USER GUIDE

SECOND EDITION

arkaos | interactive visual technologies

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2 INSTALLATION

Welcome to ArKaos GrandVJ.

GrandVJ is ArKaos' state-of-the-art video mixing and VJ software, allowing unprecedented control over visual performances.

You can use GrandVJ to perform with visuals just like you would be playing an instrument, either using the computer keyboard, a MIDI controller or a MIDI sequencer. Alternatively, you can also use GrandVJ as an eight channel video mixer, allowing full and precise control over each individual channel.

Your audience won't believe their eyes.

2.1 Installing ArKaos GrandVJ – PC

1. To install the ArKaos GrandVJ software, **insert the installation CD into your computer's CD-ROM drive**.
2. **Double-click on the installation file**, located in the root directory of the CD. This will launch the InstallShield Wizard.
3. **Follow the on-screen instructions**. Please note that the installation program will scan for available video components on your computer prior to installing the software. If there are any components that are not up to date, please install them by clicking on their corresponding buttons before proceeding with the installation.
4. **Once the installation is complete, click "Finish"**. The ArKaos GrandVJ software is now ready to be used.
5. Start GrandVJ by going to Start ▶ ArKaos GrandVJ ▶ ArKaos GrandVJ.
6. **Follow the registration procedure** described further in this document.

2.2 Installing ArKaos GrandVJ – MAC

1. To install the ArKaos GrandVJ software, **insert the installation CD into your computer's CD-ROM drive**.
2. **Double click on the ArKaos GrandVJ installer** located on the CD.
3. **Follow the on-screen instructions**.
4. Once installation is complete, you will see a shortcut on the desktop. The application will also appear in your **Applications ▶ ArKaos GrandVJ** folder.
5. **Start GrandVJ**.
6. **Follow the registration procedure** described further in this document.

3 REGISTRATION

3.1 The Activation Code

Your software comes with an Activation Code. It is very important that you keep this code in a safe place since it is the proof that you own a license and it might be needed later to re-install the software or obtain future upgrades.

If you have a software box, the Activation Code is printed on a sticker that is attached to the installation CD sleeve. If you have purchased a license online at www.arkaos.net, the Activation Code appears on the web site's *"My Licenses"* page, it was also sent to your e-mail address.

Activation Codes for GrandVJ licenses start with GVJ, GrandVJ XT licenses start with GVX and Upgrade Keys (Activation Codes for upgrades) start with GVU.

Here's an example of an Activation Code for GrandVJ: GVJ-ACBD-EFGH-HGFE-DBCA

Important:

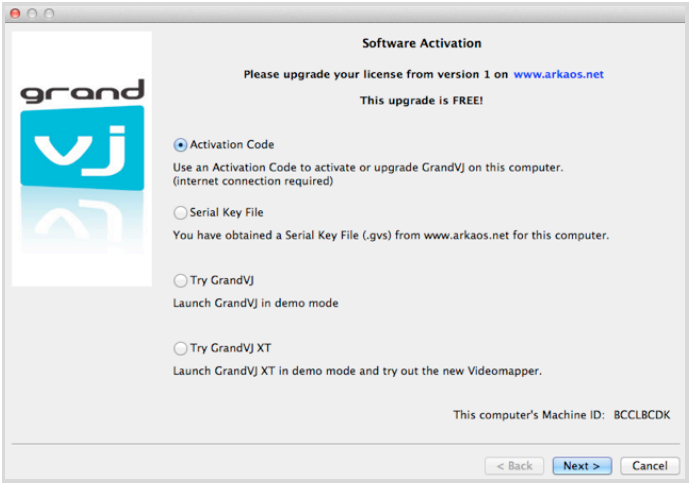
The Activation Code is not the final code that will unlock the software on your computer. To do so, you will need to obtain a Serial Key. The Serial Key is a .gvs file that unlocks GrandVJ to run on a specific computer.

3.2 Activating GrandVJ on your computer

The registration process is fairly easy. You have the choice to either unlock GrandVJ directly from within the application itself (if you are working on a computer that is connected to the Internet) or to use a Serial Key that was obtained from our web site.

In any case, your current Serial Keys are stored in your customer account online at www.arkaos.net, so you can retrieve them i.e. if you need to re-install your computer.

When you start the application unregistered, the registration wizard appears.



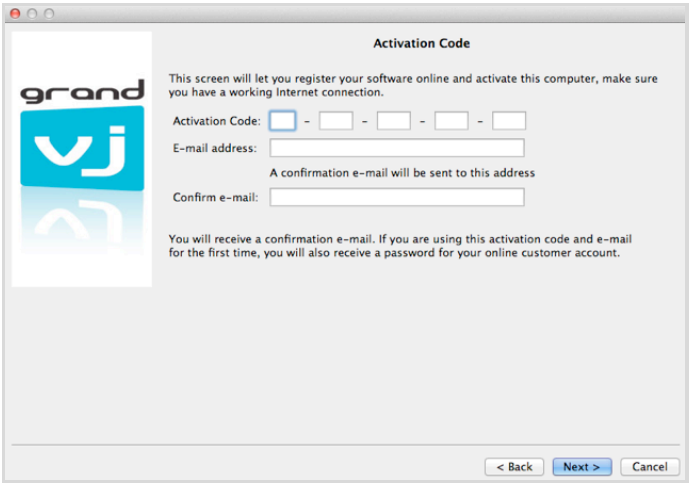
From this dialog you can choose the registration method you would like to use or to continue and try GrandVJ or GrandVJ XT in Demo mode.

For your information, your computer's Machine ID is displayed at the bottom of the dialog; you will only be able to unlock GrandVJ with a Serial Key that was generated for that Machine ID.

The Registration Wizard offers the following options:

3.2.1 Activation Code (Online Method)

Choose the first option, *"Activation Code"*, and press next if you would like to unlock the software directly from the application, automatically through your Internet connection. This is the easiest option but it requires that GrandVJ can communicate with our servers and is not blocked by a firewall or network policy restrictions.



Type your Activation Code first, each group of letters in its own text field.

In the next text fields you have to specify a valid e-mail address for your online customer account. Once you have verified all the information (make sure the e-mail address is valid!), press next.

The application will try to communicate with our servers, register your details and obtain the Serial Key for your computer, here is how it works:

1. If you are a new ArKaos user

If you don't have a customer account yet, we will create a new one for you; your e-mail address will be your login and you will receive a password by e-mail. Your software license will be bound to that new customer account.

2. If you are adding a new license in your account

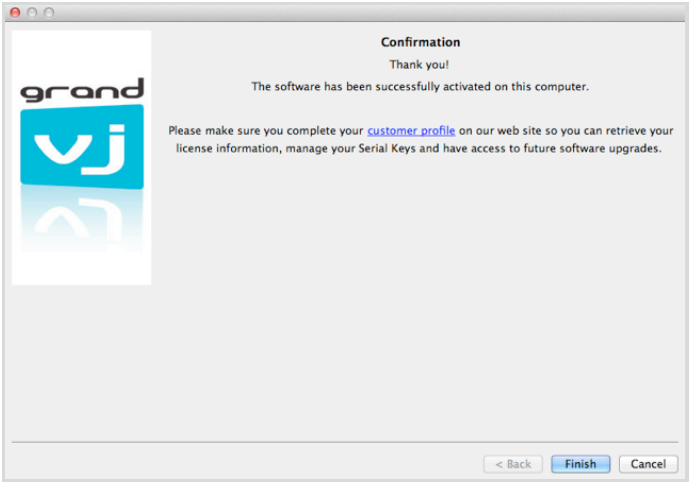
If you already have an ArKaos customer account and you want to add a new software license, just use your registered e-mail address, the new GrandVJ license will be added to your customer account with any other existing software license.

3. If you are activating a computer in an existing license

If you already have an ArKaos customer account with a GrandVJ license registered and you want to activate a second computer with that license, just use your registered e-mail address and your existing GrandVJ Activation Code.

Note:

If the registration is successful, it will display a confirmation message and your software will be activated automatically.



Important:

If you have purchased your software box from the ArKaos web site, you already have a customer account with us; you can use the same e-mail address to add your license to your account (Case 2 above). If you have purchased a software license from our web site, you already have a customer account with us **and** your Activation Code is already registered in your customer account; you can use the same e-mail address and Activation Code to activate GrandVJ on your computer with a new Serial Key from that license (Case 3 above).

3.2.2 Serial Key (offline method)

Choose this option to activate the software manually by locating a previously downloaded Serial Key file. This is useful if for any reason you couldn't go through the activation process from within the software, you can register your Activation Code manually on the ArKaos web site and download a Serial Key from your customer account to use it to activate GrandVJ.

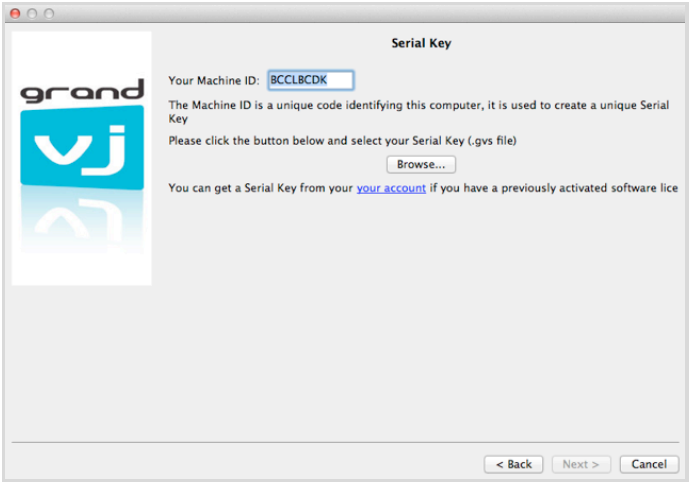
This option is also useful if the computer where you want to unlock GrandVJ is not connected to the Internet. In that case, you will need to surf to our web site with another computer and generate a valid Serial Key for the computer where you want to use GrandVJ. Remember, every computer has a different Machine ID and a Serial Key will only unlock GrandVJ on the computer with the corresponding Machine ID.

Important:

Before surfing to our web site to obtain a Serial Key, make sure to take note of the computer's Machine ID (displayed at the bottom of the registration window) and have your Activation Code ready.

With a web browser, go to http://www.arkaos.net/register/ and follow the instructions there to create a new customer account (if you don't have one already) and obtain a Serial Key for your Machine ID code.

After completing the registration process online you can download your Serial Key from your customer account's *"My Licenses"* page on our web site, it's a file named "Serial.gvs". Transfer it to the computer where you wish to activate GrandVJ i.e. by using a USB key then, from GrandVJ' Serial Key screen (below), browse to the "Serial.gvs" file.



When you press next, GrandVJ will be activated. The "Serial.gvs" file has been copied into the software, so you can remove the USB key or delete the "Serial.gvs" file from your computer.

Once you have registered your software license on our web site and activated your first computer, you can use your Activation Code again to obtain another Serial Key and activate a second computer by proceeding as previously explained.

Your online customer account at www.arkaos.net is also the place where you can change your password, update your customer profile and of course retrieve your current Serial Keys, generate a new Serial Key or upgrade your license whenever we release a new version.

Important:

One software license allows you to activate GrandVJ on up to two of your own computers (i.e. your main computer and a backup, or your workstation and your laptop, or your production computer and your show computer, etc.. - Please refer to the ArKaos software license agreement at the beginning of this document for more information).

3.2.3 Try GrandVJ / Try GrandVJ XT (demo mode)

Choose this option to start the software in Demo mode, you will not be able to save your work and a "DEMO" banner will randomly appear in the output and in the master preview.

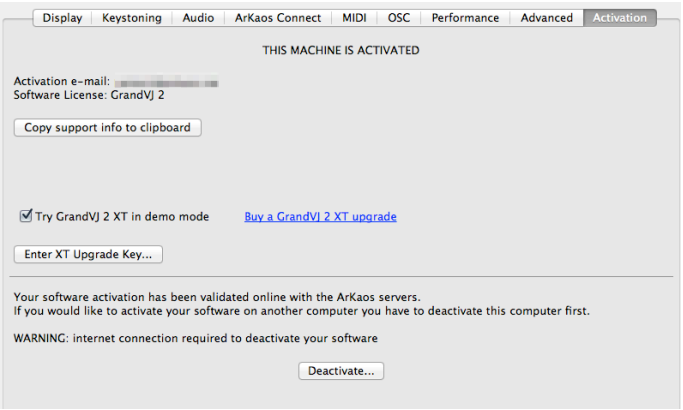
Important:

Apart from the restrictions above, the Demo mode is fully functional. All the effects and parameters are available and there is no time limitation. If you need to decide if a computer is capable of running GrandVJ fluently, you can take advantage of the demo mode, it's not necessary to activate the software on the system uness you decide to use it for good.

3.3 Deactivating GrandVJ on your computer

Since your software license is personal and only allows using two computers at the same time, you should always keep strict control of your activations. To do so, there are some cases where you might want to deactivate GrandVJ on a computer. For example, if you want to move GrandVJ to a new computer, if you want to use GrandVJ temporarily on a rented machine or on a computer pre-installed in a venue, if you intend to sell your computer etc..

You cannot deactivate a computer from your customer account on the ArKaos web site. The only way to deactivate GrandVJ on a computer is from the *"*Activation*"* tab in the *"Preferences"* window, or from the "File.." menu in GrandVJ, on the computer you want to deactivate. The computer must be connected to the Internet.



Once you press the "Deactivate.." button, GrandVJ will connect to our servers and remove its Serial Key in your customer account. The software will then confirm successful deactivation and quit. If you restart GrandVJ on that computer you will get the software registration dialog box and the option to register GrandVJ or use it in Demo mode.

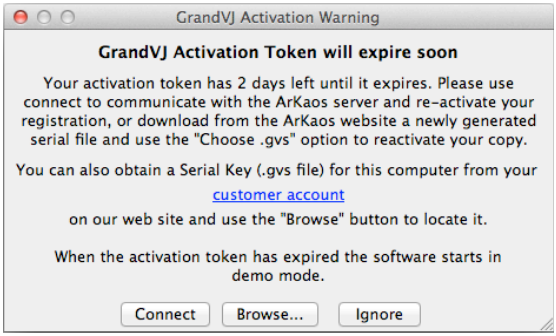
3.4 Periodical validation

For the activation / deactivation system to work, the software needs to check periodically with our servers that the computer is still authorized to run the software. Each time this happens, our servers update your GrandVJ Serial Key with a new Activation Token.

Important:
If your computer is frequently connected to the Internet while you run GrandVJ, this verification will happen silently and you will not notice anything.

3.4.1 Activation Token update

If during a few weeks you never connect your computer to the Internet while you use GrandVJ, it will start asking you to update your Activation Token.



The Activation Token message window offers the following options:

1. Online validation

If you click **"Connect"**: GrandVJ will try to contact our servers and update your Activation Token automatically. Make sure you connect your computer to the Internet before choosing this option.

2. Offline validation

If you click **"Browse.."**: you will be invited to browse your computer for a new Serial Key (i.e. a key that you have obtained from the ArKaos web site on another computer).

Each time you go to your customer account and re-download an existing Serial Key (.gvs file), it actually resets the Activation Token in that key.

Using that newly downloaded Serial Key in GrandVJ will have the same effect as above; it will update your Activation Token and give you a few more weeks of GrandVJ "offline" use.

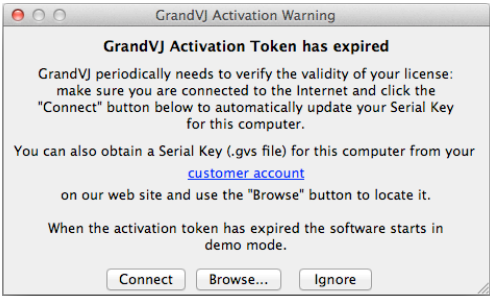
3. Ignoring the validation

If you click **"Ignore"**: GrandVJ will start normally, however you will get this message each time you start the software. To avoid this, simply use one of the options above. Once you start seeing this message you have approximately one month to update your Activation Token before GrandVJ switches to Demo mode.

3.4.2 Activation Token expired

GrandVJ only performs the periodical validation while it is running; if you have not used GrandVJ at all during several months, your Activation Token might have totally expired before the software had a chance to warn you.

If this happens, you will receive the above warning message when you launch GrandVJ but the software will immediately switch to Demo mode if you press the "Ignore" button.



You will have to connect your computer to the Internet or re-download the Serial Key to unlock GrandVJ on the computer.

3.5 Registration support

It's important to us that legit users can use the software they have purchased; therefore we provide priority support for problems related to software registration.

In order to get back to you with a solution to software registration problems in a timely manner, we have made it easy for you to send us all the necessary information related to your software license: from the *"*Activation*"* tab in the *"Preferences"* window you can click the button *"Copy support info to clipboard"*, you can then paste the copied information in your message when you contact our support team (also see chapter **Error! Reference source not found.*"Error! Reference source not found."*** for your support options).

4 SOFTWARE UPDATES

4.1 Minor software updates

We frequently release free software updates to fix software bugs, add new MIDI controller templates or even some new features, these are called “minor updates”. To benefit from these updates, no license upgrade is required; you just have to download the new software installer from our web site and install it on your computer, it will use your previous registration information.

If you are connected to the Internet, the application will inform you at startup if a new version is available. You can also subscribe to our periodical newsletter and get notified when there is a software update: https://www.arkaos.net/newsletter/subscribe

4.2 Upgrades

When we release a “major update” with important changes such as a new software interface, new advanced features or extensions we generally charge for an upgrade fee to fund development and require that you get new license codes from your customer account to unlock the new version.

It also works the same way if you want to upgrade to a superior license version such as from GrandVJ to GrandVJ XT.

4.2.1 Upgrading from our online shop

When an upgrade is available for one of the software licenses you own, you will be notified in your customer account on the ArKaos web site at https://www.arkaos.net/user. From there, select which upgrade you would like to purchase and proceed to checkout on our online store.

4.2.2 Upgrading with an Upgrade Key

If you have bought an Upgrade Pack from a reseller, you have received an installer CD and an Upgrade Key. You can install the new software version from the CD - or download the latest one from our web site - then you can use the Upgrade Key in the software registration wizard or in the from the *“*Activation*”* tab in the *“Preferences”* window of GrandVJ.

You can also use your Upgrade Key on the ArKaos web site at http://www.arkaos.net/register/. You will be asked to log in and then the web site will check if your customer account contains a license which can be upgraded with your key (i.e. the previous software version).

In both cases, when you successfully end the process, your new software license will be available in your customer account on the “My Licenses” page so you can obtain a Serial Key from it and unlock the new software version on your computer.

Your previous software license (the one you just upgraded) will still be visible in your customer account but you won’t be able to obtain any Serial Key from it anymore.

