

# QUICK START GUIDE AND USER MANUAL

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VWP-FLEX-951, VWP-FLEX-961, VWP-1182 SERIES

# RADIAN CHASSIS AND MODULES

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# TABLE OF CONTENTS

<b>QUICK START GUIDE</b> .....	<b>5</b>
Step 1: Keyboard and Mouse .....	5
Step 2: Connect Expansion Chassis (Optional) .....	5
Step 3: Connect to a Network (Optional).....	6
Step 4: Connect Input Source.....	6
Step 5: Connecting a Control Screen.....	7
Step 6: Powering up the System .....	7
Step 7: Windows® 10 Setup .....	8
Step 8: Display Configuration .....	8
Step 9: Radian Video Video Wall Manager Software (Optional) .....	13
Step 10: Video Wall Manager (Optional) .....	16
<b>1. OVERVIEW</b> .....	<b>17</b>
1.1 Introduction.....	17
1.2 Systems .....	17
1.3 How the User Guide is Organized .....	17
1.4 Symbols.....	17
1.5 Terminology and Definitions .....	17
<b>2. SAFETY</b> .....	<b>19</b>
2.1 Safety Precautions.....	19
2.2 Rackmount Safety Instructions.....	20
2.3 Unpacking and Initial Inspection.....	20
<b>3. GENERAL</b> .....	<b>22</b>
3.1 Overview.....	22
3.2 Radian Flex Chassis.....	22
3.3 Associated Input/Output Cards and Related Products .....	23
<b>4. HARDWARE</b> .....	<b>24</b>
4.1 Chassis.....	24
4.2 Single-Board Computers (SBCs).....	25
4.3 Backplanes.....	26
4.4 Backplane LEDs.....	27
<b>5. CABLING</b> .....	<b>29</b>
5.1 Connecting the Keyboard and Mouse .....	29
5.2 Connecting an Expansion Chassis .....	29
5.3 Connecting to a Network.....	31
5.4 Connecting Input Sources.....	32
5.5 Connecting a Control Screen .....	33
5.6 Connecting Power Cables .....	34



# TABLE OF CONTENTS

<b>6. OPERATION.....</b>	<b>35</b>
6.1 Switching On .....	35
6.2 Initial System Boot on Delivery (Windows® 10) .....	36
6.3 Display Driver Configuration Tool (DDCT) .....	38
6.4 Opening Radian Standard Video Wall Software (Optional) .....	50
6.5 Opening Video Wall Manager (Optional) .....	52
6.6 Displaying Video Captures.....	52
<b>7. SOFTWARE.....</b>	<b>54</b>
7.1 Video Wall Manager (Optional) .....	54
7.2 Radian Standard Video Wall Software (Optional) .....	56
7.3 Video Wall Controller Software (Optional) .....	60
7.4 Video Capture Cards Application (Optional) .....	62
7.5 Software Utilities.....	64
<b>8. TROUBLESHOOTING.....</b>	<b>66</b>
8.1 Frequently Asked Questions (FAQs) .....	66
8.2 Technical Support .....	68
<b>9. MAINTENANCE.....</b>	<b>69</b>
9.1 Filter Maintenance .....	69
<b>10. SPECIFICATIONS.....</b>	<b>70</b>
10.1 Technical Drawings .....	70
10.2 Technical Specifications - VWP-FLEX-961, VWP-FLEX-962/VWP-FLEX-962X .....	71
10.3 Technical Specifications - VWP-FLEX-1182/VWP-FLEX-1182X,/VWP-FLEX-1182DX .....	72
10.4 Technical Specifications - VWX-2090 .....	73
10.5 Technical Specifications - VWX-2110 .....	73
10.6 Technical Specifications - 9-Slot G3 .....	74
10.7 Technical Specifications - 11-Slot G3.....	76
<b>11. ADVANCED USERS .....</b>	<b>79</b>
11.1 Video Wall Manager Command Line Interface .....	79
11.2 Radian Standard Video Wall Software - Command Line Interface .....	93
11.3 Verify RAID .....	97
11.4 Backplane Slot Ordering.....	98
11.5 Installing Additional VGC-HDMI-2-4 and VGC-HDMI-2K-4 Cards .....	99
11.6 Installing CODEC Packs to Play Video .....	100
11.7 Firmware Updates .....	100
11.8 Restoring to Factory Settings.....	100



# TABLE OF CONTENTS

<b>APPENDIX A. REGULATORY INFORMATION .....</b>	<b>102</b>
A.1 FCC Statement.....	102
A.2 CE and RoHS2.....	102
A.3 NOM Statement.....	103
<b>APPENDIX B. DISCLAIMER/TRADEMARKS .....</b>	<b>104</b>
B.1 Disclaimer .....	104
B.2 Trademarks Used in this Manual.....	104



## QUICK START GUIDE

### STEP 1: KEYBOARD AND MOUSE

Connect Keyboard and Mouse to convenient USB Ports.

USB Ports are located on both the front and rear panels of the system. If the intention is to mount the Radian Flex wall controller in a rack, it may be more convenient to use the USB ports on the front for easy access.

- ♦ (4) external USB 2.0 ports (2 front panel, 2 rear panel)
- ♦ (2) external USB 3.0 ports (rear panel)

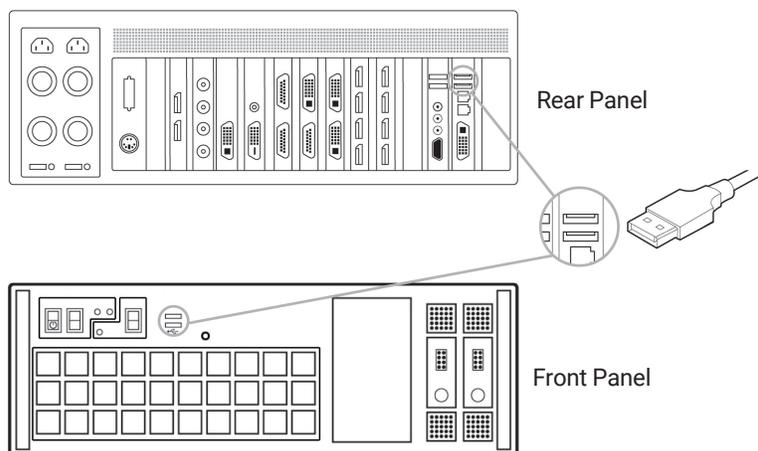


FIGURE 1.

### STEP 2: CONNECT EXPANSION CHASSIS (OPTIONAL)

A Radian Flex Expansion Chassis may have been purchased as part of a large video wall system or ordered separately. Connect the Host Link card in the main system to the Slave Link card in the expansion chassis using the Extension Cable G3. The Extension Cable G3 is packaged and shipped with the Radian Flex Expansion Chassis.

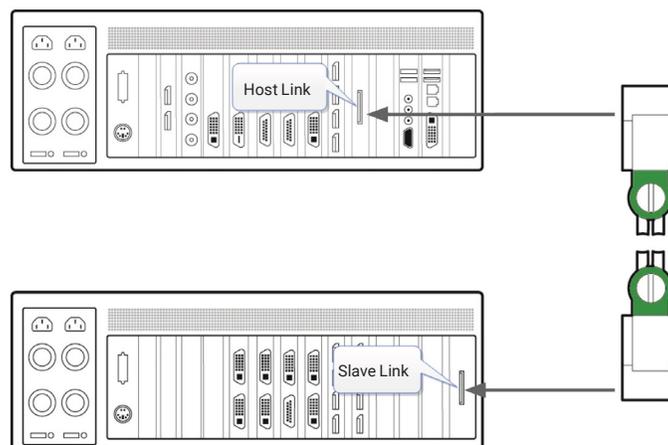


FIGURE 2.

For connecting Optical Expansion products, consult the User Guide located later in this document.

## QUICK START GUIDE

### STEP 3: CONNECT TO A NETWORK (OPTIONAL)

If the wall controller is to be used over a network, connect the controller to a network point (cables not supplied) using one of the LAN connectors on the rear panel.

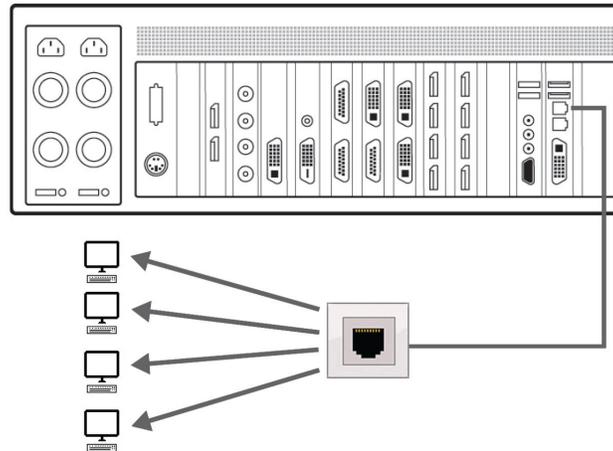


FIGURE 3.

### STEP 4: CONNECT INPUT SOURCE

As each wall controller is custom built, the number and type of video inputs will differ from system to system. If you have purchased a wall controller with video inputs, the input connectors are located on the rear panel as shown in the example below:

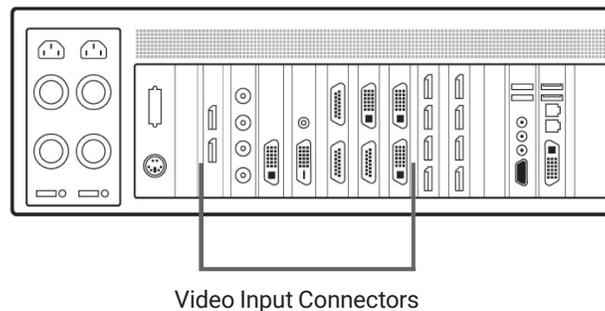


FIGURE 4.

Connect the input sources to the relevant video input connectors; cables may be supplied for some inputs, see content list for details.

# QUICK START GUIDE

## STEP 5: CONNECTING A CONTROL SCREEN

Your wall controller is configured to use a control screen connected to the systems' internal graphics device before leaving the factory. Connect the control screen to the motherboard graphics output connector on the rear of the wall controller. A control screen is initially required to set up the system including the operating system (Windows® 10).

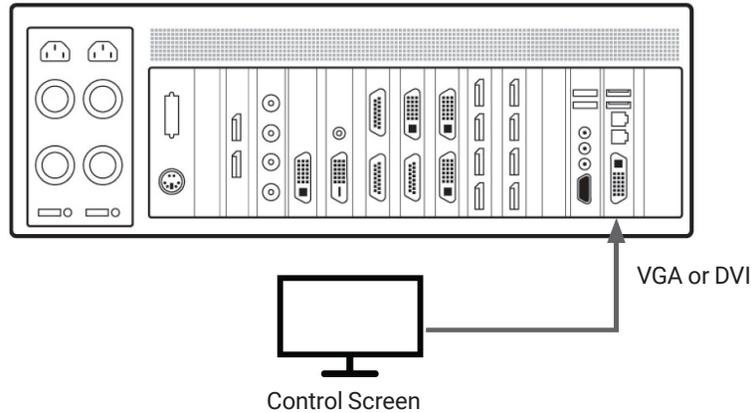


FIGURE 5.

## STEP 6: POWERING THE SYSTEM

Radian Flex wall controllers are supplied with either a Redundant Power Supply Unit (RPSU) or an ATX power supply. An RPSU power supply requires two power cables and an ATX supply requires one power cable. All power cables are supplied with your wall controller.

1. Connect power cable(s) to the wall controller then plug into a main power supply.
2. Switch on the power supply units.

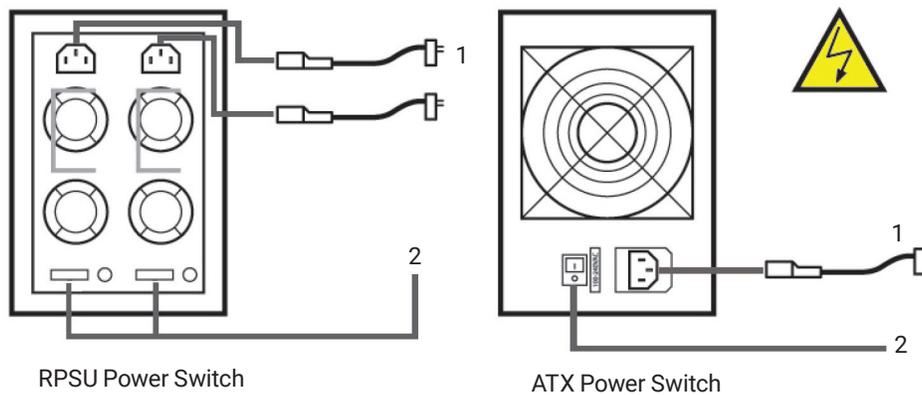


FIGURE 6.

## QUICK START GUIDE

3. Switch on the system using the power button on the front panel.

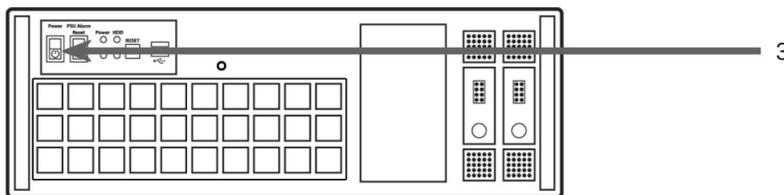


FIGURE 7.

NOTE: If you have a Radian Flex Expansion Chassis connected to the main unit (Step 2), the power supply units on the expansion chassis should be switched on prior to the main wall controller. There is no requirement to switch on the expansion chassis on the front panel (3).

### STEP 7: WINDOWS® 10 SETUP

Once the system has been built and configured in our factory, the operating system is resealed, and when you switch the system on for the first time, the operating system setup begins. You will be prompted to enter information to set up the Windows 10 operating system.

There is no requirement for users to activate Windows 10, activation is done automatically. An internet connection is required for the automatic activation.

### STEP 8: DISPLAY CONFIGURATION

Once the Windows 10 setup is complete, the wall controller will reboot and the control screen will show a Windows desktop displaying the Display Driver Configuration Tool (DDCT). The DDCT will guide you, step-by-step, through the configuration of the graphics outputs, enabling you to quickly create one or more video walls.

On the final stage of the configuration, the DDCT will recommend the optimum way to connect your wall controller to your video wall displays.

A full description of the DDCT can be found in the User Guide located later in this document.

It is recommended that you carefully read the instructions on each page of the wizard. To begin your wall configuration, click on “Start Wizard.”

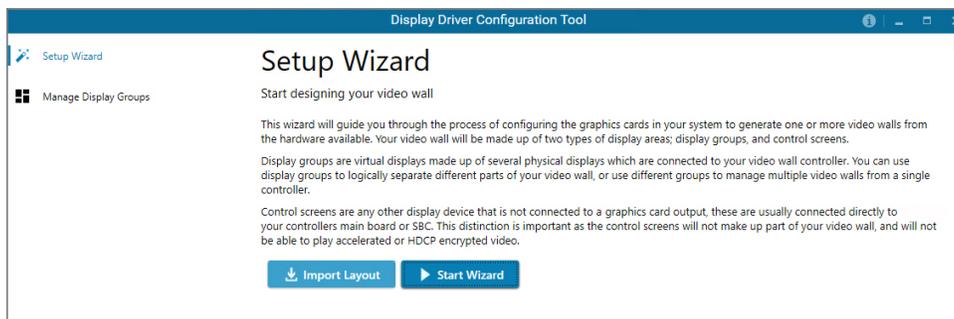


FIGURE 8.

# QUICK START GUIDE

Select the type of displays being used on your wall:

- ◆ Displays With Bezels – Monitors, TVs and DLP Cubes
- ◆ Overlappable Displays – Projectors
- ◆ LED Displays

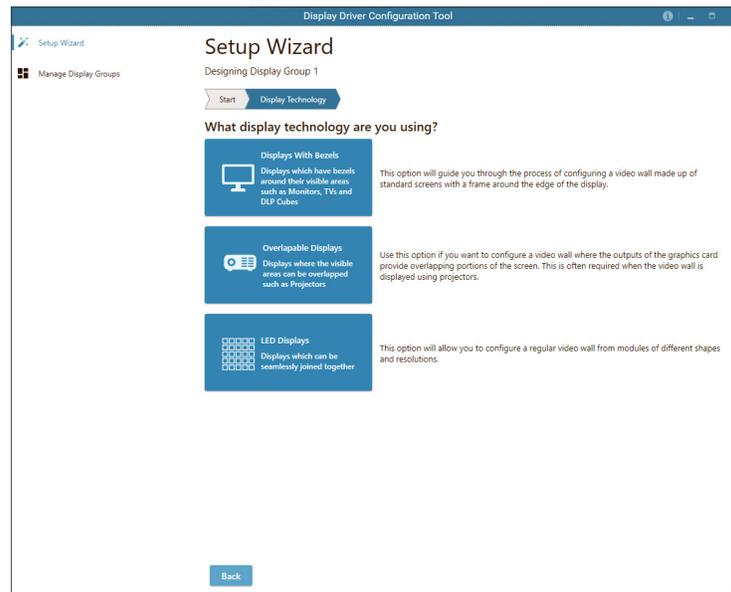


FIGURE 9.

Click on "Continue."

The tool will then display a configuration page for the type of display you selected.

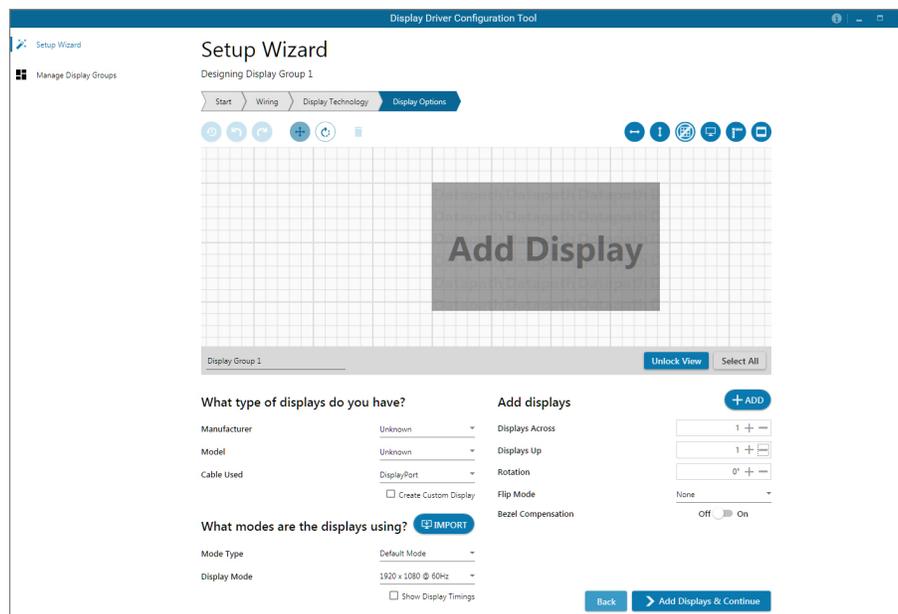


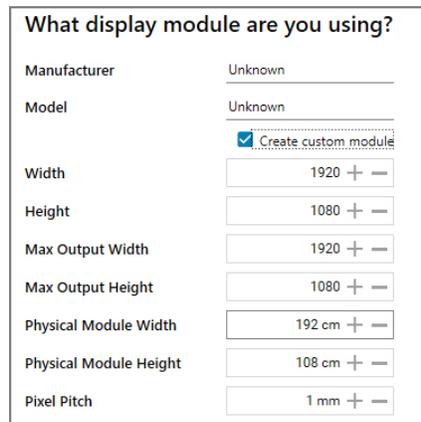
FIGURE 10.

## QUICK START GUIDE

### What Types of Displays do you Have?

Use the “Manufacturer” and “Model” drop-down lists to select the displays you are using for your wall. If the wall consists of different displays, select each one in turn to configure the type of display. The DDCT has an extensive database of displays; however, if your display is not contained in the list, you can input the details manually by selecting “Create Custom Display.”

We strongly recommend that you take measurements from the display manufacturer’s specifications if available.



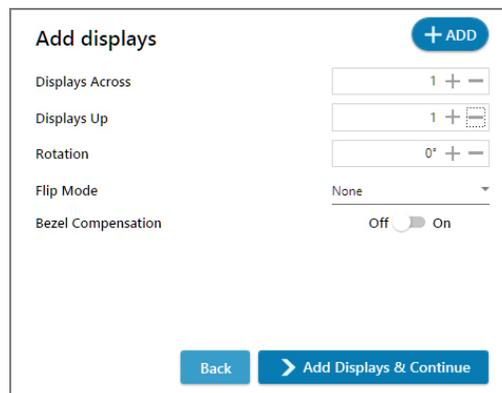
The screenshot shows a configuration form titled "What display module are you using?". It includes the following fields and options:

- Manufacturer: Unknown
- Model: Unknown
- Create custom module
- Width: 1920 + -
- Height: 1080 + -
- Max Output Width: 1920 + -
- Max Output Height: 1080 + -
- Physical Module Width: 192 cm + -
- Physical Module Height: 108 cm + -
- Pixel Pitch: 1 mm + -

FIGURE 11.

### Add Displays

Add Displays is available for displays with bezels or overlappable displays. Use the “Displays Across” and the “Displays Up” to create your Display Group. Once created, configure the displays using “What Type of Displays Do You Have?” When using overlappable displays, “Display Overlap” becomes available, enabling you to select a percentage of overlap between displays.



The screenshot shows a configuration form titled "Add displays". It includes the following fields and options:

- 
- Displays Across: 1 + -
- Displays Up: 1 + -
- Rotation: 0° + -
- Flip Mode: None
- Bezel Compensation: Off  On
- 

FIGURE 12.

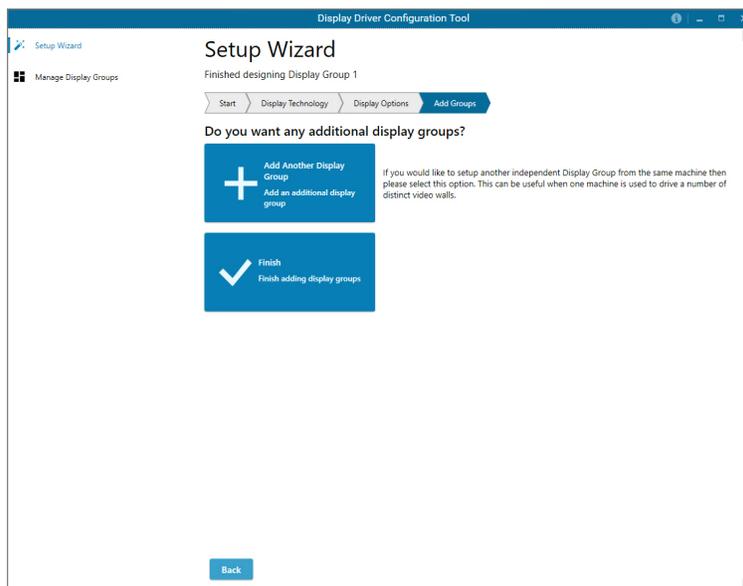


FIGURE 13.

At this stage of the setup, you can choose to create another independent display group from the same system; this would be considered if one machine will be used to drive a number of separate video walls. See the User Guide section for more details.

If another display group is not required, click on “Finish” and the following page is displayed:

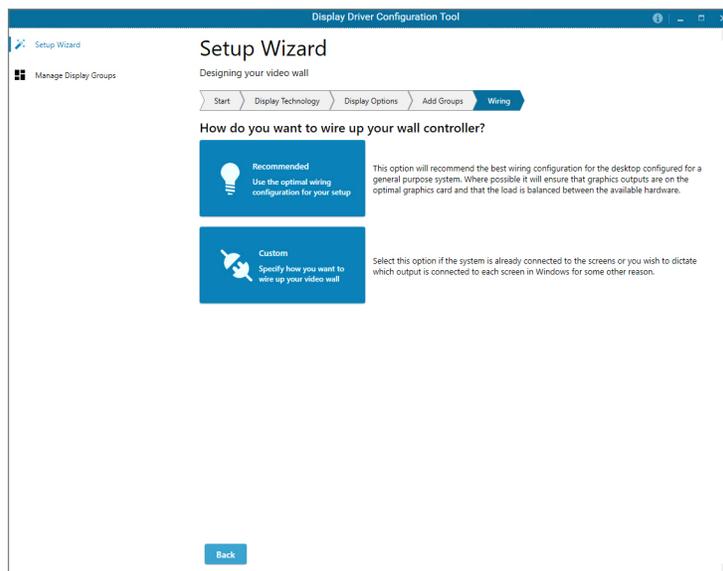


FIGURE 14.

The DDCT can recommend the best wiring configuration for the displays and your system, ensuring the load is balanced between the graphics hardware. Click on “Recommended” for the optimal configuration for your system.

(If you want to manually wire your system and decide for yourself which output is connected to which display, click on “Custom.”)

You will be next be presented with the Summary page:

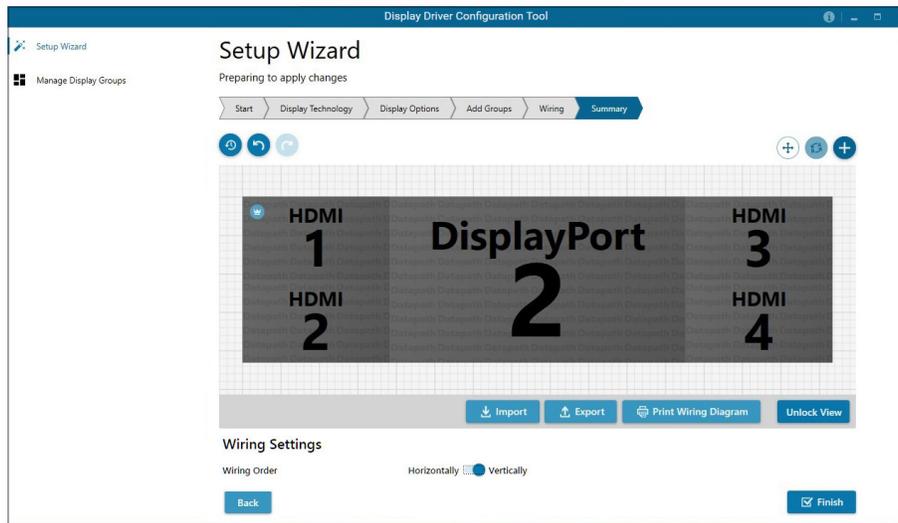


FIGURE 15.

