set*, which is responsible for transporting synchronous media samples, and a (2) *system control set*, which is responsible for the remote control of devices and the control of media transport traffic.

These primary service sets require at least two support services: (a) a *time* service, which allows synchronization of samples between devices, and (b) a *directory*, which allows devices, device services, and media streams to be recorded in a common database that may be queried as required for network operation.

The AES74-2019 standard specifies a set of functional requirements for media network directories in professional audio applications in the fields of sound reinforcement, public address, sound recording, electronic music, broadcasting, and cinema. The standard does not address consumer, automotive, or telecommunications applications.

AES74-2019 does not define a specific media network directory architecture - it only specifies functional requirements for such architectures.

This questionnaire is not a standard. It is a survey instrument that may be used to assess a given media network directory scheme's functional conformance to AES74-2019.

The principal writing group members who contributed to this document were: F. Bergholtz, R. Cabot, J. Berryman, S. Jones, A. Kuzub, M. Lave, G. Linis, S. Price, A. Rosen, S. Scott, G. Shay, M. Smaak, P. Stevens, P. Treleaven, and P. Waddell.

J. Berryman led the writing group.

Morten Lave
Chair, working group SC-02-12
2020-07-09

0 Introduction

This document is a survey instrument that assesses the conformance of a given media network directory scheme to AES standard AES74, "Requirements for Media Network Directories and Directory Services".

This document is for an AES study to analyze the AES74 conformance of current media network directory schemes. The study will survey both standards-based and non-standards-based directory/discovery systems, and will publish a summary of the results in an AES Report.

The study will be done collaboratively with the proponents of the various schemes surveyed.

The study is not intended to compare quality or fitness for use of the various directory schemes it surveys. The report will address AES74 functional compliance only.

By publishing the study report, the AES aims to inform future directory implementations, thereby rendering them more powerful, versatile, scalable, and easy to use. This is expected to increase interoperability of media network products in the long run.

The AES intends the study report to be interesting to media network designers and users, and media network equipment manufacturers.

1. Scope

This questionnaire is a checklist for assessing the conformance of a media network directory scheme to AES74-2019. It is not intended to assess quality or fitness for use.

The questions apply equally to public standards, industry specifications, and proprietary schemes.

2. References

AES74. AES standard for audio applications of networks - Requirements for Media Network Directories and Directory Services, Audio Engineering Society, New York, NY., US.

3. Definitions

See [AES74].

4. The questionnaire

4.1. Summary description

Please address:

1. Intended applications
2. Size ranges of target media networks
3. Features provided
4. Platforms supported
5. Any other salient general attributes.

4.2. Specific questions

Table 1. Questionnaire

AES74 Section	Question Number	Criterion
4	FUNCTIONALITY	
4.1	Registration / deregistration	
	4.1-1	It is possible for entities to be registered in, and deregistered from, the directory.
	4.1-2	The directory provides a network API for registration of entities.
	4.1-3	Each entity described by a directory has its own entry.
4.2	Querying	
	4.2-1	Any client can identify and monitor the entities in the media network.
	4.2-2	An entity can confirm its registration status.
	4.2-3	Media network management processes can update and report entity data and other data such as security parameters and access permissions.
4.3	Subscriptions	
	4.3-1	The directory service supports subscriptions.
4.4	Persisting queries	
	4.4-1	The directory service supports persisting queries.
4.5	Discovery <i>The criteria in this section apply only if the directory in question aims to support discovery. Not all directories support discovery. The Internet DNS does not, for example.</i>	
	4.5-1	Directory services accept entity self-registration and de-registration.
	4.5-2	Directory services support queries.
	4.5-3	Directory services support persisting queries, i.e. subscriptions to notifications of additions, changes, and deletions of entries that match the query.
4.6	Representational capability	
	4.6-1	The directory supports multiple entry types for registering multiple kinds of entities.
	4.6-2	Directory entry format and contents are described by well-formed schemas.
	4.6-3	The directory specification specifies the minimum required subset of entry types.
	4.6-4	The directory provides a means for implementations to extend the schema to support additional nonstandard entities.
	4.6-5	Queries can use entry property names and values as defined by the Directory schema.

AES74 Section	Question Number	Criterion
5.	DIRECTORY ACCESS	
	5.1-1	Directory services are accessible over the network.
	5.1-2	Directory services use entity names and other entity attributes as defined by schemas.
	5.2-1	Directory access is via one or more stable, well-specified protocols.
6.	COEXISTENCE OF MULTIPLE DIRECTORIES	
	6-1	It is possible for multiple directories to coexist within a given data network.
7.	NESTED DIRECTORIES	
	7-1	The directory allows registration of other directories ("nested directories") as entities.
	7-2	Nested directories need not be stored in the same physical locations as their parents.
7.1	Entity Paths	
	7.1-1	Directory entries are identified by entity paths. An entity path is an ordered set of names: <outermost ancestor name> ... <grandparent name> <parent name> <entity name>
	7.1-2	Entity path syntax conforms to the IETF URI scheme described in [RFC 3986]. For example: ODA://MyCompany/Operations/PagingSys/LoadingDock/Amp1
7.2	Multiple ancestry	
	7.2-1	A given directory can be registered in more than one parent directory ("multiple ancestry").
7.3	Entity name resolution	
	7.3-1	In queries, entity name resolution uses the following algorithm: <ul style="list-style-type: none"> • If the query specifies an entity path, a direct lookup shall be made in the designated directories as specified by the entity names in the entity path; • If the query specifies only a simple entity name, a lookup in the client's parent directory shall be attempted; if it is not found there, the lookup shall fail; • If the query specifies multiple entity attributes, the lookup shall generally proceed according to the rules of the query language.

