Putting Together a 4K/UHD Solution

A 4K/UHD digital signage solution can be eye-catching but creating an attention-grabbing experience requires having all of the parts in place.

Just a few short years after ultra-high-definition (UHD) made its first appearance in digital signage applications, the technology is clearly taking off.

Global shipments of UHD LCD panels were expected to top 145,000 units in 2014, according to Cambridge, Massachusetts-based research firm IHS Technology, up a whopping 590 percent from just 21,000 units the previous year. By 2018, shipments are expected to approach 656,000 panels.

Digital signage displays featuring UHD—also known as 4K because the panels feature four times the resolution of HD 1080p panels—can create an eye-grabbing experience that enables a deployment to stand out from an ever-growing field of digital displays.

And as 4K/UHD technology becomes more widely available, the cost of displays is expected to decline. That, in turn, will help to spur additional installations.

But despite its growing popularity, putting together a 4K/UHD solution can be a challenge. Getting the most out of an installation requires having every piece of the puzzle in place, with an investment in a 4K/UHD solution being an extravagant expense for an underwhelming outcome if any of those pieces are missing.

"Any 'broken link' can lead to a complete loss of image on the display, scrambled images (in many different forms) and colors either missing or less brilliant causing the messaging being displayed to have less or no impact," said Richard McPherson, senior product manager, projectors, with Chicago-based NEC Display Solutions. "For a deployer of digital signage, any of these would potentially lead to a loss in revenue."

Putting the pieces together

The higher resolution of 4K (4096 x 2160) and UHD (3840 x 2160 pixels) makes for a more immersive environment when it comes to seeing or interacting with the content on a display.

With content displayed in 1080p, if someone gets close enough to the screen there is a chance that they would be able to see the individual pixels, turning their attention away from what was actually being displayed. With 4K/UHD content, on the other hand, the distance between pixels, known as "pixel pitch," is essentially half of what was for an HD display of the same size. This means that even at a close distance, individual pixels aren't seen and essentially "pixel-free" viewing can occur.

"From a digital signage perspective, the higher depths of resolution put customers in an immersive experience that brings them closer to the display and allows for more attention to detail," said Ben Hardy, NEC's product manager, large-screen displays. "This gives greater flexibility of the branding or messaging that is being deployed on the display."

A key step in creating an effective 4K/UHD solution is using content created specifically for that purpose.

In fact, one of the main factors preventing even more explosive growth in the deployment of 4K/UHD is the relative lack of content.

Content will look best on a 4K display when it is rendered at 4096 x 2160 and 60 frames per second (fps) and on a UHD display at 3840 x 2160 at 60 fps.

Because 4K/UHD displays incorporate quadruple the number of pixels of a 1080p display, the screens carry much more information. More information means sharper, more engaging images, which can capture a greater amount of consumers' attention.

That doesn't mean, though, that a deployer must develop duplicate content for both 4K and 1080p displays.

"The general advantage of a UHD solution for content development is flexibility," said Art Marshall, product manager, desktops with NEC. "A UHD solution can be used to create both 4K/UHD content and full-HD content."

Of course, once that content is created it must be decoded, or played back. A number of companies have rolled out 4K/UHD media players over the past two years, with most including features that have become standard on HD media players. Those features include support for multiple displays, a small form factor and remote manageability, as well as the ability to play back 4K/UHD content.

And from the media player, content can be presented to the viewer via either a projector or monitor specifically designed to display 4K/UHD content. Again, one of the advantages of 4K/UHD over 1080p is the sheer amount of data that can be displayed at one time. Many 4K/UHD displays also shine with content that needs to be color-accurate because they feature wider color ranges than standard displays.

"Whether using a large display or projector, 4K/UHD content has the ability to capture the audience at hand by providing more information in ways not previously available with a single display," McPherson said. "The display can drive a single image, two separate images side by side or even four images, creating a myriad of opportunities."

The choice of projector versus display depends in large part on factors ranging from the deployer's budget, ambient lighting, where the content will be displayed, and what the deployer hopes to accomplish.

