Comparison of USB Drives and Duplicators: You Get what you Pay For

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USB Drives: Great Variety but no Quality Standard

USB memory drives, also known as “USB sticks”, have become the major vehicle for transferring content from one computer to another. USB drives are low cost, come in a variety of shapes, and support a wide range of memory sizes. In addition, the USB drives may be used for promotional purposes only and as such may not require typical read/write performance characteristics. Alternatively, USB drives may have stringent performance requirements for industrial and military applications.

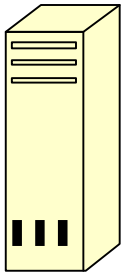
Many of the USB drives are manufactured with equipment that is of low quality. And there is no international trade group that is setting quality standards for USB drives. Thus other than brand identification, it is very difficult for corporate buyers of USB drives to ascertain the quality of the drives they purchase. Typical failures rates for straight duplication of USB drives can approach 100% but generally fall in the range of 2% to 10%. Drives purchased from the tier one suppliers have duplication failure rates in the 0.1% range. Considering the comparatively simple nature of the electronic parts in a USB drive, these failure rates are somewhat astounding. When failure rates exceed 1%, this translates into significant dollar amounts with USB drive prices in the $5-$15 range and typical duplication jobs in the 5000 to 10000 range.

The old saying, “You get what you pay for”, certainly applies to purchasing USB drives. In fact, unless you pay a little more, you can easily end up with 100% junk. I recently was duplicating 1000 USB drives for use as a promotional item. The customer supplying the drives and requesting the duplication was a CD duplication house and their customer was a very large high performance car manufacturer. During the first couple of duplication runs, I saw a 30% failure rate. I collected a number of the failures and repeated the duplication cycle. Again I saw a 30% failure rate. Oops, I thought I better go back and check the 70% first time passes. Again, I got a 30% failure rate on the initial passed USB drives. The conclusion: ***all*** the drives were bad. Interestingly enough, the customer who purchased the drives and requesting the duplication asked to have any drive shipped that would pass at least one duplication cycle. Apparently, return of bad product was not in the original agreement.

Duplicators for USB Drives: Not All the Same

There are a number of common ways to duplicate USB drives. These are listed below.

Method 1: Duplication Using a Windows PC with a USB Ports



Almost all Win PC's ship with multiple USB ports. By plugging a Master USB drive and any number of copy drives, the user can use "Explorer" and copy the Master Files to the copy drives.

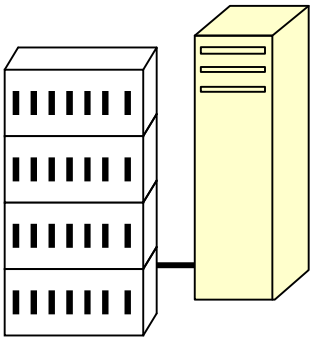
Advantages:

1. **Low Cost**

Disadvantages:

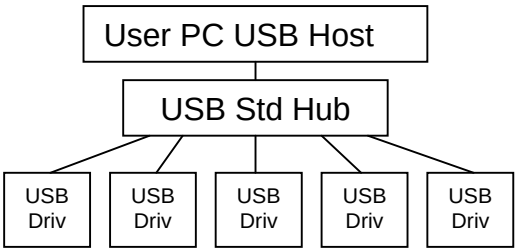
1. **Multiple File Copy is tedious and slow**
2. **No Verify capability**
3. **Slow for multiple copies**

Method 2: Duplication Using a USB Hub with Windows PC with commercial "Purchased" hardware and/or software.



A number of companies, especially in Europe, sell USB duplicators that are made from a combination of standard USB hubs packaged in a PC tower or just A bench top hub.

The architecture of this form of duplication is seen in the figure below.



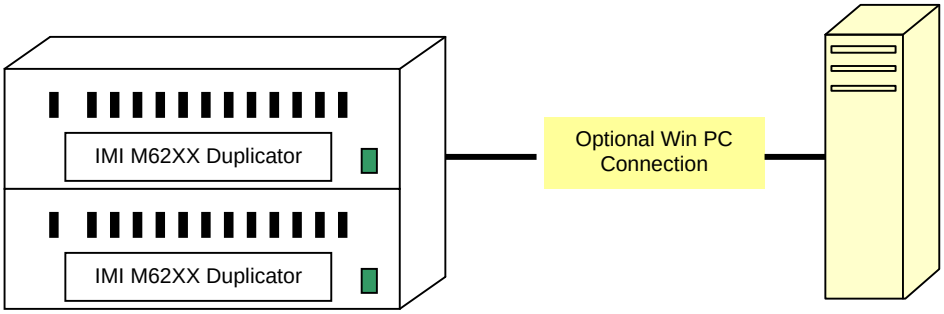
Advantages:

1. **Moderate Expense with Standard USB hubs possibly packaged in a low cost tower**
2. **Using the customer's PC for the User Interface**
3. **Expandable to a large number of duplication slots**

Disadvantages:

1. **Slows down with increasing number of slots**
2. **Requires User PC, Not Stand Alone**
3. **Verify Cycle is slow because each device must be verified separately through the single upstream USB hub channel.**
4. **Hub slot spacing is often too close together to use wide USB parts, especially USB readers for other types of Flash cards (e.g. SD cards)**

Method 3: Duplication Using a Dedicated USB Duplicator optionally tied to the User's Win PC



Advantages:

1. **Copy sockets directly tied to USB host controllers for faster speed**
2. **Verify is done at speeds greater than programming**
3. **No decrease in speed with increasing number of slots**
4. **Stand Alone operation independent of User PC**
5. **Wide socket spacing allows use of Std Flash readers for other Flash cards (SD)**

Disadvantages:

1. **Slight Premium in Price for added advantages**

Conclusions

Duplication of USB drives is a wide spread commercial practice. USB drive quality is and will remain a critical issue that should be addressed by any business wishing to use or duplicate the drives. A number of types of USB duplicators are available on the market varying in cost from very low to moderate prices. Significant differences in architecture result in a wide variety of different duplicator operation and features.