

# Audio Video Sync Monitor

Monitor and track problems of synchronization between audio and video in real time

## Product information

### Product

- Software
- Hardware <sup>(1)</sup>

### Results

- Skew (misalignment between audio and video, in milliseconds)
- Video time offset (in milliseconds)
- Audio time offset (in milliseconds)

### Input types

- Capture card, device
- IP streaming <sup>(2)</sup>
- File

### Input formats

- Any video codec
- Any audio codec
- Uncompressed video
- Uncompressed audio

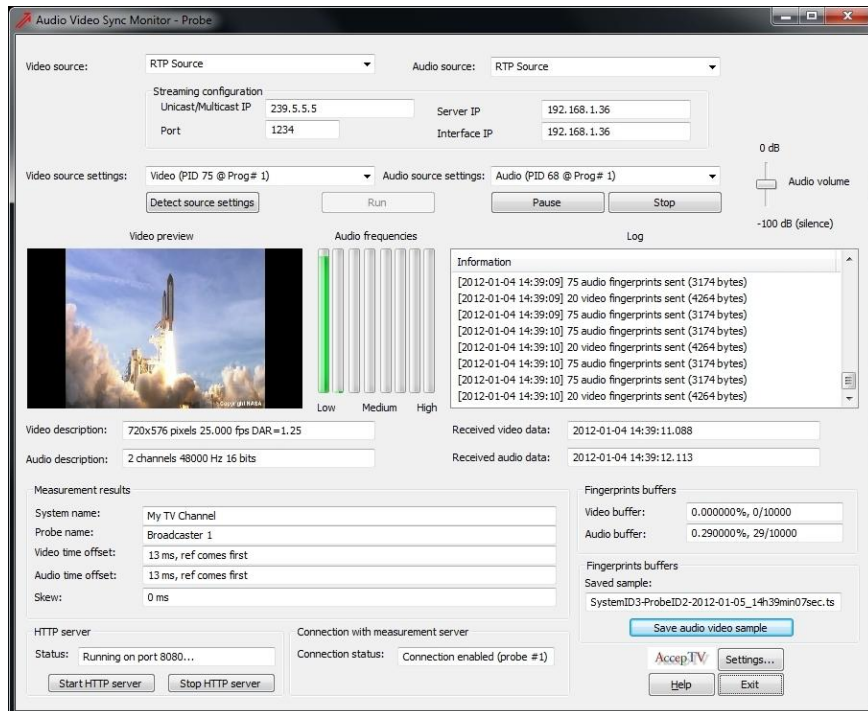
### Applications

- Broadcast / broadband monitoring <sup>(2)</sup>
- Broadcasters/operators benchmarking <sup>(2)</sup>
- Audio video equipment Research and Development <sup>(4)</sup>

<sup>(1)</sup> Hardware (PC) may be supplied as an option

<sup>(2)</sup> For IP video monitoring, also see our other products VQM and MPEG Monitor

<sup>(3)</sup> Also see our other product Video Quality Analyzer



Good synchronization between audio and video (also called "lip sync") is fundamental for television and video since no end-user can cope with misaligned sound and pictures.

But measuring synchronization has always been very difficult, imprecise and/or intrusive (forcing engineers to embed watermarks in video and/or audio). Lip reading with faces recognition is also very risky and cannot be applied to any video content. That's why real time, precise and non-intrusive 24/7 monitoring of synchronization is often considered as impossible.

Luckily, Audio Video Sync Monitor is different.

Audio Video Sync Monitor (AVSM) is a very innovative solution to monitor audio video synchronization in a non-intrusive manner (without modifying the monitored service).

AVSM computes audio fingerprints and video fingerprints, compares them to measure synchronization between audio in video and provides very precise results.

AVSM can trigger alerts (warnings, errors) if a synchronization problem happens. It can also save audio video samples which will show the problem.

AVSM supports audio video input from:

- Audio video capture devices
- IP streaming (UDP, RTP)
- Audio video files (useful for offline measurement, R&D and product evaluation)

AVSM is not dependent on specific hardware, you can install it on any Windows™ PC. You can even run it on a laptop!

AVSM is constituted by 2 types of agents: several probes and one server. At least two probes must be used (so the signal has to be captured at two different places). One probe acts as a "reference probe" while the other probe(s) is(are) "test probe(s)".

Each probe receives audio and video and computes audio fingerprints and video fingerprints, and then sends these fingerprints to a server. The server continuously receives and compares the audio and video fingerprints from each test probe with the ones from the reference probe.

This comparison produces:

- The video time offset between the test probe and its reference probe
- The audio time offset between the test probe and its reference probe
- The **skew** which is the misalignment between audio and video on the test probe.

