

# Executive Summary

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When high-definition TVs (HD or 1080p) first entered the market, only three HDTV channels were available. Fast forward five years, the number of channels grew to 40. Today, over 20 years since the HD breakthrough, most streamed content is available in HD and many consumers also own HD media players. The AV industry knew that 1080p would become a standard, but it didn't happen overnight.

The 4K specification promises significant improvements in the image and video viewing experience over 1080p, with quadruple the number of pixels and 64 times the number of colors. However, 4K system design currently presents many challenges, including the lack of content, infrastructure, and processing power. For example, if anywhere between a 4K source and a 4K display a product is not capable of handling 4K resolution — whether it is an input card, transmitter, or cable — that product creates a bottleneck. System designers have to ensure that every component in a 4K path is capable of 4K.

4K has been fodder for transition polemics and propositions for roughly a year and a half. In the absence of stable infrastructure, vendors want to know how they can build a system today that would allow them to take advantage of 4K down the road. And if they do, what pieces of the infrastructure can they use right now? How do they know and communicate to end users which system components they may have to replace within five years of implementation?

Before 4K can become widespread, there have to be applications that require it. The challenge with 4K today is that there aren't many applications that couldn't exist without it. One could argue that it is display manufacturers who need 4K to succeed, because sales of 1080p systems have peaked. And to spur sales, they have to begin pushing 4K products. In this way, *product* is perceived as the main driver of 4K adoption, rather than the *need* for product.

However, it is easy to see the immersive value of 4K in a variety of applications, from multiwindow displays, to projection mapping, to simulation and visualization. And some end users are already reaping the benefits of smoother video and much greater detail.

The goal of this white paper is to dispel myths surrounding 4K technology, present the theoretical and practical parameters of its capabilities, and explain which applications can harness 4K today and in the future.