



PART 15

Project Databases,
Collaborative, and
Remote Workflows

Chapter 171

Managing Databases and Project Servers

This chapter describes how to set up and use databases in greater detail, giving you more control over how projects are saved and organized, including how to set up project servers you can use to administer DaVinci Resolve projects that are available to multiple DaVinci Resolve workstations on the same network.

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Why Use a Project Server?

Multiple DaVinci Resolve workstations can access the same project when you set up a Project Server that shares one or more PostgreSQL databases over a local network. Once you've set this up, there are two ways of using a shared database.

Multiple Users Sharing Projects

The simplest case is for users to simply open up a project on the Project Server and work on it. Working this way, if you ever have to change rooms, or switch workstations, you can easily open that same project from any machine that's connected to the server on the same network without needing to export and import it first. For example, an assistant could be working with a colorist to prepare files for the next reel by conforming shots, managing VFX replacements, doing dust busting repairs, and so on in an unsupervised editing suite anywhere in the building, before saving their work and closing the project so the colorist can immediately open that same project in the grading theater across the hall.

Another way of taking advantage of shared Project Servers is to split large projects into sections, so multiple artists can work in parallel on different pieces of the whole in different suites, handing them off when necessary. For example, a feature film may be split into reels, or a film can be separated from the trailer and electronic press kit projects that it shares media with. In this case, each project can be edited, mixed, and graded by different people accessing the Project Server.

When a shared project is opened by someone else after it's already been opened, a dialog informs you that it's being opened in Read-only mode to prevent multiple users from accessing the project at the same time. If you load a Read-only project and decide you want to make changes anyway, you'll need to use the Save As command to create a duplicate project file using a new name in order to preserve your work.

Using Collaborative Workflow

Alternately, you can use the Collaborative Workflow features in DaVinci Resolve to enable multiple collaborators on multiple workstations in multiple rooms to open and work on the very same project at the same time. For example, an editor can be editing a project's main timeline in one room, while an assistant organizes media and adds metadata within the same project in another room, and a colorist grades dailies in that same project in yet another room, all accessing the same Project Server which allows them to work together in parallel. For more information, see Chapter 172, "Collaborative Workflow."

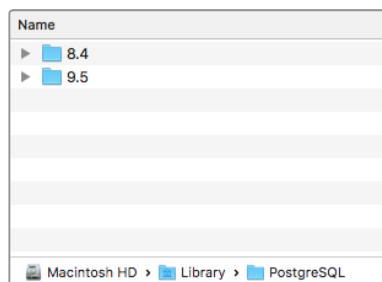
All participants in a Collaborative Workflow must have the Studio version of DaVinci Resolve, and they must be using a PostgreSQL database on a Project Server that's properly set up.

Know Which Version of PostgreSQL You're Using

Starting with DaVinci Resolve 12.5.4 on macOS, DaVinci Resolve requires PostgreSQL 9.5, which is necessary for compatibility with macOS 10.12 Sierra and macOS 10.13 High Sierra. All previous versions of DaVinci Resolve on macOS use PostgreSQL 8.4, and you must upgrade PostgreSQL before upgrading to Sierra or High Sierra.

IMPORTANT If you're upgrading from a previous version of DaVinci Resolve that uses 8.4 to a new version of DaVinci Resolve that uses 9.5, it's vital you read the instructions located in /Library/Application Support/Blackmagic Design/DaVinci Resolve/Upgrade PostgreSQL/ before you upgrade.

If you're unsure what version of PostgreSQL you're using, check to see what versions appear in the /Library/PostgreSQL/ directory.



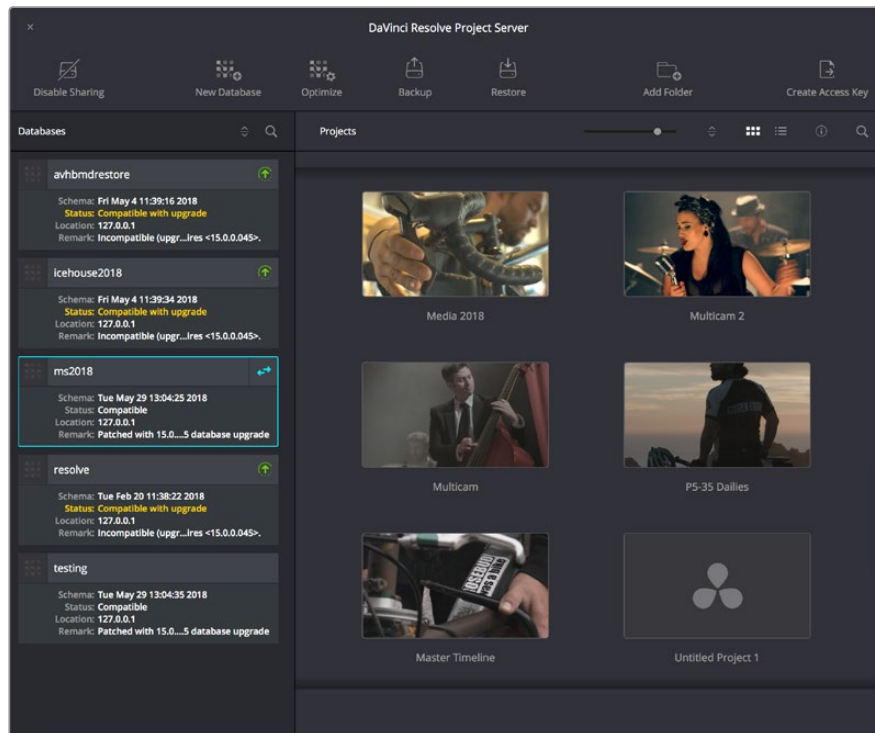
The /Library/PostgreSQL/ directory on macOS systems shows which versions of PostgreSQL you're using

Using the DaVinci Resolve Project Server Application

When you install DaVinci Resolve, an additional application is installed in the DaVinci Resolve application directory on macOS and Windows, called DaVinci Resolve Project Server. This is a stand-alone application that lets you create, manage, backup, restore, and most importantly share project databases on any workstation. Using this application, it's not necessary to launch DaVinci Resolve just to manage your databases, and it's no longer necessary to use Terminal to set up database sharing as before (although you still can if you want to).

