



Delta Media Server **Delta Workflow for New Users**

Overview Guide



Delta Workflow for New Users : Overview Guide

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Delta Workflow for New Users

Delta Workflow for New Users

This overview will help you get started. It covers how servers are connected, the Delta software is installed and used, how shows play and are controlled, the supported media formats, and where media is located and how it is organised. Here also you can assess storage and performance requirements.

Having read this, you should have confidence to dive into the full *Delta User Guide*, for detail on how to build, save and project sophisticated shows.

- [Managing Delta Servers](#) is your main resource for operating Delta Media Servers, and accessing and controlling servers over a network.
- [Managing Media for Delta Servers](#) will help you optimise, convert and manage various media resources to get the best performance.
- Stuck on terminology? See the [Brief Delta Glossary](#) on our support portal.

Workflow Overview

Workflow Overview

The environment

You have a display surface: this may be anything from a building or model, to a dome, a curved or flat screen, or LED panels or monitors. You have media and (except for panels) projectors.

The servers and control PC

If you have more than one server, these may need to be grouped, with Followers controlled via a Leader. Your system will also be set up so that you can connect with servers over a network, connecting the show creation and control software ('DeltaGUI') on a separate PC, or to control and manage by the web interface (the 'Stack' modules).

Delta Media servers are supplied with all software installed and licensed according to the original purchase. Licences can be extended to access further optional modules, but any version upgrades will need to be undertaken with 7thSense advice and support. DeltaGUI may be installed on any PC to be used for show building and control. DeltaServer and DeltaGUI software must be exactly the same version in order to communicate.

You will be able to preview your show by several routes and interact with it. Servers may not be easy to access, so learning how to switch them on and off, examine their status and control them is a priority. In most cases, your complete show system will need to be fully synchronised.

➤ [Install DeltaGUI Software on a PC](#) 

Mapping onto the display

Your Delta System of servers and software will be used first to ensure that the geometry (warping) of the media perfectly matches the display surface, and that overlaps and underlaps between channels (projectors or display panels) are blended or mapped for seamless perception. Colour adjustment can be used to balance channel differences, and you may choose to include auto-alignment software for accuracy and efficiency.

Putting the show together

You will then copy your media resources into server folder destinations so that they are available for building shows. This will include images, movies, and audio tracks. Other resources provided with Delta include geometry tools, adding and formatting text, source feeds and effects. By dragged these onto a show timeline, they can be layered, positioned and sequenced, and given transitions and edge effects. Timeline and external controls can be added for show flow, and for interacting with projectors and external show devices via Art-Net communications.

Managing the media

Having constructed and saved a show file, you may need to do more to optimise, secure and distribute the contents. This can include carving media resources between channels, content protection, converting movie formats and copying show files around a network of servers.

There is much more available to Delta Media Systems users, and our [user support portal](#) is the place to go to learn the detail.

Terminology

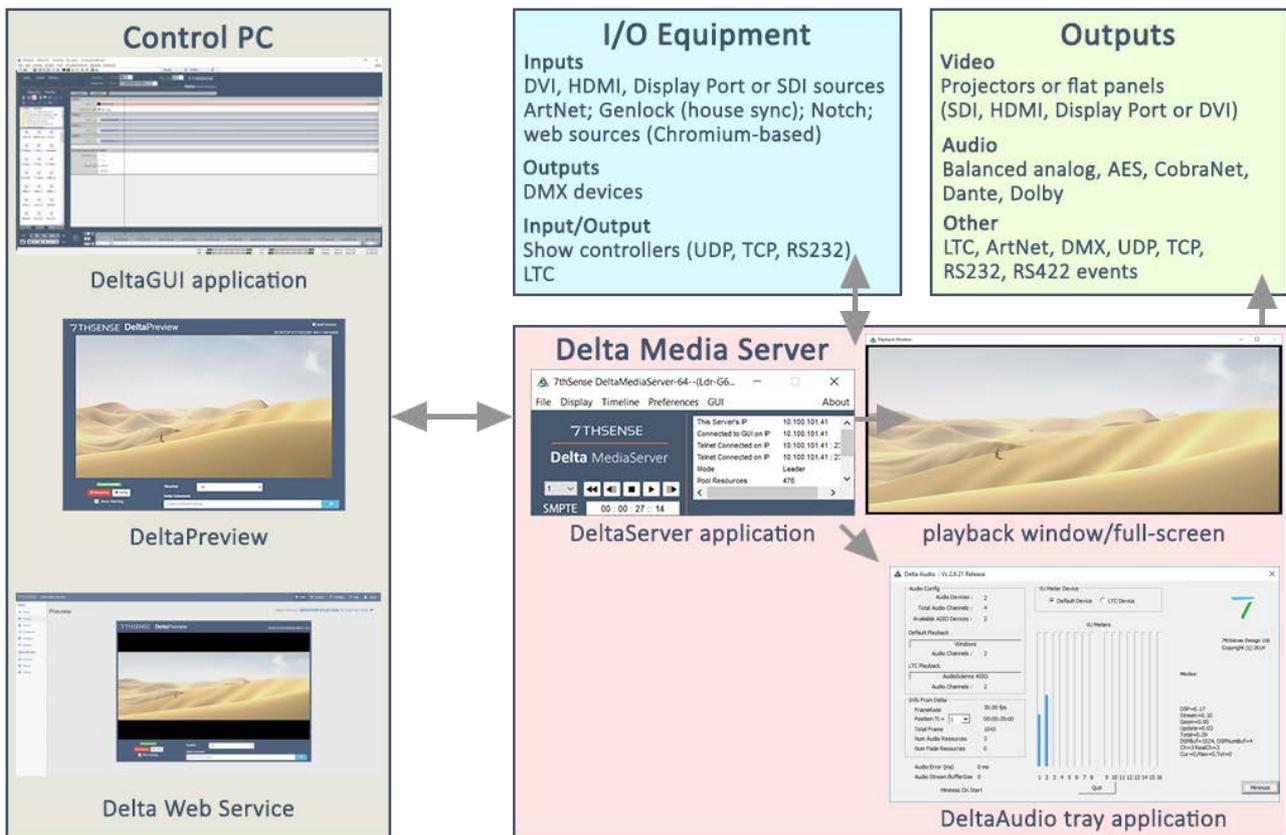
- See the [Brief Delta Glossary](#) on our support portal for any terms that you are unfamiliar with.

System Setup and Control PC

System Setup and Control PC

A Delta Media Server system comprises:

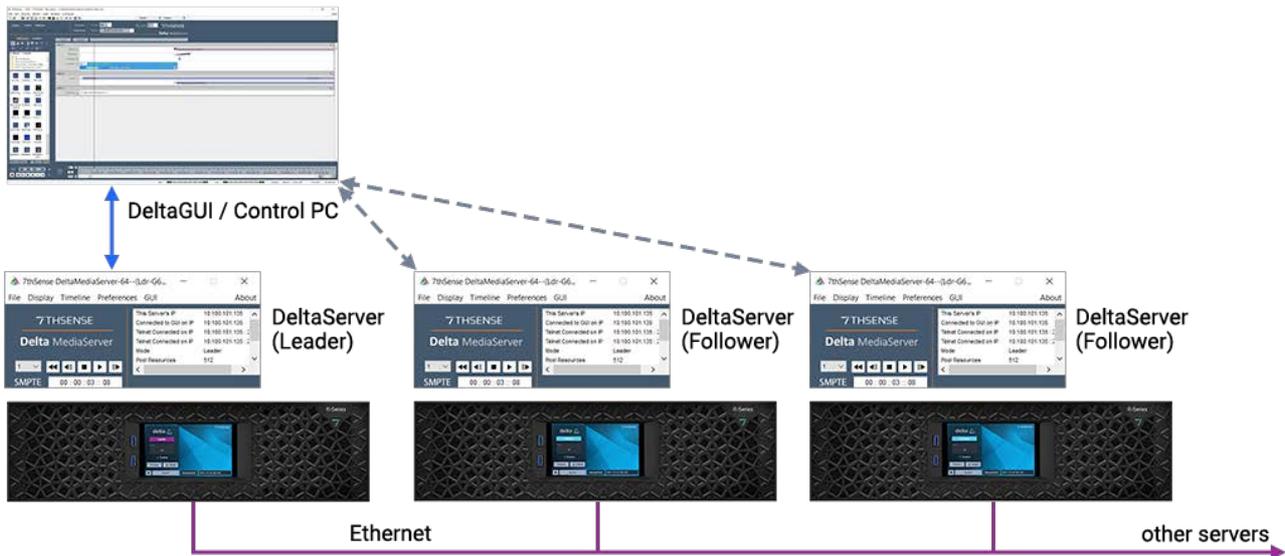
- one or more (networked) Delta Media Servers, each running the licensed **DeltaServer** software
- **DeltaGUI** show creation and management software, installed either on one of the servers or a separate PC.
- **displays** or projectors connected to the server graphics outputs and optionally:
- analog or digital **audio** equipment
- IP-connected equipment for device control, remote show control and preview, synchronisation etc.



- The **Stack** web interface provides browser-based overview, preview and control functions, scheduling, backup and restore.
- Delta up to 2.7: **DeltaMonitor** manages the server front panel, and provides service engineering options.
- Delta 2.8 and R-Series 10: **Watchdog** manages the front panel information and controls.
- **DeltaAudio** provides a common interface to audio devices.

Various modes of operation in Delta software are separate licensed options, and other 7thSense software is also available.

