

# THE M6600 CARD DUPLICATION SYSTEM

International Microsystems Incorporated



## **M6600 Memory Card Duplicator Manual**

**Version 1.6.1**



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# THE M6600 CARD DUPLICATION SYSTEM

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## Table of Contents

<b>1</b>	<b>Introducing the M6600 Card Duplication System.....</b>	<b>7</b>
1.1	M6600 Architecture and Basic Operation .....	8
1.2	M6600 Power Up and Power Down.....	10
<b>2</b>	<b>Running the M6600 Using the GUI.....</b>	<b>11</b>
2.1	Linux Start Screen.....	11
2.2	Finding The M66W Job Files In The M6600 Linux File Directory .....	12
2.3	Starting a M66W Job.....	14
<b>3</b>	<b>Running the M6600 Using the LCD and Keypad .....</b>	<b>16</b>
3.1	The Run Job Menu.....	16
3.1.1	Using the Run Job Menu – A Simple Example for Compact Flash Duplication.....	18
3.2	The System Menu .....	20
3.2.1	Info .....	20
3.2.2	Format USB Disk (Not Yet implemented).....	20
3.2.3	Update Software .....	20
3.2.4	Backup Software .....	21
3.2.5	Move Log File .....	21
3.3	Loop Run Job.....	22
<b>4</b>	<b>Running the M6600 Using the M66W GUI .....</b>	<b>23</b>
4.1	General .....	23
4.2	Starting M66W .....	23
4.3	Initial M66W Start Up Screen.....	23
4.4	Technical Description of an M66W Job .....	24
4.5	Editing a "m6j" M6600 Job File .....	24
4.6	Creating a Master File.....	26
4.7	Synchronizing Job Files and Data Files .....	28
4.8	Running a Job .....	28
4.9	Log File and Logged Information .....	30
4.10	Setting the Log Information Mode.....	30
4.11	Master Slot Information: ID Drive Info, Size, Checksum.....	30
4.12	Setting up the M6600 Slices that are Networked to the Master Slice.....	32

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## 1 Introducing the M6600 Card Duplication System

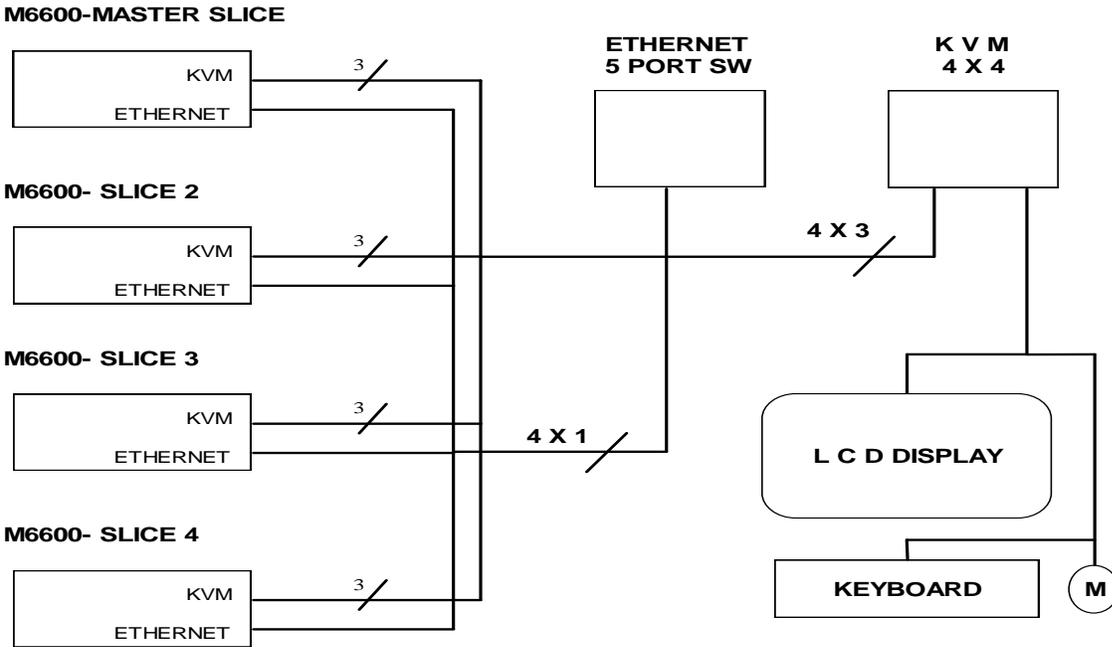
The M6600 provides high volume memory card duplication for ATA PCMCIA cards, IDE Flash drive modules, Compact Flash cards, MMC cards, and SD cards, as well as a wide variety of other flash memory cards. The basic hardware interface is PCMCIA slots or High Speed MMC/SD slots. Compact Flash adapters as well as multiple card adapters ( e.g. 6-in-1 adapters) can be used to adapt the PCMCIA slots to different mechanical card formats. Also, the use of card adapters insures low maintenance of the basic PCMCIA sockets on the M6600. Removable adapters are used on the M6600's that are configured for SD/MMC cards.

The M6600 normally comes as a linear stack of duplication boxes referred to as M6600 "Slices". Figure 1-1 shows a M6600 with four M6600 Slices. Normally, all M6600 Slices are controlled using one LCD monitor, keyboard, and mouse attached to the top M6600 Slice that is referred to as the "Master Slice". At the bottom left of the M6600 rack is a 4 position KVM (keyboard, video, and mouse) multiplexer. At the bottom right is a high-speed Internet switch that provides the means for the Master Slice to communicate with the other M6600 Slices that make up the M6600 stack. An easy-to-use graphical user interface, M66W, running on the M6600 Master Slice, allows the user to set up all connected M6600 Slices with the correct Job and Master Data Files. Once configured, the selected duplication jobs can be started individually on each M6600 Slice allowing the user to sequentially run the different M6600 Slices for improved throughput.



Figure 1-1 M6600-32 CF Duplication System

## THE M6600 BASIC OPERATION: LCD AND KEYPAD



**Figure 1-2 M6000 Four Slice Architecture**

### 1.1 M6600 Architecture and Basic Operation

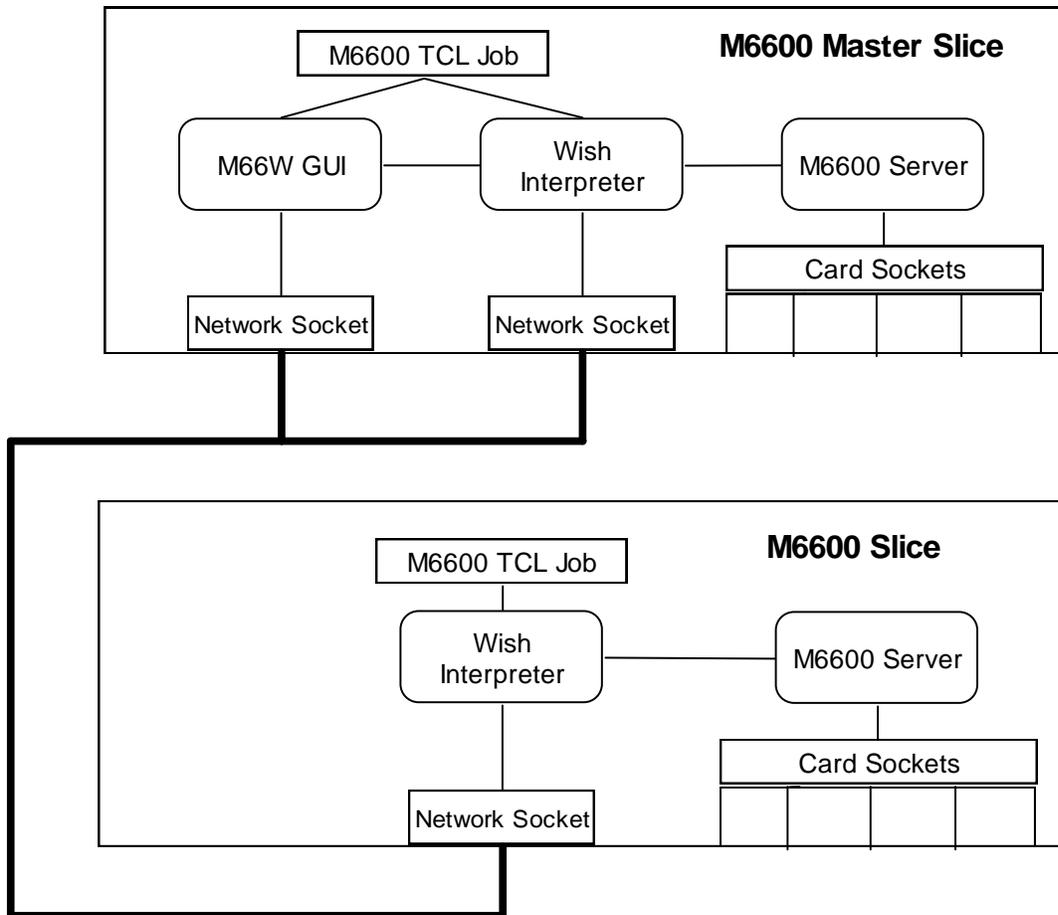
As shown in Figure 1-2, the M6600 is made from multiple computers networked together thru a high speed Ethernet switch. Each M6600 Slice is assigned a static IP address that is kept in a file on the M6600 Master Slice (“\home\m6000\config\config.ini”). After starting each of the M6600 Slices, the user starts the M66W GUI program on the Master Slice. The M66W program connects to all the other slices using the assigned Ethernet IP addresses.

