



DISPLAY DIRECTOR

Display Director User Manual

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Display Director User Manual

1. Introduction

1.1 About Display Director

Welcome to Display Director, a content management software for your LED Video Display. Display Director is designed to have an unintimidating, intuitive user interface and provide a powerful in-game tool by allowing control of your game day operations. Display Director allows your system to easily display statistics, headshots, graphics, animations, ads, and more.

1.2 System Setup

Following is the general set up of Display Director. The diagrams show how it is set up and connected to the rest of your system for a few different configurations and options.

Video Switcher/Broadcast Integration

Scorer's Tables

NOTE

NOTE: The laptop must be in extended desktop mode before starting Display Director. Press **Windows + P** to change the laptop display.

Single Display

Multiple Displays

1.3 User Interface

Figure 1-1 is an overview of the Display Director user interface. The numbered callouts are listed below; the rest of this manual covers each feature in detail.

01 Main Menu

02 Main Toolbar

03 Audio Controls

04 Project Display Dropdown List

05 Network Connection Indicator

06 Display Preview

07 Video Volume Control

08 Live Video Control Panel

09 Tab Page Controls

10 Button Layout Grid

11 Data Reader Status Panel

12 Zone Layouts Control Panel

13 Character Generator (CG) Overlays Control Panel

14 Live Video Status Bar

2. Quick Start

2.1 Getting Started

Quick Start covers the basic building blocks of operating Display Director: opening a new or existing project, adding or importing media, managing buttons, creating tabs, setting up live video, and communicating with the Display Client.

CAUTION

License key required. Display Director will not open unless the green USB license key (Figure 2-1) is plugged into the computer running it. If you have lost your key, contact the Nevco Service Department — a replacement must be ordered.

To start Display Director, click the Display Director icon on the desktop, highlighted in Figure 2-2.

The first time Display Director opens, a box with a black background and "Nevco" on it pops up. Double click it to dismiss it.

Director and Client

- **Display Director** (or "Director") is the control software shown in Figure 2-3. The Director controls what is shown on the Client.
- **Display Client** (or "Client") is the software that actually runs on the video display, shown in Figure 2-4. What is in its top left is exactly what the video display shows.

Edit Mode and Director Mode

Display Director is always in one of two modes. The icon highlighted in Figures 2-5 and 2-6 toggles between them.

- **Edit mode** — the display preview is outlined in **red** (Figure 2-5). This is where you add all of your content to the project.
- **Director mode** — the display preview is outlined in **green** (Figure 2-6). This is where you play the content already in your project. Director mode is also called "live" mode.

The Button Grid

Figure 2-7 shows the grid of squares in Display Director. A square with content in it is called a **button**.

- **Pink outline** — the selected square. Clicking an empty square selects it and turns it pink.
- **Green square** — where your mouse is hovering.
- **Empty squares** — no content yet.

To adjust the brightness of your display(s), select *Displays > Adjust Brightness* from the main menu (Figure 2-8).

2.2 Creating a New Project

By default, Display Director opens with the most recent project already open. If an existing project is open, you must close it before creating a new one.

01 Select *File > New Project* from the main menu (Figure 2-9), or click the *Create New Project* icon in the main toolbar (Figure 2-10). The New Project Dialog opens (Figure 2-11), listing all available displays (clients).

02 If no displays are listed, verify that all display controllers (clients) are turned on, then click **LOCATE DISPLAYS**. All displays on the network are discovered and added to the Available Displays list.

03 Select the display or displays to include in the project.

04 Enter a Project Name and click **CONTINUE**.

2.3 Opening an Existing Project

Display Director opens to the last project that was worked on. To open a different one:

- 01 Close the current project with *File > Close Project*.
- 02 Select *File > Open Project*, or click the *Open an Existing Project* icon on the main toolbar. All projects you have created are listed.
- 03 Select the project and click **OPEN**.

2.4 Adding Buttons to a Project

There are two ways to add buttons to the project:

- **Add Button Media** ([section 2.5](#)) creates one button and adds one or more media files to it.
- **Import Button Media** ([section 2.6](#)) lets you select multiple media files and creates a button for each one. All files import into the one zone selected — only one zone can be imported at a time. Keep in mind how much space is left on the button grid: if you import too many files, Display Director issues an error and omits the last selected files if you continue. Sequence files cannot be added with Import Button Media.

Media can be added from any location on your computer, such as a flash drive or network drive — just navigate to it in the file dialog that opens. When added to a button, the media is copied into one central folder, `C:\NEVCOFiles\Media`. Every piece of media you upload or create lives there, which matters if you want to clean out old media. Display Director opens this folder by default when you add media.

NOTE

NOTE: The `C:\NEVCOFiles\Media` folder should never have subfolders. When media is sent to play, the Display Client looks for it in this specific "Media" folder — media inside a subfolder will not be found and will not play. A subfolder is only okay for media you do not intend to use, for example to archive old files you don't want to delete but want to keep off the display.

2.5 Add Button Media

Make sure you are in edit mode, then select the square on the button layout grid where you want the media. Open the Button Properties Dialog (Figure 2-12) using any of these four methods:

- Select *Button > Add* from the main menu
- Click the *Add Button* icon (green circle with a plus sign) on the main toolbar
- Right click the selected square and click *Add*
- Double-click the square

Click **ADVANCED >>** to expand the dialog and show more options (Figure 2-13).

The numbered elements of the Button Properties Dialog (Advanced) are:

01 Button Name Textbox

02 Layout Add and Remove Options

03 Button Color Selector

04 Zone Media List Box

05 Display Options Group Box

06 Hide Zone Layout Checkbox

07 Enabled Live Input Checkbox

08 Hide CG (Character Generator) Overlay Checkbox

09 CG Overlay Options Group Box

10 Selected CG Overlay

11 Add and Remove CG Overlay Options

- 12 Audio Options Group Box

- 13 Selected Audio File

- 14 Add and Remove Audio Options

- 15 Cancel Audio Checkbox

- 16 Media Options Group Box

- 17 Media File Name and Information

- 18 Add Blank Display Option

- 19 Add and Remove Media Options

- 20 Advanced and Simple Toggle

- 21 Save or Cancel Add Options

Numbers in parentheses below refer to these callouts.

