



## **Information Sheet IS23002**

### **GV Series with NAC124\* – Burning OS Files to SSD**

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# IS23002: GV Series with NAC124\* – Burning OS Files to SSD

## INFORMATION SHEET

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### 1 INTRODUCTION

Periodically, enhancements or improvements to the AUI are identified and made available through major release (i.e, SW 4.x.y to SW 5.y.z) software upgrades. This document describes how to image the SSD (solid state drive) with a new OS IMAGE file for the GV Series transmitters and how to create a copy of the current IMAGE file for recovery purposes.

#### **NOTE**

*Minor software updates that are released within the same overall number (i.e, SW 5.x.y to SW 5.z.x) can be performed using the Upgrading Software procedure found in section 3.4 of the GV Operations and Maintenance manual.*

#### **1.1 Equipment Affected**

This procedure applies to all GV Series transmitters which have the NAC124 or NAC124A Controller.

#### **1.2 Responsibility for Implementation of Procedure**

This procedure should be carried out by qualified station maintenance personnel who are familiar with GV Series transmitters.

#### **1.3 Scheduling**

This procedure should be completed at the earliest convenience of the transmitter maintenance personnel. The transmitter will need to be “off air” when removing the SSD from the Controller and remain off until it can be re-installed. To minimize disruption of service, this procedure can be performed using a replacement SSD that can be immediately installed after the original is removed. You will also be required to perform a software update when first powering up the transmitter which will require approximately 30 minutes of “off air” time.

#### **IMPORTANT**

*Please read through the entire procedure to understand the requirements and plan accordingly.*

#### **1.4 Manpower Requirements**

Implementing these instructions varies greatly based on download time of the IMAGE file.

#### **NOTE**

*The Image files can be between 1GB to 8GB in size; download times will vary greatly based on your internet speed and connection to the host location. Plan the download for a convenient time when you can leave the downloading PC alone for hours.*



## 1.5 Special Tools/Test Equipment

- #2 and #1 Phillips screwdrivers
- M4 Socket screwdriver
- The existing SSD from the transmitter, or a compatible replacement (equivalent to Nautel supplied device (UX217) – Western Digital WDS240G2G0A or Kingston SA400S37/240G). Minimum recommended performance requirement for suitable replacement SSD is meeting SATA Rev. 3.0 specification with a minimum size of 8GB if creating a new SSD, while the minimum size is 240GB if backing up the SSD
- PC or laptop with a SATA to USB adapter cable
- USB mouse for touch-screen calibration
- USB Keyboard along with IS18005\* (may be required for section 7 of this procedure - visit [ftp://www3.nautel.com/GV\\_Series](ftp://www3.nautel.com/GV_Series) to obtain this IS document)
- Imaging software such as “SelfImage”, installed on your PC. Screenshots shown in this document will show SelfImage 1.2.1 build 92. SelfImage 1.2.1 is available online for free
- New IMAGE file to burn to the SSD. Visit [http://www3.nautel.com/pub/GV\\_Series](http://www3.nautel.com/pub/GV_Series) and use the directory with GV\_UB118\_SW with the highest version. (e.g., GV\_UB118\_SW\_5.0.1)
- Putty. Visit <http://www3.nautel.com/Utilities/putty/putty.exe>
- Anti-static mat & wrist strap (recommended)

## 1.6 Publications Affected

This modification does not affect the GV series documentation.

## 2 RECORDING SETTINGS

### **NOTE**

*If the SSD currently installed is being replaced due to a failure of the AUI, these settings will not be available to record. Proceed to step 4 using the replacement SSD.*

There are various settings and logged data that will not be saved in your transmitter when you update the OS IMAGE file. Nautel recommends that you record these settings and logged data, as desired, before removing your SSD so that you may re-enter them after burning the new IMAGE file. Logs cannot be restored to the new image. The following AUI pages apply (refer to the GV Operations and Maintenance manual, if necessary, to navigate to these pages):