Each M6600 is a full-featured Linux computer with 512M RAM, a 160 GIG hard drive and a 10/100 Ethernet Port. Upon boot up, Suse Linux version 2.6 is executed on each Slice. The duplicator hardware, on each of the M6600 slices, is controlled by the M6600 Server program (the “backend software”). The user must start the M6600 Server program on each M6600 Slice using the KVM switch to address each running slice. Once all M6600 Servers are running, the user launches the M66W GUI on the Master slice. The M66W program automatically connects to all M6600 Server programs and the user is ready to launch a M6600 Job file.

All M6600 Job Files are TCL scripts. TCL scripts are text files that execute under an interpreter program called the TCL Interpreter (or “Wish Interpreter”). The M66W program on the Master Slice launches a TCL interpreter on each M6600 slice. The user then selects a M6600 TCL Job scrip which when started is executed on each M6600 slice. Each running TCL Job scrip on the

## THE M6600 BASIC OPERATION: LCD AND KEYPAD

M6600 Slices then provides the communication link between the M66W program running on the Master Slice and the M6600 Server programs running on each M6600 slice.



**Figure 1-3: M6600 Program Structure**

A technical issue that needs to be addressed is the synchronization of the M6600 Job and data files on all M6600 slices. That is, since each slice is an independent computer, when the user selects a M6600 Job file on the M6600 Master Slice, is the same job run on all Slices and do the data file(s) used in the job script reside only on the Master Slice or on all M6600 Slices? The answer is that before a job is executed on the Master Slice, the user must make sure that all other M6600's to be controlled by the Master Slice have the same job and same data file(s). This is referred to as “**Synchronization**” and the M66W provides the tools for synchronizing M6600 job and data files.

## THE M6600 BASIC OPERATION: LCD AND KEYPAD

### 1.2 M6600 Power Up and Power Down

The following instructions assume that all M6600's are wired correctly in the M6600 rack with the Ethernet, KVM's, and power cords correctly connected. Each M6600 Slice uses a key combination to power up the internal CPU board. To Power Up the M6600, follow the steps below.

1. Turning on the M6600 slices requires the simultaneous depression of the two front panel switches labeled "**Power**" on each M6600 slice.

The M6600 LCD's should light up but will not have a message on it for about one minute. Be patient and wait. A short sequence of five notes will play and the LCD will display **Main Menu** on its top line.

The user can monitor each M6600 Slice boot sequence using the KVM to switch. After all M6600 Slices have booted, the user should switch to the Master Slice and start the M66W GUI.

To turn off the M6600, the user should exit the M66W GUI on the Master Slice. Now there are two options for shutting down each slice.

**Shutdown Method 1:** Using the KVM, switch to each M6600 slice and click on the Green circle on the left bottom of the main screen.

**Shutdown Method 2: (Recommended)** Using the down arrow on front panel of each M6600, select the Shutdown Option and press Start.

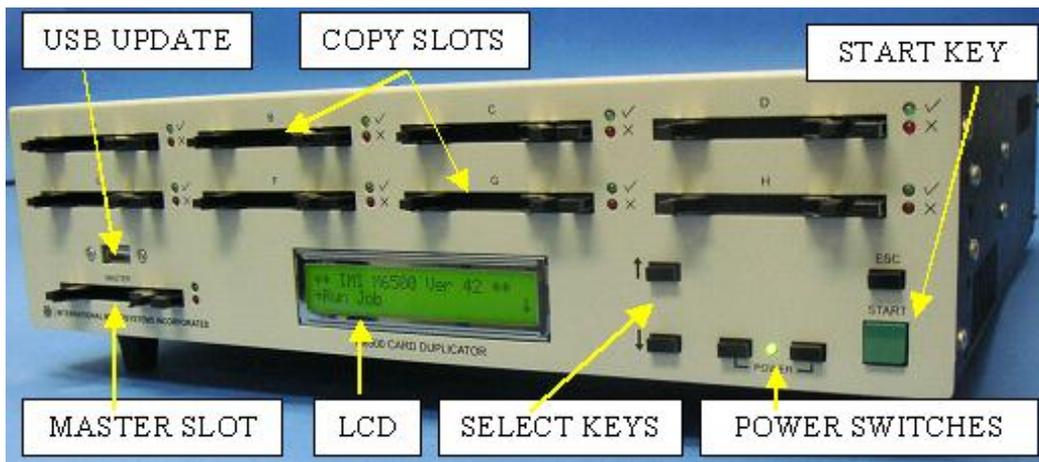
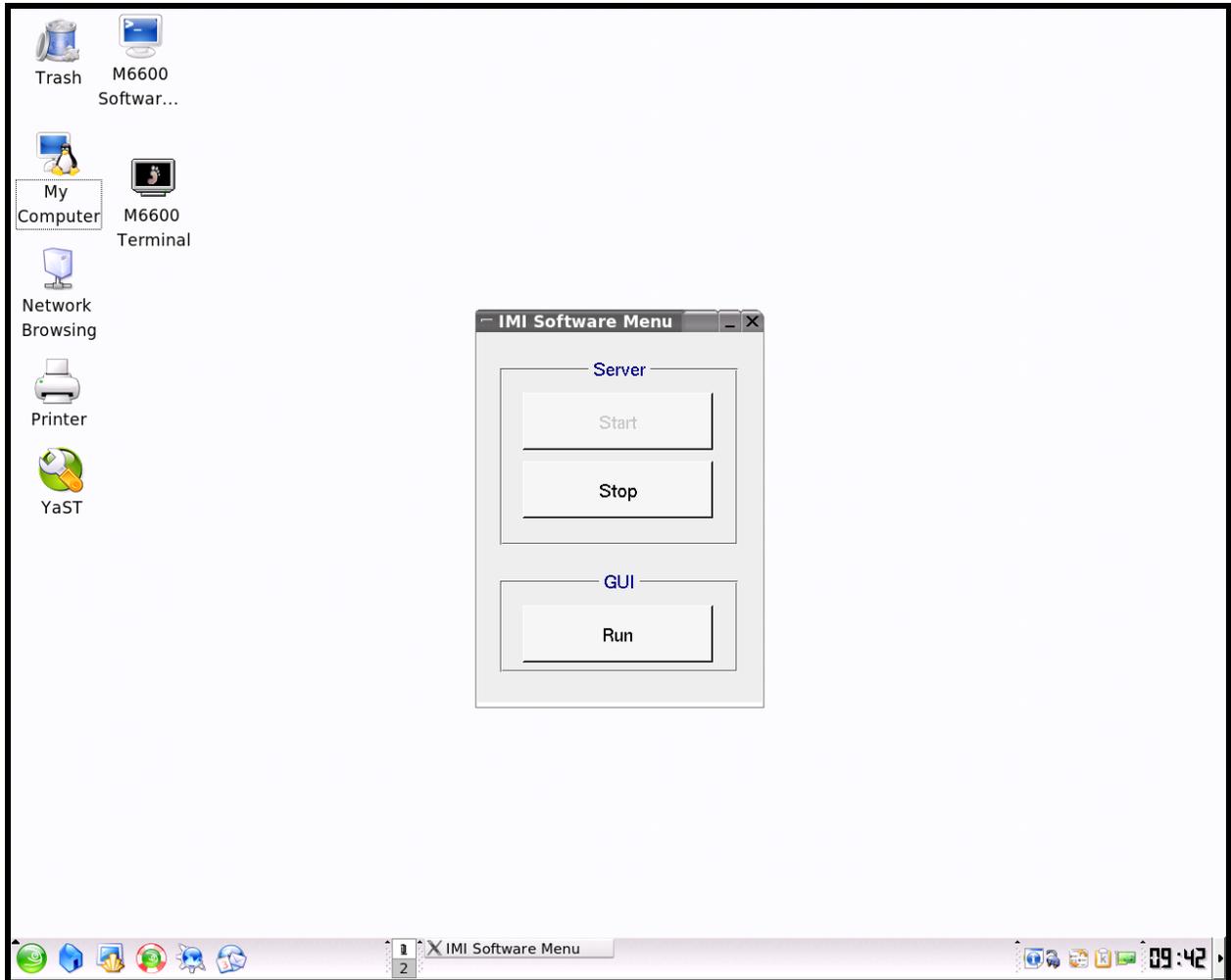


Figure 1-4 The M6600 Duplicator

## 2 Running the M6600 Using the GUI

### 2.1 Linux Start Screen

Linux is a widely used multi-tasking operating system. The M6600 uses a version called Suse Linux 2.6 and the M6600 user is given the highest access level referred to as “root” access. In contrast to Windows, root access means that the user must be careful with what system files he deletes or edits because root access allows the user to have complete control over the operating system.



**Figure 2-1: Linux Start Up Screen**

After all M6600 Slices are started and the user has returned the KVM to the Master Slice video screen, a M6600 Start Up menu is displayed as shown in Figure 2-1. To start the M66W program on the Master Slice, select the M66W RUN button. Figure 2-2 shows the M66W start up screen. The basic M66W operations that the user needs to be familiar with are given below.