If you chose to have the DDCT configure your wiring, this page will display the recommended display connections, as shown above. Connect each display to the corresponding output connector on the rear of the wall controller.

NOTE: For help, contact Black Box Technical Support at 877-877-2269 or [info@blackbox.com](mailto:info@blackbox.com) for details.

To manually select the outputs, right-click on the display group and select "Edit." You can then select each individual display and allocate your preferred output. Right-click on a selected display to reveal the list of outputs available:

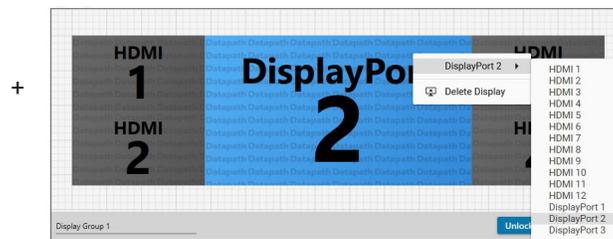


FIGURE 16.

When all outputs have been allocated by either "Recommended" or "Custom," click on "Finish." You will then be prompted to save the changes to your video wall and restart your system. When restarted, the Windows® Desktop will be displayed across the wall.

You can access the configuration tool at anytime if you want to make changes. Right-click on the desktop and select Display Driver Configuration Tool from the menu.

## QUICK START GUIDE

### STEP 9: RADIAN STANDARD VIDEO WALL SOFTWARE (OPTIONAL)

Before opening the Radian Standard Video Wall Software Client interface, you may need to start the Radian Standard Video Wall Software Server if it does not start automatically. The Server icon is displayed in the System Tray.

Server icon → 

If the Server fails to start automatically, start the Server by clicking on it in the “All Programs” menu. The Radian Standard Video Wall Software Client will only detect servers that are running.

 Start | All Programs | Radian Standard Video Wall Software - Server

Open the Radian Standard Video Wall Software Client

 Start | All Programs | Radian Standard Video Wall Software - Client

The Radian Standard Video Wall Software - Client

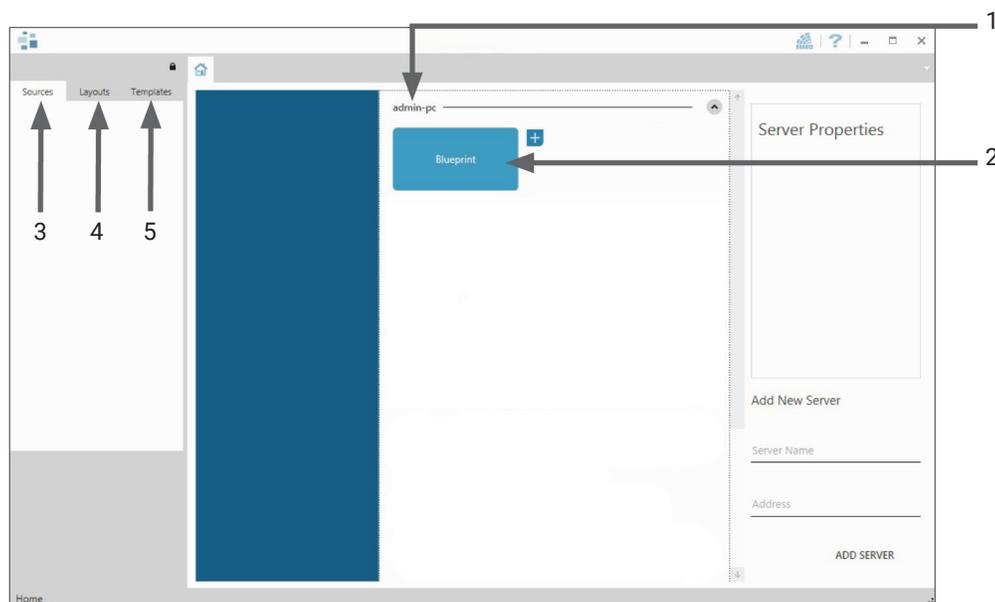


FIGURE 17.

1. Indicates the server you are connected to.
2. A representation of the display wall associated with the server.
3. Sources Tab - Displaying all the sources connected to the server for use on your display wall.
4. Layouts Tab - Use to save, recall and share display wall layout configurations.
5. Templates Tab - Use templates to assist in the design of specific display wall layouts.

Click on the display wall representation (2) as shown on the previous illustration to open the display wall tab.

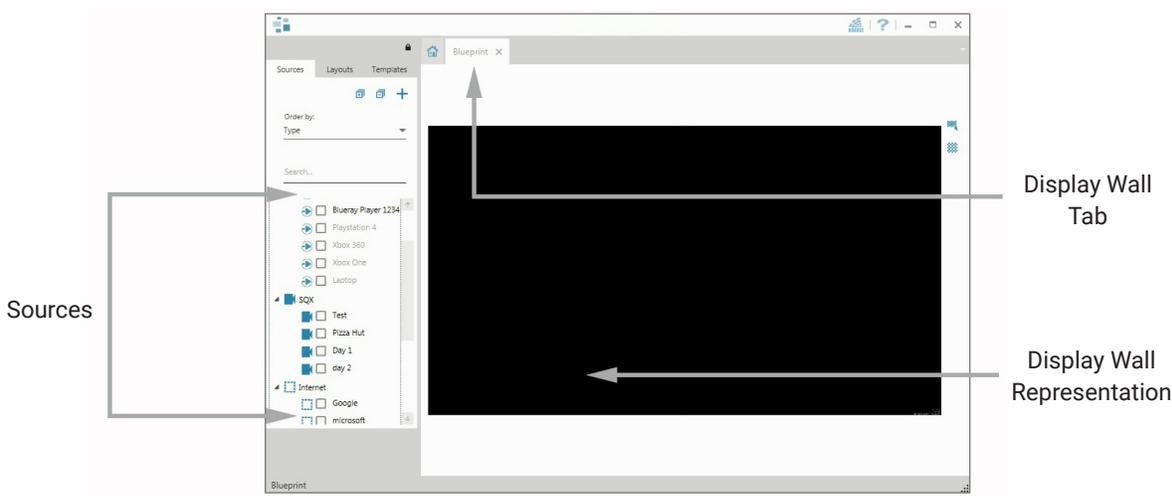


FIGURE 18.

When opened, the display wall tab shows a live representation of the physical wall and the sources available to display on it. To place a source on the video wall, simply click on the required source in the sources tab and drag it onto the display wall representation. (NOTE: It is not possible to drag Application sources, double-click to open.)

The application help file contains information explaining how multiple sources can be selected, how to use and create templates and how to save, recall and share layout files.

The Radian Video Wall Software - Security Administration Client (Only Available with Radian Video Wall Software)

A Radian Video Wall Software serial dongle must be inserted into a vacant USB port. If the dongle is removed or swapped, the Security Client will not open and an error message is displayed, so do not remove the dongle.

If you have purchased Radian Video Wall Software, the license dongle is located in the accessories box.

 Start | All Programs | Radian Video Wall Software - Security Administration Client

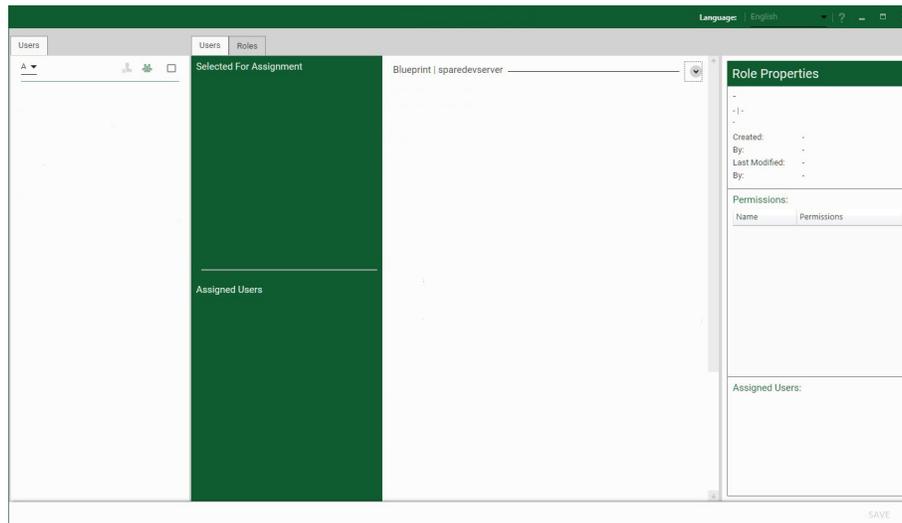


FIGURE 19.

The Radian Video Wall Software - Security Administration Client allows Administrators to assign specific users to roles on a wall-by-wall basis. For example, a user can be assigned a role allowing unrestricted access on one wall but assigned a role on another wall that only allows the opening of pre-determined layouts.

Before using Security Client for the first time, the SecurityOnOff.exe program must be running to enable security protection for the application. To manually run the SecurityOnOff.exe, make sure you are logged into Windows® with Administrator Rights.

Locate and double click on the SecurityOnOff.exe file:

 Program Files\Radian Video Wall Software\ Security Server\SecurityOnOff

The Radian Video Wall Software Security Application help file contains information on how to:

- ◆ Import users from the Windows Active Directory into the database
- ◆ Create and edit roles
- ◆ Assign permissions to providers, layouts and sources, giving specific roles access to them
- ◆ Assign roles to walls

# QUICK START GUIDE

## STEP 10: VIDEO WALL MANAGER (OPTIONAL)

Start | All Programs | Video Wall Manager | Video-Wall-Manager-My Computer

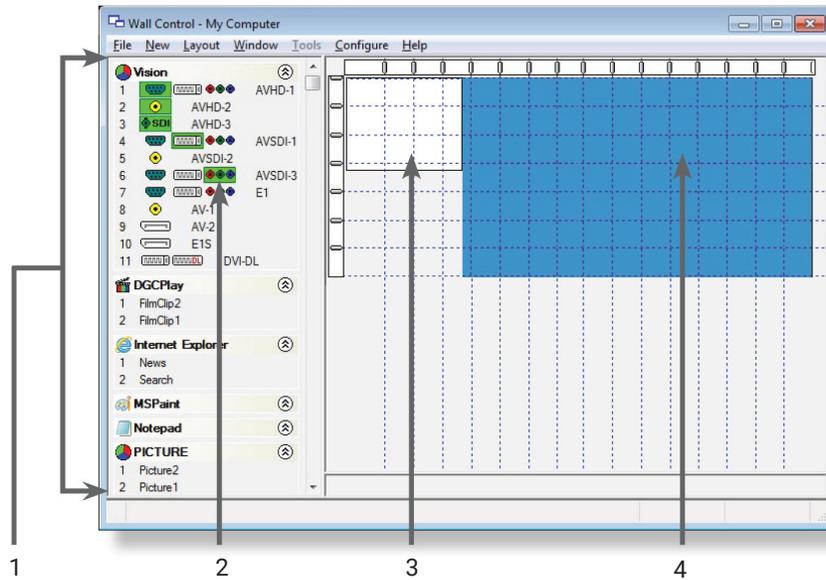


FIGURE 20.

1. The Icons displayed in the application toolbar identify the type of source available to each input.
2. Icons highlighted green indicate an active capture for that particular input.
3. Representation of the control screen if one is being used.
4. Representation of the video wall desktop.

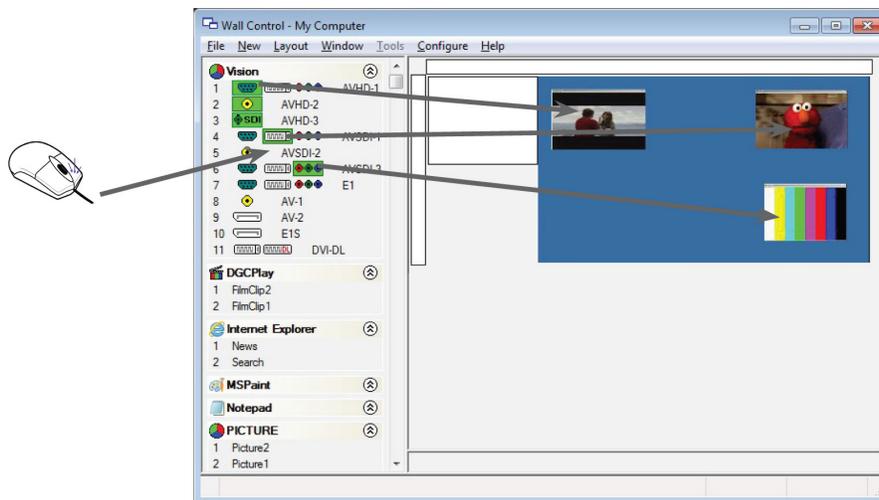


FIGURE 21.

To open a video window, click and drag an active capture into the Radian Video Wall Software application.

Use the Help Menu for a comprehensive guide on the features of the Radian Video Wall Software application.

# CHAPTER 1: OVERVIEW

## 1.1 INTRODUCTION

The Radian Flex Video Wall Controller system has been manufactured and tested to the highest standards offering unparalleled quality and reliability. The aim of this user guide is to assist you through the installation of the system safely and effectively and act as a reference guide for future use. Do not switch on the system until all the relevant cables have been connected.

## 1.2 SYSTEMS

The systems covered by this user guide are the Radian Flex 4-, 9-, and 11-slot video wall controllers and expansion chassis ranges.

## 1.3 HOW THE USER GUIDE IS ORGANIZED

The user guide is broken down into chapters and each chapter into sections. Chapters, sections and pages are numbered individually.

## 1.4 SYMBOLS

Symbols are used throughout this user guide to assist the user in quickly identifying important safety information and notes.



Yellow triangle indicates that failure to observe the instructions could result in injury and/or damage to the system.



Lifting precautions should be considered.



White arrow in a black box indicates a useful tip.



White exclamation mark in a black box indicates important information.

## 1.5 TERMINOLOGY AND DEFINITIONS

**BIOS:** Basic Input/Output System: Used during system boot up to initialize and test system hardware and load the operating system. Each BIOS is specifically designed to work with a particular motherboard.

**Command Line Interface:** Preferred means by advanced users of issuing commands and controlling an application or operating system. Programs with a Command Line Interface are generally considered easier to automate via scripting.

**Control Screen:** All systems are shipped with the BIOS configured to boot the system off the onboard graphics device. This output can then be used as the Control Screen for a typical video wall. The content of the control screen is not displayed on the video wall desktop and can be used to host the Video Wall Manager application window.

**SBC:** A Single Board Computer built on a single circuit board. SBCs in the systems are plugged into the PICMG1.3 slot on the 9- and 11-slot backplanes.

**SDK:** Software Development Kit: A set of software development tools which allows the creation of certain applications.

**Radian Standard Video Wall Software (Optional):** An optional software application for controlling and managing Video Capture Cards, IP Camera and third party application windows on a Radian Flex Video Wall Controller. It provides a graphical representation of the video wall and a toolbar to manipulate all available input sources and applications.

## CHAPTER 1: OVERVIEW

**Radian Video Wall Software Security Administration Client (Optional):** The Radian Video Wall Software Security Administration Client allows Administrators to assign specific users to roles on a wall by wall basis. The Security Administration Client is only available with Radian Video Wall Software.

**Video Wall Controller Software:** A software application that enables the user to monitor the temperatures and voltages of system components.

**Screen Order:** The order in which the screens appear on the display wall.



## CHAPTER 2: SAFETY



### 2.1 SAFETY PRECAUTIONS

To prevent damage to your Black Box product or injury to personnel operating the equipment, please read the following safety precautions before operation. These instructions should be made available to all those who will use and operate Black Box products.

#### 2.1.1 POWER SUPPLY

---

These products require a main power supply. This power supply must be disconnected when equipment is being upgraded or relocated.

#### 2.1.2 CABLES

---

Do not expose cables to any liquids; doing so may cause a short circuit which could damage the equipment. Do not place heavy objects on top of any cables because this can cause damage and possibly lead to exposed live wires.

#### 2.1.3 VENTILATION

---

All computer equipment should be located in a well ventilated area. All ventilation holes on the computer casing must be kept clear of any obstruction at all times. Failure to do so will result in the system overheating and damaging your equipment.

#### 2.1.4 WORKING ENVIRONMENT

---

Locate the equipment in an environment free from dust, moisture and extreme changes in temperature. Place the equipment on a stable and solid work surface. Do not place liquids (hot/cold drinks, etc.) near the equipment as spillage could cause serious damage.

#### 2.1.5 GAS/FLAMMABLE LIQUIDS

---

Never use electronic equipment in the presence of gas or any flammable liquid, doing so could result in an explosion or serious fire.

#### 2.1.6 SMOKE/UNUSUAL SMELLS

---

If you notice smoke or unusual smells being emitted from your system, turn off and unplug the system from the power supply. The system should then be passed to a qualified technician for inspection. Continued operation could result in personal injury and damage to property.

#### 2.1.7 MAINTENANCE

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Apart from what is detailed in this user guide, maintenance should only be carried out by competent technicians, any Black Box plug-in cards that are physically damaged should be returned to Black Box for repair using Black Box RMA procedures.

## CHAPTER 2: SAFETY

### 2.1.8 REPLACEABLE BATTERIES

---

CAUTION: Risk of explosion if batteries are replaced with an incorrect type. Dispose of used batteries according to the local laws/regulations and manufacturer's instructions.

## 2.2 RACKMOUNT SAFETY INSTRUCTIONS

### 2.2.1 TEMPERATURE

---

If Radian Flex Chassis systems are to be installed in a closed or multi-unit rack assembly, the installation should be such that the amount of air flow required for safe operation of the equipment is not compromised. The operating ambient temperature of the rack environment should be maintained below 95° F (35° C) under all conditions. Appropriate cooling arrangements should be built into the cabinet to ensure that this specification is maintained.

### 2.2.2 MECHANICAL LOADING

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Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

### 2.2.3 CIRCUIT OVERLOADING

---

Consideration should be given to the connection of the equipment to the main supply circuit and the effect that overloading of the supply might have on any over-current protection or supply wiring. Appropriate consideration of equipment nameplate ratings should be used.

### 2.2.4 RELIABLE EARTHING

---

Reliable earthing of all rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

## 2.3 UNPACKING AND INITIAL INSPECTION

### 2.3.1 UNPACKING

---

The system is heavy; lifting precautions should be considered.



To unpack the system, follow the instructions provided on the outside of the packaging. All packaging materials should be retained for future transit.

### 2.3.2 INITIAL INSPECTION

---

All systems are carefully prepared for shipment and every effort is made to ensure you receive the product in pristine condition. On receipt, you should carefully inspect the outer packaging for any transit damage, i.e. any signs that the system may have been dropped, etc.

## CHAPTER 2: SAFETY

Use the packing list enclosed to establish that all the items are present. If any items from the packing list are missing, contact Black Box Technical Support at 877-877-2269 or [info@blackbox.com](mailto:info@blackbox.com).

Check the chassis for damage that could have an adverse affect on the operation of the system or could cause injury to the operator. If there is any physical damage to the power supply unit, for example, damaged power sockets or exposed wiring, do not connect to a power source, contact Black Box Technical Support at 877-877-2269 or [info@blackbox.com](mailto:info@blackbox.com).

## CHAPTER 3: GENERAL

### 3.1 OVERVIEW

Black Box Radian Flex systems are powerful video wall controllers, capable of delivering Ultra High Definition video across large, multi-screen display installations. Use it in a host of environments, from CCTV security suites to sports stadiums, and from military installations to utility management centers. The Chassis are fully compatible with Radian Flex PCI Express video capture and graphics cards that offer Ultra High Definition video for storage and display, including the ability to capture HDCP sources without any display restrictions. Each system has been designed for use in demanding control room environments. Each component has been subjected to rigorous testing to ensure the highest levels of performance and reliability.

Features include:

- ◆ High performance and reliability in demanding conditions
- ◆ Suited for 24/7 applications
- ◆ Can be operated via a network
- ◆ PCIe switched fabrics enables systems to be expanded using additional expansion chassis
- ◆ Video Wall Software (optional) - Display video on the desktop in real time using an array of features
- ◆ Video Wall Controller Software software (optional) - Provides monitoring of the temperature and voltage sensors on system components

### 3.2 RADIAN FLEX CHASSIS

TABLE 3-1. CHASSIS MODELS AND FEATURES

Systems	Features											
	4-Slot Backplane	9-Slot Backplane	11-Slot Backplane	SBC 5	SBC 6	SBC 7	Intel® Core i5	Intel Core i7	Dual E5® Core Xeon	Single E3 Intel Core Xeon	RPSU	ATX
VWP-FLEX-961		x			x			x			x	x
VWP-FLEX-1182			x		x			x				
VWP-FLEX-962X		x				x				x	x	
VWP-FLEX-1182X			x			x				x	x	
VWP-FLEX-1182DX			x	x					x		x	
VWX-2090*		x									x	x
VWX-2110			x								x	
VWP-FLEX-951	x						x					x
VWP-FLEX-962		x						x			x	

\* Available with either an RPSU or ATX power supply.



## 3.3 ASSOCIATED INPUT/OUTPUT CARDS AND RELATED PRODUCTS

TABLE 3-2. INPUT/OUTPUT CARDS AND RELATED PRODUCTS

Product	Description
VGC-HDMI-2-4	Quad output HDMI graphics card, up to 4K output (3840x2160 @60Hz (max 594MP/s) per channel
VGC-HDMI-2K-4	Quad output HDMI graphics card, up to 2K output (2560x1600 @60Hz)
VCC-STREAM	Dedicated IP Streaming decoding card
VCC-HDMI2-2	Two independent HDMI 2.0 capture channels with HDCP 2.2 support
VCC-DP-2	Dual channel, 4K UHD DisplayPort capture card
VCC-SDI-4	Four channel 3G-SDI video capture card
VCC-HD-4-H	Quad HDMI video capture card
VCC-SD-HD-A-2, VCC-SD-HD-3, VCC-SDI-SD-HD-3-HD	Four lane PCI Express capture card with 2 x HD DVI-I and 1 SD channels
VCC-SD-HD-A-2, VCC-SD-HD-3, VCC-SDI-SD-HD-3-SDI	Four lane PCI Express capture card with 1 x HD DVI-I, SD, SDI channels
VCC-HD-4	Eight lane PCI Express capture card with four independent DVI-I HD channels
VCC-SD-HD-A-2, VCC-SD-HD-3, VCC-SDI-SD-HD-3	Single Channel HD and single channel SD video capture card
Host Link	Host link card for expansion systems
Slave Link	Slave link card for expansion systems
Extension Cable	Copper cable for expansion systems

# CHAPTER 4: HARDWARE

## 4.1 CHASSIS

### 4.1.1 FRONT

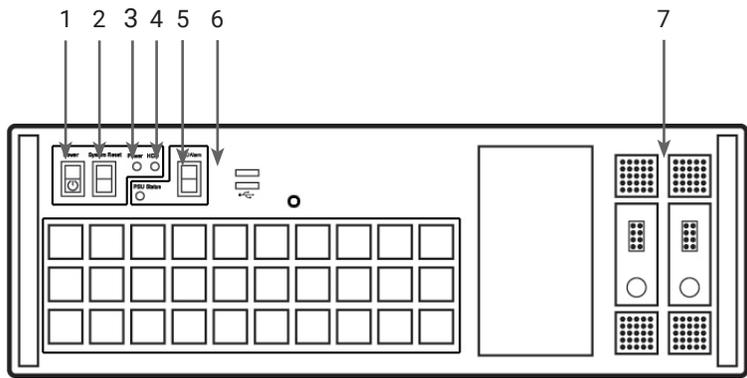


FIGURE 4-1. FRONT OF THE CHASSIS

TABLE 4-1. COMPONENTS OF THE CHASSIS FRONT

1 = Power, on-off	5= Reset Button
2= PSU Alarm Reset	6= USB Ports
3= Power LED	7= Removable Hard Drives
4= HDD LED	

### 4.1.2 REAR

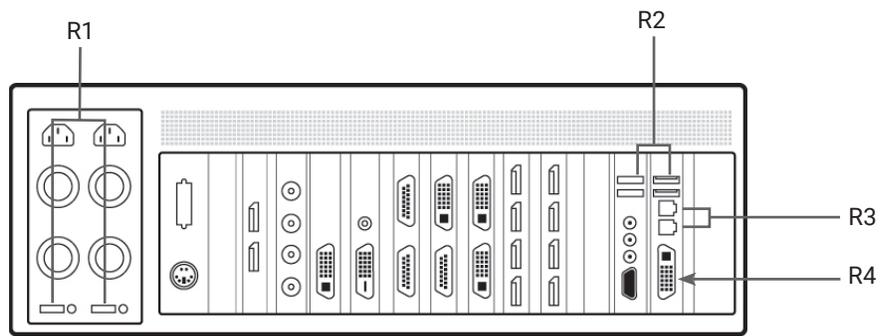


FIGURE 4-2. REAR PANEL - RPSU

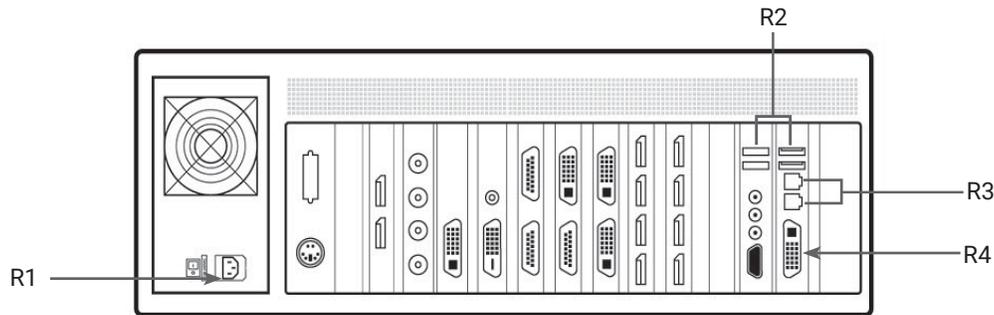


FIGURE 4-3. REAR PANEL - ATX (VWP-FLEX-961 ONLY)

TABLE 4-2. COMPONENTS OF THE CHASSIS REAR

R1= Power Switch	R3= Ethernet Ports
R2= USB Ports	R4= DVI-I Output

## 4.2 SINGLE BOARD COMPUTERS (SBCS)

SBCs are for use in the range of video wall controllers providing improvements to the BIOS and a higher performance for Windows® based software applications.

