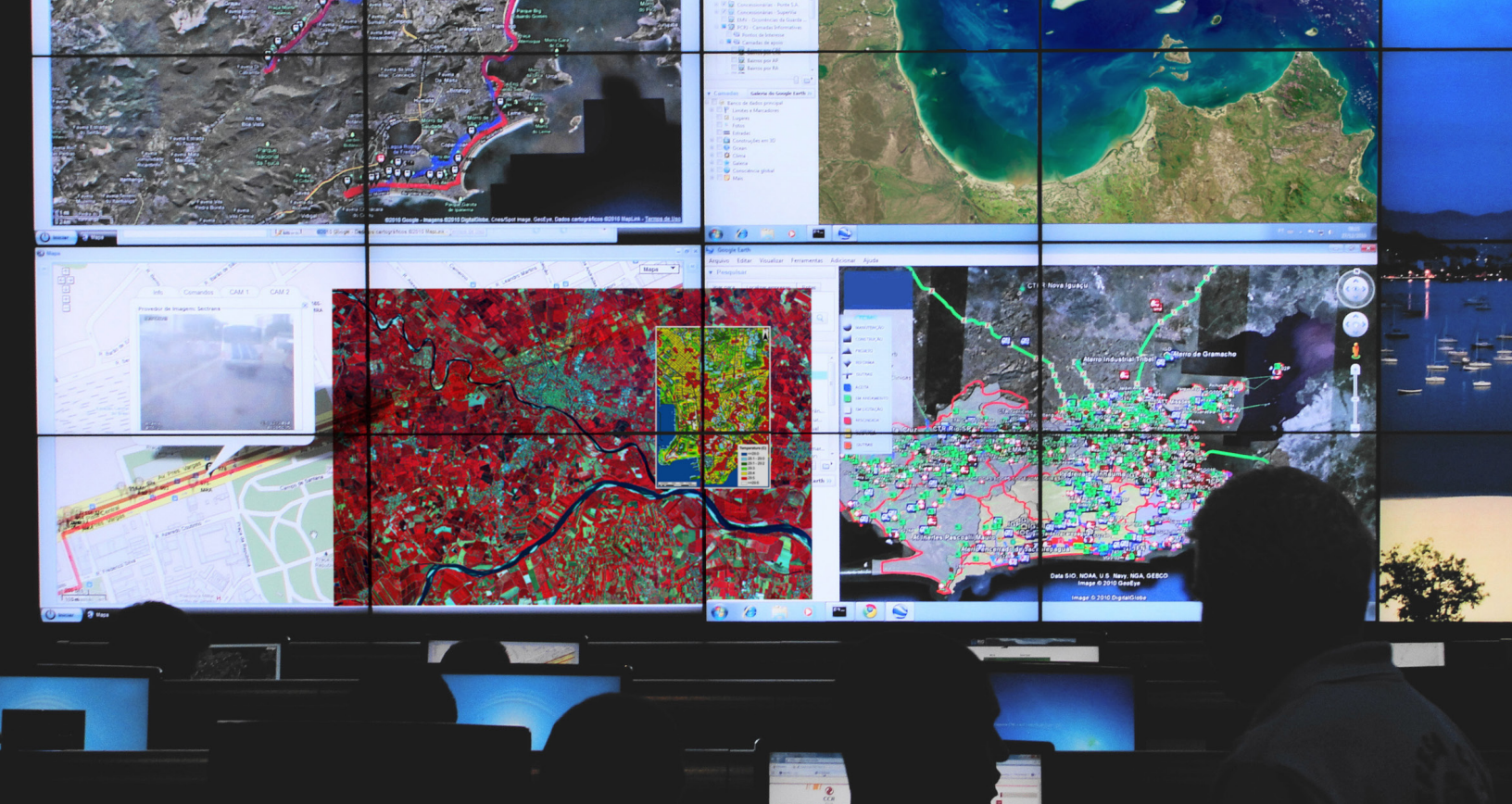


A GUIDE TO VIDEO WALLS

 BLACK BOX





When considering an investment in a video wall, there are a number of important factors you need to keep in mind. In this guide, we'll take a look at what constitutes a video wall, some of the technology behind video walls and five types of video walls used for different applications from basic to complex.

WHAT IS A VIDEO WALL?

A video wall is a multi-display wall that's created by joining multiple screens together to display a larger image or windows of multiple images. The display technology can be LCD or LED panels, tiles, cubes, or projection screens. A video wall can be as simple as one image from a single source stretched across multiple screens. Or it can be used to display multiple images from multiple sources, including live video feeds, on multiple displays. These type of video walls offer greater flexibility, control, scalability and creativity.