## THE M6600 BASIC OPERATION: LCD AND KEYPAD

1. Finding the M66W Job Files in the M6600 Linux file directory
2. Creating and Editing M66W Job Files
3. Creating and Storing Master Card Files
4. Running and Monitoring Jobs and Card Status

### 2.2 Finding The M66W Job Files In The M6600 Linux File Directory

Upon entry to the M66W GUI, the following screen, Figure 2-2 will appear.

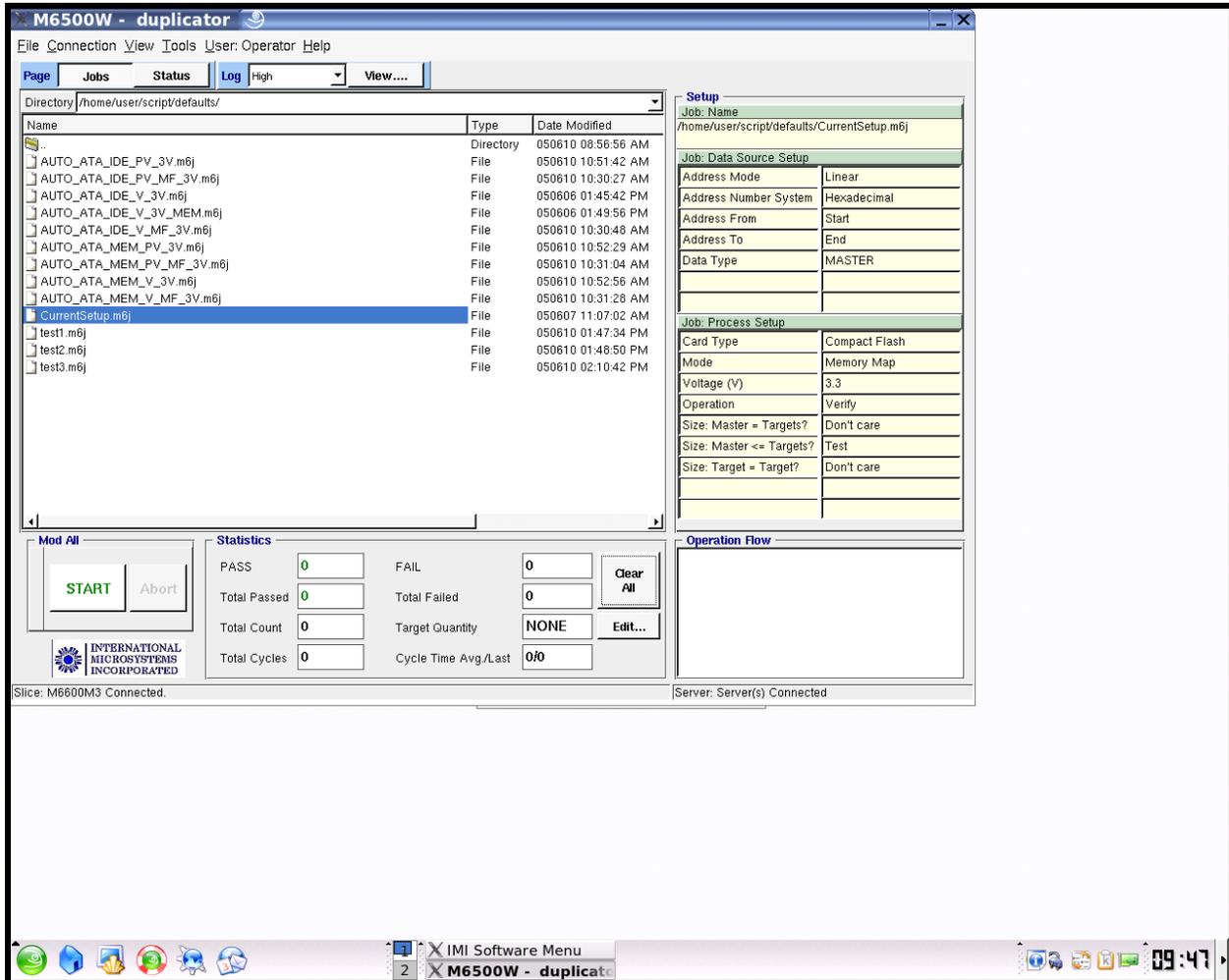


Figure 2-2: M66W Start Up Screen and Job File Selection

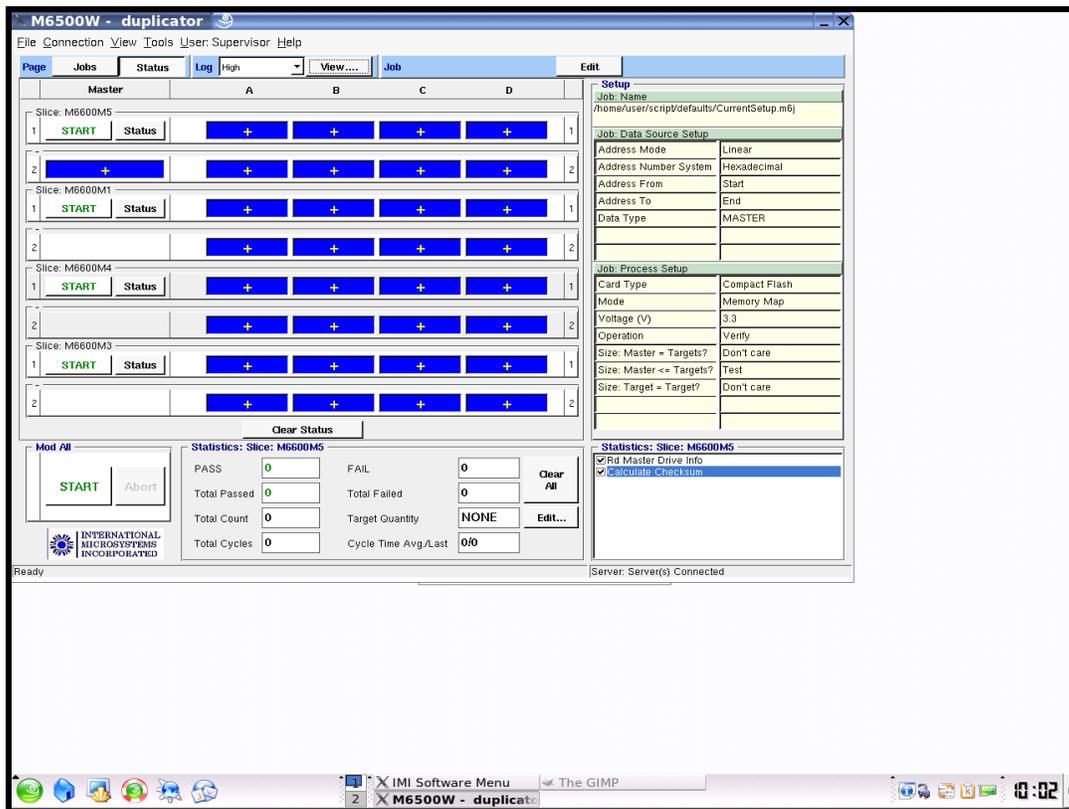
Most items in Figure 2-2 are self-explanatory but two elements are worth explanation.

1. The **Jobs** button is pressed causing the display of all jobs (files with ".m6j" and ".tcl" extensions) in the current directory, /home/user/script/defaults/. When the user wishes to return to the display of the jobs in the current directory, the **Jobs** button is pressed. The directory, /home/user/script/defaults/, is a special directory where the jobs with

## THE M6600 BASIC OPERATION: LCD AND KEYPAD

- ".m6j" extensions are accessible using the M6600 front panel keyboard and 2 line LCD display. This is also the default directory where the M66W will open upon start up.
2. On the right side of the screen is a group labeled **Setup**. Under **Setup** are the two sections labeled **Job Data Source Setup** and **Job Data Process Setup**. As each job is selected, the entries in these two sections will change.

Now Press the **Status Button**. Figure 2-3 will be displayed.



**Figure 2-3: M66W Status Display**

Status information for all enabled M6600 Slices is displayed when the **Status Button** is pressed. The Blue bar for each socket shows the M6600's detect a device in the socket. This color will change for each socket upon completion of a job to either Green (Pass) or Red (Fail). The single Blue bar on the left denotes the presence of a card in the Master slot of the Master Slice the top M6600. Clicking in any blank space in a displayed Slice will select that Slice for selective status information.

# THE M6600 BASIC OPERATION: LCD AND KEYPAD

## 2.3 Starting a M66W Job

Each M6600 Slice may be started individually using the small START keys on the left of the screen or all M6600's Slices can be started together using the large START key on the bottom left.

Normally, a Job is started in the following manner.

1. The user presses the **Jobs** button on the top of the GUI screen.
2. The user clicks the desired Job file.
3. The user loads the card sockets with cards to be duplicated.
4. The user clicks the **START** button at the bottom left of the screen.

This starts the Job on all M6600 Slices. The steps in the execution of the job are shown in the **Statistics** window on the bottom right and the relative completion of the current operation and the relative completion of the entire job are shown in the center of the bottom window. The sequence in the Statistics window and the Percent Completion bars are for the selected Slice.