- Logs
- User Accounts
- Network Setup
- Email Configuration
- Notifications
- Engine Settings
- NTP Servers
- Nautel Phone Home
- \*SNMP Configuration (MIB files are required to use SNMP; can be retrieved from the Nautel FTP site) (\* for applicable software versions)

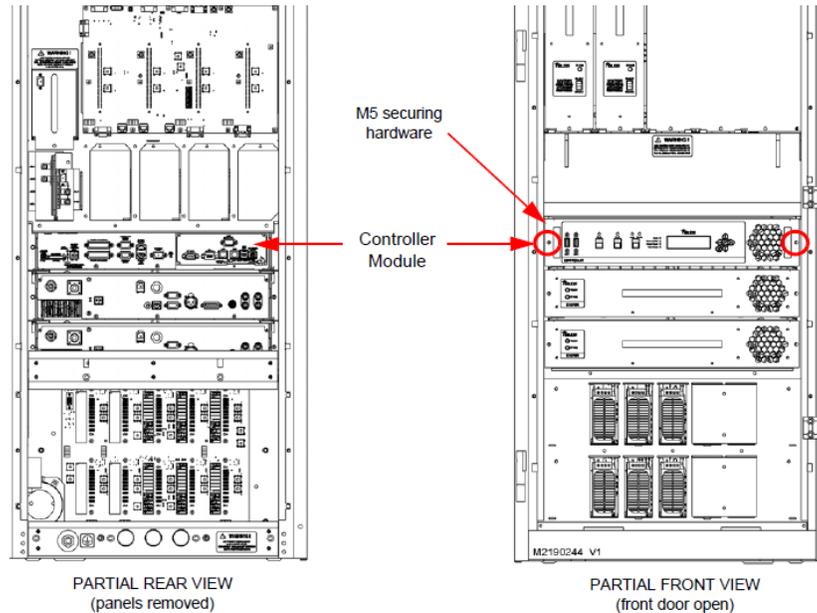


### 3 REMOVING THE SSD

#### **NOTE**

*If using a replacement SSD, perform this step only when you have completed the burning process and are ready to install the replacement. Begin at step 4 to begin the burning process.*

The SSD is located inside the controller module (A4) which will need to be removed from the transmitter to access.



**Figure 1: Front & Rear view of the transmitter (GV5 shown as reference)**

- Press RF OFF. Turn off and lock out the transmitter's main ac power. Disconnect any UPS AC feeds as applicable.
- From the rear of the transmitter, remove the upper rear panel (right most for multi-panel transmitters) and disconnect all mating connectors from the Controller Module (A4), noting connections.
- From the front of the transmitter, open the front door (left most for multi-door transmitters) and remove and retain the two M5 Phillips head screws that secure the Controller Module to the transmitter (see Figure 1). Remove the module from the transmitter.
- Place the NAC124\* Controller Module on a suitable workbench.

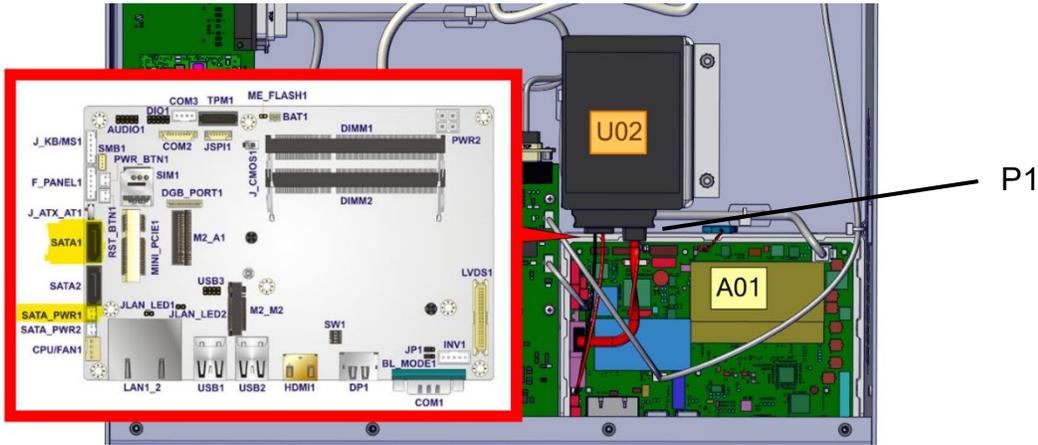
#### **NOTE**

*There are static sensitive components inside the NAC124\*, use precautions when handling static sensitive devices. Nautel recommends using a properly ground Anti-static mat and wrist strap.*

- Remove and retain the thirteen (13) M3 Phillips head screws, securing the top cover on the module.