Adding Media

- 01 Select the zone the media will be displayed in from the zone media list box (4).

- 02 Click **ADD** (19) and select the media or sequence file in the file dialog. Click **Open**.

- 03 The file's name appears in the file name textbox (17) and the button name textbox (1). By default the button is named after the last media selected for it; you can type a different name.

Media length and end type (17) — The length does not affect playback: the display keeps playing the last media it was told to play. The end type can be **Repeat** (plays endlessly until you change it) or **None** (the media freezes on its last frame).

Layouts

A layout splits your display into multiple "zones." Click **+** **LAYOUT** (2) and choose a layout; its zones then appear in the zone media list box (4). Layouts are created in Layout Creator ([section 5](#)).

A layout stays on the display until another layout is applied, the Hide Zone Layout checkbox (6) is selected, or the hide layout option is clicked in the zone layouts control panel on the main screen.

CG Overlays

CG overlays display on top of the content on the display. Click **ADD** (11) in the CG Overlay Options group box (9) and select the overlay; its name appears in the selected overlay textbox (10). Overlays are created in CG Overlay Creator ([section 4](#)).

An overlay stays on the display until another overlay is applied, the Hide CG Overlay checkbox (8) is selected, or the hide overlay option is clicked in the CG overlays control panel on the main screen.

Button Color

Click the button color selector (3), choose a color, and click **OK**. Colors help organize the buttons in your project.

Audio

On systems with audio features, click **ADD** (14) in the Audio Options group box (12), select the audio file, and click **Open**. The file name appears in the audio file name textbox (13). Audio can have its own button or play along with a media file.

Audio files (.mp3, .wav, or .m4a) keep playing over any button until either:

- the user stops it with the audio controls in the upper left corner of the Display Director main screen, or
- another button with an audio file attached is selected.

Video files with embedded audio (.mp4, .mov, etc.) are similar: they keep playing as long as the video is visible on the display.

Saving the Button

Click **SAVE** (21). The button is added to the button grid as shown in Figure 2-14.

2.6 Import Button Media

Import Button Media imports multiple media files at once, creating one button per file. Make sure you are in edit mode, then select the square on the button layout grid where the import should start. Open the Import Media Files Dialog (Figure 2-15) using either method:

- Select *Button > Import Media* from the main menu
- Right click the selected square and click *Import Media*

The numbered elements of the Import Media Files Dialog are:

01 Button Color Selector

02 Zone Media List Box

03 Media Import Options

04 Transition Dropdown Menu

05 End Type Dropdown Menu

06 Add Media Option

07 Add Audio Option

08 Create and Add Audio Playlist Options

09 Import and Cancel Options

- 10 Select the zone the media will be displayed in from the zone media list box (2). Select only one zone per import. The import starts from the first button window, or from the selected one, and fills left to right, top to bottom.

- 11 Click **ADD MEDIA** (6) and select the files in the file dialog. To select a range, click the first file, hold **Shift**, and click the last; to pick individual files, hold **Ctrl** while clicking. Files import in the order you select them. Click **Open**.

- 12 Optionally, click the button color selector (1), choose a color, and click **OK** — the color applies to every imported button.

- 13 Optionally, change the end type (5), as described in [section 2.5](#). Leave the transition option as it is.

- 14 Click **IMPORT** (9). A button is created for every media file you selected (Figure 2-16).

Imported buttons are named after their file names; you can edit each button's text afterwards. They have no layout, so they show in the selected zone of whatever layout was last applied.

Importing Audio

Import Media can also import multiple audio files or an audio playlist. To build a playlist with the Audio Playlist Creator, click "Create and Add Media Playlist" in the Import Media dialog, or select *Tools > Audio Playlist Creator* from the main menu. Playlists use the .apl file extension. Audio and media cannot be added in the same import.

2.7 Edit, Move, and Delete Buttons

Display Director must be in edit mode to edit, move, or delete buttons.

Editing a Button

Select the button, then open it using any of these four methods:

- Select *Button > Edit* from the main menu (Figure 2-17)
- Click the *Edit Button* icon on the main toolbar (Figure 2-18)
- Right click the selected button and select *Edit* (Figure 2-19)
- Double click the selected button

The Button Properties Dialog opens (Figure 2-12, or Figure 2-13 for advanced editing). Select the zone to edit, click **EDIT** to change its attached media, make any other changes as described in [section 2.5](#), and click **SAVE**.

Moving a Button (Cut, Copy, Paste)

Cut, copy, and paste work four ways:

- Select the button, then select *Button > (Cut, Copy, or Paste)* from the main menu
- Click the action's icon on the main toolbar
- Right click the button and select the action
- Use the keyboard shortcuts: **Ctrl + X** (cut), **Ctrl + C** (copy), **Ctrl + V** (paste)

To move a button, cut or copy it, then paste it in the new location. **Cut** removes the button from its old location; **Copy** leaves it in place and adds a copy where you paste.

Deleting a Button

Select the button, then use any of these four methods:

- Select *Button > Delete* from the main menu
- Click the *Delete Button* icon (red circle with a minus sign) on the main toolbar
- Right click the selected button and select *Delete*
- Press the **Delete** key

2.8 Creating Tabs

Tabs organize many different sets of buttons in one project.

To add a tab, select *Tab > Add* or click the *Add a Tab* icon on the main toolbar, enter a name for the tab, and click **SAVE**. Click a tab to switch the button grid to that tab's content.

Other tab options on the main toolbar and main menu:

- **Insert** — inserts the new tab exactly where the currently selected tab is.
- **Edit** — renames the tab.
- **Delete** — deletes the tab **and all of its content**.
- **Clear Current Tab** (*Tab > Clear Current Tab*) — deletes all of the buttons in the selected tab.

2.9 Setting Up a Live Video Stream

Make sure your live video equipment is set up and connected to the Display Director system, then open the Configure Live Source window (Figure 2-20):

- **Single mode:** select *Tools > Video Capture Setup*.
- **Multiple mode** (see [section 2.12](#)): on the Client computer, click **VID CAPTURE** on the Display Client.

