

LED Manual

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Overview

The LED department is responsible for the center LED Wall in the HOP Main Sanctuary. As part of Service Delivery, the LED Wall is used through services and greatly aids the visual effects of the services and events. Mainly, the LED Wall is used to visually accentuate the service/program experience and aid with visual cues (which help to keep the congregation engaged throughout services).



Figure 1: LED Wall Display during the Praise & Worship segment of a HOP Sunday Service

The LED Wall is controlled primarily by Resolume Arena (a computer application) and LED Controller Units (2 units behind the stage - located on the left rear side behind the LED Wall, & 2 units at the technical booth - located on the right of the LED Computer).

For each event, the LED Wall is utilized to a large degree, primarily because it serves as an extremely effective visual cue. The segments of LED Wall use can be broadly categorized into 3 categories:

1. Sermon Slides/Presentation
2. Announcements
3. Music Ministration

And because of the nature of the LED role, it involves a lot of collaboration with the Technical Director (who the LED Engineer reports directly to), the church leadership, the Lighting team, the Camera team, the ProPresenter team as well as the other sub-teams within Service Delivery. The main skills required which can be improved upon are:

- Judgement
- LED graphic-transition timing
- Creativity
- Subordination (to the Technical Director)
- Ability to have fun using small clicks to make big changes

The LED Engineer is responsible for the following:

- Preparing and optimizing content: Before each live service/events, you will prepare and optimize graphic contents to ensure they are suitable for display on the LED wall. This may involve converting files to the appropriate format, adjusting brightness and contrast, and ensuring the content is properly scaled and aligned.
- Managing graphic content during service: During each live service/events, you will be responsible for managing the graphic content that is displayed on the LED wall. This may involve cueing content at the appropriate times, adjusting content as needed, and ensuring that the content is synchronized with other elements of the service/events.
- Collaborating with other teams: you will need to work closely with the lighting engineer, media and production team to ensure that the graphics integrate effectively with the overall technical set up of the day's service/events.
- Testing and Troubleshooting content: the LED Engineer is required to test the content to ensure that it displays as intended on the LED wall and troubleshoot any technical issues that may arise (as outlined in the [Troubleshooting](#) section below).

Lastly, the LED Wall is controlled primarily by Resolume Arena, but there are other apps used to deliver services/programs. These are:

- **AnyDesk** (this is used for Remote Desktop Control over the NDI feed received from
- **NDI** (which is a bundle that includes NDI Capture)
- **Resolume Alley** (as the name implies, this also falls within the Resolume bundle, but Arena and Alley are the main apps made use of in the LED department)
- ProPresenter

The running of these apps is briefly covered in the [Setup](#) and [During Service](#) sections.

Setup Procedure

As highlighted in the [Overview](#) section, as it pertains to the LED department, the services are mainly comprised of 3 LED-centric categories where most of the graphics/video content required:

1. Sermon Slides/Presentation (**this is where NDI & AnyDesk are mainly utilized**)
2. Announcements
3. Music Ministration

All graphics are gotten from the LED Desktop folders which are as follows:

- Production Archive: this contains all Splashes (Announcement graphics), Logos, etc.
 - This is found on the Quick Access Taskbar in the Explorer File
 - This is also where Splashes are accessed; Production Archive > SPLASHES > HOP/Ignite
- LED EYE CANDY + Ignite Eye Candy: these folders contain the graphics used for graphic selection for all segments of a program/service.
 - This is found on the Quick Access Taskbar in the Explorer File
- Compositions folder: this is a folder that contains all past LED setups which can be used to access various past graphic combinations or graphic designs used in services/events.
 - This can easily be found when in Resolume Arena by loading Compositions:
While in Resolume Arena, Composition > Open > Select the past Composition

