

Blackmagicdesign 

# DAVINCI RESOLVE 11

LINUX OS SYSTEM CONFIGURATIONS



July 2014 Edition

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## DaVinci Resolve for Linux



If you have experience in configuring Linux and installing a SAN storage file system then building the world's highest performing color grading system is simple with this easy to follow guide.

DaVinci Resolve combines the world's most advanced color corrector and image enhancement system with powerful multitrack online editing, so now you can edit, color correct, finish and deliver all from one application!

Whether you are just starting your editing or grading career, building a post production facility or upgrading your existing DaVinci Resolve suite, this guide contains important information which will help you buy, build and configure your system.

The system you select or build may be based on what you already have and can update, or a specific operational or technical requirement.

As a guide, if your projects are SD or low resolutions for the web, you could use a lower powered system compared to the needs of a client supervised 2K or 4K grading session for a TVC or feature film. For low to medium budget HD projects quite often the mid-range powered systems are sufficient.

DaVinci Resolve for Linux operates on current Intel based server computers.

The hardware configuration you select has a significant impact on the performance of the overall system. To achieve the best possible experience it is essential to build your DaVinci Resolve system with high performance computer hardware including at least one high performance graphics processor (GPU).

As DaVinci Resolve will use all the available resources to provide the fastest possible processing the configuration defines not only the speed which you can edit, playback and grade but also the time to render your finished timeline.

For your client or grading monitor/projector, DaVinci Resolve also supports the range of Blackmagic Design video I/O cards to provide a SDI output to your calibrated grading display.

## Platform Specifics

This guide defines a number of certified configurations and also lists components you may consider if you don't need guaranteed performance but have a tight budget.

With so many workflow, resolution and speed demands in today's post facilities we recommend you discuss the operational requirements with the end user before ordering the hardware to configure a DaVinci Resolve system.

There are hardware configurations detailed below starting from a single dedicated GPU for image processing up to an eight GPU system and when configured with the more powerful GPUs this system is suitable for stereoscopic grading and 4K video.

### Supermicro SuperServer 7047GR-TRF

The Supermicro SuperServer 7047GR-TRF is currently the only hardware platform certified for DaVinci Resolve on Linux. It can be used as a desktop tower or rack-mounted and contains redundant power supplies.

It provides very fast image processing using up to four, double-width, PCIe3.0x16 slots that do not share bus resources for greater throughput and flexibility. One of these slots is used for the GUI and the remainder can be used for image processing.



With the addition of a PCIe expansion chassis multiple GPUs can be connected to the SuperServer.

The new 2014 Linux Configuration Generator permits GPU configurations from 1 to 8 and therefore a new 6+1 configuration using a single server and expander.

Additional image processing power can also be added using a second SuperServer. These two servers are connected together via an InfiniBand interface. The PCIe expansion chassis with up to eight GPUs is then connected to the second SuperServer.

This computer is generally available from resellers who specialize in server configurations. The table found later in this document will guide you to the configuration you need for your operation.



## UHD and 4K-DCI Image Processing

With the increasing use of digital cameras projects now often include camera clips at UHD, 4K-DCI or higher resolutions. While some cameras provide UHD or 4K or higher capture resolutions they usually store the images as compressed data as this takes less storage space and bandwidth.

However for editing and grading, the compressed data needs to be decompressed to the full RGB per pixel bit depth which will use four or more times the processing power of a HD image for the same real time grading performance. The GPU RAM therefore becomes a very important factor when dealing with UHD and 4K-DCI timelines.

Assuming your system has sufficient GPU RAM to play UHD and 4K-DCI images, one way to improve your editing and grading experience is to use a HD resolution timeline and displayed on a HD monitor. After you have completed your edit and grade simply change the timeline resolution for a UHD or 4K-DCI render.

There are many potential speed limits within this 4K pipeline so depending on the clip codec, CPU speed and number of cores, system RAM, the number of GPUs, their core count and GPU RAM, motherboard slot speed, disk speed, etc. each of these can affect the full 4K playback grade and display in real time.

## GUI Monitor

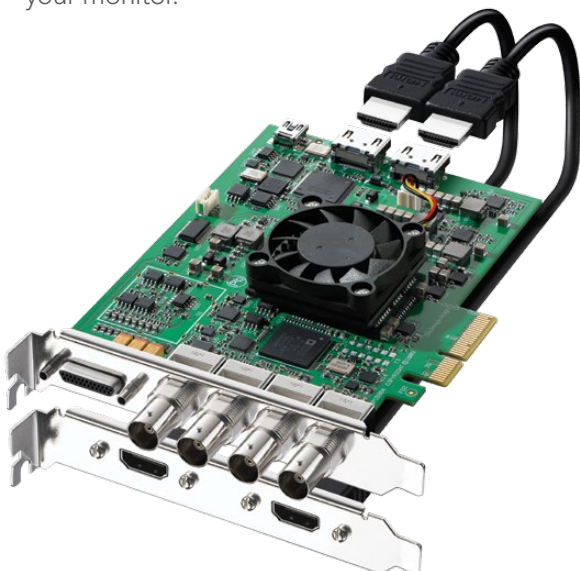
The Resolve GUI is optimized for 2560 x 1440 screen resolution but will work down to 1920 x 1080. Dual GUI monitors are also supported and these can be different resolutions within the specs listed above.

## Connecting a Calibrated Edit, Client and Color Grading Monitor

All editors and colorists grading for TV or film deliverables will need to use a proper calibrated grading monitor connected to a SDI video I/O card for 2D or 3D monitoring. This device will occupy a PCIe slot on the motherboard.

DaVinci Resolve supports the Blackmagic Design range of DeckLink video I/O devices for SDI video and embedded audio ingest and playback. The same device is used for connecting your calibrated grading monitor. Users can loop a single feed from the VTR to the grading monitor or connect the second SDI output directly to the grading monitor.

DaVinci Resolve also supports the DeckLink 4K Extreme video card and if your facility has a UHD/4K display that accepts a single 6G SDI or two 3G SDI cables you can use this DeckLink card to connect to your monitor.



Alternatively you can use the BMD demultiplexer to convert these 3G SDI connections to four 1.5G SDI feeds.

Depending on the specific card, these DeckLink capture and playback devices support SD, HD, 2K, UHD and 4K SDI video with up to 16 channels of audio. Many also feature HDMI and analog audio and video outputs, external sync and VTR control via a RS-422 connection.

For DaVinci Resolve to use the DeckLink you will need to install the latest Desktop Video drivers, which are available from the support page at [www.blackmagicdesign.com](http://www.blackmagicdesign.com).

DaVinci Resolve for Linux also supports the DVS Atomix card. Details can be found in the shopping list.

## PCIe Expanders

The SuperServer offers connection to an external expander chassis via its PCIe interface. This permits extra GPUs to be installed for use by the unique processing controller in DaVinci Resolve.

While there are a number of expanders available on the market only a few have been tested and certified for use with DaVinci Resolve.

Please refer to the PCIe Expander details later in this guide.

## File System and Media Storage

DaVinci Resolve for Linux supports the Quantum StorNext file system for its default image storage management. This has proven to be a robust and reliable file system for direct attached storage (DAS) and storage area network (SAN) systems.

StorNext can provide realtime 4K bandwidth on a continuous basis without dropping or delaying frames as sometimes seen with other file systems.

The StorNext license should be purchased from Quantum for a DAS system or ensure the facility has the license if connected to a SAN.

The automated installer provided by Blackmagic Design with the application is used to format and partition the system disk, install the CentOS 6.4 operating system, the Resolve application and appropriate drivers.

If the facility intends to use DAS with Resolve, it might be necessary to install Red Hat Enterprise Linux v6.4 rather than the usual CentOS used by most Resolve facilities.

This requirement might be imposed by Quantum in which case the Red Hat Enterprise Linux license must be sourced elsewhere and you will need to create your own RHEL 6.4 installer as described in the "Installing Linux" section.



## Database Server

DaVinci Resolve uses a file based project database or full database server to hold all the metadata relating to every grade for every clip for all the projects. You can operate with either system.

As this data is critical, many facilities back up their Resolve databases daily and some use a separate Resolve Database server.