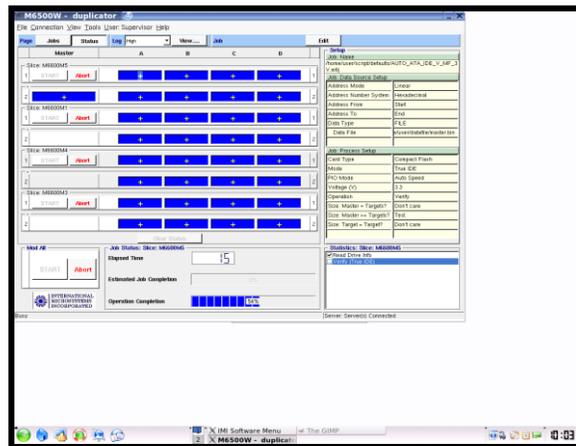


Figure 2-4: M66W Job Operation Screen

Upon completion of a M66W Job, the Statistics window is updated and the results are displayed as below.

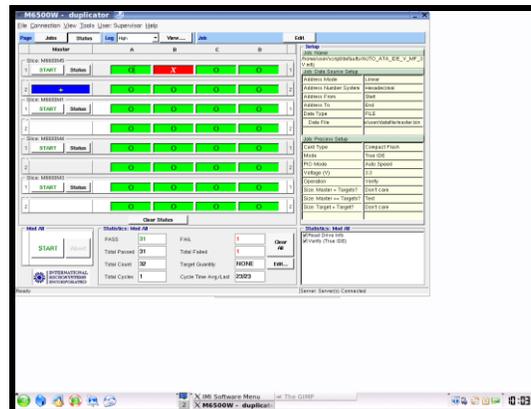
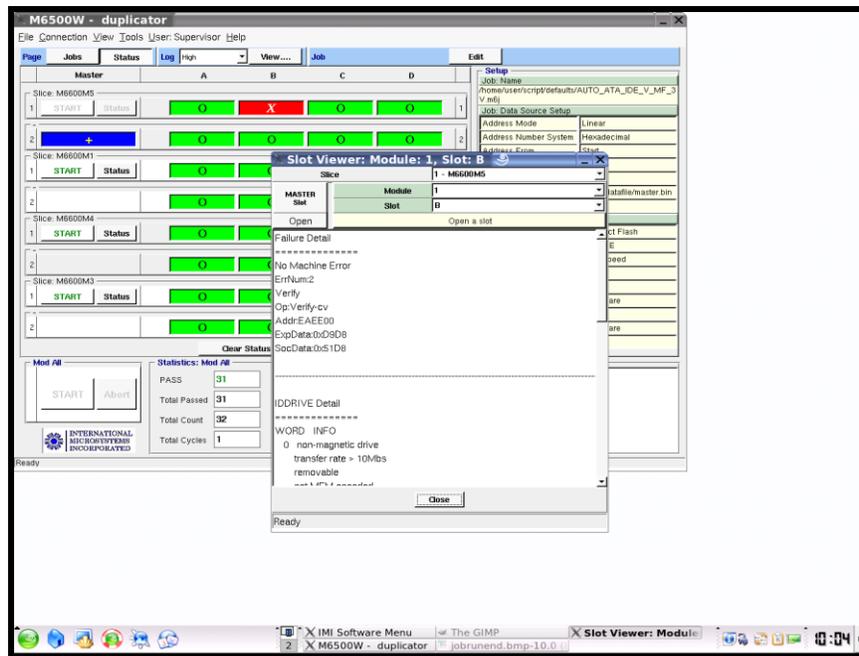


Figure 2-5: Completion of an M66W Job

## THE M6600 BASIC OPERATION: LCD AND KEYPAD

Note the Red bar on the second socket of the Master Slice indicating that an error occurred. To learn the reason for the failure, click the Red bar with the mouse.



**Figure 2-6: Display of Error Information**

This ends the introduction to the M6600 GUI program. For a more detailed description of the M66W GUI, please see Chapter 4.

### 3 Running the M6600 Using the LCD and Keypad

The LCD displays the M6600 menus. The keypad allows the user to select sub-menus, make menu choices, and execute commands.

The **Main Menu** is displayed when the machine is powered up or reset. The **Main Menu** displays the message “\*\*IMI M6600 Ver XXX\*\*” where XXX is the software version number of the M6600 code. Below the **Main Menu** are five other menus: the **Run Job** menu, the **Setup Menu**, the **System Menu**, the **Run Loop Job** menu, and **Shut Down**. Selection of one of these items is done by first displaying the menu name on the display with a right arrow to the left of the menu name and then depression of the **START** Key.

When the Main Menu is seen on the LCD’s top line, the Run Job menu name can be seen on the second line of the LCD. A arrow at the far right of the LCD points down indicating that the **DOWN** key on the keypad can be used to see more items on the Main Menu. Pressing the **DOWN** key moves the Run Job menu name to the top line of the LCD and displays the Setup Menu name on the second line. An up arrow and a down arrow are displayed at the far right indicating that you are in the middle of the menu and can move up or down to display other menu items with the corresponding **SELECT** key.

Press the **DOWN** key three more times and the Loop Run Job moves to the top line and Shut Down is displayed on the LCD bottom line. Now only an up arrow is displayed indicating you are at the bottom of the menu (the Main Menu in this case).

**\*\* IMI M6600 Ver XX \*\***

<b>Run Job</b>	<b>Select a Job that has already been defined</b>
<b>Setup Menu</b>	<b>Define a New Job</b>
<b>System Menu</b>	<b>Perform a System Task</b>
<b>Loop Run Job</b>	<b>Run a Job Multiple Times</b>
<b>Shut Down</b>	<b>Shut Down the M6600</b>

#### 3.1 The Run Job Menu

With **Run Job** displayed on the second line of the LCD, press the **START** key to display the first entry on the Run Job menu. This menu displays the Jobs with extension ".m6j" in the directory **"/home/user/scripts/default/"**. Using the Up and Down keys on the front of the M6600 front panel allows the user to page through the available jobs.

To select a job, press the **START** key. The **Confirm Job** screen will be displayed.

To execute the displayed job, press the **START** key.

## THE M6600 BASIC OPERATION: LCD AND KEYPAD

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The parameters defined for a selected Job cannot be changed under the Run Job Menu (but can be done under the Setup Menu). If you do not want to execute a job you have selected, press the **ESC** key to return to the top of the Run Job menu.

The LCD screen that appear when a particular job is executed are job dependent. However, a typical job that programs and verifies the eight Copy Cards using the Master Card as the data source will display a screen similar to the one below.

```
Current Setup
→AUTO ATA IDE PV 3V
.
```

When the current Job goes to completion, a summary screen is normally presented.

```
Master CSUM=CE2E0000
PV P: 8 ( 8) F: 0 ( 0)
```

The above screen shows that the Master Card Checksum is the Hex number CE2E0000. This checksum is the simple sum of all bytes in the Master Card that have been copied to the Copy Cards.

The second line shows the operations performed which in this case were Programming and Verify designated with the **PV**. This is the typical copy operation that entails two passes thru the Master Card and Copy Cards; the first being the program or write operation and the second being the verify operation.

After a Job is completed, the Pass and Fail results of the last cycle are displayed with the summary of all total Pass and Fails shown in parentheses.

The total Pass and Fails will be reset to zero when at the start of a new job, or reinsertion of a master card, or change of the operation in the **Setup Menu**.

To complete a Job cycle and start the next cycle, the user should remove all Pass cards (with the Green LED's) and all the Fail cards (with the Red LED's) from the copy slots; fill the empty slots with more cards to be duplicated; and press the **START** key to run the selected job once again to create a new batch of duplicates.

At the completion of a Job, pressing the **ESC** key will return the M6600 to the Main Menu.

### 3.1.1 Using the Run Job Menu – A Simple Example for Compact Flash Duplication

1. When you turn on the M6600 the following is displayed on the LCD:



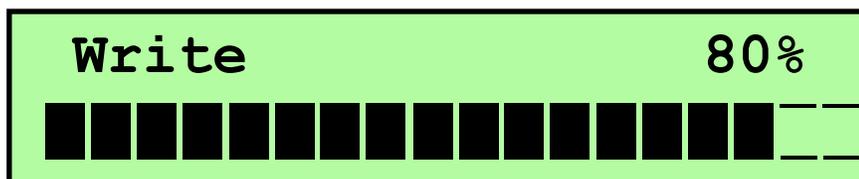
2. Load a Master Card in the MASTER slot and Copy Cards in the Copy Slots. Press the **START** key to select the Run Job menu.
3. Press the Down arrow to select the Job Auto ATA IDE PV 3V:



4. Press the **START** key to select the Auto\_ATA\_IDE\_PV\_3V program/verify Job.



5. Press the **START** key to execute the selected Job. Percent Activity Bars will be displayed during the program and verify sections.



6. Upon completion of the Job, a summary screen with pass and fail results will be displayed.

The above screen shows that the Master Card Checksum is the Hex number CE2E0000. This checksum is the simple sum of all bytes in the Master Card that have been copied to the Copy Cards.

## THE M6600 BASIC OPERATION: LCD AND KEYPAD

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The second line shows the operations performed which in this case were Programming and Verify designated with the **PV**. This is the typical copy operation that entails two passes thru the Master Card and Copy Cards.