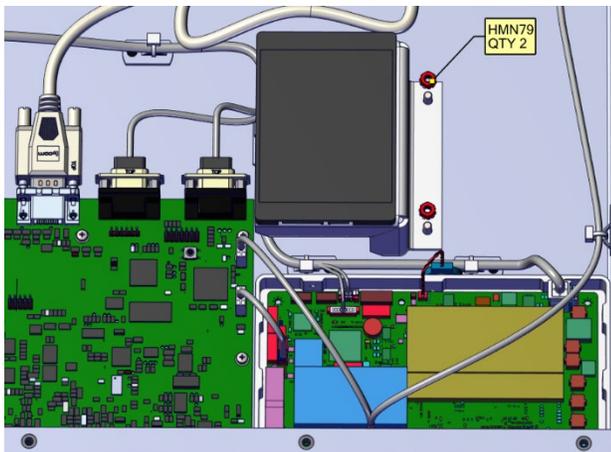


- (f) Disconnect W7P1 (large black connector) from the SSD assembly (see Figure 2). Do not remove SATA1 or SATA\_PWR1 connectors.



**Figure 2: SSD Assembly Removal**

- (g) Remove and retain the two M4 lock nuts (HMN79 in Figure 3) that secure the SSD Mounting Bracket to the chassis. Remove the SSD Mounting Bracket but do not dismount the SSD from the SSD Mounting Bracket.