### 4.2.1 SBC5

The Advantech PCE-9228G2:

- An Intel® Dual Xeon® E5-2600v3
- Used in the VWP-FLEX-1182DX

### 4.2.2 SBC6

The Portwell 8113-Q170:

- An Intel® 7th Gen Kaby Lake Pentium Core i7
- Used in the VWP-FLEX-962 and the VWP-FLEX-1182

## CHAPTER 4: HARDWARE

### 4.2.3 SBC7

The Portwell 8113-C236:

- ♦ A Single E3 Xeon processor
- ♦ Used in the VWP-FLEX-962X and the VWP-FLEX-1182X

## 4.3 BACKPLANES

The Radian Flex backplanes use advanced PCI Express switches to create a high bandwidth fabric for connecting multiple PCI Express into a system.

### 4.3.1 4-SLOT BACKPLANE

- ♦ 4-Slot Backplane
- ♦ Used in the VWP-FLEX-951

### 4.3.2 9-SLOT BACKPLANE

- ♦ Nine slot PCI Express backplane - 8 x 4 lane slots, 1 x 8 lane slot and 1 x PICMG 1.3 slot
- ♦ Used in the VWP-FLEX-961, VWP-FLEX-962X, and the VWX-2090

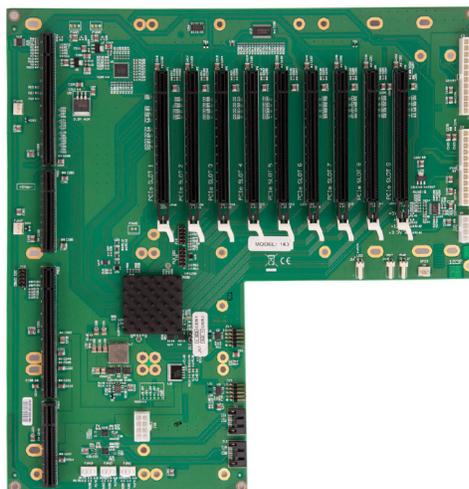


FIGURE 4-4. 9-SLOT BACKPLANE

## 4.3.3 11-SLOT BACKPLANE

- Eleven slot PCI Express backplane - 11 x 8 lane PCI Express slot and one PICMG 1.3 slot
- Used in the VWP-FLEX-1182, VWP-FLEX-1182X, VWP-FLEX-1182DX and the VWX-2110



FIGURE 4-5. 11-SLOT BACKPLANE

## 4.4 BACKPLANE LEDs

The 4-slot, 9-slot, and 11-slot backplanes have LEDs fitted for each PCI Express slot and the PICMG1.3 slot.

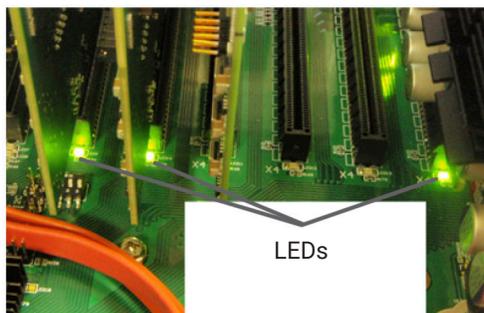


FIGURE 4-6. LEDs

## CHAPTER 4: HARDWARE

### 4.4.1 9-SLOT BACKPLANE LEDS

TABLE 4-3. 9-SLOT BACKPLANE LEDS

LED1	ON = +5V STANDBY VOLTAGE PRESENT
LED2	ON = +5V SUPPLY PRESENT
LED3	ON = +12V SUPPLY PRESENT
LED4	ON = +3.3V SUPPLY PRESENT
LED5	ON = PICMG LINK SPEED = GEN3, FLASH-FAST = GEN2, FLASH-SLOW = GEN1
LED7	ON = PCIE SLOT 1 LINK SPEED = GEN3, FLASH-FAST = GEN2, FLASH-SLOW = GEN1
LED9	ON = PCIE SLOT 2 LINK SPEED = GEN3, FLASH-FAST = GEN2, FLASH-SLOW = GEN1
LED10	ON = PCIE SLOT 3 LINK SPEED = GEN3, FLASH-FAST = GEN2, FLASH-SLOW = GEN1
LED11	ON = PCIE SLOT 4 LINK SPEED = GEN3, FLASH-FAST = GEN2, FLASH-SLOW = GEN1
LED12	ON = PCIE SLOT 5 LINK SPEED = GEN3, FLASH-FAST = GEN2, FLASH-SLOW = GEN1
LED13	ON = PCIE SLOT 6 LINK SPEED = GEN3, FLASH-FAST = GEN2, FLASH-SLOW = GEN1
LED14	ON = PCIE SLOT 7 LINK SPEED = GEN3, FLASH-FAST = GEN2, FLASH-SLOW = GEN1
LED15	ON = PCIE SLOT 8 LINK SPEED = GEN3, FLASH-FAST = GEN2, FLASH-SLOW = GEN1
LED16	NOT USED

### 4.4.2 11-SLOT BACKPLANE LEDS

TABLE 4-4. 11-SLOT BACKPLANE LEDS

D1	ON = +12V SUPPLY PRESENT
D2	ON = +3.3V SUPPLY PRESENT
D3	ON = +5V SUPPLY PRESENT
D4	ON = +5V STANDBY SUPPLY PRESENT
D5	ON = PICMG LINK SPEED = G3, FLASH-FAST = G2, FLASH-SLOW = G1
D6	ON = PCIE SLOT 1 LINK SPEED = G3, FLASH-FAST = G2, FLASH-SLOW = G1
D7	ON = PCIE SLOT 2 LINK SPEED = G3, FLASH-FAST = G2, FLASH-SLOW = G1
D8	ON = PCIE SLOT 3 LINK SPEED = G3, FLASH-FAST = G2, FLASH-SLOW = G1
D9	ON = PCIE SLOT 4 LINK SPEED = G3, FLASH-FAST = G2, FLASH-SLOW = G1
D10	ON = PCIE SLOT 5 LINK SPEED = G3, FLASH-FAST = G2, FLASH-SLOW = G1
D11	ON = PCIE SLOT 6 LINK SPEED = G3, FLASH-FAST = G2, FLASH-SLOW = G1
D12	ON = PCIE SLOT 7 LINK SPEED = G3, FLASH-FAST = G2, FLASH-SLOW = G1
D13	ON = PCIE SLOT 8 LINK SPEED = G3, FLASH-FAST = G2, FLASH-SLOW = G1
D14	ON = PCIE SLOT 9 LINK SPEED = G3, FLASH-FAST = G2, FLASH-SLOW = G1
D15	ON = PCIE SLOT 10 LINK SPEED = G3, FLASH-FAST = G2, FLASH-SLOW = G1
D16	ON = PCIE SLOT 11 LINK SPEED = G3, FLASH-FAST = G2, FLASH-SLOW = G1
D17	ON= PLX FATAL ERROR
D24	ON = PSU FAULT

No LEDs flashing indicates that lane width has not been established. The LEDs will not flash on slots where no cards are installed.



## CHAPTER 5: CABLING

This chapter will cover:

- ◆ Connecting keyboard and mouse
- ◆ Connecting an expansion chassis
- ◆ Connecting to a network
- ◆ Connecting input sources
- ◆ Connecting a control screen
- ◆ Connecting monitors
- ◆ Connecting power cables

### 5.1 CONNECTING THE KEYBOARD AND MOUSE

The keyboard and mouse supplied with your system both have a USB interface. Identify vacant USB ports on the front or rear panel of the chassis and plug them in.

### 5.2 CONNECTING AN EXPANSION CHASSIS

The Radian Flex expansion chassis are solutions that allow system builders and integrators the flexibility to extend a PCIe based PC or motherboard enabling a larger, distributed system architecture. The optical expansion chassis can be used to create systems with distances of up to 328 feet (100 meters) between the host PC and the expansion chassis.

The expansion link is created using a combination of Host Link (HLink) and Slave Link (SLink) cards connected together using a cable or a series of cables (copper or optical). These combined provide a high bandwidth PCI Express link from an upstream host to a distributed expansion unit.

TABLE 5-1. EXPANSION CHASSIS MODELS

Expansion Chassis Model	Backplane	Number of available PCIe slots
VWX-2090	9-Slot G3 (Slave Link pre installed)	9
VWX-2110	11-Slot G3 (Slave Link pre installed)	11

#### CONNECTING THE VWX-2090 AND VWX-2110

If your expansion chassis is supplied as part of a wall controller system, the Host Link card will be pre-installed in the host machine that contains the SBC. If the expansion chassis has been supplied separate to a host machine, the Host Link card provided needs to be installed in the host PC.

You are likely to need a flat blade and/or a cross head screwdriver for the installation of the Host Link card; it would be useful to have these in hand before you begin. Power down the PC (including peripherals), switch off at the main power and disconnect all the cables connected to the computer and expansion chassis. Remove the PC cover. Locate a vacant PCIe slot (x8 on the motherboard and remove the backing plate (retain all screws) .

Remove the Host Link card from its packaging and secure it firmly into the empty PCIe slot. Screw the bracket to the back panel of the PC and replace the cover.

## CHAPTER 5: CABLING

Connect the Host Link and Slave Link using the Extension Cable provided.

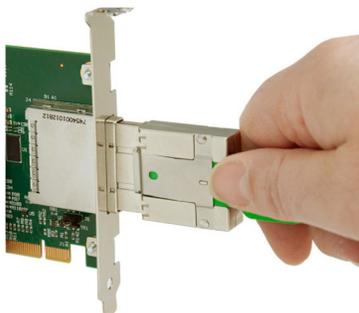


FIGURE 5-1.

The correct way to insert the cable is to have the release tab facing away from the card. The rectangular connector needs to be fully inserted into the card until a definite click can be heard. This locks the cable in place. Failure to lock the connector in place can result in the Extension Cable becoming separated from the card and the link between chassis being lost.



FIGURE 5-2.

To remove the connector, gently pull the ring pull tab to unlock the connector from the card then slide the connector out fully.

Normal copper cable handling precautions should be observed to avoid tight loops or kinks in the extension cable.

If more than one expansion chassis is supplied, ensure the cards are paired correctly by connecting the cards labelled "Link1" together, the pair labeled "link2" together and so on. If this is not possible, i.e. the expansion chassis are shipped separately and the cards are not labeled, connect the cards using the extension cables provided and re-install the driver install package to reset the pairings.

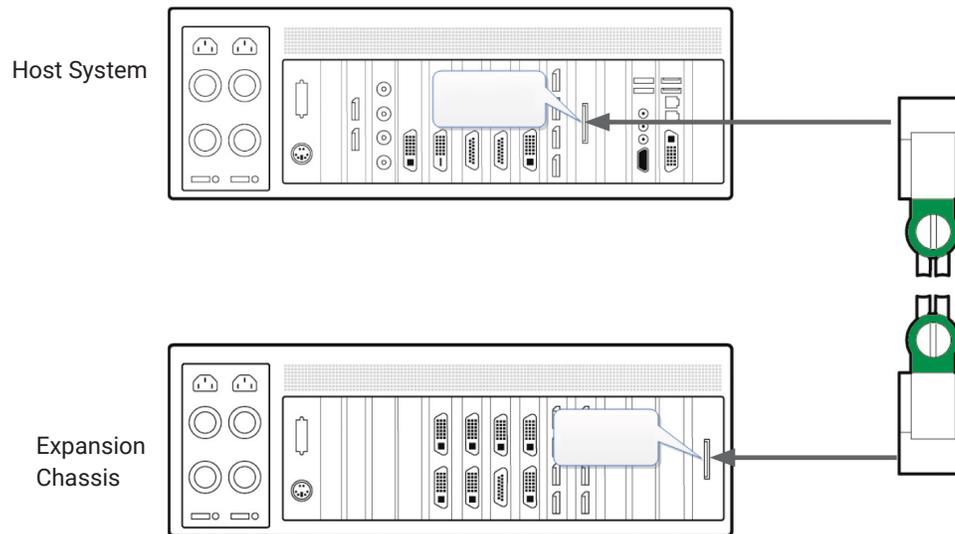


FIGURE 5-3.

The example above shows the connection of a VWP-FLEX-1182DX to a VWX-2110.

## 5.3 CONNECTING TO A NETWORK

The optional Video Video Wall Manager software enables the user to operate and manage the video wall display remotely, via a network. The systems have two LAN ports; plug in your network cable (not supplied) to a LAN port and connect the wall controller to the LAN, as shown below:

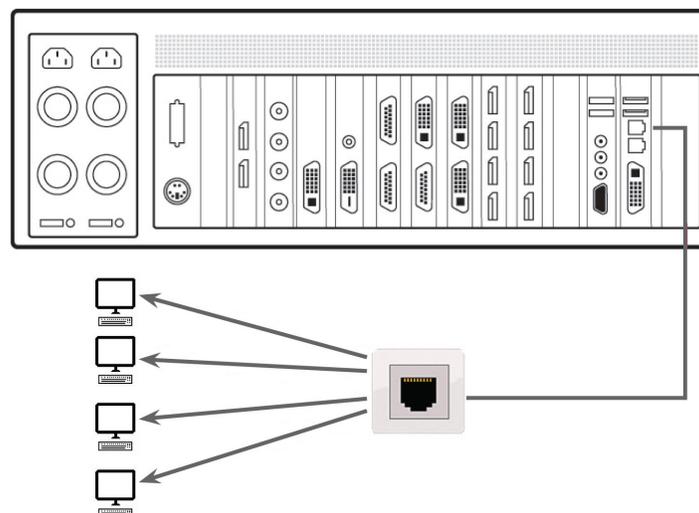


FIGURE 5-4.



## CHAPTER 5: CABLING

### CABLE HANDLING



Great care must be taken when connecting cables. Ensure the cable connectors are the correct type for the connector on the cards. Push the cable connector on squarely, there is no requirement to force the connector in place. Poor cable handling could result in damaged pins in the cable connector, this in turn could cause serious and irreversible damage to the printed circuit board. Any damage caused this way is not covered under the warranty.

### 5.5 CONNECTING A CONTROL SCREEN

Radian Flex Video Wall Controller systems are configured to boot from the onboard graphics device, therefore, there is a requirement to connect a control screen. The control screen is a standalone DVI-I monitor that is separate from the monitors on the display wall. The control screen is configured as the Primary monitor in the Windows® Display Settings and the display wall is configured as the Secondary monitor. A control screen is initially required to set up your system, including the operating system (Windows 10) and the Display Driver Configuration Tool.

Connect the control screen as follows:

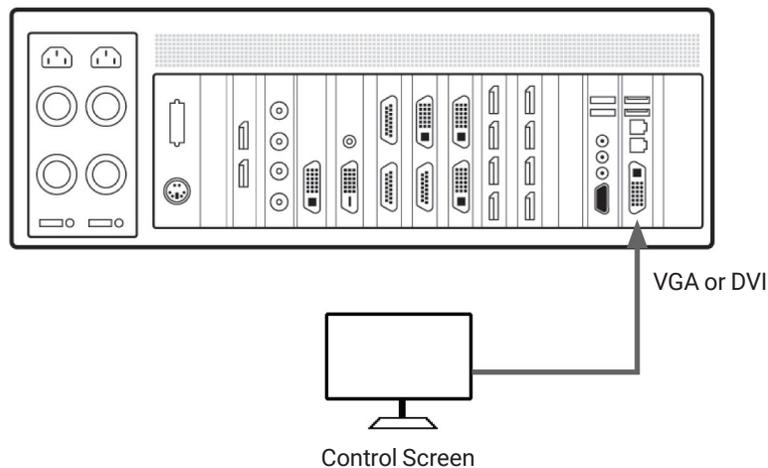


FIGURE 5-6.

## CHAPTER 5: CABLING

### 5.6 CONNECTING POWER CABLES

This section applies to both the RPSU and the ATX powered systems and expansion chassis.

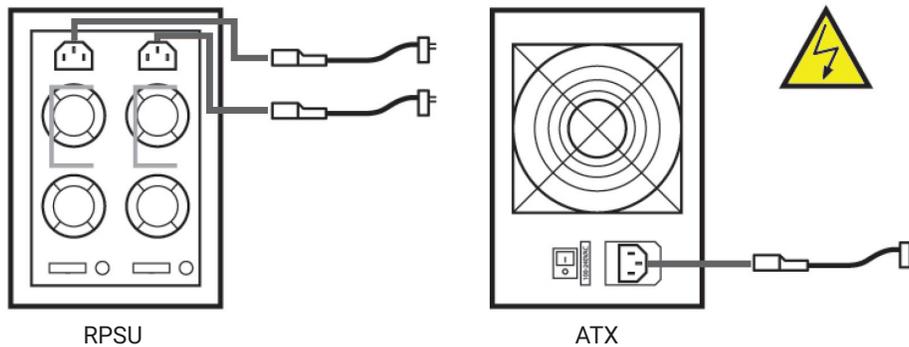


FIGURE 5-7.

Ensure cable(s) are fully inserted into the power supply sockets on the rear of the wall controller, failure to do so could result in the cable becoming dislodged and the system inadvertently shutting down.

In systems with an RPSU, both cables must be connected; otherwise, an audible alarm will be triggered when the system is switched on.



Only use the power cable(s) supplied with your system; for advice on replacements, contact Black Box Technical Support at 877-877-2269 or [info@blackbox.com](mailto:info@blackbox.com).

## CHAPTER 6: OPERATION

This chapter will cover:

- ◆ Switching on
- ◆ Initial system boot on delivery
- ◆ Setting up the operating system
- ◆ Configuring the video wall displays
- ◆ Opening Video Wall Controller Software
- ◆ Displaying video captures

### 6.1 SWITCHING ON

When switching the system on for the first time, you will need to complete the initial system boot steps as described in Initial System Boot on Delivery below.

#### 6.1.1 SWITCHING ON THE MAIN SYSTEM

All systems are supplied with either RPSU or ATX power supplies.

- ◆ Switch on the power supply units (rear panel), ensuring both units on the RPSU are switched on.

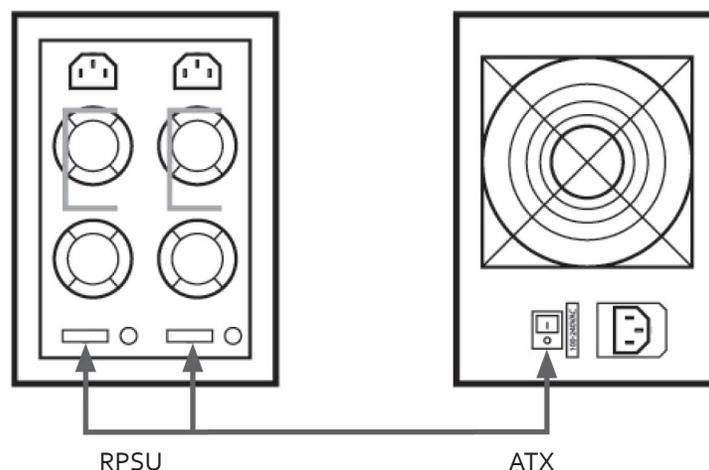


FIGURE 6-1.

- ◆ Turn on the main system power switch, located on the front panel.

The BIOS and boot messages will be displayed on the control screen as the system boots. Once the system boot up is complete, the display wall will open up into a Windows® desktop.

## CHAPTER 6: OPERATION

### 6.1.2 SWITCHING ON WITH AN EXPANSION CHASSIS

---

If your system has a VWX-2090 or VWX-2110 expansion chassis, the following procedure should be followed when switching on:

- ◆ Switch on all the power supply units, ensuring both units on an RPSU system are switched on.
- ◆ Turn on the main system power switch on the host system, located on the front panel. There is no requirement to turn on the main power switch on the expansion chassis, because it will be switched on automatically by the host system.

The BIOS and boot messages will be displayed on the control screen as the system boots. Once the system boot up is complete, the display wall will open up into a Windows® desktop.

## 6.2 INITIAL SYSTEM BOOT ON DELIVERY (WINDOWS 10)

Once the system has been configured in the factory, the operating system is resealed, meaning that when switching on the system for the first time the operating system setup begins.

You will be prompted to enter information to set up the controller.

### 6.2.1 SELECT LANGUAGE PACK

---

You will now be prompted to set up your Windows 10 operating system, starting with selecting the language option you require. Language selection is the responsibility of the customer and is not part of the system pre configuration prior to shipment. Windows 10 language settings can be changed using Control Panel/Language. Language packs are available to download as optional updates. The following languages are pre-installed:

- ◆ German
- ◆ English (UK)
- ◆ English (USA)
- ◆ Spanish
- ◆ French
- ◆ Italian
- ◆ Netherlands
- ◆ Polish
- ◆ Portuguese (Brazilian)
- ◆ Russian
- ◆ Simplified Chinese

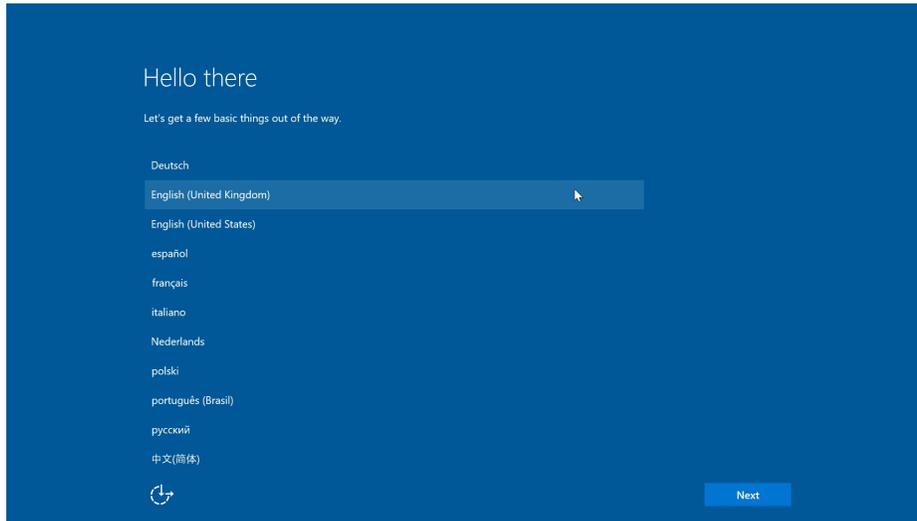


FIGURE 6-2.

## 6.2.2 SELECT COUNTRY AND REGION - WINDOWS® 10

Use the drop-down menus to select the country and region, the time zone and currency and the keyboard layout. These localized settings can be changed if required using the dialog in Control Panel/Region and Language.

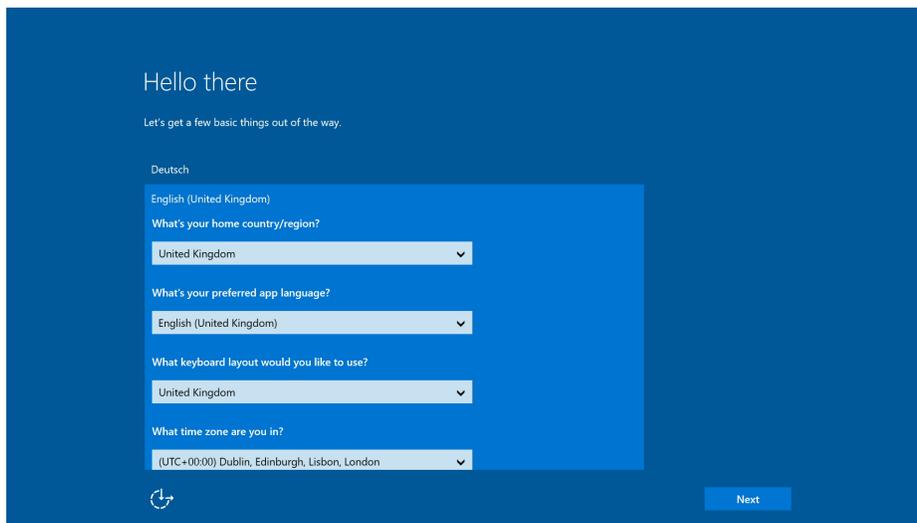


FIGURE 6-3.

## CHAPTER 6: OPERATION

### 6.2.3 NAMES AND PASSWORD

Next, you will be prompted to create an account for your computer by entering a user name, a computer name and a password.

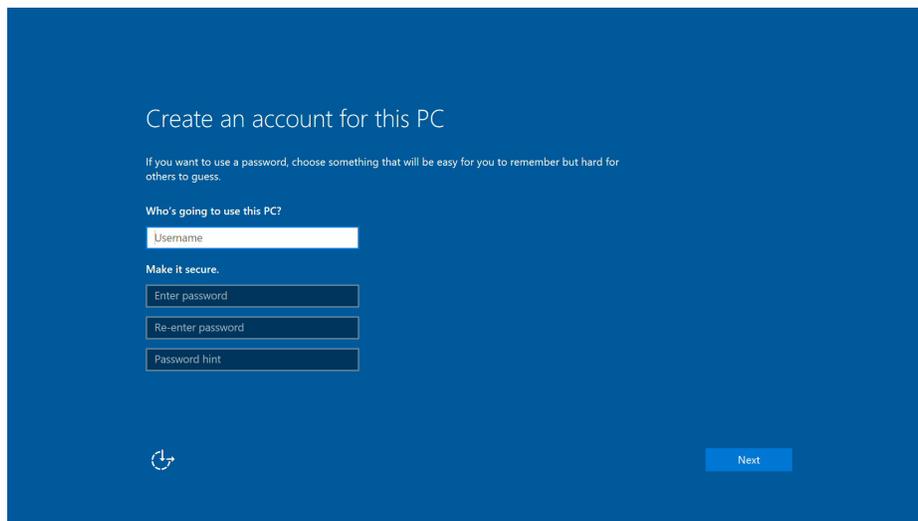


FIGURE 6-4.