After the operations are displayed, the Pass and Fail results of the last cycle are displayed with the summary of all total Pass and Fails shown in parentheses.

To complete the cycle and start the next cycle, the user should remove all Pass cards (with the Green LED's) and all the Fail cards (with the Red LED's); fill the empty slots with more cards to be duplicated; and press the Start Key to begin execution of the selected Job once again.

### 3.2 The System Menu

Use the System Menu to display system information (M6600 serial number and firmware version), format a USB drive placed in the front panel USB connector (FAT16), update the M6600 firmware, and Move Log File.

#### System Menu

**Info**

**Format USB Disk (Not Yet Implemented)**

**Update Software**

**Backup Software**

**Move Log File**

#### 3.2.1 Info

The Info selection under the System Menu provides the software version resident in the M6600.

#### 3.2.2 Format USB Disk (Not Yet implemented)

An USB disk is required to take advantage of the update/backup feature of the M6600. The disk must be properly formatted to be usable with the M6600.

The Format USB Drive option will put a FAT16 file system and a partition table on a USB drive placed in the M6600 front panel USB port. This drive can then be used to transfer an updated version of the M6600 firmware into the M6600.

Note that USB drives formatted on a standard Windows system may not work in the M6600 because the Windows formatting process often does not contain a partition table.

For your convenience, a properly formatted USB disk is shipped with the system.

#### 3.2.3 Update Software

A software or OS (Operating System) update for the M6600 is distributed by IMI via email. The software update will be in a file named like **M6600-NNN.zip**. This update file should be placed on a properly formatted USB disk as described in **Section 2.3.2**. Using the provided USB disk, which has been properly formatted, is strongly recommended.

#### **Warning!**

**Do not interrupt the system while it is updating software!  
Doing so may leave the programmer in an unusable condition.**

## THE M6600 BASIC OPERATION: LCD AND KEYPAD

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### 3.2.4 Backup Software

The current software in the M6600 will be backed up on a USB disk in the M6600 front panel USB port. The file name will be **M6600-NNN.zip**. This file should be placed on a properly formatted USB drive as described in **Section 2.3.2**.

### 3.2.5 Move Log File

Move the current log file from the M6600's volatile memory to a USB disk in the M6600 front panel USB port.

### 3.3 Loop Run Job

Loop Job allows multiple execution of a selected Job. This function is normally used for extensive testing of devices as in a burn-in test.

To loop run a job

1. Select **Loop Run Job** from the **Main Menu**.

#### **Loop Job**

#### **Select Job**

2. Select the desired job.
3. When prompted for the number of loop, enter the desired amount to run.
4. Press the **START** key to go.

## 4 Running the M6600 Using the M66W GUI

### 4.1 General

The M6600 is normally run using the M66W GUI program on the Master Slice. This chapter covers the various functions that can be done using M66W.

### 4.2 Starting M66W

Start all the M6600 slices as in section 1.2. Set the KVM on the Master Slice. The LCD monitor screen should appear as below.

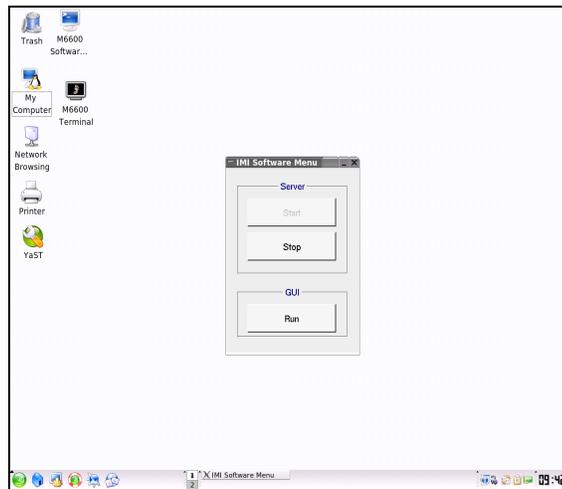


Figure 4-1: M6600 Start Up Screen

Using the mouse, click on the RUN key to start the M66W GUI program.

### 4.3 Initial M66W Start Up Screen

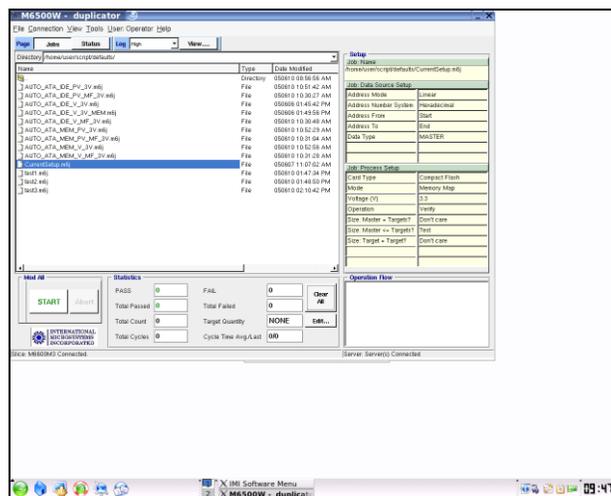


Figure 4-2: M66W Start Up Screen

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Displayed on the M66W start up screen is a list of the default directory for M66W Jobs. The currently selected job is highlighted and the choice list for this selected job is shown on the right. Note that there is a slight difference between M6600's with one, two, or four slices. If the number of M6600 slices is one or two, there is no STATUS button and the status of the two slices is displayed along with the list of available jobs in the current directory. However, if there are more than two slices, there is a STATUS button, and either a list of the current jobs are displayed or, upon click of the STATUS button, the status of all the slices is displayed.

#### **4.4 Technical Description of an M66W Job**

The file that holds an M6600 job may have one of two types of extensions; namely ".m6j" or ".tcl". An m6j file is a text template file that holds a selection of choices for a specific TCL program that is unique to the M6600. The choices for any selected m6j file are shown to the right of the M66W screen. To edit the choices, the user must sign on in the supervisor mode by clicking the User button on the top of the M66W main screen, selecting Supervisor, and entering a suitable name and password. Suitable names and passwords reside in the text file "/home/m6500/config/password.ini". The default name and password is "imi" and "123456" respectively. Note that these entries are case sensitive. If possible, the user should leave this entry in the "password.ini" file and add other entries suitable for the user environment.

The other type of file that can run a M6600 job is a TCL script with a standard extension of ".tcl". TCL is a "C" like scripting language. TCL scripts are interpreted by a TCL interpreter program. A version of the TCL interpreter program which appears as a standard DOS like terminal window is called a "Wish" window. Once a specific Wish window is launched, it may be sent various TCL procedures that add new recognizable commands to the Wish window command syntax. This is the case for the Wish window launched on the M6600 M66W and this Wish window is referred to as the MWish program. Thus, TCL job scripts that run successfully on the M6600 use standard TCL commands as well as MWish specific commands. It is not in the scope of this document to describe the specific MWish commands that are available.

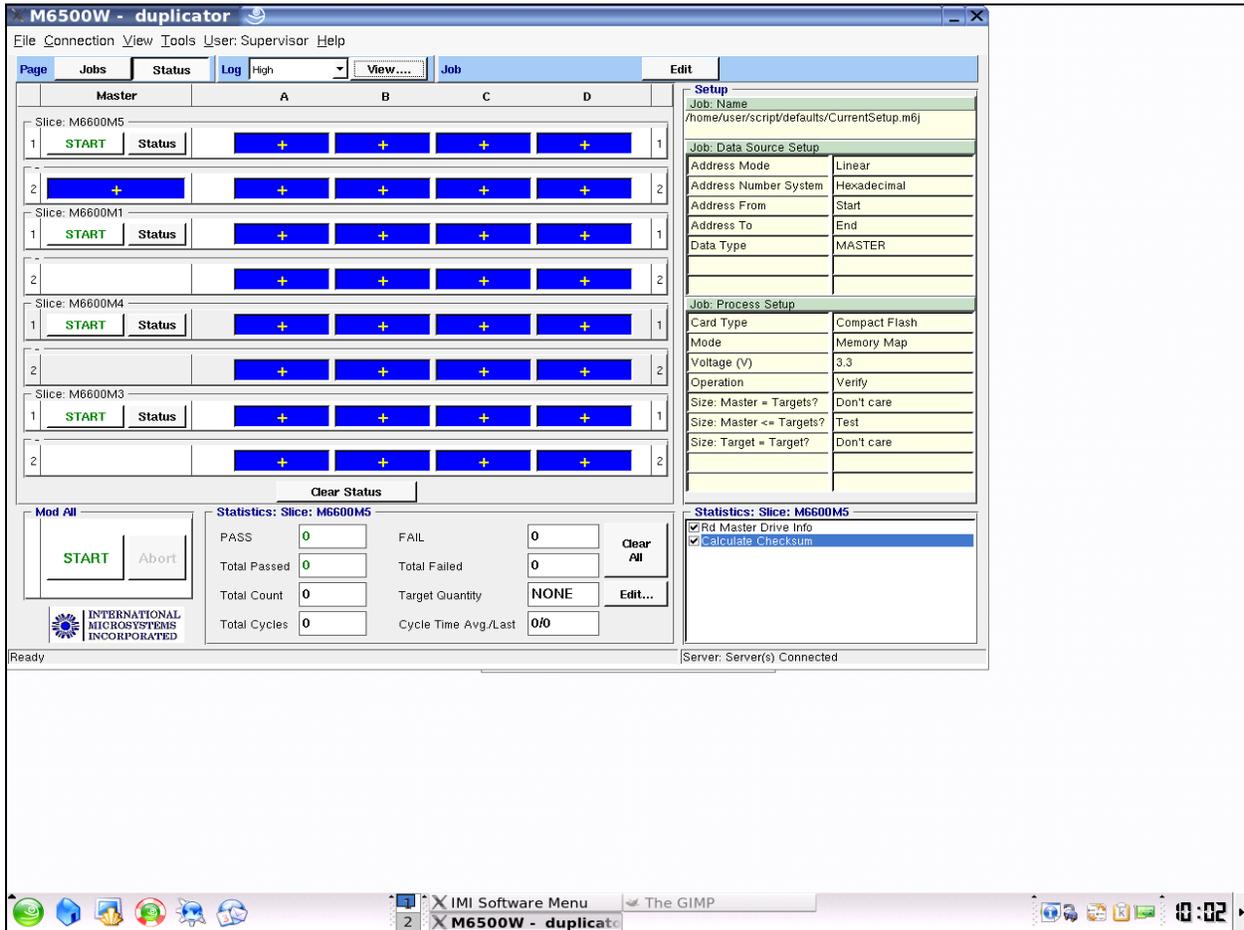
One further note with regard to TCL files is that the jobs selectable from the front panel of the M6600 are also TCL scripts.