The example in Figure 2-20 is a computer with a Blackmagic Design DeckLink Studio 4K capture card installed.

Select the options that match your setup:

- 01 Video** — the video source. Anything connected to the computer can appear here, such as capture cards, webcams, or screen capture programs. In the example, "DeckLink Studio 4K" is selected.
 - 02 Line** — where the video is coming from, i.e. which input it uses: HDMI, SDI, Component, Composite, or S-Video. It may also include the audio
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input.

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- 03 **Format** (video) — the format of your video input: NTSC options, HD 720-60p, HD 1080i and 1080p at different refresh rates, or UHD 4K at different refresh rates.
-
- 04 **Audio** — the audio source, such as a capture card (e.g. the Blackmagic DeckLink) or a microphone.
-
- 05 **External** — used if you have an external audio source; works like the Audio dropdown.
-
- 06 **Format** (audio) — the audio frequency, number of channels, and number of bits, or leave it on auto.
-
- 07 **Output video format** — choose an output format or leave it on auto.

Then make sure your video capture system is set up and turned on, and click **Init Device**. Your stream should appear in the preview window on the right side of the dialog. Click **Save and Close** — your system is ready to go live.

2.10 Live Video Status Bar

The live video status bar on the Display Director main screen (Figure 2-21) shows the status of each display set up for live video:

- **Black text** — the feed is working, e.g. "Live Signal: OK, State: Running".
- **Red text** — the feed is not working as expected; the status says whether any signal is being received. In Figure 2-21 the camera was simply turned off, so there was no live signal.

Hover over a client's status to see more detail, such as the video input device and video format.

The status updates in real time, so if something comes unplugged or the camera isn't on, the operator sees it immediately — a useful warning that the

live video setup needs attention before game day. For live video troubleshooting, see [problem 10.1.3](#).

2.11 Displaying a Live Video Stream

There are two ways to make the display go live:

- **Live video control panel** — on the right of the Display Director main screen, make sure the display you want to show the live stream on is selected, then click **Go Live!** or press **F1**.
- **A Go Live button** — create a button just for going live. In the button's advanced options, check **Enable Live Input** (callout 7 in Figure 2-13). Selecting the button then puts the video display live. You can assign layouts and overlays to it like any other button.

2.12 Sending Media to Display Client

Display Director runs in either **single** or **multiple** mode. Systems in single mode do not need to send media files to the Display Client and can skip this section.

To check which mode you are in, select *Help > About* from the main menu (Figure 2-22). The mode is listed on the left side of the About Display Director dialog, circled in red in Figure 2-23. The dialog also shows the version number — useful information for the Nevco Service Department if you call in with an issue.

Sending Files (Multiple Mode)

In multiple mode, files must be sent to the Display Client for it to operate correctly. How long the send takes depends on the number of buttons in the project and how many were added since the last send.

NOTE

NOTE: For larger projects, send files well in advance of any scheduled event.

- 01 Make sure Display Director is in edit mode. The send options are disabled (grayed out) while Display Director is connected to the Display Client in director mode — click *Displays > Disconnect*, or use the toolbar Connect icon shown in Figures 2-5 and 2-6.

- 02 Select *Displays > Send Files* from the main menu (Figure 2-24), or click the *Send Files* icon on the main toolbar (Figure 2-25).

- 03 The Send File Progress Dialog shows the transfer (Figure 2-26). It closes automatically when the send completes, and the files are available to play on the Display Client.

If you forget to send files, Display Director warns you when you switch to director mode, tells you how many files have not been sent, and asks whether to send them. Files that were never sent simply will not play on the display.

Connecting and Playing

- 01 Select *Displays > Connect* from the main menu, or click the Connect icon on the toolbar (Figures 2-5 and 2-6). The icon and borders change from red to green — Display Director is connected to the Display Client.

- 02 Click any button. The media plays in the display preview (the Pepsi logo in Figure 2-27) and on the display (client).

3. Media Sequencer

3.1 Introduction to Media Sequencer

Media Sequencer creates a sequential list of media files, like a slideshow — for advertising, slideshows, commercials, highlights, and more. Sequences can combine image files (.jpg, .png, .bmp, etc.) and video files (.avi, .wmv, .mov, .mpg, .mp4, etc.).

Sequences are not project specific: any project opened in Display Director can use them. Make sequences in advance of game time.

3.2 Media Sequencer User Interface

- 01 Main Menu
 - 02 Main Toolbar
 - 03 Sequence Preview Window
 - 04 Sequence File List
 - 05 Duration Preview
 - 06 File Preview
 - 07 Transitions Between Media
 - 08 Media Duration Option
-

3.3 Creating a Media Sequence

- 01 In Display Director, select *Tools > Media Sequencer* from the main menu (Figure 3-2).
- 02 Click the *New* icon on the Media Sequencer toolbar (Figure 3-3), or select *File > New* (Figure 3-4).
- 03 In the Display Dialog, choose the display the sequence is for and click **OK** (Figure 3-5).

NOTE

NOTE: The display you choose sets the sequence's sizing. A sequence created for one display may not work on a display of a different size.

3.4 Adding Media to Sequence

- 01 Click the *Add* icon on the toolbar (Figure 3-6), or select *Media > Add* from the main menu (Figure 3-7).
- 02 In the file dialog, select the media to add — you can select multiple files at once — and click **Open**. The media appears in the file list and the bottom preview windows (Figure 3-8).
- 03 To save, select *File > Save* or click the Save icon on the toolbar. In the Save File dialog (Figure 3-9), name the sequence and click **SAVE**.

3.5 Previewing a Media Sequence

- 01 Click the *Preview Sequence* icon on the toolbar (Figure 3-10), or select *Tools > Preview* from the main menu. The files play in the sequence preview window in order, each for its own duration, with transitions (Figure 3-11).
- 02 To stop, click the *Stop Sequence* icon (Figure 3-12) or select *Tools > Stop Preview*.

A sequence cannot be edited or saved while it is previewing — stop it first. You can then delete, add, and rearrange media, add transitions, and change durations. Rearrange media by dragging the thumbnails on the bottom panel.

NOTE

NOTE: For optimal performance, keep each sequence at or under 20 files. Media Sequencer allows more if needed.