**Figure 3: SSD Mounting Bracket Removal**

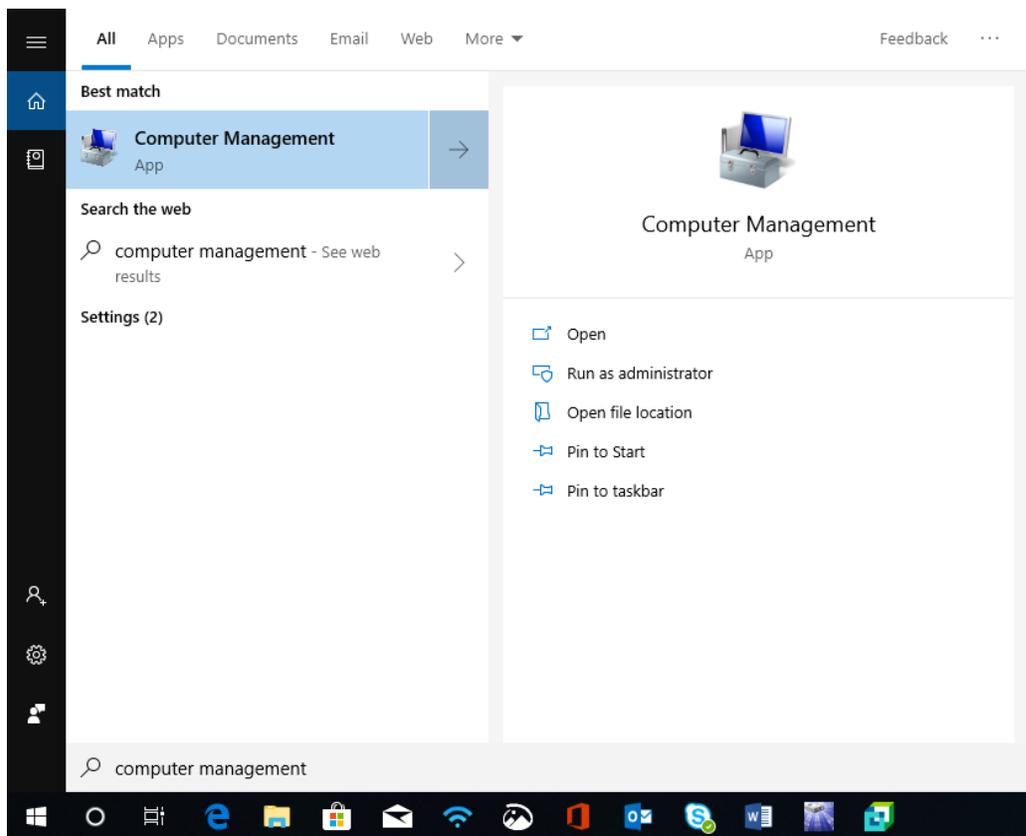
#### 4 IDENTIFYING THE DISK NUMBER

- (a) Using a PC or laptop, connect the SSD using the SATA to USB cable and let it be recognized by your OS (this process varies in different OSs).

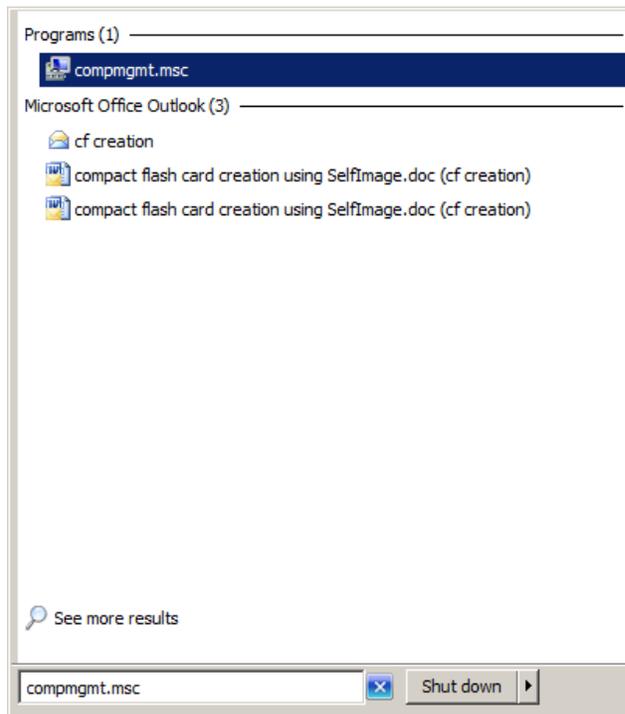
**NOTE:** Windows may display a message prompting you to format this SSD. **DO NOT** do this. Cancel the window.

- (b) From your Windows based PC, gain access to the “Computer Management” application. This can be done using various methods. Examples are:
  - Windows 10/11: click the search icon (next to the Start button), type “**computer management**” and select the Computer Management app (see Figure 4)
  - Windows 7: click the Start button, type “**compmgmt.msc**” in the ‘search for programs and files’ window and select the applicable program that appears (see Figure 5).