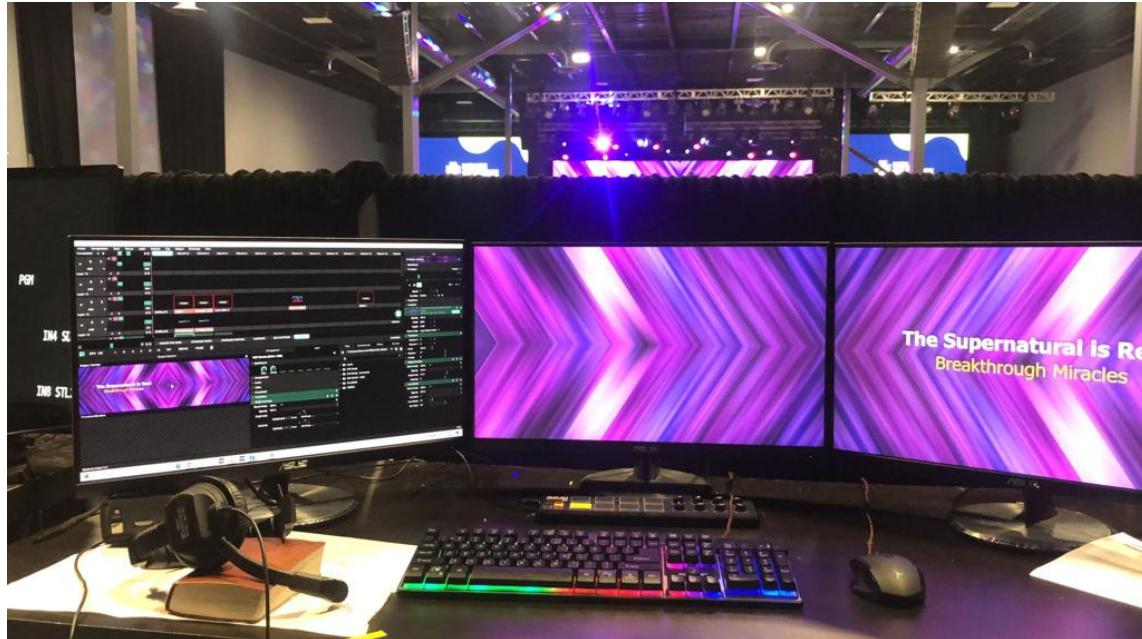


Figure 2: LED Monitor Screens. (L-R) Main Monitor w/ Resolume Arena main screen for LED Display setup, the 2 Output Monitors which display Resolume Arena selected clips (July 2021)

Usage of each app is described as follows:

Resolume Arena

This is the app responsible for displaying all content [through the LED Display Controller Units] from the LED Computer (at the technical booth), to the LED Wall. This app enables all graphics/clips to be redesigned, recoloured, speed-controlled, transition-controlled and then displayed. Without Resolume Arena, the LED Wall will only function as another projected screen of the LED Computer.

- This is where graphics for Music Ministration, Announcements, Sermon/Presentation Backgrounds, Ministration Backgrounds etc are collated and manipulated as required for each event.

Selection of graphics for every segment is gotten from EYE CANDY folder, and is based on the following criteria, in order of priority:

1. Design (consistent with HOP values)
2. Pace/Tempo
3. Colour

Resolume Arena works in layers, so top-most layers will overlay the lower layers.

- The main steps to begin using Resolume Arena are:
 - Each layer and each sheet have been named to know where to put what graphic.
Eg: Sheets are called: F1 - GENERAL SPLASHES 1 - for generic Announcement Splashes, F2 - EVENTS & INFO SPLASHES - for occasional Announcement Splashes, F4 - EYE CANDY 0 etc (see *Figure 3*).



Figure 3: Example of a Resolume Arena Composition setup for a program (HOP service, August 5 2022)

- Each graphic or graphic pack (from EYE CANDY folder or SPLASHES folder) is simply dragged onto any empty slip square in a Composition on Resolume Arena to upload into the app.
- Each graphic/clip copied onto a Composition needs to be formatted into the right LED Wall format (done by right-clicking on the label of the clip > Resize > Fill)
- Clicking on the label of a clip shows info of the clip in the far right-hand column on Resolume Arena.
- Right-clicking on the label of the clip, gives you options within Resolume Arena to “Copy”, “Paste Effects”, “Thumbnail > Update” and do other cool things to the clip or graphic selected.
- There are Transition settings on Resolume Arena, which allow for controlling how quickly or slowly a graphic is displayed (see *Figure 4*).
- There are Opacity settings on Resolume Arena. These are predetermined for each layer to control how transparent each layer is and to allow for overlays. This is done by moving the “V” dial (see *Figure 4*).