The DaVinci Resolve Project Server Interface

The DaVinci Resolve Project Server interface greatly resembles the DaVinci Resolve Project Manager with the Databases sidebar open. However, a toolbar at the top exposes all of the database management tools that are available for creating and managing databases, including controls for sharing databases and creating access keys that are essential for quickly and easily creating and connecting to Project Servers.



The DaVinci Resolve Project Server window

This window has three main UI areas:

- **Databases list:** Unlike the Databases sidebar in the Project Browser of DaVinci Resolve, in which you can disconnect databases you no longer want to use, the Databases list in the Project Server application shows every single DaVinci Resolve PostgreSQL database on your machine. This makes it easy to find databases you've disconnected that you want to reconnect.
- **Projects browser:** Shows all projects and folders within the currently selected database.
- **Toolbar:** A toolbar at the top of the window shows you all of the functions that are available for managing DaVinci Resolve databases on your workstation.
 - **Enable Sharing:** Selecting a database and clicking this button lets you turn the workstation you're on into a Project Server. When you select a database that's already shared, this button changes to Disconnect Database. This process is described in greater detail in the next section.
 - **New Database:** Lets you create new databases without needing to open Resolve.
 - **Optimize:** Only available for PostgreSQL databases. Sometimes, databases in DaVinci Resolve can become so large that the size affects performance. In these cases you may need to optimize it to improve access speed by "vacuuming" the database of unnecessary spaces and reindexing it. You can now also access the Optimize Project command directly from the Project Manager window. Simply hover

the mouse over your project in the Project Manager, hold down the Option key, and right-click. Then select Optimize Project in the menu.

- **Backup:** You can back up databases just like any other file. This provides added protection should your system drive fail, but a database backup can also be used to move multiple projects between systems (particularly if you're using PostgreSQL). Clicking this button exports the currently selected database, with all enclosed projects, to a self-contained .resolve.backup file.
- **Restore:** Imports .resolve.backup files to restore a backed up database.
- **Add Folder:** Creates a project folder inside whatever database is currently selected.
- **Create Access Key:** Selecting a database and clicking this button exports an access key file that you can send to other users to quickly connect their workstation to a shared Project Server. This process is described in greater detail in the next section.

Using the Project Server Application to Manage Databases

The DaVinci Resolve Project Server utility is useful for accomplishing all kinds of administrative tasks.

Creating New PostgreSQL Databases

If necessary, you can create new PostgreSQL databases right within this utility.

To create a new PostgreSQL project database:

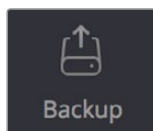
- 1 Click the New Database button in the toolbar.
- 2 When the New Database window appears, type a name for the new database into the Name field. Because all projects in a PostgreSQL database are saved internally within the PostgreSQL database, no other changes are necessary.
- 3 Click Create, and the new disk database will appear in the Databases list.

Backing Up and Restoring Databases

You can also back up and restore databases without needing to open Resolve. Furthermore, you can back up databases even if they're out of date, making it easy to back up databases for safety before you upgrade them.

To back up a database for safekeeping:

- 1 Select the database you want to back up in the Databases list.
- 2 Click the Backup button in the toolbar.

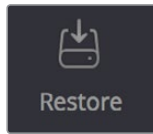


The Backup Database button in the toolbar

- 3 Choose a location to which to save the backup in the Backup Database dialog, and click Save.

To restore a database you've backed up previously:

- 1 Click the Restore button in the toolbar.



The Import Database button

- 2 Find the database you need to import using the file import dialog, and click Open. The database you've restored should now appear in the Databases list.

Upgrading Databases

From time to time, new versions of DaVinci Resolve require changes to the way projects are created, which requires databases created with older versions of DaVinci Resolve to be upgraded before you can access the projects within. Fortunately, this is a simple process.

To upgrade a database made or used with an older version of DaVinci Resolve:

Right-click any database with an upgrade badge to the right of the database name, and choose Upgrade from the contextual menu.

Reconnecting Databases You Previously Disconnected

Unlike the Project Manager in DaVinci Resolve, the DaVinci Resolve Project Server application shows you every single DaVinci Resolve database on your computer, whether it's connected to Resolve or not. For this reason, it's a good way to find the names of databases that have been disconnected, either deliberately or accidentally, in order to reconnect them.

To reconnect any database on your workstation:

- 1 Open the DaVinci Resolve Project Server application.
- 2 Find the database you want to reconnect in the Databases list at the left.
- 3 Open DaVinci Resolve.
- 4 When the Project Manager window appears, open the Databases sidebar, and then drag the database you want to reconnect from the DaVinci Resolve Project Server window to the Database list of the Project Manager. That database is reconnected and appears in the Database list.

Sharing Databases to Create a Project Server

You can also use the DaVinci Resolve Project Server to easily set up a shared Project Server on your local network. However, for this to work, you need to adhere to the following requirements:

- All workstations need to be connected to the Project Server on a local network.
- All network connections should be reasonably fast (preferably Gigabit Ethernet or faster).
- The computer functioning as the Project Server should be reasonably fast, but it doesn't need fast GPU processing.
- The Project Server should have DaVinci Resolve installed, but it doesn't need a dongle or serial number, nor need it be the Studio version.

The following procedures describe how to set up a shared Project Server, and how to export an access key with which to easily set up other workstations to connect to it.

To set up a workstation as a DaVinci Resolve Project Server:

- 1 Open the DaVinci Resolve Project Server application, found in the DaVinci Resolve application folder.
- 2 Select or create a DaVinci Resolve project database you want to share, and click the Enable Sharing button.
- 3 When a dialog appears asking if you want to authorize the configuration of your PostgreSQL server. Click Authorize. That database can now be shared among other Resolve workstations on the same network.

Once you've set up a Project Server, it's easy to connect other machines to that server using access keys that you can create using the DaVinci Resolve Project Server application.

