Bar Code Labels… More than meets the eye

Bar code labels or the concept of encoding data in a series of bars and spaces has been around since 1934. This application of encoding data within the tape automation world has added new and significant value to users of tape technology. Enabling them to track their media both within the automation products and, at offsite locations. Since their introduction, application software is also evolving to use the bar code information to track where the data cartridge is located, verify the correct media type and confirm the identity of the exact piece of media being accessed. The whole purpose behind bar code labels is to provide both human and machine-readable identifiers. Machine-readable identifiers enable the tape library system to correctly manage the tape cartridges. Any failure can cause data to be inaccessible to the system and the user. Backup and restore failures can be caused by misuse or sub-standard quality labels.

Customers are constantly looking for ways to trim the budget and sometimes make business decisions based on price. Unfortunately, this holds true for automation supplies such as data cartridges and labels. When considering the importance of a company's data, the cheapest solution doesn't always provide the level of data protection required to prevent catastrophic loss. That's why HP goes out of its way to ensure that each piece of storage media is tested and qualified above and beyond industry standards. They apply this practice to their bar code labels as well. The following explains why it's important to go beyond the surface.

On the surface, a bar code label appears very simplistic—nothing more than a small office label with laser printed bar codes. However what lies underneath is much more complex—Special adhesives developed to withstand the stringent environments of data centers--precision printing processes that allow library robotics to identify and read data accurately. All of which are tied to tight engineering specifications and rigorous testing in controlled environments to ensure that all makes and models of libraries can successfully identify, read and utilize a "standard" label for the appropriate technology.

Bar code labels should not be taken for granted—if customers use sub-standard labels or misapply their labels, serious damage can be caused to the library or interfere with data inventory, back up cycles and, the ability to restore data can be jeopardized.

Bar code labels are used in a multitude of environments and are used for a variety of functions. When performing the following functions, there are certain things to know.

Inventory

Bar code labels are typically read when an inventory is done. Inventory automatically occurs every time the library doors are opened. By keeping the doors closed, inventory errors are less likely to happen. However, off site storage warrants weekly rotation schedules by most automation customers. This means that automation customers inventory a full library every week. In order to ensure a successful inventory process, each bar code label must be readable. Sub-standard labels and improper labeling can prevent the bar code reader from acknowledging the tape and therefore will classify it as "unknown" which prevents the data from being inventoried and being added to the media pool. The software will not know what to do with it. "Unknown" media forces customers to manually load the tape into the drive defeating the automation process. An example of time loss due to manually loading DLT tapes: DLT cartridges take

approximately 5 minutes per tape to load-up which would take two full days to perform the inventory function on a fully loaded ESL9595 library. Through the automation process, this same function would take only minutes.
Occasionally, sub-standard bar code labels are successfully read during the first inventory process but not the second. When this happens, the media is classified as "foreign". "Foreign" tells the system software that the media is the proper format but that it doesn't match the media records. For this media to be read, it either has to be reformatted (5 minutes per tape) or imported. Importing can take hours to complete. Importing an ESL library with a 10% fill ratio would take a customer 2.5 days, 20% fill ratio would take a customer 5 days and so on.

Back Up

If for some reason, a customer didn't notice that the bar codes weren't read properly during the inventory process, they may not realize that their back up pool has been decreased. Media with unrecognized bar codes are typically put into the "unknown" pool and the software will not use them for backups. A smaller backup pool results in back ups not proceeding when the software runs out of available usable media. This opens the customer up to potential disaster.

Restore

If bar codes are not read successfully during the inventory process, the software will tell the customer that the data isn't in the library and to load it so it can be restored. Since this process is managed through the software, it is highly unlikely that the customer would know which cartridge has the data the system is looking for, unless of course they open up the library and look at each bar code label individually to find what the software is looking for. If they open the library, the library would have to inventoried again. If the bar codes weren't read correctly the second time, the customer would have to manually inventory the "unknown" media by having each unidentified cartridges loaded into the drive and read. As mentioned earlier, the cartridge will either be identified despite the lack of the bar code or it will be seen as "foreign" and will require an import. When considering the urgency surrounding the restore process, every second counts. If the manual process takes over due to "foreign" or "unknown" data, this process can take hours or even days resulting in catastrophic loss to the customer.

Unless the labels are grossly damaged or smudged, neither the customer nor an experienced engineer has the ability to recognize if a bar code label is out of specification. Trouble shooting under these conditions can cause significant issues for both the customer and library manufacturer. The best way to prevent any of the above issues from happening is to use high quality-reputable bar code labels or prelabeled data cartridges. HP is known throughout the world for it's high standards of quality, durability, compatibility and reliability.

For more detailed information on the do's and don'ts of bar code labels, visit www.hp.com/go/storagemedia and download "Bar Code Label Requirements, Compatibility and Usage White Paper". It contains valuable information that may save you thousands!