Collaborative Workflow

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Multi-user collaborative workflow allows simultaneous editing, grading and metadata entry within a collaborative project. Multiple users can simultaneously access the same Timeline within the same project. For example an Editor, a Colorist, and an assistant doing metadata entry on the Media Page can all work simultaneously on the same Timeline. This chapter describes how to set up multiple DaVinci Resolve workstations for collaboration in this way, and how to work within a collaborative workflow.

Setting Up to Collaborate

Multi-user collaborative workflow allows simultaneous editing, grading and metadata entry within a collaborative project. Multiple users can simultaneously access the same Timeline within the same project. For example an Editor, a Colorist, and an assistant doing metadata entry on the Media Page can all work simultaneously on the same Timeline. To accommodate this, Timelines in a collaborate workflow must be set to use Remote grades.

Setting Up a DaVinci Resolve Project Server

All participants in a Collaborative Workflow must have the Full Version of DaVinci Resolve, and a Database Server must be be set up. The Database Server can be one of the actively used Resolve workstations, or it can be another computer on your network with DaVinci Resolve installed that simply hosts your projects. A dongle or video card is not required to use the database, although it's easier if you have a dongle on hand to set it up initially. Most importantly, all machines participating in a collaborative workflow must be on the same network.

Set up of a Database Server requires an at least cursory knowledge of command line text editing. If you don't understand the following instructions, it's best to have an IT professional do this for you.

To set up a Mac as a DaVinci Resolve database server:

1. If you haven't already, install the full version of DaVinci Resolve on the Mac that you plan to use as the remote Database Server. This machine doesn't need video cards or a dongle connected (although it's good to have a dongle available for the last step), but the Resolve application installer sets up PostgreSQL as well as the database structure which is configured for Resolve.

   Once you have installed the software and restarted the system, you need to set up the permissions and access to the PostgreSQL server application running on this machine. Be sure to follow the instructions carefully.

2. Make sure you log in as a user with Admin privileges, then open the Terminal application, located in the /Applications/Utilities folder, and open up the postgres environment for editing by typing:

   ```
   sudo su – postgres
   ```

3. At the prompt, type that computer's administrator password and press return.

4. When the "postgres$" prompt appears, you'll create a backup of the "pg_hba.conf" setup file for safety by typing:

   ```
   cp /Library/PostgreSQL/8.4/data/pg_hba.conf /Library/PostgreSQL/8.4/data/pg_hba.conf.backup
   ```

5. In the next step, you'll add your particular local IP network range (the example given in these instructions is 192.168.1.88, though this value may well be different on your network). Open the System Preferences, then open the Network panel, and write down the IP address you see there. The computer being used as the Network Server should not use DHCP, instead it should have a manually entered, stable IP address so that other computers can reliably connect to it.

6. In the following instruction, change the four values of the IP address below to match the one you wrote down, and then keep the number that follows after the forward slash (/) as 24, which specifies that the fourth number of the IP address can be any number.

```
echo "host all all 192.168.1.88/24 md5" >> /Library/PostgreSQL/8.4/data/pg_hba.conf
```

7. With this accomplished, open a Finder window, open /Applications/PostgreSQl 8.4/, and double-click the Stop Server application to run it and stop PostgreSQL.

8. After you get a message stating the server has stopped, double-click the Start Server application to start it up again. You should get a message that the server has started, and this lets you know that you've successfully restarted the Database Server with the new settings you've entered.

9. With this accomplished, plug in a Resolve Dongle, if necessary, in order to run Resolve. At the Resolve login screen, click the Database button in the lower right-hand corner, then click the Plus (+) button in the lower left-hand corner to create a new database that you'll be using as the shared database on that computer.

10. In the Create New Database dialog, enter a name into the Label and DB Name fields. This name doesn't have to be anything special, although the DB Name field doesn't allow caps or special characters other than underscores. Make sure that the Driver pop-up is set to QPSQL, then click Create New Database.

11. To use that database on this computer, select it in the list, then click the Option menu at the upper right-hand corner, and choose Select to open that database and return to the DaVinci Resolve login screen.

12. At this point, you can either continue using DaVinci Resolve, or you can quit.

Connecting to Projects in a Collaborative Workflow

You now have a remote Database Server that you can connect to from each of the Resolve systems on that network. PostgreSQL runs automatically, so you must have this computer turned on whenever you wish to open a project it's serving in Resolve on another computer. However, DaVinci Resolve does not have to be actively running on the Database Server for this to work.