We recommend that you only use Internet-standard characters in the computer name. The standard characters are the numbers 0 through to 9, upper and lower-case letters from A through to Z and the hyphen character. Computer names cannot consist entirely of numbers, contain spaces or use special characters such as: < > ; : " ? \* + = \ | ? , .

Unlike a Windows® 7 system, your Windows 10 system does not require a product key to activate the operating system.

### 6.2.4 SYSTEM BACKUP

We strongly recommend that you create some form of system recovery media using the MS Windows Backup and Restore Tool once your system is up and running. This will enable you to restore to factory settings if serious problems occur.



Start | Control Panel | Backup and Restore

## 6.3 DISPLAY CONFIGURATION TOOL (DDCT)

The DDCT is a configuration tool designed to guide you through the design and creation of your video wall. The DDCT will guide you, step by step, through the configuration of the graphics outputs, enabling you to quickly create one or more video walls.

On the final stage of the configuration, the DDCT will recommend the optimum way to connect your wall controller to your video wall displays.

Once the Windows Operating System has been configured and rebooted, the DDCT Setup Wizard is displayed on your control screen.

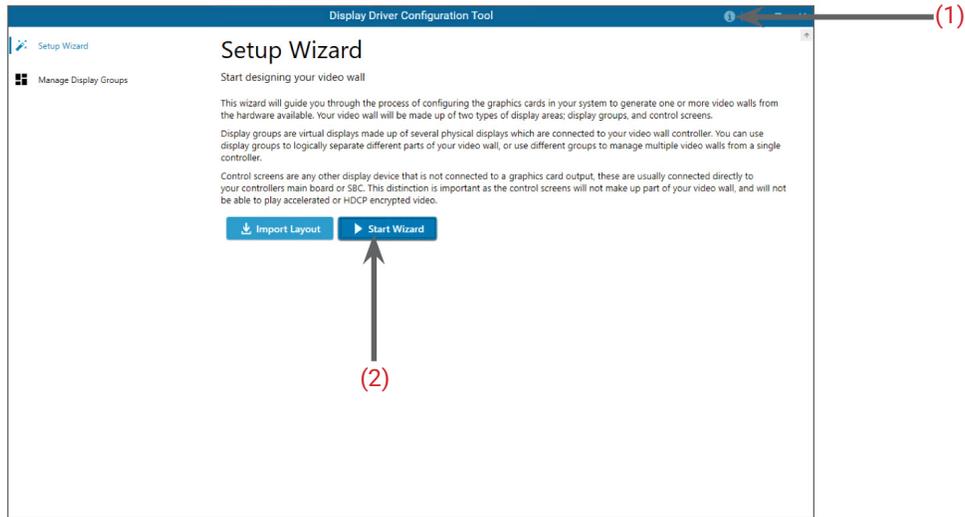


FIGURE 6-5.

We recommend that you read the information on each page carefully.

Click on the “Information Icon” (1) to open a sliding window that gives version details and copyright information.

To begin your wall configuration, click on “Start Wizard” (2). “Import Layout” is covered later.

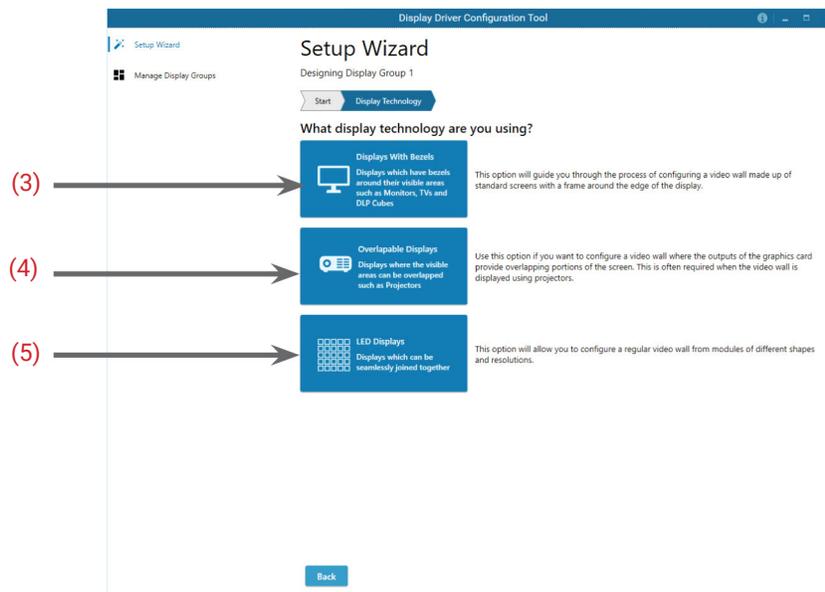


FIGURE 6-6.

## CHAPTER 6: OPERATION

### 6.3.1 DISPLAY TECHNOLOGY

Select the type of displays being used on your wall:

- ◆ Displays With Bezels – Monitors, TVs and DLP Cubes. (3)
- ◆ Overlapable Displays – Projectors (4)
- ◆ LED Displays. (5)

Click on “Continue”.

The tool will then display a configuration page for the type of display you selected:

### 6.3.1 DISPLAYS WITH BEZELS

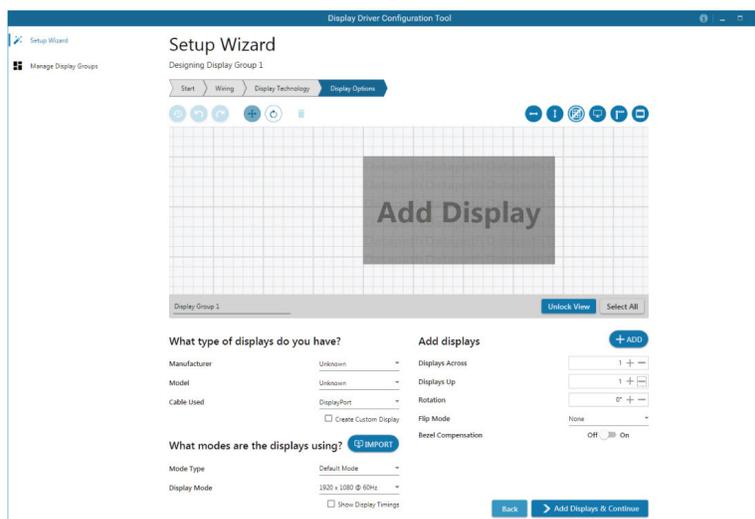


FIGURE 6-7.

# CHAPTER 6: OPERATION

## 6.3.3 OVERLAPPABLE DISPLAYS

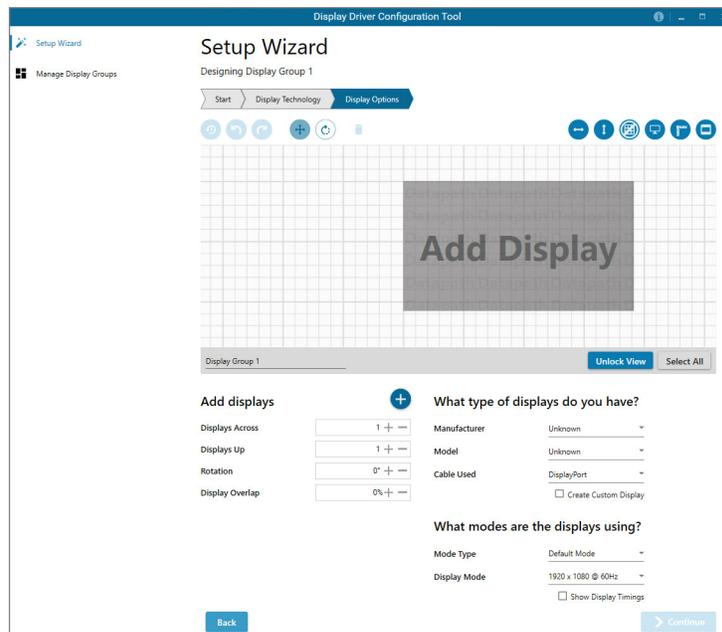


FIGURE 6-8.

## 6.3.4 LED DISPLAYS

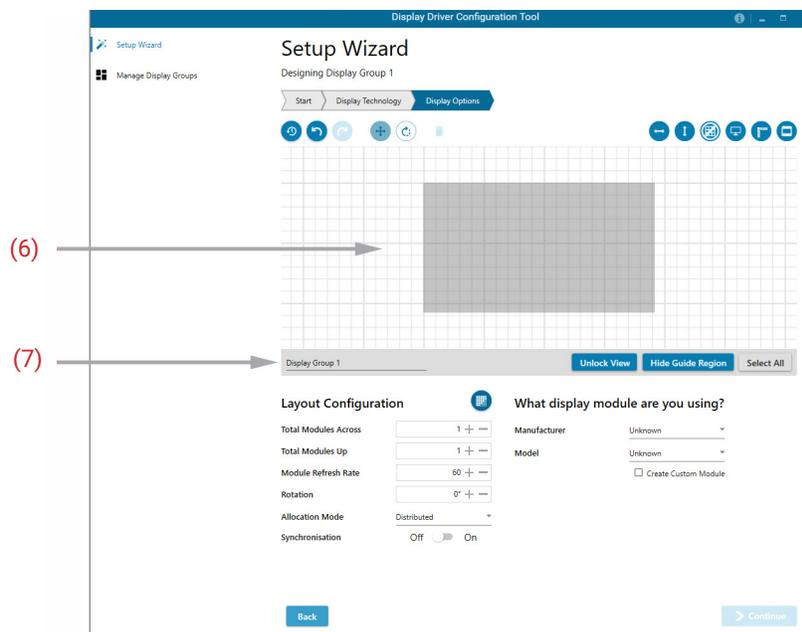


FIGURE 6-9.

## CHAPTER 6: OPERATION

### 6.3.5 APPLICATION TOOLS

The application tools enable the user to manipulate the design of the wall. The table below describes the tool functions.

TABLE 6-1. APPLICATION TOOLS

	Undo All – Undo all commands made on this page.
	Undo – Undo the last command.
	Redo – Redo the last command.
	Move displays – When selected, move the displays by clicking on and dragging the displays around the representation.
	Rotate displays – When selected, click on a display and drag the cursor up or down, left or right to rotate the display. The display can be rotated 90, 180 or 270 degrees.
	Delete displays/Display Groups – Select the displays you wish to remove from the layout then click on the delete button to delete all those selected.
	Enable X Axis – Enables the display to be moved from left to right, and right to left.
	Enable Y Axis – Enables the display to be moved up and down.
	Snap to Grid – When selected, if a display is dragged and released it will snap and position itself to the nearest grid line.
	Snap to displays – When selected, if a display is dragged close to another display and released, it will snap and position itself to the display.
	Snap to Guides – When selected, if the display is dragged and released near to the axis of another display, it will position itself on the same axis.
	Show Display Bezels – Select to show or hide the bezels on all the displays in the representation.
	Configure Outputs - Available in the Manage Display Group dialog. Select an output and configure its properties.
	Add Button- Used to add displays to your group or to create a new group.
	Layout Configuration - Used to add LED modules to your group or to create a new group.
	Edit - Used to edit a selected Display Group.
	Primary Display - Indicates which display within the display group is the primary display/boot screen. If more than one group is available, the Primary Display can be assigned to either group.

#### Representation

The representation grid (6) displays the physical arrangement of the wall as it is being created. Displays can be arranged as required by clicking and dragging them to their required positions using the application tools.

#### Wall Naming

Click on the edit box (7) to allocate a name to your wall (optional but recommended). This will be used if you choose to export your layout in the future.

## CHAPTER 6: OPERATION

### Unlock View

When unlocked, the wall representation can be dragged to a preferred position using the mouse. Use the mouse wheel to zoom in and out of the representation.

### Select All

Choosing "Select All" enables the user to select all the displays on the representation to apply common attributes to all displays.

## 6.3.6 WHAT TYPE OF DISPLAYS DO YOU HAVE?

---

### Displays with Bezels and Overlappable Displays

The first step to creating your wall is to select the type of displays you have. Use the "Manufacturer" and "Model" dropdown lists to select each display you are using on your wall. The DDCT has an extensive database of displays; however, if your display is not contained in the list, you can input its details manually by selecting "Create Custom Display."

#### What type of displays do you have?

Manufacturer	Unknown
Model	Unknown
Cable Used	DisplayPort
	<input checked="" type="checkbox"/> Create Custom Display
Display Area Width	192 cm + -
Display Area Height	108 cm + -
Left Bezel	0 cm + -
Right Bezel	0 cm + -
Top Bezel	0 cm + -
Bottom Bezel	0 cm + -

FIGURE 6-10.

We strongly recommend that you take measurements from the display manufacturer's specifications if available.

### Cables Used

Select the cable types for each monitor. An error message will be displayed if the cable limits are exceeded.

## 6.3.7 WHAT MODES ARE THE DISPLAYS USING?

---

Use the drop-down lists to select the "Mode Type" and "Display Mode" for your selected display. Select "Show Display Timings" if you want to view the display timings.

## CHAPTER 6: OPERATION

### 6.3.8 ADD DISPLAYS

#### Displays with Bezels and Overlappable Displays

Add displays is available for displays with bezels or overlappable displays. It enables you to configure the layout of your wall or display group. Use the “Displays Across” and the “Displays Up” to create a plan of your layout. Once your layout has been created, you can then configure the displays using “What Type of Displays Do You Have?” When using overlappable displays, “Display Overlap” becomes available, enabling you to select a percentage of overlap between displays.

The screenshot shows a configuration window titled "Add displays". At the top right is a blue button with a white plus sign and the text "+ ADD". Below the title are five settings, each with a control element: "Displays Across" has a text input with "1" and plus/minus buttons; "Displays Up" has a text input with "1", plus/minus buttons, and a dashed box icon; "Rotation" has a text input with "0°" and plus/minus buttons; "Flip Mode" has a dropdown menu with "None" selected; "Bezel Compensation" has a toggle switch currently in the "Off" position. At the bottom are two blue buttons: "Back" and "Add Displays & Continue".

FIGURE 6-11.

### 6.3.9 LAYOUT CONFIGURATION

Layout Configuration is available if LED display technology has been selected.

The layout configuration setting enables you configure the layout of your wall or display group. Use the “Total Modules Across” and the “Total Modules Up” to create a plan of your layout. Once your layout has been created, then you can configure the modules using “What display module are you using.”

#### Allocation Mode

The “Allocation Mode” enables you to select how the distribution of the modules is configured.

#### Distributed

Creates an even distribution of the modules from all the system outputs. (Recommended)

#### Unbalanced

Creates an uneven distribution of modules by allocating as many pixels to the first modules as possible. This creates an unbalanced load on the system outputs.

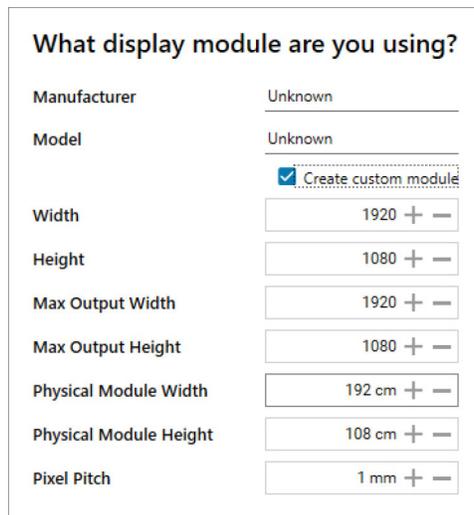
#### Synchronization

Synchronizes all the outputs in the system.

We recommend that you set the synchronization to “On.” Turning “Off” the synchronization can cause tearing when a video source is displayed; however, it does allow display timings to be edited manually.

## 6.3.10 WHAT DISPLAY MODE ARE YOU USING?

The first step to creating your wall is to select the type of LED modules you have. Use the “Manufacturer” and “Model” drop-down lists to select the LED module you are using on your wall. The DDCT has an extensive database of modules; however, if yours is not contained in the list, you can input its details manually by selecting “Create Custom Module.”



What display module are you using?	
Manufacturer	Unknown
Model	Unknown
	<input checked="" type="checkbox"/> Create custom module
Width	1920 + -
Height	1080 + -
Max Output Width	1920 + -
Max Output Height	1080 + -
Physical Module Width	192 cm + -
Physical Module Height	108 cm + -
Pixel Pitch	1 mm + -

FIGURE 6-12.

We strongly recommend that you take measurements from the display manufacturer’s specifications if available.

Once a layout has been designed and the type of displays have been selected, you can add the displays to the representation by clicking on the “Add Displays” icon or “Layout Configurations” if LED modules are being used.

When displayed on the Representation Grid,” each display can be configured separately by clicking on it. Use the tools to position your displays creating the desired layout. To deselect the display, click on it again.

When the display wall or display group has been finalized, click on “Continue” and the following page is displayed:

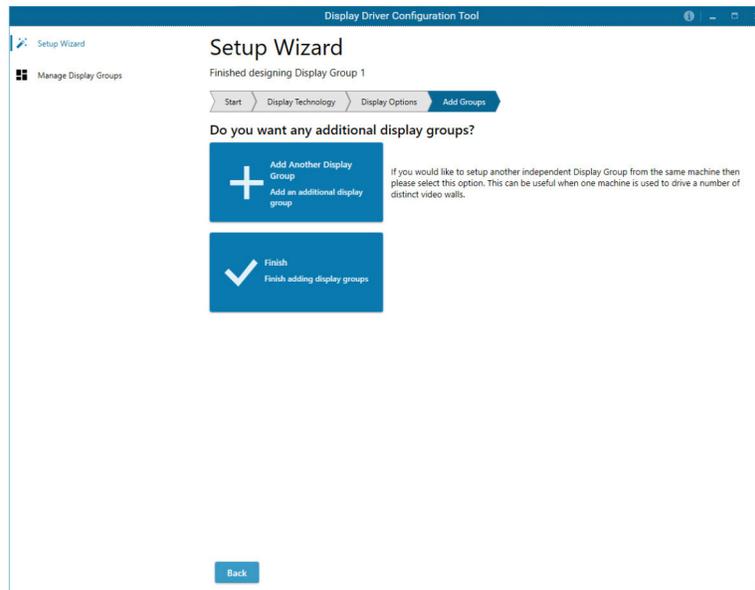


FIGURE 6-13.

## 6.3.11 ADD GROUPS

At this stage of the setup, you can choose to create another independent display group from the same system. This would be considered if one machine will be used to drive a number of separate video walls.

Click on the “Add Another Display Group” if you want to add another group of displays. This will return you to the “Display Technology” page. Note that when creating new display groups, there is no restriction to the type of display technology you can use for each group you create.

If another display group is not required, click on “Finish” and the following page is displayed.

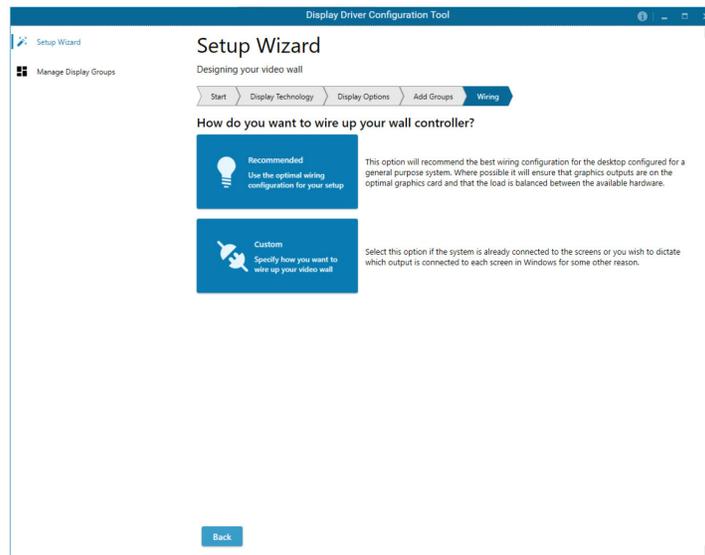


FIGURE 6-14.

## 6.3.12 WIRING

How do you want to wire up your wall controller?

The DDCT can recommend the best wiring configuration for your system, ensuring the load is balanced between the graphics hardware. Click on “Recommended” for the optimal configuration for your system.

If you want to manually wire your system and decide for yourself which output is connected to which display, click on “Custom.” You will next be presented with the Summary Page:

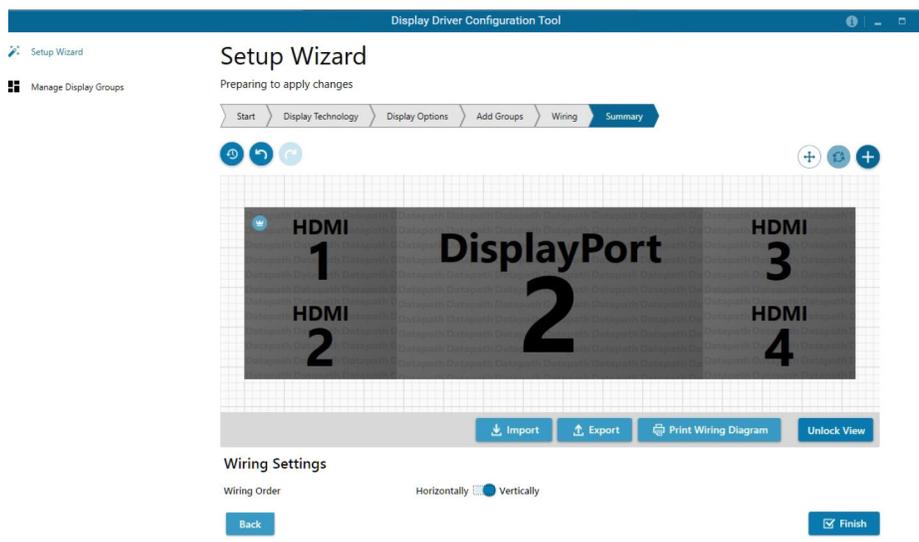


FIGURE 6-15.

## CHAPTER 6: OPERATION

o manually select the outputs, right-click on the display group and select “Edit.” You can then select each individual display and allocate your preferred output. Right-click on a selected display to reveal the list of outputs available:

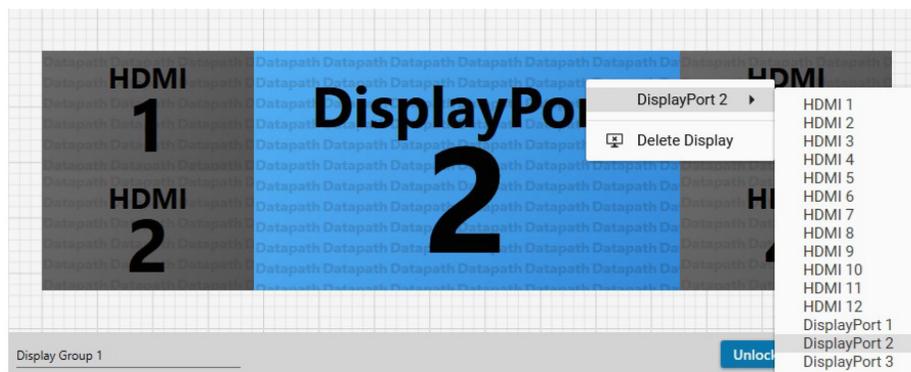


FIGURE 6-16.

### Import

Click on “Import” to import a previously saved layout. Note that if the system the layout is being imported to does not have the hardware capability to run the layout, the imported layout will be rejected.

Once imported, onto the system, the layout can be edited in the “Manage Display Group” page.

### Export

Click on “Export” to generate and export a layout as a .wall file. The layout can then be imported onto another system.

When all outputs have been allocated either “Recommended” or “Custom,” click on “Finish.” You will then be prompted to save the changes to your video wall and restart your system.

### 6.3.13 MANAGE DISPLAY GROUPS

Display groups are collections of displays that cover different portions of your video wall. Display groups can be used to separate different areas of your video wall or use different groups to manage multiple video walls from a single controller.

