

# *Spout to NDI*

<http://spout.zeal.co>

Convert between Spout and Newtek NDI sources.

Using the [Newtek NDI SDK](#)

<http://NDI.NewTek.com>

Version 2.003

"*Spout to NDI*" is a set of programs that allow Spout senders and receivers to share video, not only with each other but also by way of a network using the [NewTek](#) NDI ("Network Device Interface") protocol Version 3.7.

For more information about the NDI protocol see [here](#). This link is also available at any time by selecting Help > About.

# 1. Installation

Unzip "*SPOUTtoNDI\_V2002.zip*" in any convenient folder.

## Folders

SpoutToNDI

  \bin – contains the conversion programs

  \magic – contains Modules for Magic by [Magic Music Visuals](#)

## Runtime libraries

Before running any of the programs, install the [NDI tools](#) so that the the necessary Visual Studio 2013 runtime libraries are installed.

Spout to NDI programs are built using Visual Studio 2017. Runtime dll files are included in the \bin folder and are also embedded in the Magic modules. All the programs should run without further installations.

However, if you find that the programs still report missing dll's, you may need to install the Visual Studio 2017 runtime manually.

[Download from here](#). Scroll down to find "Microsoft Visual C++ Redistributable for Visual Studio 2017". Download both the x64 and x86 versions. Install the x64 version before the x86 version.

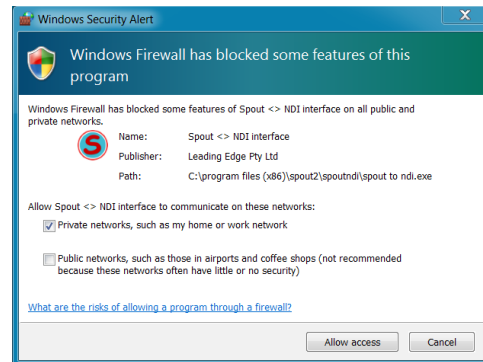
## 2. Operation

### 2.1 SPOUT to NDI

Start a Spout sender, such as the demo sender provided with the Spout installation. Then start "*Spout to NDI.exe*", located in the "bin" folder.

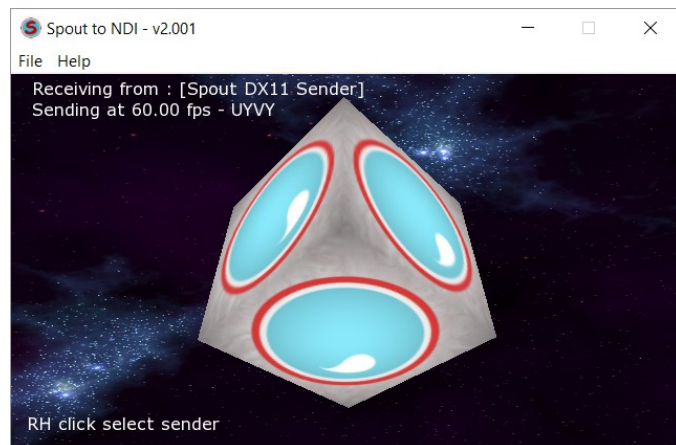
You might receive a warning about Firewall access because it is necessary for data to be transferred across a network.

Allow access as you require.



The demo Spout sender will be immediately selected. Subsequently you can RH click and select other Spout senders.

The sender is now available to any NDI receiver on the network.



To confirm this, start the Newtek Tools "Video Monitor" as as described [below](#).

You can repeat the test on another computer on the same network.

Notice that the name of the sender is preceded by the name of your computer as it is identified on the network. For example, if your computer is named "MY COMPUTER" you will see the demo sender as :

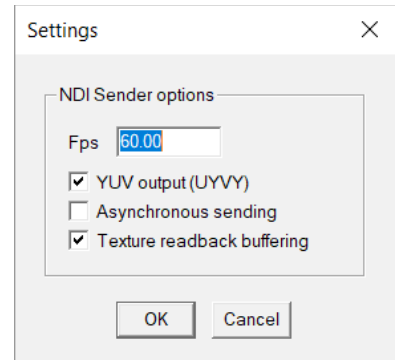
"MY COMPUTER (Spout DX11 Sender)"

## Settings

Choose NDI sender options using "File > Settings" from the menu.

### Fps

Enter the frames per second you wish to send to NDI, e.g. 29.97, 25 etc. The sender will be received at that rate.