5 INTRODUCTION TO THE SOFTWARE

5.1 Basics

GrandVJ is an application that allows you to seamlessly integrate real-time audiovisual mixing with any type of performance situation. Serving up to 8 layers of video and boasting a very wide array of effects and control parameters, it is fully controllable via MIDI, computer keyboards or external sequencers.

GrandVJ is designed to work with a multi video-output computer setup. The main video output being used to display the user-interface and the previews, while the next video outputs will send the full resolution images to external hardware displays such as projectors, plasma screens, LED walls, video mixers, etc.

For more information on setting up multiple video-outputs, see chapter **Error! Reference source not found.***"Error! Reference source not found."* and section 0*""* later in this document.

5.2 Overview

The software interface consists in one main window displaying all of the information needed during a performance. It can show the 8 individual layer previews as well as the master preview (the image which is sent to the fullscreen video-outputs) and a parameter panel with settings for each layer.

Parameters can either be modified through the user-interface, from the computer keyboard, a MIDI controller or an OSC controller.

When you first start the software, the fullscreen output is disabled by default. If you want to send the fullscreen output to the computer's secondary video-outputs, activate fullscreen either by selecting **View ▶Toggle Fullscreen** or by pressing Ctrl+F on Windows / Cmd+F on Mac.

If you don't have a proper dual output setup, the full screen will be activated on the main screen, replacing the software interface. To exit full screen mode, press Ctrl+F / Cmd+F again.

5.2.1 Application modes

Depending on how you want to mix your visuals in GrandVJ, you can chose between two different modes. For more information about Application modes, see chapter 7.1 *"*Application Modes*"*.

1. Synth Mode

This is where you play visuals like you would play an instrument. You define cells and their properties and you "stack" cells on top each other by pressing simultaneous keys on the computer keyboard/MIDI controller.

2. Mixer Mode

This is where you can access the eight individual layers and control them individually. In this mode, GrandVJ becomes a full-featured eight layers software video mixer.

5.2.2 Output modes

Output modes define how / where GrandVJ is configured to output its visuals. Output modes are independent from the application modes, they work in both Synth mode and Mixer mode. You will find more information about Output modes at chapter 9.1 *"*Display*"*.

1. Instant Mode

In Instant mode, GrandVJ directly outputs the mix to a set of displays with the same resolution. The software considers this set as a single output.

2. VideoMapper Mode (GrandVJ XT only)

When configured to run in VideoMapper mode, GrandVJ XT will send the output from each layer to virtual “surfaces” as previously defined in the VideoMapper extension. One output can display a full screen visual or a composition of several mapped visuals.

5.3 Terminology

Visuals: Visual is a generic term encompassing everything that produces frames: this can be images, videos, camera streaming, generators or flash animations.

Effects: Effects are real-time processors that allow you to alter visuals. The complete collection of available effects can be found in the Effects tab of the browser panel.

Generators: Generators are sound controlled graphical elements. They react to the sound input from your sound card and are great to provided sound automated textures

Cells: Cells are placeholders to store a given combination of visuals / effect / transparency / copy mode / position combination. When you 'trigger' a cell, you send the content of the cell to the graphic engine. In synth mode, triggering cells stacks them on top of each other. In mixer mode, triggering a cell will send it to the currently selected layer.

Banks: Banks are combination of cells forming a mini library. There are two sets of 16 banks. The first bank set is laid out according to a matrix and referred to as the 'matrix bankset'. The second is shaped as a MIDI keyboard layout and is referred to as the 'keyboard bankset'. The matrix bank size can be changed to match any controller layout you would be using.

Layers: Layers represent stacks in the visual pipeline. Each layer has a set of properties matching the cell properties: one visual, one effect, transparency, copy modes, chroma/luma keying, position etc... GrandVJ is capable of displaying up to 8 layers. In synth mode, layers are assigned automatically depending on the way you trigger cells and their foreground/background property. In mixer mode, you have access to all the layer properties individually.

Mapping: Mappings represent a way to “connect” an element from the software to a control device (MIDI controllers, MIDI sequencers or the computer keyboard). You can map the matrix bank cell triggers, control the layer/cell properties, as well as some of the general controls of the software.

Project: A project is a collection of banks and cell definitions which are stored in a project file for later use.

Previews: Allow you to preview the content of a layer or the main output. The main preview window is always displayed and shows what is sent to the main output. In mixer mode, individual layer previews are also available.

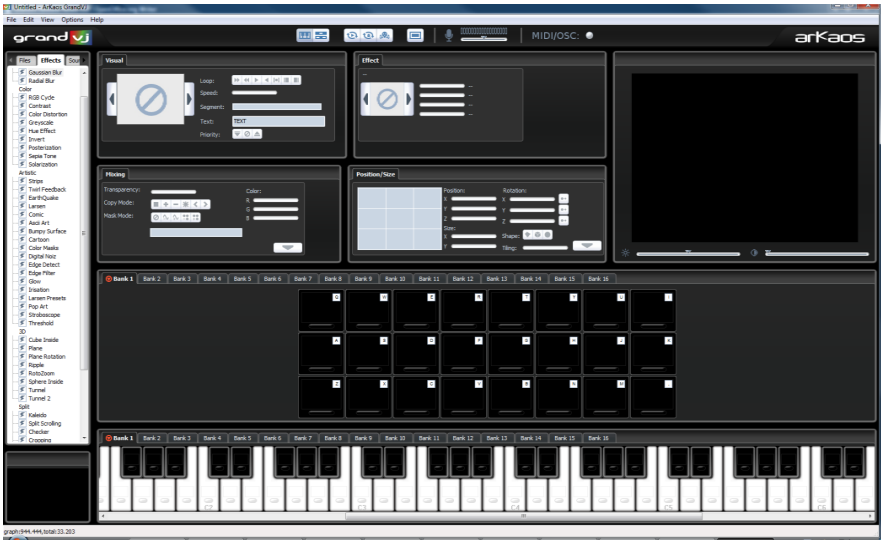
Transition: Transitions are special effects that provide a smooth change between triggered cells or decks. The complete collection of available transitions can be found in the transition tab of the browser panel.

Display: Displays are the devices that are connected to the computer graphical card(s) using DVI, HDMI, DisplayPort or VGA connectors.

Output: An output represents the destination of a video mix. While VideoMapper mode allows the use of multiple different outputs, Instant mode only allows a single one.

6 INTERFACE WALK-THROUGH

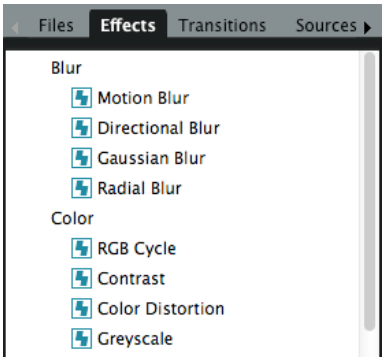
This section describes the different application panels and their functionality. Depending on the application mode you are using (synth or mixer), not all panels may be available. Specifically, in synth mode, the Mixer panel is not available.



Note:

Most panels are resizable to accommodate various screen resolutions and the software will remember different configurations for the synth and mixer mode. If you have enough resolution, you can unwrap the tabs of the parameter panel and the browser for example.

6.1 Browser Panel

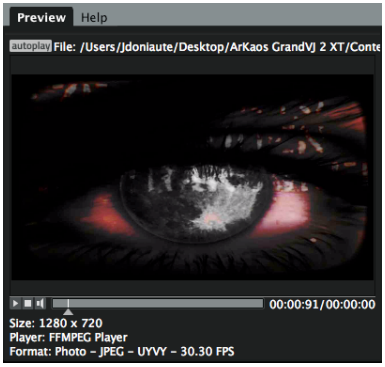


The left side of the application is dedicated to the browser section. The browser section contains six tabs with the following items:

- **The file browser** allows you to browse the file system of your computer and drag and drop files to a cell, to the visual library or to the layer previews (in mixer mode).
- **The effect browser** allows you to browse the available effects. Effects are sorted according to categories. The browser allows you to drag and drop effects to a cell or directly to a layer preview (in mixer mode).
- **The transition list** allows you to browse the available transitions. Transitions are sorted according to categories. The browser allows you to drag and drop Transitions to a cell (in synth mode) or in the Transition parameter panel (in mixer mode).

- **The source browser** allows you to browse visual elements; these include generators, flash texts, and cameras available on the system. The source browser allows you to select a source and drag and drop it to a cell or a layer preview (mixer mode only).
- **The visual library** contains the list of all the visuals that have been loaded in the session, no matter if it they're currently assigned to a cell or not. You can drag and drop a library element to a cell or to a layer preview (mixer mode only). The content of the visual library is saved with the project and restored when the project is loaded.
- If you load a lot of videos, they will keep accumulating in the visual library. To get rid of videos that are neither running nor associated to a cell, select the 'purge visual' entry from the edit menu
- **The mapping list** provides a summary of activated MIDI and keyboard mappings. It also provides additional options not available through direct mapping, such as setting and type of controller (for example, normal/incremental).

6.2 Browser preview



The browser preview panel allows to preview files, effects, transitions, sources and visuals from the browser section.

It will help you to decide which visual, effect, transition, etc. you will use before applying it to a cell in GrandVJ.

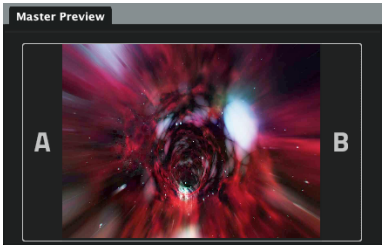
By default “Auto Preview” is enabled, thus when an item is selected in the browser section it will automatically try to preview this item.

The following controls are available for the preview:

- Start/pause button
- Stop button
- Audio mute button
- Seek bar

The purpose of the browser preview is to give quick preview of the different items listed in your browser panel. Therefore the preview will automatically stop when the browser section or the preview panel itself is out of focus. This allows saving computer processing for the fullscreen outputs of GrandVJ.

6.3 Master Preview



The master preview shows what is sent to the currently selected output of the software.

In mixer mode, when assigning layers to either A or B, you can use the master preview to display the mixer’s output or to preview only the deck A or B.

For example, let’s say you are outputting the content of deck A (by setting the cross-fader all the way to the left).

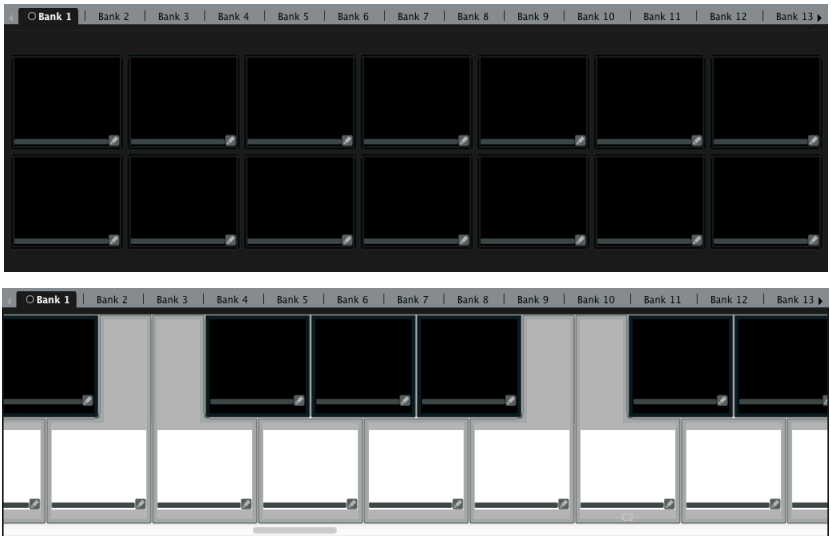
If you toggle the preview to deck B, you can now set it up without interrupting the main output. When you are satisfied by what is on deck B, flip back the preview to the main output (pressing B again) and use the cross-fader to go smoothly from A to B.

In Synth mode, the master preview displays the end result of the layer stack. What you see is what is sent to the full screen output(s).

In VideoMapper mode, since there can be multiple outputs, the master preview of the Mixer mode displays the final mix corresponding to the selected layer stack. In Synth mode, the Master Preview refers to the selected output, which can be either a single surface or a group. Refer to chapter 13 *"*VideoMapper Extension (GrandVJ XT)*"* for more information about the VideoMapper.

6.4 Banks

There are two sets of banks (or banksets). One is matrix-shaped, the other one is in the shape of a MIDI keyboard.



Each bankset contains 32 banks, arranged in tabs. Of those 32, only one is 'active' at a time. The active bank is the bank whose cells will be triggered when you press a keyboard or MIDI controller key. The active bank is marked with a small dot sign in its tab right before its name.

Each bank contains a certain number of cells containing a visual, an effect and various mixing parameters. On the matrix banks, cells can be triggered using one of three methods: Mouse, Keyboard or MIDI. The keyboard banks are only triggered from a predefined MIDI scheme corresponding to a piano keyboard.

The number of cells (horizontally/vertically) in the matrix bank set is user-definable but is the same across all banks.

6.5 Parameter Panels

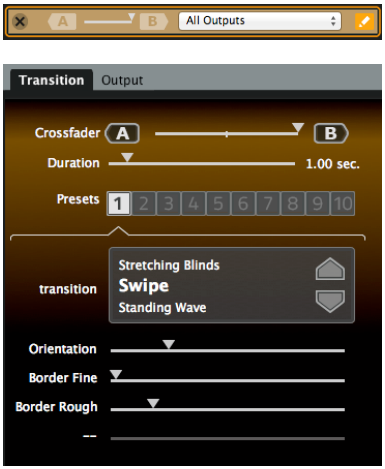
The parameter panels allows you to edit cell or layer parameters. In synth mode, only the cell parameters will be accessible.

In mixer mode, both cell parameters (for cue editing) and layer parameters (to update one of the running layers) will be accessible.

The Transition panel is only available in synth mode (cf 3.6 for transitions in mixer mode).

The parameter panel also allows you to set up the MIDI mapping of either cell parameters (synth mode only) or layer (mixer mode only).

6.6 Mixer Parameter panel (mixer mode only)

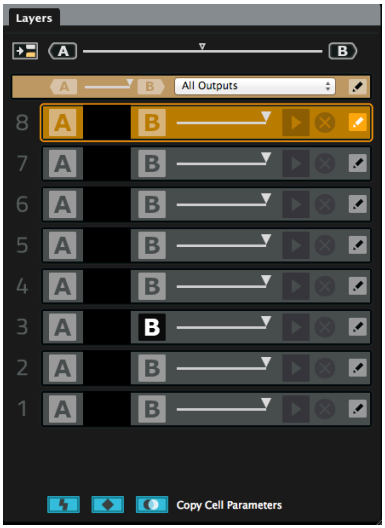


When you edit a mixer's output element (by clicking its "Edit" button in the mixer), the mixer parameter panel replaces the standard parameter panel.

The Transition tab lets you set control the current transition and prepare up to 10 transition presets.

In VideoMapper mode, the Output tab lets you select which outputs the visual mixing produced by the related layers will be rendered on.

6.7 Layer Element (mixer mode only)



In mixer mode, the layer preview panel allows you to preview the layer content. Layers are organized from the bottom up and each layer can be controlled independently.

A layer element is composed by the following items, from left to right:

- one button to map the layer selection and display the layer, if it is running.
- one A button to assign the layer to deck A
- one preview of the layer
- one transparency slider
- one button to pause/restart the layer
- one button to clear the layer
- one edit button to edit the layer's properties in the Parameter panel

6.8 Mixer element (mixer mode only)

In mixer mode, a group of layers is surmounted by a mixer element, which controls the transition between A & B decks. In VideoMapper mode, the mixer element sends the result to the selected output.

The mixer element is composed by the following elements, from left to right:

- one button to remove the mixer element
- one button to automate towards deck A
- one cross-fader slider to control the transition between deck A & B
- one button to automate towards deck B
- one menu to select the outputs the mixing will be sent to
- one edit button to edit the mixer's properties in the Mixer Parameter panel

6.9 Toolbar

The toolbar provides a series of buttons and displays with the following functionality:

switches to mixer or synth mode

latch / hold (synth mode only)

kill all (stops all running layers)

Master blackout (switch off the full screen output but not the preview)

activates / deactivates full screen

audio input meter + gain control

audio output meter + volume control

displays MIDI and OSC activity

the LED lights-up when GrandVJ is connected to an audio sequencer through the ArKaos Connect VST plug-in. The button allows to preview the sound coming from the sequencer

monitors GrandVJ's GPU and CPU framerate

shows / hide the browser and the matrix & keyboard bank panels

launches the VideoMapper editor (VideoMapper mode only)

6.10 Help Box

The help box is located under the browser section and displays contextual information about the element over which the mouse is hovering.

7 USING THE APPLICATION

7.1 Application Modes

As we mentioned earlier, GrandVJ provides two very distinct modes of operation. It can function as a visual instrument/performance tool or as a video-mixer. It is important to grasp the difference between these modes in order to fully take advantage of them.

Internally, GrandVJ allows for up to 8 layers of stacked video. In synth mode, layer assignment is done automatically depending on the order of triggering and the priority setting of the cell. In mixer mode, the user controls the layer content directly, providing a 8 channel video mixer.

7.1.1 Synth Mode

In this mode, each cell triggered is, by default, stacked “on top” of the previous ones in the graphic pipeline. A cell stays active from the moment it is triggered until it is released.

Cells are linked directly to the graphic pipeline, meaning that if you modify any parameter of a cell running in the engine, it will be reported directly to the graphic pipeline. For this reason, in synth mode, you can map cell parameters to controllers. You could, for example, map the 'transparency' setting of a cell to a MIDI controller slider and bring it from invisible to visible once it's been triggered.

It is also possible to assign a ‘priority’ value to cells. The priority has three values: foreground, background and normal. If the cell is assigned a background priority, it will always be 'stacked' under normal cells. Alternatively, if the cell is assigned a foreground priority, it will always be stacked on top of the others. This is handy, for example, if you want to have a logo or message continuously running above the rest while you're playing: simply put the cell in foreground and it will stay on top, no matter what other cells you trigger.

In VideoMapper mode, each output displays the composition of the different playing cells that are assigned to it.

7.1.2 Mixer Mode

Mixer mode works very much like a video mixer. The main difference from the synth mode is that you can decide which layer to send a cell to. Also, once a cell has been triggered on a layer, the layer runs independently from the cell.

Contrary to synth mode, modifying cell properties in mixer mode won't affect any layer settings. You can, however, act directly on all the layer parameters. To fade one layer out, you simply select it and use the parameter panel to slowly change its transparency.

