Video Tutorial of Nonresident G-List Shielding Bad Sector Method of Seagate F3 Series HDDs

This document comes from MRT Lab. http://www.mrtlab.com
http://us.mrtlab.com/prodindex.htm

Note: You need to understand some of the preliminary knowledge before reading this tutorial. Please read following three preliminary tutorials in order, then read this tutorial.

1. Basic Tutorial of Repair Bad Sectors of Seagate F3 Series HDDs
   http://us.mrtlab.com/tech/seagate/104.html
2. Advanced Tutorial of Repair Bad Sectors (red and green blocks) of Seagate F3 Series HDDs
   http://vip.mrtlab.com/en/showdown.asp?id=12
3. Complement Tutorial of repair bad sectors of Seagate F3 Series HDDs
   http://vip.mrtlab.com/en/showdown.asp?id=20

In three tutorials above, it explains the basic knowledge of repair bad sectors and represents a repair process. The basic principle is to scan the bad sectors, add bad sectors into general G-list, and turn the general G-list to nonresident G-list. It completes the process of shielding bad sectors. There is a big problem of this process. That is very time-consuming, but the success rate is not high. Because of the firmware restriction of Seagate F3 HDDs, it is very slow to add defects into general G-list. It is also very slow to turn general G-list to nonresident G-list. The whole process will be very time-consuming. What is more, capacity of general G-list is limited. If defects are too many, then you can't add the defects into general G-list. The success rate is pretty low.

The good news is MRT now have a new solution - Nonresident G-list Shielding Bad Sector Method to repair bad sectors of Seagate F3 HDDs. In recent version of update, MRT supports to edit nonresident G-list directly. Users can add bad sectors into nonresident G-list directly, and then recalculate translator. The added defects can be effective. Processing time is significantly shorter, the success rate is greatly improved. At present, users may encounter a lot of bad sectors of Seagate cases that hard to deal with. We believe after the release of this tutorial, the method of nonresident G-list bad sectors shielding will be the most effective and most popular method to repair bad sectors of Seagate hard disk.

Now let's see the demo of video. The video shows the basic procedures of nonresident G-list Shielding Bad Sector Method. Scan the hard disk first. By roughly scanning, you can find there are some bad sectors on this hard disk. Let's try to shield those bad sectors.

Step 1: Scan hard disk, select "Save the bad sectors to the defect list file". Please note that if there are a lot of bad sectors, it has a parameter that can speed up the overall scan. That is "Skip when it encounters bad sector". You can select this option when the hard disk has a lot of bad sectors. You could set a reasonable skip size and choose "record skip sectors to defect list file". It can speed up.

About techniques of scanning entire hard disk, please read the three articles above. It has more detail description. We don't repeat it again. After set the parameters well, we start the full scan and record address of bad sectors to file. During the scanning process, we pause the video, in order to save time.

Now we've already scanned front part of the sectors. Defects has been saved to file. Now, we add the defects into nonresident G-list. In defect list editor, we can see the address and length of scanned sectors. We can edit defect file according to the actual situation of the hard disk. For example, expand each entry or merge adjacent entries. Those operations are very important, because the capacity of nonresident G-list is limited. It is impossible to add unlimited number of entries. Sometimes, there are too many bad sectors, then defect entries will be enormous. We can reduce the number of entries by expanding each entry or merging adjacent entries, so that it is able to write into nonresident G-list.

Step 2: Write the scanned and processed defect file into nonresident G-list of hard disk.

First, we open the nonresident G-list of this hard disk. Please note that we need to choose correct generation (11 generation or 12 generation above) of Seagate. If wrong generation is chosen, it will not be read correctly. If you don't know which generation to choose, try both of them. If it is not correct, try another one to read. The nonresident G-list of this hard disk is empty, now we add the scanned defect file into it. Before adding, we suggest you do an operation, that is clear G-list. It prevents adding process affects the data in G-list.