To connect DaVinci Resolve on one computer to the Database Server on another:

1. Open DaVinci Resolve on a computer that's on the same network as the Database Server. At the Resolve login screen, click the Database button in the lower right-hand corner, then click the Option pop-up menu at the upper right-hand corner of the Database Manager (it looks like three vertical dots), and choose Connect.

2. In the Connect dialog, type the label and name of the database on the Database Server that you want to connect to in the Label and DB Name fields. Next, type the IP address of the Database Server into the Host field, and make sure that the Driver pop-up is set to QPSQL. When you're done, click Connect Database.

3. If all the information you entered was correct, then that database should appear in the Database Manager list. With it selected in the list, click the Option menu at the upper right-hand corner, and choose Select to open that database and return to the DaVinci Resolve login screen.

This computer should now have access to the same users and the same projects that are hosted on the Project Server, and you can work as you normally would.

To create a new project to be used in a collaborative workflow:

1. Open DaVinci Resolve on a computer with a database that's connected to a Database Server, log in as a user, and click the plus (+) button to create a new project.

2. Enter a name for the new project, and click Create. If you've just now opened Resolve, the default new project thumbnail at the upper left-hand corner appears with this new name, otherwise a new project with a blank thumbnail appears in the Project Manager.

3. Right-click the new project you created, and choose Collaboration from the shortcut menu.

4. The owner can now import whatever media is necessary for that project, editing a new timeline, or importing a timeline from another application. Projects in collaborative workflows can use media on a storage area network (SAN) so that each owner and collaborator can be properly linked to the same media. Alternately, each participant in a collaborative workflow can work with an exact duplicate of the media copied to a local volume. Each participant's media volume must be identically named, so that each participant can be properly linked to the same media with the same file path.

At this point, each new timeline you create will use Remote versions, which is important for collaborative workflow to function properly. You can now add media and create new timelines as necessary to start working.

Troubleshooting Tips

DaVinci Resolve manages all projects using PostGreSQL, which is an open-source database management system. If you have difficulty connecting to a shared database, or difficulty opening databases in general, it's probably because the Database Server you set up has been inadvertently misconfigured. Here are some ways you can check to see what the problem might be.

Checking to See If PostgreSQL Is Running Properly

To double-check whether PostgreSQL is running as it should, you can open Terminal and enter the following command, followed by Return:

```
ps -ef | grep PostgreSQL
```

If all is well, the text output by this command should resemble the following:

```
502    118    1    0 12May14 ??           0:12.77 /Library/PostgreSQL/8.4/bin/postmaster -D/Library/
PostgreSQL/8.4/data

501 88287 88143   0 11:34AM ttys000    0:00.00 grep PostgreSQL
```

The first line indicates the server is running.

Checking the PostgreSQL Setup File

Many problems can be chalked up to the "pg_hba.conf" file being misconfigured. To read the content of this file, open Terminal and enter each of the following commands, followed by Return:

```
sudo su - postgres
```

At the prompt, type your password and press return.

```
cd /Library/PostgreSQL/8.4/data/

cat pg_hba.conf
```

The contents of the "pg_hba.conf" file should appear. Properly configured, it should resemble the following sequence of text, but with your IP address:

```
# TYPE              DATABASE           USER             CIDR-ADDRESS        METHOD
# "local" is for Unix domain socket connections only
local               all                all                                  md5
# IPv4 local connections:
host                all                all              127.0.0.1/32        md5
# IPv6 local connections:
host                all                all              ::1/128             md5
host                all                all              192.168.1.88/24     md5
```

Deleting and Restoring the Original "pg_hba.conf" File

If the "pg_hba.conf" file is misconfigured, you can restore the backed up "pg_hba.conf.backup" file in order to restore PostgreSQL to its previous configuration by entering the following commands.

```
rm pg_hba.conf
cp pg_hba.conf.backup pg_hba.conf
```

With this accomplished, open a Finder window, open /Applications/PostgreSQl 8.4/, and double-click the Stop Server application to run it and stop PostgreSQL. After you get a message stating the server has stopped, double-click the Start Server application to start it up again. You should get a message that the server has started, and this lets you know that you've successfully restarted the Database Server with the original working settings.

At this point, you can try the procedure described above in "Setting Up a DaVinci Resolve Project Server."

Reconnecting Database Entries That Have Disappeared

In some cases, misconfigured databases that have been stopped while Resolve has been launched can result in the list of databases in the Resolve database manager being cleared out. If this happens, it's simple to reconnect to these databases using the PGAdmin Setup application.