#### **4.5 Editing a "m6j" M6600 Job File**

To edit an M6600 job file, the user must be in supervisor mode. Click the User button at the top of the screen and enter a suitable name and password such as "imi" and "123456" (see section 4.4 above for more details). Once signed on as a supervisor, an "Edit" button will appear above the job template selection list on the right side of the display. By clicking on this "Edit" key, the user can change the selected "m6j" job file.

Most of these choices are self-explanatory. A number of the choices have to do with the size of the source of the Master data and the size of the Targets. It is a sad fact of life that many Flash memory cards from different manufacturers are branded with the same size ( e.g. 128 Megabyte)

but in actuality have slightly different number of sectors or total number of bytes. Thus when a copy is made on the M6600, the user can set a number of different criteria for the exact size requirements of the master source and the target cards. In addition, it should be pointed out the M6600 makes a binary image copy and not a file copy of the master card to the target cards. *The net result of all of these facts is that IMI highly recommends that the user only duplicate from master flash cards that are the exact same type and manufacturer as the copy cards.*



**Figure 4-3: Entering Supervisor Mode**

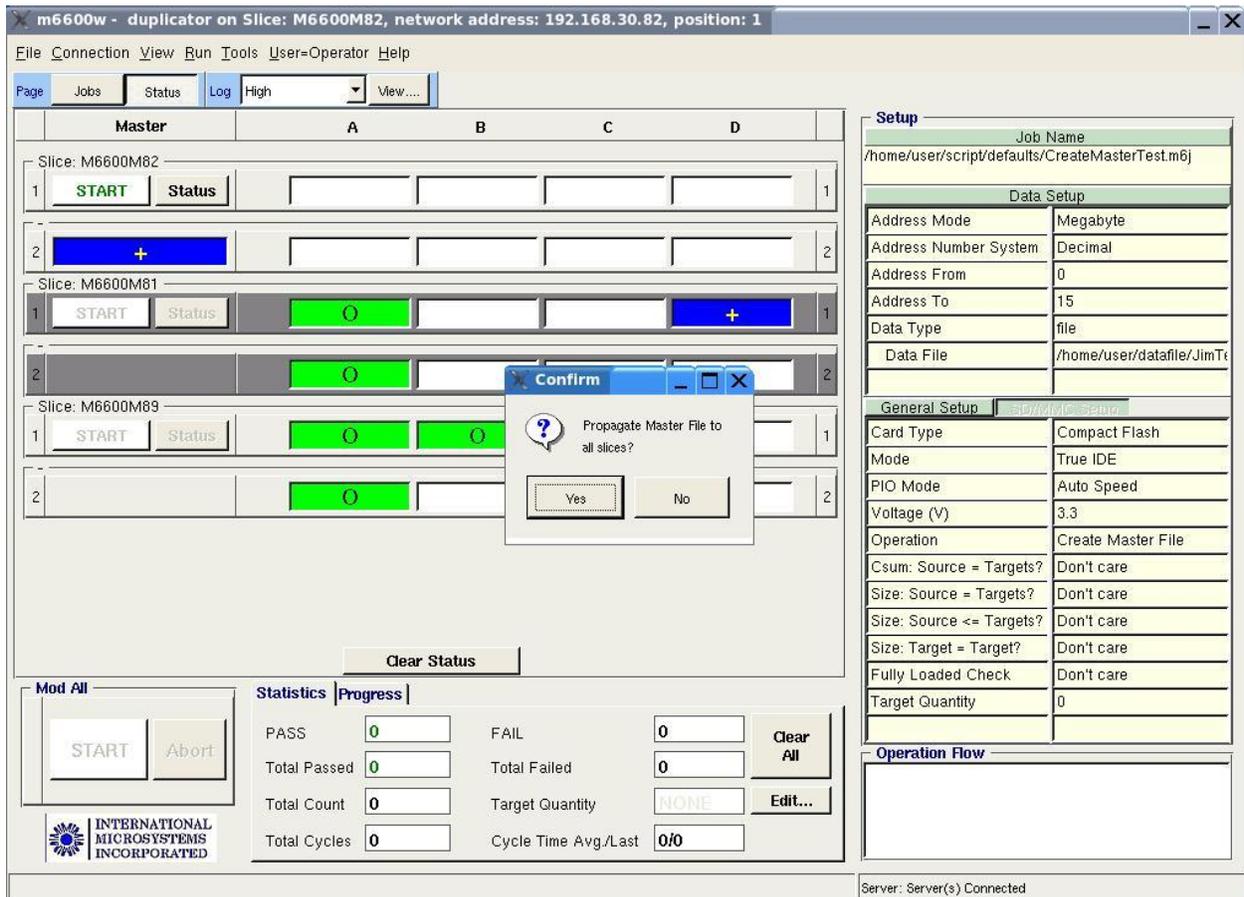
Once the supervisor mode has been entered and the user has pressed the Edit button, changes can be made to the m6j template selections. When the user is done with the changes, he may save the changes by pressing the Save button (not shown) or the Save As button which appears next to the Edit button.

Note that the user may store and later select his job files in any user specified directory. However, all jobs files that the user desires to select from the front panel of the M6600 must be in the directory "/home/m6500/script/defaults/".

## 4.6 Creating a Master File

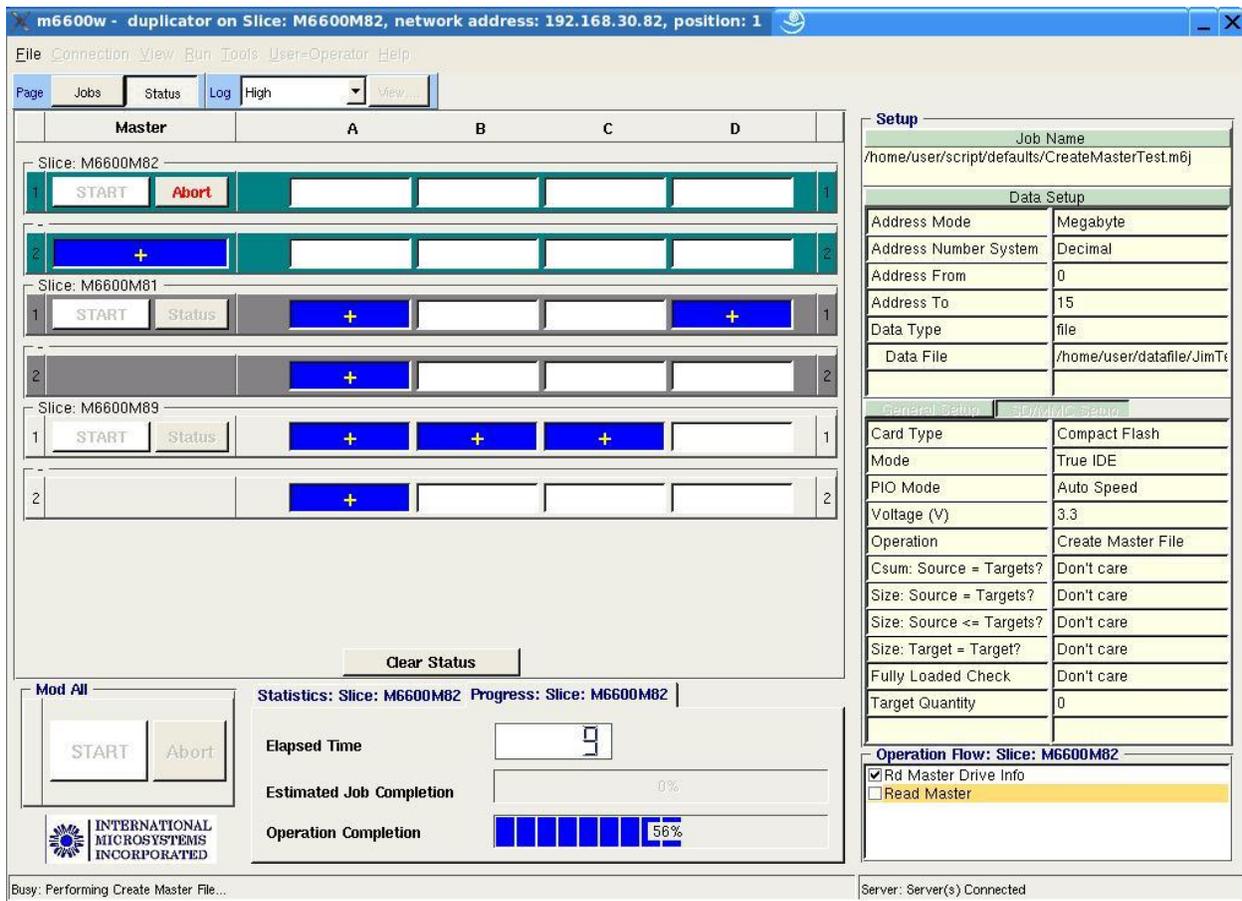
International Microsystems recommends that Master image regardless of the source be stored on the master slice and then propagated to the associated slices. This adds the ability to improve the duplication cycle performance and replication of the original master in multiple locations.