Figure 4: Example of a Resolume Arena Opacity dial “V” & Transition dial “T” (HOP Christmas Setup, December 16 2022)

- There are also 2 main effects utilized: “*Brightness. Contrast*” and “*Hue Rotate*”. These can be found on the Effects tab (on the far left of the Resolume Arena screen). Other common effects include, but are not limited to: “*Colorize*”, “*Auto Mask*”.
- The Technical Director provides feedback on Sermon/Presentation Background selection, Announcement Graphics usage for the service (and sometimes Music Ministration graphics). All feedback from the Technical Director or Service Delivery HOD is welcome.

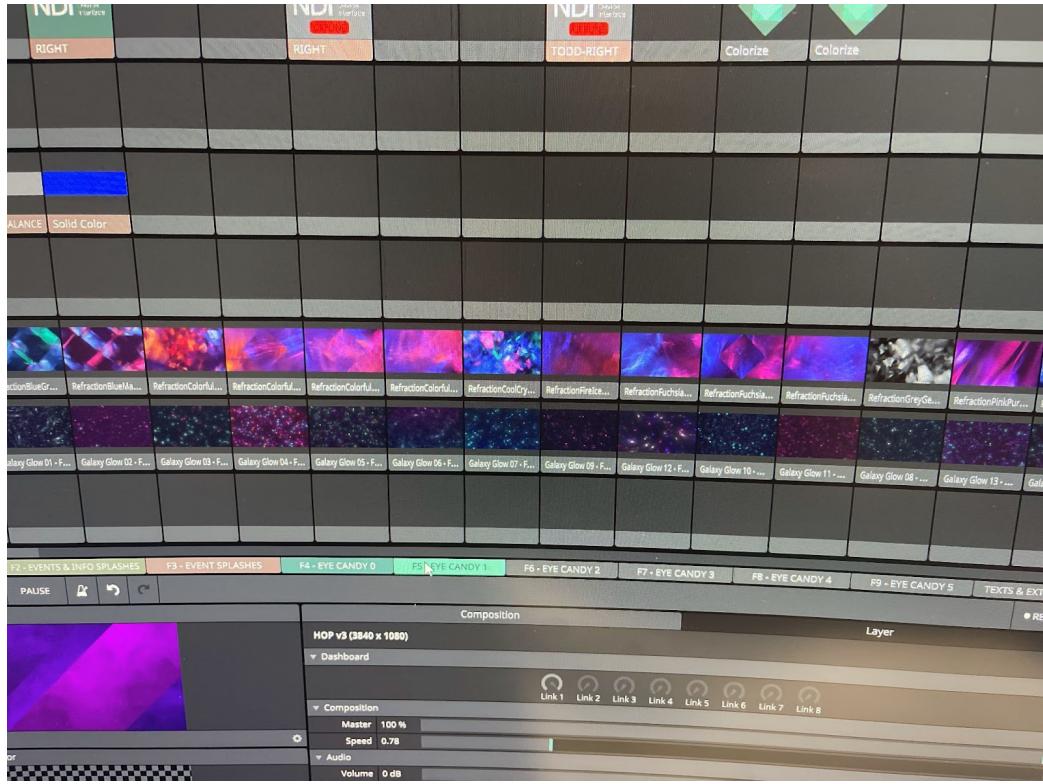


Figure 5: Example of a Resolume Arena Composition setup with a set of “Refraction” + “Galaxy Glow” graphics from EYE CANDY folder (HOP Service, June 17 2022)