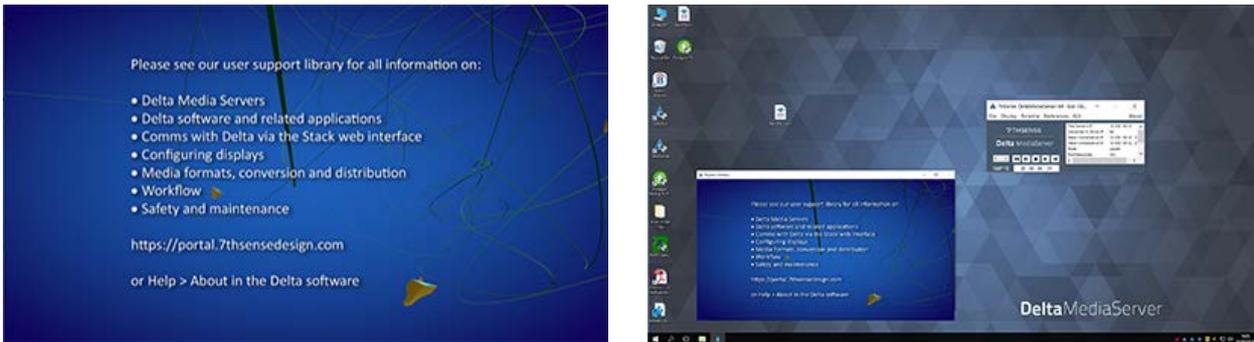
One control PC/server using the DeltaGUI software can control all servers either individually, or in Leader/Follower groups, anywhere on the same Delta network. The software version of the DeltaServer and DeltaGUI installations must be the same.



- For guidance on installing, connecting and maintaining Delta Media Servers, see our [Hardware Operation](#) guide.
- For full server hardware and network guidance see [Operating Delta Media Servers](#).
- For a full systems description, and using the DeltaServer and DeltaGUI software, see the appropriate [Delta User Guide](#).

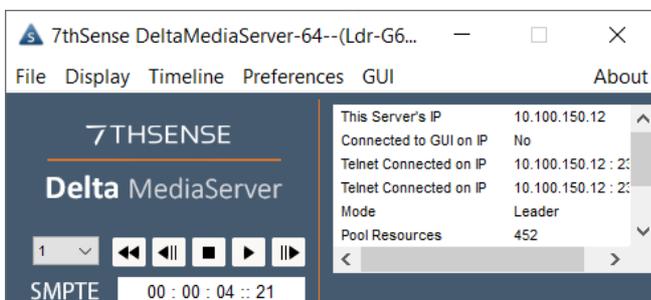
Switch-on and Running DeltaGUI

Once connected, switch on the Delta Media Server from the front panel. When booted, this will start the DeltaServer software and run the default show file. This will normally fill the display (below, left), so to see the server desktop (below, right), press F on the server keyboard to revert to windowed view:



You can now see the smaller Playback window, the DeltaServer control dialog, and can access the 'My Computer' file explorer, which will be renamed to the server name (e.g. Delta1234).

The **DeltaServer** control dialog shows IP Addresses, server Group, configuration details and playback controls:



Everything else, from managing media resources to building and programming shows, happens in **DeltaGUI**. There will be a shortcut to this on the server desktop, or you can control your shows from a separate networked PC by installing the software there.

Running DeltaGUI from a separate PC

To install DeltaGUI on another PC (e.g. a laptop), connect the new PC to the same network and use file explorer to navigate to the server: \\[IP address]\7thSense Data\Software & Drivers\Delta. (For older versions of Delta, \Software & Drivers was called \Software & Guides.) From here, first copy the Delta installer onto the separate PC, then right-click, and run as administrator. Install DeltaGUI only.

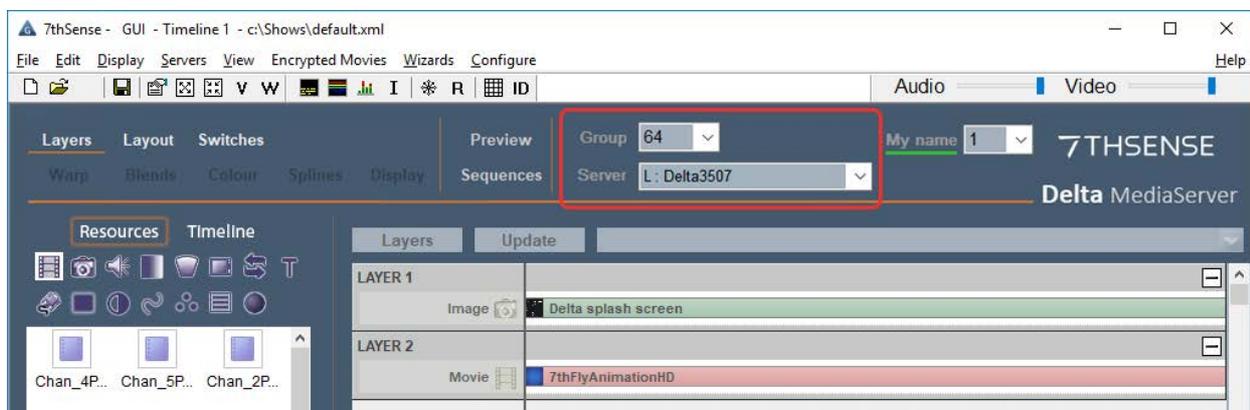
➤ See [Delta Software Install Options](#) 

From the server, you will find it useful to copy and install UltraVNC, for logging onto any server over IP. You can find this in: \\[IP address]\7thSense Data\Software & Drivers\Software\Remote Access\UltraVNC.

When DeltaGUI is run, it automatically looks for instances of DeltaServer that are currently running. If no automatic connection is made, there may be messages showing 'X' for a blocked group, or in red showing a mismatch in Delta software versions.

➤ If this is the case, see [Server Connections](#)

Where DeltaServer is running, the title bar of its dialog indicates what group the server has been assigned to as default. DeltaGUI will identify this server by its Group number and server name, e.g.: Group 63, Server M : Delta2901 where the L (or F) indicates Leader or Follower status, as here:

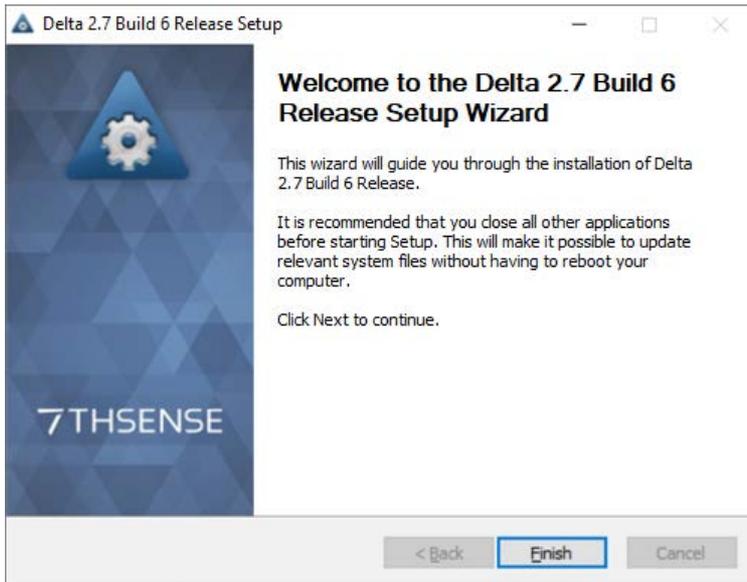


... and the current timeline shows what show and content is playing.

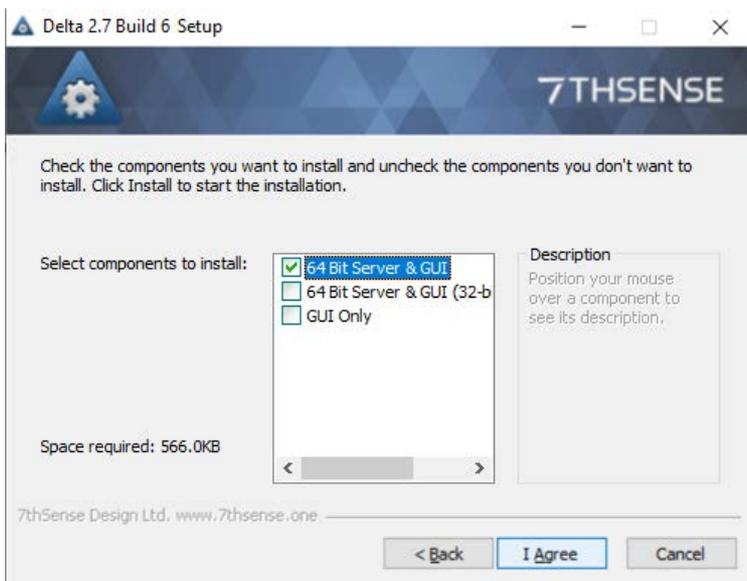
DeltaGUI Software Install Options

DeltaServer and DeltaGUI are pre-installed on Delta Media Servers. DeltaGUI can be run on any other PC on the same network, and will need to be installed there. Users will otherwise not normally need to run a Delta installation themselves.

The software can be found under C:\7thSense\Data\Software & Drivers\Delta. Run the 'Delta[version] x64 Setup.exe' file:



Agree to the terms and install what you require. Check 'GUI Only' if you are not installing on a server and only require DeltaGUI as a front end to networked servers.



32-bit Audio?

