

Managing Multiple Hard Drives with Multiple PNAs 'A' Models and older

This document discusses the steps involved in maintaining multiple hard drives for use with one PNA, or managing a spare hard drive (or multiple spares) for use with multiple PNAs. For PNA "A" Models and older (all other models.) For clarity in this document, PNAs are divided into three categories. The procedures below vary slightly depending upon version.

- "ORIGINAL" PNAs include all E836xA, E835xA, N338xA, E880xA and N5230A/C (i.e. all PNAs with the smaller 8.4" display)
- "A" MODEL PNAs include all models starting with N524xA, N522xA, N523xA (but not N5230A), and N5264A (i.e. all PNAs with the larger 10.4-inch display)
- "A" MODEL-W7 PNAs with Windows 7 as the OS. The only reason this matters is because the directory paths are slightly different from XP. **These paths will be listed in purple**

Note: While the term **HDD** is used to refer to the Hard Disk Drive, newer PNAs actually use an SSD (Solid State Drive.) The procedures are identical and one can use mechanical or solid state drives interchangeably.

Note: In Windows 7 and above, the **ProgramData** directory mentioned below is normally hidden and may need to be unhidden for access.

There are a couple of scenarios where hard drive maintenance is a bit out of the ordinary. This document is intended to explain how to handle these situations with a minimum of problems. These two cases are:

- Maintaining multiple hard drives for a single PNA. Typically this will occur in high security areas where a group must share the PNA with others, but also require privacy and security. This way, each group can have their own private drive.
- Maintaining a spare hard drive (or drives) for more than one PNA. This could commonly occur in a rental company or any company that has multiple PNAs where they need a spare drive to ensure continuous up-time.

Both situations require slightly different techniques which are explained below. First, one needs to understand some background information.

All PNA models use a single hard drive provided by Keysight. The hard drive image is unique for **each CPU type**. The actual model number of the PNA does not matter as long as they all have the same CPU type. At the time of this writing, there have been eight different CPU assemblies as follows.

- 266 MHz CPU (ver. 1) - (no longer supported.)
 - 500 MHz CPU (ver. 2)
 - 1.1 GHz CPU (ver. 3) - Used on all PNAs with small screen since mid 2006.
 - 1.6 GHz CPU (ver. 4) - Used on all PNAs with large screen shipped before 10/2009.
 - 2.0 GHz CPU (ver. 5) - Used on all PNAs with large screen shipped from 10/2009 to 10/2011.
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- 2.0 GHz i7 CPU (ver. 6.0) - Used on most PNAs with large screen shipped after 11/2011.
- 1.87 GHz Celeron CPU (ver. 6.1) - Used on all N5231A thru N5239A models.
- 2.2 GHz Celeron CPU (ver. 7) - Used on all PNAs shipped after 12/2015.

Each one requires its own version of hard drive in order to function. Using the wrong HDD usually results in a blue-screen. The eight CPUs can be identified by looking at the rear panel and comparing them to our [Identify your CPU](#) page.

Once an HDD is first used on any specific PNA, it becomes "married" to that specific PNA and cannot be used on another PNA without undergoing a "divorce" procedure (described below.)

It is also helpful to know what hard drive information is unique for each instrument. Below is a list of all unique information on the PNA, as shipped from the factory. Of course, logins, passwords, cal sets, saved files, and installed programs that have been added after delivery are not included here.

- **eebudat.dat** - Backup file of EEPROM information; used only for service. It is located in **E:\Calfiles**. This is automatically generated if missing.
- **eebudat.bak** - Another backup file of EEPROM information; used only for service. Location is same as eebudat.dat above. This is automatically generated if missing.
- **TSMBBackup** - A backup directory of Flash data. Location is same as eebudat.dat above. This is automatically generated if missing.
- **TSMBOrig** - Another backup directory of Flash data; same location as above. This is automatically generated if missing.
- **Global Delta Match CalSet.pcs** - This file normally only exists on the N5231A, N5232A, and N5239A. It is only needed for certain types of calibrations. The file is located in **C:\Program Files\Agilent\Network Analyzer\UserCalSets** or **C:\ProgramData\Agilent\Network Analyzer\UserCalSets** or **C:\ProgramData\Keysight\Network Analyzer\UserCalSets**.
If lost, it can be recreated easily by the user in about 5 minutes. In this document, it is referred to as the **GDM** file.

Spare/replacement drives provided by Keysight have none of the above unique information. These files are either automatically generated the first time the PNA is started, or must be manually generated or copied. The following steps will help ensure the PNA is properly set up regardless of your configuration.

It helps to have a USB hard drive enclosure designed for laptop hard drives (either PATA or SATA depending upon the type of drive in your PNA.) These handy devices cost less than \$20 and allow much faster deployment of working PNA systems. Keep in mind that, when using this on a PC, the drive letters will be different for any given partition.



Figure: USB hard drive enclosure

Note for ORIGINAL PNAs: You must have a copy of the current mxcal files from the original hard drive that was shipped with your PNA. All files start with "mxcalfile_" and are located in **C:\Program Files\Agilent\Network Analyzer**. Copy all files to a floppy disk or flash drive and label the media with the model and serial number of the PNA. Do this for **EACH** older PNA you own! If the files are lost or missing, performing the Receiver Adjustment (Mixer Cal) will recreate them.

With the exception of the GDM file used in the N5231A, N5232A, and N5239A, newer PNAs (any that are not ORIGINAL) do not need any data saved because the data is stored in flash memory.

