

# SOLUTION BRIEF

Video Walls  
Digital Signage



# Enabling High Scalability in Video Walls with the Intel® Digital Signage Distributed Architecture

Modern advertising with the next-generation digital signage architecture

## Executive Summary

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Modern retailers realize the added value of engaging customers with dynamic digital signage. According to a forecast, the market is expected to grow to more than USD14.8 billion by 2020. Digital signage is exponentially growing, increasing the number of video wall installations in retail, corporate environments, and public spaces. This trend leads to a growing demand for affordable solutions that can deliver a high-definition experience, is simple to control with intuitive content management systems, and able to cater to a growing number of screens.

Centralized server-based architectures often fail to offer redundant points of failure, incurring high costs and maintenance. At the same time, storing big servers tends to take valuable real estate in stores and require expensive cabling with audio/video (A/V) extenders. The new Intel® FPGA-based solution enables an efficient shift from a server-based approach to a distributed architecture, with media players located behind the screens, hence reducing operating expenses and maintaining higher advertising uptime.

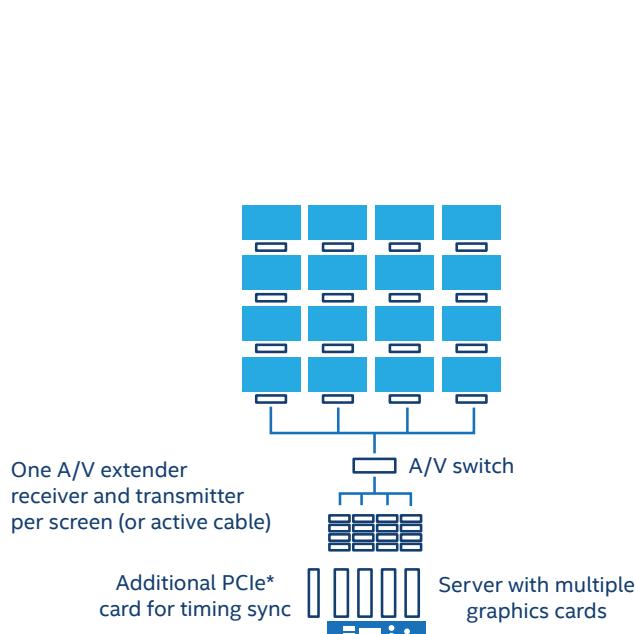


Figure 1. Video Wall Centralized Server-Based Architecture

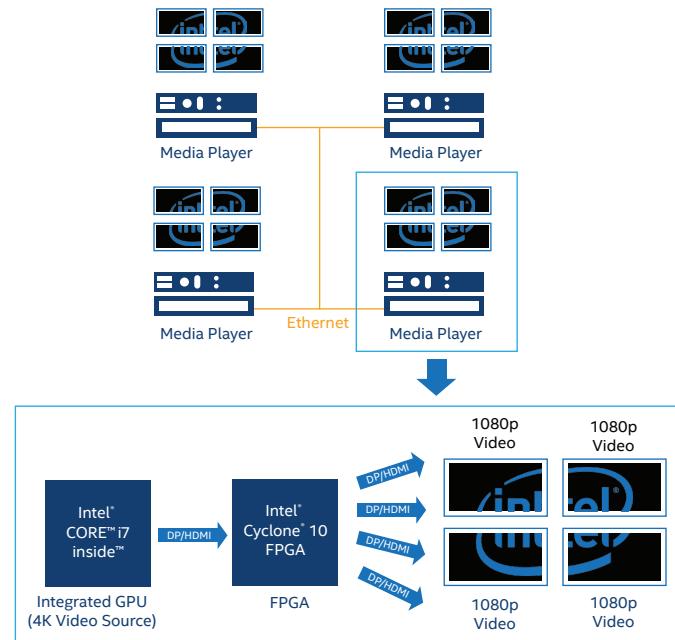
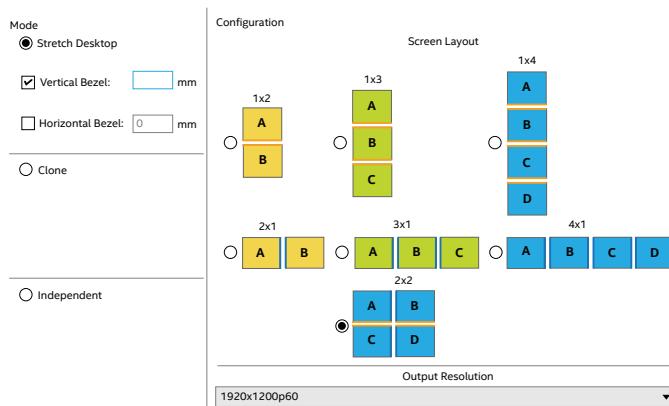