Facilities with full license versions of DaVinci Resolve, including a mix of Linux, Mac OS X and Windows systems, can share the projects or split projects across many configurations. Sometimes projects are started in one suite and finished in another. Often grading work follows job preparation, image scene detection and conforming performed in an offline suite.

The Resolve Database Server enables facilities to use a central server to hold each of the databases used by Resolve. It also provides a single source for daily backups.

The database server can be constructed using the same Supermicro SuperServer used for DaVinci Resolve. Alternatively you can build a database server using the Mac OS X or Windows installer DVDs that come with your DaVinci Resolve Panel.

As long as the machine is a modern multi-core system and can be dedicated to act as the database server the specific configurations are not specialized. A top of the line Mac Mini is a popular choice. Setup details are in the section "Connecting the Resolve Database Server" later in this guide.

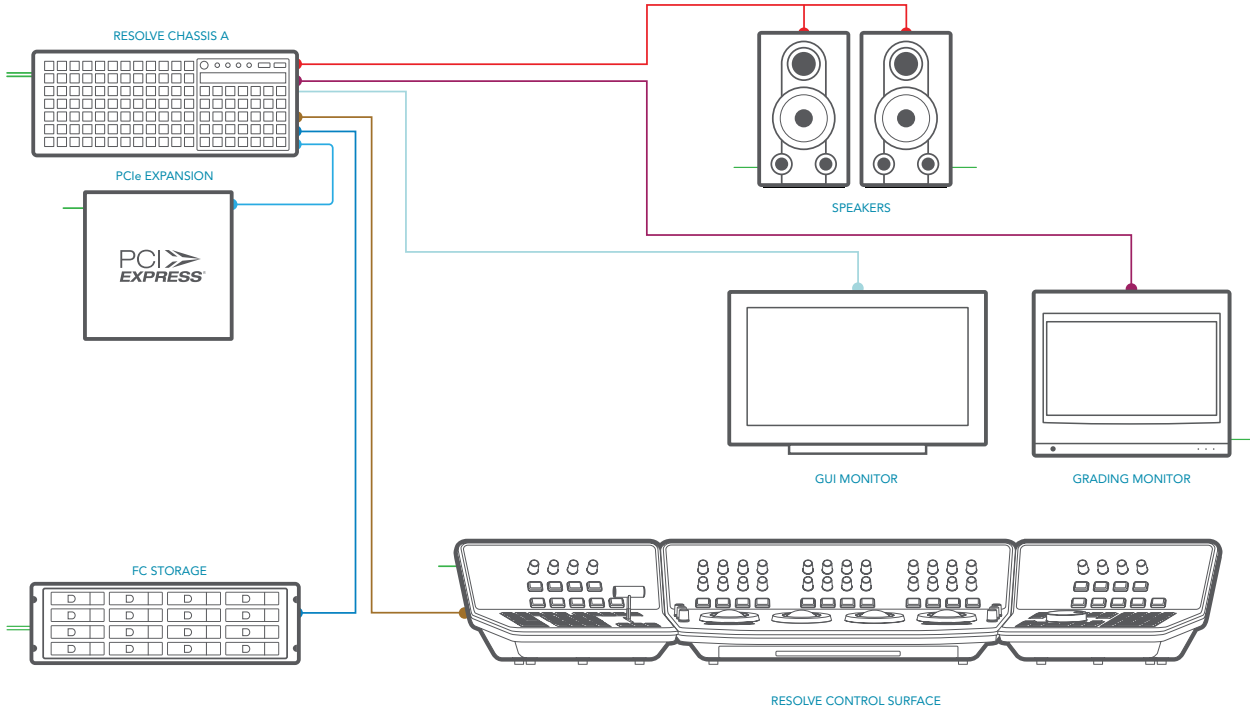
The Database Server connects to Resolve systems via a dedicated gigabit Ethernet connection.

To install the Linux Database Server software, follow the install procedure listed in the "Installing Linux" section and select the 'Database Server' option.

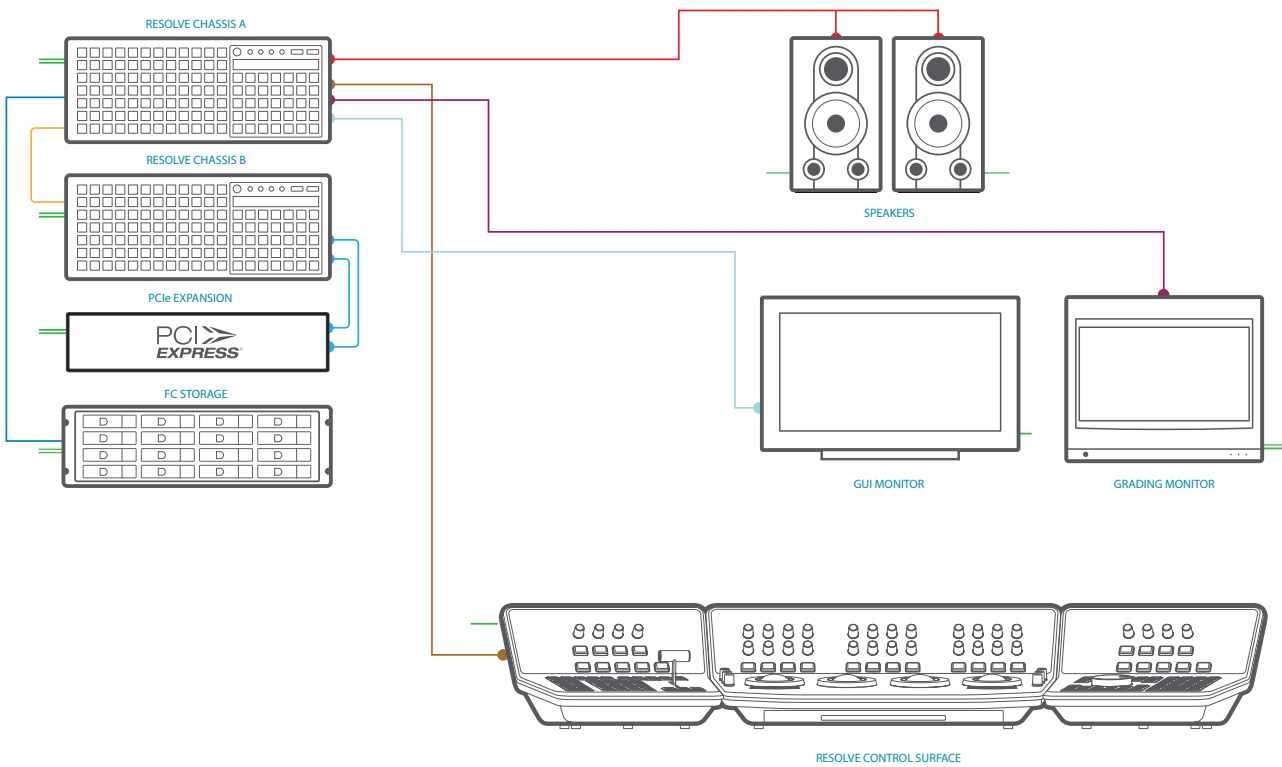


# System Connection Diagram

## Basic Configuration



## Advanced Configuration



- |                  |                      |
|------------------|----------------------|
| ■ Thunderbolt    | ■ Storage Connection |
| ■ DVI            | ■ Reference          |
| ■ USB            | ■ Audio              |
| ■ HD-SDI         | ■ RS422              |
| ■ PCI-E Extender | ■ Electrical Power   |



## Before Installing the Operating System

After selecting your hardware there are just a few steps starting with the motherboard VGA jumper and Bios settings. Then you can commence with the DaVinci Resolve installer.

Follow the instructions below to set up the computer servers before installing the OS and the DaVinci Resolve application. Note that if there are multiple chassis in your configuration the setup for each will differ.

Every Resolve configuration with 1 to 8 GPUs needs a GUI server so you'll always need to build one of these. More powerful Resolve configuration may need an additional 1 or 2 additional servers containing extra GPUs for faster performance.

### Jumpers and Bios

Follow the instructions below to set up the display jumper and system BIOS before installing DaVinci Resolve. Note that if there are multiple chassis in your configuration the setup for each will differ. Follow the procedure for each chassis.

