

CREO NT Mirror Failure/Upgrade Recovery Procedure

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Data General Canada Co.
130 –13151 Vanier Place
Richmond, BC V6V 2J2

The following document lists a procedure for recovery from failures under NT mirror sets for the DG platforms currently in use at CREO.
These platforms are the AV2200, AV2700, and AV3700.
The AV2200 do not feature hot swap drive ability.
The AV2700 and AV3700 feature hot swap drive mechanisms.

IMPORTANT: Back up the system BEFORE performing ANY of the following procedures.

****** The AV2700 is also available in a Mylex RAID model to which this procedure does NOT apply.

Considerations:
The procedures listed below detail drive configurations specific to the mirror.
Based on the desired procedure for repair of drive failures and failed upgrades the following requirement must be met prior to performing any service:

- The service technician require hardware repair knowledge (ability to swap drives) in addition to software configuration knowledge.

1 Drive Failures:

The NT system/boot partition resides on a pair of 4GB drives configured in a mirror.

1.1 Drive 0 failed:

1.1.1 If system is running shut down and turn off the system.
1.1.2 Pull defective Drive 0 from the Drive Bay 0.
1.1.3 On AV2700 and AV3700 systems remove Drive 1 from Drive Bay 1 and install in Drive Bay 0. On AV2200 systems jumper Drive 1 to SCSI ID 0 and install in Drive Bay 0.
1.1.4 On AV2700 and AV3700 systems install replacement drive in Drive Bay 1. On AV2200 systems jumper replacement drive to SCSI ID 1 and install in Drive Bay 1.
1.1.5 Start system.
1.1.6 Run Disk Administrator.
1.1.7 Click OK to Disk Administrator window to acknowledge one or more disks have been removed or offline.
1.1.8 Click OK to acknowledge one or more disks have been added since Disk Administrator was last run and system configuration will be updated.
1.1.9 Click Yes to write a signature on Disk 1.
1.1.10 Highlight Disk 0(Drive S:)
1.1.11 Select the Fault Tolerance menu
1.1.12 Select Break Mirror
1.1.13 Click Yes to confirm end mirroring and create two independent partitions.
1.1.14 Highlight Disk 0(Drive C:)
1.1.15 Select the Fault Tolerance menu
1.1.16 Select Break Mirror
1.1.17 Click Yes to confirm end mirroring and create two independent partitions

1.1.18 Click Yes to confirm mirror set cannot be locked and to continue.
1.1.19 Exit Disk Administrator.
1.1.20 Click Yes to confirm saving changes to disk configuration.
1.1.21 Click OK to successful update.
1.1.22 Click OK to initiate system shutdown.
1.1.23 After system restart run Disk Administrator
1.1.24 Examine total disk capacity on Disk 0 and 1 are the same. ***See Appendix A if the sizes are different.
1.1.25 Select partition labeled Drive C: on Physical Drive 0 and while holding down <CTRL> key select the newly installed drive 1(labeled as free space).
1.1.26 Click Fault Tolerance menu and select Establish Mirror.
1.1.27 Click OK to mirror set of system boot partition.
1.1.28 Select partition labeled Drive S: on Physical Drive 0 and while holding down <CTRL> key select the newly installed drive 1(labeled as free space).
1.1.29 Click Fault Tolerance menu and select Establish Mirror.
1.1.30 Exit Disk Administrator
1.1.31 Click Yes to save changes.
1.1.32 Click Yes to confirm restarting the computer
1.1.33 Click OK to successful disk update.
1.1.34 Click OK to initiate system shutdown.
1.1.35 When NT is loaded on next boot log in and ensure that the rebuild is in progress by running Disk Administrator and clicking on the mirrored pair. The status bar at the bottom of the screen indicates “INITIALIZING“.
1.1.36 When mirror build is complete the status bar indicates “HEALTHY”.

1.2 Drive 1 failed.

1.2.1 If system is running shut down and turn off the system.
1.2.2 Remove defective drive from drive bay 1.
1.2.3 Install replacement drive in drive bay 1. On AV2200 systems ensure drive is jumpered to SCSI ID 1.
1.2.4 Turn on system.
1.2.5 Run Start/Programs>Administrative Tools(Common)>Disk Administrator
1.2.6 Click OK to Disk Administrator window to acknowledge one or more disks have been removed or are offline.
1.2.7 Click OK to acknowledge that a disk has been added since Disk Administrator was last run
1.2.8 Click Yes to write signature to Disk 1
1.2.9 Click C: drive(MS FAT 207MB).
1.2.10 Click Fault Tolerance menu
1.2.11 Click Break Mirror
1.2.12 Click Yes on Confirm window to end mirroring and create two independent partitions.
1.2.13 Click Yes to Confirm window to continue operation (window indicates mirror set cannot be locked and that the system will be restarted on exiting Disk Administrator).
1.2.14 Click S: drive(SYSTEMDRIVE NTFS 3939MB)

1.2.15 Click Fault Tolerance menu
1.2.16 Click Break Mirror
1.2.17 Click Yes on Confirm window to end mirroring and create two independent partitions.
1.2.18 Click Partition menu and Exit
1.2.19 Click OK on Disk Administrator window that indicates disks were updated successfully.
1.2.20 Click OK on Disk Administrator window that indicates changes have been made which require restart and OK to shutdown.
1.2.21 After system restarts run Start/Programs>Administrative Tools(Common)>Disk Administrator
1.2.22 Examine total disk capacity on Disk 0 and 1 and confirm they are the same. ***See Appendix A if the sizes are different.
1.2.23 The disk Drive 1 should be listed as free space. If this is the case go to step 1.2.24. If not click the partition on drive 1 and click Partition menu and click Delete.
1.2.24 Click Yes on Confirm window to confirm deletion of partition or logical drive.
1.2.25 To establish mirror click partition labeled Drive C: on Physical Drive 0 and while holding down <CTRL> key click Free Space on Disk 1.
1.2.26 Click Fault Tolerance menu and select Establish Mirror.
1.2.27 Click OK on Disk Administrator window to acknowledge this will be a mirror set of the system boot partition
1.2.28 Disk 0 and Disk 1 should now list drive C: MS FAT 207
1.2.29 Select partition labeled Drive S: on Physical Drive 0 and while holding down <CTRL> key click Free Space on Disk 1.
1.2.30 Click Fault Tolerance menu and select Establish Mirror.
1.2.31 Click Partition menu and click Exit
1.2.32 Click Yes on Confirm window to save changes to the disk configuration.
1.2.33 Click Yes to confirm changes requested require the computer to be restarted.
1.2.34 Click OK on Disk Administrator window for successfully updated disks.
1.2.35 Click OK to initiate system shutdown
1.2.36 When NT is loaded on next boot log in and ensure that the rebuild is in progress by running Disk Administrator and clicking on the mirrored pair. The status bar at the bottom of the screen indicates “INITIALIZING“.

2 Software Update/Upgrade Procedure:

There may be a need in the field to perform software update/upgrades. This involves a software technician performing an update/upgrade on the boot/system partition which is mirrored.
The technician disconnects Drive 1. This is performed in order to preserve the original boot/system partition information in case the software upgrade fails leaving the boot/system partition in an unusable or unknown state.
The software upgrade is performed and if successful the unused broken mirror partition is deleted, recreated and the new partition is used to establish a mirror with the new upgraded drive.

If the upgrade is not successful the technician installs Drive 1 in Drive Bay 0. The failed upgrade drive is installed in Drive Bay 1. The system is booted from this unused broken mirror partition, the failed upgrade partition is deleted and the mirror is re-established with the booted partition and the update/upgrade procedure run again.

2 **Preserving the mirror partition:**

- 2.1 With system power off physically remove Drive 1.
- 2.2 Boot system.
- 2.3 Perform Software Maintenance/Upgrade
- 2.4 **If upgrade is successful** break the mirror on the drive as follows:
  - 2.4.1 Run Start/Programs>Administrative Tools(Common)>Disk Administrator
  - 2.4.2 Click OK to Disk Administrator window to acknowledge one or more disks have been removed or are offline.
  - 2.4.3 Click C: drive(MS FAT 207MB).
  - 2.4.4 Click Fault Tolerance menu
  - 2.4.5 Click Break Mirror
  - 2.4.6 Click Yes on Confirm window to end mirroring and create two independent partitions.
  - 2.4.7 Click Yes to Confirm window to continue operation (window indicates mirror set cannot be locked and that the system will be restarted on exiting Disk Administrator).
  - 2.4.8 Click S: drive(SYSTEMDRIVE NTFS 3939MB)
  - 2.4.9 Click Fault Tolerance menu
  - 2.4.10 Click Break Mirror
  - 2.4.11 Click Yes on Confirm window to end mirroring and create two independent partitions.
  - 2.4.12 Click Partition menu and Exit
  - 2.4.13 Click OK on Disk Administrator window that indicates disks were updated successfully.
  - 2.4.14 Click OK on Disk Administrator window that indicates changes have been made which require restart and OK to shutdown.
  - 2.4.15 Shut system off while system is running POST memory test.
  - 2.4.16 Physically re-install Drive 1.
  - 2.4.17 Start system and Run Start/Programs>Administrative Tools(Common)>Disk Administrator
  - 2.4.18 Click OK to acknowledge that one or more disks have been altered since Disk Administrator was last run.
  - 2.4.19 Delete all partitions on Disk 1 as follows
  - 2.4.20 Click a partition on Disk 1 and click Delete from the Partition menu.
  - 2.4.21 Click Yes to confirm deletion of chosen partition.
  - 2.4.22 Click any additional partitions on Disk 1 using procedure above.
  - 2.4.23 Click Commit Changes on Partition menu.
  - 2.4.24 Click Yes to save changes to disk configuration

2.4.25 Click OK to acknowledge disks were updated successfully

2.4.26 Establish mirror as follows:
2.4.27 Select partition labeled Drive C: on Physical Drive 0 and while holding down <CTRL> key click Free Space on Disk 1.
2.4.28 Click Fault Tolerance menu and select Establish Mirror.
2.4.29 Click OK to confirm this will be a mirror set of the system boot partition.
2.4.30 Select partition labeled Drive S: on Physical Drive 0 and while holding down <CTRL> key click Free Space on Disk 1.
2.4.31 Click Fault Tolerance menu and select Establish Mirror.
Disk 0 and Disk 1 should now each display drive C: and S:
2.4.32 Click the Partition menu and click Exit.
2.4.33 Click Yes on Confirm window to save changes to the disk configuration.
2.4.34 Click Yes to continue with the changes and restart the computer.
2.4.35 Click OK to acknowledge disks were updated successfully.
2.4.36 Click OK to initiate system shutdown.
2.4.37 When NT is loaded on next boot log in and ensure that the rebuild is in progress by running Disk Administrator and clicking on the mirrored pair. The status bar at the bottom of the screen indicates "INITIALIZING".

2.5 **If upgrade is unsuccessful** perform the following:
2.5.1 Remove Disk 0 and install Disk 1 in Drive Bay 0.
On **AV2200** systems jumper Disk 1 to SCSI ID 0 and install in Drive Bay 0.
2.5.2 Turn on system.
2.5.3 Run Start/Programs>Administrative Tools(Common)>Disk Administrator
2.5.4 Click OK to Disk Administrator window to acknowledge one or more disks have been removed or are offline.
2.5.5 Click C: drive(MS FAT 207MB).
2.5.6 Click Fault Tolerance menu
2.5.7 Click Break Mirror
2.5.8 Click Yes on Confirm window to end mirroring and create two independent partitions.
2.5.9 Click Yes to Confirm window to continue operation (window indicates mirror set cannot be locked and that the system will be restarted on exiting Disk Administrator).
2.5.10 Click S: drive(SYSTEMDRIVE NTFS 3939MB)
2.5.11 Click Fault Tolerance menu
2.5.12 Click Break Mirror
2.5.13 Click Yes on Confirm window to end mirroring and create two independent partitions.
2.5.14 Click Partition menu and Exit
2.5.15 Click OK on Disk Administrator window that indicates disks were updated successfully.
2.5.16 Click OK on Disk Administrator window that indicates changes have been made which require restart and OK to shutdown.
2.5.17 Shut system off while system is running POST memory test
2.5.18 Install failed upgrade disk in Drive Bay 1
On **AV2200** systems jumper failed upgrade disk to SCSI ID 1
2.5.19 Start system and Run Start/Programs>Administrative Tools(Common)>Disk Administrator
2.5.20 Click OK to acknowledge that one or more disks have been altered since Disk Administrator was last run.

2.5.21 Delete all partitions on Disk 1 as follows:
2.5.22 Click a partition on Disk 1 and click Delete from the Partition menu.
2.5.23 Click Yes to confirm deletion of chosen partition.
2.5.24 Click any additional partitions on Disk 1 using procedure above.
2.5.25 Click Commit Changes Now on Partition menu.
2.5.26 Click Yes to save changes to disk configuration
2.5.27 Click OK to acknowledge disks were updated successfully

2.5.28 Establish mirror as follows:
2.5.29 Select partition labeled Drive C: on Physical Drive 0 and while holding down <CTRL> key click Free Space on Disk 1.
2.5.30 Click Fault Tolerance menu and select Establish Mirror.
2.5.31 Click OK to confirm this will be a mirror set of the system boot partition.
2.5.32 Select partition labeled Drive S: on Physical Drive 0 and while holding down <CTRL> key click Free Space on Disk 1.
2.5.33 Click Fault Tolerance menu and select Establish Mirror.
Disk 0 and Disk 1 should now each display drive C: and S:
2.5.34 Click the Partition menu and click Exit.
2.5.35 Click Yes on Confirm window to save changes to the disk configuration.
2.5.36 Click Yes to continue with the changes and restart the computer.
2.5.37 Click OK to acknowledge disks were updated successfully.
2.5.38 Click OK to initiate system shutdown.
2.5.39 When NT is loaded on next boot log in and ensure that the rebuild is in progress by running Disk Administrator and clicking on the mirrored pair. The status bar at the bottom of the screen indicates “INITIALIZING“.

3 Booting to MS-DOS on a WINDOWS NT Mirror FAT Partition

There is a known issue in which there is an inability to boot to MS-DOS on a Windows NT Mirror FAT Partition(Per MS PSS ID Q145941).
To access the DOS partition follow the procedure described below.

3.1 Break mirror configuration on dos partition

3.1.1 Start Disk Administrator and click on C: MS-DOS_6 FAT partition on Drive 0.
3.1.2 While holding down the CTRL key click on C:MS-DOS_6 FAT partition on Drive 1.
3.1.3 Select Fault Tolerance menu and click Break Mirror.
3.1.4 Click Yes to Confirm that you are sure you want to break the selected mirror.
3.1.5 Click Yes to confirm the mirror set cannot be locked and to continue operation.
3.1.6 Right click Disk 1 C:MS-DOS_6 FAT partition.
3.1.7 Click Assign Drive Letter.
3.1.8 In the Assign Drive Letter window Click “Do Not Assign Drive Letter” and click OK.
3.1.9 Click Partition menu and select Commit Changes Now.
3.1.10 Click OK to message that disks were updated successfully.

3.1.11 Click OK to restart system.
3.1.12 On restart boot the system and select MS-DOS partition.

Appendix A **Hard Drive Low Level Format Procedure**

Replacement drives for NT mirrors should be the same make and model as the failed unit. There may be an occasion where the replacement drive is the same as the original but NT Disk Administrator sees the remaining mirror drive and the replacement as having different total disk capacity.
If this is the case then a low-level format of the replacement SCSI drive may be in order. The following outlines the procedures for low-level formatting hard drives in each system.

AV2200

1. Boot system.
2. During Symbios SDMS PCI SCSI BIOS banner press <CTRL><C> when prompted to access the Symbios Configuration Utility.
3. Highlight the first SYM53C875 listed from the top and press <Enter>
4. Select “Device Selections” and press <Enter>
5. Select the disk to be low-level formatted(Please be certain which drive is to be formatted!) and press <Enter>
6. Select “Format”
7. Press <Enter> to conform format operation.
8. Press <Enter> again to start format.
9. Once format is complete escape out and Cancel Changes when prompted
10. Select “Quit” to exit Symbios Configuration Utility and reboot the system.
11. You should now be ready to establish the mirror.

AV2700 The following procedure applies only towards the on board SCSI controllers(non-Mylex)

1. Boot system.
2. During the Adaptec 7890 BIOS banner press <CTRL> <A> when prompted to access Adaptec SCSI Select Utility.
3. Select “SCSI Disk Utility” and press <Enter>.
4. Select drive to be low-level formatted(please be sure which drive is to be formatted!) and press <Enter>.
5. Select “Format Disk” and press <Enter>.
6. Select “Yes” to format disk prompt and press <Enter>.
7. Once format is complete escape out of the SCSI Select Utility and reboot the system.
8. You should now be ready establish the mirror.

AV3700

1. Boot system.
2. During Symbios SDMS PCI SCSI BIOS banner press <CTRL><C> when prompted to access the Symbios Configuration Utility.
3. Highlight the first SYM53C896 listed from the top and press <Enter>
4. Select “Device Selections” and press <Enter>
5. Select the disk to be low-level formatted(Please be certain which drive is to be formatted!) and press <Enter>
6. Select “Format”
7. Press <Enter> to conform format operation.
8. Press <Enter> again to start format.
9. Once format is complete escape out, Cancel Changes when prompted and Select “Quit” to exit Symbios Configuration Utility and reboot the system.
10. You should now be ready to establish the mirror.