To find lost database entries:

1. Open /Applications/PostgreSQl 8.4/, and double-click pgAdmin III.

2. Click the "Add a connection to a server" button.

3. Enter the following into the New Server Registration window:

   → Type "localhost" into the Name field.

   → Type "DaVinci" into the Password field.

4. Click "OK."

5. When prompted about saving passwords, click "OK."

6. In the Object Browser, you should be able to see localhost as an entry in the Object browser list. Click the disclosure triangle to the left of localhost, and then click the disclosure triangle to the left of Databases.

    You should now be able to see all of your Resolve database entries in a list, and you can use these database names to reconnect to these databases from within the DaVinci Resolve database manager.

Opening Projects to Collaborate Upon

In a collaborative workflow, one person is the Owner of the Timeline, and this is typically the editor of the program. The first person who opens a project is the owner. The owner is the only one who's allowed to add media or create bins in the Media Pool, or alter the edit of the Timeline in the Edit page.

Once a project has been opened by the owner, the same project can also be opened by Collaborators on other workstations. In this way, grading done by a colorist in the Color page or metadata edited by an assistant working in the Media page can be published for use by the owner. Those published changes can be reviewed by the owner, and then accepted or rejected a clip at a time, or all at once. If the owner so chooses, published changes can also be automatically accepted.

It should be reiterated that, in collaborative workflows, shared projects should use media on a storage area network (SAN), and each owner and collaborator should be connected to that SAN so that the opened project they collaborate on is properly linked to the same media.

To open a timeline as the owner in a collaborative workflow:

1. Open DaVinci Resolve on a computer with a database that's connected to a Database Server, and log in as a user.

2. To be the owner of a collaborative project, right-click that project and make sure that the Collaborative option in the contextual menu is checked, and turn it on if necessary.

3. Finally, make sure you're the first person on the network to open that project.

4. So long as you're the first person on the network to open up a project that's with Collaborate turned on, you'll be the owner of that project until you close it. As the owner, you are the only person allowed to add media and bins to the Media Pool, and edit the timelines within.

To collaborate on a project that's currently opened by the owner:

1. Open DaVinci Resolve on a computer with a database that's connected to a Database Server, and log in as the same user the owner logged in with.

2. Right-click the project you want to collaborate on, and choose Open in Collaboration Mode.

3. Collaborators can make the following changes:

   → Edit metadata in the Media page.

   → Create and modify either Local or Remote grades in the Color page, and create and manage multiple versions.

Switching Roles as Owners and Collaborators

Once you've started collaborating, it's easy for owners and collaborators to switch roles using the Reload Project as Collaborator and Reload Project as Owner commands.

To switch roles during collaboration:

1. The current owner of a project must initiate the switching of roles by relinquishing ownership of the project. This can be done by choosing File > Collaboration > Reload Project as Collaborator.

2. At this point, any collaborator can choose File > Collaboration > Reload Project as Owner to become the owner. The first collaborator to do so becomes the owner, at which point no other collaborators can use this command until the new owner relinquishes ownership by using the Reload Project as Collaborator command.

Using Collaborative Workflow

Once an owner and one or more collaborators are set up to work on the same project, the actual process of the owner and collaborators working together is fairly simple. The basic rule is as follows:

> → Changes made by collaborators: Must be checked in by each collaborator using one of the Publish commands; the owner can then use one of the Update commands to update the Timeline with those changes.

> → Changes made by the owner: When the owner changes the Timeline, the project must be saved by the owner; collaborators will only see those changes when they use the Reload Project command.

While in collaborative mode, all commands for publishing changes, and for updating, reverting, or reloading projects are found within the button with the bell icon that's at the bottom of the screen between the gear button (Project Settings) and the name of the project. This button only appears when you're in collaboration mode.

Collaborative Workflow Commands

The Bell button is actually a pop-up menu that gives access to all of the commands that are useful for collaborative workflow. These same commands are also available in the File > Collaboration submenu. Be aware that some of these commands are for use by the owner of a project, while others are for use by the Collaborators on that project.

> → Publish All Changes: (Collaborators) Checks in all changes you've made to the grades of a timeline or to the metadata of clips in the Media Pool since the last time you published. When you Publish changes, the owner is alerted by a red highlight on the bell button, and the checked-in clips are highlighted red in the owner's timeline in the Edit page (clip thumbnails are highlighted red in the Color page).