To create the master file the Master Slice must be in the Supervisor mode. This will enable editing of the selections in the Setup area. In the General Setup region select the Operation Menu. From the dropdown menu select “Create Master File”. In the data setup region in the Data Type menu select “File”. This selection will open access to the Data file directory option box and directory link button below. Browse to the directory and select the image file to be used to create the master image file. The user can set the size of the master file by using the start and end address options. For example if they want a 15 MB master the start address should be 0 and the end address should be 15 (if in Megabyte addressing mode) or EF FFFF (if in linear addressing mode).



**Figure 4-4: Create Master in Megabyte Address Mode**

In Figure 4-4 the first option displayed is the confirm propagation to all slices window. Select “yes” this will insure that the master file is replicated to the associated slices.

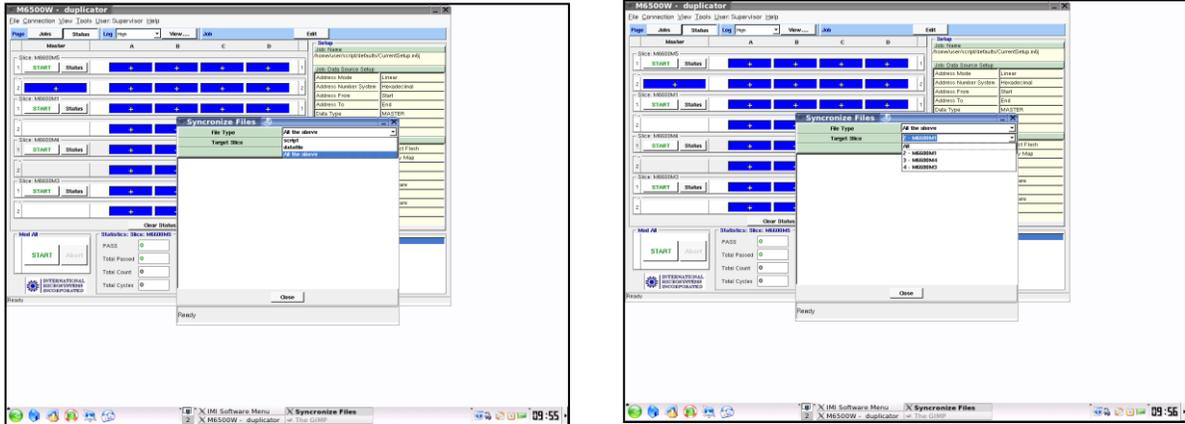


**Figure 4-5: Create Master in Process**

In Figure 4-5 the Progress for Slice M6600M82 Elapsed time and “Operation Completion” in the percent of completion bar are displayed during the Create Master operation. Please note that slice one, the Master Slice, is being used to create the master as indicated by the active “RED” Abort button.

In the Data Setup area the supported address modes are Linear, Sector, and Megabyte. The supported numbering systems are Decimal and Hexadecimal. The supported Data Types are Master, File, and Pattern. In the Data Type menu selection, dependent on your selection, specific options will be presented in the object field below Data Type. Selecting File in edit mode presents a Data File entry with it’s associated browse to location of .mjb button and for the Data Pattern selection two defined patterns and a fixed pattern option.

## 4.7 Synchronizing Job Files and Data Files

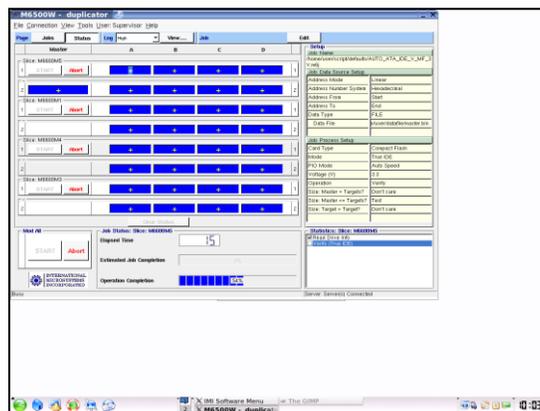


**Figure 4-6: Synchronizing Files**

After a user has edited an m6j job file on the M6600 master slice or changed a master data file, he must synchronize these changes to all the other the M6600 slices. To synchronize the files across all M6600 slices, Click on Tools, then Synchronize Files. As shown in Figure 4-6, a choice box is presented that allows the user to specify the type of files to synchronize and the M6600 slices that are included in the file update(s). If the user chooses to synchronize **all** files, then both data files and Job files will be copied from the Master Slice to the chosen M6600 slices.

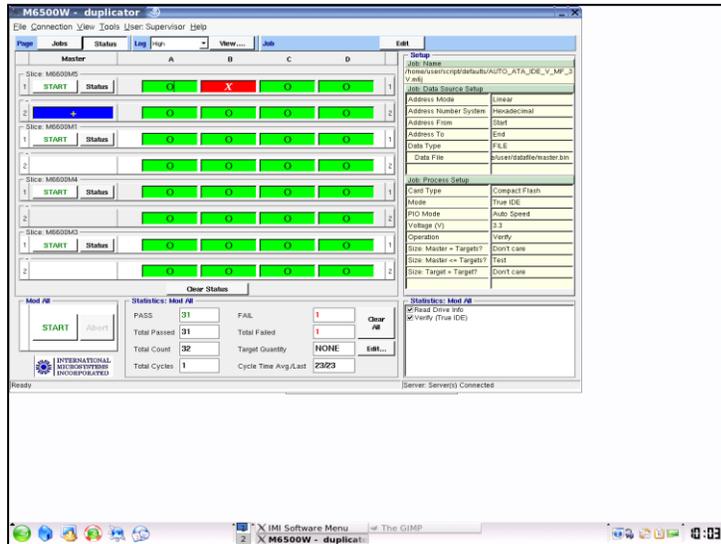
## 4.8 Running a Job

The user starts a selected Job on all M6600 slices by pressing the Start button at the lower left hand corner. Alternatively, the user may start a job on a selected M6600 slice by pressing the Start key on the individual M6600 slices represented in the Status screen (See below).



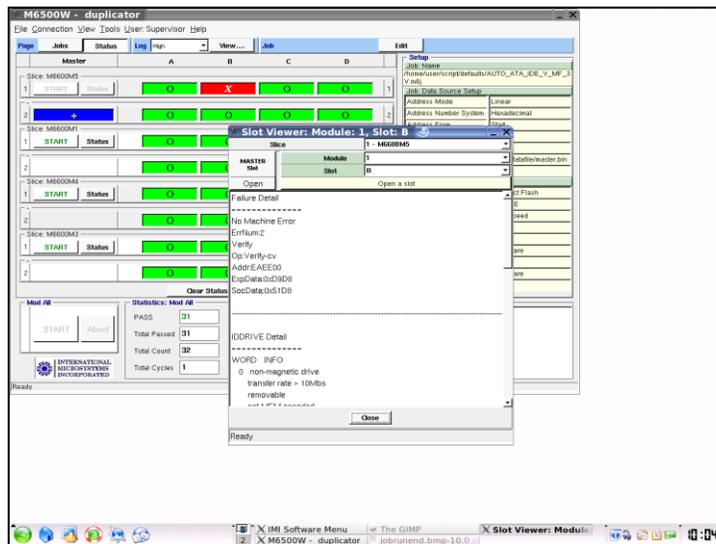
**Figure 4-7: Starting a Job**

Note the blue Activity Bar at the bottom of the M66W display. A running average is kept of the time that a job takes and this average is used to present the percentage that has elapsed along with the incremental seconds clock display.



**Figure 4-8: End of Job - Pass/Fail Information**

At the completion of a job, the Pass/Fail status is displayed for each socket as well as the Pass/Fail summary for the currently run job and all jobs. The summaries appear in the bottom middle of the screen. The Green and Red bars respectively represent each copy socket. To find out why a particular socket failed, click on the red bar of the socket.



**Figure 4-9: Socket Error Information**

The error information displayed will inform the user as to the operation that failed as well as other information such as the failing device status and or failing address and data information.