To create an access key to enable easy connection to a Project Server:

- 1 With the DaVinci Resolve Project Server application open, select a database that you've set up to share, and click the Create Access Key button to the right in the toolbar.
- 2 Choose a location via the Create Access Key dialog, and click Save. An access key file is saved to the location you chose with the file extension `.resolvedbkey`.
- 3 Copy the `.resolvedbkey` file to the workstation you want to connect to the shared database.
- 4 Open Resolve, and when the Project Manager appears, open the Databases sidebar, and then drag the `.resolvedbkey` file and drop it anywhere within the Project Manager. The shared database should now appear in the Databases sidebar, and if you select it, you'll see all of the projects that are located in that database on the Project Server.

If necessary, you can also disable sharing for any database, preventing remote access to it from other workstations on the network.

To disable sharing:

- 1 With the DaVinci Resolve Project Server application open, select a database you enabled sharing for, and click the Disable Sharing button to the left in the toolbar.
- 2 When a dialog appears asking if you want to authorize the configuration of your PostgreSQL server. Click Authorize. That database will no longer be shared.

IMPORTANT: If you enable sharing on a computer that is later moved to another network (for example, if you set up Project Server sharing on a laptop), you'll need to disable sharing and then re-enable it before you create access key files that will successfully connect to the new network location.

Manually Setting Up a Linux Project Server

These instructions are only appropriate for systems created with the DaVinci Resolve CentOS 6.x/7.3 build image ISO. The default PostgreSQL install is set up to only allow connections to the database from the local host IP address. Remote systems will not be able to access the database. To change this, you need to modify the “pg_hba.conf” file as detailed below.

Open a shell on the desktop and type:

```
su<ENTER>
```

You'll be prompted for the password. The password will be “DaVinci” for DaVinci Resolve Legacy CentOS 6.x installs. For CentOS 7.3 installs, the password is whatever root password you chose.

Based on which install you have, type either of the following:

For legacy DaVinci Resolve installs:

```
cd /db/PostgreSQL/8.4/data<ENTER>
```

For CentOS 7.3 standalone DaVinci Resolve installs:

```
cd /db/PostgreSQL/9.2/data<ENTER>
```

This puts you into the directory with the “pg_hba.conf” file.

Next, type:

```
ls<ENTER>
```

This lists the files in the directory. Make sure you see the pg_hba.conf file. If you do not, type pwd<ENTER> to make sure you are really in the proper directory.

Next, type:

```
cp pg_hba.conf pg_hba.conf.bk<ENTER>
```

This makes a backup copy of “pg_hba.conf” in case something goes wrong.

Next, use a text editor such as vi or nano to edit the “pg_hba.conf” file. Once you have the file open in a suitable editor, go to the bottom of the file and add the following line:

```
host all all 192.168.1.88/24 md5
```

Use the tab key to format the text to match the line above, just to keep things tidy. More importantly, the “192.168.1.88” IP address used above should be replaced by the IP address of your actual server; this will allow any other computer on the 192.168.1.x subnet (or whatever YOUR actual subnet is) to access the database. Note that there is no space after the 88 and before the /24.

Once you have added the line above, save the changes and exit the editor. As a sanity check, you can type:

```
cat pg_hba.conf<ENTER>
```

This shows the contents of the file and verifies that your change at the end of the file is correct.

Lastly, enter the following:

```
service postgresql restart<ENTER>
```

This restarts the PostgreSQL server, which will now use the new “pg_hba.conf” information. After the restart, other DaVinci Resolve systems on the same network subnet should be able to create and connect to databases on this server.

Chapter 172

Collaborative Workflow

Multi-user collaborative workflow has been significantly altered in DaVinci Resolve 14, using “bin locking” to manage who has access to what when multiple collaborators open the same project. However, collaborative workflow also allows multiple artists to do simultaneous editing, compositing, grading, and metadata entry to clips on the same timeline within a single project for which Collaboration has been enabled. Multiple users can simultaneously access the same timeline within the same project to edit, composite, and grade at the same time, while other editors and assistants can open different bins containing different timelines within the same project to do editorial and media management. This chapter describes how to set up multiple DaVinci Resolve workstations to collaborate, and how to use bin locking to work together.

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Introduction to Collaborative Workflow

Multi-user collaborative workflow allows simultaneous editing, compositing, grading, and Media Pool clip management by multiple people within a single project that has been enabled for collaboration. Collaboration takes three different forms:

- Using bin locking, multiple editors can simultaneously edit different timelines in different bins of the same project, while assistant editors can reorganize clips and edit the metadata in other bins within the same project. Bins are automatically locked when selected by a particular user and unlocked when deselected by that same user, or they can be manually set to be either locked or unlocked as circumstances require.
- Using clip locking, multiple colorists and compositing artists can work together in the same timeline, in either the Color page or Fusion page, without fear of overwriting one another's work. A clip is locked automatically when a user selects that clip to work on, and is unlocked (with the work checked in) when that same user selects a different clip. Clip locking in the Fusion page is maintained separately from clip locking on the Color page, so a compositing artist and colorist can work together on the same shot.
- One editor, one compositing artist, and one colorist can work together on the same clip in the same Timeline of the same project without conflict.

Overall, working in DaVinci Resolve in Collaborative Workflow mode is identical to working in non-collaborative mode. However, there are a few collaborative capabilities that are worth knowing about.

Collaborative Render Cache Support

Each collaborator on a project can have individualized render cache settings on their machine, enabling everyone to cache to a format that their workstation can best handle and that meets their needs.

Collaborative Support for Individual Monitoring

If necessary, each collaborator on a project can override the output and monitoring settings of a project on their particular workstation. When a project is set to use Collaborative Workflow, a "Use Local Overrides" checkbox appears in the Video Monitoring group of the Project Settings that lets you choose how to monitor on your particular workstation.

Collaborative Marker, Flag, and Clip Color Support

Collaborative workflow supports the modification of markers, flags, clip metadata, and clip color from the Color page. Additionally, FrameIO comment markers are supported by collaborative workflow.

Read Only Mode

Users can load collaborative projects in Read Only Mode.

Collaborative Support for HDR

Starting with DaVinci Resolve 16, there is support for Dolby Vision and HDR10+ in collaborative workflows.