The Resolve GUI and CORE servers must have the onboard VGA jumper (JPG1) set to 'disable'. The Resolve Database server must have the onboard VGA jumper set to 'enable'.

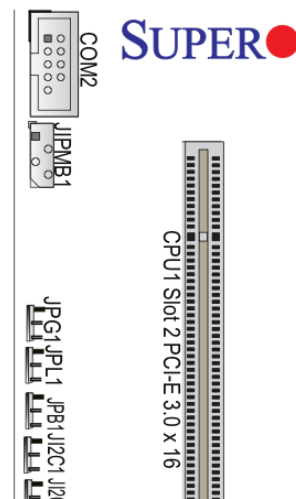
1. To change the JPG1 jumper setting on.. the motherboard to disable the onboard VGA graphics, locate the JPG1 group of 3 pins which is near the PCI-E slot 2 on the motherboard.

A one chassis configuration is setup simply as a GUI server. A two chassis configuration consists of a GUI server and a CORE server.

In addition to the most important GUI and CORE servers, a Database server can be added to the standard Resolve configuration.

Before commencing the installation of the operating system please install all specified hardware into each server chassis. A keyboard, mouse, monitor and blank system hard drive must be connected to the server.

With the exception of the blank system hard drive, disconnect all connections to storage including: SATA, fiber channel, Ethernet and USB.

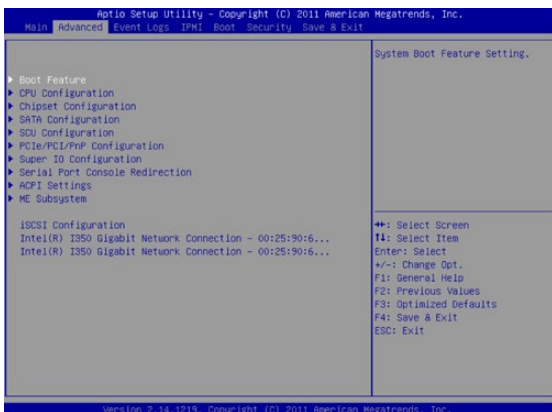


Remove the jumper from pins 1 and 2 and install it over pins 2 and 3 as shown in the accompanying illustration.

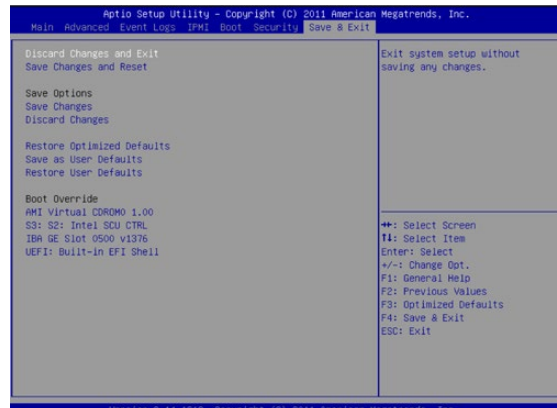
- Unplug all hard disks except the one where you want to install Linux and Resolve
- Power up the machine. Press Delete when the SuperMicro logo appears on the screen in order to go into BIOS.
- You will see the Main BIOS page shown below. Set the date and time correctly for each server.



- Use the right arrow key to go to the Advanced page shown below:



- Use the down arrow key to go to the SATA configuration page. Press enter. The SATA Configuration panel opens.
- Set the SATA Mode by pressing enter, scrolling to select AHCI and press enter again. Select Esc to exit out of SATA Configuration.
- Insert the Linux Resolve DVD into the drive.
- Press the right arrow key 5 times to go to the Save & Exit page shown below:



- Press the down arrow key to go to "Save Changes and Reset". Press Enter. Press Enter again at the pop up dialog to confirm saving changes and resetting.

This completes the jumper and bios setup.

## Installing Linux

In this section you will create a Linux DVD, either using the BMD supplied SD card to make a

CentOS 6.4 DVD or a RedHat DVD if required by your storage file system vendor. Then using the DVD install the OS in a specific configuration based on the type of server you are building.

During the installation the application may erase and format any attached storage drives, load the OS and configure a number of drivers.

This installation process is the same for all Resolve servers and can easily take an hour for each server so please be patient.

If you are using the BMD supplied CentOS 6.4 DVD go directly to step 5.

If you need to install a RHEL 6.4 or older 5.4 system to comply with a storage OS requirement, you need to start at step one and make a new installer DVD.

1. On another CentOS/RHEL system, extract your third party supplied RHEL 6.4 or 5.4 ISO image to a directory (for example /RHEL\_IMAGE)

2. Mount the BMD supplied Resolve SD Card to a folder (for example /mnt/Resolve\_SDcard)

3. Open Terminal and type
 

```
> cd /RHEL_IMAGE
```

> select return, then type

```
> /mnt/Resolve_SDcard/copy_
postinstall_files.sh/RHEL_RESOLVE_
DVD.iso
```

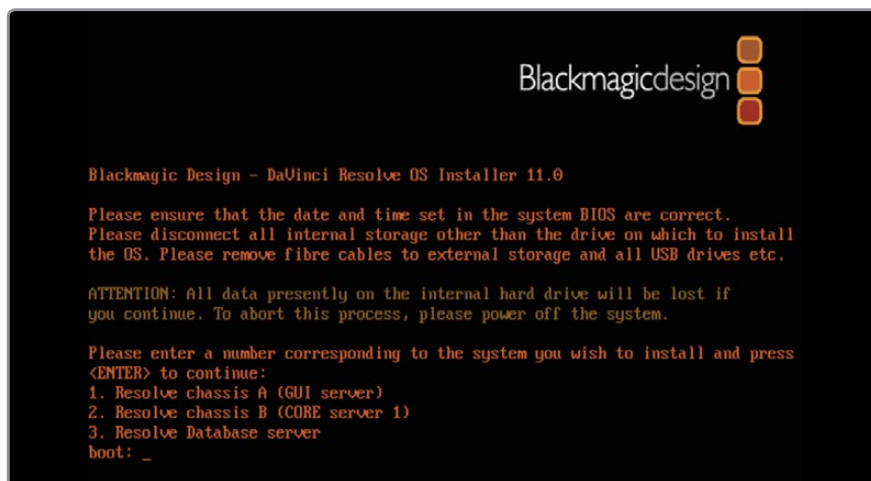
Note: /RHEL\_RESOLVE\_DVD.iso will become the new RHEL 5.4 or 6.4 ISO image of the Resolve installer DVD.

4. Burn that ISO to a DVD.

Now to the install.

5. Insert the BMD supplied Resolve DVD, or the RHEL version if you require that OS, into the DVD drive of your new DaVinci Resolve hardware and restart the server.

If the server fails to boot from the DVD drive, change the boot sequence in the BIOS settings to 'DVD then primary hard drive'. Once the server has successfully booted from the DVD you should see the screen below.



6. Read through the descriptions to the right and select your server type using the corresponding number, 1,2,3, 4 or 5 and then 'enter' or 'return' to build your server OS.
7. Continue as require for all the servers you need. When the installation for each server is finished, remove the DVD, restart the server and verify it starts without reporting errors.

Perform a "cold boot" test by completely shutting down the server, wait a few seconds and then power it up again. Make sure it starts without errors or lengthy boot delays. Check the mouse and keyboard work.

NOTE: For a single server configuration, after the OS install and check you can choose to proceed with the Resolve configuration and application installer or load the disk storage file system.

If the disk storage file system is loaded next, you can test this with the GUI server or you can load the Resolve application and install the disk storage file system later. It does not matter in which order these tasks are performed.

If you have GUI and CORE servers, check each of the servers separately then connect them together using the Infiniband cable prior to configuring and installing the Resolve application.

During the installation of the OS, the Resolve application installer was copied to the primary drive but installation will only proceed when you follow the instructions in the next section of the guide.

This concludes the OS installation phase of the servers.

## GUI Server #1

The GUI server hosts the main Resolve application and always has the control surface and GUI monitor connected in the finished system. Select option '1' and press 'enter' or 'return' to build Resolve chassis A, which is the GUI server.

The primary drive will be formatted, the OS and drivers loaded and then a number of applications and files will be installed on the primary drive.

