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Internet Streaming Media Alliance Ultravox Provisional Specification

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AND CONDITIONS OF USE

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Document Status

This version of the document is version 1.0 of the ISMA Ultravox Specification. It is approved by the Technical Committee and by the ISMA Board of Directors to be technically mature. According to the ISMA work item process, it has reached the status of an *External Provisional Specification*. In order to reach the status of a Final Specification two independent implementations and interoperability testing are needed. Please contact ISMA if you can provide evidence of this.

1   Acronyms & Terms

DP	Distribution Point
AV	Audio-Visual
HTTP	Hyper Text Transport Protocol [6]
IETF	Internet Engineering Task Force
ISMA	Internet Streaming Media Alliance
RFC	Request For Comments
RTP	Real time Transport Protocol [4]

2   Definitions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [1].

3   Scope

Ultravox is an HTTP-based streaming protocol that provides a simple and light-weight framing format to carry interleaved meta-data and codec-data. It is the successor of Shoutcast [2], which is a widely deployed streaming protocol on the Internet. Developed by AOL, Ultravox has been adopted and is now maintained by the ISMA. Nevertheless, current information on Ultravox is still available at the developer web site [3].

In a live Ultravox broadcasting system, there are three components: a live Broadcaster that performs the real-time encoding, the Distribution Point (DP) that receives the encoded stream from the Broadcaster and acts as a high performance stream replicator, and a Listener that connects to the DP to obtain and play the stream.

When Ultravox is used to stream from a file, the Broadcaster is not required and the DP acts as the file server, wrapping the data into Ultravox frames. These basic Ultravox components are illustrated in Fig. 1.
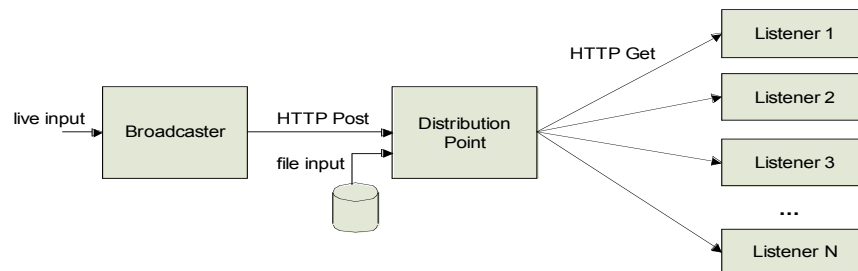

Figure 1: Ultravox architecture and components.

4 Document Structure

This ISMA specification consists of three parts:

1. ISMA Ultravox Part 1: Introduction (this document) [informative]

2. ISMA Ultravox Part 2: Ultravox 3.0 Protocol Specification [normative]

3. ISMA Ultravox Part 3: Transport of MPEG-4 Codecs [normative]

Part 2 and 3 describe the *core* Ultravox transport protocol and the extensions that are needed to carry MPEG-4 codecs. These are the normative parts of this specification. This document is informative only. In order to better understand the role of these different components it is useful to compare the Ultravox protocol stack with the more common protocol stack of RTP [4], as illustrated in Fig. 2.

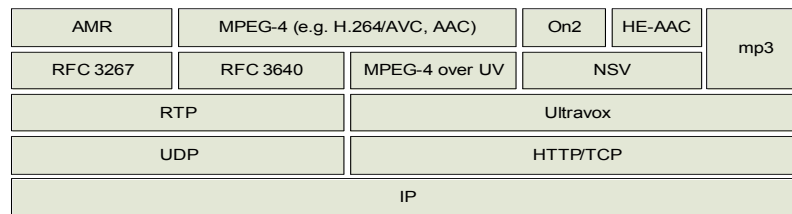| AMR	MPEG-4 (e.g. H.264/AVC, AAC)	On2	HE-AAC	mp3
RFC 3267	RFC 3640	MPEG-4 over UV	NSV	
RTP		Ultravox		
UDP		HTTP/TCP		
IP				

Figure 2: Comparison of protocol stacks when carrying AV over Ultravox and RTP.

As can be seen, Ultravox can be compared to RTP in the sense that it provides some basic transport mechanisms that can be used to carry various media formats. File formats which are *streamable* (such as mp3) can be carried directly over Ultravox. In order to carry non-streamable formats or multiplexed audio and video, an adaptation layer is required. This adaptation layer can be compared to the various payload formats available for RTP (e.g. RFC 3267 to carry AMR). For example, the NSV file format is used in current deployments for multiplexing and synchronizing On2 video and HE-AAC audio when transmitting over Ultravox. The core Ultravox transport protocol is described in Part 2 of this specification and is identical to version 3.0 of the Ultravox protocol as developed by AOL.

In addition, a special adaptation layer called "MPEG-4 over Ultravox" is specified by the ISMA which aims to carry any MPEG-4 codec over the core Ultravox transport protocol. This layer is described in more detail in Part 3 of this specification and can be best compared to RFC 3640 [5], which provides analog functionality for RTP transport.

References

[1]   IETF RFC 2119: "Key words for use in RFCs to Indicate Requirement Levels", S. Bradner, March 1997.

[2]   Shoutcast Home Page, http://www.shoutcast.com/

[3]   Ultravox Reference Site, http://ultravox.aol.com/

[4]   IETF RFC 3550: "RTP: A Transport Protocol for Real-Time Applications", Schulzrinne H. et al., July 2003.

[5]   IETF RFC 3640: "RTP Payload Format for Transport of MPEG-4 Elementary Streams", J. Van Der Meer et al., Nov 2003.

[6]   IETF RFC 2616: "Hypertext Transfer Protocol – HTTP/1.1", R. Fielding et al., June 1999.