

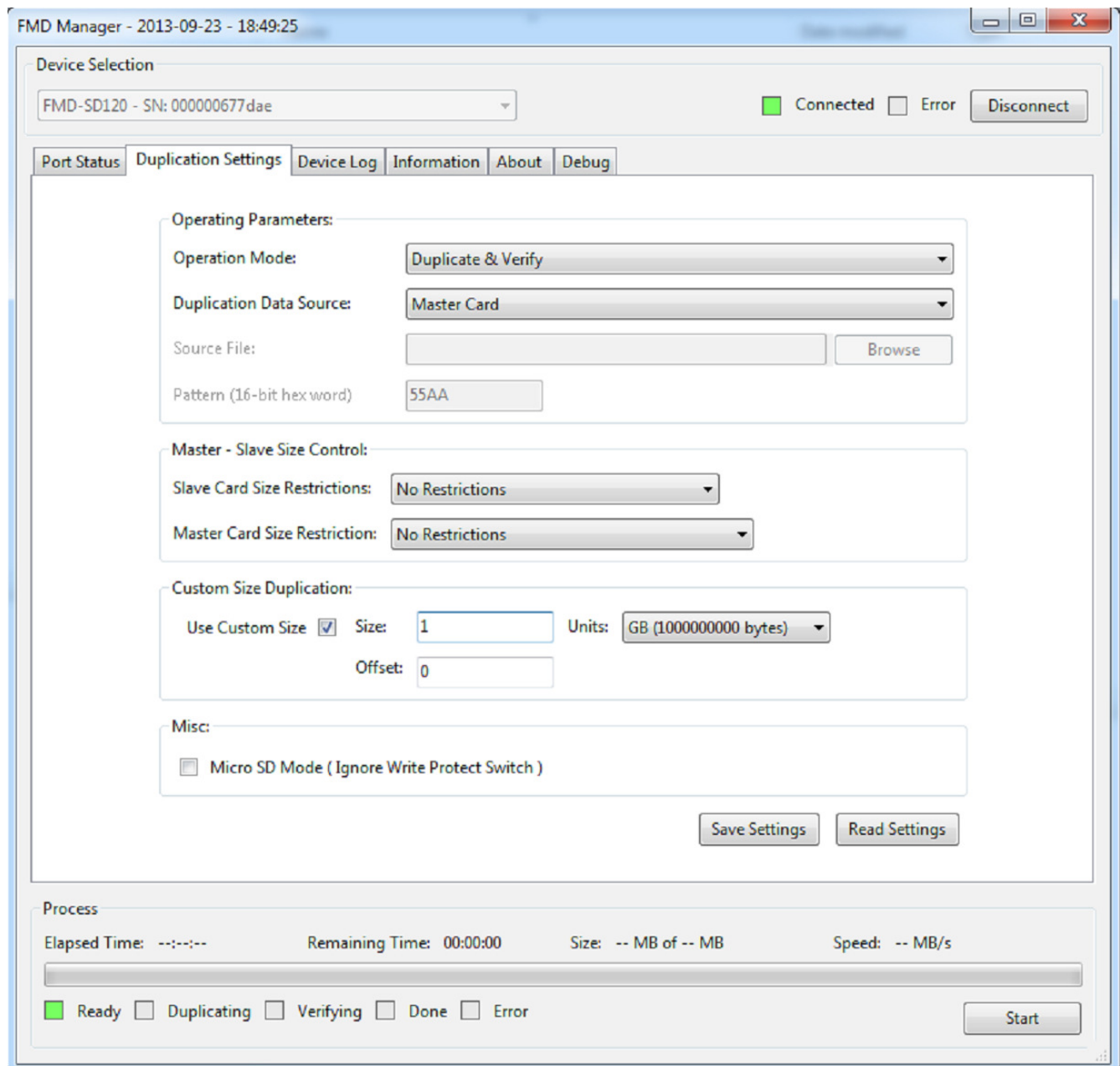
Optimizing Duplication Times for Partially-filled USB Drives

One benefit of Virtual Console (www.vconsole.com) USB duplicators is greatly enhanced duplication times through the ability to customize the duplication process to the amount of data actually being duplicated.

