



Weighing the Pros and Cons of Barcode Data Collection Methods

The importance of understanding your options before selecting a device

When planning to deploy new data collection system at your company, there are a lot of points to consider before signing on the dotted line. So prior to making the investment, assess the unique operational needs of your company. Analyze your business process requirements and the technology infrastructure. Those tasks may seem daunting, but it will ultimately mean the difference between extreme frustration and a sense of accomplishment once the solution is deployed. Having the right technology in place will mean the job gets done with the desired results that fit your overall business goals.

Once you have that knowledge in place on which to base your decision, you need to know which options are available. Fundamentally speaking, there are three types of barcode data collection methods that should be considered:

Batch Data Collection

A batch data collection device stores data directly on the device. As the data is scanned or keyed in, it stays in the memory of the device until such time it can be connected to a computer and uploaded. Afterwards the data can be erased, freeing the memory of the device for its next use.

Pros:

- ▶ **WLAN is not necessary:** Because the information is stored on the device and then uploaded or “batched” to a computer over a wired connection, such as USB, there is no need for a wireless infrastructure in the facility.

- ▶ **Remote use:** It can also be used in remote areas where wireless connectivity may not be an option at all.
- ▶ **Low cost:** The device itself is a smaller investment than a Wi-Fi equipped device because there is no radio. For the same reason, battery life tends to be better as well.

Cons:

- ▶ **Software:** A small software program or application must be produced and loaded onto the device in order to generate the screen prompts telling the operator to scan or enter data. This can usually be accomplished with a program generation tool that can be used by non-programmers, but still takes some time and thought to properly execute.
- ▶ **Not real time:** This means that the information is not available to be processed by the host software application until it has been uploaded to the computer, and then imported into the host package. Until the data is uploaded, it is still somewhat vulnerable should the device get damaged or destroyed.

- ▶ **Low-volume:** Batch data collection devices may not be the best choice for a receiving application in a high-volume, high-velocity distribution center where the information is needed on a more real-time basis. They are limited to relatively simple applications such as physical inventory counts.

Terminal Emulation (TE)

The use of wireless data collection (Wi-Fi) is the real-time alternative to batch data collection. The handheld devices can be almost identical, except that the wireless device will be equipped with a radio for communicating over the wireless LAN.

A simple and reliable methodology for real-time data transfer is called Terminal Emulation (TE). The basis of TE is that handheld computers can actually emulate “dumb terminals” when connected to a server over the WLAN. It is an almost effortless way to send text-based screens down to handheld devices, providing information to the user and prompting them for scanned or keyed data. The only software application running on the handheld device is the software used for emulating the “dumb terminal,” hence the term “terminal emulation.”

Pros:

- ▶ **Ease of use:** Handheld devices designed specifically to run TE software are inherently simpler. This is because they will typically only run the TE client, connect to a server, and login to the host application. Since no other options are presented, it's even easier to use.
- ▶ **Cost efficiency:** TE software can actually run efficiently on slower processors that require less memory and consume less energy (battery). Because the screens on TE devices are almost always text-based, a color display with touch panel is rarely necessary, further reducing the cost and energy requirements.

Con:

- ▶ **Lack of versatility:** The Downside to TE handheld devices is that it can only be a TE device. It can never run a true browser or any software developed for a Windows® environment, meaning it can't run third party packages like device management software. If the chance exists that the host software application might change in the near future requiring a web browser or some other Windows®-based client, then a dedicated TE device might not be the best option for the long term.

Most handheld computers are capable of running TE software. In fact, some come equipped with it already loaded. However, it's important to know that not all handheld computers are alike. Some are specifically designed to be terminal emulation devices only, while others are more powerful Windows® devices that are largely overkill when running TE software.

Windows® Architecture

A typical Windows®-based handheld computer will have a microprocessor speed of anywhere from 400 to 800 MHz and a minimum memory configuration of 128MB of RAM and 128MB of ROM.

The vast majority of handheld computers available today come equipped with a variant of either Windows® CE or Windows® Mobile (now Windows® Embedded Handheld). These devices are quite literally computers in every sense of the word in that they can run software programs that were designed for their particular operating system and hardware configuration like screen size, keypad, etc. This software might be a “canned” Windows® application like Internet Explorer®, or third party applications like TE clients. It might also be custom software written to connect and communicate with a specific host software package running on a server. The point is that a handheld computer becomes whatever its application software makes it — be

it a web browser, a TE device, a route accounting tool, etc.

Pro:

- ▶ **Versatility:** As long as the software exists or can be written, the Windows®-based handheld computer can become a powerful tool. They are generally available in a wide range of form factors from semi-rugged PDAs to super-tough handhelds and tablets designed to withstand even the worst conditions, including hazardous or even explosive environments.

Cons:

- ▶ **Software costs:** The software may or may not exist. So, it may have to be purchased or even written. It is a very common practice to run TE software on a Windows® device, but in most cases, the computing power is wasted. You may invest more in this type of device, but “dumbing it down” into a TE device also wastes money.
- ▶ **Complexity:** A Windows® device is not designed to be dedicated to one specific purpose. It may have to be “locked down” to remove options that the user doesn’t need to see or access. Taking a tool that is designed to be versatile, and then deploying it in such a manner that it is dedicated to a single task, is sometimes harder than it first appears.

The most important part of any discovery process is to first understand what options exist, and then selecting the option that is the most ideal for meeting the specific needs of the application. Whether or not it makes sense to “future-proof” by purchasing equipment that might have more features and capabilities than what is currently necessary, is a business decision that has to be made on a case-by-case basis.

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We believe there is more to buying a product, than just the product. It’s also the service and support that is available before, during, and after the sale. It’s being able to communicate when you need to, and get action and responses that work for you. It means not being at the mercy of anyone, but rather being the recipient of stellar customer service and support. That’s AML.

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Phone: 1-800-648-4452

Email: sales@amltd.com