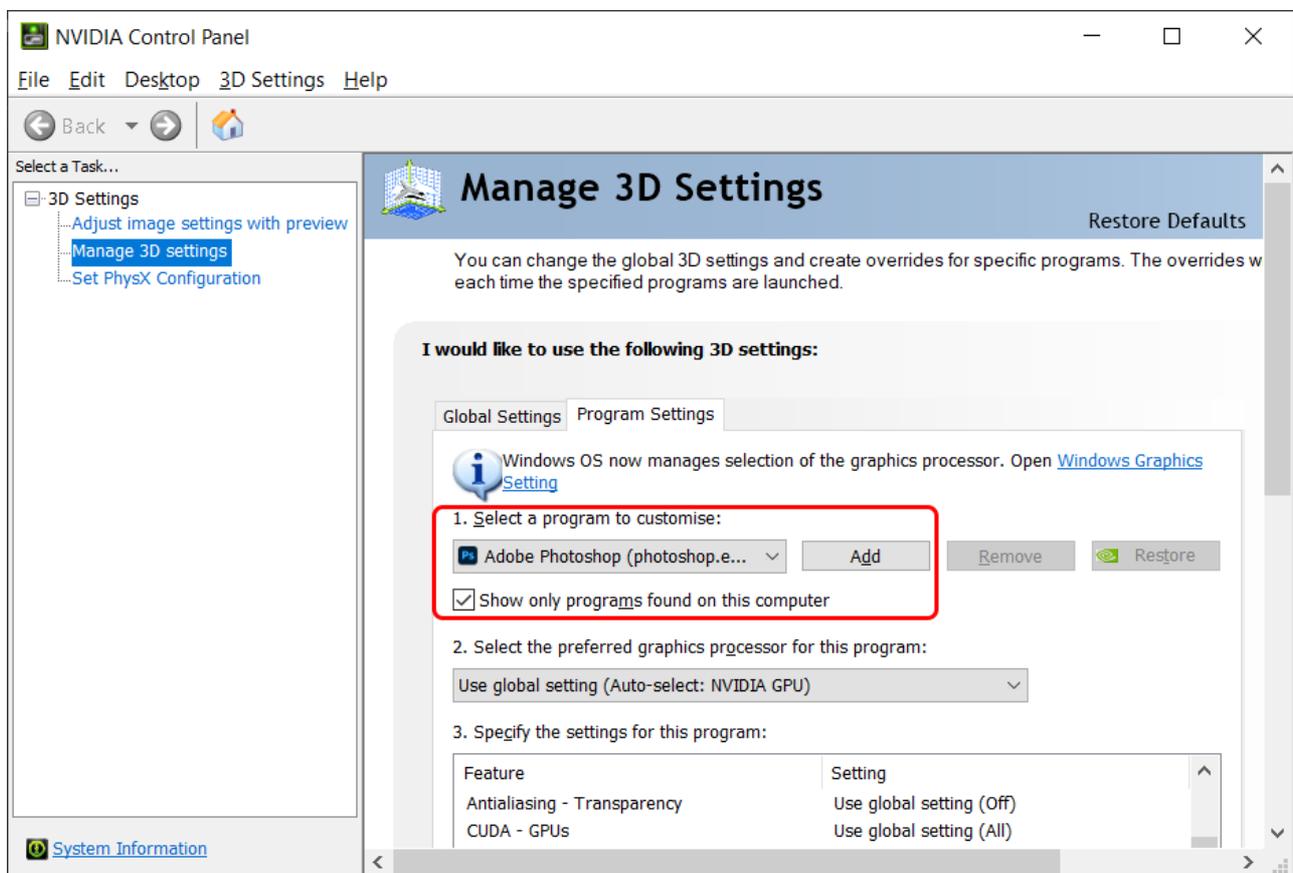
From Delta 2.6, our audio engine (DeltaAudio) has been updated to support 64 bit. It is the default installation option when you run **DeltaServer** package installer. There is an option for 32 bit DeltaAudio, which is a requirement when using BlackMagic SDI with LTC (typically NanoSDI servers). This does not affect DeltaGUI installations.

DeltaGUI Performance on a Control PC

Some Windows laptops have both an Intel GPU and an NVIDIA GPU for enhanced graphics performance. The latter is better for DeltaGUI, and can be assigned as default in the NVIDIA Control panel.

If you have NVIDIA installed, find the control panel in the System Tray, right-click and select 'NVIDIA Control Panel'.

In 'Manage 3D settings' in the left menu, select the 'Program Settings' tab. To select **DeltaGUI.exe** as a program you will probably need to click the 'Add' button:



1. Navigate to C:\Program Files\7thSense\Delta\DeltaGUI.exe and click 'Open'.
2. Now select the preferred graphics processor as 'High-performance NVIDIA processor' rather than Auto-select.

No further changes should be necessary, so close the NVIDIA control panel.

Command Line Installation

There is an optional command-line 'silent install' option (requires no user interaction). Copy the install .exe to the required location from where it will be run from a command line:

C:\[location]\\"Delta[version] x64 Setup.exe" /S (cap S is case sensitive)

Add the required install parameter:

64-bit: /S /P Delta64

32-bit Audio: /S /P Delta64_32Audio

DeltaGUI only: /S /P GuiOnly

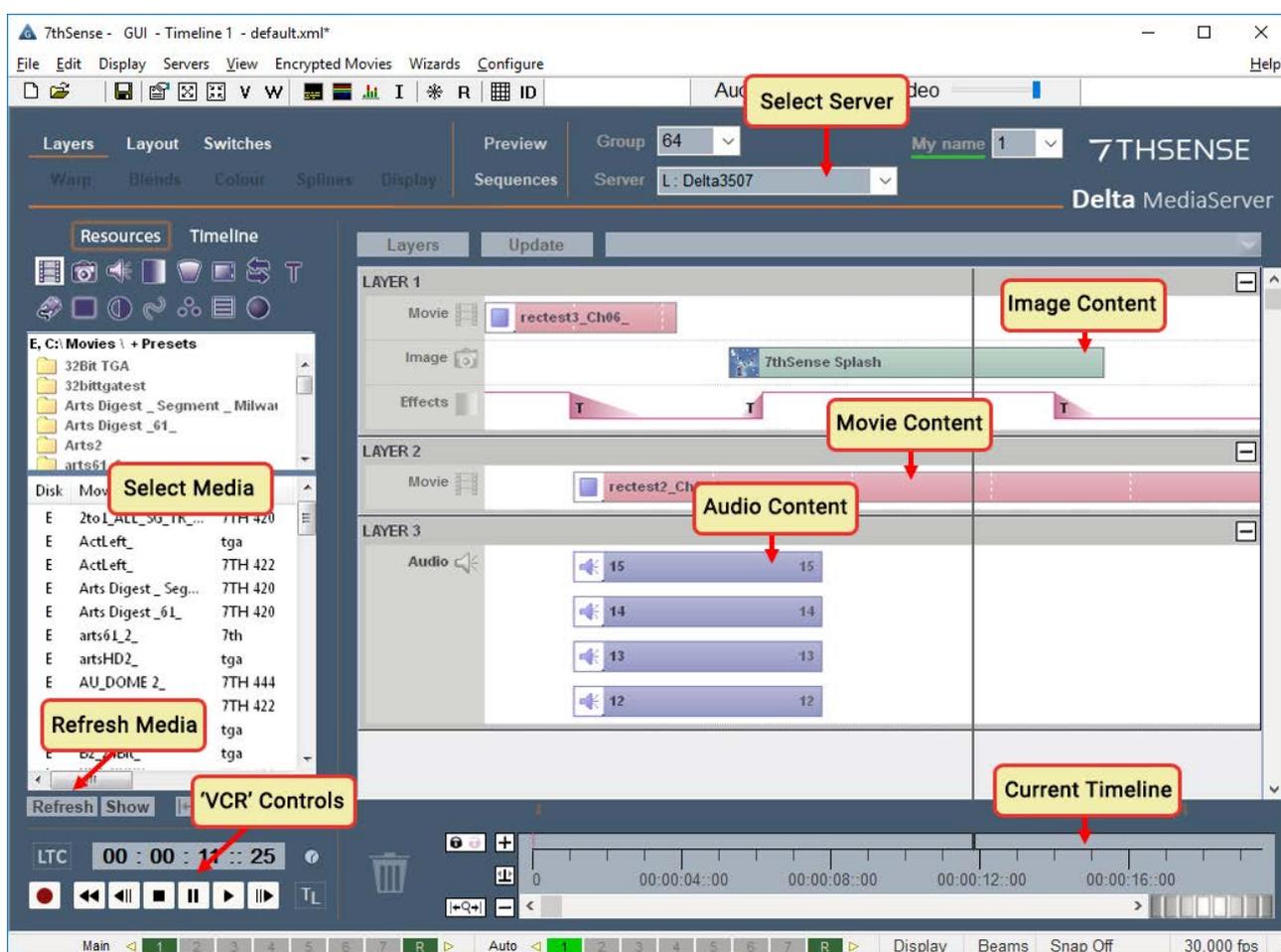
For non-silent command line installation, omit the /S.

(Silent install is available from Delta 2.6.43 and Delta 2.7.2.)

DeltaGUI Main Features

DeltaGUI (graphical user interface) is a single point of control for show and timeline creation across all Delta Media Servers automatically found on the network. From DeltaGUI, you can add media to the timeline, edit its properties, place it anywhere on the output of the Delta server, size it, change its colour, chroma-key it and much more. You can also configure the display side of the media server, for example creating overlaps for a multi-projector display system then warping and blending, or place virtual projectors within a full dome for planetaria or live events domes.

In the example shown below, a simple timeline has been constructed from movies (pink), a still image (green) and audio files (blue). The layers show which media is dominant: layer 1 is on top of other layers, so at the current cursor position (11s, 25 frames), the '7thSense Splash' image is shown over the top of the 'rectest2_ch06' movie until the transparency effect on layer 1 comes into play later in the timeline. Note that media can have transparency set individually on each resource.



To create this timeline, you would find the media from the left 'Media Selection' area, and drag it into the central timeline area, then move it along in time until it is at your preferred time position. You can then double-click or right click and edit the Properties for that resource on the timeline, in its Resource Editor screen, changing its duration, dimensions, location on screen, or other visual effects such as cropping, feathering, transparency or chroma key.

To play this timeline, simply press the Play button in the 'VCR Controls' area. You can also advance frame-by-frame here, or rewind to the start of the timeline, or click in the area next to the 'Current Timeline Position' to go immediately to that time on the timeline.