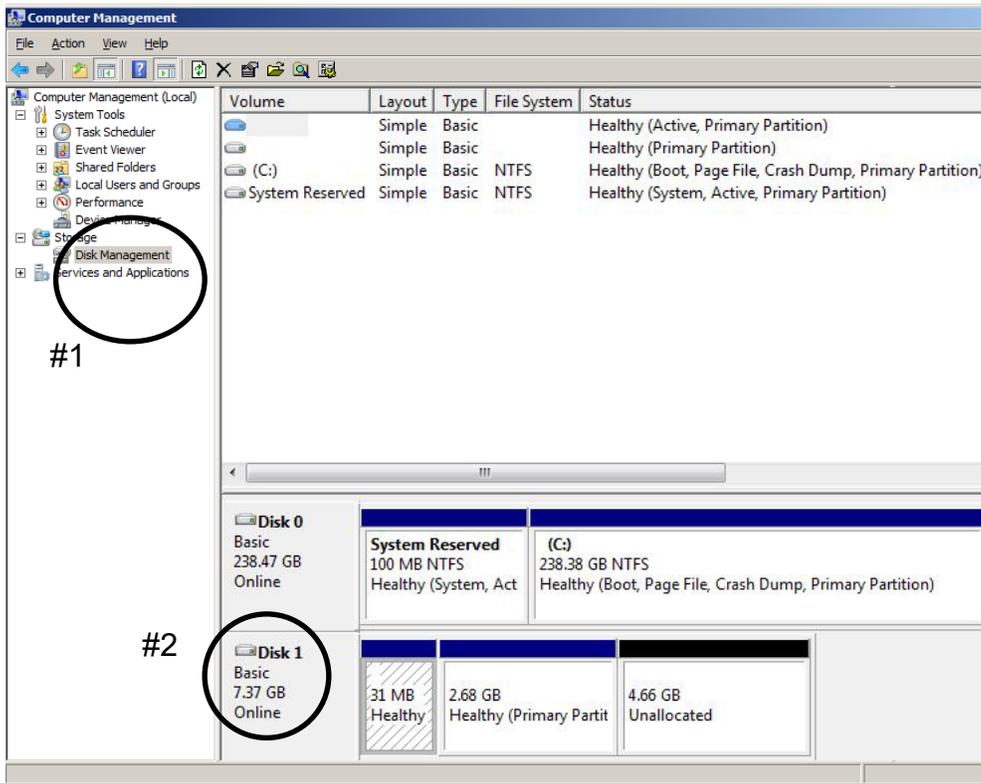




**Figure 4: Windows 10**



**Figure 5: Windows 7**



**Figure 6: Computer Management window**

- (c) The Computer Management window (see Figure 6) will open. Select “Disk Management” on the left (see Figure 6, #1).
- (d) Identify which “Disk” is your flash card (see Figure 6, #2). You may have to disconnect the SSD to confirm which “Disk” number disappears. Note this “Disk” Number for future reference.

**5 SAVING A BACKUP OF THE EXISTING IMAGE FILE**

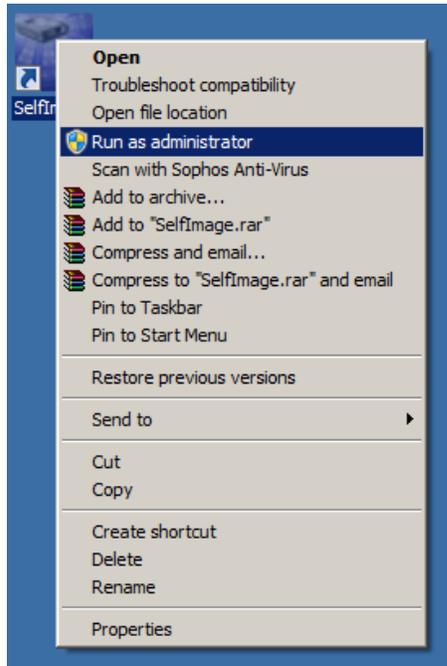
When using your existing SD instead of buying a replacement, Nautel recommends you make a copy of your current SD Image to have for recovery purposes. This will save your touch screen calibration, network setup, email setup, user accounts, and notifications. In the event you experience difficulties after the OS upgrade, contact Nautel Customer Service at [support@nautel.com](mailto:support@nautel.com) for guidance before using the backup image file.

**NOTE: The image being created will be 240GB. Please ensure the drive the image is being saved to has enough space to accommodate this.**

- (a) Connect the SSD to your PC or laptop using the SATA to USB cable and run SelfImage.  
**NOTE:** The SSD must be connected prior to running SelfImage.