Requirements for Collaboration

In order to use collaborative workflow:

- All users must be using the paid Studio version of DaVinci Resolve.
- All users must be working on a project that's been saved on a properly configured Remote Database Server. This Remote Database Server can be on one of the actively used DaVinci Resolve workstations, or it can be another computer on your network that simply hosts shared projects, but it should be on a computer that is never shut down or put to sleep, to prevent projects suddenly becoming unavailable.
- All machines participating in a collaborative workflow must be networked. They can be on the same local area network (LAN), but you can also connect computers on different subnets.
- Shared projects should ideally use media on some type of fast storage area network (SAN), with each collaborator connected to that SAN so that every workstation that's connected to the project being collaborated on has direct access to the same media. In a pinch, shared volumes over a network will work, but proper SANs will provide significant performance benefits.

For more information on setting up a Database Server, see Chapter 171, “Managing Databases and Project Servers.”

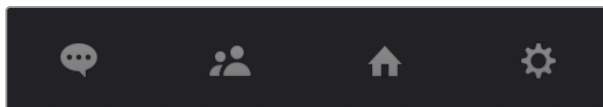
Enabling Project Collaboration

Starting with DaVinci Resolve 14, the process of initiating a collaborative workflow has been vastly simplified over previous versions.

To open a project and initiate a collaborative workflow:

- 1 Open DaVinci Resolve on a computer that's connected to a Remote Database Server.
- 2 Open any project on the remote database DaVinci Resolve is connected to using the Project Manager.
- 3 When the project is open, choose File > Enable Collaboration.

Once collaboration is enabled, two additional buttons appear at the lower right-hand corner of the DaVinci Resolve interface, next to the Project Manager and Project Setting buttons. These are the Collaboration Chat and Collaboration buttons.

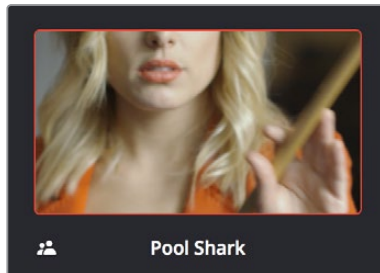


The Collaboration Chat button (far left) and the Collaboration button (second from left)

NOTE: When you enable collaboration, the “Auto conform missing clips as media is added to Media Pool” option in the General Options panel of the Project Settings is automatically disabled, as it interferes with collaborative workflow. Also, Live Save is automatically turned on in the Auto Save panel of the User Preferences, to ensure that all collaborators’ work is saved regularly to avoid conflicts between collaborators.

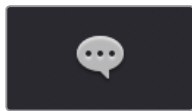
Opening Projects to Collaborate

Projects that have Collaboration enabled appear with a badge below their thumbnail in the Project Manager to let you know that project is available for collaboration.



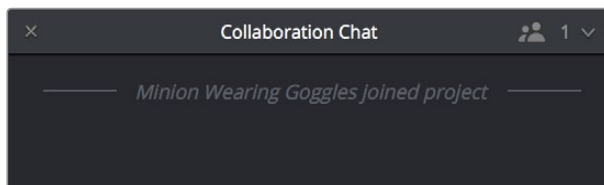
An icon indicates that a project in the Project Manager is available for collaboration

At this point, anyone else who has access to this Remote Database Server can simply open this project up and work collaboratively with you. Whenever a collaborator opens the same project you're working in, the Collaboration Chat button at the bottom of the DaVinci Resolve UI highlights to let you know you have a message.



The Collaboration Chat button highlights to let you know you have a message

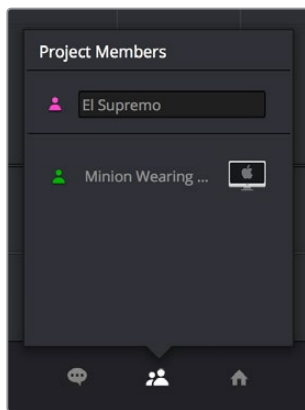
Opening the Collaboration Chat window shows who's collaborating with you.



A new message in the Collaboration Chat window lets you know who else has opened the project you're working on

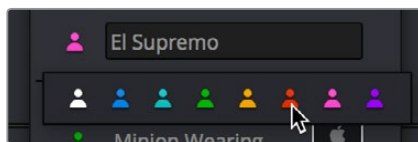
Customizing Your Collaborator Identification

Once you've set up a project for collaboration, you want to make sure it's easy to tell all your collaborators apart. Clicking the Collaboration button opens a list of all collaborators, or project members, working in that project.



Opening the Collaboration list shows all the current project members

The top member is you, and you can change the name you use by editing the text field. Additionally, you can click the icon to the left and choose a new color for yourself from the icons in the pop-up menu below. All the badges that indicate who has a lock on which folders, timelines, and shots are color-coded, so it's a good idea for everyone to choose their own custom color so you can tell who's doing what.



There are eight custom colors for collaborators to choose from

How Collaboration Works

At its simplest, collaborative workflow uses a “first come, first served” model to manage who has can make changes to what. Essentially, the first collaborator to select a bin in the Media Pool, open a timeline, or select a clip in the Fusion page or Color page gets a “lock” on that item. Once an item is locked (indicated by a colored collaborator badge), other collaborators can look at it, but they cannot make changes. This prevents versioning conflicts from occurring.

Bin and clip locks are released when a collaborator selects a different bin or timeline in the Media or Edit pages, or a different clip in the Fusion page or Color page. At that point, the changes that have been made to the previously locked item are “checked in” and made available to all collaborators once they refresh their project (by clicking a circular refresh icon that appears to the right of bins in the Media Pool or in the corner of the Edit page Viewer).

All changes that collaborators make are automatically saved to the project as they're made, via Live Save (which is always on in Collaborative mode), so no work will ever be lost as you collaborate with your team. However, each collaborator gets to decide when they want to update the bin, timeline, or clip they're currently working on to see the changes made by everyone else, in order to prevent a kaleidoscope of constant alterations to compositions and grades from being a distraction while you're working.

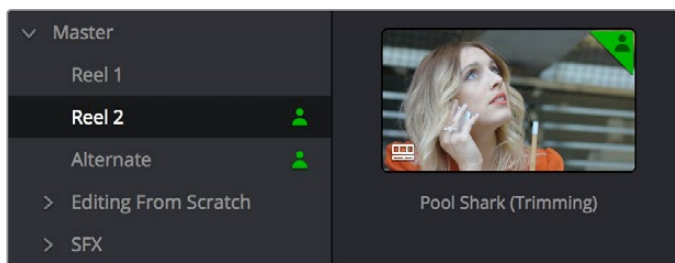
The following sections describe Bin and Timeline locking and Clip locking in more detail.