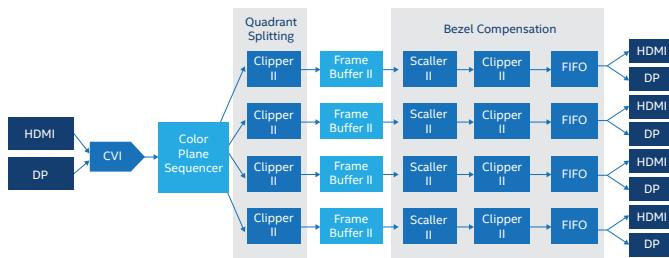
Figure 2. Intel's FPGA-Based Distributed Architecture

## Intel Processor + Intel FPGA-Enabled Video Walls

Intel's digital signage distributed architecture solution consists of several Intel based media player units powering a scalable number of screens. Each unit combines the capabilities of an Intel CPU-based media player plus the I/O expansion and video processing acceleration of an Intel FPGA. The combination enables a robust solution with media player redundancy, avoiding single points of failure, scalable from few to multiple screens, and architecturally future-proofed to new technologies and product requirements.



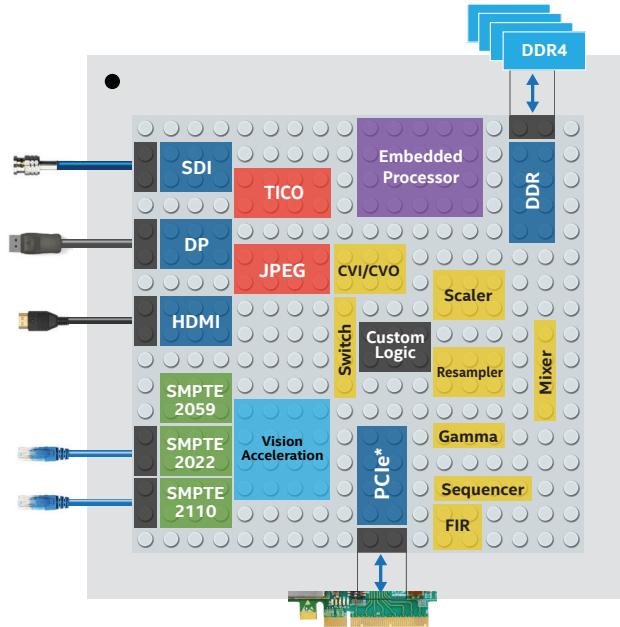
**Figure 3.** Intel FPGAs enable solution customization. For example: shifting to different layouts in run time or adding other effects such as video rotation and alpha blending



**Figure 4.** Intel FPGA reference design for the Intel digital signage distributed architecture.

The Intel FPGA product portfolio enables a quick customization of new products by making use of its high-performing core and high-speed flexible transceivers to upgrade to the latest trends in technology. The digital signage market continues to evolve faster than ever with new technologies and trends, such as 8K and higher resolutions, high dynamic range (HDR) and better color, high-quality low-latency video compression, new video connectivity standards, and vision analytics acceleration. Intel FPGAs provide the following offerings that enable you to quickly intersect new technologies and accommodate your latest product requirements:

- Solution customization with a plug & play architecture
- Fast time-to-market, pre-canned connectivity intellectual property (IP) solutions, such as DisplayPort 1.4, HDMI 2.1, 12G SDI, HDCP 2.3, and 25G Ethernet
- Over twenty 8K60-ready video processing solutions, such as Scaling, Mixing, Alpha Blending, and De-interlacing
- Vision acceleration tools, such as the OpenVINO™ toolkit



**Figure 5.** Intel FPGAs enable design innovation and differentiation with a flexible architecture

In addition, Intel processors present a scalable range of options to provide the best match in price and performance for a given application. System integrators and Original Equipment Manufacturers (OEMs) can leverage Intel's wide hardware and software portfolio to accelerate time to market. Intel provides a range of software development kits to enable the rapid development of media player software. Intel Media SDK products provide software developers a rapid way to leverage the latest capabilities in video rendering and decoding, such as hardened high efficiency video coding (HEVC) decode, within devices. For artificial intelligence and computer vision extensions, Intel provides the OpenVINO toolkit which enables rapid development and portability across Intel processors and accelerators, such as Intel FPGAs and Intel Movidius™ products. For world-class remote manageability, solution providers can select Intel vPro™ platform devices and leverage the Intel Active Management Technology (AMT), greatly reducing the need to make onsite engineering visits and saving time and money whilst improving customer satisfaction.

## Learn More

For more information about solutions based on Intel's digital signage distributed architecture, you can:

- Contact **JWIPC** and **iBASE**
- Go to [www.intel.com/digitalsignage](http://www.intel.com/digitalsignage)
- Go to [www.intel.com/content/www/us/en/broadcast/products/programmable/overview.html](http://www.intel.com/content/www/us/en/broadcast/products/programmable/overview.html)
- Contact your Intel sales representative

## Partner Solutions

Intel enables an ecosystem of Original Design Manufacturing (ODM) and OEM solution providers to develop digital signage products that target a diverse range of applications in retail, education, enterprise, and public utilities. Check out the latest solutions from our partners, JWIPC and iBASE:

**JWIPC**



Figure 6. JWIPC Board

**iBASE**



Figure 7. iBASE Board