## Core Server #2

If your Resolve configuration requires an additional CORE server please use the same installation DVD and proceed just as you did for the GUI server. The only difference is that you will need to select option '2' to build Resolve Chassis B.

Remember that the primary drive will be formatted, and the OS and drivers loaded on each server, so nothing will remain on the existing drives.

## Database Server #3

Some facilities with multiple Resolve systems use a common server to hold each of the databases they use and so there is a Resolve Database server. The Resolve Database server supports connections from Mac OS X, Windows and Linux systems. Select option '3' to build a Resolve Database server.



# Configuring and Installing the DaVinci Resolve Software

Once the Linux OS installation has been completed for all servers, the Resolve GUI server should be used to select the desired Resolve configuration by carrying out the following procedure.

With the GUI server powered off, connect the Resolve software dongle to one of the USB ports. The dongle needs to be connected before attempting to install and run the Resolve application.

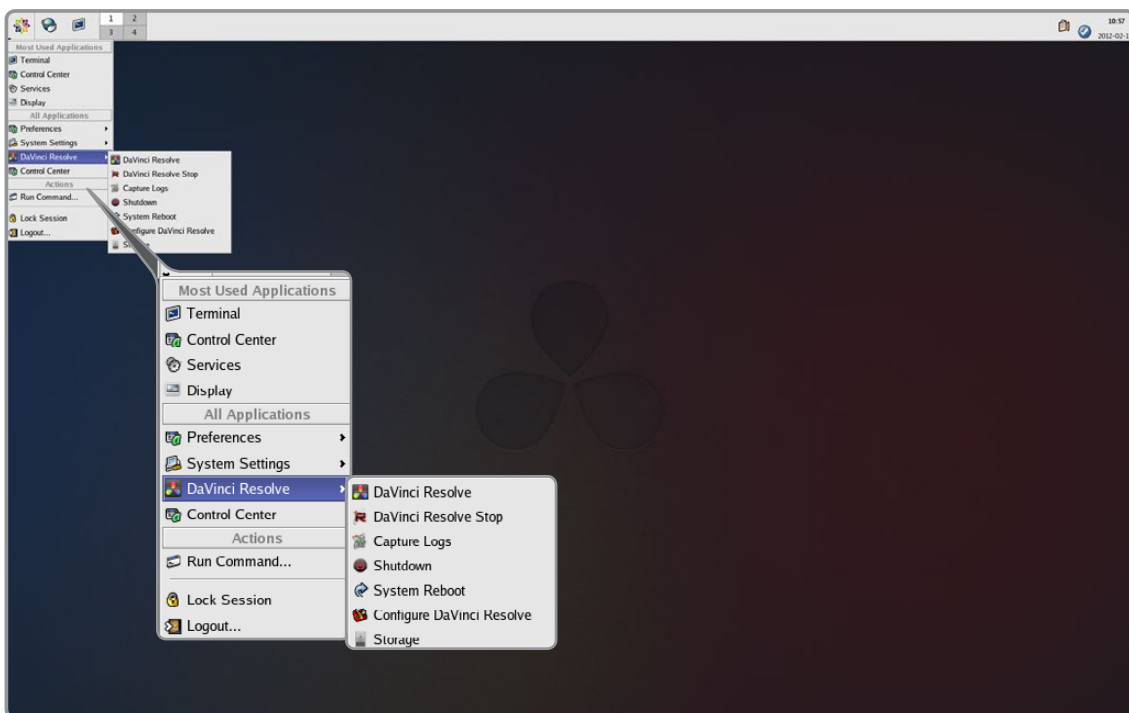
For a multi server system, it is essential to connect all the servers together via InfiniBand, except for the Resolve Database server which does not have InfiniBand and does not require any special configuration.

Start all of the servers and verify they have booted correctly.

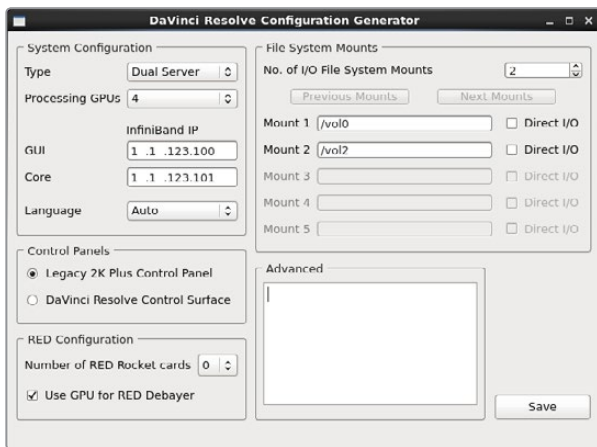
The GUI server should show the Resolve wallpaper once it has completed booting. Commence the installation of the Resolve application by selecting “Configure DaVinci Resolve” from the home DaVinci Resolve menu.

The ‘DaVinci Resolve Linux Configuration Generator’ window will open allowing you to set a number of parameters and also review any preconfigured IP addresses from the selected system configuration.

To configure the system, select the desired number of image processing GPUs from the Type pop-up menu, e.g. 1 GPU, 2 GPUs up to 8 GPUs.



Then select the DaVinci Resolve panel type your system will use, i.e. a new Resolve Control Surface with USB or a legacy DaVinci 2K+ panel.



Next is the number of file system mounts. Most systems with direct attached storage (DAS) will have one but some will have two or more.

Once the number of file system mounts has been selected, the next step is to specify the path to these. You will find a few DPX and QuickTime files on the primary hard drive so you can test the Resolve application even if you do not have your high-speed disk storage ready. Unless you are setting up the final file system now, type `"/vol0"` into the first file system text box.

At such a time as the Resolve GUI server is subsequently attached to high speed disk storage, the first file system mount path should promptly be changed from `"/vol0"` to the mount path of the high speed disk storage.

If you have or will have a StorNext file system, type the path in the text box, e.g. `"/mnt/nl01"`. Keep adding mount points for each file system.

Some facilities have a dozen or more file systems so please enter each of the mount points on page 1 and then select page 2, or more pages, for additional mount points.

Leave the text entry 'Advanced' field blank. This may be required for a special configuration at the direction of BMD support.

If your colorist works with RED r3d files and wants realtime hardware support select the number of cards installed from the "Number of RED Rocket cards" popup menu.

Now that you have completed these steps, click 'Save'. The Resolve configuration will be saved immediately and the window will continue to display the saved settings. Any further changes made to these settings will only take effect once the 'Save' button has been clicked.

For a multi server configuration, clicking 'Save' also verifies the connections to all servers which have been powered on and connected via InfiniBand.

Clicking 'Save' also causes the 'DaVinci Resolve Configuration Generator' to check if the Resolve application software is installed on the GUI server. If not, a dialog box will offer to install the software.

Choose to 'Install now' and the Resolve application will be installed in a few minutes. Software will also be installed on any servers connected via InfiniBand.

If you reopen 'Configure DaVinci Resolve' in the future, such as when you wish to add or change a file system mount point, the last saved configuration will be shown. Make any desired changes to the settings and then save again before exiting the application.

## Upgrading the DaVinci Resolve Application

Upgrading DaVinci Resolve is as simple as downloading the new software release from the Blackmagic Design website, extracting the software and placing it into the 'Releases' folder. Then double-click the new release to install.