AVSM can send alerts by email (warning and/or error reports) if the skew gets beyond a user-defined threshold for a user-defined duration.

All measured data are saved to disk and can be retrieved between two user-chosen dates and times, thanks to the integrated HTTP server.

Skew curves and statistics can be remotely monitored in real time in any web browser.

At last, AVSM can save audio video samples when a synchronization problem happens (from a few seconds before the problem, to several seconds after the problem).

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## Key features

### Skew monitoring

AVSM measures the skew (misalignment between audio and video) continuously and from several different types of audio video sources (capture devices, IP streaming and even files).

This measurement is totally non-intrusive: nothing is changed in your audio and video signals.

### Integrated web server and database

AVSM saves all measured data in an integrated database and includes its own web server so you can remotely:

- Monitor audio video synchronization
- Watch audio video samples of detected synchronization problems (saved from several seconds before the problem, to several seconds after the problem)
- Save an audio video sample of the audio video signals at a probe (from several seconds before, to several seconds after)

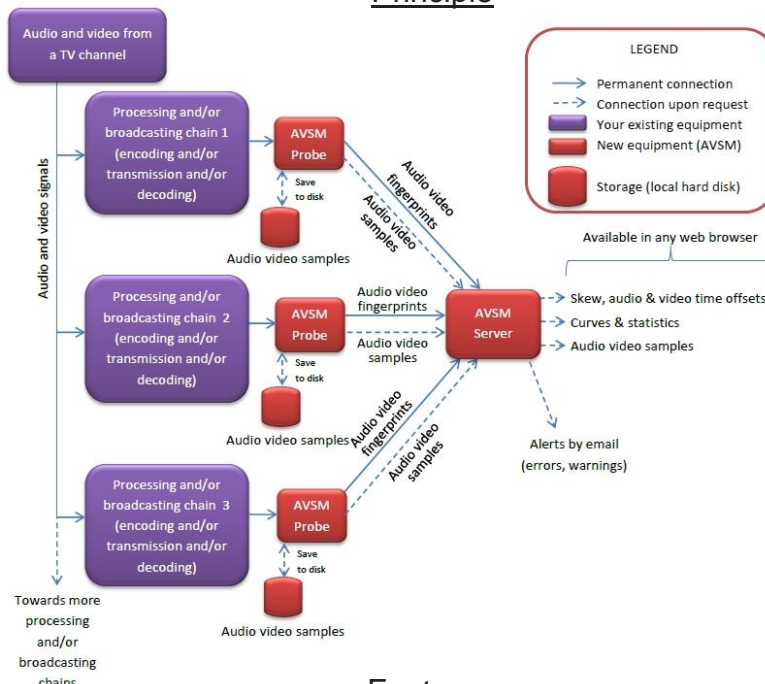
### More software, less hardware

The probes and the skew measurement server can all run on the same PC.

And more, a single server can process probes capturing different systems (to monitor different TV channels for example).

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## Principle



## Features

### Input

Uncompressed YUV or encoded video (virtually any codec: MPEG-2, H.264, VC-1...)  
Uncompressed audio or encoded audio (virtually any codec: MP3, AAC, AC3...)  
Support for DirectShow decoding filters  
Any resolution (mobile, SD, HD or more), any frame rate  
Any audio sampling rate (if not 48 kHz, audio will be resampled), stereo or mono

### Input source

AVI files (useful for offline measurement or product evaluation)  
Capture card or device (ex: Blackmagic Design, Aja, etc.)  
Streaming video (RTP, UDP)

### Network

Bandwidth required for traffic from probe to server: < 10 kB/s  
Bandwidth required for traffic from server to probe: < 1 kB/s  
Buffering at both sending and receiving sides to cope with unstable networks  
Automatic reconnection

### Measurement

Skew (misalignment between audio and video between 2 probes), in milliseconds  
Video time offset between 2 probes, in milliseconds  
Audio time offset between 2 probes, in milliseconds  
Measures precision: 1 millisecond  
Minimum delay before detection: 2.5 seconds (for faster detection, please contact us)

### Results

Curves, values (in milliseconds) and statistics of skew, video time offset and audio time offset between two user-defined dates and times (average and max value over each second)  
Real time monitoring: curves and statistics in real time  
Reports generation (CSV)  
Audio video samples when sync problems happen (saving from several seconds before the problem, until several seconds after the problem).

### Extra

Integrated HTTP server for distant results consultation and built-in database to store results  
Audio volume control  
Possible command line usage  
Measurement warning and errors by email  
Real time operating mode  
Remote saving of audio video samples (the server can force a probe to save a sample)  
Remote download of audio video samples (the server can download samples from probes)

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