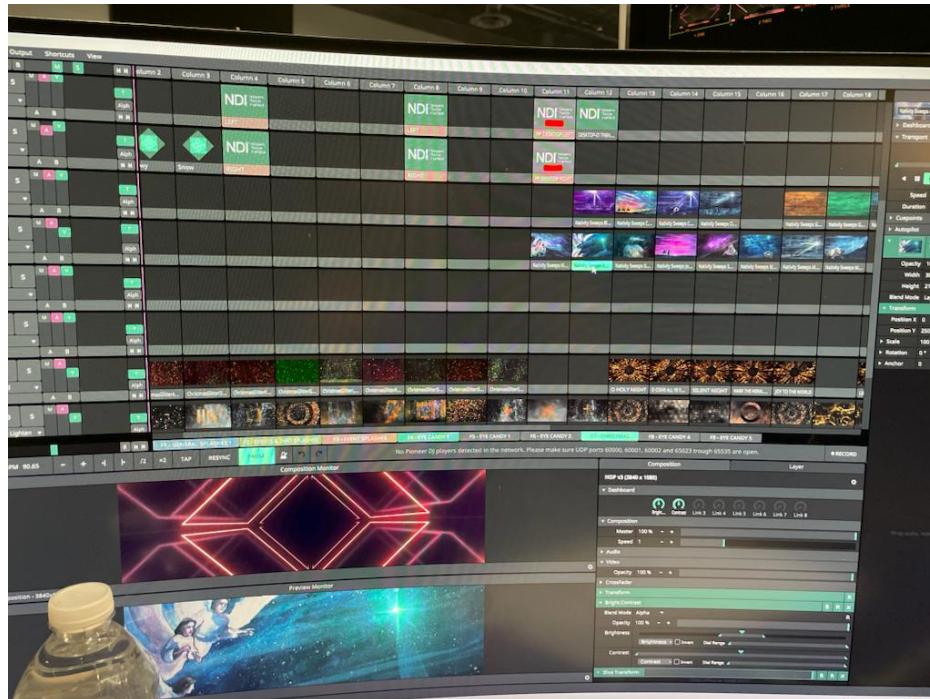


Figure 6: Example of a Resolume Arena Composition setup for a program (HOP Christmas Setup, December 16 2022)

The online websites, which function as our online catalogs, consist of:

- Church Motion Graphics (CMG)
- Visual Media Church (VMC)
- Envato Elements
- Motion Worship (MW)
- Shutterstock

NDI

This is the app responsible for wirelessly receiving the video display of another computer. NDI functions as a wireless HDMI cable for laptop-to-computer, when distance between laptops or computers is relatively large. Important to note for running of services is:

- There is a laptop which is where all Sermon/Presentation PowerPoint Slides or Ministry PowerPoint Slides are loaded onto. This laptop is located on the left side of the stage, close to the Smoke Machine (see *Figure 7*)



Figure 7: Sermon computer near the stage

- This laptop has 2 clicker modules connected to it (for the 2 Presentation Clickers), and a blue ethernet cable connected to it. These must always be connected to ensure the laptop is connected to the right wifi connection, and that the Clicker is able to control the Slides (when the PowerPoint Slides are in Presentation mode).
- More details on how to use NDI are found on items 14-19 of the **LED Wall Checklist** in the **During Service** section.



Figure 8: NDI feed configured on Resolume Arena to display desktop feed from Sermon/Presentation laptop (HOP Service, August 05 2022)

AnyDesk

This is the app responsible for remotely controlling the Sermon/Presentation laptop. This is a very simplistic app and only requires a password to connect to the Sermon laptop. This password can be found in items 10-11 of the **LED Wall Checklist** in the **During Service** section.