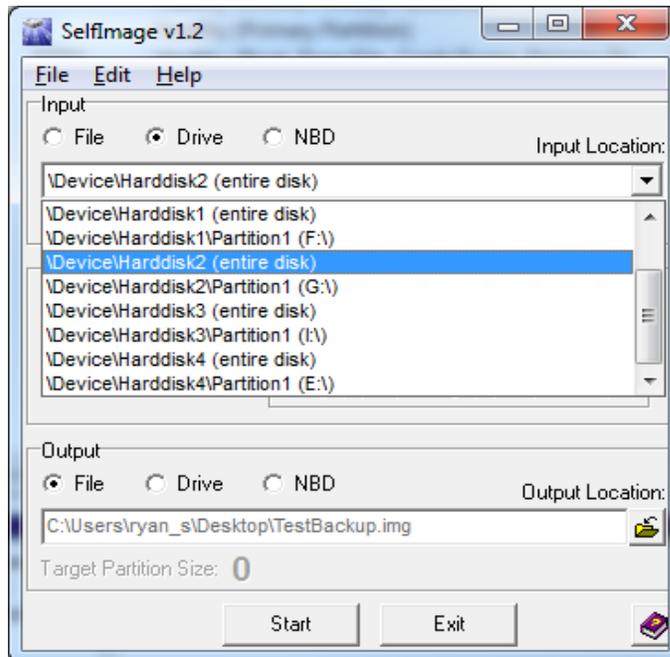
Depending on your OS and administrative rights, you may have to right click on the SelfImage icon and select “Run as administrator” (see the Windows 7 example in Figure 7).





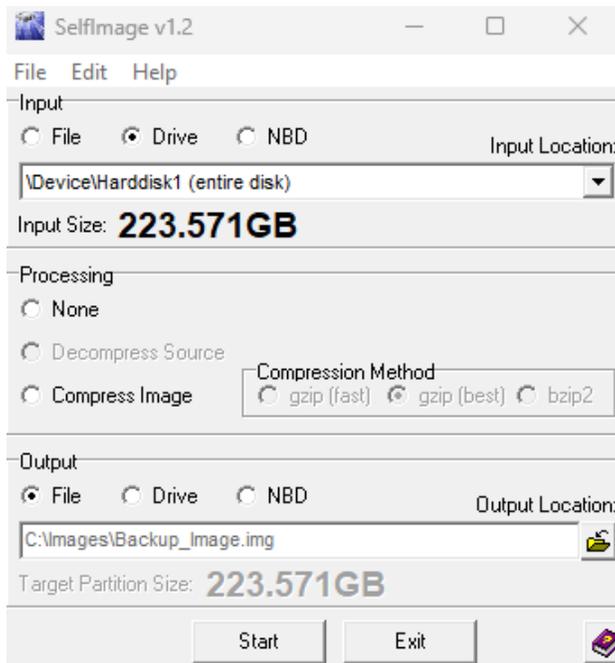
**Figure 7: Windows 7 – Run As Administrator**

- (b) In SelfImage select the “Input” as “Drive” and then use the drop down to select the drive (see Figure 8) noted in step 4 (d). It is important that you select “Entire Disk” version of the “Disk” number to ensure the proper imaging.



**Figure 8 – SelfImage – Making an Image**

- (c) Under “**Processing**”, select “**None**” (see Figure 8).
- (d) Under “**Output**”, select “**File**” and then choose a file location and assign a file name (see Figure 8). This file will be saved in the IMG format and will be approximately 4 to 8 GB in size. The actual file size is shown as “**Input Size**” (see Figure 9).
- (e) Click **Start**. This process can take between 15 and 60 minutes depending on the speed of your computer. A progress window (see Figure 12) appears to indicate the progress. It reverts back to the original SelfImage window when complete.



**Figure 9: SelfImage**

## 6 BURNING AN IMAGE TO THE SSD

### **WARNING**

*The following procedure will completely replace any existing data on the SSD.*

- (a) Connect the SSD to your PC or laptop using the SATA to USB cable and run SelfImage.