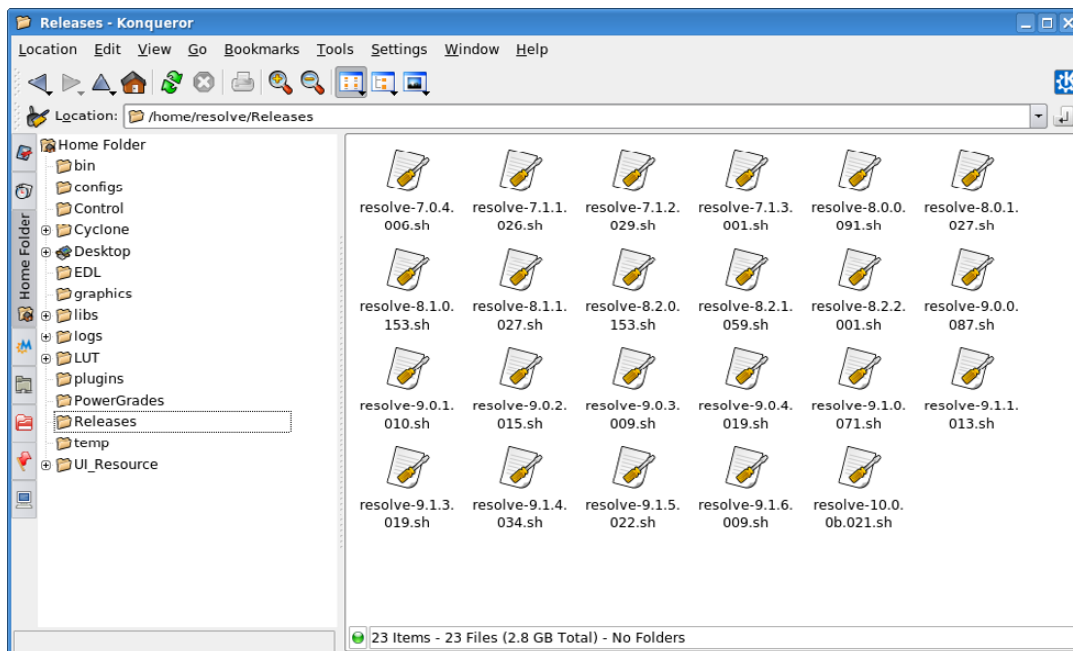
For a multi server system, it is essential to connect all the servers together via InfiniBand, except for the Resolve Database server, before installing a Resolve update.

Double-click the 'Home' icon on the desktop and, in the resulting window, open the 'Resolve' folder to reveal the 'Releases' folder. Any future updates to the Resolve application should also be put into the 'Releases' folder to make installation easy.

The 'Releases' folder contains all software versions available for installation. Most people will only use the latest software installer but you may wish to keep earlier versions in case of any technical issues with the latest update. Double-click the desired software version and installation should complete in just a few minutes.

Updates to the DaVinci Resolve application will load in quite a similar manner to the initial installation, with the exception that colorist configuration and project files will not be overwritten.

Nevertheless, it is always wise to backup the colorist configuration and project files. Please refer to the Installer notes.



## Testing the Installation

Once the application installation is complete, please reboot the server(s).

Each system should be tested prior to deployment. Testing can be performed at this stage, prior to installing the StorNext file system.

You will find four icons on the GUI server desktop: 'Home' will take you to the top directory, which is a helpful place to be when you want to move files such as EDLs and audio.

'DaVinci Resolve' launches the Resolve application with a double-click. When the application is open, choose 'Quit' to exit the application.

'Storage' quickly provides a graphical listing of all connected drives, including USB flash drives.

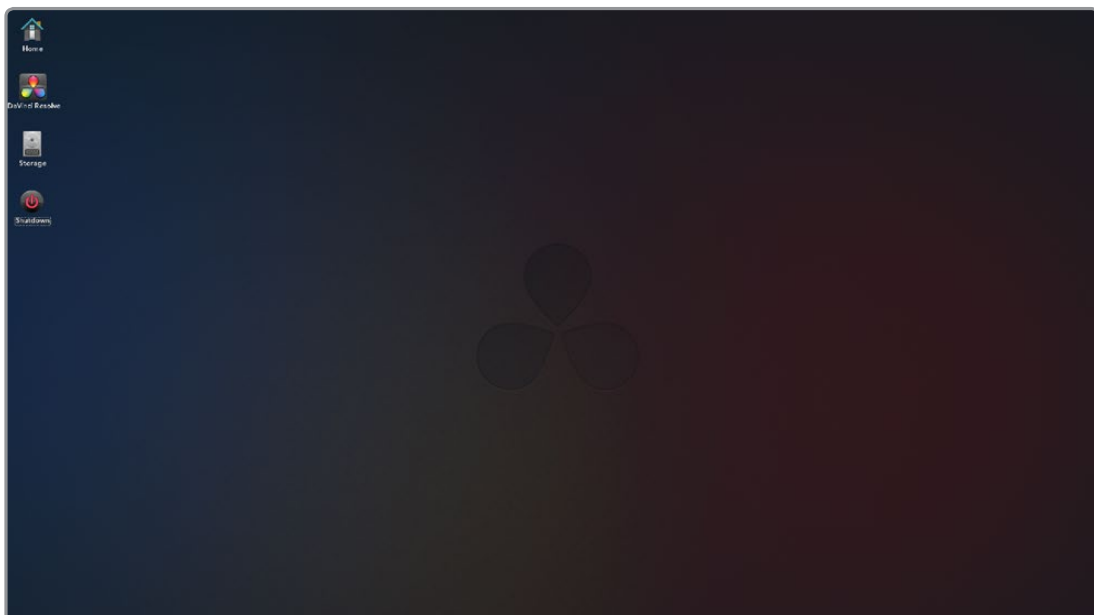
'Shutdown' commands the Linux OS to cleanly turn off the system.

To test the system, double-click the DaVinci Resolve icon to launch the application.

Log in as a guest user by double clicking on guest and Resolve will open on the Project Manager. Leave all the settings as they are. On the media page, look for vol0 or whichever file system mount was specified in the DaVinci Resolve Configuration Generator.

Select the QuickTime or DPX files with a single click and then play them in the viewer. You can add clips to the media pool with a double click. These clips are QuickTime or DPX from the system disk and are just for testing. Realtime performance is not expected. For normal operation you will need to have images stored on your high-speed disk array using the StorNext file system.

Go to the color page and verify the system adjusts the grade by using the mouse to control the lift, gamma or gain RGB settings and/or the master gain setting. While using the system with the Resolve panels is far quicker and more intuitive, all operations are controllable using a mouse.





## Storage Subsystem Connection and Installation

The StorNext image file system and the storage should now be installed and tested. Please consult your local StorNext distributor and/or your storage subsystem vendor for installation and configuration guidance. We have certified StorNext version 4.3 and legacy 3.5.2 systems.

In a DAS configuration, Resolve hosts the server and client for StorNext. Your IT engineer can open a shell and run the StorNext installer following the guidelines set by Quantum. Please seek guidance from your local Quantum support office. You will also need to enter the StorNext license which can be obtained from Quantum.

In a SAN configuration, Resolve is a client and the metadata controller (MDC) holds the license information. Resolve must have the IP address of the MDC(s) which was previously entered during the configuration and installation of the StorNext file system.

If your facility has CXFS file system storage, select the Direct I/O checkbox in the 'DaVinci Resolve Configuration Generator'.



## DaVinci Resolve Ethernet Network Connections

There are several types of DaVinci Resolve servers but only the GUI and Database servers require Ethernet connections. All other servers are networked together via InfiniBand.

This section provides Ethernet configuration instructions for the GUI server and assumes that the USB-based DaVinci Resolve Control Surface is being used.

Network configuration instructions for the Database server are included in the following section of this document named 'Connecting the DaVinci Resolve Database server'.

The Resolve GUI server (Resolve chassis A) has two, built-in, 1Gb Ethernet ports: eth0 and eth1.

- > One Ethernet port should be connected to the house network switch.
- > The other Ethernet port can be connected to a SAN metadata controller (MDC) to carry SAN metadata.

When using a Resolve Control Surface which connects via USB, it does not matter which Ethernet ports are used as long as they are configured correctly. The network system settings must be configured by performing the following procedure:

1. On the Resolve GUI server, go to the start menu, choose System Settings and then Network. When the 'Query' window appears, enter the root password 'DaVinci' and then click OK to open the Network Configuration tool.

2. From the Devices tab, select eth0 or eth1 and click Edit to open the Ethernet Device window. From the General tab, enable 'Activate device when computer starts' and leave the other options disabled. The Ethernet port should be configured with suitable settings for the house network. If a static IP address is being used, ensure the default gateway address and DNS server information is set so that updates to the Resolve software can be downloaded from the Internet. Click 'OK'.
3. If the other Ethernet port will be connected to a SAN MDC, select the port from the Devices tab and click Edit to open the Ethernet Device window. From the General tab, enable 'Activate device when computer starts' and leave the other options disabled. Click on 'Statically set IP addresses' and then set the IP address and subnet mask to the settings provided by the SAN documentation or from your SAN vendor. Click 'OK'.
4. Deactivate and activate both Ethernet devices to ensure they are working with the new settings. Close the Network Configuration tool and save changes when prompted.