Once a cell is triggered on a layer, it will run continuously, even when you release the cell's key. To stop a visual from running on a layer, simply press the stop button next to the layer preview.

In this mode, there is always one “selected” layer. The selected layer is the layer which will receive any triggered cell that’s not assigned to a particular layer. The currently selected layer can be changed by clicking on any layer’s index or preview.

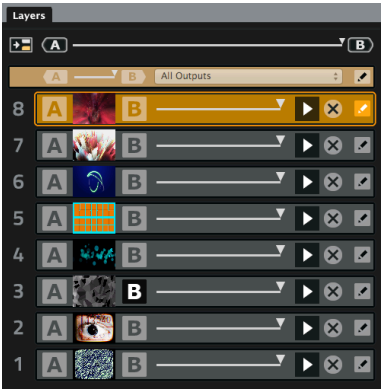
Selected layers are highlighted in orange.

You can set cells to be triggered directly to a specified layer rather than to the one currently selected.

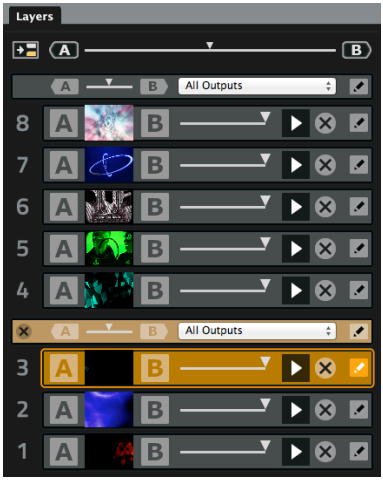
This is allows you to pre-configure specific movies, masks or effects to be sent directly to one layer (the topmost for example) without having to switch layers. This setting is available in the visual tab and is only available for cells.

As we just explained, in mixer mode, you can still modify cell parameters but these will only be active when the cell is triggered. For this reason, cell parameters cannot be mapped in mixer mode. You can only map layer parameters.

In addition to triggering cells on a layer, you can drag and drop visuals and effects directly on the layer preview.



In instant mode, the eight layers of GrandVJ display a unique mixer.



In VideoMapper mode, GrandVJ lets you insert additional mixers in the layer stack. Therefore every consecutive layer that are under that mixer will be mixed together and displayed on the selected outputs.

In GrandVJ, each Mixer has two decks. By pressing the 'A' or 'B' button on each side of the layer preview, you can assign each layer to either the 'A' or 'B' deck. This makes the software run two separate scene renderings, one being the combination of A and unassigned layers, and the other the combination of B and unassigned layers. The two separated renderings are finally mixed using the selected transition effect that's controlled with the cross-fader.

When the cross fader is all the way to the left (on the A side), layers assigned to 'A' will be fully visible while layers assigned to 'B' will be invisible. On the other hand, when the cross-fader is all the way to the right, all layer assigned to B will be fully visible while layers associated to A will be hidden.

You can also achieve an automatic transition between A and B scenes by using the A and B buttons that are located respectively on the left and on the right side of the cross- fader.

The automatic fade time, as well as parameter of the selected transition preset, can be configured by deploying the cross- fader control panel as shown on the image on the left.

7.2 Managing cells

7.2.1 Basics

Cells are the foundation of GrandVJ. Cells work like “cues” where you setup a combination of a visual and/or an effect ready to be triggered at anytime.

To assign a visual to a cell, simply browse your file system for any movie or picture and drag and drop it to the cell of your choice.

You can achieve this either from GrandVJ’s integrated browser or from your operating system's Finder / Explorer.

Note to PC users:

By default, when running in full screen, GrandVJ uses a special DirectX mode called “exclusive mode”. The exclusive mode is optimal in terms of performances but has one drawback: if you activate any other application, full screen mode will quit. This prevents you from using the Windows Explorer to drag and drop elements while running in fullscreen. If you wish to use the Explorer (or other applications) while running GrandVJ in fullscreen, go to the Preferences dialog and remove the “force resolution” option (see the ‘Preferences Dialog’ section later in this document).

Using this technique, you can start building collections of cells that you want to use during your performance.

In order to organize your cells, you have two sets of 32 banks: the matrix bankset and the keyboard bankset.

The matrix banks can be mapped to any keyboard/MIDI controllers while the keyboard banks are pre-assigned to MIDI notes and cannot be triggered from the keyboard.

7.2.2 Triggering and Mapping Cells

Once you have a set of cells containing visuals and/or effects you can trigger them so that they 'play' in the engine. Triggering cells in synth mode and in mixer mode is quite different. In synth mode, a cell stays active until you release the corresponding key. In mixer mode, a cell is “copied” to a mixing layer and will continuously play until you either trigger another cell on that layer or decide to stop it manually (see above for more description of the two modes)

There are different ways to trigger a cell:

- **using the mouse**: simply click on the cell.
- **using the computer keyboard**: if a cell is mapped to a keyboard key (the keyboard shortcut is shown on the top right corner of the cell), simply depress the corresponding key.
- **using a MIDI controller**: if your cell is mapped to a MIDI controllernote, you can trigger it by just pressing the corresponding key on the controller.
- **using an OSC controller**: if your cell is mapped to a OSC message, you can trigger it by just pressing the corresponding key on the controller.
- **using a MIDI sequencer**: If you cell is mapped to a MIDI note, you can trigger it from the sequencer using ArKaos Connect, Rewire or simply MIDI.

If you don't have any mapping set up (on the matrix bank) you can very easily define a new mapping by toggling the application in 'mapping' mode. Note that the mapping is the same across all banks.

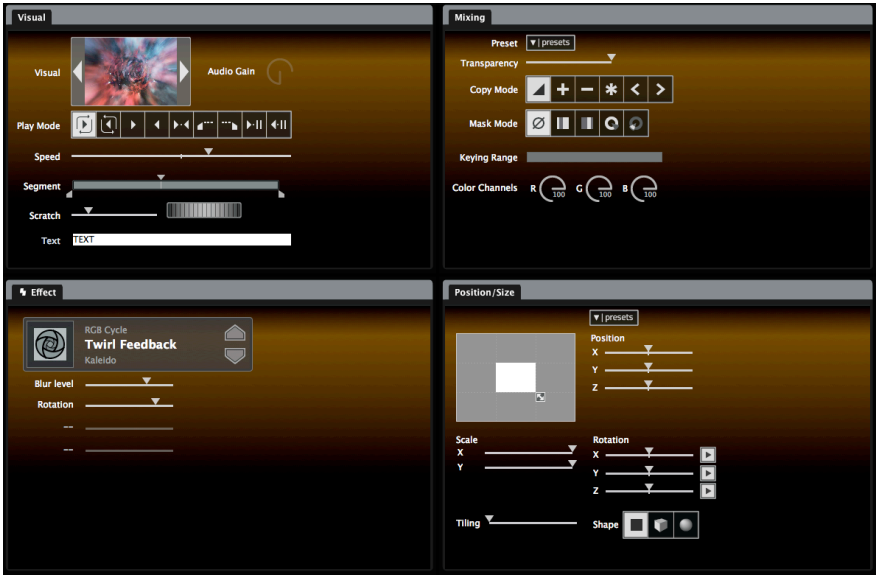
If the mapping for the top left cell is 'A' it will be 'A' for all banks from 1 to 32. Cells are always triggered from the active bank, designated by a red tab.

7.2.3 Latch and Hold (Synth mode)

The latch and hold buttons on the tool bar add flexibility to triggering cells in synth mode. Normally, a cell runs as long as the corresponding keyboard/MIDI key is held down. If latch is activated, triggering a cell will work in a toggling fashion. The first time you trigger the cell, it is activated, the second time it is deactivated. The hold button can be used to 'hold' all running cells, meaning that once the cells have been triggered, you can release the corresponding key(s) and the cells will continue to run, until you retrigger the cells.

7.2.4 Cell parameters

Together with the visual and effect assigned to a cell, you can also define a whole set of parameters that will influence the way your visual is displayed. All of the parameters are contained in the parameter panel and are grouped in four tabs: Visual, Effects, Mixing and Position/Size.

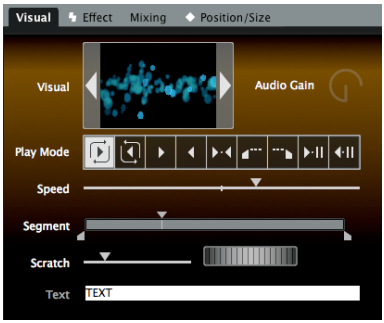


Note that if your screen is big enough, you can undock the tabs and to see all four tab contents at the same time as shown above.

To edit the parameters of a cell, click on the edit button in the bottom right corner of the cell. You can right click on the cell as well. The cell will have a blue outline to show it is currently edited. The parameter panels are blue as well when a cell is edited.

1. Visual Tab

The visual tab controls what visual is assigned to the cell and how it will be played.



- **The visual thumbnail** shows the visual assigned to the cell. If you wish, you can directly drag and drop a visual from the file browser n the thumbnail rather than on the cell itself.

- **The two arrows** on each side of the cell allow you to browse through all the available visuals. This includes any visuals already opened in the project (and listed in the 'Visuals' browser), as well as cameras and generators. Use the left arrow to go to the previous visual and the right one to go to the next one.

- T**he audio gain** of each video placed on a cell can be controlled using a dedicated slider that is in the Visual parameters panel when editing the corresponding cell.

- **Loop modes** allow you to define how the visual will be played back. The modes include, in order: forward loop, backward loop, forward once, backward once, ping-pong, start frame, end frame, play once forward and freeze, play once backward and freeze.

- **The speed setting** allows you to control playback speed: The center position is 0% (still), all the way to the right is forward at 400% (4 times faster than nominal playback) and all the way to the left is backward at 400%. Note that, like most controls in GrandVJ, you can reset the speed to its default value (nominal playback) by right clicking the control and selecting 'default value'. You can also reset any slider to its default value by using Ctrl+Click [PC] / Alt+Click [Mac].

- **The segment widget** allows you to define a subset of a movie. The start and end point define which frames will be used for the actual playback region of the movie. Note that it's very handy to setup the playback mode to either 'start frame' or 'end frame' when setting up the segment since it will continuously display the reference point you modify.

- **The two scratch widgets** let you control the sensitivity of the scratch and the scratch itself. The scratch widget should be mapped to a MIDI cc that sends circular values. You can also use one that is incremental but in this case you have to check the “circular” checkbox when editing the MIDI mapping on this widget (right-click → “MIDI Mapping..”).

- **The text setting** is only for flash animations that support text replacement. If this field is active, it means you can enter any text to be displayed when playing the flash file.

- **The priority setting** is only available in synth mode (see earlier in this document for a description of the synth & mixer mode). If the priority is set 'background', the cell will be triggered “under” already running visuals, if it is set to “foreground”, it will run on top of cells that have either a regular or background priority.

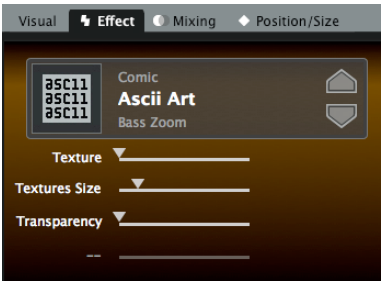
- **In mixer mode**, you can set cells to be triggered directly to a specified layer rather than the one that is selected. This is allows you to pre-configure movies, masks or effects to be sent directly to one layer (the topmost for example) without having to switch layers.

2. *Effect Tab*

The effect tab shows the cell effect and effect parameters.

Just as the visuals, you can directly drag an effect from the effect browser and drop it on the effect thumbnail.

- You can also browse the effects using the **next/previous arrows** located alongside the effect thumbnail.
- Each effect can have up to 4 parameters. **The parameters** and their values are displayed next to the effect thumbnail.



3. *Mixing Tab*

The mixing tab controls how the cells are “composited” with the underlying layers.

- **The transparency setting** controls how the visual will be mixed with the underlying layer. If the transparency is set to zero, the visual will be completely invisible. If it is set to the maximum and no copy/mask mode is selected, the visual will be opaque, possibly hiding them completely. Changing the transparency allows you to do fade ins/fade outs.

- **The copy modes** express how pixels from the cell are going to be combined with the ones of the underlying layers. In the default mode, pixel colors are mixed together, with a blending value depending on the transparency, like a traditional mixer. GrandVJ also allows you to use other ways to combine the pixels: In addition modes, the pixels from the cell are going to be added to the ones of the underlying layers; In subtraction mode, they will be subtracted; the multiplication mode multiplies pixels together while the two last modes do a luminosity comparison, taking the pixel that has either the lowest or highest brightness.

- **The masking modes** are used for luminance/chrominance masking. Masking allows you to 'remove' part of the visual based on either the brightness (luminance keying) or color (chrominance keying). Each mode needs the definition of a 'filter' that express which values are let through and which values are not. Depending on whether you choose 'pass' or 'reject' filters, the filter definition will be used to either keep or reject pixels.

  Here's the example of a chrominance filter definition:

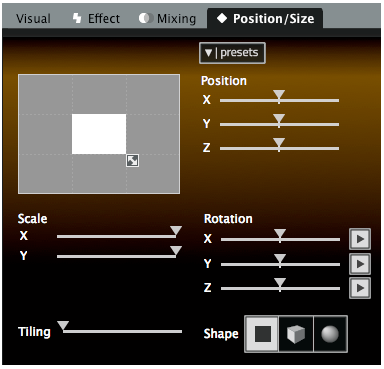
  The color bar allows you to define the center color around which the filter will be computed. Click and drag inside it to change the center/reference color. The top handles specify the width of the color range. The larger it is, the more colors will be passed/rejected. The bottom handles defines the slope or 'smoothness' of the filter. The larger it is, the smoother the transition gradient from passed to rejected colors will be.

- **The color settings** can be used to change the tint of the visual. Each of the R,G,B sliders remove a certain amount of that component from the original visual.

- **The preset button** (down arrow) allows you to quickly select a combination of mask mode, copy mode and color settings from a list of presets.

4. Position / Size Tab

The position/size tab specifies how the visual will be positioned on the screen.



- **The position setting** x / y moves the visual across the screen. The z position acts like a zoom.

- **The scale setting** alters the size of the visual on the screen.

- **The rotation parameters** are used to specify a 3D rotation of the object on which the visual is mapped. Next to each axis slide is a button which specifies whether the rotation value is an absolute value or a continuous rotation speed.

- **The shape controls** map the visual on various 3D shapes: you can select between plane, cube or sphere.

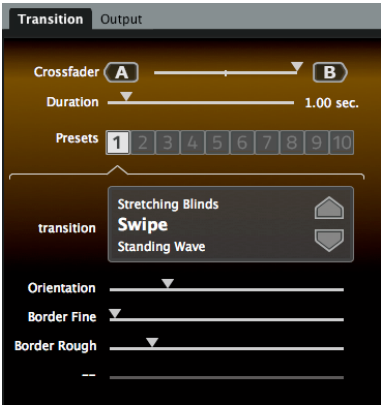
- **The tiling parameter** specifies how many times the visual is to be tiled (repeated) on the 3D shape.

- **The preset menu** (down arrow) selects predefined combinations for the position/size parameters.

7.2.5 Transition Tab

In Synth mode, the transition tab is only available when editing a cell. The transition tab shows the cell's transition and parameters that's used when starting and stopping a cell.

Just as for the visuals, you can directly drag a transition from the transition browser and drop it on the transition thumbnail.



- You can also browse the transitions using the **next/previous arrows** located alongside the transition thumbnail.

- Each transition can have up to 4 parameters. **The parameters** and their values are displayed next to the transition thumbnail.

7.2.6 Cell Parameter Mapping

In synth mode only, most cell parameters can be mapped. To map any parameter to either a computer keyboard key or MIDI controller, simply toggle the application in MIDI/Keyboard mapping mode; select the control to map and move the desired controller.

Note that in mixer mode, the cells parameters are merely 'copied' to a running layer and there is no way to map them to remote control. The live controls in mixer mode are assigned to layer parameters (see further).

All controls can also be reset to their default values by right-clicking on the control and selecting 'default value' from the pop-up menu.

7.2.7 Cell Copy / Paste

In addition to building cells from scratch, there are ways that you can copy content or cell parameters to other cells:

Dragging one cell to another cell will duplicate all the settings from the source cell to the target cell.

Right-clicking on a cell allows you to select copy/cut/paste the cell content from/to the clipboard. It will also allow you to clear the cell completely or to remove its effect or visual.

Please note that since right-clicking a cell is also used to select it for edition, you need to hold the right click for a little while before the menu shows up.

Alternatively, you can also select a cell and select copy/cut/paste from the menu or use the keyboard shortcut.

7.3 Banks

As seen previously, banks are collections of cells. There are two groups of banks (or bank sets): one is shaped like a piano keyboard (and is pre-assigned to MIDI notes) and the other one is in the form of a matrix.

The matrix bankset is the only one that can be mapped. The number of row/column in the matrix is also user-configurable by right-clicking in the gray area of the bank and selecting “set matrix size”. The size of the matrix will be changed across all banks. Alternatively, you can also set the matrix size by selecting the menu entry **Options ▶ Set Matrix Size...**”

7.3.1 Bank Control

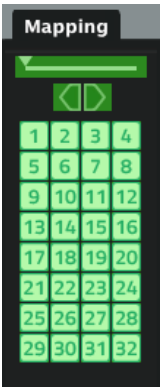
In each bank set, there is always one active bank. The active bank is designated with a red indicator in its tab:

Whenever you trigger a cell from the computer keyboard or a MIDI controller, it is ALWAYS in the active bank that the cell is triggered. All banks share the same trigger mapping settings.

To change the active bank, you can left-click its tab with the mouse or trigger the change with a controller. To display a bank without making it active, simply right-click its tab with the mouse.

Note:
In Synth mode, triggering a cell in a new active bank will stop all cells which were running in the previous active bank.

To define which controllers will be used to control the active bank selection, simply switch the application to either Keyboard, or MIDI or OSC mapping mode using the options menu.



You will notice that next to the bank, a special bank-mapping panel appears. This panel provides several ways to control the active bank in each bankset:

- **The slider** allows a continuous controller to be used to smoothly browse iterate across all banks.
- **The two arrows** allow you to map to controllers/keys to next/previous bank in the bankset.
- **The 16 to 32 numbers** gives the possibility to map a key or a controller to directly select one of the 3216 banks.

7.3.2 Bank Operations

Banks can be easily duplicated. The context menu provides the usual copy/cut/paste operations.

You can also export a bank's content to a file and re-import it later. This feature allows you to create a lot of banks according to different themes and load them in your live project as you need them.

Keep in mind however, that loading a lot of video might slow down your system, so it's a good idea to use the “purge visual” entry in the edit menu to get rid of unused videos taking unnecessary resources.