3.6 Adding a Media Sequence to a Button

Sequences are saved automatically to `C:\NEVCOFiles\Media` with the .spq file extension. Add a sequence to a button as explained in [section 2.5](#) — sequences cannot be added with Import Button Media.

- **Updating a sequence** automatically updates every button it is already on.
 - **Resume:** if a different animation is selected while a sequence is playing, Display Director remembers where the sequence stopped and resumes from there next time it is selected. Only one timestamp is held, so this works only for the most recently interrupted sequence.
-

4. Character Generator Overlay Creator

4.1 Introduction to CG Overlay Creator

CG Overlay Creator creates overlays for buttons. Overlays display on top of all other content and can include images, conditional images, permanent text, and editable text. They can also be used to build a Virtual Scoreboard (VSB) on the video display.

Overlays are added to buttons in the advanced Button Properties Dialog (Figure 2-13; see [section 2.5](#)). Overlays are not project specific: any project opened in Display Director can use them.

4.2 CG Overlay Creator User Interface

Select *Tools > CG Overlay Creator* from the Display Director main menu. CG Overlay Creator opens (Figure 4-1). The black box is the preview of your message center; zoom it from the *Tools* menu. Use the main toolbar to move, resize, and rearrange items.

The side toolbar has four tools:

01 Add Image

02 Add Pitch Speed Image

03 Add Text

04 Add Data Item (dynamic text)

4.3 Creating a New Overlay

01 Select *File > New* or click the *New* icon on the main toolbar.

02 Select the display the overlay is for, name the overlay, and click **OK**.
The display preview appears.

03 Use the side toolbar (Figure 4-1) to add objects to your overlay.

04 Save with *File > Save* or the Save icon on the main toolbar. Verify the overlay's name and click **SAVE**.

The finished overlay can be added to a button as described in [section 2.5](#). An overlay stays on the display until another overlay is applied, the Hide CG Overlay option is selected on a button, or the hide overlay option is clicked in the CG overlays control panel on the Display Director main screen.

NOTE

NOTE: An overlay used on a display it was not created for may not work.

4.4 Creating Data Items and Virtual Scoreboard Elements

Dynamic Text (User Data)

Dynamic text is text you can edit during the game — useful for a 50/50 raffle or the next home game date.

01 Click the Add Data Item icon (4). The Insert Data Object dialog opens (Figure 4-2).

02 Set the Data Properties dropdowns as shown in Figure 4-2 and change the Field number as needed.

03 Click **ACCEPT** to add the item to the overlay.

To change the text during the game, open the User Dynamic Data dialog (Figure 4-3) any of three ways: click **USER DATA** in the CG overlays control panel on the main screen, select *Tools > User Data Entry...*, or press **F3**. Select the field, make your change, then click **UPDATE** and **CLOSE**. The item on the overlay changes to match.

Virtual Scoreboard Elements

A Virtual Scoreboard overlay is built one element at a time; you then arrange the elements however you like. To add an element, click the Add Data Item icon (4) and use the Data Properties group box on the right of the Insert Data Object dialog (as in Figure 4-2). Each dropdown narrows the next:

01 **Data Source** — the two virtual scoring sources:

- **StatCrew** — supports baseball (game and season data), basketball, football, ice hockey, lacrosse, soccer, and volleyball.
 - **NEVCO** — everything else: all MPC (Nevco) data, FinishLynx track, HyTek track, and FlashTiming track. Supported MPC data: basketball, basketball stats, baseball, football, volleyball, lacrosse, soccer, wrestling, hockey, pitch speed (from the Stalker radar gun interface), and DateTime.
-

02 **Type** — the kind of data from the list above.

03 **Table** — usually a sport, or a data type within the sport you chose. For example, Data Source StatCrew with Type Soccer gives the tables

period1h, period1v, period2h, period2v, playerh, playerv, teamh, and teamv.

-
- 04 Data Field** — the specific data item. Continuing the example, Table teamh ("Home Team") offers id, name, code, record, score, shots, saves, and fouls. Selecting **saves** adds an element that updates with the home team's saves during the game.

You can change the look, size, and position of each data element.

DateTime elements — set Data Source to NEVCO, Type to VSB, and Table to DateTime; the Data Field list then offers date, time, or both together. DateTime reads from the computer's clock, so make sure the computer's date and time are accurate.

NOTE

Tips: You can add images, such as your school mascot, alongside scoreboard elements. Instead of "Home" and "Guest" labels, use your mascot's name (e.g. "Eagles") for the home team and a user data item for the guest's name — then update it for each new opponent instead of making a new overlay.

4.5 Creating a Pitch Speed Image

Display Director can display pitch speed on an overlay. When a pitch is thrown, a Stalker radar gun measures its speed, and the registered speed shows on your video display. The speed stays up for a set number of seconds after the pitch — that duration is set in the Stalker radar gun's settings; Display Director simply reads the data the radar gun outputs.

4.5.1 Hardware Connections

- 01** Connect the hardware as described in the pitch speed interface manual (135-0141.PDF).
-
- 02** Connect the receiver's coax output to the VSBI.

4.5.2 Decryptor Setup

On the Display Director PC, set up a Decryptor input for the incoming serial data.

4.5.3 Data Reader Setup

In Display Director, set up a data reader for that Decryptor output (see [section 6](#)):

4.5.4 Pitch Speed CG Overlay

Create a CG overlay with a PitchSpeed data item (Data Source NEVCO, Type VSB, Table PitchSpeed). Use the Add Pitch Speed Image tool (2) to add graphics that appear and disappear along with the pitch speed when the ball is pitched.

5. Layout Creator

5.1 Introduction to Layout Creator

Layout Creator creates button layouts, each with one or more zones, so one button can show multiple media on the video display at the same time — for example, live video on one half of the screen and player statistics on the other. Layouts are not project specific: any project opened in Display Director can use them. Adding a layout to a button is described in [section 2.5](#).

How Layouts Behave

- **No layout (default)** — a button without a layout plays full screen, unless another layout was previously selected. In director mode, switching from a button with a layout to one without keeps the previous button's layout.
- **Media in one zone** — selecting a button that only has media in one zone changes only that zone; the other zones keep their current media.