Your Resolve GUI server is now configured with Ethernet connections to the SAN MDC and the house network switch.

## Connecting the Resolve Database server

While other DaVinci Resolve servers connect to each other via InfiniBand, the Database server simply uses 1Gb Ethernet to connect to the facility's network switch. In order for the GUI server to connect to the Database server, a static IP address must be manually set on the Database server.

Start by connecting an Ethernet cable from the facility's network switch to the eth0 back panel connector on the Database server.

On the Database server, go to the home menu, choose System Settings and then Network. When the 'Query' window appears, enter the root password 'DaVinci' and then click OK to open the Network Configuration tool.

From the Devices tab, select eth0 and click Edit to open the Ethernet Device window. From the General tab, enable 'Activate device when computer starts' and leave the other options disabled. Click on 'Statically set IP addresses' and then set the desired IP address, subnet mask, default gateway address and DNS server information for the facility. Click 'OK' and then close the Network Configuration tool. Make a note of the static IP address.

Ensure the GUI server is also connected via 1Gb Ethernet to the facility's network switch. On the GUI server, launch the DaVinci Resolve application and then select 'Database Manager' from within the User Login page.

By default, DaVinci Resolve uses a database on the GUI server unless you change to a new database on a Database server.

To create a new database on the Database server, click on 'Create New' to open the 'Add Database' window. Enter a label for the new database, in the 'Label' field, and enter the IP address of the Database server. Enter a database name, username and password. Click 'OK' to return to the 'DB' window.

### Testing the Resolve Database server

Testing the DaVinci Resolve Database server is easy. Select the new database in the 'Database Manager' window and click 'Select'. You will have successfully connected to the new database, on the Database server, unless you encounter an error message stating, "Failed to connect to database".

Click 'delete' or 'Cancel' to dismiss the 'Database Manager' window. The new database will be used to store your projects.

### Updating DaVinci Resolve Database server

Updates to the Database server are easy and are independent to any updates for all other DaVinci Resolve servers. Updates may become available on DVD or as a download from the Blackmagic Design website. The software updater needs to be run locally on the Database server itself but can be run from any location on the server.

Database Manager					
Label	Name	Host	Type	Schema Last Updated	Date Created
Resolve	DaVinci Resolve Main Database	127.0.0.1	SQL	Today 12:30am	Today 12:30am
Matts Server	Local Database 7	/library/Application sup...	Disk	Yesterday 1:30pm	Yesterday 1:30pm
Backup Server	Database Duplicate backup server	127.0.0.1	Disk	12/04/2012 8:24am	12/04/2012 8:24am
Facebook Drives	World wide web database	/library/Application sup...	SQL	12/04/2012 8:24am	12/04/2012 8:24am
Resolve 8	DaVinci Resolve Main Database	127.0.0.1	SQL	12/04/2012 8:24am	12/04/2012 8:24am

## System Configurations

The following tables show multiple hardware configurations and where to install the PCIe cards. Use the Shopping List on the following pages to order the quantity as indicated in the table.

### Single Chassis; 1 GUI GPU + 1 Image Processing GPU

Slot	Spec	Server Chassis
1	-	
2	PCI 3.0 x16	GUI GPU
3	-	
4	PCI 3.0 x16	Optional DVS Atomix
5	-	
6	PCI 3.0 x16	Image Processing GPU
7	-	
8	PCI 3.0 x16	
9	PCI 3.0 x8	HDMI Bracket
10	PCI 3.0 x8 (x16)	Storage Interface
11	PCI 2.0 x4 (x8)	BMD DeckLink

### Single Chassis; 1 GUI GPU + 2 Image Processing GPUs

Slot	Spec	Server Chassis
1	-	
2	PCI 3.0 x16	GUI GPU
3	-	
4	PCI 3.0 x16	Optional DVS Atomix
5	-	
6	PCI 3.0 x16	Image Processing GPU
7	-	
8	PCI 3.0 x16	Image Processing GPU
9	PCI 3.0 x8	HDMI Bracket
10	PCI 3.0 x8 (x16)	Storage Interface
11	PCI 2.0 x4 (x8)	BMD DeckLink

Note; An Optional Red Rocket card should be installed in slot 8  
 Note; that the Motherboard slot 11 is closest to the CPU.



Single Chassis; 1 GUI GPU + 4 Image Processing GPUs in PCIe Expander

Slot	Spec	Server Chassis	PCIe Expander
1	-		
2	PCI 3.0 x16	GUI GPU	Image Processing GPU
3	-		
4	PCI 3.0 x16	Optional DVS Atomix	Image Processing GPU
5	-		
6	PCI 3.0 x16	PCI-E expander HIC	
7	-		
8	PCI 3.0 x16		Image Processing GPU
9	PCI 3.0 x8	HDMI Bracket	
10	PCI 3.0 x8 (x16)	Storage Interface	Image Processing GPU
11	PCI 2.0 x4 (x8)	BMD DeckLink	

Single Chassis; 1 GUI GPU + 6 Image Processing GPUs in PCIe Expander

Slot	Spec	Server Chassis	PCIe Expander
1	-		
2	PCI 3.0 x16	GUI GPU	Image Processing GPU
3	-		Image Processing GPU
4	PCI 3.0 x16	Optional DVS Atomix	Image Processing GPU
5	-		
6	PCI 3.0 x16	PCI-E expander HIC	
7	-		
8	PCI 3.0 x16	PCI-E expander HIC	Image Processing GPU
9	PCI 3.0 x8	HDMI Bracket	Image Processing GPU
10	PCI 3.0 x8 (x16)	Storage Interface	Image Processing GPU
11	PCI 2.0 x4 (x8)	BMD DeckLink	

Note; An Optional Red Rocket card should be installed in slot 8  
 Note; that the Motherboard slot 11 is closest to the CPU.

Dual Chassis; 1 GUI GPU + 8 Image Processing GPUs in PCIe Expander

Slot	Spec	8+1 GPU 2K-3D/4K Server Chassis 1	Server Chassis 2	PCIe Expander
1	-			
2	PCI 3.0 x16	GUI GPU		Image Processing GPU
3	-			Image Processing GPU
4	PCI 3.0 x16	Optional DVS Atomix	PCI-E expander HIC	Image Processing GPU
5	-			Image Processing GPU
6	PCI 3.0 x16	InfiniBand	InfiniBand	
7	-			Image Processing GPU
8	PCI 3.0 x16		PCI-E expander HIC	Image Processing GPU
9	PCI 3.0 x8	HDMI Bracket		Image Processing GPU
10	PCI 3.0 x8 (x16)	Storage Interface		Image Processing GPU
11	PCI 2.0 x4 (x8)	BMD DeckLink		

Note; An Optional Red Rocket card should be installed in slot 8  
 Note; that the Motherboard slot 11 is closest to the CPU

### PCIe Expansion Chassis

In all system configurations, additional image processing GPUs or even a RED Rocket card can be added using a PCIe expansion chassis.

If you use one of the chassis recommended below, install the expander HBA in the PCIe slot indicated and then your image processing GPUs in the expander. The GUI GPU should remain in the main computer as should the DeckLink and a RAID controller if installed.

Note: There are multiple PCIe expander options listed below. Not all offer Gen 3.0 x16 speed to every slot and the power supply limits on some expanders make them suitable for only one or two GPUs especially if a RED Rocket card is also installed.

The expander tables below show the ideal slot to use for the GPUs. Use the spare slots for other cards if needed.

#### CUBIX GPU-Xpander Desktop Elite

Slot	Board
1	Image Processing GPU
2	Image Processing GPU
3	Image Processing GPU
4	Image Processing GPU

#### CUBIX GPU-Xpander Rackmount Elite

Slot	Board
1	Spare x8 slot
2	Spare x8 slot
3	Image Processing GPU
4	Image Processing GPU
5	Image Processing GPU
6	Image Processing GPU

#### CUBIX GPU-Xpander Rackmount 8

Slot	Board
1	Image Processing GPU
2	Image Processing GPU
3	Image Processing GPU
4	Image Processing GPU
5	Image Processing GPU
6	Image Processing GPU
7	Image Processing GPU
8	Image Processing GPU

#### Cyclone PCIe2-2707

Slot	Board
1	Image Processing GPU
2	Image Processing GPU
3	Image Processing GPU
4	Spare x8 slot
5	Spare x8 slot

#### NetStor NA255A-XGPU

Slot	Board
1	Image Processing GPU
2	Image Processing GPU
3	Image Processing GPU
4	Image Processing GPU

While this expander used x8 slots, in testing its performance has shown to be acceptable.