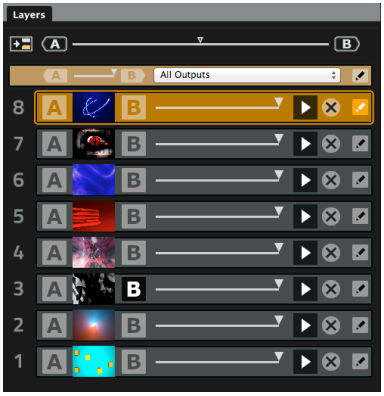
Also, importing banks won't change the size of the matrix layout. If you rely on this feature, try to always use the same configuration.

7.4 Layers (Mixer Mode)

Layer previews are only visible in mixer mode. As we said earlier, mixer mode works differently from the synth mode. In mixer mode, rather than acting on cell parameters, you act directly on the layer parameters. There are eight layers available at all times and all layers are shown in the layer preview panel.

7.4.1 Layer Previews

The layer previews display the state of the different layers, along with a few controls. Each layer has, in order from left to right:



- **A layer index** number used for selection
- **A / B buttons** to render the layer in a specific deck
- **A layer preview**, showing the visual running on the layer
- **A transparency slider**, allowing direct control of the layer's transparency
- **A play / pause button** allowing you to temporarily pause the layer and restart it. When paused, the layer will not be displayed.
- **A stop button** to clear the layer

- **An edit button** to show the layer's parameter in the parameter panel
- **A running indicator**

You can right click on a layer preview to show a contextual menu which allows you to remove the visual or the effect from the layer.

Layers previews can also be dragged and dropped back onto cell, creating a cue with the current layer settings.

7.4.2 Layer Parameters

In mixer mode, there is always one layer that is selected. The selected layer is the one that will receive cells that are triggered. (Unless of course you have set a target layer)

Once a cell has been triggered on a layer, the layer runs independently from it. This means that, to the contrary of the synth mode, once a cell has been 'sent' on a layer, changing the cell parameters won't affect the running layer. You can, however, directly edit the layer parameters. To do so, simply select a layer and the parameter panel will turn Orange. It will display the layer parameters instead of the cells parameters, which are blue.

It's important to understand at this point that in mixer mode, the same parameter panel can be used to edit either cells (Blue) or layer (Orange) parameters, depending on which one was last selected. Right click on a cell or left clic on the small pen icon will Edit a cell and you will see the cell's background outline turn blue, showing it's the cell parameters that are being edited.

Layer parameters are the same as the cell parameters except that what relates to Layers is shown in orange and what relates to cells is shown in blue, this is made to avoid the confusion when editing the parameters.

In mixer mode, when you trigger a cell, the parameters of the cell (transparency, speed, copy modes, etc ..) are copied to the layer if the copy control is activated..

To let you see at a glance which parameters will be copied to the layer, The three buttons represent respectively

- the effect parameters:  ,
- the mixing parameters: 
- the position parameters: 

7.4.3 Layer control

1. Locking Layer Parameters

If you can now see which parameters will be copied to the layer at a glance, you can also depress these buttons to lock some of the layer parameters so they won't be transmitted to the layer when you trigger a cell. For example, if you set up a transparency setting on the layer, you don't want the transparency setting of the cell to alter the layer.

2. Mapping Layer Parameters

As for the cell parameters in synth mode, you can map all of the layer parameters through MIDI / OSC. Simply toggle the application in MIDI / OSC mapping mode, select the parameter to control and move the MIDI / OSC controller knob you would like to assign to it.

GrandVJ provides two different modes to control the layer parameters:

- In the default mode, all layers have independently assignable parameters. This means that you can for example define a separate controller for the red balance on Layer 1,2,3,...,etc. This scheme works quite well if you have a controller that is large or allows you to easily change presets on the fly.

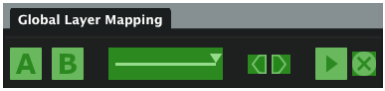
- The other “Map Selected Layer” mode allows you to define a 'template' of controllers that will always act on the selected layer. In this mode, if you assign the red balance to CC 3, moving CC 3 will always affect the red balance of the selected layer. This makes it easier to control a large set of parameters from a small amount of knobs.

You switch between the two modes by selecting the menu entry **Options ▶ Map Selected Layer**.

Note that even in the “Map Selected Layer” mode, you still can access the individual transparency controls on the layer preview panel and map them to separate controllers.

3. Mapping Layer Selection

There are a number of possible ways to control layer selection. When you toggle the application in MIDI/Keyboard mapping, a new panel appears on top of the layer previews:



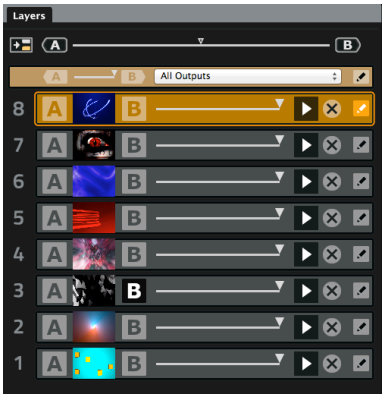
- **The slider** allows you to assign a continuous controller to the layer selection.

- **The two arrow shaped buttons** allow mapping a control for next and previous layer.

- **The “A” and “B” buttons** are used to map the A/B deck assignment.

- **The play/pause and “X” buttons** allow respectively pausing or stopping the selected channel.

7.4.4 A/B Cross-fader (Mixer mode)



In mixer mode, GrandVJ now has the possibility of assigning each layer to either the 'A' or 'B' deck. This is done by pressing the 'A' or 'B' buttons on each side from the layer preview.

Therefore, the software will run two separate scene renderings, one being the combination of A and unassigned layers, and the other the combination of B and unassigned layers.

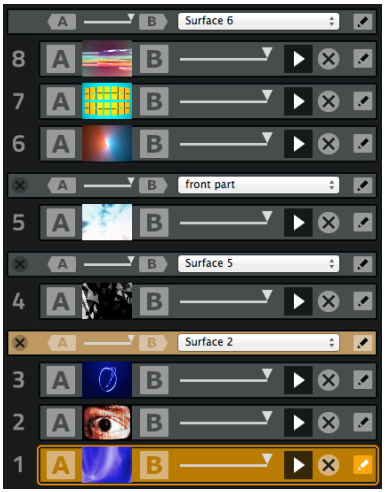
The two separated renderings are finally mixed using the selected transition effect that's controlled using the cross-fader.

When the cross-fader is all the way to the left (on the A side), layers assigned to 'A' will be fully visible while layers assigned to 'B' will be invisible. On the other hand, when the cross-fader is all the way to the right, all layer assigned to B will be fully visible while layers associated to A will be hidden.

You can also achieve an automatic transition between A and B scenes by using the A and B buttons that are located respectively on the left and on the right side of the cross-fader.

Each mixer element has its own set of transitions, cross-fader and automatic fade buttons.

The automatic fade time, as well as parameter of the selected transition preset, can be configured in the Transition tab, which appears when you click on the "Edit" button next to the output selector.



In VideoMapper mode, GrandVJ allows you to create additional mixer elements, each controlling the mixing of the layers that are under it.

On top of the layers stack lays an "insert mixer" button and a global cross-fader that let you control all the mixers' at once:

More importantly, you can select which outputs the mixer renders to, enabling you to display different video mixes on different displays with the same machine.

The master preview will display the mixer that corresponds to the selected layer.

Note:

If several Mixers would render to the same output, the mixer that's the highest in the layer stack would be the only one rendering into that output.

7.4.5 Independent preview

When assigning layers to either A or B, you have the possibility to use the master preview to display the output but also to preview only the layers assigned to either deck A or B.

Suppose you are outputting the content of deck A (by setting the cross fader all the way to the left). If you toggle the preview to deck B, you can now set it up without interrupting the main output. When you are satisfied by what is on deck B, flip back the preview to the main output (pressing B again) and use the cross fader to go smoothly from A to B.

7.4.6 Mixer state saving

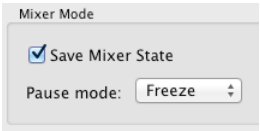
When quitting the application, the state of the mixer is now saved and restored when it is restarted. Note that only the locked parameters are saved, since any cell triggered will override non-locked parameters, it doesn't make sense to include them.

You can activate/deactivate this feature from the Preferences Dialog, in the *"Advanced"* tab

7.4.7 Mixer pause mode preference

This preference (also located in the *"Advanced"* tab) lets you chose between two different pause modes when in Mixer mode:

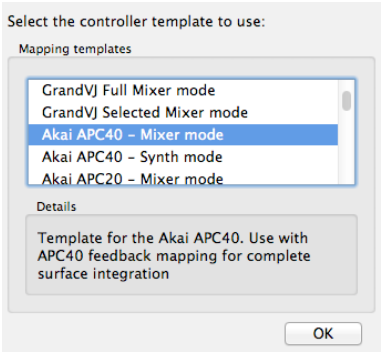
- **"Cut"** (default, for compatibility reasons): the layer disappears from the Mixer
- **"Freeze"**: the layer keeps showing in the Mixer



8 USING A CONTROLLER WITH GRANDVJ

8.1 Mapping templates

Controller mapping is an important part of GrandVJ. Together with external MIDI gear, MIDI sequencers, OSC or even the computer keyboard, these are all key elements to create your perfect live setup.



GrandVJ has built-in templates for most popular MIDI controllers of the market. These should give you an idea of the interaction between the software and the MIDI controllers.

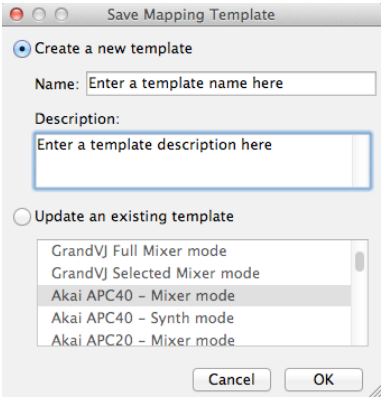
When you start GrandVJ and select “New”, you will be prompted to select a controller template to start with.

For each controller, you will have the choice between Mixer mode and Synth mode.

Note that you can switch the mode later in GrandVJ, however, since the controller is slightly differently mapped, some of the functions might not seem to be available.

8.1.1 Using custom templates

In GrandVJ, it is easy to create, modify or share templates with other users.



To create your own template, map and prepare all your MIDI/OSC/Keyboard assignment and then select the menu File ▶Save mapping template.

In the dialog, you can choose to either create a new template (in which case you will need to specify a template name and a description) or update an existing template.

To load or manage your template set, choose the menu File ▶Load Mapping Template. This will open the “Choose mapping template” dialog. Then simply select a template from the list and click the Ok button.

Alternatively, you can also reset all templates to the factory settings or import a template that has been given to you as .vjt file.

You can also right click on any entry to delete it, edit its name/description or export the template definition to a separate .vjt file.

8.2 Controller Mapping

Mapping a new controller is fairly easy and can be achieved in two ways:

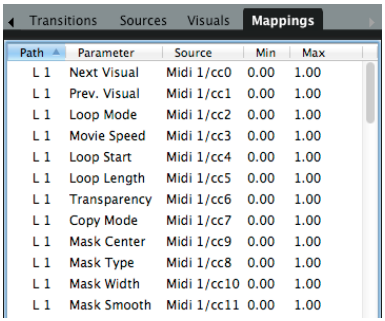
For each element you wish to map in GrandVJ, you can right click on it and choose 'MIDI mapping', 'OSC mapping' or 'Keyboard mapping', depending on the mapping mode corresponding to your controller. A dialog will pop up, allowing you to edit the mapping parameters for that particular element. You can also clear a control mapping by right-clicking it and selecting "clear mappings".

If you plan to map of a lot of controls, you can switch GrandVJ to mapping mode from the menu **Options ▶ Edit MIDI Mapping** (or OSC or Keyboard, depending on the mapping mode corresponding to your controller). Once there, all controls that can be mapped are highlighted in green (MIDI), pink (OSC) or blue (Keyboard).

For each element you map, you will select a control, cell or parameter in GrandVJ and then move the corresponding control (knob, fader, button, etc.) on your device. Once you are done, exit mapping mode and you will be able to control and trigger parameters directly from the controller.

All the existing mappings are listed in the mapping list, which you can access from "mappings" tab of the browser section. You can edit the mappings and delete them directly from there. Selecting a control on the interface will also select the corresponding mapping in the browser.

8.3 The Mapping List



Through the previous chapters, we've seen that it is fairly easy to map MIDI, OSC or keyboard control to most software parameters.

The 'mappings' tab in the browser section lists all the existing mappings.

If you right-click an entry in the mappings lists you can edit it or delete it.

If you choose to edit it (which you can achieve by double-clicking as well), it will open the Mapping Definition dialog.

8.4 Keyboard Mapping Mode

To define/change a keyboard mapping of any controllable element in GrandVJ, the easiest is to toggle the application in keyboard mapping mode. To do so, go to the menu **Options ▶ Edit Keyboard Mapping**. All controllable elements will turn blue.

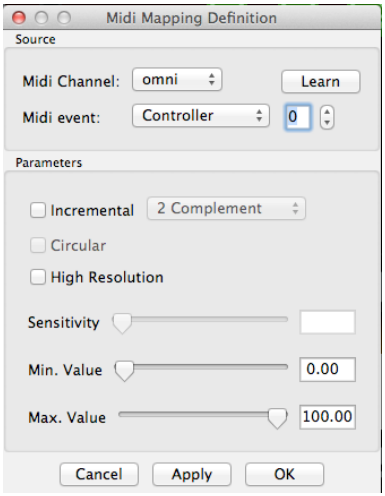
You can edit the mapping of any element by clicking it (it will be surrounded by a black outline) and pressing the keyboard key you would like to assign to it. Exit the keyboard mapping edit mode by selecting **Options ▶ Edit Keyboard Mapping** again.

8.5 MIDI Mapping Mode

To define/change the MIDI mapping of any controllable element, you follow a similar procedure. Toggle the application by selecting **Options ▶ Edit MIDI Mapping**, select a control and activate the key/controller you would like to assign to it. All controllable elements will turn green when editing MIDI mapping.

Additionally, you can edit mappings in the mapping browser window or by right-clicking any controllable element.

8.5.1 The MIDI Mapping Dialog



The dialog allows you to manually setup the controller type and MIDI channel but also gives you a few more options:

- **The incremental toggle** specifies that the controller is sending incremental values. There are a couple of variants in the MIDI specification so you will have to choose the type of incremental controller: (2 complement, Signed bit, Signed bit 2, Bin Offset)
- **The circular toggle** specifies you want the mapping to work in a wrap-around fashion; for example, if you go lower than the minimum value it goes back to the maximum value and vice versa.
- **The sensitivity** is used to calibrate the incremental controllers to react better
- **The Min. & Max. values** can be used to limit the range of the controlled element. If you put a maximum value lower than the minimum value, the control mapping will be inverted.

Note:

You can also directly access this dialog by right-clicking on any assignable control and select “edit keyboard mapping...” or “edit MIDI mapping...”

8.6 OSC Mapping Mode

In addition to MIDI and Keyboard control, GrandVJ can be controlled through Open Sound Control (or OSC). OSC is a networked protocol (so it works through regular wired or wireless tcp/ip) and a lot more precise than MIDI. There is a lot of applications that support this OSC, especially in the mobile field on devices like the iPhone.

To define/change the OSC mapping of any controllable element, you follow a similar procedure. Toggle the application by selecting **Options ▶ Edit OSC Mapping**, select a control and activate the key/controller you would like to assign to it. All controllable elements will turn pink when editing OSC mapping.

Additionally, you can edit mappings in the mapping browser window or by right-clicking any controllable element.

8.6.1 Setting up OSC nodes

The same way GrandVJ listens to MIDI, it can also listen to the network for OSC messages. Any control can be mapped to any OSC address for remote control.

Since it is a network protocol, you will have to define on which port GrandVJ needs to listen. This is done in the Preferences Dialog, in the OSC tab.

To assign a control to an OSC control, simply toggle the application in OSC mapping (Menu Options ▶Edit OSC Mapping), select with the mouse the control you would like to map and send OSC messages from the remote application.

Once it is mapped, you will see the mapping address looking like a path on the key itself. for example:

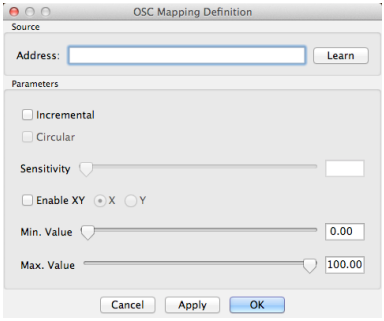
```
/2/push1
```

All OSC communication is done using referring path-like addresses. Each address represents a node that can be controlled. GrandVJ expects the controlling application to supply values between 0.0 and 1.0.

If your controlling application sends more than one value per address (for example a X-Y touch pad could send one value for X and on for Y using a single address), you will need to enter the address by hand.

To do so, right click on the control you would like to map and select OSC Mapping, this will open the OSC Mapping dialog...

8.6.2 OSC Mapping dialog



You can there enter any address that you would like. If you want to specify the second value of the address (e.g. for the XY pad example we talked about) specify a comma followed by the number of the parameter after the address.

Similarly to MIDI mapping, you can set the mapping as incremental and circular.

GrandVJ can take advantage of the two-coordinates OSC controls like XY pads by letting you choose which of the two coordinates you would like to you for the targeted parameter.

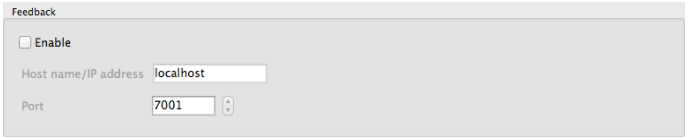
Note for handled device users:

if you use an OSC application on an handled device (for example mrmr, TouchOSC, ...), don't forget to deactivate the accelerometer during the "OSC learn" phase, otherwise the device will send a lot of accelerometer values and you won't be able to assign messages other than the accelerometer controls.

8.6.3 Open Sound Control feedback

GrandVJ can send OSC feedback to compatible devices.

You can activate OSC feedback in the Preferences, at the bottom of the OSC tab:



In order for GrandVJ to send the feedback to the device, you must specify the hostname or its IP address as well as the port. Those information should be summarized on the device itself.