### YUV output

This creates a sender in YUV (UYVY) format which is the most efficient for NDI throughput. The Openframeworks RGBA texture is converted to YUV using a shader for maximum speed.

### Asynchronous sending

This option activates an asynchronous sending mode where frames are sent without waiting until the previous one has been processed. The NDI system manages the buffering and synchronisation. This is the fastest sending method, and will over-ride the entered fps.

### Texture readback buffering

This increases efficiency of the transfer of GPU texture to CPU image pixels required by NDI. Disable if it causes problems such as stuttering. Otherwise it gives a significant improvement in performance.

## 2.2 NDI to SPOUT

If you have NDI senders running you can receive any one of them and produce a Spout sender which can then be used to share textures between applications on the receiving machine just as they would be on the source machine.

After installation of NDI tools, find the "Test Patterns" application and open it. An NDI sender will then be available on the network.

Then start "*NDI to Spout.exe*", located in the "bin" folder.

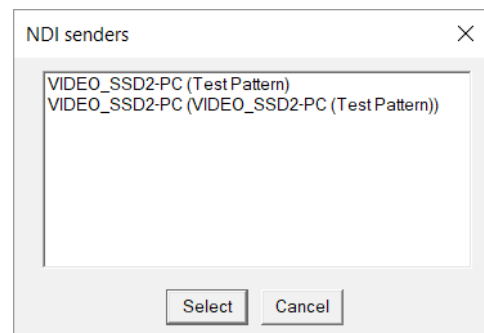


This can be started on any machine on the network but for testing start it on the source machine.

Now the NDI sender test pattern is being received and the output is a Spout sender of the same name preceded by the name of your computer as it is identified on the network. Run the Spout demo receiver and you will see it listed. It will also be available in any program that supports Spout input such as [Resolume](#) or [Magic](#).

### Selecting a sender

Right click to bring up a dialog with a list of NDI senders currently available on the network and select the one you want. In this case you can see the test pattern application as well as "Spout to NDI" which is also running and receiving from "Test pattern"



Sometimes the network may be temporarily unavailable or some other problem and NDI senders might disappear and re-appear in the list. This will not affect the selected sender and when that NDI sender comes back on line, the frames will resume. It may take some seconds for discovery of all the NDI senders on the network.

## 2.3 Magic

"MagicNDIsender.dll" and "MagicNDIreceiver.dll" are [Magic](#) plugin modules for sending to and receiving from NDI applications. Both 64bit and 32bit versions can be found in the "magic" distribution folder.

Magic does not have NDI support at the time of writing but may in the future, so these plugins could be useful in the meantime.

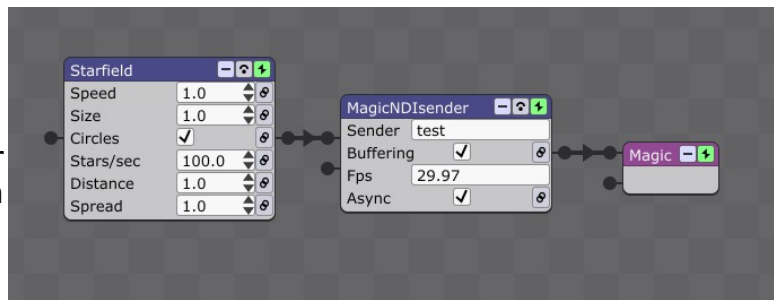
For the current version of Spout to NDI (Version 2.003) modules are compatible with the most recent version of Magic, Version 2.2 and higher. They can be found in "magic\Win32" and "magic\x64".

Modules compatible with earlier versions of Magic are in "magic\Vers\_2002\Win32" and "magic\Vers\_2002\x64".

The files can be copied to wherever the host application will find them. *Magic* allows "additional module folders" to be defined.

### MagicNDIsender

When the plugin is first activated, nothing will happen because there is no sender name yet. Type in a name and activate with the Enter key.



The NDI source is now available on the network. You can confirm this with the Newtek Video Monitor application.

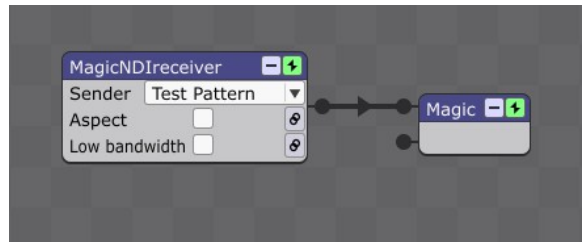
You can specify the frame rate of the NDI sender which is independent of the frame rate for Magic, or whether Vsync is enabled or disabled for the display. Default is 60fps. Other common frame rates are 24 (film), 25 (PAL), 29.97 (NTSC).

