

Live Video Encoder – Acoustic Echo Cancellation (AEC)

This document describes recommended settings for Acoustic Echo Cancellation in a video streaming/video chat application.

Requirements:

- nanoStream Live Video Encoder running on Windows Vista or Windows 7
- RTMP Server (Wowza recommended)
- Flash Media Player or other client
- Microphone and Loudspeaker setup to let echo cancellation work (no headset)

NOTE: These settings are dependent on overall system configurations and may vary between different version releases of encoder, server and client components.

General Description

When using microphone and speaker setups for audio/video communication, a known acoustic “echo” effect is sometimes leading to disturbing feedback loops. To remove these echoes, a special technique called “Acoustic Echo Cancellation (AEC)” may be used.

Nanocosmos AEC works by installing a special audio driver called “VoiceCaptureDriver”.

There are 2 operation modes of this driver:

- usage within nanoStream Live Video Encoder
Switching on AEC in Live Video Encoder automatically uses the VoiceCaptureDriver
- usage within DirectShow or other applications
The VoiceCapture driver may be directly used as an audio recording source; additionally the original audio source needs to be configured in the driver properties.

Notes:

- All effects are dependent on hardware and software system setup, microphone and loudspeaker positions.
- This driver uses the Microsoft “Voice Capture DSP” driver available only with Windows Vista and 7.

Sample / Test Setup

The nanoStream.html sample web page contains a sample implementation to show how to use the AEC feature within Live Video Encoder. Switch on "AEC" in the "Advanced Options" area.

Plugin / ActiveX Configuration

To switch on AEC, use the SetConfig method of the Plugin Interface:

```
SetConfig("AcousticEchoCancelation","1");
```

The AEC mode supports some additional configuration settings to fine tune AEC behavior. See nanoEncoder.js for sample code.

```
SetConfig("AEC:AesTimes", 2);
```

Specifies how many times the Voice Capture performs acoustic echo suppression (AES) on the residual signal.

Possible Values: 0, 1, 2 (default=0)

MS Property: MFPKEY_WMAAECMA_FEATR_AES

```
SetConfig("AEC:Agc", 1);
```

Specifies whether the Voice Capture DSP performs automatic gain control

Possible Values: 0,1 (default=0)

MS Property: MFPKEY_WMAAECMA_FEATR_AGC

```
SetConfig("AEC:AecEchoLength", 1024);
```

Specifies the duration of echo that the acoustic echo cancellation (AEC) algorithm can handle, in milliseconds.

Possible Values: 128, 256, 512, 1024 (default=256)

MS Property: MFPKEY_WMAAECMA_FEATR_ECHO_LENGTH

Additional Information:

Microsoft Notes on Windows XP: <http://support.microsoft.com/kb/310507>

Microsoft Voice Capture:

[http://msdn.microsoft.com/en-us/library/ff819492\(v=vs.85\).aspx](http://msdn.microsoft.com/en-us/library/ff819492(v=vs.85).aspx)

[http://msdn.microsoft.com/en-us/library/ff819411\(v=vs.85\).aspx](http://msdn.microsoft.com/en-us/library/ff819411(v=vs.85).aspx)