- **Layout stays up** until another layout is applied, the Hide Zone Layout option is selected on a button, or the hide layout option is clicked in the zone layouts control panel on the main screen. Hiding the layout makes zone 1 full screen.

NOTE

Tips: - Create one main layout button that you use most of the time, then create buttons *without* layouts that put media in individual zones. That way you can change each zone of your main layout independently. - Add a layout to a button when it should look exactly the same every time it plays — for example, a full screen layout on the American flag animation so it always plays full screen.

5.2 Layout Creator User Interface

Select *Tools > Layout Creator* from the Display Director main menu. Once you have selected a layout, Layout Creator looks similar to Figure 5-1.

5.3 Creating a New Layout

- 01 Select *File > New* or click the *New* icon on the main toolbar. The Select Template dialog opens (Figure 5-2) with a few ready-made layout templates.
- 02 Select the template you want, and select the display the layout is for. A layout applied to a display it was not made for may not display correctly.
- 03 Click **OK** to open the template.
- 04 Save it as is, or customize it with the left side toolbar and preview window — zones can be added, deleted, resized, and moved.
- 05 Save with *File > Save* or the *Save* icon on the main toolbar. Name the layout and click **SAVE**.

Zone Rules

- **The live zone** is the zone with the multicolored bars in Figure 5-1. It is the only zone that plays audio, so media with audio in several zones won't overlap. It is also where your live stream appears when you click "Go Live" in the live video control panel. Change the live zone with the toolbar on the right side.
 - **Areas without a zone** cannot hold media, but overlays still display on top of them. For example, if StatCrew stats are displayed on one side of the video display, leave that area without a zone so no media can ever play behind the stats and they stay easy to read.
 - **Maximum zones:** a layout can have up to 8 zones. The limit may be set lower for smaller video displays, which would look crowded and busy with 8 zones.
-

6. Data Reader (Virtual Scoring)

6.1 Introduction to Dynamic Data Sources

A dynamic data source is an XML feed into Display Director from another software package or device. Display Director reads the XML file and automatically updates that data on your video display through a CG overlay — this is how virtual scoring works on an LED display.

Data Reader is the part of Display Director that reads this XML data as it changes during the game. Each data source needs its own data reader.

Data Source Types

- **NEVCO** — Nevco scoreboard data files (MPC), FinishLynx, and HyTek. These are grouped under "NEVCO" because the Nevco Decryptor software converts them into a version Display Director can read. (FinishLynx and HyTek are third party companies.)
- **StatCrew** — any data from StatCrew (a third party company). StatCrew files are already readable and do not go through Nevco Decryptor. Supported

sports: Volleyball, Basketball, Baseball (single game and season data), Lacrosse, Soccer, Football, and Ice Hockey.

- **PitchSpeed** — data from a Stalker Radar gun interface (Stalker Radar is a third party company), output by Nevco Decryptor.
- **DateTime** — the date and time from the computer running Display Director, for display on the scoreboard alongside other data.

6.2 Creating a Dynamic Data Source

- 01 Select *Tools > Data Reader Setup* from the main menu.
- 02 In the Data Reader window, select *Edit > Add Data Input*. The Data Input Setup Dialog opens in front of the Data Reader window (Figure 6-1).
- 03 **Display** — the name of the display that will host this data. If it isn't the right one, change the name to match where you want the data.
- 04 **Data Source** — the type of data being read (see [Data Source Types](#)).
- 05 **Browse for Source File** — find the file Display Director will read: where StatCrew writes its output files, or where Decryptor is set to put its output files. DateTime does not need a source file.
- 06 **File Path** — enter the path relative to the computer that is reading the data (see below).
- 07 Set the status and update options (see [Status and Update Settings](#)) and click **OK**.

File Path

Enter the path as seen from the computer that reads the data:

- **File on the same computer** — e.g. if the Display Client computer has the data in `C:\NEVCOFiles\StatCrew\game.xml`, enter that path.
- **File on another computer on the local network** — enter `\\COMPUTER\NEVCOFiles\StatCrew\game.xml`, replacing `COMPUTER` with the name or IP address of the computer that hosts the file.

On a multiple system, Display Director opens to the client computer's file path. To test a path, paste it into the Windows File Explorer address bar and confirm the file opens. Remember: Decryptor's output file is Display Director's input file.

Status and Update Settings

These settings (Figure 6-2) control when the file is read and what the status lights show.

- **Data File Status Indicator Settings** drive the Data Reader Status panel on the Display Director main screen (Figure 6-3), which shows whether each data reader is receiving new information. The **Status Monitor Interval** sets how often the data reader is checked.
- **Data Properties** set when Display Director reads the file:
- **On File Update** — reads as soon as the source file is updated.
- **Timed** — reads on an interval you choose.
- **None** — the data reader never updates.

How Many Data Readers?

- **One per type of data.** For example, reading MPC data and StatCrew data, plus DateTime, takes three separate data readers.
- **MPC: one for all sports** (unless you use legacy scoreboards). For example, a 2700 scoreboard that displays Basketball, Volleyball, and Wrestling needs only one data reader. This requires Decryptor 2.0 or later.

Data readers start automatically — on creation, when Display Director opens, and when you switch to live mode — and update the data immediately. No

further maintenance is needed.

When a Data Reader Shows No New Data

Work through these checks in order:

- 01 **Is the data source on?** Make sure it is turned on and outputting data to the Display Director computer — e.g. an MPC controller must be on for there to be data to read.

- 02 **Is Decryptor working?** For sources that go through Nevco Decryptor — scoreboard data files (MPC), FinishLynx, HyTek, and Stalker Radar setups — watch Decryptor's output file and make sure it is changing.

- 03 **Has the Status Monitor Interval passed?** E.g. a StatCrew file that hasn't been updated in over an hour (StatCrew's default interval) turns the indicator red even though everything is set up correctly. Push an update to the StatCrew file.

- 04 **Is the source file path right?** Open Data Reader Setup, select the data source, click **Edit Data Input**, and check the File Path.

7. Content Play Log

7.1 Viewing a Play Log Report

A play log records all of the content played on your video display, listing the file name, start time, duration, and other details. There is a separate play log for each day.