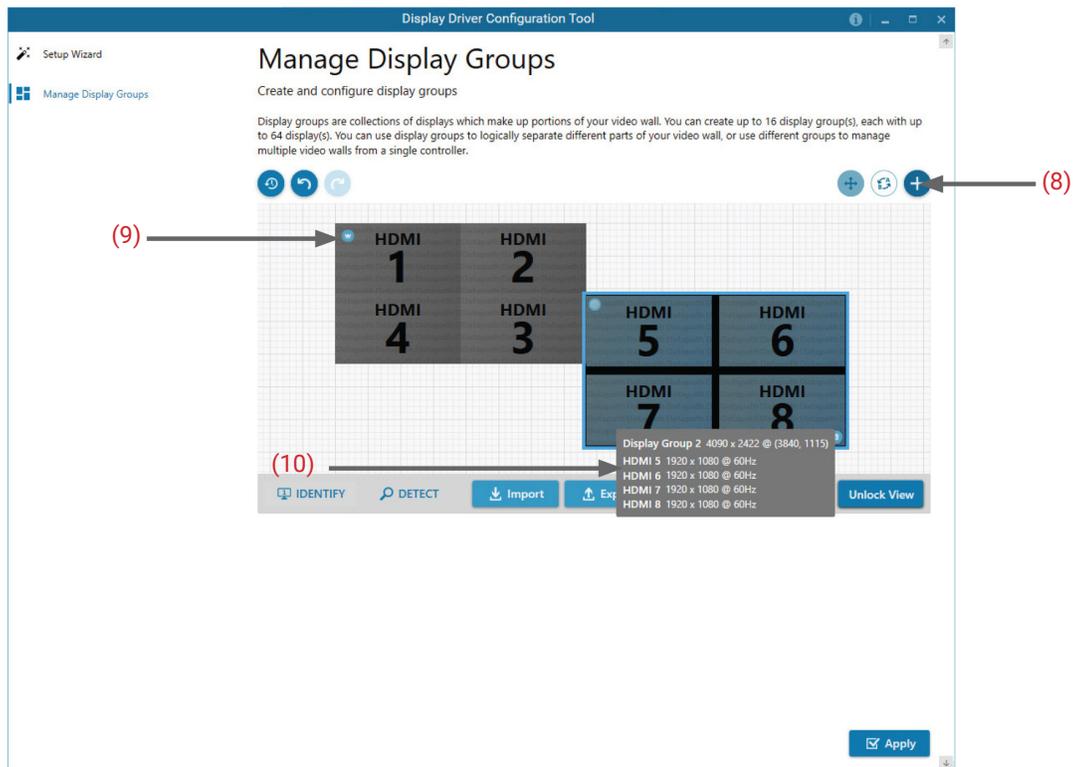


FIGURE 6-17.

The “Manage Display Groups” dialog allows you to edit current groups and create new groups. In the example above, two groups have been created. Hover the mouse over each group (10) to display basic information about the display group:

- ◆ The group name
- ◆ Resolution
- ◆ Details of each output

The “Primary Display” can be assigned to any group by clicking on the icon (9) and toggling between each display group.

To create a new display group, click on the “Create a new display group” icon (8) and the following dialog is displayed.

## CHAPTER 6: OPERATION

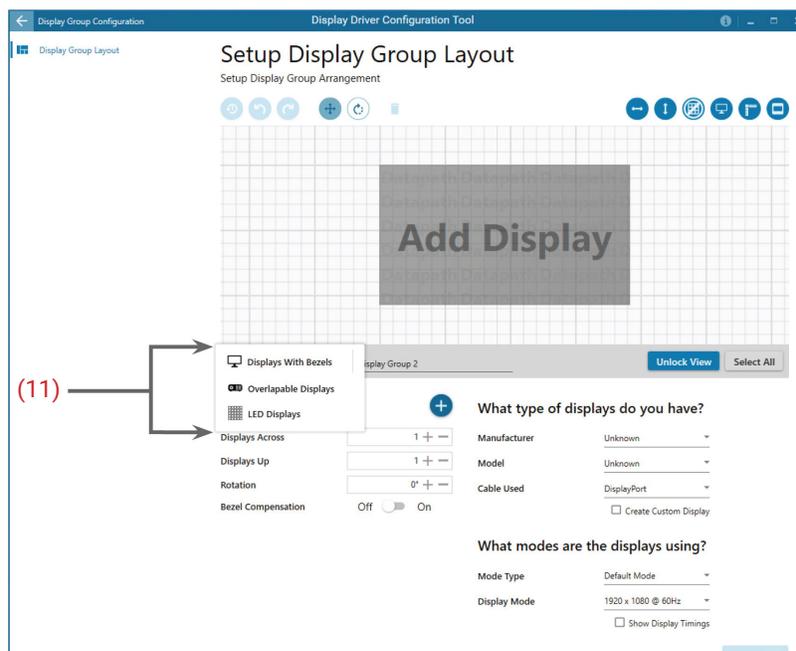


FIGURE 6-18.

Create a new display group by first selecting the type of technology you will be using for your displays by clicking on the drop-down list (11). Continue to create your new group layout in the same way you created your initial display group.

### 6.4 OPENING RADIAN STANDARD VIDEO WALL SOFTWARE (OPTIONAL)

Radian Standard Video Wall Software is an optional video/display wall management software application specifically designed for Radian Flex Video Wall Controllers. Radian Standard Video Wall Software consists of two separate elements that work together to enable you to control the display wall, the Client (application) and the Server.

The Radian Standard Video Wall Software Start Menu has four options, Radian Standard Video Wall Software Client, Radian Standard Video Wall Software Server, Radian Standard Video Wall Software Security Server and Radian Standard Video Wall Software Security Administration Client.

#### 6.4.1 RADIAN STANDARD VIDEO WALL SOFTWARE SERVER

The Radian Standard Video Wall Software Server is used to display IP and application windows. The Server element of Radian Standard Video Wall Software needs to be installed on the machine to which your video wall is connected. The Server is the machine that drives your display wall. A Server can be accessed locally or via a network. Radian Standard Video Wall Software will automatically seek out and display all servers available to you. Each server can run multiple display walls depending on the version of Radian Standard Video Wall Software you have. Before opening the Client interface, you may need to start the Server manually by clicking on it in the Programs menu. The Radian Standard Video Wall Software Client will only detect Servers that are running.



Start | All Programs | Radian Standard Video Wall Software | Radian Standard Video Wall Software Server

## CHAPTER 6: OPERATION

### 6.4.2 RADIAN STANDARD VIDEO WALL SOFTWARE CLIENT

The Radian Standard Video Wall Software Client should be installed on the machine that has been identified to control the display wall. This could be any machine on the network including the machine driving the display wall. The application element of Radian Standard Video Wall Software is used to control the position, size and properties of each window displayed on the Server machine.

The Radian Standard Video Wall Software Client can be installed on systems running up to and including Windows® 10 Operating Systems.

Open the Radian Standard Video Wall Software Client application:

 Start | All Programs | Radian Standard Video Wall Software

### 6.4.3 RADIAN STANDARD VIDEO WALL SOFTWARE - USER INTERFACE

Open the application by selecting Radian Standard Video Wall Software Client and the user interface will be launched.

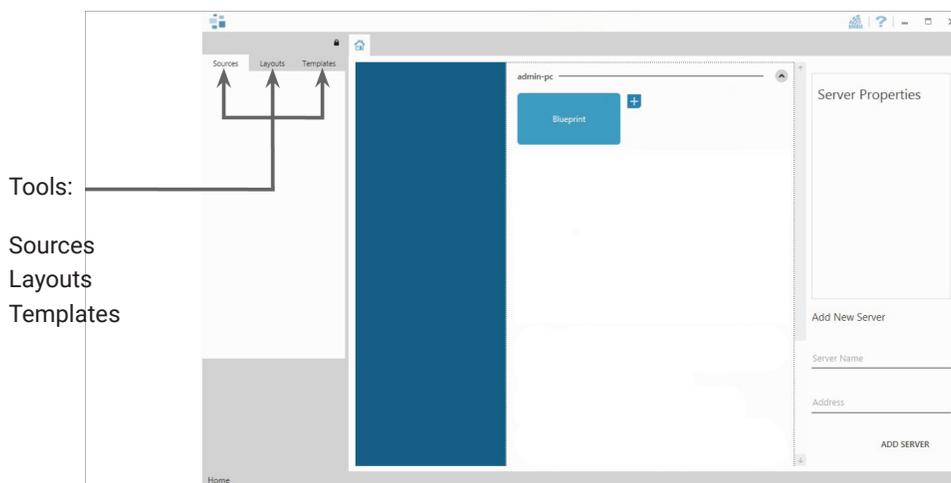
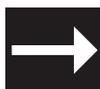


FIGURE 6-19.



A detailed summary of Radian Standard Video Wall Software features can be found in Chapter 7; alternatively, a comprehensive help file is available within the application.

## CHAPTER 6: OPERATION

### 6.4.4 RADIAN STANDARD VIDEO WALL SOFTWARE SECURITY ADMINISTRATION CLIENT

---

The Radian Standard Video Wall Software Security Administration Client allows Administrators to assign specific user roles on a wall by wall basis. Users are assigned Roles based on their Windows® login. Roles can be structured to allow only specific tasks to be carried out on a wall using the Radian Standard Video Wall Software Client. For example, a user can be assigned a role allowing unrestricted access on one wall but assigned a role on another wall which only allows the launching of pre-determined layouts.

The application allows you to carry out the following User Rights Management Tasks:

- ◆ Import users from the Windows Active Directory into the application database
- ◆ Create and edit roles
- ◆ Assign permissions to providers, layouts and sources, giving specific roles access to them
- ◆ Assign Roles to walls

### 6.5 OPENING VIDEO WALL MANAGER (OPTIONAL)

Video Wall Manager are optional video/display wall management software applications specifically designed for Radian Flex Wall Controllers. Both Video Wall Controller Software-red and Video Wall Manager consist of two separate elements that work together to enable you to control the display wall, the Video Wall Controller Software Application and the Video Wall Controller Software Server.



Start | All Programs | Video Wall Manager

The Video Wall Manager Start Menu offers two methods of opening the application, Video Wall Manager and Video Wall Manager-My Computer.

#### 6.5.1 VIDEO WALL MANAGER - MY COMPUTER

---

Video Wall Manager-My Computer refers to your system having both the Video Wall Manager Application and the Video Wall Manager Server installed. Selecting Video Wall Manager-My Computer will open the Video Wall Manager application window having activated both the Server and the Application. The application window will display all inputs available in the system.

#### 6.5.2 RADIAN VIDEO WALL CONTROLLER SOFTWARE

---

Selecting Radian Video Wall Controller Software will launch the application window but will not connect to a Radian Video Wall Software Server. For more information regarding connecting to a Radian Video Wall Software Server, consult the application help file.

### 6.6 DISPLAYING VIDEO CAPTURES

Once a connection to a Radian Video Wall Software server has been established, then windows can be created for display on your video/display wall. Some video formats may not be supported; see Installing video CODECS in the Advanced User Chapter.

Windows can be created using the New menu or the application Toolbar.

## CHAPTER 6: OPERATION

### 6.6.1 NEW MENU

Displays options for each window type:

- Preset Window
- Video Capture Cards Window
- IP Camera Window
- Run an Application

### 6.6.2 TOOLBAR

The application Toolbar displays a list of the type of windows that can be opened, depending on the hardware you have installed in your machine.

To open the required inputs:

Select the required input using the cursor and drag to a preferred position on the wall.

Double-click on the required input and the window will open, positioned at the top left of the display wall.

Open multiple inputs by pressing the shift key and clicking the required number of inputs with the mouse.

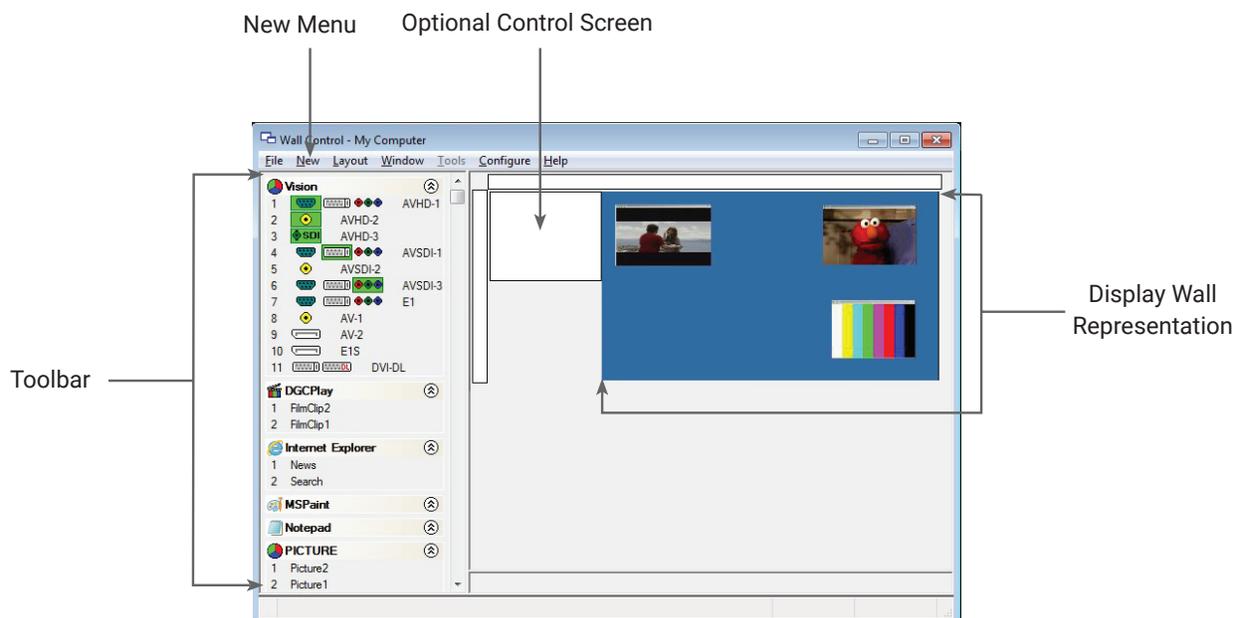


FIGURE 6-20.

## CHAPTER 7: SOFTWARE

This chapter will cover:

- ♦ Video Wall Manager
- ♦ Radian Standard Video Wall Software
- ♦ Video Wall Controller Software
- ♦ Utilities

### 7.1 VIDEO WALL MANAGER (OPTIONAL)

The optional Video Wall Manager software application (Video Wall Manager) is pre-installed and tested before shipment of your system, so no installation of the software is required.

Video Wall Manager displays the desktop of the machine that is being controlled. It allows you to remotely display Video Capture Cards, IP Camera (Video Wall Manager required) and Application windows across a network on another machine or locally on the same machine.

You can use Video Wall Manager to interactively move, size and position application windows and control Video Capture Cards and IP Camera windows by using the Windows Properties sheet. Video Wall Manager also has a guide and grid function to aid the positioning of windows on the display wall.

Video Wall Manager allows you to save specific wall layouts as .lay files, enabling them to be re-called when required.

There is an area of the application around the desktop where windows can be dragged allowing them to be manipulated without being displayed on the video/display wall.

#### 7.1.1 ICONS DISPLAYED IN THE VIDEO WALL MANAGER TOOLBAR

The Icons displayed in the application toolbar identify the type of source that is available to each input:

TABLE 7-1. TOOLBAR ICONS

	Composite Source
	S-Video Source
	Analog Source
	Component Source
	DVI Source
	Dual-Link DVI Source
	DisplayPort Source
	SDI/HD-SDI/3G Source
	IP Camera Source
	If an Icon is displayed with a green surround, this indicates the type of source currently being captured for that particular input.
	

## CHAPTER 7: SOFTWARE

### 7.1.2 VIDEO WALL CONTROLLER SOFTWARE - FEATURES AND TOOLS

---

Video Wall Controller Software has a range of advanced features to enable you to manage your video/display wall either locally or remotely over a network. The following list provides a brief summary of the features and tools contained within the application. However, all the features and tools are documented in depth in the Video Wall Manager help file, which can be accessed through the Help menu or by pressing F1 when the application is active.

### 7.1.3 LAYOUT FILES

---

Save and recall specific desktop configurations using layout files. Window properties including the position, size and any On Screen Displays are also saved in layout files.

### 7.1.4 OFFLINE CONFIGURATION

---

The Video Wall Controller Software offline layout editor allows layout files to be created and edited without physically displaying any windows on the display wall. Video Wall Controller Software can be connected offline on either the server machine or a machine without any display wall hardware, for example a laptop.

An offline connection in Video Wall Controller Software is initiated by opening a configuration file. This file must have been exported from a server machine and will contain a snapshot of the hardware and software configuration on that machine.

### 7.1.5 VIDEO CAPTURE CARDS AND IP WINDOW

---

Control over presenting captured video and IP camera streams on the display wall. Configure window properties including:

- ◆ Position and size of windows
- ◆ Aspect ratio enforcement
- ◆ Exclude window borders and menu bar
- ◆ Create on-screen display captions
- ◆ Control capture rate

### 7.1.6 APPLICATION WINDOWS

---

Support for controlling applications such as Internet Explorer, Microsoft Powerpoint. Application can be opened direct from the Video Wall Controller Software Toolbar, through the Command Line Interface or from previously saved layout files.

### 7.1.7 ON-SCREEN DISPLAY (OSD)

---

Highly configurable OSD function to overlay bitmaps (not on all types of window) and text over Video Capture Cards and IP Camera windows. Add descriptions and logos with transparency support and create specific display variables such as frame rates.

## CHAPTER 7: SOFTWARE

### 7.1.8 CAROUSEL SUPPORT

---

The Carousel function can automatically cycle through configured lists of different inputs for Video Capture Cards and IP Camera windows over defined time periods. A double buffering mechanism will automatically start IP Camera streams prior to the carousel input switch.

### 7.1.9 SPLIT INTO SUB-WINDOWS

---

Divide an active Video Capture Cards window into sub-windows. Each sub-window will display a cropped portion of the original Video Capture Cards window.

### 7.1.10 AUDIO SUPPORT

---

Control digital and analog audio content associated with specific Video Capture Cards windows.

### 7.1.11 COMMAND-LINE INTERFACE

---

Video Wall Manager comes with a powerful Command Line Interface to enable you to automate almost any operation from opening layout files, moving windows around the display wall and changing specific input settings.

### 7.1.12 SUPPORT FOR CRESTRON/AMX CONTROLLERS

---

- ◆ Remote Command Line Interface for automation via Crestron/AMX Controllers:
- ◆ Control the display wall remotely from a Crestron/AMX controller
- ◆ Access to the full local Command Line Interface
- ◆ Support for RS-232 (via serial cable) and TELNET (via a local network)
- ◆ Integrated user interface support to configure and monitor the Remote Command Line

## 7.2 RADIAN STANDARD VIDEO WALL SOFTWARE (OPTIONAL)

Radian Standard Video Wall Software provides users with the interface required to quickly and effectively manage content that includes video captures, IP streams and local applications. Users are able to place any input source on any part of the video wall using a simple drag and drop operation. Precise positioning of each piece of content can be achieved through the mouse and keyboard, or via the template tool.

The Template Tool allows users to not only place their own templates across an entire wall that evenly distributes content, but Radian Standard Video Wall Software also allows users to apply a template to an individual window so multiple windows can be grouped together and moved as a single item.

Radian Standard Video Wall Software also introduces a tabbed interface that will allow a single user to seamlessly manage multiple video walls; a user can see unique walls side by side to ensure things are running smoothly.

## CHAPTER 7: SOFTWARE

Radian Standard Video Wall Software allows multiple walls to be delivered by a single system. Walls in separate areas of a building can be independently driven from a single location. Multiple walls can be easily set up using the Wall Management functionality and, if required, each wall can be assigned a unique set of sources or video resources.

Before opening the Client and Security Administration Client interfaces, you may need to start the Radian Standard Video Wall Software Server by clicking on it in the Programs menu. Starting the Server loads both the Radian Standard Video Wall Software Server and the Radian Standard Video Wall Software Security Server. The Radian Standard Video Wall Software Client will only detect servers that are running. The Server icon is displayed in the System Tray.

Server icon ----> 

 Start | All Programs | Radian Standard Video Wall Software - Server

Opening the Radian Standard Video Wall Software Client

 Start | All Programs | Radian Standard Video Wall Software - Client

### THE RADIAN STANDARD VIDEO WALL SOFTWARE - USER INTERFACE

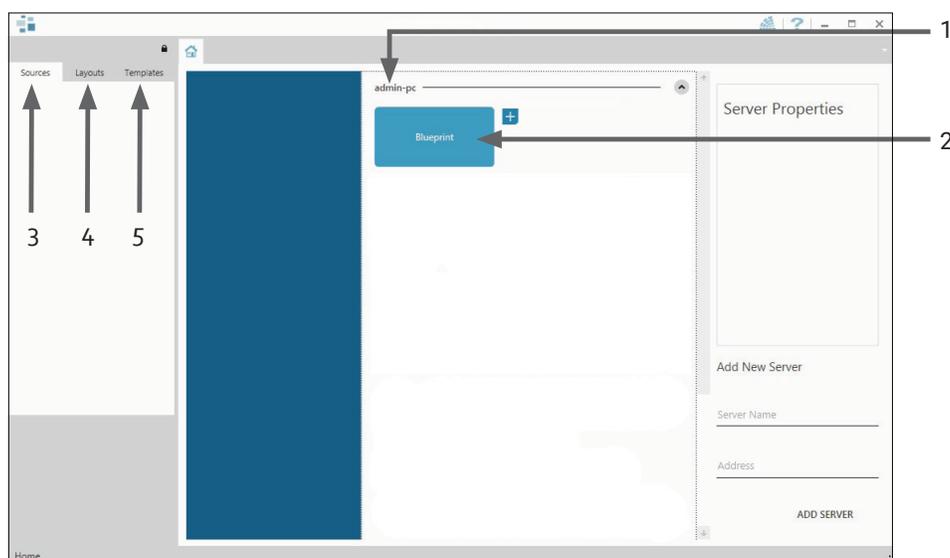


FIGURE 7-1. USER INTERFACE

TABLE 7-2. USER INTERFACE CALLOUTS

1	Indicates the server you are connected to
2	A representation of the display wall(s) associated with the server
3	Sources Tab - Displaying all the sources connected to the server for use on the display wall
4	Layouts Tab - Used to save, recall and share display wall layout configurations
5	Templates Tab - Use templates to assist in the design of specific display wall layouts

## CHAPTER 7: SOFTWARE

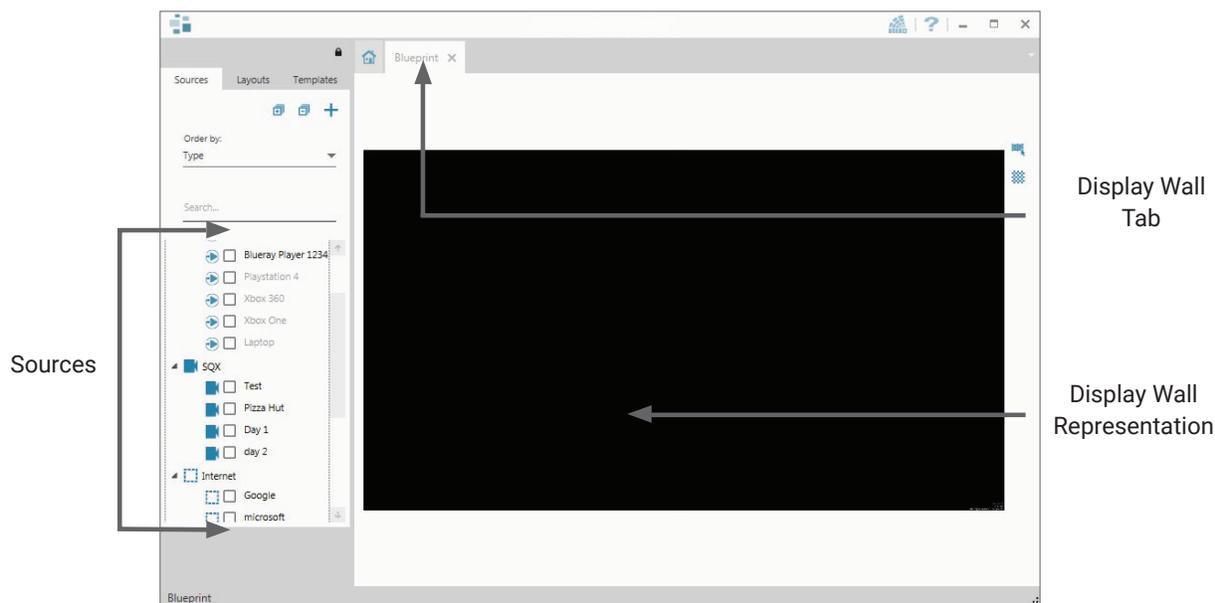


FIGURE 7-2.

When opened, the display wall tab shows a live representation of the physical wall and the sources available to display on it. To place a source on the video wall, simply click on the required source in the sources tab and drag it onto the display wall representation.

The application help file contains information explaining how multiple sources can be selected, how to use and create templates and how to save, recall and share layout files.

### THE RADIAN PRO VIDEO WALL SOFTWARE - SECURITY ADMINISTRATION CLIENT

A Radian Pro Video Wall Software serial dongle must be inserted into a vacant USB port. If the dongle is removed or swapped, the Security Client will not open and an error message is displayed, so do not remove the dongle.

If you have purchased Radian Pro Video Wall Software, the license dongle can be located in the accessories box.

 Start | All Programs | Radian Standard Video Wall Software - Security Administration Client

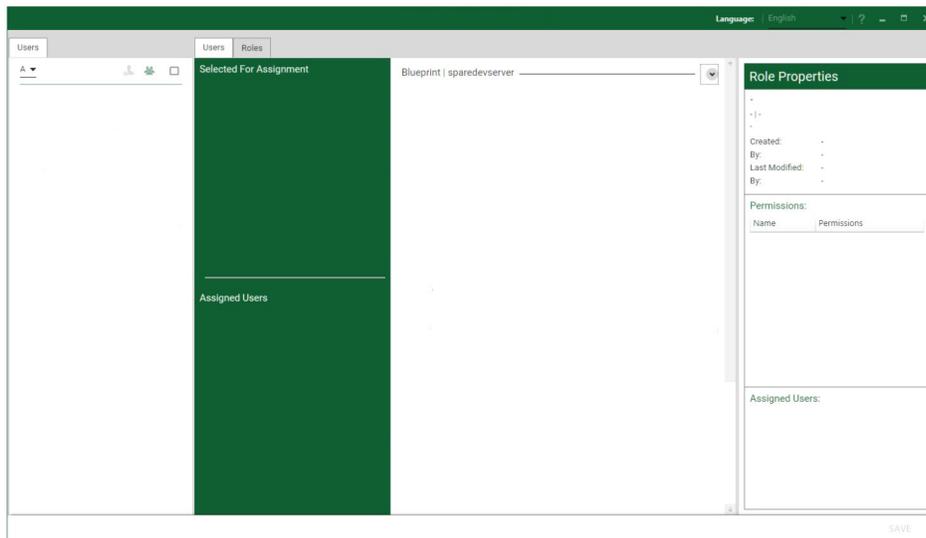


FIGURE 7-3.