Automatic Bin and Timeline Locking

Whenever a collaborator opens a particular bin, that bin and its contents are locked, preventing any other collaborators who open that project from making alterations to anything inside that same bin. This prevents versioning conflicts while work is in progress. When a bin is locked, you can still view its contents, if for instance you just need to figure out where a particular clip has been put, but you can't make changes.

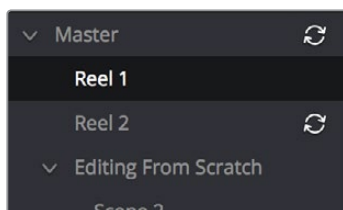
Furthermore, when a collaborator opens a timeline in either the Edit or Fairlight pages, whatever bin that timeline is in is locked as well, along with any other timelines or clips in that bin. Collaborators can open locked bins and see the contents for reference, but they cannot make any organizational or editorial changes. The only things that can be changed once a bin and its contents are locked are the creation or alterations of clip compositions in the Fusion page, and alterations to clip grades in the Color page.

You can always tell when a collaborator has a lock on a bin and its contents because a badge appears to the right of the bin in the Bin list, and in the corner of timeline thumbnails that are visible in the Media Pool browser area. Hovering the mouse over that badge in the Bin list reveals a tooltip with that collaborator's name.



An icon indicates that another collaborator has a lock on the Reel 2 bin, the Pool Shark (Trimming) timeline, and the Alternate bin

Once a collaborator (someone other than you) makes changes to a bin's contents or to a timeline, you'll see a circular "refresh" badge appear by each affected bin in the Bin List of the Media Pool. Click these badges whenever you want to update your version of the shared project with all organizational and editorial changes made by others in that bin.



An icon indicates that another collaborator has made changes, clicking it refreshes your project to show those changes

To release a bin or timeline, simply select another bin or timeline. It's that simple.

Managing Bin Locks Manually

You can also manually control the locked state of bins, during instances where you want to keep bins locked for future use or prevent them from becoming locked when you only want to browse the contents.

Keeping Bins Locked

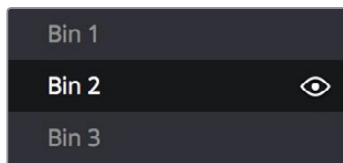
If you want to lock one or more bins that you know you're going to be switching among to either prevent other collaborators from making changes or so that nobody else inadvertently prevents you from having access, you can right-click one or more selected bins and choose Lock Bins to lock them. Bins locked in this way remain locked, even when you deselect them, until you right-click them again and choose Unlock Bins.



Manually locked bins stay locked even when they're not selected

Keeping Bins Unlocked

Additionally, you can choose to keep bins unlocked when selected. For example, you may just want to examine the contents of a bin without keeping someone else from editing its contents. In this case, simply Option-click any bin to open that bin in read-only mode, which is indicated by an eyeball badge to the left of that bin in the Bin list. In this mode, any other collaborator can still lock that bin while you're examining its contents. Selecting any other bin will clear this read-only status.



Selecting a bin in read only mode allows collaborators to lock that bin while you examine its contents

TIP: While a bin is open but manually unlocked by you, you can still open clips into the Source Viewer and add markers to them, so long as another user doesn't select that same bin and lock you out.

Manually Unlocking Timelines

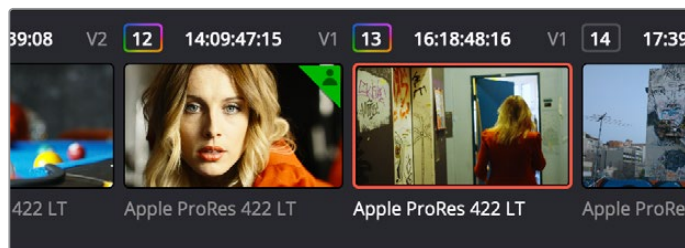
You can also manually manage the locking of timelines. Ordinarily, opening a timeline automatically locks other collaborators out of making changes to that timeline, and also locks the bin that timeline appears within. However, if you've finished making changes to a timeline and you want to release it to other collaborators for immediate work, you can unlock the currently open timeline.

To unlock a timeline to let other collaborators work on it:

- 1 Right-click that timeline in the Media Pool and choose Timelines > Unlock Timeline from the contextual menu.
- 2 Your collaborator will then need to right-click the Media Pool bin the timeline is in to be able to edit it.

Automatic Clip Locking

Clip locking in the Fusion and Color pages works similarly. As multiple compositing artists work in the Fusion page, and multiple colorists work in the Color page, the first compositing artist or colorist to select any given clip has an automatic lock on that clip. Other compositing artists or colorists will see a badge on that clip in the Thumbnail timeline showing that it's locked as well as letting them know who has the lock. In the following screenshot, a green badge at the corner of clip 12 in the Color page Thumbnail timeline indicates that clip is locked.



Badges in the Thumbnail timeline indicate which clips are locked because a collaborator is grading them

Automatically Checking In Work When You Change Clips

When you're finished with the clip you're working on, you need only select another clip for the changes you made to the previously selected clip to be automatically saved and pushed to all other colorists who are working on that timeline in the Color page. No refresh is needed. This is the main difference between clip locking in the Color page and bin locking.

Compositing Artists and Colorists Can Work Together

The Fusion page and Color page each maintain separate clip locks. This means that for any given pool of compositing artists, only one will be able to work on a given clip at a time, while in the Color page only a single colorist will be able to work on a clip at a time.

However, because Fusion and Color page clip locking is maintained separately, that means that one compositing artist and one colorist can work on a single clip in the timeline simultaneously, even while an editor is working on that timeline.

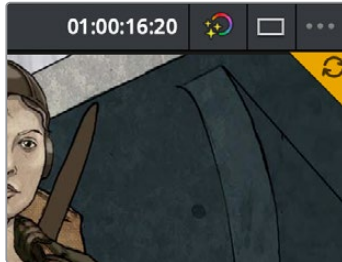
Receiving Changes Made by Collaborators

As you work collaboratively, it will be common for groups of compositing artists to be executing multiple compositions at a time, while colorist and their assistants will be working on the grade, and an editor and their assistants will be refining the edit, all working together within the same project.