8.7 Bi-directional controllers & MIDI feedback

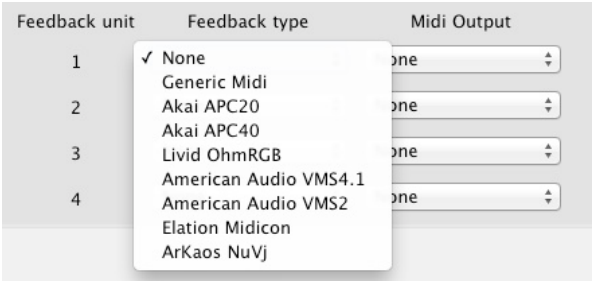
GrandVJ supports controllers with MIDI feedback.

In the Preferences / MIDI tab, you can specify devices that will receive MIDI feedback from the application. This means that bi-directional devices can be much better integrated since switching layer will reflect parameter changes to the units.

You can define up to four different feedback units in the Preferences Dialog / MIDI tab. Once selected, feedback devices will be restored each time GrandVJ is restarted.

Additionally, we also provide dedicated templates with predefined mapping for specific controllers (see 8.1 Mapping templates).

To use MIDI Feedback with these predefined mappings, you first need to create a new project using the desired template, then go to the Preferences Dialog / MIDI tab and choose the corresponding device as feedback unit (if the controller supports MIDI feedback) and MIDI output.



For other feedback devices that are not listed (i.e. Behringer's or Livid's), simply select "Generic MIDI" as feedback type.

8.8 Dedicated mapping templates for specific controllers

8.8.1 Akai APC20 and APC40

To use GrandVJ with the APC40, you first need to create a new project using one of the APC40 templates, then go to the preferences/MIDI tab and choose the APC40 device & APC40 MIDI output as feedback unit, do the same for the APC20.

8.8.2 Elation MIDIcon

Don't forget to load the Elation MIDIcon MIDI feedback in MIDI preferences to enable the feedback on the controller.

- The two page selectors control the selection of the active bank and active layer.
- The 8 sliders on the left control the transparency of the layers.
- The buttons above each slider control the selection of the layer, the play/pause state of the layer and the kill function. When a layer is selected, the led above the corresponding slider light up.
- The last slider is mapped on the GrandVJ's A/B cross-fader.
- The buttons on the right block trigger the cells.
- The touchpads select the transition preset. The touchpad corresponding to the active transition is lights up. Encoders can be mapped as general-purpose encoder.

8.8.3 Korg Nano

MIDI mapping templates for Korg Nano controllers (no feedback), the following controllers are supported:

- Nano PAD + Nano KONTROL
- Nano KEY + Nano KONTROL

8.8.4 Livid Instruments Ohm64 and OhmRGB

The OhmRGB mapping template is similar to the Ohm64 mapping template but don't forget to load the Livid OhmRGB MIDI feedback in GrandVJ's MIDI preferences to enable the specific nice colored keys.

8.9 Numark NuVJ Video Controller

Owners of a Numark NuVJ Video controller can now control GrandVJ in a NuVJ style. You need to load the NuVJ MIDI feedback in MIDI preferences to enable the feedback on the screen and on the pads.

- The template for this controller is defined as follows:
- The first jog wheel controls the GrandVJ scratch parameter on layer 1
- The second jog wheel controls the scratch parameter on layer 2
- The master FX knob selects an effect on the top layer.
- The other knobs in the center control the transparency of the effect layer (the Fx Level), the parameters of the effect, the contrast and the brightness.

Remarks:

In GrandVJ, to reproduce exactly the behavior of NuVJ, you should assign the 9 pads on the left to the first layer, and the 9 pads on the right to the second layer. If you want to use GrandVJ in a more complete mode, use the two top left knobs to control the bank and layer selection.

8.10 Dedicated mapping templates for DJ-style controllers

We have added or updated templates with feedback support for several controllers featuring jog wheels in order to support the scratch control feature, giving a DJ-style feeling when mixing video with them.

8.10.1 American Audio VMS2

Don't forget to load the American Audio VMS2 MIDI feedback in MIDI preferences to enable the feedback on keys.

The template for this controller is defined as follows:

- Deck A basically controls GrandVJ's layer 1, and Deck B controls layer 2.
- The two jog wheels are mapped to the layers scratch parameters.
- The twelve keys on each deck have been mapped to the 24 cells in the matrix bank. However, on both decks, the "SHIFT" key doesn't send any MIDI. The "KEYLOCK" doesn't send MIDI either, but only on Deck A (hardware failure?).
- The two central faders are mapped to layers transparency.
- The two pitch faders on the sides control the layers pitch, central position being default pitch, and lowest value pitch 0.
- The cross-fader controls GrandVJ's A/B cross-fader.
- "TREBLE", "MID" and "BASS" respectively control layer's red, green and blue values.
- "TONE" controls the audio input level, and "CUE MIX" controls the audio output level.

8.10.2 American Audio VMS4.1

Don't forget to load the American Audio VMS4 MIDI feedback in MIDI preferences to enable the feedback on keys.

The template for this controller is defined as follows:

- Deck A basically controls GrandVJ's layer 1, and Deck B controls layer 2.
- The two jog wheels are mapped to the layers scratch parameters.
- The "Effect", "Sample", "Loop" and "Smart" pads on each deck have been mapped to the 24 cells in the matrix bank. However, on both decks, the "SHIFT" key doesn't send any MIDI.
- The right and left column of pads have been mapped to the layer selection. The correspondent opposite knobs ("Gain", "Treble", "Mid" and "Bass") controls the transparency of the layer.
- The two faders next to the jog wheels control the layers pitch.
- The cross-fader controls GrandVJ's A/B cross-fader.

8.10.3 Hercules DJ controllers

MIDI mapping templates for Hercules DJ controller series (no feedback), the following controllers are supported:

Hercules DJ Console MP3

Hercules DJ Console MK2

Hercules DJ Control STEEL

Hercules DJ Control RMX

8.11 MIDI reference for template mapping

8.11.1 Introduction

Additionally to custom-made templates for existing controllers, the template library contains two templates that expose all of the controllable parameters available in mixer mode.

The first one, GrandVJ Full Mixer Mode, maps all the layer parameters in full mode (I.e. You control all layers independently).

The second one, GrandVJ Selected Mixer Mode, maps all the layer parameters in 'selected mode', i.e. you always control the selected layer (see the Reference Manual for more information about the difference between the two modes).

The following tables list the MIDI assignment of those two templates

8.11.2 GrandVJ Full Mixer Mode

Layer Parameter	MIDI CC	Channel
Visual Next	0	1-8
Visual Previous	1	1-8
Loop Mode	2	1-8
Movie Speed	3	1-8
Loop Start	4	1-8
Loop Length	5	1-8
Transparency	6	1-8
Copy Mode	7	1-8
Mask Mode	8	1-8
Mask Center	9	1-8
Mask Width	10	1-8
Mask Smooth	11	1-8
Red	12	1-8
Green	13	1-8
Blue	14	1-8
Mixing Preset	15	1-8

Layer Parameter	MIDI CC	Channel
Effect Next	16	1-8
Effect Previous	17	1-8
Effect Parameter 1	18	1-8
Effect Parameter 2	19	1-8
Effect Parameter 3	20	1-8
Effect Parameter 4	21	1-8
Position X	22	1-8
Position Y	23	1-8
Position Z	24	1-8
Size X	25	1-8
Size Y	26	1-8
Rot X	27	1-8
Rot Y	28	1-8
Rot Z	29	1-8
Rotation Mode X	30	1-8
Rotation Mode Y	31	1-8
Rotation Mode Z	32	1-8
Shape	33	1-8
Tiling	34	1-8
Position Preset	35	1-8
Deck A Select	125	1-8
Deck B Select	126	1-8

Layer Control	MIDI CC	Channel
Layer Next	36	1
Layer Previous	37	1
Layer Select (continuous)	38	1
Layer 1 Select	39	1
Layer 2 Select	40	1
Layer 3 Select	41	1
Layer 4 Select	42	1
Layer 5 Select	43	1
Layer 6 Select	44	1
Layer 7 Select	45	1
Layer 8 Select	46	1
Layer 1 Pause	48	1
Layer 2 Pause	49	1
Layer 3 Pause	50	1
Layer 4 Pause	51	1
Layer 5 Pause	52	1
Layer 6 Pause	53	1
Layer 7 Pause	54	1
Layer 8 Pause	55	1
Layer 1 Clear	57	1
Layer 2 Clear	58	1
Layer 3 Clear	59	1
Layer 4 Clear	60	1
Layer 5 Clear	61	1

Layer Control	MIDI CC	Channel
Layer 6 Clear	62	1
Layer 7 Clear	63	1
Layer 8 Clear	64	1

Bank Control	MIDI CC	Channel
Matrix Bank Next	65	1
Matrix Bank Previous	66	1
Matrix Bank Select (continuous)	67	1
Matrix Bank 1 Select	68	1
Matrix Bank 2 Select	69	1
Matrix Bank 3 Select	70	1
Matrix Bank 4 Select	71	1
Matrix Bank 5 Select	72	1
Matrix Bank 6 Select	73	1
Matrix Bank 7 Select	74	1
Matrix Bank 8 Select	75	1
Matrix Bank 9 Select	76	1
Matrix Bank 10 Select	77	1
Matrix Bank 11 Select	78	1
Matrix Bank 12 Select	79	1
Matrix Bank 13 Select	80	1
Matrix Bank 14 Select	81	1
Matrix Bank 15 Select	82	1
Matrix Bank 16 Select	83	1

Bank Control	MIDI CC	Channel
Keyboard Bank Next	84	1
Keyboard Bank Previous	85	1
Keyboard Bank Select (continuous)	86	1
Keyboard Bank 1 Select	87	1
Keyboard Bank 2 Select	88	1
Keyboard Bank 3 Select	89	1
Keyboard Bank 4 Select	90	1
Keyboard Bank 5 Select	91	1
Keyboard Bank 6 Select	92	1
Keyboard Bank 7 Select	93	1
Keyboard Bank 8 Select	94	1
Keyboard Bank 9 Select	95	1
Keyboard Bank 10 Select	96	1
Keyboard Bank 11 Select	97	1
Keyboard Bank 12 Select	98	1
Keyboard Bank 13 Select	99	1
Keyboard Bank 14 Select	100	1
Keyboard Bank 15 Select	101	1
Keyboard Bank 16 Select	102	1

General Controls	MIDI CC	Channel

Latch	103	1
Hold	104	1
Clear All Layers	105	1
Input Volume	106	1
Contrast	107	1
Brightness	108	1
Cross fader	120	1
Cross fader Full A	121	1
Cross fader Full B	122	1
Preview Deck A Assign	123	1
Preview Deck B Assign	124	1

8.11.3 GrandVJ Selected Mixer Mode

Layer Parameter	MIDI CC	Channel
Visual Next	0	1
Visual Previous	1	1
Loop Mode	2	1
Movie Speed	3	1
Loop Start	4	1
Loop Length	5	1
Transparency	6	1
Copy Mode	7	1
Mask Mode	8	1
Mask Center	9	1
Mask Width	10	1

Layer Parameter	MIDI CC	Channel
Mask Smooth	11	1
Red	12	1
Green	13	1
Blue	14	1
Mixing Preset	15	1
Effect Next	16	1
Effect Previous	17	1
Effect Parameter 1	18	1
Effect Parameter 2	19	1
Effect Parameter 3	20	1
Effect Parameter 4	21	1
Position X	22	1
Position Y	23	1
Position Z	24	1
Size X	25	1
Size Y	26	1
Rot X	27	1
Rot Y	28	1
Rot Z	29	1
Rotation Mode X	30	1
Rotation Mode Y	31	1
Rotation Mode Z	32	1
Shape	33	1
Tiling	34	1

Layer Parameter	MIDI CC	Channel
Position Preset	35	1
Deck A Select	118	1
Deck B Select	119	1

Layer Control	MIDI CC	Channel
Layer Next	36	1
Layer Previous 38	37	1
Layer Select (continuous)	38	1
Layer 1 Select	39	1
Layer 2 Select	40	1
Layer 3 Select	41	1
Layer 4 Select	42	1
Layer 5 Select	43	1
Layer 6 Select	44	1
Layer 7 Select	45	1
Layer 8 Select	46	1
Pause Selected Layer	47	1
Layer 1 Pause	48	1
Layer 2 Pause	49	1
Layer 3 Pause	50	1
Layer 4 Pause	51	1
Layer 5 Pause	52	1
Layer 6 Pause	53	1
Layer 7 Pause	54	1

Layer Control	MIDI CC	Channel
Layer 8 Pause	55	1
Clear Selected Layer	56	1
Layer 1 Clear	57	1
Layer 2 Clear	58	1
Layer 3 Clear	59	1
Layer 4 Clear	60	1
Layer 5 Clear	61	1
Layer 6 Clear	62	1
Layer 7 Clear	63	1
Layer 8 Clear	64	1
Layer 1 Transparency	109	1
Layer 2 Transparency	110	1
Layer 3 Transparency	111	1
Layer 4 Transparency	112	1
Layer 5 Transparency	113	1
Layer 6 Transparency	114	1
Layer 7 Transparency	115	1
Layer 8 Transparency	116	1
Layer 1 Deck A Select	125	1
Layer 1 Deck B Select	126	1
Layer 2 Deck A Select	125	2
Layer 2 Deck B Select	126	2
Layer 3 Deck A Select	125	3
Layer 3 Deck B Select	126	3

Layer Control	MIDI CC	Channel
Layer 4 Deck A Select	125	4
Layer 4 Deck B Select	126	4
Layer 5 Deck A Select	125	5
Layer 5 Deck B Select	126	5
Layer 6 Deck A Select	125	6
Layer 6 Deck B Select	126	6
Layer 7 Deck A Select	125	7
Layer 7 Deck B Select	126	7
Layer 8 Deck A Select	125	8
Layer 8 Deck B Select	126	8

Bank Control	MIDI CC	Channel
Matrix Bank Next	65	1
Matrix Bank Previous	66	1
Matrix Bank Select (continuous)	67	1
Matrix Bank 1 Select	68	1
Matrix Bank 2 Select	69	1
Matrix Bank 3 Select	70	1
Matrix Bank 4 Select	71	1
Matrix Bank 5 Select	72	1
Matrix Bank 6 Select	73	1
Matrix Bank 7 Select	74	1
Matrix Bank 8 Select	75	1
Matrix Bank 9 Select	76	1

Bank Control	MIDI CC	Channel
Matrix Bank 10 Select	77	1
Matrix Bank 11 Select	78	1
Matrix Bank 12 Select	79	1
Matrix Bank 13 Select	80	1
Matrix Bank 14 Select	81	1
Matrix Bank 15 Select	82	1
Matrix Bank 16 Select	83	1
Keyboard Bank Next	84	1
Keyboard Bank Previous	85	1
Keyboard Bank Select (continuous)	86	1
Keyboard Bank 1 Select	87	1
Keyboard Bank 2 Select	88	1
Keyboard Bank 3 Select	89	1
Keyboard Bank 4 Select	90	1
Keyboard Bank 5 Select	91	1
Keyboard Bank 6 Select	92	1
Keyboard Bank 7 Select	93	1
Keyboard Bank 8 Select	94	1
Keyboard Bank 9 Select	95	1
Keyboard Bank 10 Select	96	1
Keyboard Bank 11 Select	97	1
Keyboard Bank 12 Select	98	1
Keyboard Bank 13 Select	99	1
Keyboard Bank 14 Select	100	1

Bank Control	MIDI CC	Channel
Keyboard Bank 15 Select	101	1
Keyboard Bank 16 Select	102	1

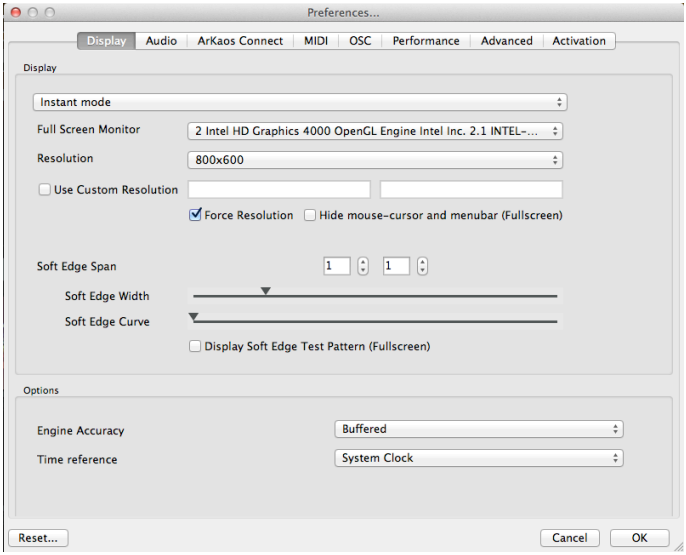
General Controls	MIDI CC	Channel
Latch	103	1
Hold	104	1
Clear All Layers	105	1
Input Volume	106	1
Contrast	107	1
Brightness	108	1
Cross fader	120	1
Cross fader Full A	121	1
Cross fader Full B	122	1
Preview Deck A Assign	123	1
Preview Deck B Assign	124	1

9 THE PREFERENCES DIALOG

The preferences dialog sets various options of the application; this chapter will cover each tab you can find in the Preferences dialog of GrandVJ.

9.1 Display

The Display tab contains the settings related to the software's outputs.



In the Display panel, you can choose between two different modes:

- Using the **'Instant mode'**, you can directly output visuals full screen to a set of similar displays using a single resolution for all. GrandVJ considers this set as a single output.

- In the **'VideoMapper mode'**, you will define a set of surfaces on the different displays that are connected to your computer using the VideoMapper application. In this mode, each display can have its own resolution, and each surface created on a display is considered as a separate output by GrandVJ, meaning that each surface can display a different set of visuals.

9.1.1 Instant mode

The Display panel contains the setup related to the full screen or output mode of the software. As previously stated GrandVJ is designed to be used with a setup consisting of at least two displays, where the first display shows the software interface and the second (and next) are dedicated to the full screen output from the software.

As such the first video output is used to display the main interface containing all the previews and parameters while the second video output is used to send the fullscreen image to a display.

This dialog is used to specify the characteristics of the adapter used for the full screen.

- **Full screen monitor** selects the screen adapter to use when the application is toggled in fullscreen. Usually, you will use the second adapter, keeping the interface on the main monitor.

- **Resolution** specifies the resolution that you want to use when running the engine.

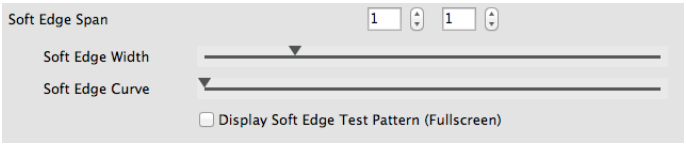
- **Force resolution:** This setting has a different meaning on PC and Mac:
  - On PC, it runs fullscreen in so-called 'Exclusive mode'. This mode is the mode used by most games and is optimal in terms of video performance. However, when engaged, you can't toggle to any other application than GrandVJ. If you do so, fullscreen will quit.
  - On MAC, it will change the monitor resolution to fit the setting of the resolution. If you toggle the setting off, only a part of the screen will be covered.