During Service Procedure

The In-Service Procedure is covered on the “LED Wall Checklist” document. The link is attached here for reference as well:

| LED WALL CHECKLIST | | |
|--------------------|---|--|
| | Date: | |
| Check in | | |
| 1 | <input type="checkbox"/> Switch on desktop. Password is: 3196 | |
| 2 | <input type="checkbox"/> Open Resolume Arena | |
| 3 | <input type="checkbox"/> Switch on LED Wall display by clicking the "1 DVI-1" buttons on the two black components on the right of the LED computers | |
| 4 | <input type="checkbox"/> If display is not automatically showing on LED Wall, press Ctrl+Shift+A in Resolume Arena to bring up "Resolume Display" | |
| 5 | <input type="checkbox"/> Make sure all required announcement splashes for the day are available and set up on Resolume | |
| 6 | <input type="checkbox"/> Set up or download eye candy for praise & worship and preaching for the day | |
| 7 | <input type="checkbox"/> | |
| 8 | <input type="checkbox"/> Slides Presentation | |
| 9 | <input type="checkbox"/> Ensure that sources are showing under the "Sources" tab in Resolume Arena at the upper left | |
| 10 | <input type="checkbox"/> Open AnyDesk application on LED computer (AnyDesk SLIDES password: HopHebrews13:8) | |
| 11 | <input type="checkbox"/> On AnyDesk, double click the thumbnail called "SLIDES" at the bottom left of the application start page | |
| 12 | <input type="checkbox"/> | |
| 13 | <input type="checkbox"/> Make sure Preacher's laptop is switched on. Password is: PeakPerf22! | |
| 14 | <input type="checkbox"/> Activate NDI Capture (the NDI application icons on the taskbar) and AnyDesk on Preacher's Laptop (if not already on) | |
| 15 | <input type="checkbox"/> Contact Technical Director or assigned personnel to ensure the slides are downloaded on Preacher's laptop | |
| 16 | <input type="checkbox"/> Once slides are setup on PowerPoint, add "Loop continuously until Esc" (under Slideshow -> Setup Slideshow). | |
| 17 | <input type="checkbox"/> Under Sources in Resolume, this shows up as HOP-PRESENTATIONS | |
| 18 | <input type="checkbox"/> Ensure that the SLIDES on AnyDesk are active/displaying the feed from the Preacher's laptop | |
| 19 | <input type="checkbox"/> "SLIDES" icon (on Resolume) should be green when connected to Preacher's laptop slides | |
| 20 | <input type="checkbox"/> Check clicker and Pastor's laptop to ensure that the receiver is plugged into the laptop | |
| 21 | <input type="checkbox"/> Check slides to make sure it's connected and moving on both Preacher's laptop and Resolume Arena/LED Wall | |
| 22 | <input type="checkbox"/> Check if slides are controllable by the clicker and AnyDesk for backup | |
| 23 | <input type="checkbox"/> | |
| 24 | <input type="checkbox"/> | |
| 25 | <input type="checkbox"/> If required, make sure "PP7-IN-HOUSE (Video Feed)" source is also showing and is the corresponding source for Bible icon | |
| 26 | <input type="checkbox"/> If required, ensure the Bible icon is also "green" and connected | |
| 27 | <input type="checkbox"/> | |
| 28 | <input type="checkbox"/> Ascertain that the Slides for the day are controllable on AnyDesk | |
| 29 | <input type="checkbox"/> | |
| 30 | <input type="checkbox"/> | |
| 31 | <input type="checkbox"/> | |

+ ≡ Summary ▾ **LED WALL** ▾ LIVE STREAM ▾ IN HOUSE PROPRESENTER ▾ SOUND ▾ STA

PRODUCTION CHECKLIST_HOP/IGNITE

Post Service Procedure

The Post Service Procedure only involves switching off the LED Wall by following the Checkout Procedure:

| Check out | |
|-----------|---|
| 1 | <input type="checkbox"/> On Reolume Arena, press the letter "X" (to black out display on Resolume Arena and LED Wall) |
| 2 | <input type="checkbox"/> Black out the LED Wall by clicking the two "Black" buttons on the two black right hand side components |
| 3 | <input type="checkbox"/> Close Resolume Arena, ProPresenter, AnyDesk and other confidential documents |
| 4 | <input type="checkbox"/> Lock the LED computer by pressing Windows+L |
| 5 | <input type="checkbox"/> Clear your station of all personal items and water bottles after the service is done |

Troubleshooting

The LED Wall's main issues include:

- Brightness/Contrast setting for services (LED Wall Controller Unit which is directly behind the LED Wall itself, near the band area)
 - Solve this by either; adjusting the Brightness. The contrast of the clip on Resolume Arena, or changing the Brightness settings on the LED Wall Display Video Controller Unit (behind the stage).
- LED Wall glitches - these usually occur when the frame rate of
- Inverted Output Screens - if there is anything wrong with the output display, open up Video Output by pressing Ctrl+Shift+A. Then ensure that Display 1 is on (Output) Screen 1 and Display 2 is on (Output) Screen 2 (see *Figure 9*).