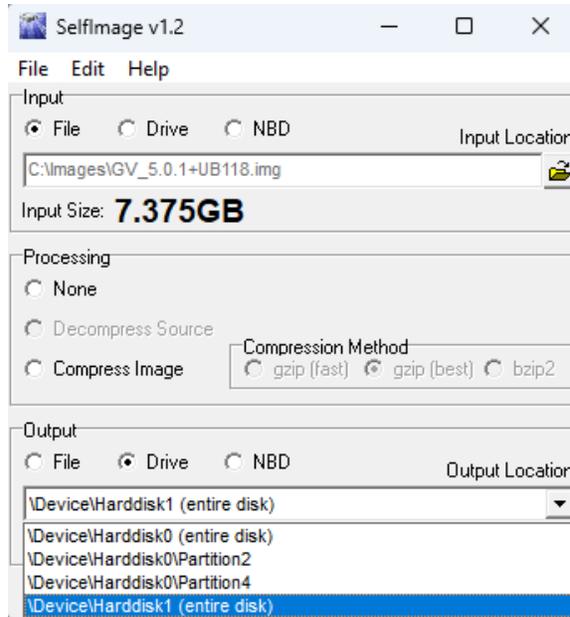
**NOTE:** The SSD must be connected prior to running SelfImage.

Depending on your OS and administrative rights, you may have to right click on the SelfImage icon and select “**Run as administrator**” (see the Windows 7 example in Figure 7).

- (b) In SelfImage select the “**Input**” as “**File**” and then use the browsing window to locate and select the Nautel provided IMG file you are going to write to the SSD (see Figure 10).
- (c) Under “**Processing**”, select “**None**” (see Figure 10).



- (d) Under “**Output**”, select “**Drive**” and then choose your “Disk” number as determined in step 4 (d). It is important to ensure you select “**Entire Disk**” version of the “Disk” number to ensure proper imaging (see Figure 10)

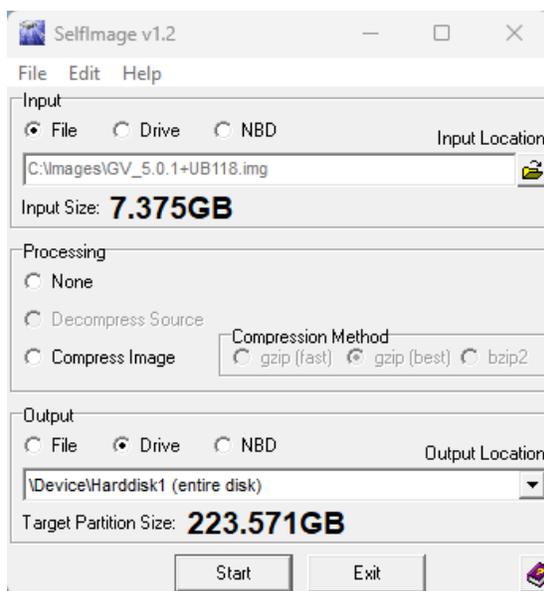


**Figure 10: SelfImage**

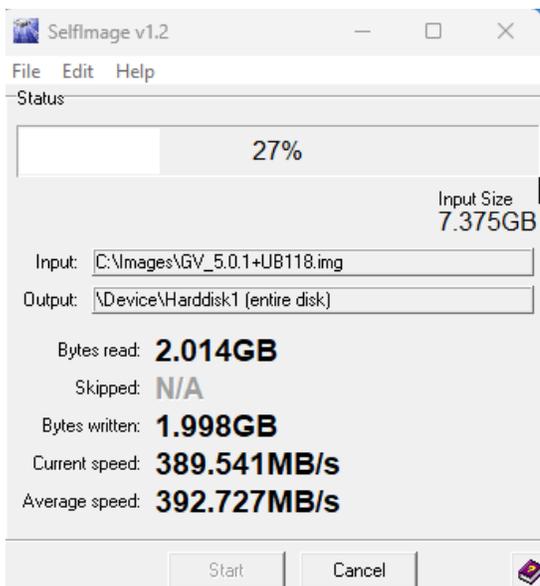
- (e) Click **Start**. This process can take between 15 and 60 minutes depending on the speed of your computer. A progress window (see Figure 12) appears to indicate the progress. It reverts back to the original SelfImage window when complete.