- **Custom resolution:** This setting allows you to use 'exotic' resolutions that don't match the adapter settings. This feature is mainly intended for Mac users to allow spanning of the display across two monitors.

- **Start Full screen at application start-up** – For most temporary or touring applications this is unlikely to be needed but for installations in venues where you want the system online as quickly as possible and the same output is being used every time, enabling this ensures that the output appears as soon as the software is loaded.

- **Hide mouse cursor in full screen** – Exactly as described: with this box selected the mouse will not be visible in full screen mode. This can be fine when you use the system entirely by external DMX or MIDI control but if you want to be able to edit in the main software window during a live show then leave this unchecked.

- **Soft-Edge** can be used if you split the engine's output to several beaming devices. In that case, it is good, quality-wise, to overlap the beamer's output and introduce a mixing curve in the overlap zone. The span allows you to specify how many beaming devices will be in use, both vertically and horizontally. The width and curve parameters control the blending zones of the soft edge. See "*Widescreen And Multiscreen Presentation*" for more details.



9.1.2 Multi-Monitor support (in Windows)

It is possible to display the output of GrandVJ across all the monitors connected to a graphics card without using the "spanning" feature that was only available on windows XP.

It can be used to avoid going through Matrox DualHead2Go or TrippleHead2Go interfaces if your video card has 2, 3 or more outputs.

This feature is available under Windows XP, Vista, 7 and 8.

The "Resolution" pop-up menu now proposes multiple-monitor setups (i.e. "1024x768x2" for a 2048x768 horizontal setup or 1024x1536 vertical setup) in addition to the standard single-monitor resolutions.

The "Multi-monitor Arrangement" line has been added to the Display tab of the preference dialog to choose the way you want to arrange your monitors. GrandVJ uses this information in combination with the actual Windows monitor arrangement to determine a correct output.

Note:

Under Mac OS X it is also possible to span the output of GrandVJ over several monitors simply by selecting the monitor on the top-left and use a custom resolution that will cover the multi-screen setup area.

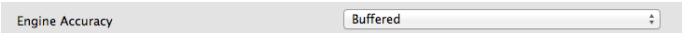
9.1.3 VideoMapper mode (GrandVJ XT only)

In VideoMapper mode, the configuration of the displays is done in the external VideoMapper application.

- Clicking on the "Import..." button will let you choose a VideoMapper file that you have previously created in the VideoMapper application.
- Clicking on the "Edit" button opens the selected mapping file in the VideoMapper so you can edit it.

9.1.4 Options

1. Engine Accuracy



There are three settings for the engine accuracy:

- **Minimal** is more suited for less powerful hardware.
- **Buffered** is the default mode and ensures frame pre-buffering to achieve display synchronization.
- **Frame Blending**: activates the Frame Blending.

Note:

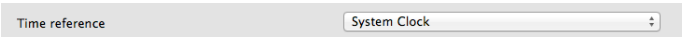
Frame Blending is a technique that allows the engine to interpolate between movie frames whenever it needs to. It's very useful when slowing down videos a lot, since instead of producing a steppy frame display, the engine will continuously mix from one frame to the other making the transition a lot smoother. It's also useful when you display movies that have a frame rate that is not 'coherent' with your output display.

For example, when using a 60hz display output, you should ideally use only 60/30 fps movies to avoid desyncronisation between the movie frame and when the monitor can display frames. GrandVJ won't prevent you to play a 25 fps movie, but you might end up with some jitter in the display. Activating Frame Blending will dramatically improve the output quality of the movie in this scenario.

2. Timing Reference

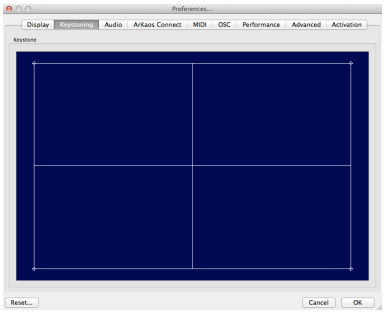
In order to get the smoothest display possible, GrandVJ defaults to using the main display output as timing reference. This ensures that frames are delivered in timely fashion, synchronized to the display's vertical blank.

However the timing of graphic cards is not always truly accurate: they might advertise 60Hz while actually running slightly over/under that frequency. In most cases this is not really an issue but if you need the movie playback to be perfectly in time (if you synchronize it with some external audio for example, or use movies with audio) you need to be able to use the more accurate time reference of the System clock instead. The selection of the time reference is done through the Combo box under the engine accuracy:



Choose "Display" for a smoother image when exact timing isn't mandatory or "System Clock" when the video playback speed is critical.

9.2 Keystoning



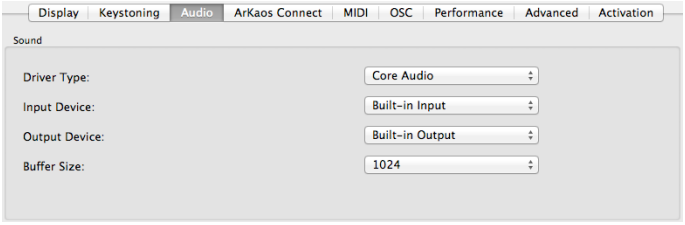
The “Keystoning” tab configures the keystoning used for projector output.

Keystoning is used to correct the image if the projector is not totally perpendicular to the screen.

This tab is not available if you are running GrandVJ XT in VideoMapper mode.

9.3 Audio

The Audio tab lets you to configure how GrandVJ handles the audio when media clips with sound are used.



The master output volume of GrandVJ can be controlled from the toolbar on top the main software window.

- **Driver Type**: This where GrandVJ detects your system’s audio and let you select which sound card you wish to use.

- **Input Device:** GrandVJ will use the sound from the selected input device to feed audio-reactive Flash animations or Pixel Generators. The default Input Device is usually the on-board microphone of the system. When working in high volume environments you might want to configure it to a line-in feed – for example the audio feed from a DJ or if you wish to be even more specific even a single instrument such as a bass drum when working with live musicians. You can set the audio input to NONE to deactivate it.

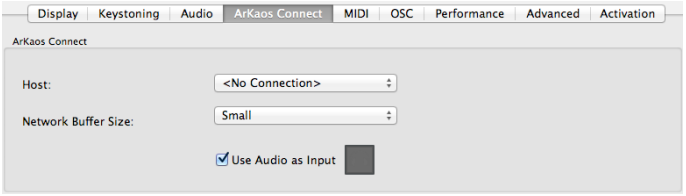
- **Output Device:** Select the audio output device where GrandVJ will send the sound from any clip you play that has an audio track. You can set the audio output to NONE to deactivate it. You can also find a global volume control for output on the master section of the main software window (see “Master output controls” at page 21) and this can be set to zero also.

- **Buffer Size:** Here you can define the size of the audio buffer in Kilobytes (K). The default setting is 1024k (or 1 megabyte) but this can be reduced to 256k or increased to 2048k as required. Bigger values will lead to more stable output but may cause latency with the video playback.

- **Hardware Setup:** This recalls the ASIO control panel for configuration under Windows OS.

9.4 ArKaos Connect

This tab allows configuring GrandVJ's interaction with the ArKaos Connect VST plug-in (see chapter 11 ArKaos connect).

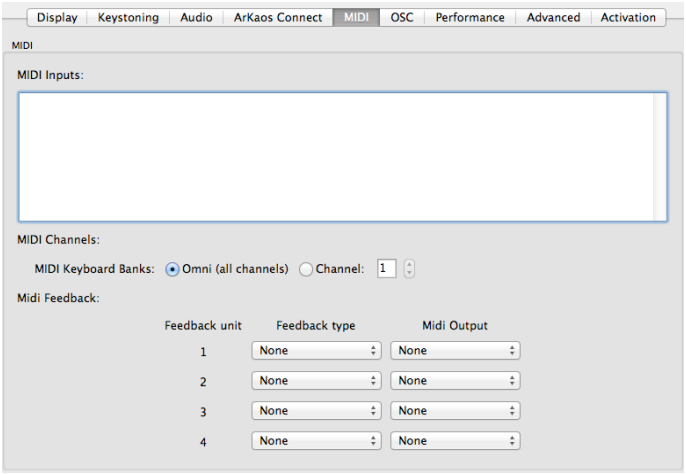


- The host drop-down list can be used to choose a running plug-in to connect to.
- The "Network Buffer Size" parameter is a tradeoff between latency and sound quality. The lower is the buffer size, the lower is the latency between the audio sequencer and GrandVJ. The value "low" or "medium" can be chosen for a vast majority of network configurations (local machine or a fast LAN).
- Tick the checkbox "Use Audio as Input" to use the sound of the audio sequencer as sound input (the selected audio input device in the audio preference is then automatically deactivated). You can preview the sound coming from the connected VST plug-in by clicking on the "Test Audio Input" button.

The ArKaos Connect section in GrandVJ's toolbar also displays a LED indicating communication between ArKaos Connect and GrandVJ, and the same button allowing to preview the sound coming from the sequencer.

9.5 MIDI

The MIDI tab allows you to select which MIDI devices will be enabled for use with the application.



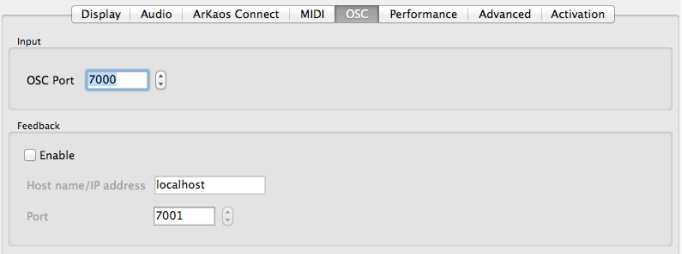
Please note that all data from enabled MIDI devices are merged so no matter what interface it comes from, a note on message on channel 1 will have the same effect.

Here, you can also select whether the keyboard banks should be dedicated to one MIDI channel or should listen to all of them.

It's also the place where you activate MIDI feedback for selected devices (see chapter 8.7 Bi-directional controllers & MIDI feedback).

9.6 Open Sound Control Mapping (OSC)

The OSC tab allows you to select the local machine's network port that will be used to accept connection from OSC devices / applications.



Note:

GrandVJ automatically declares its OSC input port and IP address using the *Bonjour* network protocol, meaning you won't have to enter those information in your OSC device / application if it supports *Bonjour*.

GrandVJ can also send real-time feedback information about the state of its mapped controls through OSC. If you activate OSC feedback, you need to specify both the IP address and port of the OSC device.

9.7 Performance

The "Performance" tab configures how GrandVJ renders previews .

- **GPULevel** gives an indication of the capabilities of your graphic card. If the level is too low, some options become unavailable. The maximum level is 4.

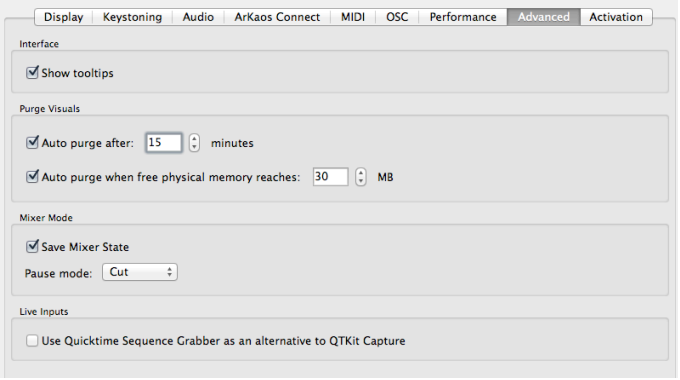
- **Preview style** defines what is shown in the layer preview in mixer mode. You can choose off, media (default) and full.
  - **"Media"** will only display the media without applying effects.
  - **"Full'** will display both the media and the effect applied on it but this will imply that the preview are downloaded back from the graphic card to the main memory which might

give a performance hit, especially on PC.

- **Preview Quality (Windows only)** allows you to down-sample the preview content quality, if you begin to run into decreased performance.

9.8 Advanced

This tab allows you to set up various advanced options for the software.



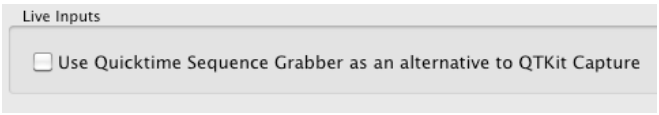
- **Show tooltips:** enable / disable the tooltips showing above a graphical control when the mouse cursor stays above for more than one second. Disable tooltips to make GrandVJ more user-friendly when controlled from a touchscreen.

- **Auto purge:** allows the software to automatically unload visuals that are neither running nor assigned to a cell. You can activate both a purging timer and ask the software to purge when the physical memory available goes under a certain threshold.

- **Save Mixer State:** When quitting the application, the state of the mixer is now saved and restored when it is restarted. Note that only the locked parameters are saved, since any cell triggered will override non-locked parameters, it doesn't make sense to include them.

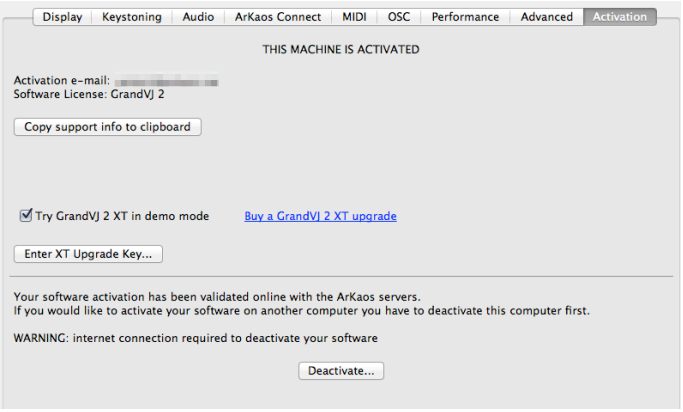
- **Pause mode:** This preference lets you choose between the different pause modes when in Mixer mode:
  - **"Cut":** the layer stops rendering in the Mixer
  - **"Freeze":** the layer keeps rendering in the Mixer

- **Alternative Live Input Service (Mac only):** . Originally, GrandVJ was relying on the *QuickTime Sequence Grabber* framework to acquire frames from live input devices. Since GrandVJ 1.1, *QTKit Capture* framework has replaced *QuickTime Sequence Grabber* in GrandVJ, in order for the software to support HDV devices. However, several live input devices still work a lot better when used through *QuickTime Sequence Grabber* than *QTKit Capture*, since the drivers are developed separately. This setting lets you switch back to *QuickTime Sequence grabber*.



9.9 Activation

This tab displays the information related to your software license and whether the software is activated or not on this particular computer.



- **Activation e-mail** is the e-mail address that is registered with the customer account which registered the software license at www.arkaos.net

- **Software license** shows the license type with which GrandVJ is activated (currently, GrandVJ or GrandVJ XT)

- The **"Copy support info to clipboard"** button lets you copy your license codes to the clipboard in case you need to communicate those details to the ArKaos Support Team (see chapter 3.5 *"Registration support"*).

- If you have activated GrandVJ on your computer, you can still try GrandVJ XT by checking the **"Try GrandVJ XT"** option. GrandVJ will then restart in GrandVJ XT Demo mode, with the limitations of the Demo but you can test the GrandVJ XT features such as the VideoMapper and decide if you want to upgrade your license. Simply uncheck the "Try GrandVJ XT" option and restart GrandVJ to get back to your fully registered GrandVJ.

- The **"Buy a GrandVJ XT upgrade"** link will open your Internet browser on our online shop page where you can purchase a license upgrade to GrandVJ XT. You will need to log-in with your ArKaos customer account so we can verify that you have a GrandVJ license that can be upgraded.

- Click the **"Enter XT upgrade key"** button if you have received an Upgrade Key to GrandVJ XT from our online shop or from a reseller, you will be presented with the Registration Wizard as described at chapter 3.2 *"Activating GrandVJ on your computer"*.

- Click on the **"Deactivate…"** button to free your license from the current machine, so you can activate GrandVJ on another machine (see chapter 3.3 *"Deactivating GrandVJ on your computer"* for more information).

10 Media Types

10.1 Video

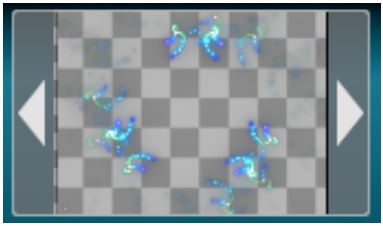
GrandVJ can play mostly any video file you will throw at it, however we have found MPEG-2 to be the compression codec that produces the best overall performance.

If you have a multicore CPU, GrandVJ will take advantage of it. If you intent to play high definition content you should have a system that has as at least the same number of cores as the number of high definition layer you want to play.

The software decodes video through FFMPEG natively so it doesn't require QuickTime or another decoder, which takes up more hardware resources to complete.

> ***Note:***
> The compression codec, file size and type can have an effect on the reliability and quality of playback depending on your hardware configuration and show type. For example a show which uses 8 layers of HD video simultaneously will require much more processing power than one using low resolution video or stills.

10.1.1 Alpha from source



If you import images or videos with an alpha channel (for example as a result of green keying), the transparency of the media will be used in the mixing. When setting the preview style to "full" (see the Performance tab in the Preferences dialog) you will see the transparent areas in the layer preview, no matter if it comes from the original media or from applying luminance / chrominance inside the software.

10.2 Images

GrandVJ will accept the following file types into the library for still images:

- JPG
- BMP
- GIF
- PNG

You can import images that are bigger than the output resolution as it may be useful to achieve specific effects, however it's not recommended for performance reasons.

10.3 Audio

GrandVJ will play audio files in the same way that it will play sound from video files with an audio track. If you want to disable sound altogether, you can go to the Preferences dialog under the Audio tab; and set the output devices and set it to "No Audio".

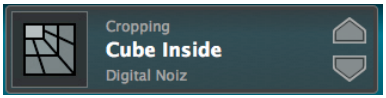
The best synchronization between audio and video is achieved by selecting "System Clock" in the Preferences dialog under the Display tab under "Timing Reference".

10.4 Generators

Generators are music visualizers that react to the sound of the audio input of your system. Some generators are GPU accelerated effects while others are SWF Flash files.

You can create custom generators as Adobe Flash™ .SWF files, please check the ArKaos Blog for a tutorial in the category “Hints and Tips”: http://vj-dj.arkaos.net/blog

10.5 Effects



GrandVJ comes with various effects that you can mix with your other media, and we frequently add new effects with software updates.