Async and Buffering options are the same as described for "Spout to NDI.exe". If Async is not selected, the sender clocks the output at the frame rate selected.

*Importantly, if you specify a sending frame rate without Asynchronous sending mode, Magic itself is clocked at this rate.*

## MagicNDIreceiver

When the plugin is activated, it will detect the first NDI sender running. If there is more than one sender, each can be selected using the "Sender" list control.



It can take a few moments to populate the list or to update after starting a new sender so be patient.

Once a sender is selected, the module will start receiving from it. If the network drops out, the last frame will be displayed and frames will resume when it comes back.

### Aspect

"Aspect" allows you to either fill the render window with the received image (off) which is the default, or preserve the aspect ratio (on).

### Low bandwidth

This will reduce the resolution of the received sender to preserve bandwidth with high resolution sources. The resolution is determined by the NDI system.

***Both plugins are dependent on "Processing.NDI.Lib.x64.dll" for a 64 bit application or "Processing.NDI.Lib.x86.dll" for a 32 bit application. The appropriate file has to be copied to the folder of the host application, not the folder where the plugin resides. Find it in the "MAGIC\NDI" distribution folder.***

## 3. OSX

### 3.1 Syphon2NDI

"*Syphon2NDI*" is the equivalent of "*Spout to NDI*" but for OSX using [Syphon](#) instead of *Spout*.

This has been developed by Nozomu Miura of [Techlife SG](#), and complements his work on network video sharing with [TCPSpout](#) and [TCPSyphon](#) and his open source [INetSyphon](#) SDK.

OSX machines using "*Syphon2NDI*" can receive textures from any application with *Syphon* support and share video over a network. Requirements are OSX 10.8+.

The applications are "*Syphon2NDIServer*" and "*Syphon2NDIClient*".

On a Mac, start any application with *Syphon* output. Then start "*Syphon2NDIServer*" and select the *Syphon* source. The *Syphon* texture will then be transmitted over the network using the Newtek NDI protocol and any machine on that network can access the video.

An OSX receiving machine can then use "*Syphon2NDIClient*" to select an NDI source and broadcast this as a *Syphon* texture to any applications on that machine with *Syphon* input.

A Windows receiving machine can use "*NDI to Spout*" to select an NDI source and broadcast this as a *Spout* texture to any applications on that machine with *Spout* input.

[Download](#) or [contact](#) from the [Techlife](#) website. Newtek

### 3.2 NDI tools

You can register with [Newtek](#) to receive a download link for useful tools. You will receive an email with a link to download the [NDI Tools](#).

These include a "Test Pattern" sender, a "Video Monitor" to receive from NDI senders and a "Scan Converter" screen capture application, which are most useful for use with *Spout to NDI*.



## 4. Licencing

### 4.1 Spout to NDI

"Spout to NDI" is released under the Simplified BSD licence.

Copyright (C) 2018. Lynn Jarvis, <http://spout.zeal.co/>, All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.

IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

### 4.2 Syphon2NDI

Copyright 2014-2016 z37soft (Nozomu Miura). All rights reserved. Details of licencing requirements on the Techlife website <http://www.techlife.sg/>.

### 4.3 Magic MDK

The Magic modules are developed with the Magic Module Development Kit (MDK) v2.11. Copyright (c) 2012-2017 Color & Music, LLC. All rights reserved.

The MDK is provided "as is" without any express or implied warranty of any kind, oral or written, including warranties of merchantability, fitness for any particular purpose, non-infringement, information accuracy, integration, interoperability, or quiet enjoyment. In no event shall Color & Music, LLC or its suppliers be liable for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or physical damage to hardware or storage media) arising out of the use of, misuse of, or inability to use the MDK,

your reliance on any content in the MDK, or from the modification, alteration or complete discontinuance of the MDK, even if Color & Music, LLC has been advised of the possibility of such damages.

#### **4.4 Newtek NDI**

Newtek NDI ("Network Device Interface") is copyright NewTek, Inc. Details of licencing requirements on the Newtek website <http://NDI.NewTek.com/>.