- 01 Select *Tools > Play Log...* from the main menu. The Logging Dialog opens (Figure 7-1).

- 02 Use the Display dropdown to view all displays' reports together, or one display at a time.
-
- 03 Check the box next to each play log you want to view — you can load several at once — and click **LOAD PLAY LOG**.

7.2 Exporting to a File

Exporting a play log gives you a receipt to share with advertisers as proof their content was played on your video display.

- 01 Click **EXPORT TO FILE** and save the play log as a CSV (comma separated value) file. A CSV opens in a text editor or Microsoft Excel.
-
- 02 Click **CLOSE** when you are finished viewing and exporting play logs.

8. Display Client

8.1 Client Control Panel

The Display Client (Figure 8-1) has the controls below. On a single system setup you may see fewer of them here, because some are located in the Director's user interface instead.

CONTROL	WHAT IT DOES
Bright Adjust	Slider that adjusts the brightness of the video display.
Reset Bright	Resets brightness to the default value (50%).
Contrast Adjust	Slider that adjusts the contrast of the video display.
Reset Contrast	Resets contrast to the default value (50%).
Stop Life Monitor	Life monitor keeps the client open — it reopens the client if the computer reboots or the client is closed. To close the client on purpose, click Stop Life Monitor, then Exit. You must reopen the client for the video display to show any content.

CONTROL	WHAT IT DOES
Refresh	Closes and reopens the display client. Resets the video display to black.
Fullscreen	Makes the display client go full screen on your computer monitor. Double click the full screen display to return to your settings.
Properties	Changes the pixel matrix and other video display settings. Do not change these settings without talking to the Nevco service team. On a single system setup, this control is in the Director.
Exit	Exits the display client. No content shows on the video display until the client is reopened.
VSB Props	Changes how indicators (such as possession, end of period, or bonus) look on your virtual scoreboard (VSB).
Vid Capture	Sets up your live video feed. On a single system setup, this is in the Director's settings.

9. Content Guidelines

9.1 Content Creation Guidelines

Designing content for a digital display is different from designing for print — different rules apply to creating an effective message.

Make Text Large

- Outdoor displays should be simple, clear, and easy to read

Bold Text – Making Your Display More Legible

- Use both upper and lower case letters
- Use sans-serif fonts – these provide the best readability
- From a distance, thin lines begin to fade and very heavy fonts blur together
- Add a dark, thick line around text to separate it from the background

Convey ONE Message or Idea at a Time – Less is More!

- Keep messages or images to a minimum
- Convey ONE thought to your target audience

Short and Sweet – Keep the Words Short for Faster Comprehension

- Use no more than ten words on a billboard, including logo and product tag line

- It is recommended that seven or fewer words are used for the headline

Use Bright, Bold Hues and Limit White Backgrounds

- Use the primary colors – red, yellow, and blue
- Do NOT use complementary colors, like orange and green, together
- Use contrasting color combinations – best for viewing from far distances

Choose Images Carefully

- It is recommended that three or less visual images are used
- Example: one image, one logo, and one headline
- Use images that correspond to the size (and aspect ratio) of your display for optimal performance
- If occasional delays, lock-ups, or crashing are experienced, try resizing your media to be smaller

No White Space

- Outdoor digital displays are NOT like printed media; what looks good on paper may not be a good digital display – a full white screen may illuminate the stadium more than the lighting and be distracting to players and fans

9.2 Accepted Media Types

CAUTION

Use a supported codec. Video in an unsupported codec may be rejected by Display Director or could lock up the display output.

FILE FORMAT	SUPPORTED CODECS
.avi	Xvid, MPEG-4, DivX, ffdshow
.mov	H.264, Sorensen 3, Animation
.wmv	Windows Media Video 9
.mp4 / .mpg	MPEG-4 Video File

Image File Types: .jpg, .png, .bmp

Video File Types: .avi, .mov, .wmv, .mp4, .mpg, .spq, .gif

Audio File Types: .mp3, .m4a, .wav, .apl

9.3 Recommended File Sizes

- **File resolution:** For best performance, make images and videos **twice the pixel matrix** of your video display in both height and width — e.g. for a 360x480 video screen, produce content at 720x960 or larger. This gives Display Director enough pixels to scale content for zoning such as lower thirds and ad banners. Resolutions above **1920x1080 are not supported**.
- **File encoding:** The optimal video format is an **.MP4 file with H.264 + MP3 encoding**.

9.4 Accepted Video Input Formats

Display Director accepts the following live video formats through the hardware interfaces listed.

HD VIDEO STANDARD	FORMATS
720p	720p50, 720p59.94, 720p60
1080p	1080p24, 1080p25, 1080p29.97, 1080p30, 1080p50, 1080p59.94, 1080p60
1080PsF	1080PsF23.98, 1080PsF24, 1080PsF25, 1080PsF29.97, 1080PsF30
1080i	1080i50, 1080i59.94, 1080i60

HARDWARE INTERFACE	INPUTS
SDI video input	1 x 10-bit SD/HD/2K/4K — supports 6G 4:2:2 and 3G 4:4:4
HDMI video input	1 x HDMI type A connector

10. Troubleshooting Guide

Using This Guide

This guide covers the most common issues with single display systems, multiple display systems, and virtual scoreboards. It assumes the hardware is connected properly and that you are familiar with the rest of this manual.

- To check whether you are running a single or multiple system, see [section 2.12](#).
- "Director" and "client" are explained in [section 2.1](#).
- Even if a solution doesn't fix your issue, each one is a good check that your system is set up correctly.
- If your problem isn't covered here, contact the Nevco service department.

10.1 Single Display System

A single display is one that only runs on one computer, meaning the director and the client are on the same computer. Following are common problems and solutions that can occur within a single display system.

10.1.1 Preview doesn't match the display

Problem: The preview window does not match the display, the message center doesn't reflect the button presses, and I can see the "display client" on my director computer.