While video walls are typically large horizontal or vertical rectangles, they can also be creatively shaped presentations with screens arranged in different configurations. Video walls can be deployed on mobile mounting systems or wall-mounted for permanent installation.

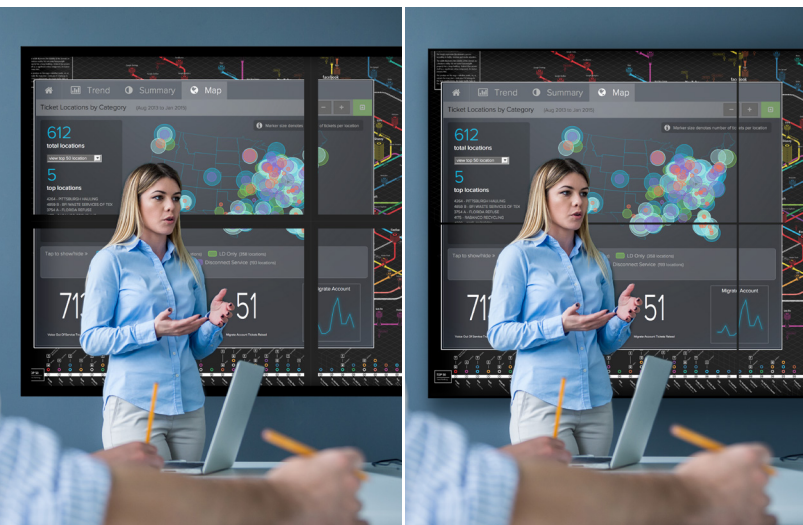
When considering what type of video wall meets your unique needs, you first need to consider how you plan to use the video wall. Do you want a simple digital signage type display, an advanced, large-scale control room wall or something in between? What environment will the video wall be used in: military/tactical, security, utilities, retail, education, transportation, museums, industry, conference rooms and more. The application will drive what type of video wall you choose.

You also need to factor in how you may be using the video wall in the future. Will a basic, fixed wall do the job? Or do you want a wall that offers flexibility and scalability to accommodate future growth? Some video walls are specifically designed for mission-critical 24/7 environments. These are powerful systems with advanced controls and built-in redundancy.

FOUR VIDEO WALL COMPONENTS TO CONSIDER

Displays

When planning your video wall, consider what type of display you're going to use. You can choose from LED and LCD panels, tiles, cubes, and projector systems. Not all displays have the same level of brightness or resolution and these specifications will likely be important decision criteria. The more detail and sharpness you require, the higher resolution you need. You also need to consider the width of the display bezel. Newer displays feature ultra-narrow bezels that result in a more seamless image.



The display bezel on the left is wider than the newer, ultra-narrow bezels on the right.

Video Wall Processors

There are a number of types of video wall processors to choose from depending on your application today and your future requirements.

First, today, the terms video wall processor and video wall controller are often used interchangeably. Their basic job is to segment video content for each display in a multi-display wall. A video wall processor is a video scaler that makes sure every source signal goes to the right screen with the right resolution. It takes an image and sends it to individual screens for display as one large, cohesive image. A video processor is in charge of taking the various inputs and putting them all together. An advanced video wall processor can take content from multiple sources for display on multiple screens. A video wall processor is similar to conventional video scalers, but with greater input, output and processing capabilities.

Video Extenders

Sometimes video wall processors can be located close to the displays and can be connected directly by video cables. In other applications, the video wall processor may need to be located in a server room or IT closet and the distance is too far to use a standard video cable. In these cases, video extenders are needed to transport the video signals from the video wall processor to the displays. Video extenders might need to be used for cable distances as short as 30 feet. Some IP-based systems use small receivers (one per display) that can be mounted on the back of the displays. In these cases, the signal extension occurs over the LAN and there is no need for additional video extension.

Control

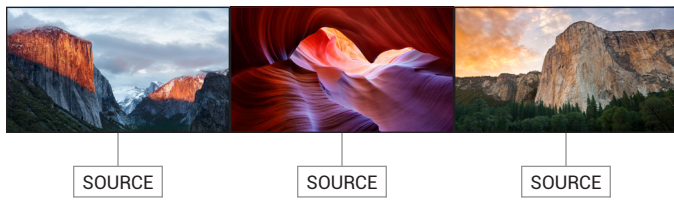
System control for multi-input and multi-window video walls can be performed in several ways. First, there is the video wall software that runs on the processor. This provides both content control and system management. Oftentimes administrators only want to allow users to have access to specific, pre-defined actions or control capabilities and no ability to change system management settings. A simple and often used solution is an external control system that sends commands to the control port of the video wall processor, typically through a serial (RS-232) or Ethernet (Telnet) port. Some systems also support control via HTTP or XML. Control systems with touch screens can be designed and customized for simple and intuitive operator control.