AES74 Section	Question Number	Criterion
8.		DATA NETWORK CONSIDERATIONS
8.1		Data network type independence
	8.1-1	The directory can be implemented over a variety of network types, including non-IP networks.
8.2		Data network topology independence
	8.2-1	Entity names and paths do not depend on the underlying data network's topology.
	8.2-2	Entity names, paths, and attributes survive reorganization of data networks and network addresses.
8.3		Minimal effect on data network infrastructure
	8.3-1	Adding/changing/deleting new directory entries requires no infrastructure administration (e.g. IT department) activity.
	8.3-2	Adding/changing/deleting new media networks and their directories requires minimal or no infrastructure administration (e.g. IT department) activity.
8.4		Shared data networks
	8.4-1	Directories that share a common data network do not interfere with each other.
	8.4-2	One media network's directory is not detectable or accessible by a different media network's entities unless specific permissions have been granted.
	8.4-3	With suitable permissions, an entity can be registered simultaneously in more than one directory.
8.5		Discoverability
	8.5-1	Directory services are discoverable. <i>Please explain how.</i>
9.		SECURITY AND ACCESS CONTROL
9.1	Security	
	9.1-1	Directory service clients authenticate the directory service.
	9.1-2	Directory services authenticate connected clients.
	9.1-3	Mechanisms are provided to ensure that directory service traffic is safe from eavesdropping and tampering.
9.2		Access control
	9.2-1	Directory services provide access control features that define the scopes of directory interactions that a given user is permitted to perform. In this context, "user" may mean a person, a device, a program, or any other accessor that can be identified by some kind of unique ID.

AES74 Section	Question Number	Criterion
10.	SCALABILITY	
	10-1	Directory supports local network applications
	10-2	Directory supports applications with multiple IP subnets.
	10-3	Directory supports wide-area network applications
	10-4	Directory is designed to support populations up to 1,000 entities.
	10-5	Directory is designed to support populations up to 10,000 entities.
	10-6	Directory is designed to support populations up to 100,000 entities.
	10-7	Directory is designed to support populations of more than 100,000 entities (please state design limit).
10.1	Performance	
	10.1-1	<p>Describe Directory service performance design goals. Consider performance under the following conditions:</p> <ul style="list-style-type: none"> • Distribution of an update to many persistent query subscribers; • Servicing many simultaneous queries - this is particularly important for system startup; • Recovering from loss of the active directory service.
10.2	Centralized and Distributed Implementation	
	10.2-1	Directory can be stored in a centralized server.
	10.2-2	Directory can be stored in a decentralized manner.
	10.2-3	Distribution of directory storage is not visible to clients
11.	RELIABILITY AND ROBUSTNESS	
	11-1	<p>Describe the product's reliability and robustness design goals. Possible answers include:</p> <ul style="list-style-type: none"> • Reliability and robustness levels only as inherited from network environment, without additional features; • Features sufficient to implement commercial online systems with high availability; • Features sufficient to implement mission-critical systems, including life-safety systems certifiable by safety authorities.
	11-2	Describe mechanisms used to support the reliability and robustness design goals listed in 11-1.
12.	EASE OF USE	
	12-1	Are advanced network administration skills required to set up a directory service?
	12-2	For small networks, does the directory scheme offer a plug-and-play mode that requires no preconfiguration work?

AES74 Section	Question Number	Criterion
Annex A.	IP-BASED DIRECTORIES	
A.1	Directory addressing	
	A.1-1	Directory can operate with either IPv4 or IPv6 addressing.
	A.1-2	Directory services use Dynamic Host Configuration Protocol (DHCP) to determine their own IP address(es).
	A.1-3	Directory services register their hostnames in the IP Domain Name Service (DNS).
	A.1-4	Directory services provide service names that can be used to register DNS SRV records.
A.2	Entity addressing	
	A.2-1	Directory entries address their respective entities using hostnames, not explicit IP addresses.
A.3	Serverless operation	
	A.3-1	Directory offers a serverless option that uses multicasting.
A.4	Multiple directories on the same network	
	A.4-1	Each directory instance has a unique DNS domain
A.5	Directory access protocol agility	
	A.5-1	<List message transport protocols supported>
	A.5-2	<List protocol data encodings supported>
	A.5-3	<List directory access protocols supported>
A.6	SDP media profiles	
	A.6-1	Directory can store recommended Session Description Protocol (SDP) media profiles for entities that use SDP.