Solution: The client is not on the correct screen. The client must be on the screen that is your message center. To solve this, a few methods can be used:

- i. Right click on your desktop and select "Screen Resolution" or "Display Settings." A dialog window will open; ensure that the "Multiple displays" drop down box is set to "Extend these displays." The Windows + P shortcut can also be used to change this setting, select "Extend."
- ii. Now if you still cannot see your content, you may have to try changing your main display (this can be found in the same dialog window mentioned above.) A restart of the computer may be needed to see the changes. Also, Windows + Arrow Key will move programs between displays.

- **iii.** Another fix that should be more permanent if the previous fixes are not working is to go to *Tools > Edit Display Properties* in Display Director, and in the dialog box, you will see the "Multiple Monitor Settings," as seen in Figure 10-1. Select the Monitor that is not currently selected, ensure that the "Director and Client on same monitor" is not selected, and then save your changes. You will need to close and reopen Display Director and it should open as expected.

10.1.2 Error on opening, client won't open, or red status light

Problem: An error message may pop up on opening, the client will not open, or the status light by the display preview will be red.

Solution: It is possible that a setting was not set correctly upon installation. To edit these you will need to look at a few files. On your computer, navigate to `C:\NEVCOFiles\Settings`. Here you will see a file, DisplayInfo. Right click and select edit for this file. Find the line that says `X`. X will either be 0 or 1... for a single display setup, ensure that it is 0 or change to 0 and save. Now reopen Display Director; it should be working.

10.1.3 Live video input not working

Problem: The live video input is not working.

Solution: The live video may not be set up to work, or may be set up incorrectly. See the following:

- **i.** Check that the video format is set properly, see [section 2.9](#) on setting up your live stream
- **ii.** The video input is connected to the wrong port. This can be common with a composite signal connected to the HD-SDI input on the DeckLink Studio 4k cards because they can both use coaxial BNC connectors. Figure 10-2 shows the proper place to connect a composite signal, from a TC-40 for example. Note that if you are using HDMI input, the bottom port is the input – in line with the SDI inputs on the main PCI card shown below.

10.2 Multiple Display System

A multiple display is one that runs on two or more computers, meaning that the controlling computer is the director, and the other computers (video boards) are running as clients. Following are common problems and solutions that occur within a multiple display system. If your answer is not below, please check the single display issues as some of them overlap.

10.2.1 Can't send files to the client

Problem: I cannot send files to my client. When attempting to send files, the progress window will show up but it will not show any progress.

Solution: The computers have not been connected correctly. One of the following should be a solution to this problem:

- i. Follow the path: *Control Panel > Network and Internet > Network and Sharing Center > Change advanced sharing settings >* and ensure that "network discovery" and "file and printer sharing" are both turned ON and "password protected sharing" is turned OFF.
- ii. There are files that must be "shared" on your network. On each computer (director and client computers), navigate to the `C:\` drive and locate the "NEVCOFiles" folder. Right click on this folder, and go to "Give access to" and select "Specific people..." Now, as seen in Figure 10-3, select "Everyone" in the drop down and click add, make sure the permission level is Read/Write, and click Share. Complete this process with the `C:\NEVCOLogs` folder as well. Make sure this is done on the director computer and all the client computers. You should now be able to send files to the client computer(s).
- iii. A check to ensure you are connected properly is that after "sharing" the NEVCOFiles and NEVCOLogs folders, you should be able to access all of your computers from any of your computers. A good test for this is to go to your Windows "File Explorer" and type in `\\192.168.10.10` (or the IP address of any computer other than the one you are using), and here you will see shared folders from this computer. If the NEVCOFiles and NEVCOLogs folders are there, you should be connected properly. Ensure this is true for all the

computers in the system. If this is not the case, please review this whole solution.

10.2.2 Display Client appears on the Director computer

Problem: I see a Display Client on my Display Director machine. There should only be Display Director.

Solution: A setting was not set up correctly. On the director computer, navigate to `C:\NEVCOFiles\Settings` and right click to select edit on the DisplayProps.xml file. We will be looking at the SignMode line, `x`. X can be 0 or 1. For a multiple display director, ensure that SignMode is set to 1 and if not, change it and save the file. Exit and reopen Display Director.

10.2.3 Files sent, but buttons don't show on the display

Problem: I have a green light on my preview and I was able to send files... However, when clicking a button, it will not show up on my message center.

Solution: A setting was mistakenly changed. Follow these steps:

- 01 On the client computer, navigate to `C:\NEVCOFiles\Settings` and right click to select edit on the DisplayProps.xml file. We will be looking at the SignMode line, `x`. X can be 0 or 1. For a multiple display client, ensure that SignMode is set to 1 and if it not, change it and save the file. Exit and reopen the display client. This will have to be done for each client computer that is not operating.

- 02 Make sure that the display name matches on both computers. In the DisplayInfo.xml (director computer) and the DisplayProps.xml (client computer) is where you will find the display name, `DisplayNameHere`. Change these lines in these files so that they match. Ensure to restart both programs and then to send files again.

- 03 If the buttons are still not working or the SignMode settings were correct, proceed to problem 10.2.4.

10.2.4 Buttons still not working after 10.2.3

Problem: I did problem 10.2.3, but the buttons are still not working.

Solution: If the buttons are still not working or the SignMode settings were correct, there may be a problem with the subnet masks of your computers.

- 01 The broadcast address of the network must be 255. This is a hardcoded setting of Display Director and to get your system to operate correctly, you will need to change your network settings so that the broadcast address of your network is 255. This is standard, but it can sometimes be set otherwise.

- 02 The subnet masks of each computer must match. To find the Subnet Mask of the computer, open the command prompt (can use search bar to open this in Windows). Type "ipconfig" and hit enter in the command prompt. Below the IPv4 address, there will be a Subnet Mask line. The subnet mask should look like 255.255.255.0. This must be checked for each computer. If it does not match (for example, it is 255.255.0.0), it will not work. The subnet mask must be changed.

- 03 Follow the path: *Control Panel > Network and Internet > Network and Sharing Center*. Now under "View your active networks" there will be something like "Connections: Ethernet 2." Click on the "Ethernet," this will bring up a dialog window. In this dialog window, click Properties.

- 04 Now you will see a list; double click on "Internet Protocol Version 4 (TCP/IPv4)." This will bring up the dialog window seen in Figure 10-4 on the following page (may not look exactly like the figure, but it will be similar.)