For example, if a user has 8GB master and target drives, but only needs to duplicate 1GB of data, the duplicators can be configured to duplicate only 1GB, rather than a full 8GB duplication.

Configuring using <<FCD Manager>>

All Virtual Console (www.vconsole.com) USB duplicators, whether 21 port (FCD-USB-21) 42 port (FCD-USB-42) or 60 port (FCD-USB-60), are fully stand-alone devices.



However, they all can also be controlled, configured, and monitored using <<FCD Manager>>, an optional and free-of-charge Win32 GUI application included with every duplicator.

Within <<FCD Manager>>, the user can click on the “Duplication Settings” tab, and then check the “Use Custom Size” box. The user then enters an offset of “0” and the size of the chunk of data being duplicated (in either blocks (512 bytes), kB, MB, or GB). In our example case, the user would enter a “1” in the size field, and select “GB” from the drop down menu.

Important Master Drive Consideration

It is critically important, when using custom size duplication with Virtual Console (www.vconsole.com) USB duplicators, that the entire data set being duplicated actually resides within the first 1GB of address space on the master card. There are two ways users can ensure that this is indeed the case. The first option is to manually defragment the master drive. The second is to low-level format the master drive, and then copy the files to the master drive.

Flash memory is incredibly effective, portable, and inexpensive storage, but it does come with some limitations. Ultimately, it wears out. Each flash drive has a limited (though fairly high) number of write cycles available to it. Within the drive, each block has its own individual life span. Much of the genius in flash memory is that developers have incorporated the reality of different failure rates for different memory blocks into the control of the writing of data. As such, the data on a USB master drive that has had some amount of use may be scattered in chunks from the first to the last memory block.

When it comes to duplicating a USB drive, you can think of the actual process in this way: even if your file is only 1GB, and even if the data is actually within the first sequential 1GB of addresses ... when a USB drive is duplicated without using custom sizing, the entire master drive is read and then written to the entire target card, even when 7GB of data are all zeroes.

Defragmenting

Normally with flash drives, there is little to be gained and only write cycles to be lost in defragmenting. The conventional wisdom is that defragmenting only increases performance with hard drives, because it reduces the travel of the read arm. Not only do flash drives not have read arms, developers have made work-arounds so that the scattered data chunks don't slow down read speeds.

Of course, the objective in our 1GB example is not to reduce read arm travel, but to get all of the data into the first 1GB of address space. This may be the one situation where there is a use for defragmenting a flash drive. By moving all of the data on the master card to the first 1GB of address space, we can shorten the duplication process by only reading the first 1GB of space on the master card, and only writing one 1GB of data to the target cards. In practice, using the custom size option to duplicate 1GB of data on 8GB master and target cards will be seven times faster than not using the custom size option.

Defragmenting a USB drive presents a minor technical challenge, since search results for flash defragmenting software online are likely to: 1) warn users against defragmenting the drive, and/or 2) not support flash drive defragmentation. Still, some software available by searching does seem to support flash drive defragmentation.

Additionally, Windows users can launch the Disk Defragmenter utility. In a recent test, the USB test drive did not immediately appear in the list of drives available for defragmenting. It was necessary to

remove and re-insert the USB drive, and click on “Scan and Repair” in the pop-up menu that appeared upon re-inserting the USB drive. After allowing Windows to scan and repair, the drive appeared on the list, and was subsequently defragmented.

Formatting

Low-level formatting takes the drive back to “factory settings” by writing a “0” to each and every single address on the drive. It also entirely and irreversibly erases all the data on the drive, so make sure any data on the drive you are formatting is backed up.

When data is written to a freshly formatted drive, it will fill up addresses sequentially from the first address. Tools for low-level formatting a USB drive are readily found online.

Virtual Console USB Duplicators

Firms with USB duplication operations looking to make the most efficient use of the Virtual Console (www.vconsole.com) USB duplicators (FCD-USB-21, FCD-USB-42, FCD-USB-60) are encouraged to optimize their operations by making use of the custom sizing options available in the freely included << FCD Manager >> application.