The Radian Standard Video Wall Software - Security Administration Client allows Administrators to assign specific users to roles on a wall by wall basis. For example, a User can be assigned a role allowing unrestricted access on one wall but assigned a role on another wall that only allows the opening of pre-determined layouts.

Before using the Security Client for the first time, run the SecurityOnOff.exe program to enable security protection for the application. To run the SecurityOnOff.exe, make sure you are logged into Windows with Administrator Rights.

Locate and double click on the SecurityOnOff.exe file:

Program Files (x86) \Radian Standard Video Wall Software\ Security Server\SecurityOnOff

A Radian Video Wall Software serial dongle must be inserted into a vacant USB port. If the dongle is removed or swapped, the Security Client will not open and an error message is displayed, so do not remove the dongle.

The Radian Standard Video Wall Software Security Application help file contains information on how to:

- ◆ Import users from the Windows® Active Directory into the database.
- ◆ Create and edit roles.
- ◆ Assign permissions to providers, layouts and sources, giving specific roles access to them.
- ◆ Assign roles to walls.

## CHAPTER 7: SOFTWARE

### 7.3 VIDEO WALL CONTROLLER SOFTWARE (OPTIONAL)

The optional Video Wall Controller software application enables you to monitor the temperatures and voltages of the following system components:

- ◆ Backplanes
- ◆ Capture Cards
- ◆ Streaming Cards
- ◆ SBC
- ◆ CPU Cores
- ◆ Graphics Cards

If any overheating or voltage surge is imminent within the system, the Video Wall Controller application will alert the user via a pre-configured alarm.

When running, the Video Wall Controller Software application can display a transparent floating icon that can be placed anywhere on the desktop.

Cursor tool tips are available throughout the application offering information and advice. Hover the cursor over different areas of the application to reveal the tool tips. The application also has a help file to assist you; click on any help button or press F1 on your keyboard to access the help files.

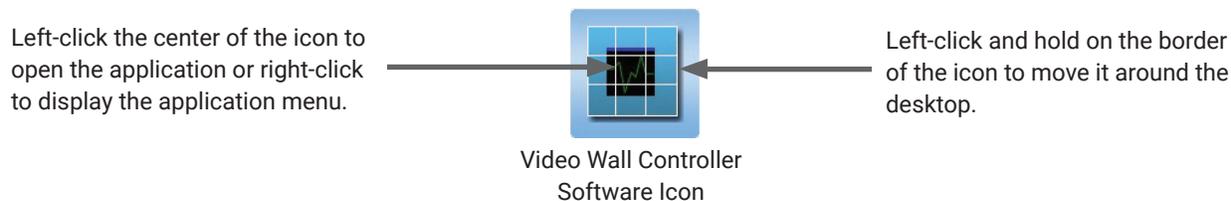


FIGURE 7-4.

#### 7.3.1 MONITORING SYSTEM COMPONENTS

Each of the system components listed above have built in temperature and/or voltage sensors that enable the Video Wall Controller Software application to display any increase or decrease in voltage and temperature. The temperature and voltage ranges are graded as follows:

Green = Normal operating conditions

Amber = An indication that voltages or temperatures are operating outside of normal thresholds and if configured and alarm will activate.

Red = Indicates that the voltages or temperatures have exceeded the acceptable working thresholds and a system shutdown is imminent.

## CHAPTER 7: SOFTWARE

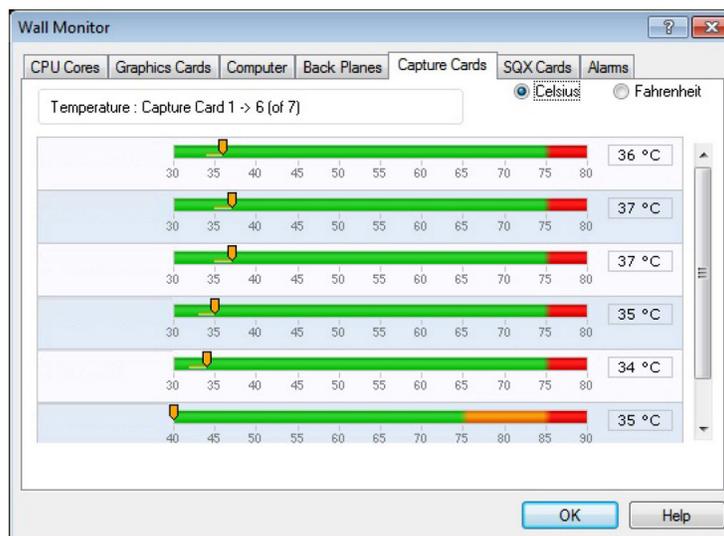


FIGURE 7-5.

### 7.3.2 VIDEO WALL CONTROLLER SOFTWARE APPLICATION WINDOW

The Video Wall Controller Software application window (above) displays the temperature of the capture cards in the system. To view different components, click on the relevant tabs of the application. Temperatures can be displayed in either degrees Fahrenheit or degrees Celsius.

### 7.3.3 CONFIGURING ALARMS

Video Wall Controller Software allows you to configure three types of alarm to warn of impending problems:

**System Buzzer** - The system buzzer can be configured to determine the amount of time the buzzer will be audible up to a maximum of 5 seconds. An audio alarm is activated within the system. On some systems, speakers may have to be connected.

**Email** - If you are not near your system, you can configure an email warning. An email is sent to a nominated email address giving details of impending problems.

**On Screen** - Text is displayed on screen to warn of impending problems with the system. The Video Wall Controller Software icon adopts an amber border when the alarm is issued.

## CHAPTER 7: SOFTWARE

### 7.3.4 CURRENT STATUS

At any time, you can check the current status of the monitored components by selecting Show Current Status in Browser from the Application menu. This will display a browser window, similar to the following:

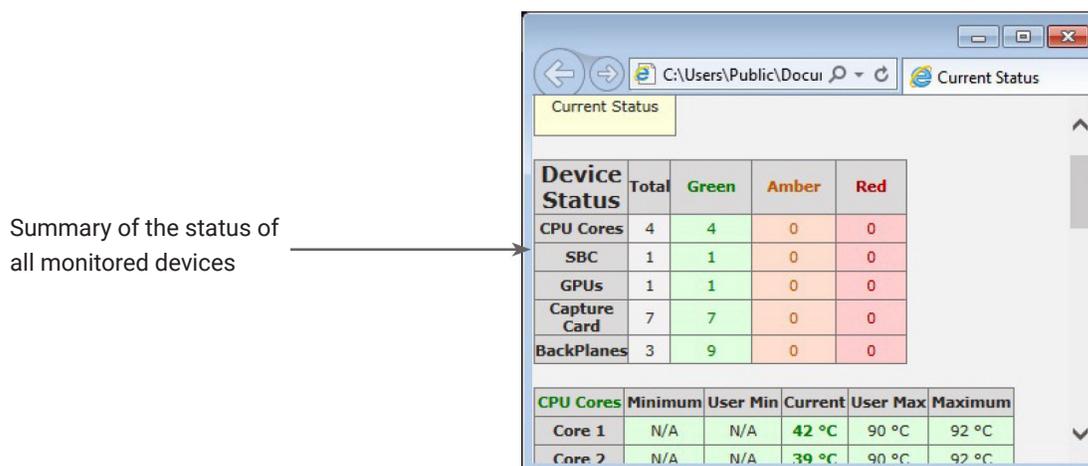


FIGURE 7-6.

## 7.4 VIDEO CAPTURE CARDS APPLICATION (OPTIONAL)

When purchased separately, capture cards are supplied with a powerful software application for configuring the format of input sources and displaying the data.

### 7.4.1 VIDEO STREAMING

DirectShow drivers for WDM Streaming driver supports the following applications, to encode, record and stream video over networks or the Internet:

- ◆ Microsoft Media Encoder®
- ◆ VLC
- ◆ VirtualDub
- ◆ Any other DirectShow encoding software

For streaming applications, Video Capture Cards can be used with Windows® Media Encoder to compress and stream captured video. To replay the video, use Windows Media Player.

Any application compatible with Windows DirectShow technology can use Video Capture Cards because they have built-in WDM support.

## CHAPTER 7: SOFTWARE

### 7.4.2 VIDEO CAPTURE CARDS SOFTWARE CAPABILITIES

---

Timestamp support for streaming synchronization:

- ◆ Synchronization of multiple inputs across multiple cards
- ◆ Synchronize systems using network clock synchronization
- ◆ For edge blending and other applications

Flexible and configurable EDID Management:

- ◆ Allows programming of custom EDID parameters for capture cards

Low Input to Output Capture Latency.

DMA to third party graphics vendors back and front buffers via Direct3D:

- ◆ Compatibility with AMD DirectGMA
- ◆ Compatibility with Nvidia GPUDirect

User Mode filter for source selection:

- ◆ Enables cropping support in DirectShow on all inputs
- ◆ Supports Start and Stop trigger interface on all Video Capture Cards inputs

Unified Video Capture Cards Driver:

- ◆ Multiple cards per system, 16 streams per input
- ◆ Frame sync and time stamping
- ◆ DirectShow interface
- ◆ The RGBEasy API for advanced audio and video control
- ◆ Fully integrated for use with Video Wall Manager software for video wall applications

### 7.4.3 MULTISTREAM

---

The MultiStream feature is available on all capture cards and enables multiple, independently formatted video streams to be set up in parallel.

Each stream can be formatted completely independently and individual selection of resolution, color space and cropping region can be set for each stream. This maximizes bandwidth use of the capture card and PCIe interface, and also simplifies development tasks for application developers who do not need to implement video stream reformatting separately.

## CHAPTER 7: SOFTWARE

### 7.4.4 VIDEO CAPTURE CARDS APPLICATION OVERVIEW

---

The application displays the connected source in a window; it has the following features:

- ◆ Scales the data to fit in the window
- ◆ Ability to set up sources accurately (settings automatically saved)
- ◆ Save a single frame to a file in one of the following formats: BMP, JPEG, GIF, TIFF, PNG
- ◆ Print a single frame
- ◆ Maintain the aspect ratio of the displayed captured data
- ◆ Cropping
- ◆ Display text over the data (on-screen display)
- ◆ Command line interface
- ◆ HDCP supported (not supported in SQX encoding)
- ◆ Help file documenting all features

NOTE: The supplied drivers and software require you are using:

- ◆ Up to and including Windows® 10
- ◆ DVD ROM Drive

## 7.5 SOFTWARE UTILITIES

Black Box provides a group of software utilities designed to assist you fine tune your system for specific individual system requirements. All the software utilities can be found on the Recovery Media that was shipped with your system, alternatively, to download the most up-to-date versions, contact Black Box Technical Support at 877-877-2269 or [info@blackbox.com](mailto:info@blackbox.com).

### 7.5.1 DESKTOP UTILITY

---

Used to define a desktop resolution that can compensate for display bezels or projector overlap.

### 7.5.2 CUSTOM MADE UTILITY

---

A utility for defining custom display timings for video modes not available in the display driver or EDID.

### 7.5.3 MULTI RESOLUTION CONFIGURATION TOOL (MULTIRESCONFIG)

---

Developed to assist in the design and configuration of a video wall that contains a mixture of multi resolution displays.

### 7.5.4 DIAGNOSTIC TOOL (DIAGTOOL)

---

A diagnostic tool that gathers information to assist in diagnosing problems with hardware and software configurations. Information is gathered and compressed into a zip file for onward transmission to Black Box Technical Support.

### 7.5.5 PCICFG TOOL

---

A diagnostic program that prints out the PCI configuration information. Note, this tool must be run from either a USB or MSDOS boot disk, it cannot be run from Windows®.

### 7.5.6 SLEEP UTILITY

---

Designed to generate a pause within a script. This can be used when sequencing the loading of files or application windows.

## CHAPTER 8: TROUBLESHOOTING

### 8.1 FREQUENTLY ASKED QUESTIONS (FAQS)

#### 8.1.1 I CAN'T SAVE A LAYOUT FILE?

---

The server does not have a USB License Dongle installed and so Video Wall Manager is working in limited Demo mode.

#### 8.1.2 ACCESS IS DENIED

---

This message means that the attempt to connect to the server application failed because the authentication information provided was not acceptable.

One of the following has occurred:

The user name, the password or the machine/domain that you have entered are not correct. Try entering the details again.

If the machine to which you are connecting is running Windows® XP Service Pack 2 and you have not entered a password, you will need to change your account so that you have a password.

If the machine you are connecting to is running Windows XP and it is not participating in a domain, you will need to change the Network Authentication settings on the machine.

#### 8.1.3 RPC SERVER UNAVAILABLE

---

This message means that the attempt to connect to the server failed.

If you are connecting to My Computer:

Is the server application running?

Did an error occur that prevented the server application from starting the RPC server?

Are you using the correct port name?

If you are connecting across a network:

Has the Video Wall Manager server been activated?

When Video Wall Manager is installed on the server, a serial number must be entered to enable the networking features.

Is the Video Wall Manager server configured for network access?

Is the server application running?

Did an error occur that prevented the server application starting the RPC server?

Are you using the correct port?

If a connection is possible with the Video Wall Manager application either remotely or locally, you can use the Server Application Manager dialog to find out if the server application has been installed, is running and which port and port name it is using and if an error occurred. In the Video Wall Manager application, go to the Configure menu and select Server Applications.



## CHAPTER 8: TROUBLESHOOTING

If a connection is not possible with the Video Wall Manager application, you will need to look at the application event viewer on the Video Wall Manager Server.

### 8.1.4 THE ENDPOINT IS A DUPLICATE

---

This error message suggests that an attempt to open a communication port failed because it is already in use.

If the Video Wall Manager server has not been activated or the networking has been disabled in the Video Wall Manager Administrator dialog or Video Wall Manager has not been activated, the problem is with the port name.

If networking is enabled, the problem could be with either the port number or the port name.

You can find out the port number and the port name that the server application is using through the Server Application Manager dialog or the application event viewer.

You can find out which port numbers are in use on a machine with the netstat command. There is no way to find out which port names are in use.

Use Video Wall Manager | Configure Menu | Server Application Manager to change the port number and/or port name and restart the server application.

### 8.1.5 THE REMOTE PROCEDURE CALL FAILED AND DID NOT EXECUTE

---

This is displayed when trying to contact a server application that has been stopped after it had been connected to successfully. Go to the Server Application Manager dialog and start the server application again.

### 8.1.6 CHANGING SCREEN RESOLUTION

---

Before making any changes to the resolution, we recommend that you stop the Video Capture Cards server beforehand. This can be done using Video Wall Manager | Configure Menu | Server Application Manager.

The servers retain resources on the graphics card, which may not be available if the resolution is changed.

### 8.1.7 HOW DO I CONNECT A REMOTE COMMAND CONTROLLER VIA RS-232 OR IP TELNET?

---

Support for RS-232 and IP remote control of machines is provided through our Video Wall Manager software. This package includes a "remote command line interface" that can be used to select and configure the required method of control. This can be accessed under the "Configure->Remote Command Line" menu option while Video Wall Manager is connected to the server. Once configured, the Video Wall Manager program does not need to remain open and the system will process remote commands until the configuration is changed.

To use the remote command line, you must first select the required method of control via the "Active Server" drop-down list in the "remote command line" dialog. This allows you to select between "Com Port Command Line Interface" (RS-232) and "Telnet Command Line Interface" (IP network based control). Once a server has been selected, its settings can be configured by pressing the "Settings" button and it must also be enabled via the "Enabled" checkbox; the server specific settings include options such as ports and transmission speed. Once the selected server has been activated, then the "Status" on the "Remote Command Line" dialog should change to "Connected." At this point the software should be ready to receive remote commands and the Video Wall Manager software can then be closed.

## CHAPTER 8: TROUBLESHOOTING

RS-232 and Telnet commands can be sent by any suitable remote device, including Crestron Controllers or PCs. Note that we do not provide any client software or support for the configuration or usage of these remote devices themselves, though.

The commands sent to the controller via the remote command line interface should be in the format of Video Wall Manager's local command line interface. The command usage includes the ability to open and close layout files, manipulate individual windows properties and to change capture sources. These commands, which are detailed in the help file topic "Command Line Interface," can be tested by executing them locally on the server machine via the Windows® command prompt CMD.EXE. When using the "Com Port Command Line," each command will be executed when a carriage return or line feed character is encountered. For Telnet, a carriage return immediately followed by a line feed is used to signify that the command should be executed. When testing usage of the remote command line, the "Monitor" window in the "Remote Command Line" dialog will display all commands as they are received.

Full information on usage of the Remote command line interface can be found in the Video Wall Manager help file by either searching for "remote command line" or pressing the "Help" button on the "Remote Command Line" dialog itself. Note that Radian Standard Video Wall Software only supports Telnet.

### 8.1.8 WHEN I RECALL A FIREFOX OR CHROME PAGE, THE WINDOW IS NOT IN PLACE?

---

Video Wall Manager only supports Internet Explorer. Full functionality is not available using any other web browser.

All the cards in your system are driven together to display a single, virtual desktop across multiple screens. Users should be aware that although error code 43 is reported, this is normal operation and there are no faults with the cards installed in your system.

## 8.2 TECHNICAL SUPPORT

### 8.2.1 CONTACTING BLACK BOX

---

If you determine that your Radian Flex is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box Technical Support at 877-877-2269 or [info@blackbox.com](mailto:info@blackbox.com).

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- ♦ the nature and duration of the problem.
- ♦ when the problem occurs.
- ♦ the components involved in the problem.
- ♦ any particular application that, when used, appears to create the problem or make it worse.

### 8.2.2 SHIPPING AND PACKAGING

---

If you need to transport or ship your Radian Flex:

- ♦ Package it carefully. We recommend that you use the original container.
- ♦ If you are returning the unit, make sure you include everything you received with it. Before you ship for return or repair, contact Black Box to get a Return Authorization (RA) number.



## CHAPTER 9: MAINTENANCE

### 9.1 FILTER MAINTENANCE

The system filter is an integral part of the wall controller and as such it needs to be maintained correctly. Failure to maintain the filter can result in the system overheating and causing it to fail. In normal operating conditions, the filter should be removed and cleaned every 3 months. However, this 3 month period is a guide only and it can be increased to every 6 months or decreased to one month depending on the levels of dust in the environment the system is operating in.

We recommend that you check the condition of the filter at regular intervals.

The filter can be removed and cleaned while the system is in operation, system shutdown is not necessary.

NOTE: Failure to maintain the system filter could result in damage to your system and invalidate the warranty.

#### 9.1.1 REMOVE THE FILTER

Open the front panel door and locate the filter housing screw, remove the screw and lift the filter housing away from the front panel.

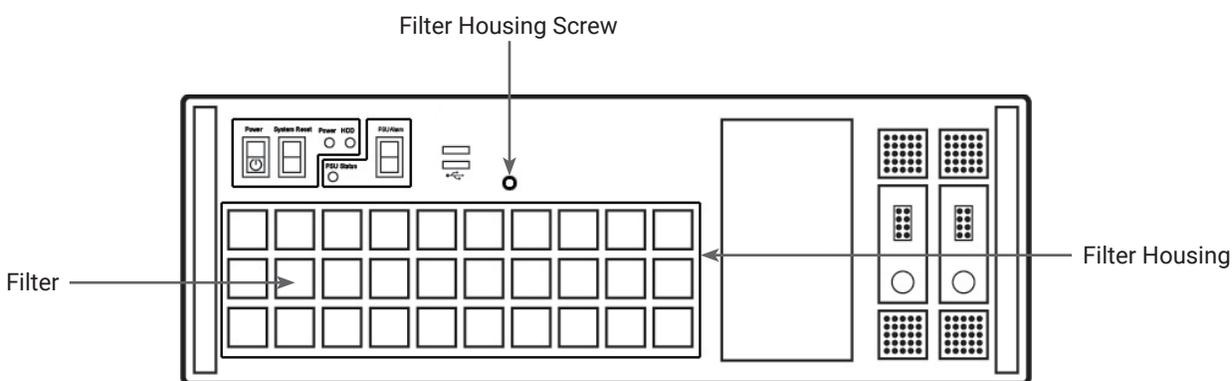


FIGURE 9-1.

Remove the filter from the housing and shake it to remove any dust particles, this should not be done in close proximity to the system to avoid dust ingress. Ideally, the filter should be cleaned using a vacuum cleaner.



NOTE: The filter should never be immersed in water or any other cleaning liquid.

For advice on replacement filters, contact Black Box Technical Support at 877-877-2269 or [info@blackbox.com](mailto:info@blackbox.com).

## CHAPTER 10: SPECIFICATIONS

This chapter will cover:

- ◆ Technical drawings of the chassis
- ◆ Technical specification of the VWP-FLEX-961, VSN982, VWP-FLEX-962X and VWP-FLEX-1182X
- ◆ Technical specification of the VWX-2090
- ◆ Technical specification of the VWX-2110
- ◆ Technical specification of the 9-slot G3 backplane
- ◆ Technical specification of the 11-slot G3 backplane

### 10.1 TECHNICAL DRAWINGS

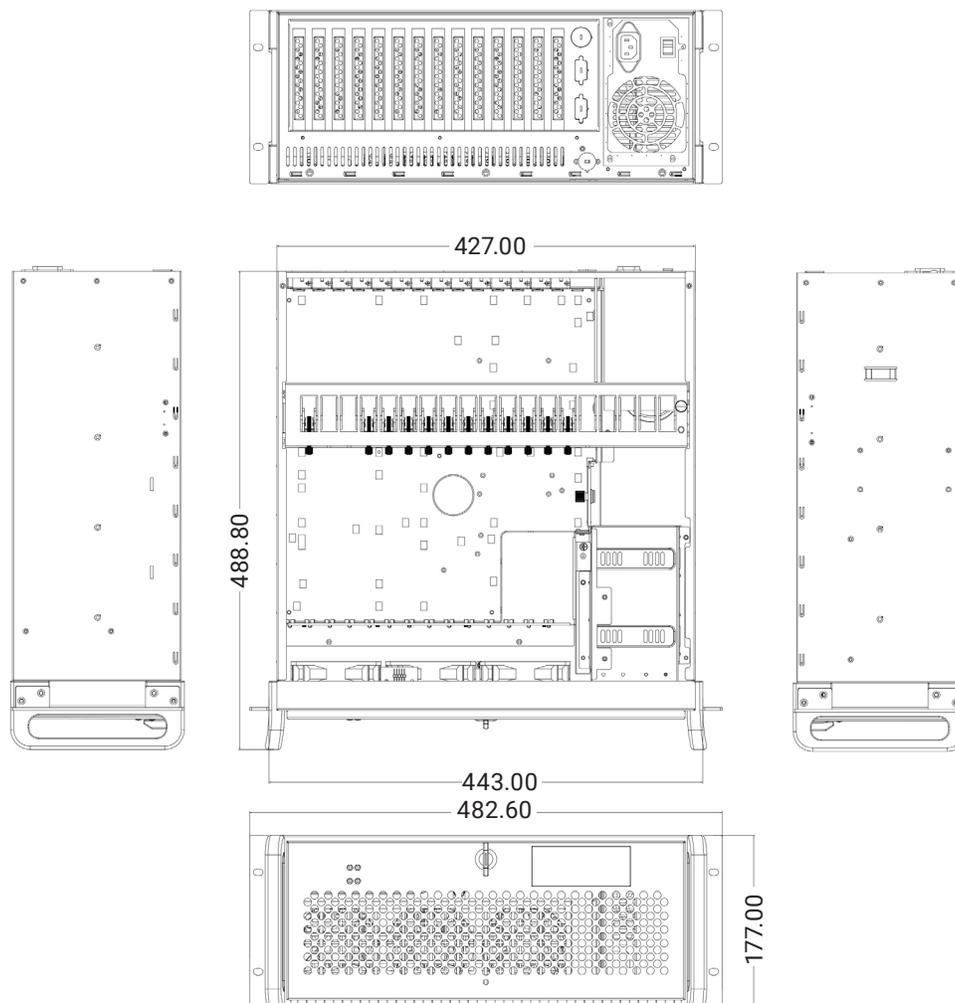


FIGURE 10-1. DIMENSIONAL DIAGRAM

## CHAPTER 10: SPECIFICATIONS

### 10.2 TECHNICAL SPECIFICATIONS - VWP-FLEX-961, VWP-FLEX-962/VWP-FLEX-962X

FIGURE 10-1.

19" 4U Industrial PC chassis
Dimensions (approx) Length 500 mm (incl handles), Height 177 mm, Width 481 mm (incl mounting brackets)
SBC6 - Supports an Intel Core i7 processor (VWP-FLEX-961, VWP-FLEX-962) SBC7 - Supports Single E3 Intel Core Xeon processors (VWP-FLEX-962X)
16 GB DDR2 1600 DDR3 non-EEC registered system memory. 32 GB available on request. (VWP-FLEX-961, VWP-FLEX-962) 32 GB DDR2 1600 DDR3 non-EEC registered system memory (VWP-FLEX-962X) 64 GB DDR2 1600 DDR3 non-EEC registered system memory.
Express9-G3 PCIe back plane providing 1 x8 lane slot and 8 x4 lane slots
Two 240GB removable SSD hard drives, upgrade option of 480 GB SSD.
Ethernet ports -Dual 10Base-T/ 100Base-TX/ 1000 BaseT
On-board Graphics - DVI-I output for VWP-FLEX-961, VWP-FLEX-962/VWP-FLEX-962X. (Used as a control screen)
RS-232 - For control
USB - 2 x 3.0 (back panel) 6 x 2.0 2 front, 2 back, (2 internal - for security dongles)
500 Watt ATX (VWP-FLEX-961, VWP-FLEX-962 Only) 600 Watt Hot Swappable RPSU (VWP-FLEX-961, VWP-FLEX-962/VWP-FLEX-962X)
Noise - 48.6 dB (A) up to 67.9 db (A); Dependent on system configuration and ambient temperature
Triple cooling fans with removable air filter
Includes keyboard and mouse
Windows® 10 LTSB
Operating temperature: 32 to 95° F (0 to 35° C)
Weight - 19 to 25 kg, Shipping Weight - 30 to 33 kg
Compliance - FCC/CE/RoHS/UL/CCC

## CHAPTER 10: SPECIFICATIONS

### 10.3 TECHNICAL SPECIFICATIONS - VWP-FLEX-1182/VWP-FLEX-1182X/VWP-FLEX-1182DX

FIGURE 10-2.

