



ATLONA.
Connecting Technology

WHITE PAPER

Atlona® | 2014

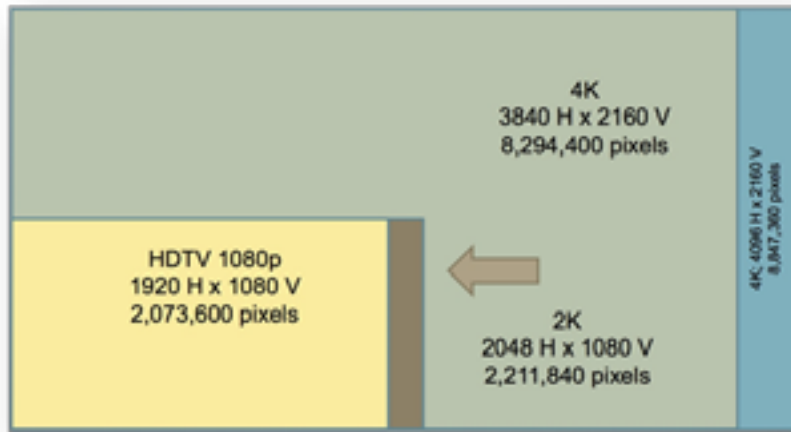
Understanding 4K Signal Distribution

[Table of Contents](#)

P.3 - Understanding 4K Signal Distribution

P.4 - About Atlona®

To understand 4K signal distribution we first must understand what 4K resolution is. 4k resolution is 4096 H x 2160 V. That means there are 4096 pixels laid out horizontally across the display and 2160 pixels arranged vertically across the display for a total of a little more than 8.8 million pixels in the 4K image. Ultra-HD, which has an aspect ratio of 16:9, has a resolution of 3840 H x 2160 V pixels or nearly 8.3 million pixels in the Ultra-HD image.



Now that we know how many pixels are in a 4K image the next thing we need to know is, how much bandwidth does it take to distribute that information? 4K has a data stream of 8.8 million pixels but what we need to know is the bitrate of the 4K image. Bitrate not only takes into consideration the number of pixels but also examines the color depth and the refresh rate of the image being sent.

Depending on the number of pixels, color depth and refresh rate, the 4K bitrate can range between 3.5 and 20 gigabits per second (Gbs). We also know that HDMI 1.4a and HDBaseT both have a maximum bitrate of 10.2 Gbs. That means in order to successfully send a 4K signal over HDMI or HDBaseT our 4K signal must be at or below a bitrate of 10.2 Gbs.



Sending a full 4K signal, that is 4096 x 2160 with a refresh rate of 24 Hz will require nearly 10.2 Gbs. Likewise sending an Ultra-HD signal, that is 3840 x 2160 with a refresh of 30 Hz will also require nearly 10.2 Gbs. As a result these are the maximum resolutions and refresh rates that can be used when distributing 4K/Ultra-HD over HDMI 1.4a and HDBaseT.

About Atlona®

Atlona® is a leading provider of innovative, AV distribution solutions. Since 2003, the company has been designing and engineering award-winning products for a diverse range of residential and commercial AV and IT markets, including education, business, government, entertainment, and healthcare.

Atlona's products and services enable system designers, integrators, consultants, and installers to simplify installation, minimize maintenance, and maximize the versatility of premier automated control solutions. Atlona's vision is simple: deliver customer-driven products designed and developed with the features, performance, and reliability that industry leaders demand; and deliver the best value in the industry.

More information about Atlona is available at www.atlona.com.