# Shopping List

## Software

DaVinci Resolve for Linux

<http://www.blackmagicdesign.com>

### Where to Buy

Included with DaVinci Resolve Control Surface

## Control Panel

DaVinci Resolve Control Surface

(Note: includes the DaVinci Resolve software)

<http://www.blackmagicdesign.com/davinciresolve>

### Where to Buy

<http://www.blackmagicdesign.com/resellers/>

## Capture Card

Blackmagic Design DeckLink 4K Extreme

### Alternatives with a different feature set

Blackmagic Design DeckLink Studio 4K

(Note: HD-SDI I/O and HDMI output is supported by Resolve)

<http://www.blackmagicdesign.com/products/>

### Where to Buy

<http://www.blackmagicdesign.com/resellers/>

### Alternative with Additional features

DVS Atomix

Model: Atomix HDMI

<http://www.dvs.de/products/video-boards/atomix-hdmi.html>

### Where to Buy

[sales@colorscene.com](mailto:sales@colorscene.com)

## Computers and Chassis

DaVinci Resolve GUI and CORE Server(s)

Computer: Supermicro SuperServer 7047GR- TRF Black 4RU Rackmountable/Tower

CPU: 2 x Intel Xeon 10 Core E5-2680v2 2.8GHz or faster

RAM: 32GB (8x4GB) or more ECC DDR3-1866 SDRAM

Hard Disk: Seagate Barracuda ES.2. 500GB or Intel 520 SSD, 240GB

DVD Drive: DVD-RW drive, SATA, Black

<http://www.supermicro.com/products/system/4U/7047/SYS-7047GR-TRF.cfm>

Please note that dual chassis configurations have two of the above configuration.

### Where to Buy

<http://www.supermicro.com.tw/wheretobuy/index.cfm>

### Optional DaVinci Resolve Database Server

Computer: Supermicro SuperServer 7047GR- TRF Black 4RU Rackmountable/Tower

CPU: 1 Intel Xeon 6C E5-2620 2.0 GHz 2 15M 7.2GT/s QPI, or faster

RAM: 16GB or more ECC DDR3-1333 SDRAM

Hard Disk: Seagate Barracuda ES.2. 500GB or Intel 520 SSD, 240GB

DVD Drive: DVD-RW drive, SATA, Black

<http://www.supermicro.com/products/system/4U/7047/SYS-7047GR-TRF.cfm>

### Where to Buy

<http://www.supermicro.com.tw/wheretobuy/index.cfm>

# Shopping List

## GUI Monitor

HP DreamColor Z27x Professional Display

Single or Dual as required

<http://www8.hp.com/us/en/campaigns/workstations/dreamcolor-displays.html>

### Where to Buy

<http://www8.hp.com/us/en/campaigns/workstations/dreamcolor-displays.html>

## Alternatives with a different feature set

Any high quality computer monitor with a 2560x1440 screen resolution. 1920 x 1080 and higher screen resolutions are also supported.

### Where to Buy

Your local computer supplier

## USB Keyboard and Mouse

Microsoft Model: APB-00018 USB Desktop 600 KB & Mouse

<http://www.microsoft.com/hardware/en-us/p/wired-desktop-600>

### Where to Buy

Your local computer supplier

## Alternatives with a different feature set

Logickeyboard Apple DaVinci Resolve

Model: LKBU-RESOLVE-AM89-US

<http://www.logickeyboard.com/shop/apple-davinci-resolve-2952p.html>

### Where to Buy

<http://www.logickeyboard.com/shop/apple-davinci-resolve-2952p.html>

## USB 2.0 Extender

ICRON USB 2.0 Ranger 2204

<http://www.icron.com/products/icron-brand/usb-extenders/cat5/usb-2-0-ranger-2204/>

### Where to Buy

<http://www.icron.com/where-to-buy/>

## RED R3D Processing Card

RED Rocket

<http://www.red.com/>

### Where to Buy

<http://www.red.com/store/775-0001>

## InfiniBand Interconnect

The InfiniBand interconnect is applicable for dual chassis systems - two cards and one cable are required

Mellanox InfiniBand card (QSFP)

Model: MCX353A-FCBT

[http://www.mellanox.com/page/products\\_dyn?product\\_family=119&mtag=connectx\\_3\\_vpi](http://www.mellanox.com/page/products_dyn?product_family=119&mtag=connectx_3_vpi)

### Where to Buy

[http://www.mellanox.com/page/buy\\_overview](http://www.mellanox.com/page/buy_overview)

Mellanox InfiniBand cable (QSFP to QSFP)

Model: MCC4Q26C-002 (or MC2207130-002 for CentOS 6.3)

[http://www.mellanox.com/related-docs/prod\\_cables/DS\\_FDR\\_56Gbs\\_Passive\\_Copper\\_Cables.pdf](http://www.mellanox.com/related-docs/prod_cables/DS_FDR_56Gbs_Passive_Copper_Cables.pdf)

### Where to Buy

[http://www.mellanox.com/page/buy\\_overview](http://www.mellanox.com/page/buy_overview)



# Shopping List

## PCI Express Expansion

Multiple Options Shown

### CUBIX GPU-Xpander Desktop Elite Model:

XPDT-G3-ELDHE5 (Hi-flow exhaust)

<http://www.cubixgpu.com/gpu-xpander-desktop>

### CUBIX GPU-Xpander Rackmount Elite

Model: XPRM-G3-ELRHE

<http://www.cubixgpu.com/xpander-rackmount-elite>

### CUBIX GPU-Xpander Rackmount 8

Model: XPRM-G3-82A

<http://www.cubix.com/gpu-xpander-rackmount>

### Where to Buy

<http://www.cubixgpu.com/catalog>

### Cyclone PCIe2-2707 (five slot)

[http://www.cyclone.com/products/expansion\\_systems/600-2707.php](http://www.cyclone.com/products/expansion_systems/600-2707.php)

### Where to Buy

<http://www.cyclone.com/purchase/process.php>

### NetStor NA255A-XGPU

[http://www.netstor.com.tw/\\_03/03\\_02.php?MTEEx](http://www.netstor.com.tw/_03/03_02.php?MTEEx)

### Where to Buy

[http://www.netstor.com.tw/\\_06/06.php](http://www.netstor.com.tw/_06/06.php)

## Graphics Processor

### Important note for GPU selection

DaVinci Resolve performs all image processing in the GPU so selection is important based on the clip type, resolution of the clips and timeline, and of course render resolution.

Some of the image processing operations in DaVinci Resolve, for example RAW clip debayer, temporal noise reduction, optical flow speed changes, motion effects and OpenFX plugins, need large GPU memory for operation. These

processes might not be available or operation could be restricted on GPUs with limited memory so consider this when selecting your GPU from the options below.

For processing UHD or 4K-DCI images we recommend 4GB or more of GPU memory (RAM).

## NVIDIA GPUs

### NVIDIA Quadro K6000; 12GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

### NVIDIA Quadro K5000; 4GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

### Recommended for GUI GPU Only

#### NVIDIA Quadro K4000, 3GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

### Alternative NVIDIA GPUs

#### NVIDIA GeForce GTX TITAN Black; 6GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-titan-black>

#### NVIDIA GeForce GTX 780ti with 3GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-780-ti>

#### NVIDIA GeForce GTX 780 with 3GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-780>

### Where to Buy

<http://www.nvidia.com/object/workstation-wtb.html>

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-780/buy-online>

(Select the GPU and then 'Compare and Buy')

# Shopping List

## Storage File System

Quantum StorNext v4.3

<http://www.quantum.com/products/software/stornext/index.aspx>

### Where to Buy

<http://www.quantum.com/wheretobuy/index.aspx>

## Fiber Channel SAN External Storage

Multiple alternative options shown

Scale Logic Genesis

RX RAID Series Genesis RX 12

<http://www.scalelogicinc.com/images/pdf/2014/SLI%20Genesis%20RX%2012Bay%2001-25-14.pdf>

Genesis RX 24

<http://www.scalelogicinc.com/images/pdf/2014/SLI%20Genesis%20RX%2024Bay%2001-25-14.pdf>

Genesis RX 36

<http://www.scalelogicinc.com/images/pdf/2014/SLI%20Genesis%20RX%2036Bay%2001-25-14.pdf>

Note: Scale Logic offer OS agnostic SAN operation and support for StorNext or the HyperFS file system.