19" 4U Industrial PC chassis
Dimensions (approx) Length 500 mm (incl handles, Height 177 mm, Width 481 mm (incl mounting brackets)
SBC5 - Supports an Intel Dual E5 Xeon Processor (VWP-FLEX-1182DX) SBC6 - Supports an Intel Core i7 processor (VWP-FLEX-1182) SBC7 - Supports Single E3 Intel Core Xeon processors (VWP-FLEX-1182X)
16 GB DDR2 1600 DDR3 non-EEC registered system memory. 32 GB available on request. (VWP-FLEX-1182) 32 GB DDR2 1600 DDR3 non-EEC registered system memory (VWP-FLEX-1182X) 64 GB DDR2 1600 DDR3 non-EEC registered system memory. 128 GB DDR2 1600 DDR3 non-EEC registered system memory. (Option available for VWP-FLEX1182DX only)
Express11-G3 PCIe back plane providing 11 x8 lane slots
Two 240 GB removable SSD hard drives, upgrade option of 480 GB SSD.
Ethernet ports -Dual 10BASE-T/100BASE-TX/1000BASE-T
On-board Graphics - DVI-I output enabling connection to DVI/VGA using the cable provided. Can be used as a control screen (Only a VGA connector available on the VWP-FLEX-1182DX).
RS-232 - For control
USB - (2) 3.0 (back panel) (2) 2.0 (2) front, (2) back, ([2] internal - for security dongles)
800 Watt RPSU Dual Redundant
Noise - 48.6 dB(A) up to 67.9 db(A); Dependent on system configuration and ambient temperature
Triple cooling fans with removable air filter
Includes keyboard and mouse
Windows® 10 LTSC
Operating Temperature: 32 to 95° F (0 to 35° C)
Compliance - FCC/CE/RoHS/UL/CCC

## CHAPTER 10: SPECIFICATIONS

### 10.4 TECHNICAL SPECIFICATIONS - VWX-2090

FIGURE 10-3.

9-slot G3 PCIe backplane providing 1 x 8 lane slot and 8 x 4 lane slots
600 W Redundant PSU or 500 W ATX
Dual cooling fans with removable air filter
Noise - 48.6 dB(A) up to 67.9 dB (A); Dependent on system configuration & ambient temperature
Product Weight - 19-25 kg (Shipping weight is 30-33 kg)
Operating Temperature: 32 to 95° F (0 to 35° C)

### 10.5 TECHNICAL SPECIFICATIONS - VWX-2110

FIGURE 10-4.

11-slot G3 PCIe backplane providing 11 x 8 lane slots
800 W Redundant PSU
Dual cooling fans with removable air filter
Noise - 48.6 dB(A) up to 67.9 dB (A); Dependent on system configuration & ambient temperature
Product Weight - 19-25 kg (shipping weight is 30-33 kg)
Operating Temperature: 32 to 95° F (0 to 35° C)

## CHAPTER 10: SPECIFICATIONS

## 10.6 TECHNICAL SPECIFICATIONS - 9-SLOT G3

## 10.6.1 PIN CONNECTORS

FIGURE 10-5.

FAN1, FAN2, FAN3	4 PIN FAN SPEED CONTROL HEADER PIN 1: GND PIN 2: +12 V PIN 3: TACH PIN 4: PWM	J11, J12	SATA 2.0 PIN 1: 0V PIN 2: A+ PIN 3: A- PIN 4: 0 V PIN 5: B- PIN 6: B+ PIN 7: 0 V
FAN5, FAN6, FAN7, FAN8	3 PIN FAN HEADER (NON SPEED CONTROL) PIN 1: GND PIN 2: +12 V PIN 3: N/C	J13	DEBUG I2C PIN 1: SCL      PIN 2: 0 V PIN 3: SDA      PIN 4: N/C PIN 5: N/C      PIN 6: N/C PIN 7: N/C      PIN 8: N/C PIN 9: N/C      PIN 10: 0V
FAN9	2 PIN FAN HEADER (NON SPEED CONTROL) PIN 1: GND PIN 2: +12 V	J14, J15	USB 2.0 PIN 1: +5 V      PIN 2: +5 V PIN 3: USB1N    PIN 4: USB0N PIN 5: USB1P    PIN 6: USB0P PIN 7: 0 V        PIN 8: 0 V PIN 9: N/C        PIN 10: N/C
J1, J2	ATX POWER CONNECTOR PIN 1: +3.3 V    PIN 13: +3.3 V PIN 2: +3.3 V    PIN 14: -12 V PIN 3: 0 V        PIN 15: 0 V PIN 4: +5 V        PIN 16: PS_ON# PIN 5: 0 V        PIN 17: 0 V PIN 6: +5 V        PIN 18: 0 V PIN 7: 0 V        PIN 19: 0 V PIN 8: PWR_ON    PIN 20: N/C PIN 9: +12 V      PIN 21: +5 V PIN 10: +12 V     PIN 22: +5 V PIN 11: +12 V     PIN 23: +5 V PIN 12: +3.3 V    PIN 24: 0 V	J16	PANEL LED CONNECTOR PIN 1: LED ANODE PIN 2: LED CATHODE
J7	PANEL POWER PUSH BUTTON CONNECTOR PIN 1: PWRBUT PIN 2: 0 V	J17	PLX EEPROM SELECT PIN 1-2: EEPROM U4 PIN 2-3: EEPROM U14
J8	PANEL RESET PUSH BUTTON CONNECTOR PIN 1: SHB_RST PIN 2: 0 V	J18	AUX POWER CONNECTOR PIN 1: 0 V        PIN 5: +12 V PIN 2: 0 V        PIN 6: +12 V PIN 3: 0 V        PIN 7: +12 V PIN 4: 0 V        PIN 8: +12 V



# CHAPTER 10: SPECIFICATIONS

J6	AUX POWER CONNECTOR		J19	PLX I2C	
	PIN 1: 0 V	PIN 5: +12 V		PIN 1: SCL	PIN 2: 0 V
	PIN 2: 0 V	PIN 6: +12 V		PIN 3: SDA	PIN 4: N/C
	PIN 3: 0 V	PIN 7: +12 V		PIN 5: N/C	PIN 6: N/C
	PIN 4: 0 V	PIN 8: +12 V	PIN 7: N/C	PIN 8: N/C	
			PIN 9: N/C	PIN 10: 0 V	

## 10.6.2 PCIE PORT WIDTH

FIGURE 10-6.

PICMG	X 8
SLOT 1	X 8
SLOT 2	X 4
SLOT 3	X 4
SLOT 4	X 4
SLOT 5	X 4
SLOT 6	X 4
SLOT 7	X 4
SLOT8	X 4
SLOT9	X 4



## CHAPTER 10: SPECIFICATIONS

### 10.6.3 POWER AND ENVIRONMENT

FIGURE 10-7.

Max Power (without SBC)	16W
Power requirements	Max current at +3.3V < 0.5 A Max current at +12 V < 0.5 A Max current at +5 V < 1.5 A
Form Factor	PICMG1.3 Host SBC interface (1) PCI Express (x8) expansion slot (8) PCI Express (x4) expansion slots
ATX PSU	(4) 24-pin power connectors
SATA Ports (2.0)	(2) ports via PICMG1.3 interface
USB Port (2.0)	(2) ports via PICMG1.3 interface
Operating Temperature	32 to 95° F (0 to 35° C)
Storage Temperature	-4 to +158° F (-20 to +70° C)
Relative Humidity	5 to 90% non-condensing

## 10.7 TECHNICAL SPECIFICATIONS - 11-SLOT G3

### 10.7.1 PIN CONNECTORS

FIGURE 10-8.

FAN1, FAN2, FAN3	4-PIN FAN SPEED CONTROL HEADER PIN 1: GND PIN 2: +12V PIN 3: TACH PIN 4: PWM	J30, J31	SATA 2.0 PIN 1: 0 V PIN 2: A+ PIN 3: A- PIN 4: 0V PIN 5: B- PIN 6: B+ PIN 7: 0 V
FAN5, FAN6,	3-PIN FAN HEADER (NON SPEED CONTROL) PIN 1: GND PIN 2: +12 V PIN 3: N/C	J33	2-PIN FAN HEADER (NON-SPEED CONTROL) PIN 1: GND PIN 2: +12 V

**CHAPTER 10: SPECIFICATIONS**

FIGURE 10-8 (CONTINUED).

J17	PANEL POWER PUSH BUTTON CONNECTOR PIN 1: PWRBUT PIN 2: 0 V	J38	USB 2.0 PIN 1: +5 V      PIN 2: +5 V PIN 3: USB1N    PIN 4: USB0N PIN 5: USB1P    PIN 6: USB0P PIN 7: 0 V        PIN 8: 0 V PIN 9: N/C        PIN 10: N/C
J18	PANEL RESET PUSH BUTTON CONNECTOR PIN 1: SHB_RST PIN 2: 0 V	J40	JTAG PIN 1: TCK        PIN 2: 0 V PIN 3: TDO        PIN 4: +3 V PIN 5: TMS        PIN 6: +3 V PIN 7: N/C        PIN 8: TRST PIN 9: TDI        PIN 10: 0V
J19	PANEL LED CONNECTOR PIN 1: LED ANODE PIN 2: LED CATHODE	J42	DEBUG + PLX I2C PIN 1: SCL        PIN 2: 0 V PIN 3: SDA        PIN 4: N/C PIN 5: N/C        PIN 6: N/C PIN 7: N/C        PIN 8: N/C PIN 9: N/C        PIN 10: 0 V
J23, J24	ATX POWER CONNECTOR PIN 1: +3.3 V    PIN 13: +3.3 V PIN 2: +3.3 V    PIN 14: -12 V PIN 3: 0 V        PIN 15: 0 V PIN 4: +5 V        PIN 16: PS_ON# PIN 5: 0 V        PIN 17: 0 V PIN 6: +5 V        PIN 18: 0 V PIN 7: 0 V        PIN 19: 0 V PIN 8: PWR_ON    PIN 20: N/C PIN 9: +12 V      PIN 21: +5 V PIN 10: +12 V     PIN 22: +5 V PIN 11: +12 V     PIN 23: +5 V PIN 12: +3.3 V    PIN 24: 0 V	J49	PLX DEBUG SPEED SELECT PIN 1-2: ALL SLOTS GEN 1 PIN 2-3: ALL SLOTS GEN 3
J25, J26	AUX POWER CONNECTOR PIN 1: 0 V        PIN 5: +12 V PIN 2: 0 V        PIN 6: +12 V PIN 3: 0 V        PIN 7: +12 V PIN 4: 0 V        PIN 8: +12 V	J50	GPIO PIN 1: GPI PIN 2: 0 V PIN 3: GPO
J29	PLX EEPROM SELECT PIN 1-2: EEPROM A - U13 PIN 2-3: EEPROM B - U14		

## CHAPTER 10: SPECIFICATIONS

### 10.7.2 PCIE PORT WIDTH

FIGURE 10-9.

PICMG	X8
SLOT 1	X8
SLOT 2	X8
SLOT 3	X8
SLOT 4	X8
SLOT 5	X8
SLOT 6	X8
SLOT 7	X8
SLOT 8	X8
SLOT 9	X8
SLOT 10	X8
SLOT 11	X8

### 10.7.3 POWER AND ENVIRONMENT

FIGURE 10-10.

Max Power (without SBC)	25 W
Power requirements	Max current at +3.3 V < 0.5 A Max current at +12 V < 0.5 A Max current at +5 V < 4 A
Form Factor	PICMG1.3 Host SBC interface (x8 PCIe) 11 x PCI Express (x8) expansion slots
ATX PSU	(2) 24-pin power connectors (2) 8-pin AUX power connectors
SATA Ports (2.0)	(2) ports via PICMG1.3 interface
USB Port (2.0)	(2) ports via PICMG1.3 interface
Operating Temperature	32 to 95° F (0 to 35° C)
Storage Temperature	-4 to +158° F (-20 to +70° C)
Relative Humidity	5 to 90% non-condensing



## CHAPTER 11: ADVANCED USERS

This chapter is aimed towards advanced users and covers the following:

- ♦ Video Wall Manager Command Line Interface
- ♦ Radian Standard Video Wall Software Command line Interface
- ♦ Software Development Kit (SDK)
- ♦ RAID
- ♦ Replacing Cards
- ♦ Updating Firmware
- ♦ System Recovery

### 11.1 VIDEO WALL MANAGER COMMAND LINE INTERFACE

The Video Wall Manager command line interface allows you to open layout files.

#### Example Usage:

- Open the Layout file "c:\layouts\layout.lay" and exit without showing the Video Wall Manager application window.

```
"C:\Program Files (x86)\Video Wall Manager\wallctl.exe" -Layout="c:\layouts\layout.lay" -exit
```

- Connect to a computer named VideoWall and close all existing windows.

```
"C:\Program Files (x86)\Video Wall Manager\wallctl.exe" -Machine=VideoWall -CloseWindows=Yes
```

- Connect to a computer named VideoWall without showing the Video Wall Manager application window and save the configuration to a layout file named "c:\layouts\snapshot.lay".

```
"C:\Program Files (x86)\Video Wall Manager\wallctl.exe" -Machine=VideoWall -Save="c:\layouts\snapshot.lay" -exit
```

#### Commands

-Layout=layout file

- This command line argument specifies the layout file to be loaded.
- If the layout file name or path contains spaces then enclose the path in quotes, for example:

```
-layout="C:\Documents and Settings\user\Desktop\file.lay"
```

- -layout is not compatible with -machine.

-Exit

- When used with the -layout option, -Exit will cause the Video Wall Manager application to load the layout file without the application window being displayed and to terminate once the layout file has been loaded.
- Use this option to open a layout file without displaying the Video Wall Manager application.
- When -Exit is specified on the command line, an exit code is returned.

## CHAPTER 11: ADVANCED USERS

### -Quiet

- Used in conjunction with -Exit to suppress user interface dialog boxes.

### -CloseWindows={Yes|No}

- Use -CloseWindows=Yes to close existing windows.
- Use -CloseWindows=No to keep existing windows open.
- When the -layout command line option is specified, the default value for -CloseWindows is Yes.
- When the -machine command line option is specified, the default value for -CloseWindows is No.

### -ShowState={Minimized|Restored|Maximized}

- Controls the appearance of the Video Wall Manager application window.

### -Window=[top],[left],[width],[height]

- This option enables the Video Wall Manager application window to be positioned.
- If a number is left out of the list, then the value saved when the application was last terminated is used.
- To change the position of the window without changing the size:

```
-window=100,200
```

- To change the size of the window without changing the position:

```
-window=,800,600
```

### -AlwaysOnTop={True|False}

- This sets the Always on Top state of the Video Wall Manager application window.
- To enable the window to behave normally, the value should be set to false.
- To force the window to be displayed on top of all other normal windows the value should be set to true.
- 1 or on can be substituted for true.
- 0 (zero) or off can be substituted for false.

### -Save= Layout file

- Allows the saving of a layout file from the command line. It's not compatible with the -layout or -closewindows options but can be used with -exit

### Networking Options

To control a machine other than the one you are working on you will need some of the following options:

### -Machine={machine name|IP address}

- This option specifies the machine to connect to.



## CHAPTER 11: ADVANCED USERS

- If the machine name contains spaces, then enclose the name in quotes, for example:

```
-machine="My Computer"
```

- You can also specify an IP address, for example:

```
-machine=10.0.0.21
```

- -machine is not compatible with -layout.

If the server requires a User Name and Password the following options should be used:

```
-UserName=user name
```

```
Password=password
```

If the machine is not participating in a domain, the account must be on the machine you are connecting to.

If the machine is participating in a domain, you have a choice:

- The account can be on the machine you are connecting to.
- It can be an account on the domain.

If the account is on the domain, the domain name must be specified with the following option:

```
-Domain=domain name
```

```
-Port=port number
```

You need to specify the port if you are attempting to connect to another machine and Video Wall Manager has been configured to listen on a port other than the default port.

A port number is any integer between 1 and 65535.

### 11.1.1 IP CAMERA

---

The command line interface allows you to create, modify or close IP Camera windows. The command line interface can be accessed in a number of ways:

- From a shortcut specifying IPCAMCMD.EXE as the target followed by the command line options separated by spaces.
- From a command prompt by specifying the full path of IPCAMCMD.COM or by having the folder where the IP Camera software was installed on the path.
- From a batch file. The same rules as command prompt apply.

```
-ID=number
```

- When a window is created it can be allocated an ID. To modify or close a window, specify its ID so the correct window is modified or closed.
- An ID is any integer between 1 and 65535. The ID is specific to **IP Camera** windows.

## CHAPTER 11: ADVANCED USERS

-Input=camera name

- Specifies the name of a camera. This camera must already have been configured in Video Wall Manager.

-Close

- If this command line option is specified with an ID, the window with that ID is closed.

-ShowState={Minimized|Restored|Maximized|Show|Hide}

- Sets the show state of the window.
- To activate a window use Restored.

-AlwaysOnTop={On|Off}

-AspectRatio={On|Off],[width],[height]

- Switch the maintain aspect ratio feature on or off and specify the ratio of the width and height of the window.
- All the values are optional, but the commas must be used.

-Caption=

- Set the caption of the window. To include spaces, enclose the string in double quotes ("").

-ShowFrameRate={On|Off}

- Display or remove the current frame rate in the title bar.

-ShowMenuBar={On|Off}

- Use to specify if the menu bar is to be displayed.

-Window=[top],[left],[width],[height]

- Change the position and size of the window.
- All the values are optional, but the commas must be used.

-WindowStyle={BorderAndTitleBar|BorderOnly|NoBorderOrTitleBar}

The following command line options allow changes to the appearance of the IP Camera source. The numbers correspond to the values displayed on the Input Settings sheet.

### Networking Options

To control a window on a machine other than the one you are working on, you will need some of the following options:

-Machine={machine name|IP address}

- Use this option to specify the machine to connect to.

-Port=port number

- You need to specify the port if you are attempting to control a window on another machine and the server has been configured to listen on a port other than the default port 1049.



## CHAPTER 11: ADVANCED USERS

- A port number is any integer between 1 and 65535.
- If the server requires a User Name and Password, the following options should be used:

-UserName=user name

-Password=password

If the machine is not participating in a domain, the account must be on the machine you are connecting to.

If the machine is participating in a domain, you have a choice:

- The account can be on the machine you are connecting to.
- It can be an account on the domain.

If the account is on the domain, the domain name must be specified with the following option:

-Domain=domain name

### 11.1.2 VIDEO CAPTURE CARDS WINDOWS

---

The Video Capture Cards command line interface allows you to create, modify or close Video Capture Cards windows.

-ID=number

- When a window is created, it can be allocated an ID. To modify or close a window, specify its ID so the correct window is modified or closed.
- An ID is any integer between 1 and 65535. The ID is specific to Video Capture Cards windows.

-Close

- If this command line option is specified with an ID, the window with that ID is closed.

-ShowState={Minimized|Restored|Maximized|Show|Hide}

- Sets the show state of the window.
- To activate a window use Restored.

-AlwaysOnTop={On|Off}

-AspectRatio=[{On|Off|Source}], [width], [height]

- Switch the maintain aspect ratio feature on or off and specify the ratio of the width and height of the window.
- If Source is specified, the width and height of the source are used as the aspect ratio.
- All the values are optional, but the commas must be used.

## CHAPTER 11: ADVANCED USERS

-Caption=

- Set the caption of the window. To include spaces, enclose the string in double quotes (").

-ShowFrameRate={On|Off}

- Display or remove the current frame rate in the title bar.

-ShowMenuBar={On|Off}

- Use to specify if the menu bar is to be displayed.

-Window=[top],[left],[width],[height]

- Change the position and size of the window.
- All the values are optional, but the commas must be used.

-WindowStyle={BorderAndTitleBar|BorderOnly|NoBorderOrTitleBar}

-ExcludeBorders={On|Off}

-DisplayMessageAfter=time in milliseconds

-CaptureFormat={Automatic|5-5-5|5-6-5|8-8-8}

-TransferData={ViaSystemMemory|DirectToGraphicsCard}

-Scaling={Fast|Slow}

-ActiveCaptureRate=percentage

- Select one of the following percentages: 1, 5, 10, 15, 20, 25, 33, 50 or 100. If you use a number that is not in the list, it will be rounded down to the closest number lower in the list.

-InactiveCaptureRate=percentage

- Select one of the following percentages: 1, 5, 10, 15, 20, 25, 33, 50, 100. If you use a number that is not in the list, it will be rounded down to the closest number lower in the list.

-DifferentCaptureRate={On|Off}

-Input=input number

-Reset

- Discards the capture settings for the mode the source is currently generating.

-ShareCaptureSettings={On|Off}

- With ShareCaptureSettings switched on, the changes made to the capture settings controls are shared with other Video Capture Cards windows. The capture settings are saved automatically so that the next time a Video Capture Cards window is created, the capture settings can be used.
- With ShareCaptureSettings switched off, the changes made to the capture settings controls are applied to this Video Capture Cards window only.



## CHAPTER 11: ADVANCED USERS

- When switching ShareCaptureSettings on, the capture settings for the Video Capture Cards window will be discarded.
- By default, ShareCaptureSettings is switched on.

-Cropping={On|Off},{top},{left},{width},{height}

-Deinterlace={Weave|Bob|Field0|Field1}

- Select Weave for sources with little or no motion.
- Select Bob for sources displaying motion.
- Select Field for a single field to be displayed.

The following command line options allow changes to the appearance of the Video Capture Cards source. The numbers correspond to the values displayed on the Input Settings sheet.

-CaptureWidth=number

-CaptureHeight=number

-HorizontalPosition=number

-HorizontalSize=number

-Phase=number

-VerticalPosition=number

-BlackLevel=number

-Brightness=number

-Contrast=number

-Saturation=number

-Hue=number

-Rotation={0|90|180|270}

- Sets the orientation for the current input signal.

-Information

- Creates a text file called information.ini in the current directory. The file contains details of the minimum and maximum values and supported features that can be used with the command line.
- The information.ini file is over written every time the -information is used.

-CursorStyle=Show

- Always shows the cursor within the client area of the window.

## CHAPTER 11: ADVANCED USERS

-CursorStyle=Hide

- Always hide the cursor within the client area of the window.

-CursorStyle=HideWhenActive

- Only hide the cursor within the client area of the window when the window is the active window on the desktop.

### Networking Options

To control a window on a machine other than the one you are working on, you will need some of the following options:

-Machine={machine name|IP address}

- Use this option to specify the machine to connect to.

-Port=port number

You need specify the port if you are attempting to control a window on another machine and the Video Capture Cards server has been configured to listen on a port other than the default port 1049.

A port number is any integer between 1 and 65535.

If the server requires a User Name and Password, the following options should be used:

-UserName=user name

-Password=password

If the machine is not participating in a domain, the account must be on the machine you are connecting to.

If the machine is participating in a domain, you have a choice:

- The account can be on the machine you are connecting to.
- It can be an account on the domain.

If the account is on the domain, the domain name must be specified with the following option:

-Domain=domain name

### 11.1.3 IP CAMERA

---

The command line interface allows you to create, modify or close Application windows; it can be accessed in a number of ways:

- From a shortcut specifying APPCMD.EXE as the target followed by the command line options separated by spaces.
- From a command prompt by specifying the full path of APPCMD.COM or by having the folder where the software was installed on the path.
- From a batch file. The same rules as command prompt apply.



## CHAPTER 11: ADVANCED USERS

### Non-Configured Applications

The command line interface can be used to control windows for third-party applications that have not been specifically configured in Video Wall Manager. See Starting Non-Configured Applications below.

### Configured Applications

An abbreviated version of the command line is available for starting applications that are already configured in Video Wall Manager. See Starting Configured Applications below. This includes pre-supported applications automatically configured during installation and also custom applications added by the user after installation. See Configuring Applications in Video Wall Manager.

#### Example Usage – Configured Applications

- Open the Internet Explorer application 'iexplore.exe' with the configured input ID 1.

```
"C:\Program Files (x86)\Video Wall Manager\appcmd.exe" -AppName="Internet Explorer" -Input="Search" -ID=1
```

- Dynamically switch input for an Internet Explorer window with the ID of 1.

```
"C:\Program Files (x86)\Video Wall Manager\appcmd.exe" -ID=1 -Input="News"
```

#### Example Usage – Non-Configured Applications

- Open the application 'notepad.exe' to display the file "c:\info.txt".

```
"C:\Program Files (x86)\Video Wall Manager\appcmd.exe" -AppName="notepad.exe" -CmdArgs="c:\info.txt"
```

- Open the Internet Explorer application 'iexplore.exe' with the URL "http://www.google.com" and assign the ID 1.

```
"C:\Program Files (x86)\Video Wall Manager\appcmd.exe" -AppName="C:\Program Files\Internet Explorer\iexplore.exe" -CmdArgs="-nomerge http://www.google.com" -ID=1
```

- Dynamically switch inputs for an Internet Explorer window with the ID of 1.

```
"C:\program files (x86)\Video Wall Manager\appcmd.exe" -ID =1 -CmdArgs="http://www.google.com/news"
```

- Move the application window with the ID 1 to the origin of the desktop without changing its size.

```
"C:\Program Files (x86)\Video Wall Manager\appcmd.exe" -ID=1 -Window=0,0,,
```

- Close the application with the ID 1.

```
"C:\Program Files (x86)\Video Wall Manager\appcmd.exe" -ID=1 -Close
```

-ID=number

- When a window is created it can be allocated an ID. To modify or close a window, specify its ID so the correct window is modified or closed.

- An ID is any integer between 1 and 65535. The ID is specific to windows.