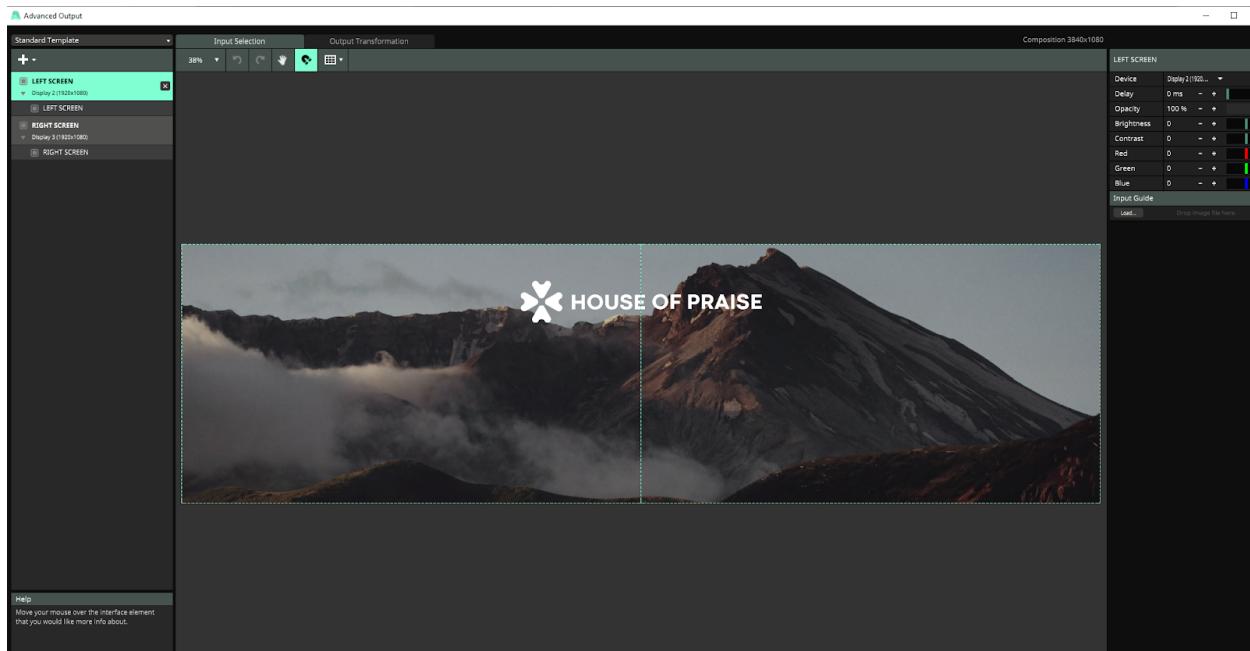


Figure 9: Advanced Output screen on Resolume Arena (HOP Service, August 05 2022)

Additional Features

- The Clicker runs on batteries, so it's a good idea to change the batteries, approximately every 1 year.
- Receiving feed from In-House ProPresenter computer (which controls Side Screens) is also through NDI.
- Resolume Alley is used to convert graphics to Resolume Arena-LED compatible formats
- A YouTube playlist of generic LED training videos:
https://youtube.com/playlist?list=PL8KUag9G_-iGlrSovgKC-zYTkY_-EZkAm
- Transitions can be controlled by moving the "T" dial which appears on the right of each layer.
- There are more depths to the features of Resolume Arena which have not been explored exhaustively at this time. The nature of the software allows for a lot of creativity, so new features can be found by exploring other uses of Resolume Arena on Google, or just observing how others use Resolume Arena in general.