<http://www.scalelogicinc.com/html/san.php>

### Where to Buy

[sales@scalelogicinc.com](mailto:sales@scalelogicinc.com)

Oxygen Tec O2 24 bay enclosure

Model: 4K24FS

<http://www.oxygentec.com/products/250/node>

### Where to Buy

<http://oxygentec.com/foot/contactus/finden>

## HBA for Fiber Channel SAN External Storage

ATTO 8Gbps Dual Channel PCIe Fiber Channel HBA

Model: CTFC-82EN-000

<http://www.attotech.com/products/product.php?cat=1&scat=1&prod=2&sku=CTFC-82EN-000>

ATTO 16Gbps Dual Channel PCIe Fiber Channel HBA

Model: CTFC-162E-000

<http://www.attotech.com/products/product.php?cat=1&scat=33&prod=108&sku=CTFC-162E-000>

### Where to Buy

<http://www.attotech.com/store/>

## Direct Attached External Storage

Multiple alternative options shown

Accusys A08S-PS, 8 Bay RAID

<http://www.accusys.com.tw/products/storage/a08s3-ps-new.html>

Accusys A12S2-PS, 12 Bay RAID

<http://www.accusys.com.tw/products/storage/a12s2-ps.html>

Accusys SWF16, PCIe Switch

<http://www.accusys.com.tw/products/switch/swf16-v2.html>

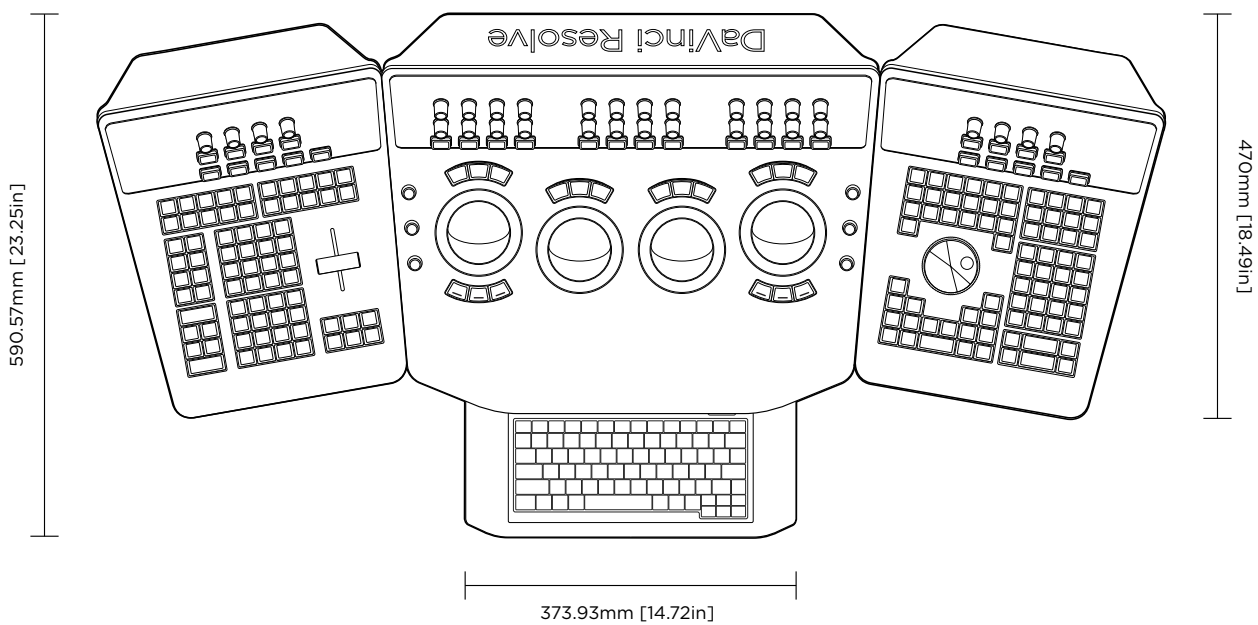
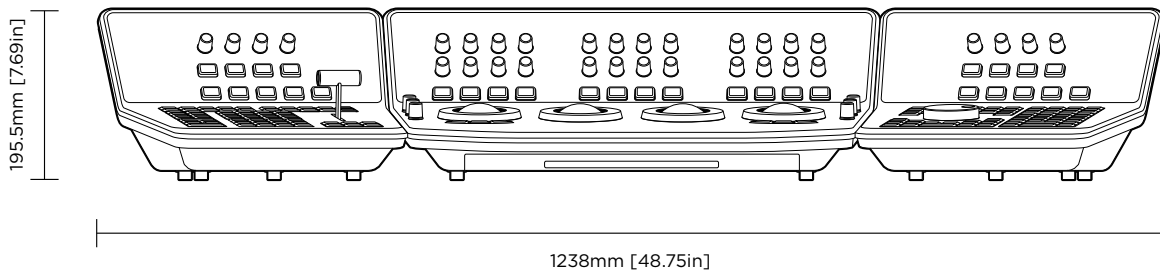
### Where to Buy

<http://www.accusys.com.tw/where-to-buy/reseller-agent.html>

# DaVinci Resolve Control Surface

## Dimensions and Weights

	HEIGHT	WIDTH	DEPTH	WEIGHT
CENTER PANEL	195.5mm (7.69in)	574.1mm (22.60in)	460.7mm (18.14in)	12.2kg (26.9lb)
LEFT PANEL	195.5mm (7.69in)	333.5mm (13.13in)	421.8mm (16.60in)	4.8kg (10.6lb)
RIGHT PANEL	195.5mm (7.69in)	333.5mm (13.13in)	421.8mm (16.60in)	4.8kg (10.6lb)



# Warranty

## 12 Months Limited Warranty

Blackmagic Design warrants that DaVinci Resolve control surface will be free from defects in materials and workmanship for a period of 12 months from the date of purchase. If a product proves to be defective during this warranty period, Blackmagic Design, at its option, either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product. Periodical updates to the operational software are not included under this warranty.

In order to obtain service under this warranty, you the Customer, must notify Blackmagic Design of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. The Customer shall be responsible for packaging and shipping the defective product to a designated service center nominated by Blackmagic Design, with shipping charges pre paid. Customer shall be responsible for paying all shipping charges, insurance, duties, taxes, and any other charges for products returned to us for any reason.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. Blackmagic Design shall not be obligated to furnish service under this warranty: a) to repair damage resulting from attempts by personnel other than Blackmagic Design representatives to install, repair or service the product, b) to repair damage resulting from improper use or connection to incompatible equipment, c) to repair any damage or malfunction

caused by the use of non Blackmagic Design parts or supplies, or d) to service a product that has been modified or integrated with other products when the effect of such a modification or integration increases the time or difficulty of servicing the product. THIS WARRANTY IS GIVEN BY BLACKMAGIC DESIGN IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED. BLACKMAGIC DESIGN AND ITS VENDORS DISCLAIM ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. BLACKMAGIC DESIGN'S RESPONSIBILITY TO REPAIR OR REPLACE DEFECTIVE PRODUCTS IS THE WHOLE AND EXCLUSIVE REMEDY PROVIDED TO THE CUSTOMER FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES IRRESPECTIVE OF WHETHER BLACKMAGIC DESIGN OR THE VENDOR HAS ADVANCE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES. BLACKMAGIC DESIGN IS NOT LIABLE FOR ANY ILLEGAL USE OF EQUIPMENT BY CUSTOMER. BLACKMAGIC IS NOT LIABLE FOR ANY DAMAGES RESULTING FROM USE OF THIS PRODUCT. USER OPERATES THIS PRODUCT AT OWN RISK.

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