-Close

- If this command line option is specified with an ID, the window with that ID is closed.

-

## CHAPTER 11: ADVANCED USERS

ShowState={Minimized|Restored|Maximized|Show|Hide}

- Sets the show state of the window. To activate a window use Restored.

-AlwaysOnTop={On|Off}

-ShowMenuBar={On|Off}

- Use to specify if the menu bar is to be displayed.

-Window=[top],[left],[width],[height]

- Change the position and size of the window.
- All the values are optional, but the commas must be used.

-WindowStyle={BorderAndTitleBar|BorderOnly|NoBorderOrTitleBar}

### Starting Non-Configured Applications

A non-configured application involves any application that has not been added to Video Wall Manager's list of configured applications: See Configure Applications.

-AppName="application name"

- The full path of the application must be specified (eg. "C:\Program Files\Internet Explorer\iexplore.exe")

-CmdArgs="Command line arguments"

- Specifies optional parameters for the application. Many applications accept the name of a file to be opened. For details of command line arguments, refer to your application documentation.
- -CmdArgs can only be used in conjunction with -AppName for non-configured applications. If -AppName contains the name of a pre-configured or custom application, then -Input should be used instead.

-CmdArgs="-File=\"C:\My Pictures\picture.jpg\""

### Starting Configured Applications

Configured applications include pre-supported applications automatically added during Video Wall Manager installation and custom applications added by the user after installation: See Configure Applications.

-AppName="application name"

- The name of a pre-configured or custom configured application in Video Wall Manager must be specified (eg. "DGCPlay").

-Input="input name"

- The input name must specify the name of an input that has been configured for the application (eg. "FilmClip1").

### Networking Options

To control a window on a machine other than the one you are working on, you will need some of the following options:

-Machine={machine name|IP address}

- Use this option to specify the machine to connect to.



## CHAPTER 11: ADVANCED USERS

-Port="port number"

- You need specify the port if you are attempting to control a window on another machine and the Application server has been configured to listen on a port other than the default port 1049.
- A port number is any integer between 1 and 65535.
- If the server requires a User Name and Password, the following options should be used:

-UserName="user name"

-Password="password"

If the machine is not participating in a domain, the account must be on the machine you are connecting to.

If the machine is participating in a domain, you have a choice:

- The account can be on the machine you are connecting to.
- It can be an account on the domain.

If the account is on the domain, the domain name must be specified with the following option:

-Domain="domain name"

### Dynamically Switching Inputs for Configured Applications

The -Input command can be used to change the input displayed in a window for a configured application without closing and re-opening either the window or the application. This is an application-specific feature that requires the window to be in a visible state and not obstructed by other windows on the desktop.

-Input="input name"

- The input name must specify the name of an input that has been configured for the application that owns the window.
- The -Input switch must be used with the -ID switch to specify the target window.

Example of dynamically switching the input for an Internet Explorer window with the ID of 1.

```
"C:\Program Files (x86)\Video Wall Manager\appcmd.exe" -ID=1 -Input="News"
```

### Dynamically Switching Inputs for Non Configured Applications

-CmdArgs can be used to change the open file/URL displayed in a window for a non-configured application without closing and re-opening either the window or the application. This is an application-specific feature that requires the window to be in a visible state and not obstructed by other windows on the desktop.

-CmdArgs="File pathname or URL"

- The value in -CmdArgs must specify the full pathname or URL.

-CmdArgs must be used with the -ID command to specify the target window.

- The value in -CmdArgs should only include the pathname/URL and should not include any application specific commands that were used to start the application.

## CHAPTER 11: ADVANCED USERS

Example of dynamically switching inputs for an Internet Explorer window with the ID of 1.

```
"C:\program files (x86)\Video Wall Manager\apccmd.exe" -ID =1 -CmdArgs="http://www.google.com/news"
```

### 11.1.4 ON-SCREEN DISPLAY (OSD)

---

`-OSDType={Disabled|SimpleText}`

- Switches the OSD on or off

`-OSDText=`

- Specifies the on screen display text.
- If the text includes spaces, the text must be enclosed in double quotes.
- Line breaks are indicated by the characters `\n`. If you wish to include a `\` in the text, it must be preceded by a `\`.

For example, `-OSDText="The quick\nbrown fox\njumps over\nthe lazy dog."` Gives the on screen display:

The quick

brown fox

jumps over

the lazy dog

`-OSDScaling={FixedSize|ScaleWithWindow}`

- Allows you to specify how the OSD is scaled. When `FixedSize` is specified, the OSD is displayed at the same size, regardless of the size of the window. When `ScaleWithWindow` is specified, the OSD is scaled up or down according to the size of the window.

`-OSDFontName=font name`

- Specifies the name of the font to be used for OSD text. If the font name includes spaces, the name must be enclosed in double quotes.

`-OSDFontSize=number`

- Specifies the point size of the font to be used for OSD text.

`-OSDFontStyle={Regular|Bold }`

`-OSDFontItalic={On|Off}`

`-OSDFontStrikeout={On|Off}`

`-OSDFontUnderline={On|Off}`

`-OSDFontColor=red,green,blue`

- Specifies the color of the text in red, green and blue components. Each of the components is a number from 0 to 255.



## CHAPTER 11: ADVANCED USERS

`-OSDBackground={Transparent|Opaque}`

- When Transparent is specified, the Video Capture Cards capture in the area behind the text is visible.
- When Opaque is specified, the area behind the text is displayed in the colour specified using the OSDBackgroundColor option.

`-OSDBackgroundColor=red,green,blue`

- When OSDBackground is set to Opaque, this option specifies the colour displayed behind the text in red, green and blue components. Each of the components is a number from 0 to 255.

`-OSDMargins=[top],[left],[right],[bottom]`

- The margins define the area in which the OSD is displayed.
- If ScaleWithWindow is specified, the margins are measured in pixels of the Video Capture Cards source. If FixedSize is specified, the margins are measured in pixels of the interior of the Video Capture Cards window.
- Any part of the OSD that falls outside the margins is not displayed.

`-OSDTextWrap={On|Off}`

- When text wrapping is switched on, if the text does not fit between the left and right margins, spaces between words are replaced with line breaks to produce shorter lines.
- When text wrapping is switched off, the text is displayed with the same spaces and line breaks as it has been entered.

`-OSDHorizontalAlignment={Left|Center|Right}`

- If you specify Left, the left edge of the OSD will be positioned against the left margin and each of the individual lines will be left aligned.
- If you specify Center, the centre of the OSD will be positioned half way between the left and right margins and each of the individual lines will be centered.
- If you specify Right, the right edge of the OSD will be positioned against the right margin and each of the individual lines will be right aligned.

`-OSDVerticalAlignment={Top|Center|Bottom}`

- If you specify Top, the top edge of the OSD will be displayed against the top margin.
- If you specify Center, the center of the OSD will be positioned half way between the top and bottom margins.
- If you specify Bottom, the bottom edge of the OSD will be displayed against the bottom margin.

### 11.1.5 AUDIO

---

The Audio command line interface controls analog, digital and line out audio streams.

`-AudioEnable={On|Off}`

- Enable or disable for the specified window.

`-AudioFocusMute={On|Off}`

## CHAPTER 11: ADVANCED USERS

- Use to mute audio for the specified window unless it has focus.

-AudioLineOutMute={On|Off}

- Mute line out in hardware.

-AudioLineOutGain=gain

- Specify the numeric gain value to be applied to the line out.

-AudioLineOutSource={Digital|Analog}

- Set line out source to as digital or analog line out source .

-AudioDigitalMute={On|Off}

- Mute digital input in hardware.

-AudioDigitalPair={0|1|2|3}

- Select the stereo channel pair sampling for a digital input.

0: 0-1

1: 2-3

2: 4-5

3: 6-7

-AudioUnbalancedMute={On|Off}

- Mute unbalanced input in hardware.

-AudioUnbalancedGain= gain

- Specify the numeric gain to be applied to the unbalanced input.

-AudioBalancedMute={On|Off}

- Mute balanced input in hardware.

-AudioBalancedBoost={On|Off}

- Add a 20 dB boost to the balanced input.

-AudioBalancedGain= gain

- Specify the numeric gain to be applied to the balanced input.

-AudioADCMute={On|Off}

- Mute the output mixer in hardware.

-AudioADCGain= gain

- Specify the numeric gain to be applied to the output mixer.



## CHAPTER 11: ADVANCED USERS

### 11.2 RADIAN STANDARD VIDEO WALL SOFTWARE - COMMAND LINE INTERFACE

The Radian Standard Video Wall Software command line interface can be accessed from a command prompt and also by using Telnet for issuing commands remotely, specifying wcmd.exe.

If you intend using a Telnet connection, the following procedures should be followed prior to using the Telnet Client:

- Run the Radian Standard Video Wall Software Telnet Server:

C:\Program Files\Radian Standard Video Wall Software\Telnet Server\Radian Standard Video Wall Software Telnet Server.exe (double click on the .exe file)

This will start the Radian Standard Video Wall Software Telnet Server and ensures it runs continually after the machine is rebooted.

- Switch on the Telnet Client:

Control Panel/Programs and Features/Turn Windows features on or off.

Ensure the Telnet Client checkbox is selected.

- Type "telnet" into the command prompt followed by the name of the machine you want to connect to. By default Telnet is accessible on port 23. If you have it configured for something different, then you will need to specify the port number to connect on. If the machine name contains spaces, then enclose the name in quotes.

```
telnet 127.0.0.1
```

or

```
telnet 127.0.0.1 23
```

The command line arguments are grouped into three categories:

- Information
- Action
- Impersonation

Command line arguments are provided with both a long switch and a short switch where shown.

#### Information Commands

TABLE 11-1. INFORMATION COMMANDS

Long Switch	Short Switch	Description/Example
-help	-?	Displays a list of available command line arguments and some examples.
-exitcodes	-ec	Displays a list of all known exit codes.
-layouts	-l	Displays a list of all layouts on the server.
-providers	-prs	Displays a list of all providers installed in the system.
-openwindows	-ow	Displays a list of all windows currently open on the wall.
-inputs		Displays a list of available inputs in the following format: Alias="friendly name", Provider="web", Input="http://xxxxxxx"



## CHAPTER 11: ADVANCED USERS

### Action Commands

TABLE 11-2. ACTION COMMANDS

Long Switch	Short Switch	Description/Example
-addinput	-ai	Add a new source. Currently only available for IPDecode and Web sources. addinput="rtsp://10.0.0.1:522/Ch2" addinput="http://www.google.com"
-alias		Use in conjunction with -addinput to allocate a friendly name. -alias="Camera 1"
-shared	-sh	Use in conjunction with -addinput. -shared="true" Places the source in the Global Media Store. -shared="false" Places the source in the Local Wall Content Store.
-deleteinput	-di	Deletes a specified input from the Global or Local source repository. Currently only available for IPDecode and Web sources. -deleteinput=<inputurl>
-ReadOnly	-ro	Use in conjunction with -addinput to specify if the source alias is editable. -readonly="true" Renders the input alias uneditable. -readonly="false" Renders the input alias editable.
-deletelayout	-dl	Delete a specific layout file. If the layout name contains spaces then enclose the name in quotes, for example: -deletelayout="CCTV One" or -deletelayout="c:\mylayoutfolder\CCTV One.dpl"
-audio	-audio	Enables or Disables audio for selected inputs.
-window	-w	-window=[top],[left],[width],[height] Set the position and size of the window. Commas must be used between values. Must be used in conjunction with the -id switch. To display a Video Capture Cards window, a typical command line argument would be:  wcmd -machine=10.0.0.21:8099 -id=3 -provider=rgbprovider -input=3 -window=200,300,500,500
-closewindows	-cw	Closes all open windows.
-closewindow	-c	Used with a specific ID will close that window.
-provider	-pr	-provider={RgbProvider AccProvider MsWordProvider Imageprovider SqxProvider WebProvider PdfProvider DpVncProvider} Target a type of provider on the server. The types of Provider that may be available are: Images, Video Capture Cards captures, MS Word, IP, Internet, Remote Connection and PDF providers.
-windowstyle	-ws	-windowstyle={BorderAndTitlebar NoBorderAndTitlebar} Sets the style of the window.



## CHAPTER 11: ADVANCED USERS

TABLE 11-2 (CONTINUED). ACTION COMMANDS

Long Switch	Short Switch	Description/Example
-input	-in	-input=name The name of the input to target on the server. The name of the input will depend on the type of provider being used. For example, if the input you are selecting is from the RgbProvider then the input name will be a number from 1 upwards. For other Providers (SQX) it will be a friendly name. If the input comes from the AccProvider then the full path is required. See Example Command 2 below.
-savelayou	-sl	-savelayou=name Allows you to save the current wall view as a layout. If the layout name contains spaces then enclose the name in quotes, for example: -savelayou="Layout One"
-layout	-ol	-layout=layout file Open a specific layout file. If the layout name contains spaces then enclose the name in quotes, for example: -layout="CCTV One"
-deletelayout	dl	-deletelayout=name Delete a specific layout file. If the layout name contains spaces, then enclose the name in quotes, for example: -deletelayout="CCTV One"
-schedule	-s	Used in conjunction with the -layout command to create a scheduled task to execute a specific layout. This creates a single scheduled task: wcmd -machine=10.0.0.21:8099 -layout="my layout" -scheduled="15/05/2017 09:00:00"

## Impersonation Commands

TABLE 11-3. IMPERSONATION COMMANDS

Long Switch	Short Switch	Description/Example
-username	-un	If you are trying to connect to a machine other than the one you are using, a username and password may be required:  -username="user name"
-password	-pwd	-password="password"

## Example Commands

- Open a Video Capture Cards window using Video Capture Cards input number 2 positioned at the top left of the wall with a height and width of 500 pixels:

```
wcmd -machine=10.0.0.21:8099 -id=1 -provider=Capture -input=2 -window=100,100,500,500
```

- Open a video window using Input wildlife:

```
wcmd -machine=10.0.0.21:8099 -id=5 -window=1920,1080,1920,1080 -input="C:\users\desktop\videos\wildlife.wmv"
```

## CHAPTER 11: ADVANCED USERS

The full path is required for the input.

- Change the source of Window 1 to a known internet source

```
wcmd -machine=10.0.0.21:8099 -id=1 -provider=Web -input="google"
```

NOTE: The input used must exist within the Radian Standard Video Wall Software repository and the name "google" must exist as an internet source accessible via the Radian Standard Video Wall Software source menu.

- Move Window 1 to a different position on the wall.

```
wcmd -machine=10.0.0.21:8099 -id=1 -window=5000,450,500,500
```

- Get a list of available layouts

```
wcmd -machine=10.0.0.21:8099 -layouts
```

- Save a layout

```
wcmd -machine=10.0.0.21:8099 -savelayou="my layout"
```

- Load a layout

```
wcmd -machine=10.0.0.21:8099 -layout="my layout"
```

- Schedule a task to load a layout

```
wcmd -machine=10.0.0.21:8099 -layout="my layout" -scheduled="15/05/2017 09:00:00"
```

- Get a list of all open windows on the wall

```
wcmd -machine=10.0.0.21:8099 -openwindows
```

- Turning on/off the audio for a Capture window

```
wcmd.exe -machine=10.0.0.21:8999 -id=1 -provider=Capture -audio=on
```

- Adding a new web input source into the Global Media Store with an editable friendly name:

```
wcmd -machine=10.0.0.1:522 -provider=web -alias=Google -addinput="http://www.google.com" -shared=true -readonly=false
```

- Adding a new IPDecode source to a Local Wall Content Store with an uneditable friendly name:

```
wcmd -machine=10.0.0.1:522 -provider=IPDecode -alias="Camera 1" -addinput="rtsp://10.0.0.1:522/Ch2" -shared=false -readonly=true
```



## CHAPTER 11: ADVANCED USERS

### 11.3 VERIFY RAID

To verify the RAID set up on your Wall Controller, follow these instructions.

#### 11.3.1 ENTER THE BIOS SETUP

---

Restart the Wall Controller and press the keyboard delete button when the Boot-Up splash screen is displayed. This will direct you to the BIOS Setup Utility.

Use the keyboard arrows to navigate across to the Advanced Tab:

- Confirm that Configure SATA#1 is set to RAID.
- Press F10 to save and exit the BIOS Utility.

When the wall controller restarts press CTRL+i at the BIOS splash screen to enter the RAID BIOS utility.

#### 11.3.2 DEGRADED RAID ARRAY

---

If a RAID array degrades, this does not necessarily mean that the hard drive or any other hardware within the system is faulty. What it does mean is that there is an inconsistency in DATA across the array. This could be caused by many different factors, including a BSOD, the system hanging, an application conflict or power outage.

As stated above, the degrade of a RAID array does not necessarily mean hardware failure but if the problem occurs on a regular basis, then perform further diagnostics. We recommend, as with any system, that you back up on a regular basis to safeguard information.

If a RAID array is degraded, take note of the physical port number and the drive serial number of the degraded disk. The degraded disk will normally be highlighted with an error in red in the RAID BIOS Utility. Working drives are normally set to green.

Using the keyboard arrow keys, navigate to Reset disks to Non-RAID and press enter.

Using the keyboard arrow keys, select the degraded disk and press the keyboard spacebar to assign it for Reset.



**Warning!** Ensure the correct disk is selected before continuing.

Once a disk has been reset, the BIOS RAID Utility will detect the disk as a new one and a prompt will appear asking if you want to use the selected disk to repair the RAID. Accept and continue.

Both disks should now be displayed as Member Disk (x) with the status highlighted in yellow as Rebuild.

Exit the Utility by clicking Esc and RAID will begin the rebuild process once the operating system has loaded.

## CHAPTER 11: ADVANCED USERS

### 11.4 BACKPLANE SLOT ORDERING

The order in which the System BIOS enumerates the cards is dictated by the way the PCI Express slots are mapped onto the PCI Express switch on the backplane. Unfortunately, this is dictated by the routing of the tracks from the slot to the switch on the backplane. The track routing is designed to provide the highest signal integrity possible, and this means that there is not necessarily a straight mapping between physical slot number and logical BIOS enumeration.

TABLE 11-4. BACKPLANE SLOT ORDERING

Physical Slot	9-Slot G3 Bus Number	9-Slot <sup>1</sup> G3 Bus Number	11-Slot G3 Bus Number
1	1	1	3
2	2	2	2
3	3	3	7
4	4	4	6
5	5	5	11
6	6	9	10
7	7	8	9
8	8	7	8
9	9	6	5
10	--	--	4
11	--	--	1

<sup>1</sup> This order was introduced in Revision F of the 9-slot G3 backplane. Before this, the ordering was as found in the original Express9. The revision can be determined from the backplane serial number, and the Revision F serial number will always start with 163F.

The table shows that the first card enumerated by the BIOS when using an 9-slot G3 is the one in Slot 1. However, on an 11-slot G3, the first card enumerated would be the card in Slot 11.

The last card enumerated in an 11-slot G3 would be the one in Slot 5. If we were using an SBC4 with this backplane, then an ImageDP4 card would be programmed with the IO Enabled BIOS. Additional cards could have their IO requirement disabled. If Slot 5 is not populated with an ImageDP4, the card that would require IO would be the one with the highest bus number.

The last slot enumerated in a 9-slot G3 by the SBC4 would be Slot 6. In the same manner as the Express11, if a VGC-DP-4 or VGC-DP-4-R2 is placed in this slot, it should be the IO enabled card.

It is also worth noting that once booted into Windows®, the drivers will reorder the hardware so that it appears in the order dictated by the jumpers on the card, or by the physical slot if the jumpers are not set. We hide the logical bus order from the user to simplify the wiring of the inputs and outputs.

## CHAPTER 11: ADVANCED USERS

### 11.5 INSTALLING ADDITIONAL VGC-HDMI-2-4 AND VGC-HDMI-2K-4 CARDS

As the number of required screens increase, the likelihood of reaching a system limitation or encountering problems increases. The system limitations are the amount of address space available and the capacity of the power supply.

#### 11.5.1 DEGRADED RAID ARRAY

The amount of current a power supply can deliver on each voltage rail is limited. Often there is also a limit on the total power.

Each VGC-HDMI-2-4 and VGC-HDMI-2K-4 card requires 0.25 A at +3.3 V and 1.2 A at +12 V.

You can calculate the amount of current and the amount of power required for the VGC-DP-4 and VGC-DP-4-R2 cards. For example, the requirements for a 24-screen system of VGC-HDMI-2-4 and VGC-HDMI-2K-4 cards is calculated as follows:

##### Current

$$+3.3 \text{ V } 6 \times 0.25 \text{ A} = 1.5 \text{ A}$$

$$+12 \text{ V } 6 \times 1.2 \text{ A} = 7.2 \text{ A}$$

##### Power

$$(3.3 \text{ V} \times 1.5 \text{ A}) + (12 \text{ V} \times 7.2 \text{ A}) = 91.35 \text{ W}$$

These are the requirements for the VGC-HDMI-2-4 and VGC-HDMI-2K-4 cards; you must also take into account the requirements of all the other devices in the system.

#### 11.5.2 VGC-HDMI-2-4 AND VGC-HDMI-2K-4 JUMPER LINKS

Multiple VGC-HDMI-2-4 and VGC-HDMI-2K-4 cards may have had jumper links fitted. When fitted, the links control the order in which the display driver uses the VGC-HDMI-2-4 and VGC-HDMI-2K-4; therefore, any additional cards need to have their jumper links set accordingly. If a damaged card is being replaced, the new card must have the same jumper settings as the damaged one coming out of the system.

#### 11.5.3 INSTALLING THE DISPLAY DRIVERS

If any graphics cards are added (or removed) from the system, the Display Drivers need to be re-installed from the Recovery Media that came with your system or by downloading the latest drivers. For details, contact Black Box Technical Support at 877-877-2269 or [info@blackbox.com](mailto:info@blackbox.com).

#### 11.5.4 SCREEN ORDER

Any additional graphics cards will change the way the screens on your video wall are ordered. The Video Wall Manager application has a screen order tool that can be used to configure which order the screens appear on the desktop. This allows the screen order to be changed without physically swapping any of the output cables between graphics cards.

## CHAPTER 11: ADVANCED USERS

### 11.6 INSTALLING CODEC PACKS TO PLAY VIDEO

DGCPay utilizes the DirectShow codecs installed on the computer to playback a video file. A standard installation of Windows® includes codecs for playing WMV files, plus some AVI and MPG files. Many video files require additional 3rd-party codec files. For many of AVI and MPG formats, the open source ffdshow package will contain codecs that will allow playback using DGCPay. ffdshow is available from:

<http://ffdshow-tryout.sourceforge.net>

MOV files are supported through QuickTime. By default, QuickTime is not available through DirectShow. With additional software, it is possible to make QuickTime video files available, however. There are a number of codecs that do this, for instance:

[http://www.codecguide.com/download\\_kl.htm](http://www.codecguide.com/download_kl.htm)

<http://www.riverpast.com/en/prod/quicktime/>

[http://www.medialooks.com/products/directshow\\_filters/quicktime\\_filter.html](http://www.medialooks.com/products/directshow_filters/quicktime_filter.html)

SWF and FLV files are supported by Flash. In the same manner as QuickTime, these are not natively supported by DirectShow, although it is possible to use additional software to enable playback. A suitable codec for this might be:

[http://www.medialooks.com/products/directshow\\_filters/flash\\_source.html](http://www.medialooks.com/products/directshow_filters/flash_source.html)

Black Box does not provide any warranty or assurance that these examples will be suitable for commercial use. We simply list them as an example of those available through 3rd parties. Before deployment, we advise that any of the above, and any other codec selected, are thoroughly evaluated to confirm their suitability.

### 11.7 FIRMWARE UPDATES

For details, contact Black Box Technical Support at 877-877-2269 or [info@blackbox.com](mailto:info@blackbox.com).

### 11.8 RESTORING TO FACTORY SETTINGS

To restore your wall controller to its factory settings, you will need to use the recovery media inside your system. The "Recovery" drive is located under "This PC" in File Explorer.

Turn off your wall controller before starting the recovery process.

#### 11.8.1 SELECTING A BOOT DEVICE

Switch on your wall controller and press F7 until a Splash Screen is displayed, allowing you to select a boot device.

From the list of boot devices, select the 'UEFI: KingstonDataTraveler 3.0PMAP' and click on OK.

NOTE: At this point, if Windows fails to start, this indicates that the wrong boot device was selected. In this instance, select Esc to exit and start the process again.

The wall controller will reboot with the boot messages appearing on your control screen or the first screen on your video wall. When prompted, accept the terms and conditions and then follow the instructions to restore your wall controller.

## CHAPTER 11: ADVANCED USERS

### 11.8.2 INSTALL DISPLAY DRIVERS AND SOFTWARE

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Once the Windows® re-activation process is complete, the Display Drivers need to be re-installed and if required, the Video Wall Manager application software. The Display Drivers and Video Wall Manager software can be found in the Driver and Tools folder on the recovery media.

For the latest drivers and software, contact Black Box Technical Support at 877-877-2269 or [info@blackbox.com](mailto:info@blackbox.com).



## APPENDIX A: REGULATORY INFORMATION

### A.1 FCC CLASS A STATEMENT

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

### A.2 CE AND ROHS2

This product complies with CE and ROHS2 certifications.



## APPENDIX A: REGULATORY INFORMATION

### A.3 NOM STATEMENT

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
  - A: El cable de poder o el contacto ha sido dañado; u
  - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
  - C: El aparato ha sido expuesto a la lluvia; o
  - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
  - E: El aparato ha sido tirado o su cubierta ha sido dañada.

## APPENDIX B: DISCLAIMER/TRADEMARKS

### B.1 DISCLAIMER

Black Box Corporation shall not be liable for damages of any kind, including, but not limited to, punitive, consequential or cost of cover damages, resulting from any errors in the product information or specifications set forth in this document and Black Box Corporation may revise this document at any time without notice.

### B.2 TRADEMARKS USED IN THIS MANUAL

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**NOTES**

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**LIVE 24/7  
TECHNICAL  
SUPPORT**

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# NOTES

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