Receiving Changes On the Edit Page

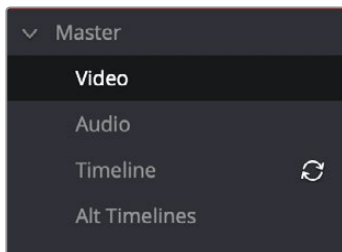
While compositors are compositing and colorists are grading clips within the same timeline of the same project, each clip that's adjusted in the Fusion or Color page triggers a Refresh badge to appear in three areas of the Edit page, so the collaborating editor(s) can decide when to update their timeline to see the changes that have been made.

- At the upper right corner of the Timeline Viewer. Clicking this badge refreshes the composites and grades of all clips in the currently open Timeline.



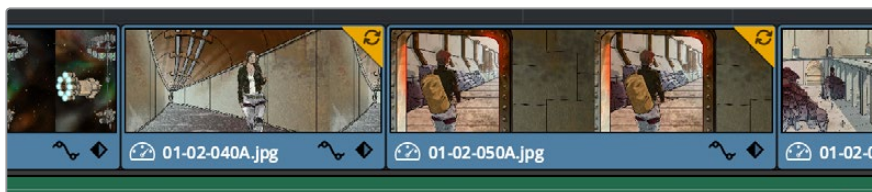
A clickable “update” badge appears in the corner of the Timeline Viewer for timelines with edits, grades, and composites that have been updated

- At the right of the bin containing the modified timeline in the Media Pool's bin list. Clicking this badge refreshes all clips in the Timeline within that bin.



A clickable “update” badge appears over bins containing timelines in the Media Pool with edits, grades, and composites that have been updated

- At the upper-right hand corner of each modified clip in the Timeline.

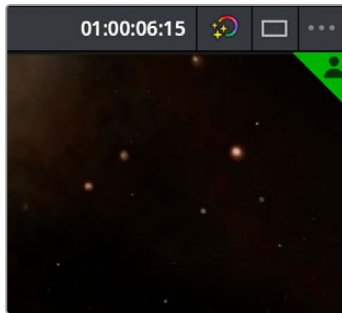


A clickable “update” badge appears over clips in the Timeline with edits, grades, and composites that have been updated

Receiving Changes On the Fusion and Color Pages

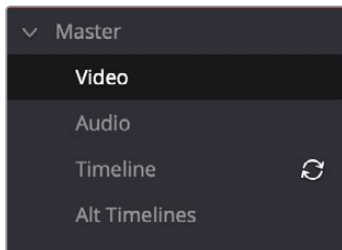
For collaborators working on the Fusion or Color pages, other badges indicate when editors have made changes to the Timeline, or when other compositing artists or colorists have made changes to other clips in that timeline.

- Timelines that you're locked out of because another collaborator has a lock on them are indicated by a badge at the upper right corner of the Viewer, while changes made to the Timeline by editors on the Edit page are indicated by a refresh badge in the same location. Clicking this badge refreshes all clips in the Timeline.



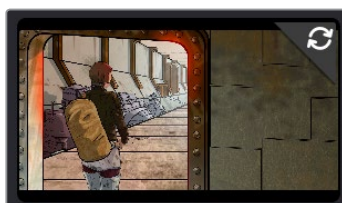
A badge in the Viewer shows that a viewer has a lock on this timeline

- If you open up the Media Pool, then a badge appears at the right of any bin in the Bin List that's been reorganized or that contains a modified timeline. Clicking this badge refreshes all clips in the Timeline within that bin.



A badge appears to the right of bins in the Media Pool containing timelines that have been updated

- A badge appears at the upper-right hand corner of each clip in the Thumbnail timeline that's been modified by a fellow compositing artist or colorist. Clicking a single clip's badge updates that clip alone.



A badge appears over clips in the Timeline with grades that have been updated. Clicking this badge refreshes just that clip.

Examples of Collaborators

Working Together

The first collaborator that opens a timeline is the only person that can make editorial changes to that timeline in the Edit or Fairlight pages. Other collaborators who open that project are “locked out” of making changes to the Edit or Fairlight pages, but they can see the Timeline, and they can make grading changes in the Fusion or Color pages. This means in situations where you want multiple editors to be working on a project, it can be ideal to organize your program into separate “reels,” where each reel of a project is a separate timeline in a separate bin.

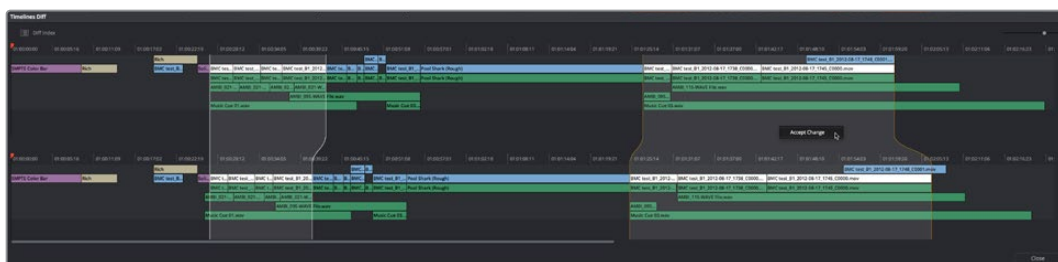
Multiple Editors Working Together

The first collaborator that opens a timeline is the only person that can make editorial changes to that timeline in the Edit or Fairlight pages. Other collaborators who open that project are “locked out” of making changes to the Edit or Fairlight pages, but they can see the Timeline, and they can make grading changes in the Fusion or Color pages. This means in situations where you want multiple editors to be working on a project, it can be ideal to organize your program into separate “reels,” where each reel of a project is a separate timeline in a separate bin.

