BrightSign Tech Note
Selecting SD / SDHC Flash Cards

Summary
When using a BrightSign product, your content and playlists are loaded onto an SD or SDHC flash card. Although the SD/SDHC interface is standardized, there are differences in performance and reliability among various card brands and models. Brightsign strongly recommends that you use SD/SDHC cards that support Wear Leveling and use SLC flash chips. Most newer cards support wear leveling, and many card vendors, like Kingston (Ultimate and Elite Pro series) and ATP (Industrial and Promax II series), use SLC flash chips in some products.

Avoiding Card Corruption due to "Read Fatigue"
In a typical BrightSign application, there might be an "attract video loop". If this video is fairly short, then a small number of flash blocks will be repeatedly read. Over time, the number of times the attract loop is read can be enough to trigger the "fatigue read errors" if the card's controller chip is not designed correctly to handle and eliminate them.

SLC vs. MLC Flash
Different types of NAND flash are more susceptible to these read errors than others. For example, "multi-level" (MLC) flash chips are much more susceptible to this read issue than "single level" (SLC). SLC Flash devices provide faster write performance and greater reliability.

Wear Leveling
Wear leveling works to distribute data evenly across each memory block of the entire SD/SDHC card. This process decreases the total wear on the card, thereby increasing the lifetime of the flash card. All our cards have active and dynamic wear leveling to maximize life of the cards.

Speed
We have not found an SD/SDHC card that did not have sufficient read speed for digital sign and kiosk applications with standard definition video. In general you want a card that can sustain over 3 megabytes per second read rates. For High Definition video, we recommend at least 4 megabytes per second; Class 4 SDHC cards are rated at a minimum of 4 megabytes per second. Underperforming cards can cause a variety of playback problems including distorted and pixilated video or audio dropouts. You can test a card's speed with BrightSign by placing a file on it, and using the shell "readperf" command (see the BrightSign User Guide on shell instructions).

Brightsign recommends periodically testing the read performance you purchase, even if you've successfully used that brand/model before. Card vendors make changes in manufacturing (controllers, chips, and firmware) that can affect the

performance of the card. A card that used to consistently provide 4+ megabytes per second, for example, may now only provide 2.5 megabytes per second.

BrightSign Compatibility
BrightSign is compatible with most SD/SDHC cards, but may not be 100% compatible with every model. As of the 3.1.73 firmware version, we are not aware of any incompatible cards. We have tested with a large number of chips, and at this point have high compatibility.

When deploying units into the field, Brightsign **strongly** recommends that you test the content and the SD/SDHC card with the BrightSign firmware version you will use before deployment.