Save your show, start a new one, or open a saved show, from the File menu.

➤ Now learn to use Delta with our [User Guides](#)

Display Type and Media Size

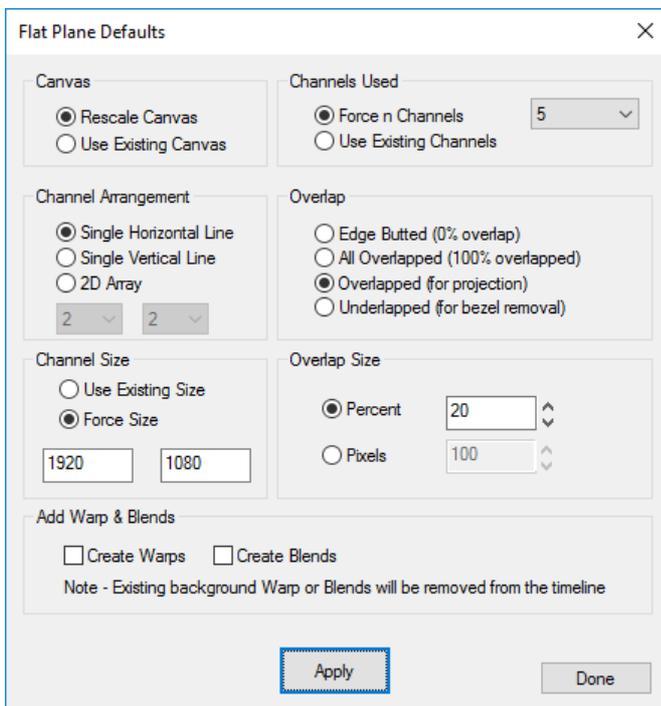
Display Type and Media Size

Delta Media Server can playback all different media resolutions, scaling them to fit the native output resolution of the display or playing at 1:1 resolution for pixel-mapping (as used, for example, on LED screens). The resolution of the media can have a great impact on the quality of the resultant image, and the optimal size of the media can be worked out using Delta itself.

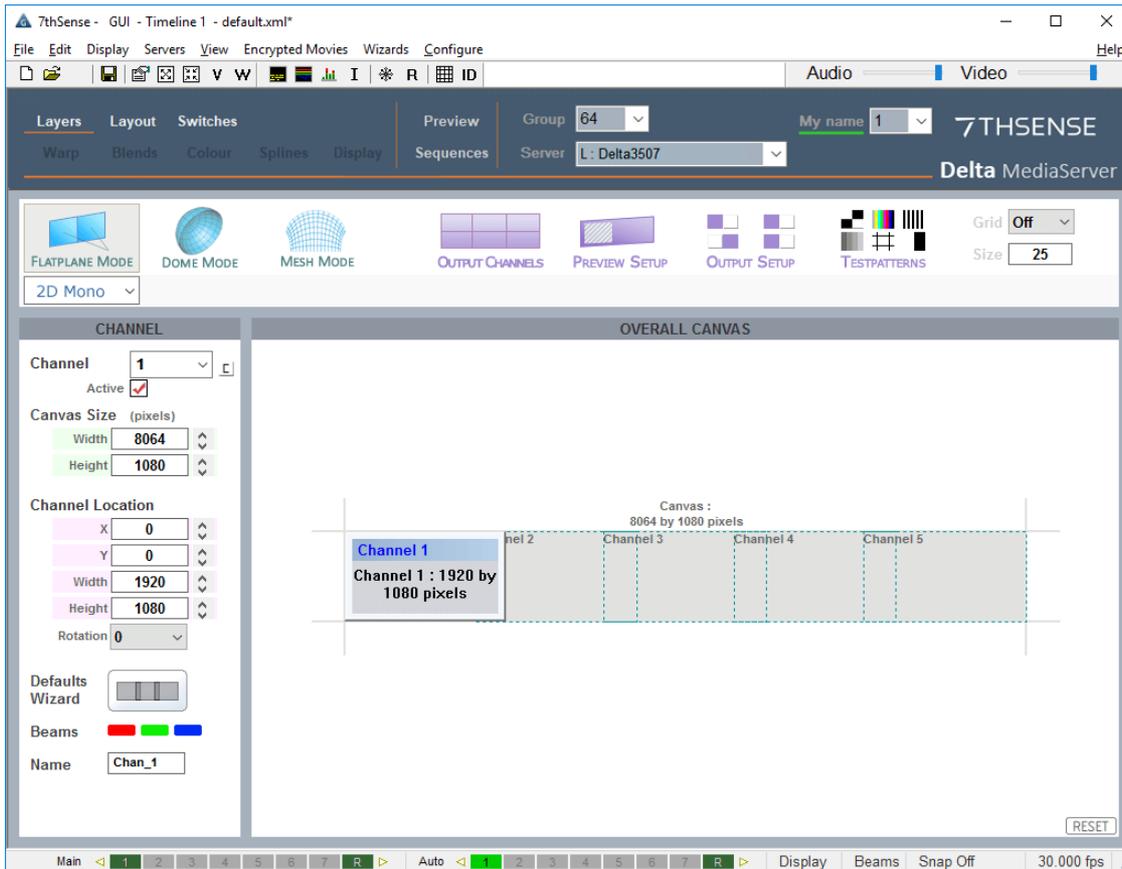
Flat or Curved Screens

In a flat or curved (typically cylindrical or conical) display, the media is essentially mapped to a flat canvas and warped to correct for the screen geometry. The size of that canvas can be calculated using the Delta Display Config wizard. It is of course normal that some companies design the display and media resolutions exactly, so this wizard may not be necessary in all cases.

In the example below, a $5 \times 1920 \times 1080$ projector (this is termed 5-channel) projected display system has 20% overlap to provide blending area, and the Delta display config wizard can be used to calculate the resultant canvas size of the total, composite projected image:



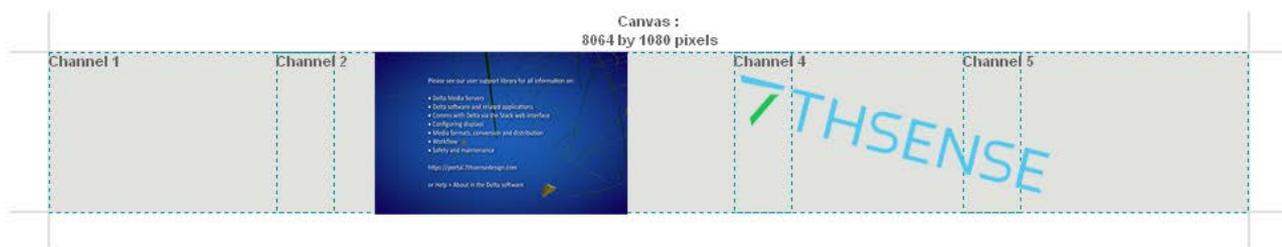
In the DeltaGUI below, you can see the 5 channels shown, each one is 1920×1080 and they are arranged with the 20% overlap which results in an overall canvas size of 8064×1080 pixels.



This resolution is the total resultant display resolution and it is typical to provide media at that exact resolution so that you get the best match between media resolution and display resolution. In Delta, the overlaps are always created in real-time, so there is no need to provide 5 individual 1920x1080 movies for playback to each projector (though this is of course possible in Delta), but the easiest workflow is to provide a single, full resolution movie or image at the calculated resolution and let Delta play this movie and create the overlaps automatically.

So in the case above, the preferred media resolution is 8064 × 1080, which is full resolution and an aspect ratio of 8.064 : 1.08 – providing any media in this resolution or simply this aspect ratio at a different resolution (for example 4032 × 540) will result in correct imagery onscreen, where features within the media are the correct shape and size.

It is possible, of course, to use any resolution or aspect media: in the same canvas below, a blue 1920 × 1080 '7thSense Splash' image is placed on the canvas at its native resolution and size, and a 7thSense Logo is placed, scaled smaller, to the right and at an angle.

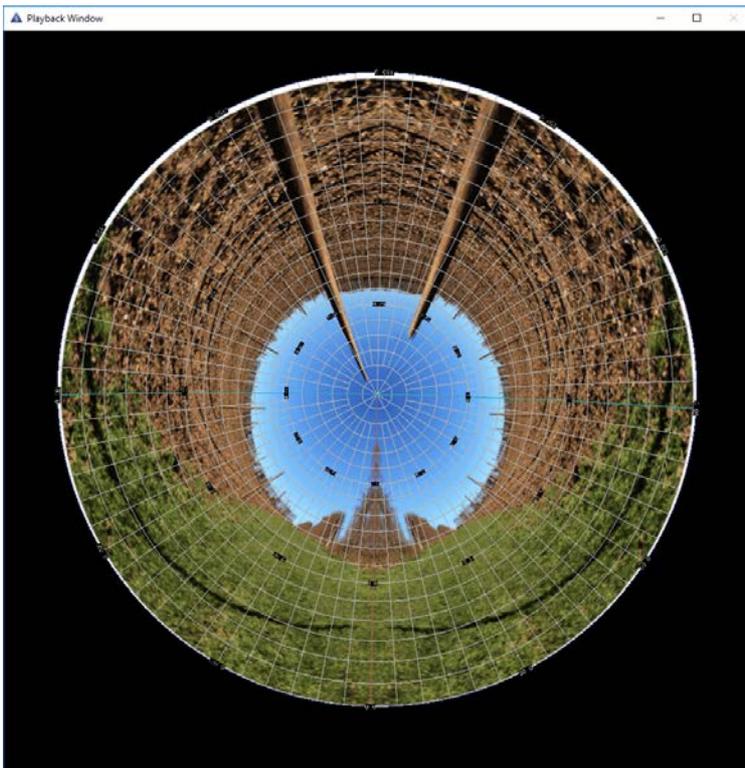


This composition is all performed in real-time within Delta, so you can place, scale or alter media at any time according to your needs.