On the other hand, if two or more editors must both work on the same timeline, this can be accomplished using duplicate timelines and then merging the changes back together later on. For example, collaborating editor Anne can do the following to make changes to a timeline that editor Erin is already working on:

- First, Anne can duplicate the locked timeline into a separate bin from the one Erin has a lock on. Alternately, Erin could be proactive and duplicate the timeline into a separate bin in advance.
- Second, Anne will re-edit the duplicate timeline to make whatever changes are necessary to a different scene than the one Erin is currently working on. Working on different scenes is the cleanest and easiest way of using this workflow.
- Third, Anne uses Collaborative Chat to notify Erin that the changes are finished.
- Fourth, Erin then refreshes the project to see Anne’s updated duplicate timeline in the Media Pool, right-clicks it, and chooses Compare With Current Timeline from the contextual menu to show the Timeline Comparison window that makes it possible to merge the changed section of the duplicate timeline with the original timeline that Erin already has open.

In the following screenshot, Erin’s highlighted changes (made while Anne was working) can be seen at the left, and Anne’s highlighted changes can be seen at the right. Right-clicking within the right highlighted area reveals an Accept Change command that lets that scene’s changes be merged from the duplicate timeline back to Erin’s original timeline.



Using the Compare With Current Timeline command lets you see the differences between two differently edited versions of the same timeline, and merge a scene's worth of changes that a collaborator has made (at right) back to the original timeline

For more information on comparing timelines, see Chapter 26, “Creating and Working with Timelines.”

Editors and Assistant Editors Working Together

Collaborators can edit metadata, create new bins, and reorganize clips within unlocked bins only. This means that your project should be organized so that an editor can lock the contents of the bins they need to work with at a given point in time, while the assistants can work on additional timelines and media within other bins in that project.

However, in addition to being able to copy timelines from a locked bin to a bin that you control, you can also copy clips from one timeline to another. In this way, if you absolutely need to make changes to source clips while the original source clips are locked, you can make your changes to copies of these clips.

Editors and Compositing Artists Working Together

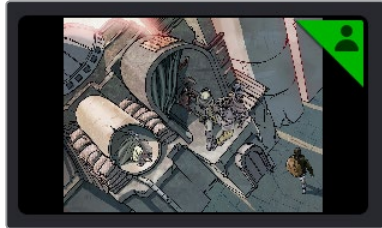
Editors and compositing artists can work together closely, since compositing artists can create compositions for one or more clips in a timeline while it's being edited, even though that timeline and the bin it's in are locked to other editors.

Here's an example of an editor working on a commercial spot with a lot of greenscreen material working together with one or more compositing artists.

- First, the editor cuts together each foreground clip with actors performing as a rough cut, and once that rough cut is assembled, they edit in the background clips that accompany each greenscreen clips to create a series of stack of clips.
- Second, the editor selects each stack of clips, one by one, and uses the New Fusion Clip command to create Fusion clips that the compositing artists can work on. By making each of these clips into Fusion clips, the editor is making it easy for the compositing artists to have access to all the clips necessary for each composition from within the Fusion page, collaboratively.
- At this point, the editor uses collaborative chat to notify the compositing artists that there are composites ready for them to work on, and the editor can then turn their attention back to refining the edit.
- Upon being notified that they can begin work, one or more compositing artists start working through the Fusion clip compositions while the editor is working, to create each multi-layered composite that's necessary. As each compositing artist finishes a clip and moves to a new clip to begin work, the editor sees a notification badge at the upper right corner of each clip in the Timeline that's been composited, as well as notification badges in the Bin List of the Media Pool, and at the upper right corner of the Timeline viewer. Clicking any of these badges will refresh one or more of these clips, so the editor can see the changes.

Multiple Compositing Artists Working Together

To prevent versioning issues, only one compositing artist can work on a particular clip at a particular time in the Fusion page, and the first compositing artist to select a clip puts a lock on that clip. Other collaborators looking at the Thumbnail timeline in the Fusion page will see a small icon that shows it's locked, letting them know they can't make any changes to it until whoever is working on that composition moves to another clip.



A small icon indicates that you're locked out because another compositing artist is working on that clip

This means that multiple compositing artists can't work on the same composition at the same time. However, an assisting compositing artist can do preparatory work on one composition, such as doing rotoscoping, paint, particle system design, or any other time-consuming task, while a lead compositing artist works on another shot in the meantime. Once the assisting compositor is done, they can select another clip to work on and use collaborative chat to let the other compositor know they're done and that clip is ready for more work.

In order to prevent half-finished work from being disseminated to other collaborators, a clip that's in the process of being worked on in the Fusion page isn't updated for anyone else who's working on that same timeline until the compositing artist who's working on it selects another clip. Immediately upon being deselected, all changes are automatically checked in and made available to all other collaborators, who see notification badges in the Fusion page and the Edit page to alert them that changes are available and that they can refresh their timeline to see the updates.

Editors and Colorists Working Together

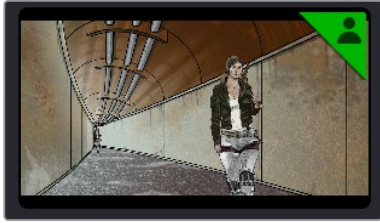
Colorists and editors can work together very closely in DaVinci Resolve, as colorists can grade the shots of a timeline that an editor is currently working on, even though that timeline and the bin it's in are locked to other editors.

From the colorist's point of view, whenever the editor makes an alteration to the Timeline, a badge appears at the upper right hand corner of the Color page Viewer to indicate that a change has been made to the timeline being graded. Clicking this badge updates the timeline the Colorist is working on.

In order to prevent half-finished work from being disseminated to the editor (or worse, being seen by the client), clips that are in the process of being graded aren't updated for other collaborators that are looking at that timeline until the colorist who's working on it "checks in" their work by selecting another clip. So, from the editor's point of view, whenever a colorist has finished grading a clip and has selected another clip to grade, a series of badges appear in the Edit page, one on the clip that's been graded, one on the Timeline Viewer and one on the bin in the Bin List that contains the Timeline. Clicking any of these badges updates the Timeline with the latest grades.

Multiple Colorists Working Together

Only one colorist can work on a particular clip at a particular time, and the first colorist to select a clip puts a lock on that clip. Other collaborators looking at the Thumbnail timeline in the Color page will see a small icon that shows it's locked, letting them know they can't make any changes to it until whoever is grading that clip moves to another clip.



A small icon indicates that you're locked out because another colorist is grading that clip

In order to prevent half-finished work from being disseminated to other colorists or editors, a clip that's in the process of being graded isn't updated for other collaborators that are looking at that timeline until the colorist who's working on it selects another clip. These changes are then automatically made available to all other collaborators working in the Color page, who see badges appear in the Edit and Color pages to indicate which clips have updates available.