10.6 Quartz Compositions (Mac Only)

Under Mac OS X, GrandVJ allows to use Quartz Composer .qtz files directly, both as sources and effects. The compositions are rendered natively through the fastest available interface.

You can import .qtz files as sources easily by adding them to your patch, just like you import any standard media.

If you want to create Quartz Compositions and add them as effects , please check the ArKaos Blog for a tutorial in the category “Hints and Tips”: http://vj-dj.arkaos.net/blog

10.7 Cameras / External Sources

GrandVJ will let use as a source any live input that is connected to your system, provided that it is compatible with QuickTime under Mac OS X and DirectX under Windows.

Your device must be natively supported by your operating system, which means that it must be able to work without requiring you to install any proprietary software or drivers.

Note:

GrandVJ detects any connected device during startup, make sure that your device is connected, detected and correctly configured with your system before you launch GrandVJ.

10.8 Syphon (Mac only)

Syphon is an open source Mac OS X technology that allows applications to share frames – full frame rate video or stills – with one another in real-time.

GrandVJ natively supports Syphon as an additional (virtual) output. Through Syphon, you can send the output from GrandVJ to any other application that support Syphon as input, which makes it possible to use GrandVJ as video mixer module in some more complex setups.

The Syphon output is automatically activated when a Syphon client is running, there is nothing to configure in GrandVJ.

You can use Syphon as an input through Quartz Composer. Please refer to the official Syphon website (http://syphon.v002.info/) for more information.

11 ARKAOS CONNECT

ArKaos Connect is a VST plugin for audio sequencer software that allows them to send audio and MIDI to GrandVJ.

The audio host can run on the same machine as GrandVJ or a different one which is running on the same local network.

The configuration of the connection in GrandVJ is pretty straightforward: just launch ArKaos Connect from your sequencer, select the sending VST plug-in in an auto-updated list and enjoy the new possibilities open by these interactions.

The interface of the VST plug-in is very simple:

- **The "Connected" LED** shows the connection status - the led becomes green if the plug-in is connecter to an instance of GrandVJ.
- **The "MIDI" LED** blinks when MIDI messages are routed to the plug-in.
- **The "Gain" knob** lets you modify the gain of the sound sent to GrandVJ.

For more information, please refer to the ArKaos Connect Quickstart PDF document located in the GrandVJ software installation folder, in the "Documentation" directory.

12 PERFORMANCE AND SETUP CONSIDERATIONS

Achieving good performance with video can be difficult because it depends on many different factors.

The most important factors are:

- CPU speed
- Disk speed
- RAM access speed
- Video card & video bus speed
- Movie compression

There is no easy way to give a definitive answer in terms of what is best for every computer setting. In ArKaos GrandVJ, most of the graphic processing is done in the graphic chip of the video hardware, so the more powerful it is, the better performance you are going to get.

The CPU is mainly used to decompress movie frames from the disk and send them to the video card. The faster your drives are, the faster frames will be loaded in the memory and the faster your CPU is, the faster it will decompress the frames.

GrandVJ's engine is also heavily multi-threaded. Having several cores will help decompress movie frames in parallel, allowing a faster throughput.

To achieve a good frame rate with a given hardware, you can:

- Adapt the resolution of the engine. See (Preferences/Display)

- Use source material that is adapted to your hardware. If you have a slow disk or older generation of hardware, try working with smaller video sources to minimize the impact of loading and decompressing the movie. Since all calculations are done inside the graphic card, the automatic filtering applied when the images are scaled to the final resolution will minimize aliasing effects.

It is very important to note that popular compressions schemes such as mpeg, divx,DV and vobs, are very inefficient for VJing. Video files using these compression schemes will behave ‘correctly’ when used at nominal speed (100%), but will be very sluggish if you change their playback speed or play them backwards. If you use these compression formats, you will get poor performance from the software.

12.1 How to achieve best performances with the new engine

In order to get the best out of our new engine, you need to be attentive to quite a bit of details. We’re going to explain here what needs to be checked:

12.1.1 Monitor Rate vs Movie Rate

If you want your movies to be really smooth, you need them to be in accordance with the monitor frequency to ensure that each time there is a frame to show, you have a monitor refresh.

So if your movies are 30 FPS, the monitor needs to be at 60 Hz and if they are at 25 FPS, you need to use either 50 Hz or 75 Hz.

Be also careful that depending on your chosen resolution, the choice of frequencies might change so it’s important that once your setup is done, you put GrandVJ in fullscreen and get the monitor reading from the status panel.

12.1.2 Hardware dependencies

We've noticed that some Graphic Cards sometimes react differently depending on the output resolution. For example we have ATI's that don't provide a steady frame rate in 800x600 whilst completely stable under 1024x780.

Also, if you do spans across the two outputs of a graphic card, there's no guarantee the two outputs will run at the exact same frequency. This can also produce jitter. It is sometimes more efficient to make a wide output from one head using Matrox's doublehead2go / triplehead2go than to do a span across the two outputs.

12.1.3 OS dependencies

There are some performance issues that are only valid with respect to the operating system. We'll examine them separately here.

1. Windows

The only thing you need to make sure is that you run the software in Exclusive mode since it's the only mode that will ensure correct locking to vertical blanks.

To turn on Exclusive mode, make sure the option "Force Resolution" (in Preferences/Display) is active:

2. Mac OSX

Mac OS X is a more sensitive platform. If you display the full screen on one Monitor, all system drawing on the other monitor can cause the full screen to glitch. No matter what application. We adapted the way we do our interface updates so that it won't be interfering with the output but any **other** program updating its GUI will most likely be a problem.

For this reason, in order to achieve the most fluid display under Mac OSX, we recommend to either quit or hide other visible window. To give you an idea, even the refresh of the clock in the menu bar can lead to one frame skipping.

12.2 Frame blending and software GenLock

The graphical engine of GrandVJ has been highly optimized to allow Frame Blending and Software GenLock which, if setup correctly, can greatly help you to get great results.

Make sure you read about this in chapter 9.1.4 about the Options of the Display

12.3 Movie Compression

Beside movie size, compression scheme has a huge impact both on the fluidity of the display and playability. The more complex the compression scheme, the more work the processor will have to do to recover specific frames, which often results in sluggish performance. In addition to the compression method itself, there's the issue of key frames.

Most widely spread compression mechanisms work using incremental methods, which means they construct a frame by storing the difference between a frame and the previous one. In order to keep the process from deriving too much from the original material, they store an original frame every now and then, and start coding incremental information from that frame on. These original frames are called 'key frames'.

Using sparse key frames will mean that for GrandVJ to access a given frame, it will have to find the previous key frame and process all the intermediate frame differences until it reaches the desired one. As you can imagine, this process is rather slow and prevents fast access to frames, which is very important for backward playback or scratching.

That's why compression schemes like mpeg or DivX are not at all suited for video performance.

From our experience, the best compression scheme for video performance is QuickTime's PhotoJPEG with a quality setting of about 80% or more. This will ensure smooth playback, effective scratching and decent file size. If you want to use high definition content (HD) you can also use the Quicktime H264 codec.

12.4 Widescreen & Multiscreen Presentation

In a common ArKaos GrandVJ setup, a computer with two video outputs is generally used: one output for the desktop monitor (to display the interface and control the software) and another output which receives the result of the visual mix. The second output is generally connected to a video projector, a large screen or a hardware video mixer.

In this case, you will be using the single second output to send your final mix and, after having defined the adapter to use and its resolution, you are ready to go.

ArKaos GrandVJ, however, also offers custom output resolution possibilities. This allows you to create multi-screen or wide screen setups, controlled by a single computer running ArKaos GrandVJ. In this chapter, we'll investigate those specific setups.

Important:

Wide screen or multi-screen setups require high resolution output and therefore a recent / powerful graphic card is necessary; a setup including 2 screens, each in 1024x768, will require ArKaos GrandVJ to output in 2048x768, which may require a lot of CPU and GPU resources.

12.5 Definitions

1. Wide Screen

A wide screen setup consists of one large visual mix spanning across several screens placed next to the other.

This is achieved by generating a single ArKaos GrandVJ projection in very a large resolution, which spans across several video adapters. If you plan to use projectors as outputs devices, you also have a Soft-Edge option, which allows seamless edge blending between the two projectors.

2. Multi-screen

The multi-screen setup is the same concept as the wide screen in the sense that it drives several adapters but in this case you end up with different visual mixes displayed on each output.

The way it works is that you use the position settings of ArKaos GrandVJ to assign layers to part of the screen, which is divided across the various adapters.

12.5.2 Case Studies

In order to explain the different steps to setup ArKaos GrandVJ to produce a wide screen or multi-screen projection with several displays, let's examine some common hardware configurations.

1. Case 1: Dual Head Graphic Card

If you only have a dual head graphic card and would like to achieve multiple outputs, you will need to use both adapters and, since you have no more monitor available left, you will lose the interface display.

2. Case 2: Dual Head Graphic Card + Single Head Graphic Card

Adding a supplementary graphic card to the setup described above will allow you to use it with your desktop monitor in order to display the ArKaos GrandVJ interface and control the software while you use the dual head graphic card and its two outputs for the wide screen or multi-screen outputs.

Important:

At this stage, this option is only available on PC. The Mac version does not support accessing more than one graphic adapter.

3. Case 3: Dual Head Graphic Card + Additional Hardware

Using an external hardware such as the Matrox™ DualHead2Go™ allows splitting one video output into two separate signals (the DualHead2Go is a palm-sized box that sits outside of your system and has one VGA input and two VGA outputs).

This system allows computers with a dual head graphic card to use one of the graphic card output for the software interface and its second output to send the visuals that will be split across two different screens. This very affordable solution will also fit perfectly with most modern laptops.

4. Other Possible Combinations

Dual head graphic card with each output split in two with a DualHead2Go; you would have a 4 screens setup.

Matrox™ also provides the TripleHead2Go™ multi-display upgrade allowing splitting a single display adapter across 3 different screens. This can lead to up to 6 screens if you are using a dedicated two-heads display adapter for the output.

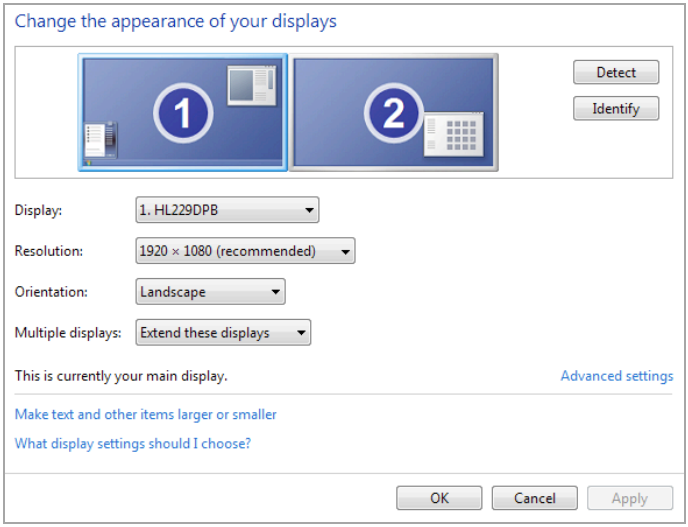
12.5.3 Monitor Setup For Wide Screen Or Multi-Screen Projection

Earlier in this document, we've seen how to choose and setup a second monitor to display the ArKaos GrandVJ visual mix. To do wide screen or multi-screen, the principle is the same in the sense that ArKaos GrandVJ will continue to output one large visual mix, but the visual is going to span across the multiple heads of an adapter. The way to execute the span across adapters is very different for Mac and PC's so we'll examine them separately.

1. Monitor Setup Under Windows Vista, 7 and 8

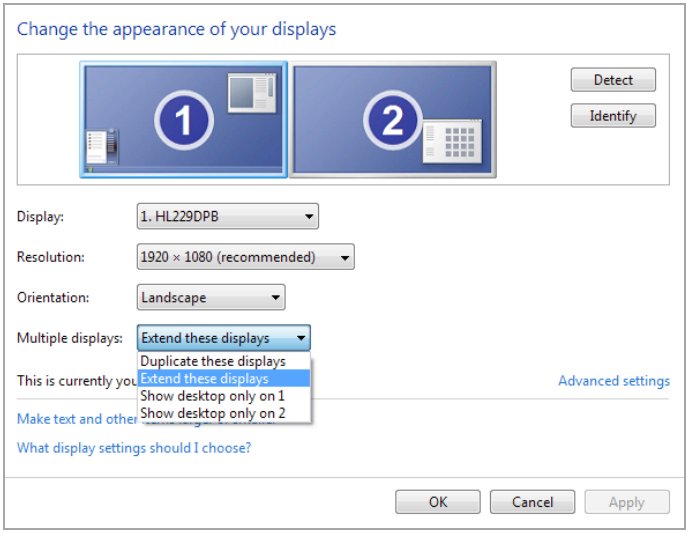
Right click on your desktop and select “Screen resolution” in the contextual menu

A window will open with the following options:



Make sure that there are at least 2 screens displayed under “Change the appearance of your display”. If not, click the “Detect” button. If you still don’t see 2 screens then windows doesn’t detect the second monitor connected to your computer.

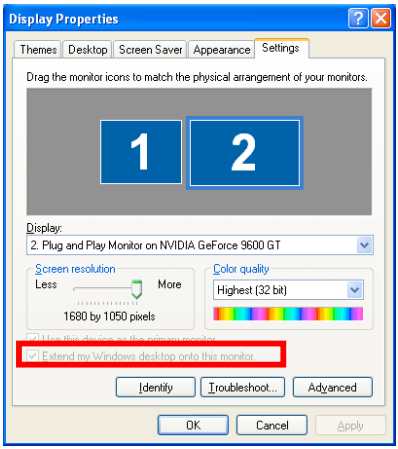
Now click on the drop down menu next to “Multiple displays”. Then select “Extend these displays”. The second screen gets activated and now you can select the resolution for the screen. For the best image quality and correct aspect ration, always select the native resolution of the screen.



2. Monitor Setup Under Windows XP

Right click on your desktop and select “Properties” in the contextual menu

A window will open with the following options:



On the **Settings tab**, make sure that there are at least two monitors displayed in the central gray area.

Click **Identify** to display a large number on each of your monitors. This shows which monitor corresponds with each icon.

Click the **monitor icons** and drag them to positions that represent how you want to move items from one monitor to another.

Click on the screen that is not yet active and check the **“Extend my Windows desktop onto this monitor”** checkbox.

Click **OK** or **Apply** to view changes

You can now close the Display Properties window and launch GrandVJ

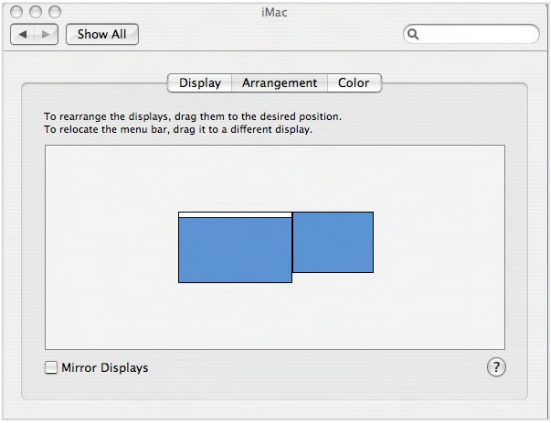
3. Monitor Setup Under Mac OS X

From the Apple menu, open the System Preferences and select “**Displays**”.

In the Displays window, go to the “**Arrangement**” tab.

Click the **monitor icons** and drag them to positions that represent how you want to move items from one monitor to another.

In this case the primary monitor is placed to the left of the secondary monitor.



Important:
You will later need to manually specify the resolution corresponding to the sum of your two monitors. So make sure you take note of it at this stage. For example, if you have two monitors of resolution 1024x768 placed side by side, your total resolution will be 2048x768.

You can now close the System Preferences Displays window and launch ArKaos GrandVJ.

In ArKaos GrandVJ, go to the Preference Dialog and select the display tab. First, as output monitor, select the monitor that is positioned at the top left of the full display. Then select the custom resolution setting and enter the resolution corresponding to the sum of the two monitors (2048x768 in our example).

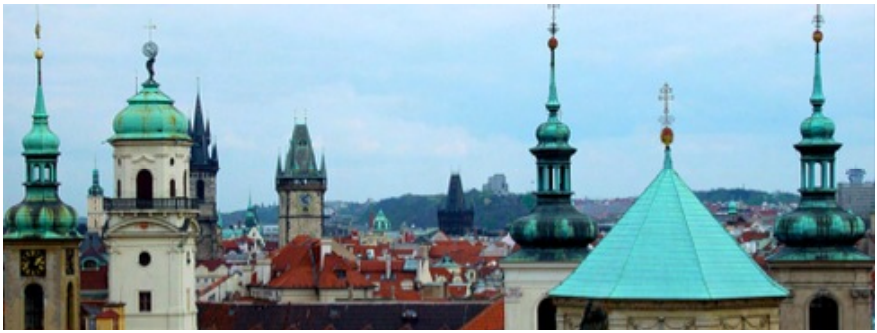
Start full screen and the window will be created across the two monitors.

To have it correctly spanned across your two monitors it is important that they have been positioned as they should at step 1 and that your ArKaos GrandVJ resolution corresponds to the sum of the resolution of your two monitors.

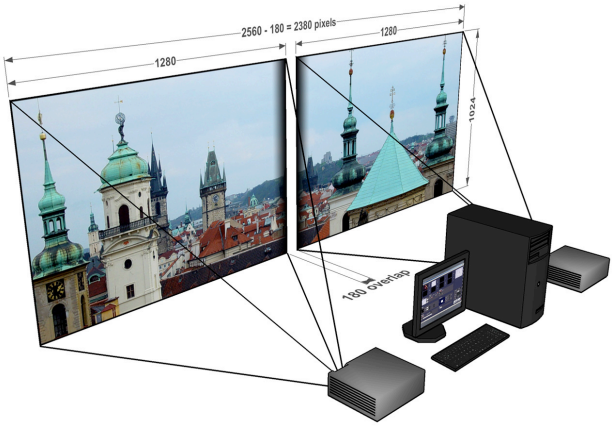
12.6 Soft-Edge

To create a large screen by combining several video projectors it is important to be able to seamlessly blend the edges between each projection. This can be achieved through the use of the Soft-Edge option as it creates an overlapped area on the border of each screen with a fade on the edge that can be overlapped with the next image.

Here is the original image (a nice view of Prague's skyline):



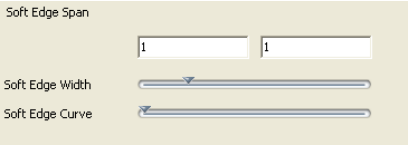
And here's an example of what would be displayed with a two beamers setup:



The areas to blend are displayed in the middle of the visual. Positioning the beamers so that these two areas are superposed will re-create the original picture without any visible separation in the middle of the visual.