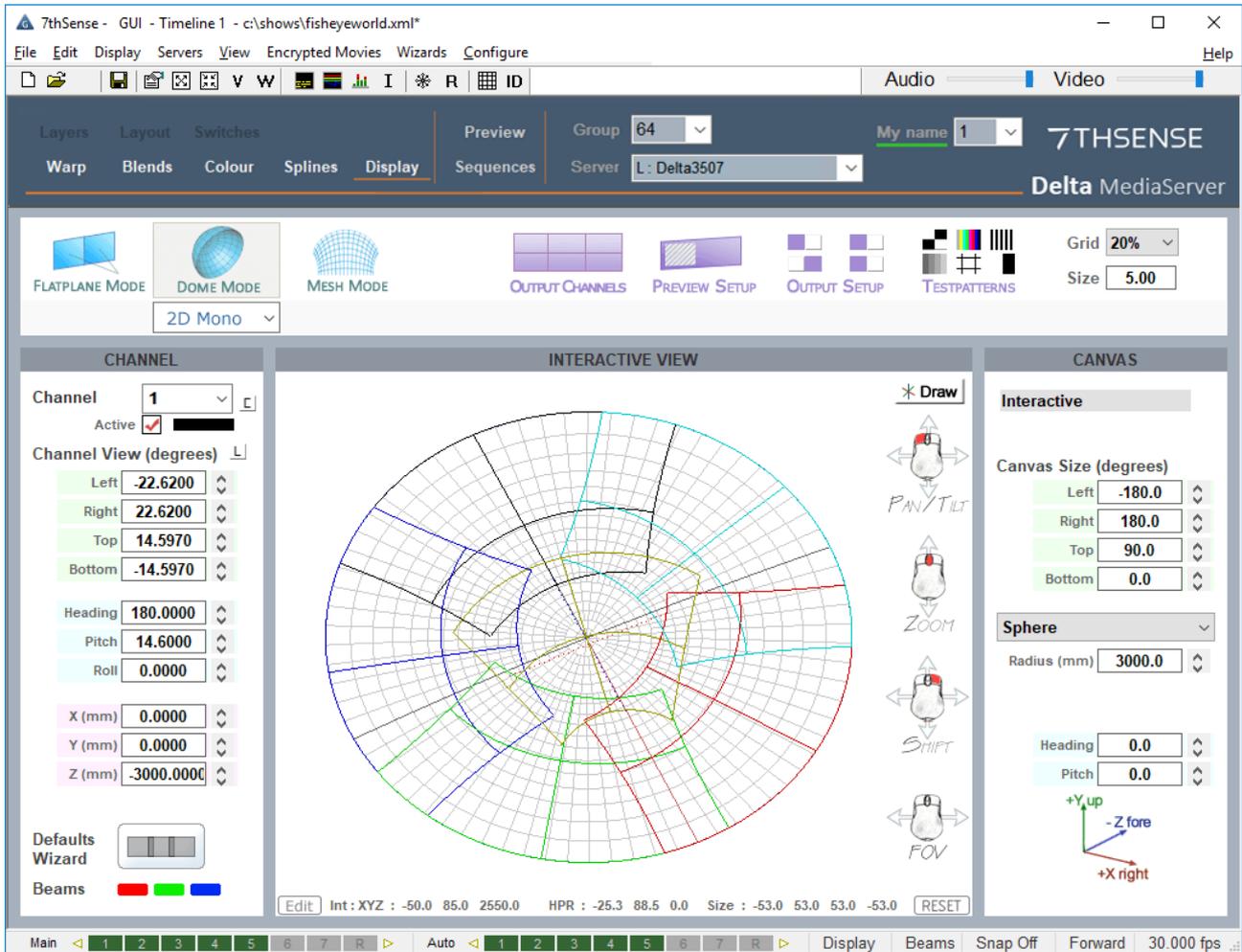
Full Dome Screens

The canvas size for the optional full dome mode is different, since the hemispherical screen does not perfectly suit flat, 2D media. Instead, media is usually produced in a fisheye shape, where the pixel resolution is square (for example 4096 × 4096 pixels), and the media within that shape is formatted into a fisheye shape (also known as dome-Leader format).

The image shown here is a typical fisheye frame from a movie on a full dome canvas within Delta.



The layout of the projectors and how many projectors you have, will tend to define the optimal media resolution. In the example shown here in DeltaGUI, there are 5 projectors around the dome and 1 cap projector, making a total of 6 projectors.



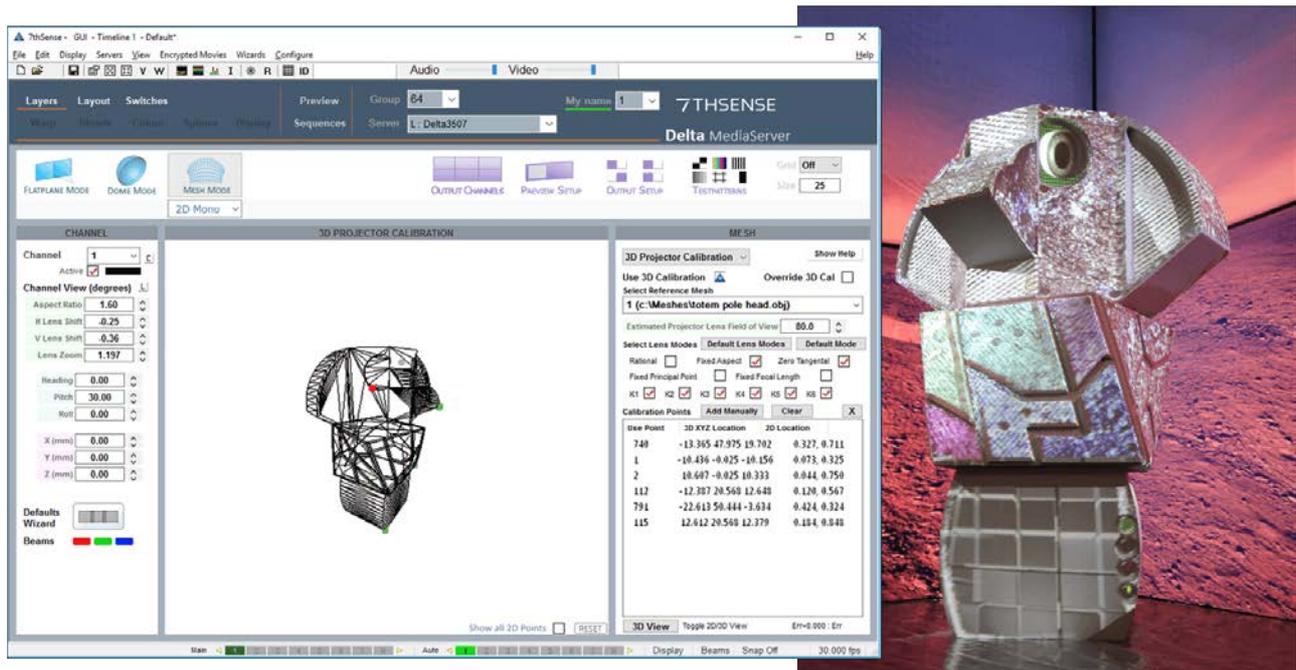
Assuming the projectors are 1920×1080 , then going across the pole of the dome from edge to edge, there are 3×1080 high projected images, which are overlapped for blending as shown. The maximum realistic display resolution in this system therefore would be $(3 \times 1080 - \text{overlap})$, around 2800×2800 pixels. Media of higher resolution will still scale to the display canvas, but at much beyond the nominal display resolution there will be less and less benefit in image quality on screen.

As before, the media should be supplied as full-resolution uncompressed TGA if possible, ignoring any projector/channel placement and overlaps: Delta will work this out in real time. You can also place standard flat or even cylindrically-mapped media onto the canvas in real time within Delta, and change its mapping mode from flat to fisheye or panoramic.

Mesh Mode (Projection Mapping)

Mesh Mode is an optional mode of operation within Delta which can project onto any shaped screen. For example, in a live event building projection, a laser scan of the building creates a 3D CAD model, which is imported to Delta for media to be projection mapped onto.

In the example below, Delta uses a CAD model of a 3D figurine, with virtual projector positions matching the real-life positions, to project onto the real 3D figurine using 2 projectors:



The media for mesh mode is usually created in a 3D modelling package, then output in any of the movie formats listed above. Media can be UV-Mapped onto the mesh (by the content creator) or projected from a virtual eyepoint within Delta onto the 3D Mesh (or meshes).

Media Configurations

- UV Mapped media or Flat Plane projection from an eyepoint
- 3D CAD model in OBJ format
- Up to 16 simultaneous meshes, 16 eyepoints within Delta

Media Formats

Media Formats

Delta Media Server plays a variety of media types and formats. This guide aims to show the most optimal way of importing and playing movie, image and audio media onto a Delta Media server. Delta Media Server (Delta) is a highly optimised playback solution for playing high resolution, high framerate, uncompressed media onto any display surface, whether it is flat, curved, full dome or even an abstract 3D mesh surface.

Note : The horizontal resolution of any piece of media should be divisible by 4 to ensure maximum performance and compatibility. Odd sizes may not run or run badly. From Delta 2.6.74 bad dimensions will generate an alert in the Resource Pool.

- For more information and guidance on media formats, see [Media Management for Delta Servers](#).

Native Movie Playback Formats

Movies

Delta Media Server natively plays these preferred formats without any conversion: TGA, YUV, A7S, DPX, CIN, SGI, STH or 7TH (see conversion formats below).

Note: 7TH and STH formats are identical. STH is the naming convention for Nuke Compositing, which does not recognise numeric characters in file extensions.