This makes it easy for multiple colorists to work together. For example, an assistant colorist can be notified via Collaborative Chat to draw a custom window that a senior colorist needs for a grade. The assistant opens that timeline in another suite, selects the appropriate clip, and draws the window. Once finished, the assistant simply selects a different clip, and the changes they've made are immediately available to the senior colorist, who sees a badge on that clip in the Thumbnail timeline and can click to update it.

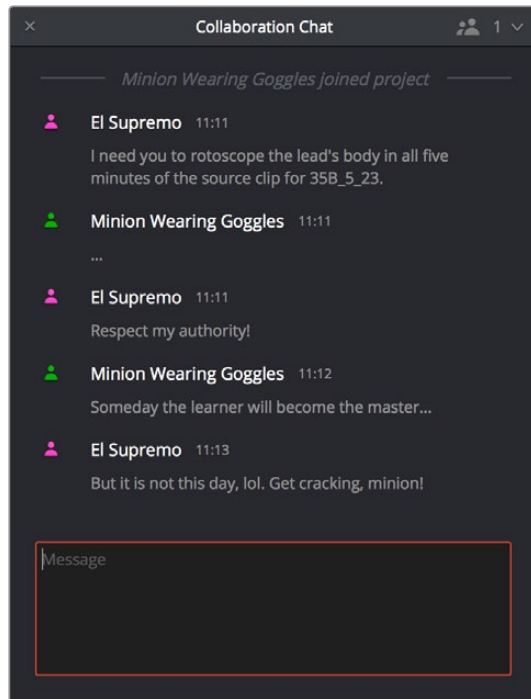
Managing Notes Among Collaborators

If an editor wants to send a note to colorists or compositing artists, they can do one of the following:

- They can add a marker with note text to the Timeline ruler (the marker appears in the marker submenu in the Color page Viewer option menu)
- They can add a marker with note text to a clip (that marker appears in the mini-timeline of the Color page)
- They can color code clips in different ways to get the colorist's attention (clip color coding appears as a dot in the Thumbnail timeline).
- Of course, the editor and colorist can always interact via the collaborative chat window, as well.

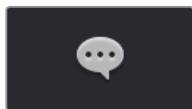
Collaboration Chat

To facilitate communication among collaborators, DaVinci Resolve has built-in text chat, called Collaboration Chat. Simply click the Collaboration Chat button to open the chat window, and chat away.



The Collaboration Chat window for communication among collaborators

The Collaboration Chat button at the bottom of the DaVinci Resolve interface highlights whenever someone texts while this window is closed, letting you know you have messages that are waiting.



The Collaboration Chat button highlights to let you know you have a message

Chapter 173

Remote Grading

This chapter describes how to set up and use databases in greater detail, giving you more control over how projects are saved and organized.

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Introduction to Remote Grading

To enable colorists to work interactively with clients across the globe, DaVinci Resolve offers a remote grading option. It allows two matching DaVinci Resolve systems to be synchronized via an Internet connection such that changes made on the colorist's workstation are immediately applied on the remote client's workstation.

Cue commands are also synchronized to ensure that both systems are always on the same frame in the Timeline. Starting or stopping playback on the colorist's DaVinci Resolve also starts and stops the remote client system. While a remote grading session is in progress, input from the user at the remote client's DaVinci Resolve workstation is ignored.

Currently, the remote grading feature supports only color correction and does not allow editing or conforming during a session. The two colorist and remote DaVinci Resolve systems must have matching timelines and the number of clips, clip durations, and system resolutions must match. The requirements and limitations of a remote grading session are summarized below.

Requirements for Remote Grading

- The following requirements must be met for remote grading to work.
- The same version of DaVinci Resolve must be installed on both systems.
- The display resolution must be the same on both systems.
- The Timeline to be graded must be conformed on both machines prior to the start of the remote grading session.
- The number of clips on the Timeline and the duration of each clip must be identical.
- While grading, the active Timeline and versions on the remote client system are constantly updated. Creating, deleting, or switching the Timeline on the client's DaVinci Resolve is not allowed. Doing so will terminate the remote grading session immediately.
- You cannot make any grading adjustments on the remote client's DaVinci Resolve workstation until the remote grading session has ended.

NOTE: Remote grading does not require a shared database.

Setting Up for Remote Grading

To start a remote grading session, the client's DaVinci Resolve must be able to connect to the colorist's system using TCP/IP.

- 1 Open DaVinci Resolve on the remote client's workstation (the one that's being remotely controlled), log in, and open the project that will be remotely graded.
- 2 Choose Workspace > Remote Grading (Ctrl-G) on the remote client's workstation. A window is displayed with text fields to enter the IP address and port number of the colorist's system.
- 3 Set the IP address field to the IP of the colorist's DaVinci Resolve workstation. If the colorist's system already has a public IP address, the port number can be left at its default value (15000). If the colorist's system is on a private network, the colorist or their network administrator should set the port number to one on the public IP router that is internally routed to port 15000 of the colorist's DaVinci Resolve.
- 4 Once the remote client clicks Connect, the client's DaVinci Resolve system will attempt to establish a connection with the remote colorist's workstation.
- 5 Once the connection is established, a pop-up appears on the colorist's screen asking for permission to accept a Remote Grading connection.
- 6 Click OK to accept, minimize the size of this dialog window, and continue grading normally.

The Remote Grading session will remain active until one of the users chooses to disconnect or an error occurs causing DaVinci Resolve to automatically terminate the session.

Remote Grading Restrictions

To allow operation over low bandwidth and a potentially long latency Internet connection there are some restrictions to remote operation.

- When playback is started, the playback speeds on the two DaVinci Resolve systems may differ. The frame positions are only guaranteed to be synchronized when playback is stopped.
- Input/output/display LUTs applied from the Config page on the colorist's DaVinci Resolve will not have any effect on the client system. LUTs selected on the client's DaVinci Resolve will be applied instead.
- Presets applied from the Config/Color pages on the colorist's system will not have any effect on the client's system. Presets selected on the client's DaVinci Resolve will be applied instead.