Maintaining Multiple Hard Drives for a Single PNA

In this case we will assume you want to have several hard drives that will be installed on a single PNA. This is the simpler of the two scenarios. We will also assume that you have obtained the hard drives from Keysight.

1. **First, make sure you have backup copies of any unique file as described above.**
2. Remove the original hard drive and install the spare drive. Apply power. After some initialization and one or more reboots, the PNA screen will appear. Some older replacement hard drive images may ask you to manually enter the model and serial number; this is used to generate the computer name. Newer HDD images can automatically find the model number and serial number. At this point, all the above files will have already been created with the exception of the mxcalfiles (for ORIGINAL PNAs) and the GDM file (for certain newer models only.)
3. For ORIGINAL PNAs, close the application and copy all the corresponding mxcalfiles to the directory C:\Program Files\Agilent\Network Analyzer\ **and to** D:\Calfiles\ as a backup.
4. For the N5231A, N5232A, and N5239A, copy the GDM file to the UserCalSets directory listed above
5. At this point, you should set up all account names, passwords, computer name (if a different one is needed from the default), network configurations, etc.

That's it; you are done. For ORIGINAL or any "A" model PNAs, either hard drive will work properly with this specific PNA, however, **neither hard drive will work properly if placed in *any* other PNA**

You should run the Operators Check on the PNA: (Utility), System, Service, Operator's Check to ensure all steps were properly performed.

A quick note regarding newer PNAs sent in for Calibration (all except for the ORIGINAL Models)

For any PNA with the 10.4 inch display: These PNAs that are sent in for yearly calibration will **NOT** have any calibration data stored on the hard drive. All calibration data is stored in internal non-volatile memory. This means that hard drives can be swapped as needed without any concern about losing calibration data. Again, this **only** applies to PNAs with the 10.2 inch screen.

Maintaining a Spare Hard Drive (or Drives) for Multiple PNAs

In this case we will assume you want to have one or more spare drives that can be used on multiple PNAs. This involves a bit more work than the above scenario. Again, we will assume that you have obtained any hard drives from Keysight.

Pre-planning

Before any new PNA is deployed, you should have backed up the following data to some permanent storage media such as a network drive or flash drive. The data **must** be stored under a unique name that is both model and serial number specific so that there is no chance of confusion.

- For ORIGINAL PNAs, make sure you have a copy of all the various mxcalfiles (see above.)
- The entire contents of D:\Calfiles
- For the N5231A, N5232A, and N5239A, the GDM file located in the UserCalSets directory listed above.

If the hard drive is new and has never been used in a PNA before, simply install it in the PNA, turn it on, allow it to initialize. Then copy all unique files previously stored (under "Pre-Planning" above) to the appropriate location. Close, then restart the PNA application. At this point, you are done.

Assuming the hard drive has previously been used in **another** PNA before, you must follow these steps. These can be done on the PNA itself, or you can use a USB enclosure together with a PC.

1. Insert the hard drive into the PNA or USB enclosure. If installed into the PNA, the actual PNA application will NOT run properly, so ignore any error messages and close it as soon as it appears.
2. You must **delete** the following files. Remember, if you are using a USB enclosure, the drive letters **will be different!**

For XP PNAs

- C:\Program Files\Agilent\Network Analyzer\gen.lic **Delete this file; do NOT just rename it!**
- Any file named **pnacalsets.dat** or **pnacalsets3.dat** in C:\Program Files\Agilent\Network Analyzer\ (if it exists)
- All files that start with "mxcalfile_" in C:\Program Files\Agilent\Network Analyzer\
- All files in C:\Program Files\Agilent\Network Analyzer\UserCalSets\
- All files in C:\Program Files\Agilent\Network Analyzer\CalRegisters\
- All files in D:\Calfiles

For Win 7 PNAs (remember, the ProgramData directory may be hidden)

- C:\ProgramData\Agilent\Network Analyzer\gen.lic **Delete this file; do NOT just rename it!**
- All files in C:\ProgramData\Agilent\Network Analyzer\UserCalSets\
- All files in C:\ProgramData\Agilent\Network Analyzer\CalRegisters\
- All files in D:\Calfiles

3. If you wish to keep this drive available for **any** other compatible PNAs in the future, **stop here**, you are done! Once the individual PNA has been identified, you will still need to perform the next 4 steps.
4. Assuming you have identified the specific PNA to be used, and for older PNAs only, copy the correct mxcalfiles to the appropriate directory (see above) **and to** D:\Calfiles.
5. For models N5231A, N5232A or N5239A, copy the GDM cal to its corresponding directory.
6. If you were using a USB enclosure, install the hard drive into the PNA. Allow it to fully power up and make sure the PNA application is running properly.
7. If used in a networked environment, and depending upon the previous PNA's computer name, you may need to change it so it does not conflict with another PNA. Right-click on My Computer, click on Properties, Computer Name, Change. Enter a new, unique computer name.

You should also verify that the text file D:/Calfiles/ComputerName.txt contains the proper Computer Name (used for system recovery.)

8. For non-Win7 PNAs, the Agilent account password should be changed to correspond to the serial number. If you know that the previous password was at its default value and you don't care about this, then you can skip this step, otherwise, note the serial number of the PNA. Contact Keysight support for the password to use.

That's it; you are done. This hard drive will now work properly, **but only** on this specific PNA.

You should run the Operators Check on the PNA to ensure all steps were properly performed: (Utility), System, Service, Operator's Check

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