TGA Sequence

A Targa (TGA) movie sequence comprises a single folder containing 1 TGA file on disk per movie frame, fully uncompressed and can be 24-bit (RGB, 8-bit per colour) or 32-bit (RGB Alpha, 8-bit per colour) with optional RLE (lossless compression). These movies can be exported directly from most 3D or film based editing packages such as Adobe After Effects or Nuke.

Important: TGA files should be placed in a single folder within the Movies folder of the Delta server movie drive and named with a constant number of digits between 4 and 12 digits long like this:

```
...  
my_movie_000008.tga  
my_movie_000009.tga  
my_movie_000010.tga  
my_movie_000011.tga  
...
```

The frame number must be the last set of characters in the filename before the extension.

If files are incorrectly named (or have fewer than 4 digits or greater than 12) there will be no output (playback will be black).

Stereo media content should be provided in **separate folders per eye** with the folder name designating the appropriate eye. Left Eye/Right Eye designation within each file name is recommended as follows:

Folder Name: E:\Movies\My 3D Movie\Left

```
...  
my_movie_lt_000008.tga  
my_movie_lt_000009.tga  
my_movie_lt_000010.tga  
my_movie_lt_000011.tga  
...
```

Folder Name: E:\Movies\My 3D Movie\Right

...

my_movie_rt_000008.tga

my_movie_rt_000009.tga

my_movie_rt_000010.tga

my_movie_rt_000011.tga

...

The horizontal resolution of any piece of media should be divisible by 4 to ensure maximum performance and compatibility.

- 24-bit RGB TGA should be the default format unless you require an alpha plane for that movie in order to save disk space & disk transfer rate.

DPX formats

From Delta 2.6, .dpx formats have been more reliably supported:

- 8-bit (4:4:4)
- 10-bit (YUV and 4:4:4)
- 12-bit (4:4:4)
- full support of little- and big-endian
- filled and packed types are both supported

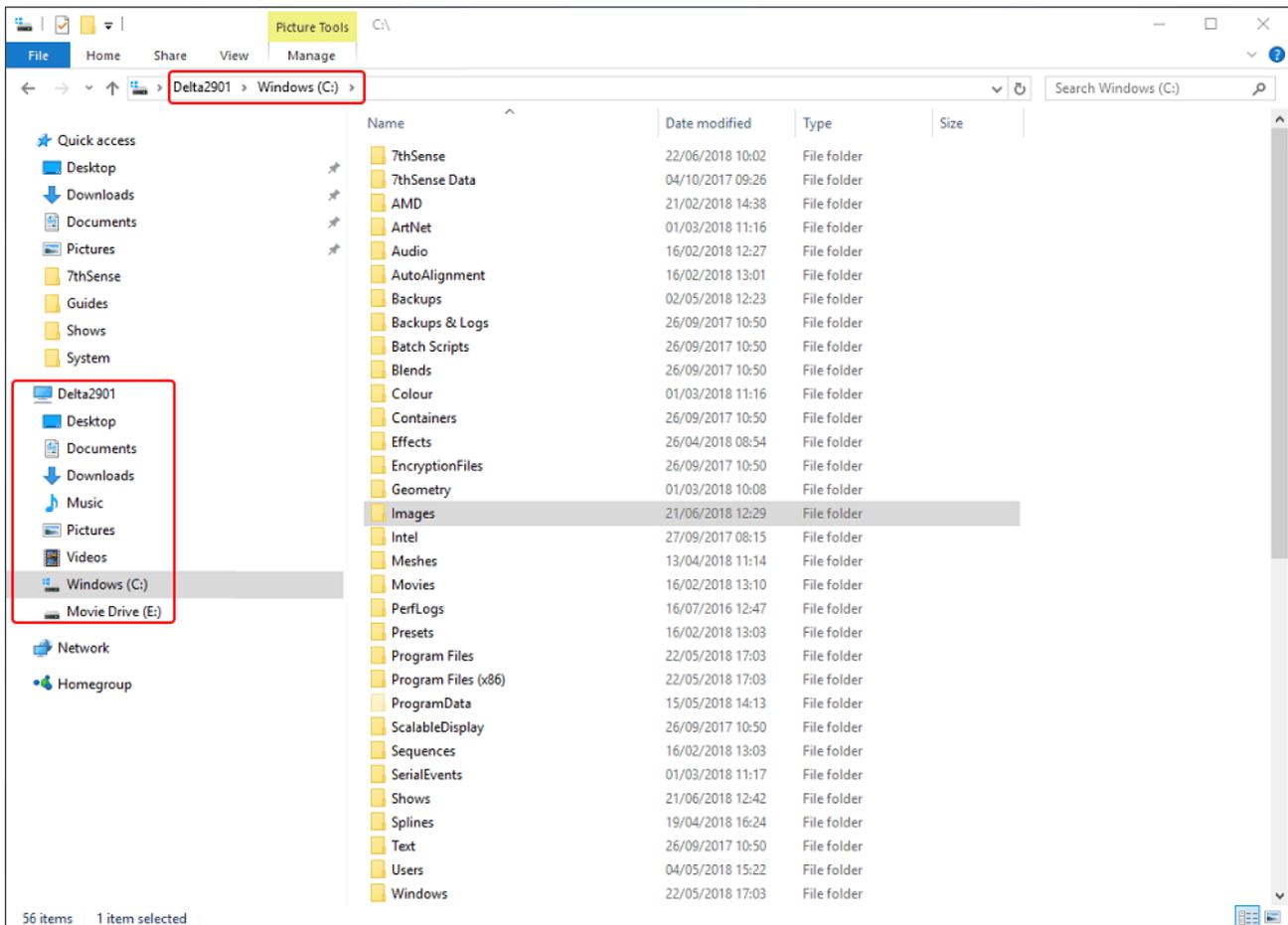
From Delta 2.7, alpha is also supported.

Notes on Filenaming

- The following characters are reserved and should never be used in the filename:
! ? @ # \$ % & = == + - { } [] \ * | < >
- Avoid spaces in filenames, use underscores.
- There must be a period (dot) separating digits from extension: Movie_000008.tga
- No characters should be between the frame number and the file extension.
- The frame name stem is separated from the frame number by an underscore:
my_movie_000008.tga
- No other file types should be present in the folder – check for hidden files when creating movie folders.
- All files for one movie must live in the same folder.
- If using a USB hard drive to transfer the movie to Delta, it must be Windows Formatted (not Mac formatted).

- The full length of the path structure and filename should be fewer than 250 characters.
- If transferring from a MAC formatted drive, you'll notice a 1 KB file for every frame on disk, normally named .filename (with a preceding dot) or _filename. These files should be deleted from the Delta server.

Note: Movies should be stored on your server's E drive, whilst other media (such as Images and Audio) should be stored on C drive (in appropriately named folders).



Other Movie Playback Formats

Although the formats above are the native (preferred) playback formats, there is an included conversion program (DFM) that can convert from other movie formats for playback on Delta.

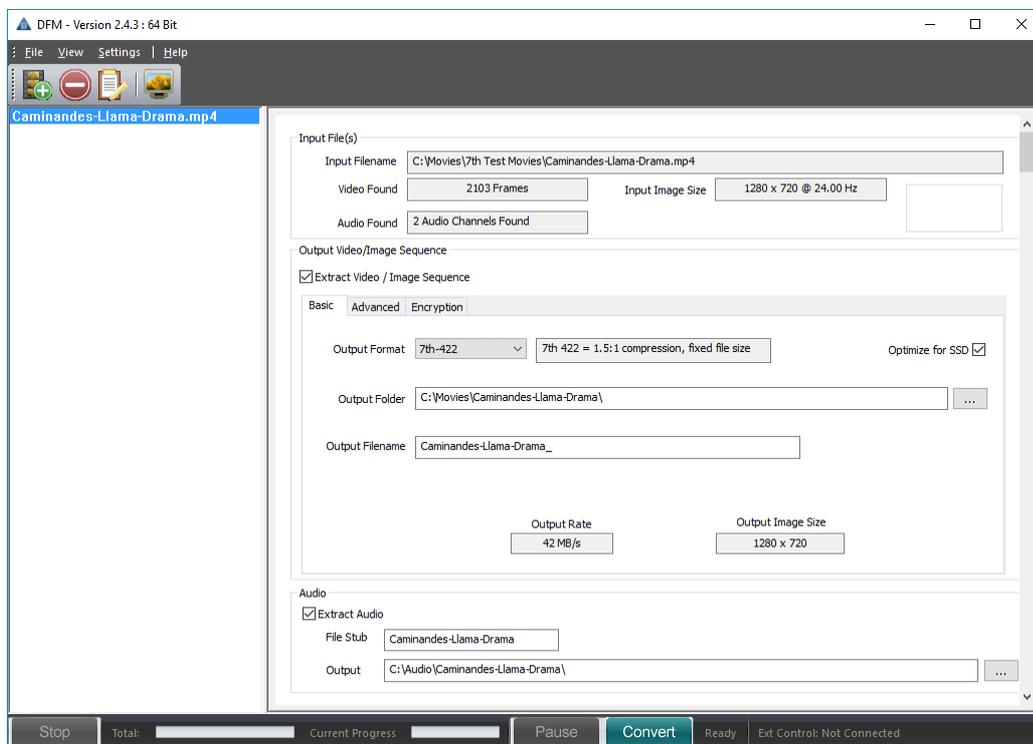
DFM is a separate application which runs on the server or any other Windows PC and enables the following types of media to be converted to one of the native 7TH movie formats: MXF, MOV, MP4, LXF, ASF, WMV, DV, MPEG-PS, MPEG-TS, GXF, FLV, AVI, MKV, WebM, HapQ, or image sequences of JPG, BMP, TIF, PNG or DPX.

There are also Plug-ins for Adobe After Effects, and Nuke that allow native rendering of 7TH422 sequences or STH422 sequences.

Notes:

With codec movie formats, the audio is in-built and speaker mapping is encoded in the file itself, so Delta audio control available is therefore only volume control (no channel mapping as is possible with separate audio files – see audio files below).