BASIC VIDEO WALL

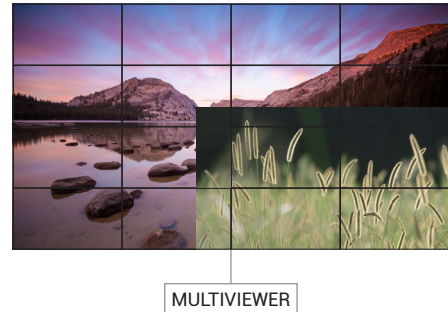
Monitor Wall

The monitor wall is the simplest form of video wall as it is just a collection of individual monitors. Each piece of content is limited to a single screen and cannot be scaled across multiple screens. A monitor wall can be driven by dedicated sources, or it can be front-ended with a matrix switch (AV or KVM) to switch content on the screens. Alternatively, an IP-based matrix can provide significant scale for switching the number of potential inputs in a distributed manner while avoiding a centralized matrix chassis.



Multi-viewer

A multi-view processor is a video processor that takes multiple video sources and outputs them to a single display. Options typically range from four to eight sources. Multiple layouts can be configured in order to display the sources in different arrangements on the screen. A multi-viewer can be used when the number of windows and scalability of a larger video wall processor is not required. A multi-viewer can be coupled with a projector or multi-window wall processor to increase the viewing size.



INTERMEDIATE VIDEO WALL

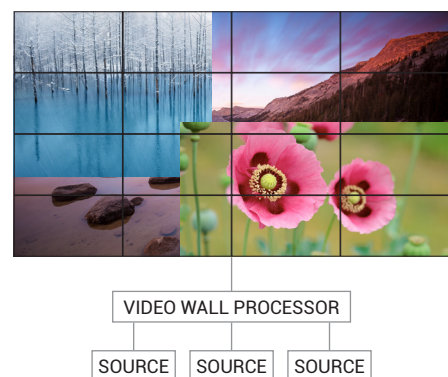
Multi-window Wall

A multi-window video wall takes a single input per section and displays it across multiple screens. The wall can be 2x2 up to 8x8 and sometimes more. However, the content windows are limited to the screen sizes. For example, with a 4x4 wall, up to four 2x2 windows can be displayed, or a 3x3 window with seven additional single screen windows, or the entire 4x4 could be a single window. Or, there can be two 2x2 windows with eight additional single-screen windows. An IP-based matrix solution is a very easy and low cost way to implement this type of video wall.



ADVANCED VIDEO WALL

An advanced video wall is one that supports a large number of screens of different form factors (e.g. 2x2, 3x2, 6x3, etc.) and offers a canvas-type user and display interface on which numerous content windows can be dynamically moved or resized. Advanced video wall processors typically support dozens of screens and numerous types of video inputs. These type of video wall processors can also support native decoding of IP streams for displaying large numbers of streams from devices such as IP-based security cameras or other remote sources. Some are also capable of encoding of video sources for sharing to additional sites or users. Advanced wall processors can typically drive more than one video wall from the same system. Advanced video walls are found in mission-critical control rooms requiring 24/7 uptimes.



Below is a summary of several features and capabilities of different types of video walls. With the range of capabilities for video walls, it may be difficult to distinguish which type is most appropriate for your needs. In addition, there may be some other components needed to create a complete solution. Black Box provides expert engineering support to design a solution that meets your technical and budgetary requirements. Contact our technical team today for a free, customized system design.

Expert Advice

Choosing the right video wall processor can be a challenge. Before you make a decision, consult the experts at Black Box's Center of Excellence for free advice and application engineering. We'll work with you to find and configure the right video wall solution for your specific application.

	BASIC	INTERMEDIATE	ADVANCED
	MONITOR WALL	MULTI-WINDOW VIDEO WALL	ADVANCED VIDEO WALL
CONTENT WINDOWS	1 per screen	Multiple sizes, limited to screen size	Only limited by practical viewing size
CONTENT SIZE	Limited to single screens	Limited to screen boundaries	Windows can be freely moved and resized anywhere on the Screen
WINDOW RESIZING	No	Yes, limited to screen boundaries (e.g. increase from a 2x2 to a 3x3)	Yes, any window can be any size
VIDEO INPUT TYPES	Limited, monitor inputs type limit options unless driven by a flexible matrix switch	Limited, but multi-view processors can increase the number of available inputs	Typically support all standard video types including VGA, Component, Composite, DVI, HDMI, DisplayPort, SDI and IP
BLACK BOX PRODUCT	MediaCento IPX	MediaCento IPX, VideoPlex4, VideoPlex4000, 4K Quad Viewer	Radian™ Video Wall Processor 1000, Radian Video Wall Processor 2000