Of course, it's highly recommended to use two identical projectors.

In the “Display Tab” of the Preferences Window, you can access Soft-Edge options, including the number of projectors to be used horizontally and vertically:



Once this has been setup, you can control the soft edging characteristics by changing the width and curve of the soft edge.

- The width of the overlapping area is defined between 2% and 50% of one screen size.
- The curve factor defines the fade curve value, allowing you to fine-tune the luminosity of the overlapping area compared to the rest of the picture.

12.6.1 Calibration

Below are the common steps to setup a wide screen with Soft-Edge in ArKaos GrandVJ (provided that you have correctly setup your system and your graphics card driver parameters as explained earlier in this document).

- Launch ArKaos GrandVJ.
- Setup the number of horizontal and vertical screens, and the soft-edge settings in the “Display tab” of the Preferences Window.
- Import a picture appropriate for calibration and activate it.
- Launch the full screen mode ([Ctrl]+A or [Apple]+A in ArKaos GrandVJ)
  (At this point, you should have the picture displayed on the two beamers with the soft-edge effect).
- Place the beamers correctly so that the edges blend seamlessly.
- Adjust the Curve parameter to obtain the desired luminosity of the overlapping area.

13 VIDEOMAPPER EXTENSION (GRANDVJ XT)

For a practical introduction to Video Mapping in GrandVJ, please refer to the VideoMapper Quickstart document located in the software installation folder, in the “Documentation” directory.

13.1 Concept

The ArKaos VideoMapper is an extension for GrandVJ that allows easy mapping of video onto irregularly shaped surfaces and through multiple outputs. Designed to let you setup mapping projects in a very short time, it makes it incredibly simple to flow visuals on complex objects with just a few clicks.

Once you launch the extension, GrandVJ will send the output from each layer to virtual “surfaces” that can be scaled, deformed, and assigned to any physical output. One output can display a full screen visual or a composition of several mapped visuals; output to a video projector and you can map the surfaces to any physical volume (like objects or buildings).

13.2 Hardware setup

ArKaos VideoMapper is designed to output video content on any display connected to the computer’s graphical cards.

It is advised to connect all the displays to the computer before turning it on.

The VideoMapper application will detect the connected displays and let you configure their resolution and refresh frequency individually. This is a great tool to set up multiple outputs with different resolutions.

13.3 Mapping workflow overview

The VideoMapper application is designed to communicate with GrandVJ. The VideoMapper and GrandVJ can run at the same time on the same computer, so that you can edit the mapping directly with the video content running in GrandVJ.

The VideoMapper application is only needed for the edition the video mapping itself, and can be closed once the mapping setup is finished. The mapping will be automatically imported in GrandVJ.

The typical workflow is:

- Connect the displays to the graphical card then switch on the computer.
- Launch GrandVJ application and switch to the “VideoMapper mode” in the Output preferences. The application will restart in order to apply the new mode..
- Launch VideoMapper application. You can also launch it using the “Edit” button in GrandVJ’s Output preferences.

Important:

The video rendering of GrandVJ occurs on one graphical card. If you would create surfaces on a display that’s on another graphical card, be aware that you may experience reduced performances due to memory transfers between the different graphical cards going through the main memory.

If possible, it’s advised to use the same graphical card to drive all the displays, eventually using a video splitter device.

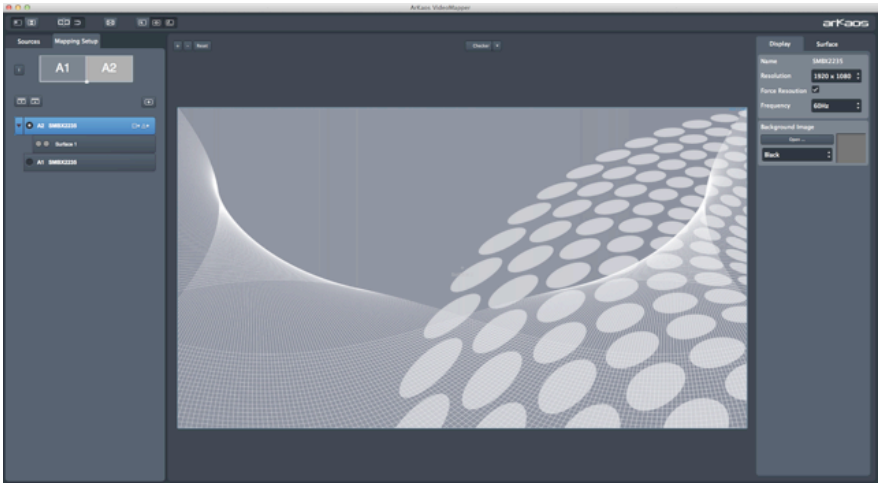
If you absolutely need to use several graphical cards, then you should connect the displays with the biggest resolution to the main graphical card.

13.4 VideoMapper application

The VideoMapper application allows you to manage your displays and create/edit surfaces that will be used by GrandVJ to display its layers when in VideoMapper Mode.

13.4.1 Interface overview

Here's a quick overview of the VideoMapper interface, we'll go through each part in detail further in this document.



1. Toolbar

The toolbar on top of the window contains various options and switches for the user interface.

2. Mapping setup and sources

The left side of the application shows the Mapping setup, with a graphical representation of the connected displays and the Display browser. Each display in the browser list will contain your surfaces, which can be added, deleted or copied directly in the browser.

The Sources tab contains the visual sources that are used by the VideoMapper, it can be an image or the feed from GrandVJ XT running in "VideoMapper Mode".

3. Surface Editor

The "surface editor" in the center shows the output panel with surfaces for the selected display. It is a preview of the result you will obtain on the related display in full screen.

Thanks to the "Show crop panel" button from the toolbar, you can split the surface editor horizontally to show the crop panel on top with the output panel below.

4. Inspectors

The right panel is an inspector that shows parameters of the selected surface (under the "surface" tab) or parameters of the selected display (under the "display" tab).

13.4.2 Toolbar options

Show / hide left panel: shows or hide the left panel with the display browser so you can have more room to edit your surfaces.

Show / hide crop panel: this will split the surface editor horizontally to show the crop panel on top with the output panel below.

Link grid points: links points between the grind on the crop zone and the grid on the output zone so that moving a point on one will make the corresponding point move on the other also.

Snap surfaces: surface borders will snap with each other and with the borders of the surface editor

Enable / disable full screen: goes full screen on the active outputs.

Show cursor on full screen: show the cursor position on the full screen displays

Surface selection flash: the active display will flash each time you select a surface

Surface info on full screen: show the surface edition objects (surface borders, handles, center and name) on the full screen display.

13.4.3 Setting up displays

Each connected display (as detected by your operating system) is listed in the display browser. Disconnected displays are shown in red.

Below each display item appears the list of surfaces (click on the arrow on the left to expand the display item).

Each display can be enabled or disabled by clicking on the left check box. Disabled displays won't go full screen when the global full screen button is activated (the display showing the VideoMapper interface is disabled by default).

Note:

The first letter of identification before the display name (**A**1, **A**2, **B**1, etc..) represents the GPU to which the display is connected. Two displays named A1 and A2 means that they are connected to the same graphical card.

1. Draft Displays

You can create a "draft display" by clicking the "add draft display" button above the display browser on the right. Draft displays can be used when the display you want to use in your final setup is not connected. Create your mapping on a draft display and, later, copy/paste the surfaces to the final display. The draft display can be deleted once the job is done (right-click on the draft display item and choose "delete").

2. Going full screen

To activate the full screen, press CTRL+F (Command+F on Mac) or click on the full screen button in the toolbar. The VideoMapper keep the full screen state in memory. So, when you start the VideoMapper, the full screen will automatically be enabled if it was enabled the last time you closed the application.

3. Display Properties

When you click on a display item in the display editor, or when you click on the display tab in the right inspector, the properties related to the display are shown. You can choose the resolution of the display and its frequency.

- **The "Force Resolution" option** will force the resolution of the display. This is very useful when you connect to a display which you don't know the resolution. The background of the display can be set to black, grey, or bitmap image (you can choose the image file by clicking on the "open button").

13.4.4 Setting up surfaces

1. Creating a surface

To create a new surface, click on the rectangle or triangle that appears on the right when the display item is selected.

The list of surfaces on a display is like a stack of layers from top to bottom. The first surface will be displayed on top of the others. You can change the order of the surfaces by dragging them around in the list.

2. Surface Properties

When you select a surface, its properties are displayed in the inspector on the right.

You can modify geometrical parameters by editing the surface directly in the graphical editor (for example modify the width or the height of a rectangle by dragging the middle handles of the rectangle) or by enter numerical values in the inspector.

- **The X and Y parameters** are the coordinates of the surface. This position is by default the top-left corner for rectangles and the center for triangles. If the option “Display Top Left Coordinates” is unchecked in the view menu, the position of the rectangles will be centered.

- **The R parameter** is the rotation of the surface. The rotation can also be modified by dragging the rotation handle in the graphical editor

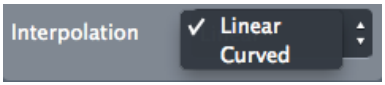
The other parameters depend on which surface you are editing:

- **Triangles:** You can edit the position of the three corners of the triangle (parameter X-Y in the inspector).
- **Rectangles:** You can modify the width and the height of the rectangle (parameter W-H in the inspector).

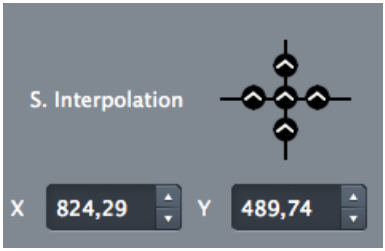
The rectangle can also be deformed using a grid pattern. To enable the grid, check the option “Edit Grid” in the inspector. Each control point of the grid can then be dragged separately.

To add or remove control points, use the buttons just below the edit grid option:

- Click  to **add a point vertically**.
- Click  to **add a point horizontally**.
- Click  to **delete a point vertically**.
- Click  to **delete a point horizontally**.
- Click  to **add a point anywhere** (then click with your mouse in the surface, where you want to add the point.
- Click  to **reset the grid** and delete all the points.



The interpolation combo box lets you set the interpolation for all the control points of the grid, it can be set to linear or curved.



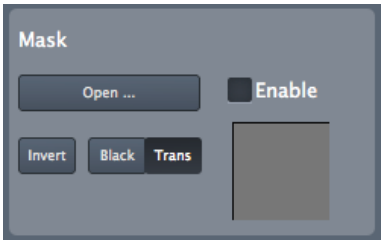
To set the interpolation separately for each control point, first click a control point in the graphical editor, then the interpolation editor appears.

It represents the selected control point with its four adjacent segments. The interpolation for each segment can be set to linear or curved.

The position of the selected corner box or the selected control point can also be edited with the arrow keys of the keyboard.

- **To move the point of 20 pixels**, press alt while moving the point.
- **To move the point of 0.05 pixels**, press Ctrl (Cmd on mac) while moving the point.

3. Image Masks



Any image file can be used as mask that can be applied on a surface. The average of the RGB colors will be used if the source is a color image.

In the Mask properties editor, click on the “Open” button to load an image.

Make sure that the “Enable” button is checked.

The following options are available to modify the mask:

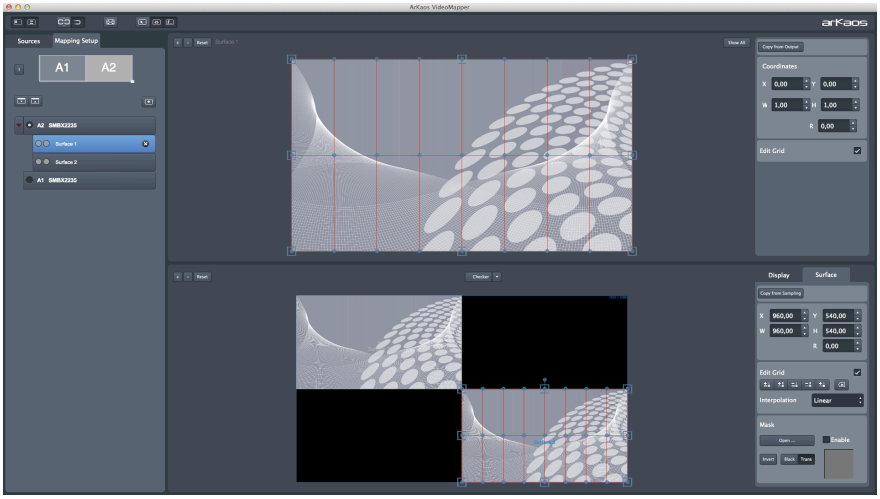
- **Invert:** invert the greyscale source image before applying the mask
- **Black:** the masked part of the image is black
- **Trans:** the masked part of the image is transparent.

13.4.5 Cropping

You can crop the visuals that are sent to the output surfaces. The cropped zones can be a rectangle, a triangle, or a grid and can be edited in the cropping panel just like surfaces can be edited in the output panel. The four corners of rectangle cropping zones can be moved separately if you check the option ”Edit Grid”.

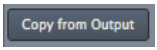
1. The cropping panel

To show the cropping panel, click on the “Show Crop Panel” button in the toolbar, this will split the surface editor horizontally to show the crop panel on top with the output panel below.

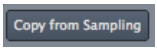


1. Copy from sampling/output

The cropping panel and the output panel each have their inspector on the right, on top of it, you can find the “Copy” buttons:



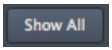
Copy from output: copies to the crop panel the shape of the surface that is currently selected in the output panel



Copy from sampling: copies to the output panel the shape of the surface that is currently selected in the crop panel

The Copy from sampling/output feature is very handy when you have to deal with complex shapes made of several surfaces, it will help to keep a final image that won’t get distorted.

2. Show all



The “Show All” button in the top right of the crop panel allows seeing the cropping zones corresponding to all the surfaces of the display. This option is useful if you want “cut” a visual into several surfaces.

13.5 Visual Sources

The visual sources of the VideoMapper can be found under the “Sources” tab in the left pane, next to the Mapping setup.

Visual sources can be an image or the feed from GrandVJ XT running in “VideoMapper Mode”. If GrandVJ XT is running, the source will automatically switch to GrandVJ.

To add an image to the list of sources, click on the “Load Image” button above the list. Double click on an item of the list to select that source.

13.6 Export and Import of Mapping Files

The VideoMapper constantly saves the mapping file internally. You can export your mapping using the “Export” option in the “File” menu. The exported file (.vmp file) contains the configuration of the output groups of GrandVJ XT as well. You can import external mappings using the “Import” option in the “File” menu.

13.6.1 Key Bindings

1. Surface editor shortcut keys

- Middle Mouse Button : Pan View
- Scroll Wheel : Zoom View in/out
- Shift + Left Mouse Click : Multiple selection
- Shift + Surface Rescale : Aspect-ratio rescale
- arrow keys : Move selected Surface (1 pixel)
- Alt + arrow keys : Move selected Surface (10 pixels)
- Ctrl + arrow keys on Windows / Cmd + arrow keys on Mac : Move selected Surface (0.1 pixel)
- Ctrl + I / Cmd + I: Hide all Surfaces except the selected one
- Ctrl + Shift + I / Cmd + Shift + I: Show all Surfaces

2. Grid surface shortcut keys

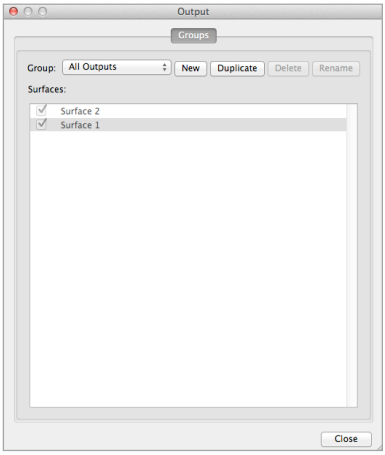
- R : Reset Grid
- F1 : Add Horizontal Control Points
- F2 : Remove Horizontal Control Points
- F3 : Add Vertical Control Points
- F4 : Remove Vertical Control Points
- F5 : Add a control point anywhere
- F6 : Change Grid Interpolation Type
- F7 : Toggle Control Point Interpolation Type
- TAB + arrow keys : Change Control Point Selection
- Right-click inside grid: Selection Box Around Control Points

3. Application shortcut Keys

- Ctrl + I / Cmd + I: Move The VideoMapper Window To Cursor Position
- Ctrl + G / Cmd + G: Surface Snap
- Ctrl + E / Cmd + E: Show crop panel
- Ctrl + F / Cmd + F: Go Fullscreen
- Ctrl + N / Cmd + N: New Mapping
- Ctrl + O / Cmd + O: Import a Mapping file
- Ctrl + Shift + S / Cmd + Shift + S: Export a Mapping file
- Ctrl + P / Cmd + P: Open the Preferences dialog
- Ctrl + Q / Cmd + Q: Quit the Application

13.1 Output management in GrandVJ

In GrandVJ XT, you can create groups of outputs so you can display a layer on several outputs at once.



The Groups dialog in GrandVJ XT is available through the transition parameter panels.

It lets you create a new group of course, select and edit an existing group, rename it or duplicate it.

14 SUPPORT, INFORMATION AND CONTACT

Users discussion forum	Support centre / Knowledgebase
http://forum.arkaos.net/	http://support.arkaos.net/

14.1 Solutions

As always, we are eager to hear from you. If you have any problems or questions, don't hesitate to join our forums or to contact our support team!

14.1.1 Users discussion forum

If you just want to discuss with other ArKaos users, share tips and experiences about our products or third party software / hardware, ask questions about particular setups etc.. Our Users discussion forum is the place to be!

14.1.2 Knowledgebase articles

Our online Support Centre features a FAQ / Knowledgebase where a solution to the most common registration / configuration problems has been posted.

14.1.3 Trouble ticket system

Our online Support centre also features a Trouble ticket system which allows our team to receive your support requests and follow up the resolution of your problem as well as eventual future issues. You can check the status of your trouble tickets, post replies to our team or create new trouble tickets directly from our web interface.

Our support team answers your requests during office hours (CET) on weekdays, we do our very best to answer your trouble tickets within one business day.

14.1.4 Distributors and resellers

Our distributors and resellers are also at your service if you would like to request information in your language, advice on additional hardware or software, solutions or quotes for a particular configuration etc..

A complete list of distributors and resellers for our software can be found on our web site.

Thank you very much for your interest in our products, we hope you will enjoy using this software as much as we enjoyed creating it!

Have fun!

The ArKaos Team

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