**NOTE**

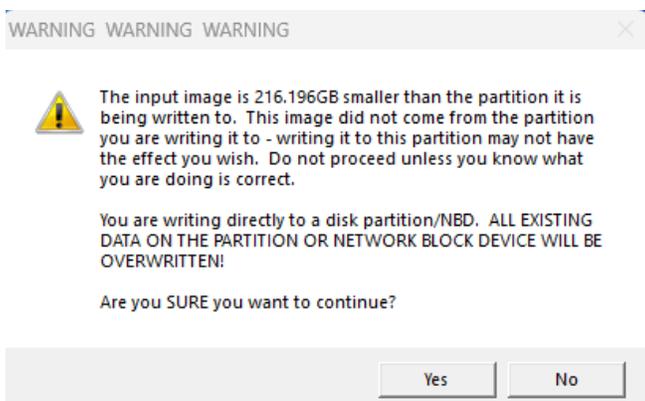
When you click **Start**, if there is a size difference between the input image size and the target partition to which you are writing (see example in Figure 11), you may receive a warning message (see Figure 13) that asks you "Are you are SURE you want to continue?". Select **Yes**.



**Figure 11: SelfImage (showing size difference between input and target partition)**



**Figure 12: Progress Window**



**Figure 13: Warning Window**

## 7 INSTALLING THE SSD

### **NOTE**

*If using a replacement SSD, follow instructions in Step 3 to remove the existing SSD prior to proceeding with the following steps. Take note of the SSD model being removed from the transmitter. If different than the replacement, the BIOS boot options may need to be updated when turning on the transmitter for the first time.*

### **NOTE**

*This section will require approximately 30 minutes of 'Off Air' time while the transmitter installs the new software.*



- (a) Reverse steps 3 (g) through 3 (e), using the retained hardware. Re-install the SSD and Controller's top cover. Refer to Figure 2, if necessary.
- (b) Using retained hardware from step 3 (c), re-install the Controller and reconnect the mating connectors. Refer to Figure 1 if necessary.
- (c) Turn on the transmitter's main ac power leaving RF OFF.

#### **NOTE**

*If the SSD being installed is a different brand than what was originally installed, you may need to update the BIOS boot options for the AUI to load. Plug in the USB keyboard and refer to IS18005\* for further instructions.*

- (d) The touchscreen monitor will turn on and a screen will appear prompting you to perform a software upgrade. The AUI will not navigate away from this page until it has been completed. Plug in the USB mouse to any available USB port on the NAC124\* Controller and begin the upgrade. Refer to the Non-standard Maintenance section of the transmitter's Operations and Maintenance manual if you require assistance with installing the new software.
- (e) When the software upgrade is complete you can turn RF ON.
- (f) Perform a touch screen calibration through the AUI (**Menu ► System Settings ► Screen Configuration**). Refer to the GV Operations and Maintenance manual, if necessary. Use the USB mouse to navigate to the touch screen calibration page, and then use your finger to touch the targets.
- (g) Reconfigure the network settings in the **Network Setup** page (**Menu ► User Settings**).
- (h) Reconfigure the **User Accounts** settings (**Menu ► User Accounts**), **Email Configuration**, **Notifications**, **Engine Settings**, **NTP Servers**, **Nautel Phone Home** and **SNMP Configuration** settings (**Menu ► User Settings**).
- (i) Unplug the USB mouse. Install the rear panel and close the front door.

## **8 CHANGING THE OS PASSWORD**

The OS password must be changed for security purposes. To do this, you will need a way to remotely connect to a Linux computer using SSH. PuTTY is a common utility for Windows users (available at <ftp://www3.nautel.com/Utilities/putty/putty.exe>; if unable to open this link, use a search engine to find new URL), while Linux users can use 'ssh' from the command line. Change the password as follows:

- (a) Connect to the transmitter IP address using your selected SSH client.
- (b) Login with username **root** and password **gckTZbiMEq**.
- (c) At the prompt, type the command **passwd**. This is the Linux command to change your password.
- (d) Enter and confirm your new password. Consider using the last OS password as supplied by Nautel, provided with the original documentation for the transmitter or with a replacement SD card, for consistency. If not, and you choose a new password, record it now in a secure location for safe keeping.

The procedure is complete.