Codecs are supported for media prototyping type purposes only, and are never recommended as the final deliverable/show content.



DFM can unpack these types of media (see note below) and save out a movie in one of these 7TH formats:

- 7TH-420: 2:1 reduction in storage requirement

- 7TH-422: 1.5:1 reduction in storage requirement
- 7TH-444: no reduction in storage requirement

The 7TH-444 format can also contain an alpha plane if required.

Note: DFM can only unpack a media file if the relevant codec is found on that PC (image sequences do not require a codec) – the general rule of thumb is that if the media can play in Windows Media Player, DFM can convert it.

- For full details, please see the [DFM User Guide](#).

Other Media Formats

Stills Images

Still imagery can be placed on the Delta timeline in the following formats:

JPG, JPEG2000, BMP, DPX, PSD, TIF, TGA, PNG, GIF, A7S.

TGA, PNG and TIF formats can also contain an optional alpha plane.

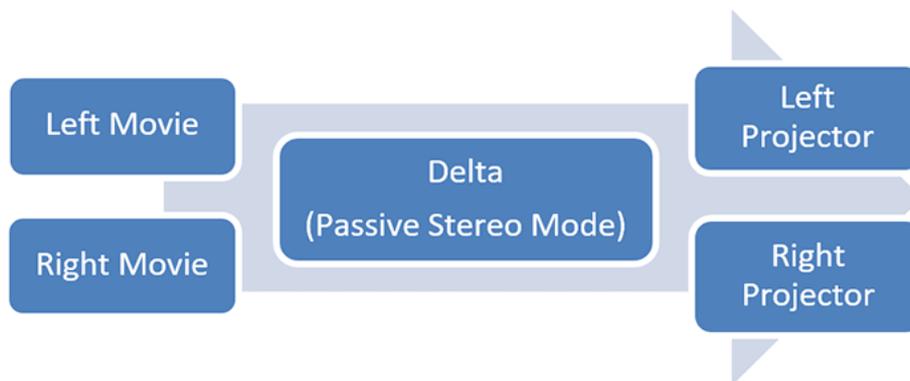
Audio

Audio files can be mono, stereo or multichannel, from the following formats: WAV, MP3, MP2, AIFF.

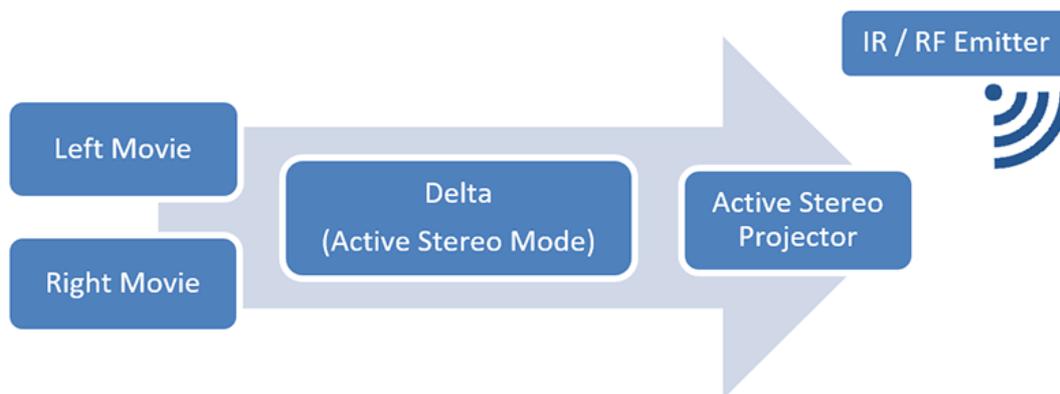
Preferred format is 48 kHz mono WAV, since Delta can patch the speaker destination for these files to any combination of speakers.

There is a 2 GB size limit per WAV file, so again, multiple mono WAV files are preferred over a single multi-channel (5.1 or 7.1) WAV files.

3D Stereo Media



Passive stereo projection (using polarised glasses) is possible from Delta Duo, Nucleus or Infinity servers, since for passive stereo, you need 2 projectors, 2 unique video feeds and movies: one left eye movie and one right eye movie.



Active Stereo (using shutter glasses) is possible from Delta Nucleus or Delta Infinity servers, having the active stereo capable outputs and 3D Sync output necessary to sync external IR or RF emitters, which remotely trigger the shutter glasses.

For both types of system configuration, the media is usually supplied as separate left eye and right eye movies, in any of the movie formats listed above. The stereo separation is encoded directly into each movie and the server simply plays back to the relevant display (e.g. 2 outputs to 2 passive stereo projectors) or interleaved in time (e.g. 1 output to 1 active stereo projector).

Delta can also take combined movie files, in which the left eye and right eye content is placed in a single movie, in a side-by-side or top/bottom configuration. So, for example, standard 1920×1080 left and right movies are usually supplied as separate movie files, but they can also be supplied as a single movie of 3840×1080 where the left half is left eye, the right half is right eye (side by side format) or 1920×2160 (top/bottom format).

Supported Media Inputs

- Separate left eye/right eye movies
- Combined left eye/right eye movie (side by side or top / bottom)
- Pixel interleaved (chequerboard)
- Anaglyph encoded media

Supported Stereo Displays

- Passive Stereo Projectors
- Active Stereo Projectors
- 3D LED (pixel interleaved)
- Anaglyph output from non-anaglyph media

Media Locations

Media Locations

The DeltaServer application looks for media in specific folders on the server, so ingesting media onto the server is as simple as copying your new media into these folders and asking the server to look for new media.

This can be done locally at the server (using an external hard disk, preferably USB3, must be Windows formatted) or over the gigabit Ethernet network, since there are Windows Shares created for each media location as below:

Media type	Default Windows Local Folder	Windows Network Share
Movies	E:\Movies\...	Movie Drive\Movies
Images	C:\Images\...	Images
Audio	C:\Audio\...	Audio

Note that the default local drive may be different on your system (for different disk configurations available), but the Windows Share will point to that local folder.

Within each local folder, you can place the media in any location, so for example you can construct a project-related folder containing many movies:

```
E:\Movies\Project1\Movie1\*.tga  
E:\Movies\Project1\SecondMovie\*.tga  
E:\Movies\Project1\originalmovies\movie1\*.tga  
E:\Movies\Project1\originalmovies\movie2\*.tga
```

Delta will automatically look in each local folder for new media when it first starts and also when you press the Refresh Resources button in DeltaGUI.

The process to ingest a new piece of media (in a native format) is:

- Copy media into new folder within the local folder (e.g. E:\Movies\newmovie)
- Press Refresh Resources in DeltaGUI
- Drag the new media clip onto the timeline
- Press play

Media Performance

Media Performance

Delta Server is offered with very scalable hardware performance to target application/budget requirements. Shows are often more than just a movie, and every element adds to the server load. However, media bandwidth calculation is a good base judgement for planning straightforward playback.

In the example above, the 2800×2800 fisheye media would result in a media performance requirement on the Delta server of around 670 MB/s (670 Megabytes per second) if stored in a fully-uncompressed 4:4:4 format on disk. This is perfectly acceptable to a Delta Media server, which is based on fast SSD disks. The performance of the Delta Nucleus model, for example, is up to 1500 MB/s, so you can play this media and others at the same time, up to the 1.5 GB/s typical limit. Delta Infinity has a higher performance and is capable of up to 6.5 GB/s, and also has increased media capacity of up to 57 TB (internal).

Calculation of Media Performance

Media Width \times **Media Height** \times **3 (RGB)** \times **framerate** = bytes per second

then divide by (1024×1024) to give megabytes per second.

So, for example, $1920 \times 1080 \times 3 \times 30$ for an HD movie at 30 fps in 4:4:4 gives:

$$1920 \times 1080 \times 3 \times 30 = 186624000 \text{ bytes/s}$$

$$186624000 / (1024 \times 1024) = 178 \text{ MB/s}$$

In this case, the 178 MB/s is easily playable, and you could play up to 6 of these in parallel on a Delta Nucleus (or more on a Delta Infinity).

Using 7TH formats, you have the choice of 4:2:2 (a 1.5:1 reduction) or 4:2:0 (a 2:1 reduction), so you can choose a trade-off between image fidelity against performance/storage requirement, depending on your needs.

4:2:2 format:

1920×1080 30 fps is 178 MB/s in 4:4:4, so $178/1.5 = 119$ MB/s in 4:2:2

4:2:0 format:

1920×1080 30 fps is 178 MB/s in 4:4:4, so $178/2 = 89$ MB/s in 4:2:0

Media Storage

Media Storage

A typical Delta Nucleus server with small storage fitted has 900 GB of storage space (850 GB free), and the calculation for storage space is much the same as for performance. Delta servers can of course have much more storage fitted as required (up to 100 TB).

Usable disk capacity is not the number on the label

The raw capacity of an SSD (what it says on the box) can be 120 GB, 240 GB, 480 GB, 960 GB, 1920 GB, or 3840 GB. Part of this capacity is used for necessary overhead associated with partitioning and formatting. The result is that about 95% of the raw capacity is usable. For example, 2 × 120 GB raw disks would give around 225 GB formatted array. Beyond that, we only recommend utilizing about 95% of the *available* formatted capacity, because for many disk models, it is valuable for the disk's firmware to have some breathing room for activities that aid in the longevity of the disk's lifespan. So for example, we would recommend filling only about 214 GB of that formatted volume of around 225 GB.

Once you have worked out how many MB/s the movie will take, then the length of the movie in seconds will give the space requirement:

Media Performance (MB/s) × length of media in seconds gives space requirement

or

Storage size in MB / Media Performance (in MB/s) gives how many seconds available

So, for example, the 1920 × 1080 30 fps 4:4:4 movie above is 178 MB/s:

$178 \text{ MB/s} \times 60 \text{ s} = 10680 \text{ MB} / 1024 = 10.4 \text{ GB}$ per minute of that size media

or

$850 \text{ GB} = 850000 \text{ MB} / 178 \text{ MB/s} = 4775 \text{ s} = 79.5 \text{ minutes}$ total of that size media

In the cases above, total space requirement is the total of all movies on the disk: images and audio can be discounted from the calculation, since they are usually a small fraction of uncompressed movie size.

Notes

- TGA with RLE compression (lossless) gives a variable size for each movie frame dependent on the content of that frame, so you can see typically a 50% average storage and performance reduction compared to fully uncompressed TGA, but RLE is only suitable up to a certain size of media (4k 30fps for example).
- Delta Nucleus and Infinity models can have typical media storage starting at 900 GB, but with options for up 100 TB if required.

UltraVNC

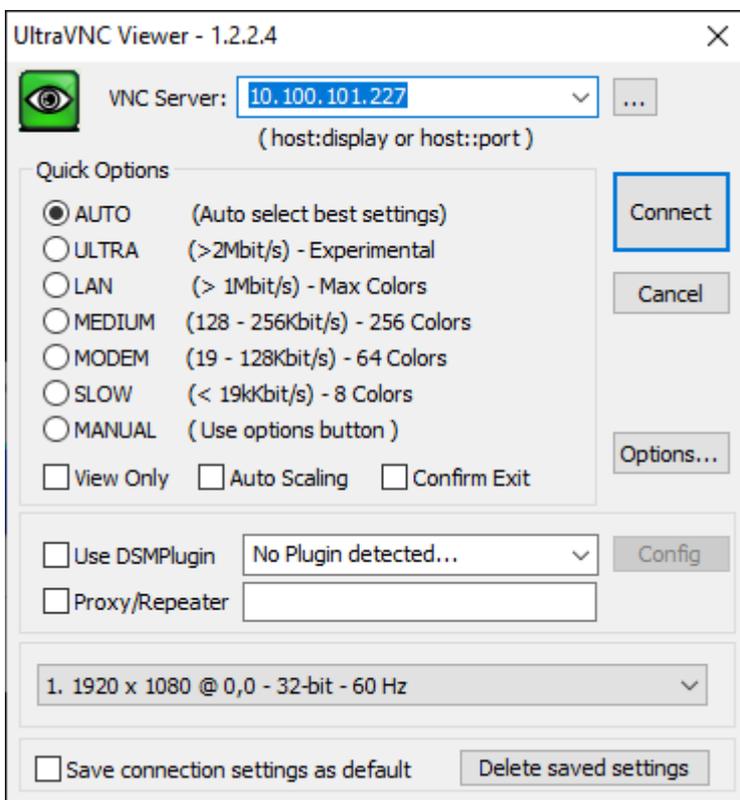
UltraVNC



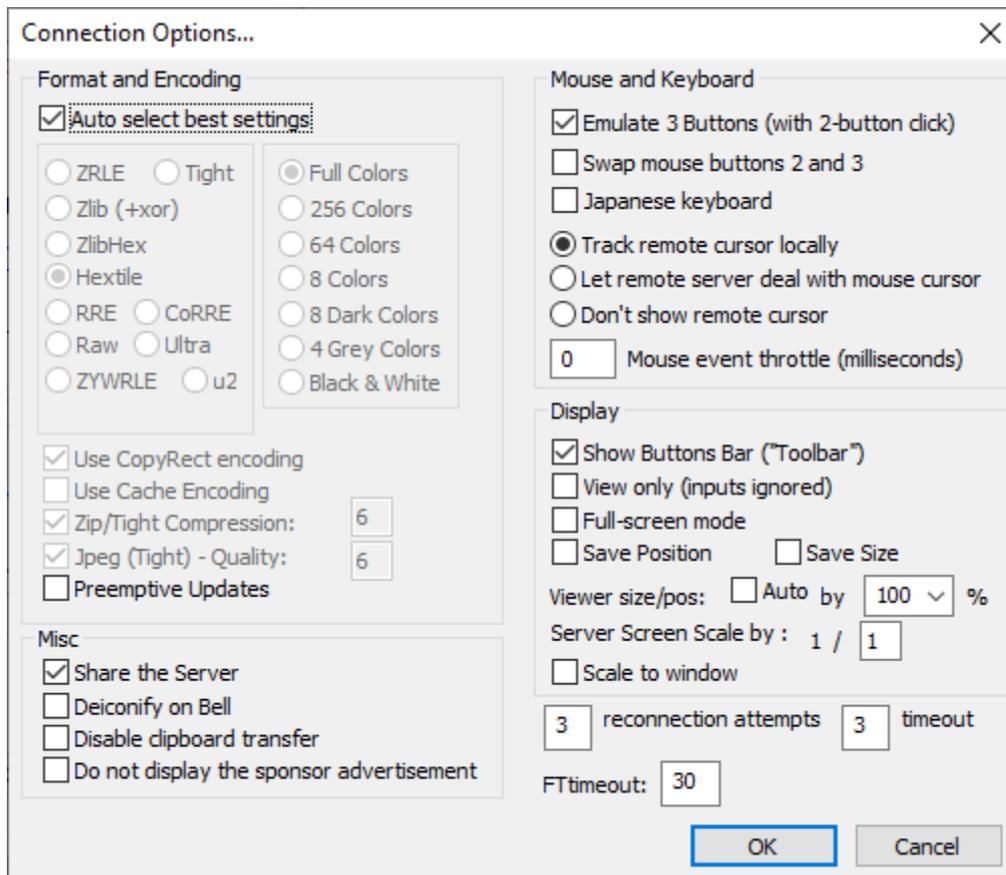
UltraVNC (referred to as VNC) is a piece of free software for viewing and working on a remote PC desktop with your local mouse and keyboard.

It comes pre-installed on your Delta Media Server, but can be used on any PC where you may, for example, be using DeltaGUI. You can download it from <https://www.uvnc.com/>.

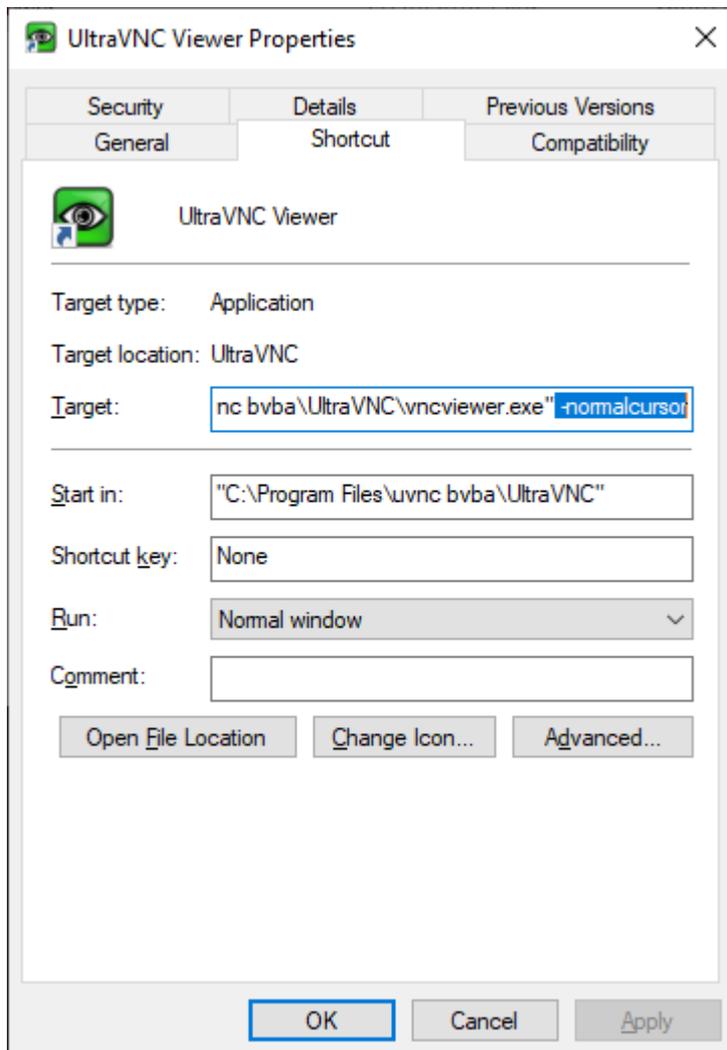
Start UltraVNC and enter the IP of the server to look at and click Connect. The default login password for 7thSense servers is: 7th



By default the remote cursor can appear as a very small circle, with or without a cursor arrow. Make sure these Options are set:



If the cursor problem persists, go to the properties of the UVNC Viewer app launcher in your taskbar, desktop or start menu, and add the parameter '-normalcursor' as here and click 'Apply':



Delta Media Server Family

Delta Media Server Family

For the latest specifications of members of the Delta Media Server family, see our product brochure on our [hardware specifications](#) page.

Document Information

Document Information

Date	Document edition	Software version	Revision Details	Author/Editor
August 2014	1.4		New release	Ian MacPherson
September 2015	1.5		Reformatted	Helen Ward
June 2016	1.6	Delta 2.4	Codec information added	Helen Ward
June 2017	2	Delta 2.5	Updated, republished	Andie Davidson
June 2018	3	Delta 2.6	System setup and running added	Andie Davidson
July 2018	4	Delta 2.6	Improved system overview	Andie Davidson
December 2018	5	Delta 2.6	New Delta software install options	Andie Davidson
July 2020	6	Delta 2.6, 2.7	Revised terminology	Andie Davidson
February 2021	7	Delta 2.6, 2.7	Advice on control PCs with dual/NVIDIA GPUs	Andie Davidson
February 2023	8	Delta 2.6, 2.7, 2.8	Watchdog replaces DeltaMonitor for front panel info. and control	Andie Davidson

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