Turn to ATA and add defect file. Due to defect file is the LBA address format and nonresident G-list is PBA address format, it needs a conversion. After conversion, defect file of LBA format has been loaded into nonresident G-list editor (Note that it has not been written to hard disk yet). You can observe the loaded entries. if it is necessary, you can also modify and edit these entries. Please note that the entry address of nonresident G-list are all PBA address. It represents a physical sector. After confirmation, those entries can be written to hard disk. Writing program will ask you whether to merge adjacent entries. It can expand the scope of entries, reduce the number of entries and avoid excessive number of nonresident G-list entries and bursting the list. Default not to fill, choose "ok" directly, it means not to merge adjacent entries. If you want to merge, then fill in a value except 0. We can see the entries have been added to nonresident G-list. You may notice that it only shows 64 entries. 11 generation hard disks have this kind of problem which displays incomplete entries. 12 generation hard disks does not have this problem. You don't need to worry. It is just the display problem. In fact, all the entries have been written to hard disk. All of them will take effect.

Step 3: Recalculate Translator

Complete the above two steps, newly added nonresident G-list entries which were only added to the list has not entered into force yet. To make entries into force, you must do the operation of recalculate translator. m0,6,3,,,,,22 Note: If you want to use this parameter to recalculate translator, you must select "Handle growth defect list". Otherwise, entries in the nonresident G-list will be lost. Now we recalculate translator. To save time, we pause the video. This process is pretty slow. The more the number of entries to add, the slower the process of recalculating

translator. Please be patient! After a long wait, finally recalculating translator has finished. Let’s go to next step.

Step 4: Writing to erase the whole hard disk

The hard disk must go through the writing to erase, then it can be used. The purpose of this step is to erase all the sectors. Specific operations can be diverse. The first method is to do the low level format. Please use m0,8,3,,,,,22 this parameter. Note: please select “Handle growth defect list”. The advantage of low level format is hard disk can make automatic completion. You can offer an external power supply to the hard disk. It does not need to occupy the MRT interface. The second method is to do the writing scan. Sometimes, when you do the low level format, it will appear the situation that the process goes dead in the middle of somewhere. The low level format can not be complete. At this time, you can do the writing scan. It also has the function of erasing sectors. But it need to occupy MRT interface. The third method is to use MRT security subsystem erase function. After this function is started, it does not require to occupy MRT interface.

We demonstrate the second method here. That is to erase sectors by writing scan. In order to save time, we only erase a fraction of it. After the whole hard disk is erased, the hard disk can be used.

Now the erase has completed. We scan the hard disk over again. We can see the bad sectors have much less than before. However, it still has a small amount of yellow and pink blocks. At this time we can repeat step 1 to step 4, continue to add the rest of bad sectors into nonresident G-list. Let's demonstrate this operation. Scan again and record defects to file. Then with append mode, load defect file to nonresident editor (Before loading, you must clear i4 first). Write to hard disk. When writing, you can make the setting to merge adjacent entries. We merge the entries within a distance of 256 sectors and recalculate translator. After that, we use writing scan to erase hard disk. Now we read the scan again. We can see the bad sectors of hard disk has been shielded.

Supplement:

1. Default of scan program is to record pink, red and brown sectors. Usually yellow blocks are the relatively slow sectors. In many cases, yellow blocks also need to be added to defect list. At this time, you only need to select "with delay" in scan parameter. Then the yellow blocks will be added to defect list.

2. If you add too many defects, the capacity of hard will decrease. Before recalculating translator you need to modify the hard disk capacity. Otherwise, recalculating translator will lose defect entries. Please note the order: 1. Write into nonresident G-list, 2. Modify hard disk capacity, 3 Recalculate translator. Note that “modify capacity” is in: Tools -> Service Area Tools -> Edit hard disk identifier(Edit RAP field). Moreover, “Edit hard disk ID” also has a place to modify capacity. Suggest you to modify it as well. But it is not very important.

Above is the tutorial of Nonresident G-List Shielding Bad Sector Method of Seagate F3 Series HDDs. Thank you for watching.

This document comes from MRT Lab. http://www.mrtlab.com
http://us.mrtlab.com/prodindex.htm