- 05 Now that this window is open, select "Use the following IP address:" and type in the IP address that is associated with the computer you are on. Set the subnet mask to match the other computers, as seen in Figure 10-4. After this, you can hit OK and exit out of the windows that were opened. Make sure to change all computers' subnet masks to

match each other. IP addresses should be kept the same as before and should NOT match across computers.

10.3 Virtual Scoring

Virtual scoring is the ability to create a scoreboard on an LED display. This can be done on a single or a multiple display system. When setting up a VSB for a multiple system, the controller is connected to the client computer. Setting up the virtual scoreboard (or VSB) has a few points of failure. This section assumes that Display Director is working normally for all other aspects and features. Following are common problems and solutions for virtual scoring.

10.3.1 Virtual scoreboard is blank

Problem: My virtual scoreboard is not working. The screen is blank.

Solution: There are many different reasons why this may be. Check all of the solutions in this list (in order):

- i. The VSB Decryptor should be set up. There will be an icon on your desktop that shows three colored spheres (blue, green, and orange). Click on this and now there will be an icon in your status bar (lower right corner) with the same image, see Figure 10-5. Double click the spheres shown in your status bar. This will pull up a window, seen in Figure 10-6; In this window, ensure that the Server Type, Input File Path (FinishLynx), MPC Model Code (MPC), and COM Port (MPC) are all correct and match your system setup. Now, the Decryptor Output File Path must be correct. This output file path should be in the NEVCOFiles\NEVCOVSB and then the corresponding data type. Click "Add Server," and now the gears should be in your status bar, as seen in Figure 10-5.
- a. If the gears are in your status bar, take a look at them – if the symbol next to them flashes between a green "play" symbol and a red "record" symbol, the MPC is sending data and the Decryptor is receiving data. There may also be a blue "pause" symbol; this is okay as long as no data is changing at the moment. When data is changed, it should no longer show only the blue "pause"

symbol, though. You may have to double check the Decryptor settings if this is not as described.

- **b.** Another thing to look at is the actual output file. Go to `C:\NEVCOFiles\NEVCOVSB` (on the director computer if single mode and on the client computer if in multiple mode). Now choose the data being used for the VSB. There should be a Nevco MPC0.xml file. Take a look at the last date and time the file was modified (make sure you are in "details" view). If you are feeding it data, it should be the current date and time.
- **c.** If using a multiple display setup, the Output File Path in Decryptor must be pointing to the client computer. This is done by setting the file path to be something like `\\COMPUTER\NEVCOFiles\StatCrew\GAME.xml` and replacing COMPUTER to be the client's computer name or IP address and replacing GAME to be the file name. For a MPC the path will look something like this: `\\COMPUTER\NEVCOFiles\NEVCOVSB\NevcoMPC\Nevco MPC0.xml` where the 0 changes based on how many output files are setup in Decryptor.
- **ii.** Ensure that the Data Reader Setup includes your data reader. See section 6 of this manual for more information on the Data Reader and setting it up. Make sure that the output file path for Decryptor is the input file that the data reader is setup to read.
- **iii.** It is possible that virtual scoreboards are disabled. To enable, open Display Director, go to the main menu and find "Tools," from here select "Edit Display Properties." Now the window in Figure 10-7 will open. In this window, there is a section labeled "Scoreboard Options," Underneath, Enable Stats must be checked and Scoreboard Data Source must be set to Nevco MPC; other virtual scoring methods will still work. For a multiple system, this also should be checked and changed if incorrect on the client computer. To do this, go to the panel in the bottom left of the client computer and click "PROPERTIES". This will pull up a dialog similar to Figure 10-7. Now, virtual scoring should be enabled.
- **iv.** The CG Overlay should be checked that the correct values are being used. When adding a data item, there is an options window as seen in Figure 10-8. For StatCrew, ensure that the Data Source is StatCrew and that the rest of the

fields are selected so that the data you are trying display is correct. Keep in mind that if the Data Reader is setup to read a file, that file needs to have the Data Field's information, otherwise it will not show up. If using FinishLynx, HyTek, or Nevco's MPC, the Data Source should be set to NEVCO. After this, the Type must be selected accordingly. The type "VSB" is for using a Nevco MPC. The last two fields are now what you are trying to display on the VSB. Keep in mind that if using the Data Field of PlayerH or PlayerV, the player number must be set in the lower left corner of the CG Overlay Creator user interface.

- **v.** Ensure that the program you are using to input the data (MPC, StatCrew, FinishLynx, HyTek, or Stalker Radar) is turned on and operational or that the file being edited is saved. If using the Nevco MPC, ensure that the correct sport model is selected on the MPC.
- **vi.** Make sure that the CG Overlay is applied to the button that you are using.

10.3.2 Client data only updates after Send Files

Problem: On a multiple system setup, there is data displayed on the client, but it will not update unless the "send files" icon is used.

Solution: The VSB Decryptor is not set up to output the file in the correct location. It is setup to output to the director computer and instead of the client computer. Review problem 10.3.1, sub-bullet i.c.

10.3.3 Virtual scoreboard shows incorrect data

Problem: There is data on my VSB, but it is incorrect.

Solution: First check that your problem does not fall under problem 10.3.1. If it does not, this means that there must be one setting somewhere that is not correct. The possible settings that you can check are:

- **i.** If using a MPC, check the sport model being used on the MPC and check the model code that is being used on the Decryptor software. Review problem 10.3.1, bullets i and v.

- **ii.** Make sure the CG Overlay has the correct information, and possibly player number. Review problem 10.3.1, bullet iv.
- **iii.** Double check that the correct CG Overlay was added (possibly opening CG Overlay Creator and verifying the data, not just the file name). Review problem 10.3.1, bullet vi.

10.3.4 Connecting FinishLynx ResultTV

Question: How do I connect FinishLynx ResultTV to Display Director?

Solution: ResultTV creates a full screen track scoreboard on a laptop and connects to Display Director's live video input. To show the track scoreboard on the video display simply connect it to the live video input capture card and click the **GO LIVE** button. The following diagram illustrates the FinishLynx integration: