IBM TotalStorage NAS 100
System Recovery Maintenance Procedure

This document describes the process for recovering the NAS 100 system. These procedures are intended to be used by skilled personnel (customer or IBM)

Problem Determination

Determine the specific problem:
1. One hard drive has failed:
   Advise the customer to read the User's Reference Information in the "Troubleshooting" and "System Recovery" section of the <u>Hardware Installation and Service Guide</u>.
2. Hard drives 1 and 2 have failed:
   The Support Center engineer should refer to the <u>Recovering Primary Operating System</u> section of this document

<u>Recovering Primary Operating System</u>

Preparation:
With the failure of two new hard drives it will eliminate the possibility of preserving RAID 5 data. If the two hard drives are usable but require a reformat and partition then this will also eliminate the possibility of preserving the RAID5 data. Take out all the components that added into the system by customer (video card, USB keyboard …) to make sure the system looks just as one received from IBM manufacture.

 Procedure:

1. Replace hard drives 1 and 2 with new hard drives.(or useable disks with Basic unallocated configuration)
2. Push the Clear CMOS button (see "Clearing CMOS data" in the Hardware Installation and Service Guide).
3. Power on the NAS 100. It will boot the recovery operating system from disk 3. (system may go to boot up from disk 3 after three or more times boot up tries)
4. Log into the NAS 100 via a web browser (see "Accessing the NAS 100 using DHCP using LAN 1 port" or "Accessing the NAS 100 using a static IP address on LAN 2" in the Hardware Installation and Service Guide). You need to login as "Administrator".
5. Select the Maintenance tab.
6. On the next screen, select "Terminal Services". This will start a Terminal Services session. Log into the NAS100 as "Administrator".
7. Right click on "My Computer" and select "Manage".
8. Open the Disk Management tool.
9. The "Write Signature and Upgrade Disk Wizard" will start. Click Next.
10. On the "Select Disk to Write Signature" screen (you may see this screen only if using 2   new HDDs), select disks 0 and 1 and click Next.
11. On the "Select Disks to Upgrade" screen, **deselect** disks 0 and 1 and click Next.

12. Click Finish.
13. Right click on "Unallocated" in Disk 0 and select "Create Partition" from the pop up menu.
14. In the Wizard, click Next.
15. Select partition type as Primary Partition, Click Next
16. Change the "Amount of disk space to use" to 8000 MB and click Next.
17. Assign a driver letter as C: Click Next
18. Change the "Volume label" to "Primary_OS" and click Next.
19. Click Finish.
20. Right click on the C: partition you just created on disk 0 and select "Mark partition active". In order to be able to access drive C, you will need to log off and log back on. Click the Start menu and select "Shutdown" from the menu.
21. In the dialog, select "Log off Administrator" and click OK. The Terminal Services session will terminate.
22. From the Maintenance screen, select "Terminal Services". This will start a Terminal Services session. Log into the NAS100 as "Administrator".
23. Click the Start menu and select "Run".
24. In the dialog, type "cmd" and hit enter.
25. In the command window, type "cd \ibm\nas100" and hit enter.
26. In the command window, type "RecoverySystemO" and hit enter.
27. When the "Enter Current volume label for drive C:" message appears, hit enter. The recovery process will begin. You will see several "Access denied" messages; these are normal.
28. After the recovery process completes, the NAS 100 will automatically reboot from the Primary operating system on drive 1.
29. Log into the NAS 100 via a web browser (see "Accessing the NAS 100 using DHCP using LAN 1 port" or "Accessing the NAS 100 using a static IP address on LAN 2" in the Hardware Installation and Service Guide). You need to login as "Administrator". If "Writing Signature and Upgrade Disk Wizard" is popped, "CANCEL"
30. Select the Maintenance tab.
31. On the next screen, select "Terminal Services". This will start a Terminal Services session. Log into the NAS100 as "Administrator".
32. Right click on "My Computer" and select "Manage".
33. Open the Disk Management tool.
34. Right click on Disk 0 and select "Upgrade to dynamic disk".
35. You will see system message "Once you upgrades these disk to dynamics, you will not be able to boot previous version of Windows from any volumes on these disks" Click OK.
36. Another system message will come out as "File system on any of disks to be upgraded will be forced dismounted" Click Upgrade.
37. Click Yes.
38. Click Yes.
39. Reboot NAS 100
40. Log into the NAS 100 via a web browser (see "Accessing the NAS 100 using DHCP using LAN 1 port" or "Accessing the NAS 100 using a static IP address on LAN 2" in the Hardware Installation and Service Guide). You need to login as "Administrator".
    If "Writing Signature and Upgrade Disk Wizard" is popped, "CANCEL"
41. Select the Maintenance tab.

42. On the next screen, select "Terminal Services". This will start a Terminal Services session. Log into the NAS100 as "Administrator".
43. Right click on "My Computer" and select "Manage".
44. Open the Disk Management tool, (If reboot is required, then reboot and login again...)
45. On Disk Management tool
46. Right click on Disk 1 and select "Upgrade to dynamic disk".
47. Click OK.
48. Right click on the C: partition on disk 0 and select "Add Mirror".
49. Select Disk 1 and click "Add Mirror". Drive C will start regenerating and will show up a message as "you have mirrored your boot volume. To be able to boot from mirror disk, add the appropriate entry to your BOOT.INI file" Click OK.
50. Wait for it to finish regenerating. Continuing on to the next step if using new hard drives. Otherwise, go to step 57.
51. Right click on one of the "7.81 GB / Failed" partitions and select "Delete Volume".
52. Click Yes.
53. Right click on one of the "107.22 GB / Failed" partitions and select "Delete Volume".
54. Click Yes.
55. Right click on one of the "Missing" drives and select "Remove Disk".
56. Right click on the other "Missing" drive and select "Remove Disk".
57. Reboot the system and following the steps same as 42 to run Terminal Service and logon as Administrator.
58. Copy ClearHDDInfo.cmd file to the NAS 100 download from:ftp://ftp.software.ibm.com/storage/nas/519x/hardware/5190/ClearHDDInfo.zip)
59. Click the Start menu and select "Run".
60. In the dialog, type "C:\clearhddinfo" and hit enter.
61. **Continue on to "Creating the RAID 5 drive".**

Creating the RAID 5 drive

1. Right click on the "Unallocated Space" in Disk 0 and select "Create Volume" from the popup menu.
2. In the Wizard, click Next.
3. Select "RAID-5 Volume" and click Next.
4. Select Disks 1-3 under "All available dynamic disks" and click Add.
5. Click Next.
6. Click Next.
7. Click Next.
8. Click Finish. The RAID 5 array will begin regenerating. After it has finished regenerating (approximately 5 hours), data can be restored to the drive.