4K/UHD displays as large as 98 inches have been hitting the market in recent months. NEC's 98-inch X981UHD display, for example, offers 3840 x 2160 resolution at full 60Hz, including the ability to run 24/7. In addition, multi picture mode allows for up to four simultaneous feeds to be displayed on the single display. This could be groundbreaking in command and control or corporate environments.

Advantages of LCD displays over projectors in these applications include brightness of the display, the ability to direct specific content to individual screens, and the potential for interactivity, with a slight disadvantage being the visibility of the bezel.
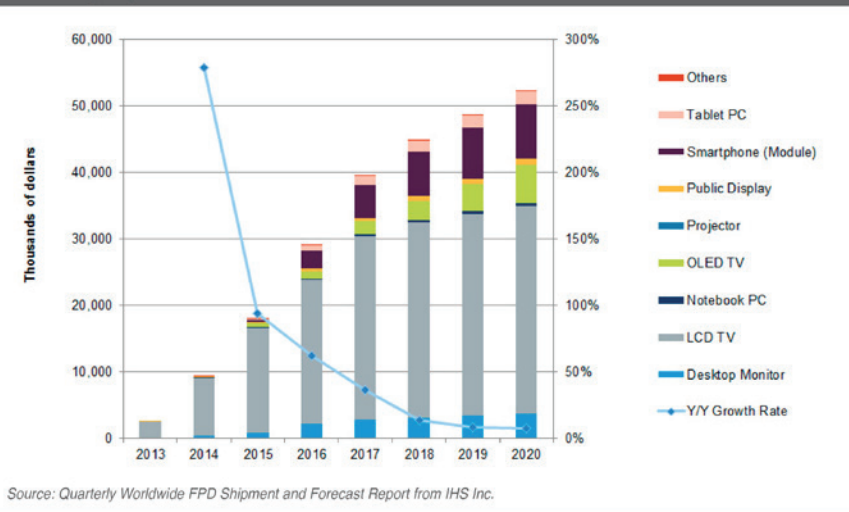
Projectors, on the other hand, offer the ability to create even larger images in any shape the deployer desires, with a disadvantage being concerns over ambient light and placement of the projector. And looking at cost, projectors have the advantage when it comes to image sizes beyond 80 inches or so.

"There are advantages for both but the decision will be dictated based on the environment and usage models," McPherson said.

"From a projector standpoint, the major advantage is a more seamless image than can be achieved with large screen displays," he said. "On the other hand, a large-screen display has the built-in ability to map four separate images internally, which subsequently removes the need for external processors."

4K Display Revenues with Year-over-Year Growth Rate

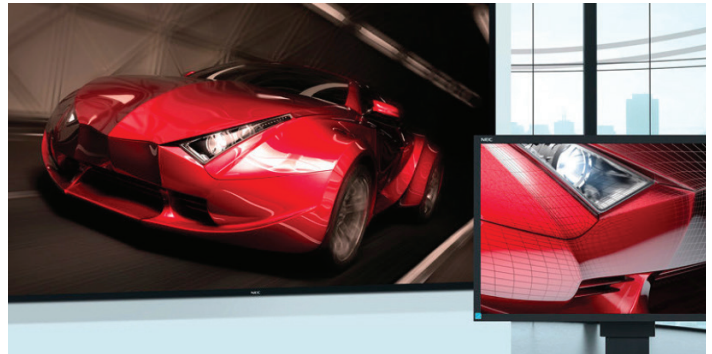Source: Quarterly Worldwide FPD Shipment and Forecast Report from IHS Inc.

Conclusion

A well-thought-out 4K installation can be the centerpiece of a messaging campaign that stands head and shoulders above the competition, bathing customers in a visual experience second to none.

It can't be stressed strongly enough, though, that creating the 4K experience requires all of the various components be ones designed for that purpose, from media players to displays to content. And with the plethora of digital signage choices in the market, knowing which components are the right ones can be a difficult task.

One of the best decisions a potential deployer can make is to work with a technology partner who's knowledgeable about developments in the technology and is at the forefront of the changes that are occurring.

Finding the right partner can help ensure the deployer gets the most effective technology for their needs while ensuring they get the biggest bang for their buck. Don't skimp on the due diligence!

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