> → Publish Changes for Selected Clips: (Collaborators) Checks in only the changes made to one or more clips you've selected, allowing you to do partial check-ins.

> → Update All Clips: (Owners) Updates every single checked in change to a clip that's highlighted red, so that the owner's timeline now reflects all changes checked in by the collaborators.

> → Update Selected Clips: (Owners) Updates only those clips you've selected.

> → Revert All Clips: (Owners) Lets the owner revert all updated clips back to their original state prior to the update. This is useful if the owner has reviewed the changes and decided to reject them.

> → Revert Selected Clips: (Owners) Lets the owner revert only those clips that are selected, which is useful if you only want to reject a subset of changes.

→ Reload Project: (Collaborators) If the owner has re-edited the Timeline, or made any grading changes, then the owner must save the project. Collaborators then use the Reload Project command to update the Timeline to its current state. If a collaborator has made any changes that haven't been checked in, a dialog will appear offering the options to either check in these changes, or discard them, prior to reloading the project.

→ Automatic Update: (Owners) In order to automatically receive all published changes made by collaborators, without having to use the Update commands, the owner can turn on Automatic Update so that a check appears next to this menu command.

An Example of Collaborative Example

Here's a brief description of how a typical collaborative workflow might work once a project has been set up.

The Owner and Collaborator Open the Project

After the owner and a collaborator have opened the same project and selected the same timeline on which to work, the collaborator begins grading and the owner continues to edit the timeline.

Collaborators Check In Changes

Once the collaborator has finished grading a series of clips, for example grading every clip in a scene, the collaborator clicks the Collaboration pop-up (the bell button) and chooses Publish All Changes. The bell button on the owner's workstation immediately lights up red to indicate that there are changes available to the owner.

A highlighted Bell button and red highlighted clips indicates changes are available

Additionally, the clips that have been graded are highlighted red as well to indicate what changes are available for updating and review.
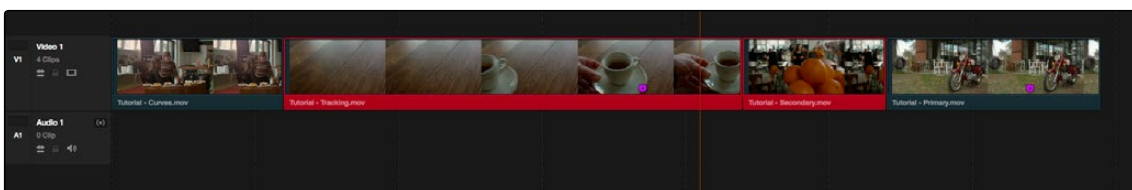
A highlighted Bell button and red highlighted clips indicates changes are available

The Owner Updates Clips

Taking a break from editing, the owner clicks the Collaboration pop-up and chooses Update All Clips, so the grades appear in the owned Timeline. After reviewing each changed clips, the owner decides one of them isn't suitable, so the owner selects it and chooses Revert Selected Clips from the Collaboration pop-up to return that clip to its previous state. The owner then places a purple marker on that clip with a note containing further instructions.

Tip: You can filter the Timeline using the "Clips with collaborative update available" option in the color page to help you focus on reviewing just the updated clips.

Multiple Collaborators Working Together

If other collaborators are working together, for example an assistant colorist who's drawing custom windows for the lead colorist, then each collaborator can select whatever clip they've finished and choose Update Selected Clips to check in their change. When this happens, all the other collaborators and the owner will see the bell button light up in red, and the altered clip highlighted red. Collaborators can then select the checked-in clip and choose Update Selected Clips.

If the lead collaborator doesn't like the change, the Revert Selected Clips command can be used to return that clip to its previous state. This doesn't affect the assistant collaborator's work, and the two collaborators can confer as to what new changes need to be made prior to the assistant's next check-in.

Collaborators Reload the Project

To make sure these changes get back to the collaborator(s), the owner then saves the project, and contacts the collaborator via email, Skype, or hollering down the hall, to let them know the Timeline has changed. The collaborator then chooses Reload Project from the Collaboration pop-up, clicks Publish when prompted to publish any changes that have been made since the last check-in, and clicks Yes when asked to open the current project.

At this point, the collaborator's timeline is updated to reflect the state of the owner's timeline, complete with all editing changes, clips with check-ins that were reverted, and markers with notes that were added. The collaborator can now proceed with their work.

If multiple collaborators are working on a project, then each collaborator must use the Reload Project command.