## 4.9 Log File and Logged Information

Logging information is stored in log files that are named by year, month and day and kept in the directory "/home/user/log-all/". For example, a log file with the name "050316.log" contains the logged information for the date year=2005, month=03, and day=16. To view the log files from the M66W program, click on View then Log at the top of the screen and then click on the log file you wish to open.

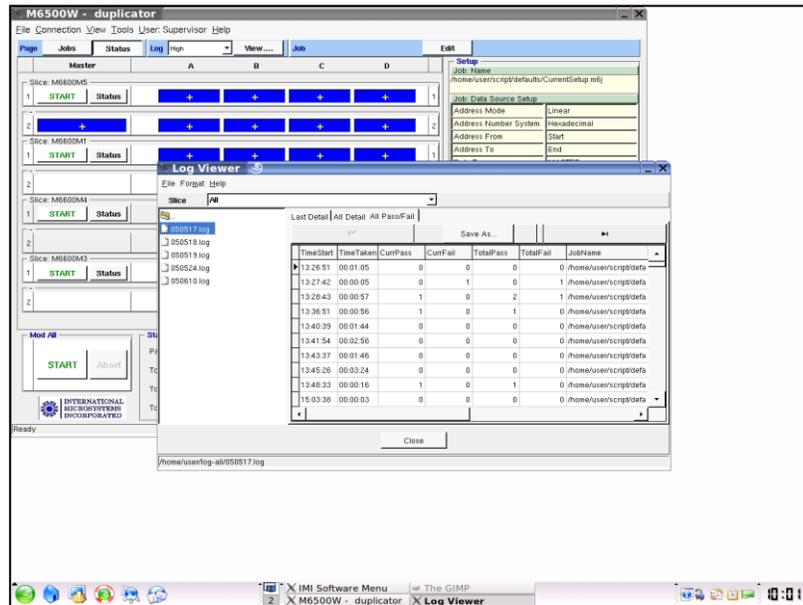


Figure 4-10: Viewing a Log File In M66W

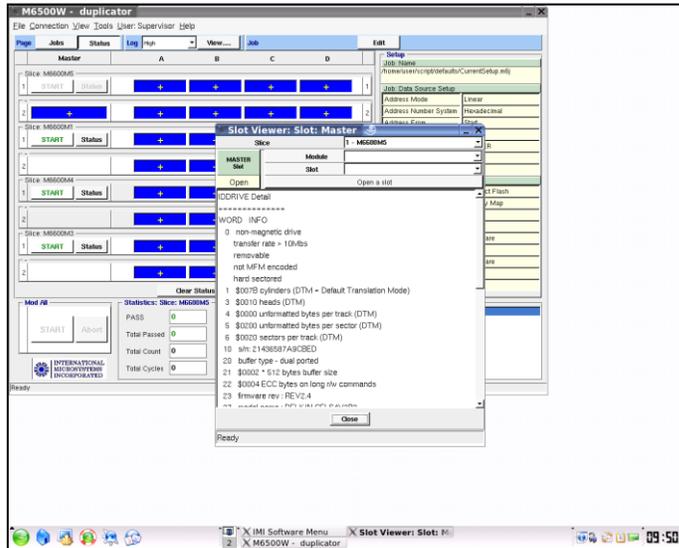
There are three different views of the data which can be selected using the buttons on the top of the log window; namely *Last Detail*, *All Detail*, and *All Pass/Fail*. *All Pass/Fail* is the default window and shows only the summary information for all jobs. *All Detail* lists the entire contents of the selected log file. And *Last Detail* lists the error information for the last run cycle.

## 4.10 Setting the Log Information Mode

The amount of information stored in the active log file is determined by the Log Information Mode selection Off, Low, Medium, and High (default). The selection is made using the pull down **Log** menu at the top of the M66W screen.

## 4.11 Master Slot Information: ID Drive Info, Size, Checksum

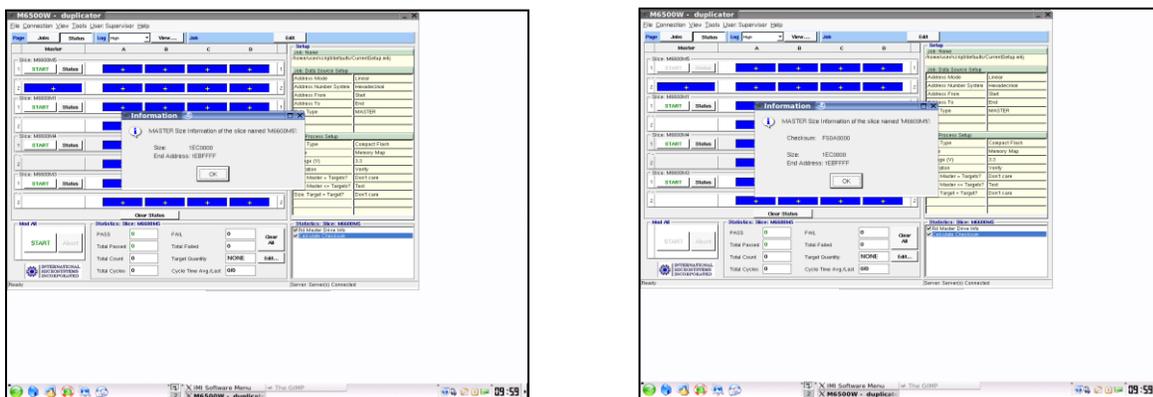
When a master card is inserted into a Master slot on an M6600 which is the single, lowest, left hand slot on an M6600, the user may find out various information about the Master card using a mouse. When a Master card is present, a Blue bar will be seen on the Status screen. Placing the mouse cursor over the Master Blue Bar, and clicking the left hand button on the mouse display the ID DRIVE info for the Master card.



**Figure 4-11: Master Card ID Information**

A few words about the ID Information displayed. This information may differ depending upon the configuration of the M6600 and the type of card being used. However, in the case of Flash cards that are emulating IDE drives such as CF cards, the M6600 will send the IDE command, "Identify Drive". When an IDE drive gets this command, it returns a defined table of information that will be displayed for the user.

Most often, the two pieces of information that a user wishes to know about the Master card are its size and its checksum. To find out these two pieces of information, place the mouse over the Master card Blue bar and press the right button. A selection menu will appear and allow the user to select the display of either the size or the checksum of the Master card.



**Figure 4-12: Display of Master Size & Checksum**

The Size in bytes is given in hexadecimal along with the last address. The Checksum is an eight digit hexadecimal number which is the sum of all 8 bit bytes starting at the first logical block of the drive and up to and including the last logical block of a drive. Note that the M6600 makes an

exact copy of the Master drive to all of the copy slots so that the checksum of all duplicated cards should be the same as the Master drive.

## 4.12 Setting up the M6600 Slices that are Networked to the Master Slice

When the Master M6600 Slice is to control other M6600 slices, the M6600's must reside on a local network and have fixed IP addresses. When shipped, M6600's with multiple slices have a multi-port Ethernet switch through which all M6600's are networked together. Also when shipped, the Master slice will have been set up to recognize the other M6600's in a file "/home/m6500/m6w-mach.ini". To edit this file within the M66W program, click on Tools, Configure Machines.

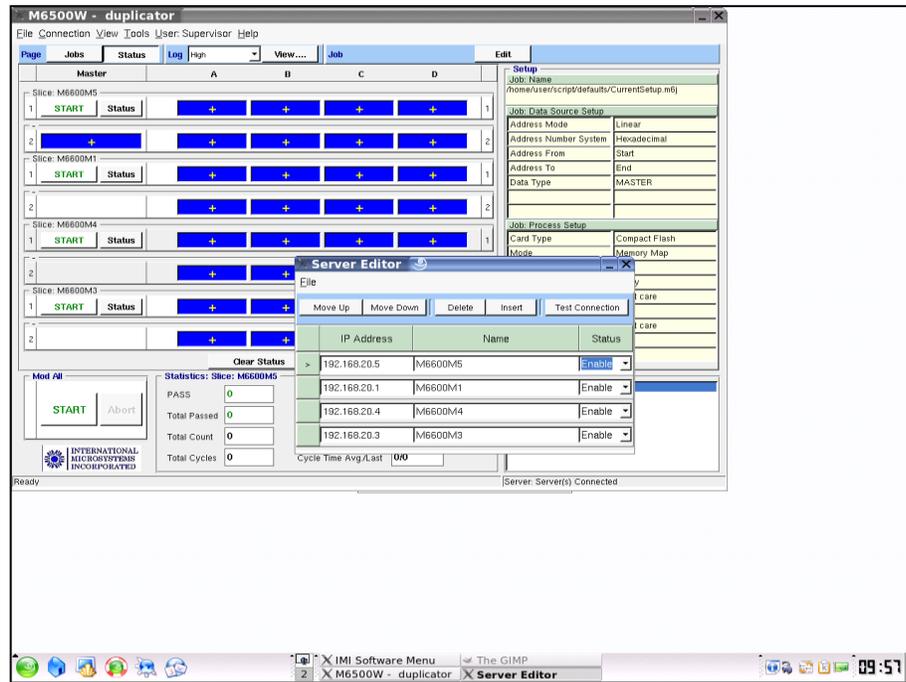


Figure 4-13: Configuring M6600 Slices