

AccessionIndex: TCD-SCSS-T.20121208.083

Accession Date: 8-Dec-2012

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Object name: RAID-3 Subsystem

Vintage: c.1992

Synopsis: First of a series of large RAID chassis for 35 SCSI disks designed and constructed by the Dept.Computer Science, TCD.

Description:

This subsystem incorporated the first of a series of large RAID chassis housing 35 disks that were designed and constructed in the Dept.Computer Science, TCD, as a precursor to embarking on the design and construction of the Stable Disk, see elsewhere in the collection. The subsystem also included an NCR ADP-92 RAID Controller in a PC case, plus a host server, mounted above the disk chassis itself.

The front end of the controller connected to the host server via a 16-bit differential SCSI-II interface. At the back end of the controller, five (vertical) 8-bit SCSI-I ribbon cables attached to the five disk strings of seven (horizontal) RAID arrays. Each string of disks was powered by a PC power supply modified to incorporate a load resistor encapsulated on a heatsink to guarantee PSU startup under all conditions. Initially 35 Fujitsu 330MB SCSI-1 disks were mounted in standard disk caddies, but over time the disk capacities were increased towards 100GB, and some of the arrays were modified with SCSI-to-IDE adapters to allow large IDE disks to be utilised.

The disk arrays had SCSI IDs 0-6, while the controller ID was 7. The NCR controller was 68000-based, fairly advanced and very flexible, with downloadable firmware that it stored in a dedicated partition on array 0. It supported all the usual RAID patterns, but was specifically acquired for its RAID-3 functionality, which is not commonly supported. For RAID-3 writes, the parity information was calculated on-the-fly in hardware from the data, so updates were pure writes rather than read-modify-writes, efficient for streaming of video data to disk.

Accession Index	Object with Identification
TCD-SCSS-T.20121208.083.01	35-disk RAID-3 Subsystem Chassis.
TCD-SCSS-T.20121208.083.02	NCR ADP-92 RAID Controller in PC case. S/N:
TCD-SCSS-T.20121208.083.03	35 x SCSI-1 Disk Caddies. S/N:
TCD-SCSS-T.20121208.083.04	15-Fan Cooling Panel. S/N:
TCD-SCSS-T.20121208.083.05	5 x Compact PC Power Supply. S/N:

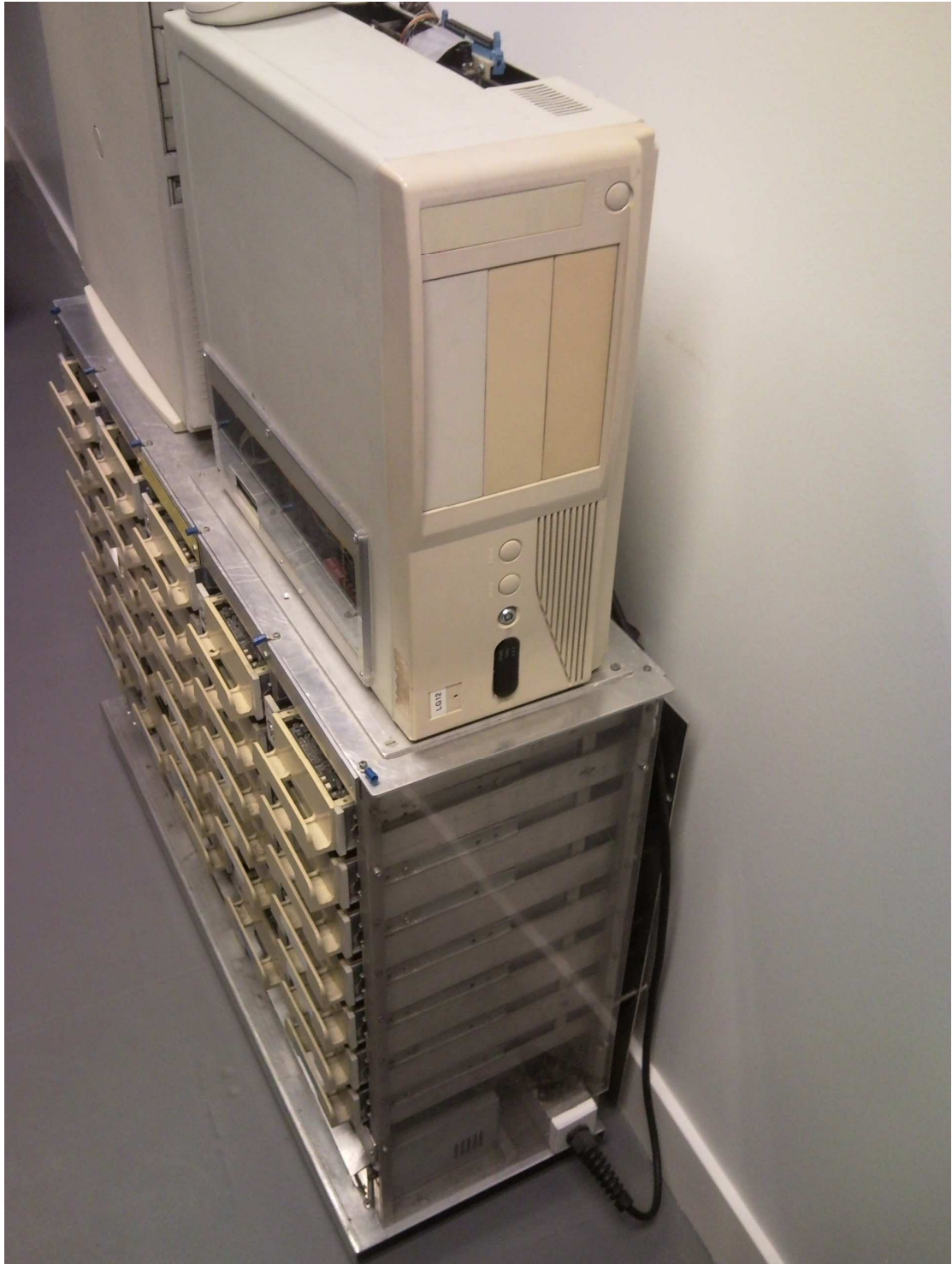


Figure 1: RAID-3 Subsystem front three-quarter view

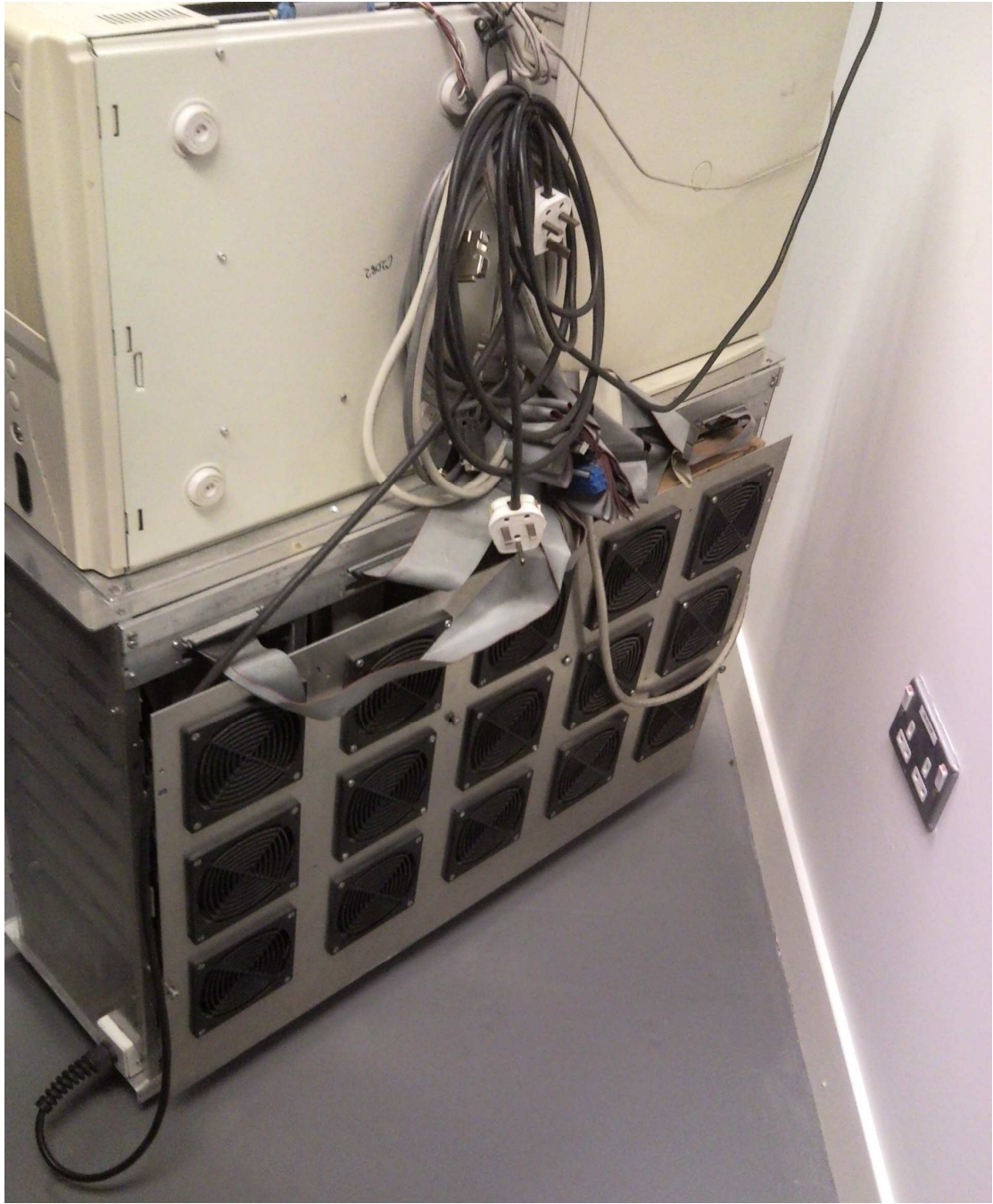


Figure 2: RAID-3 Subsystem rear three-quarter view

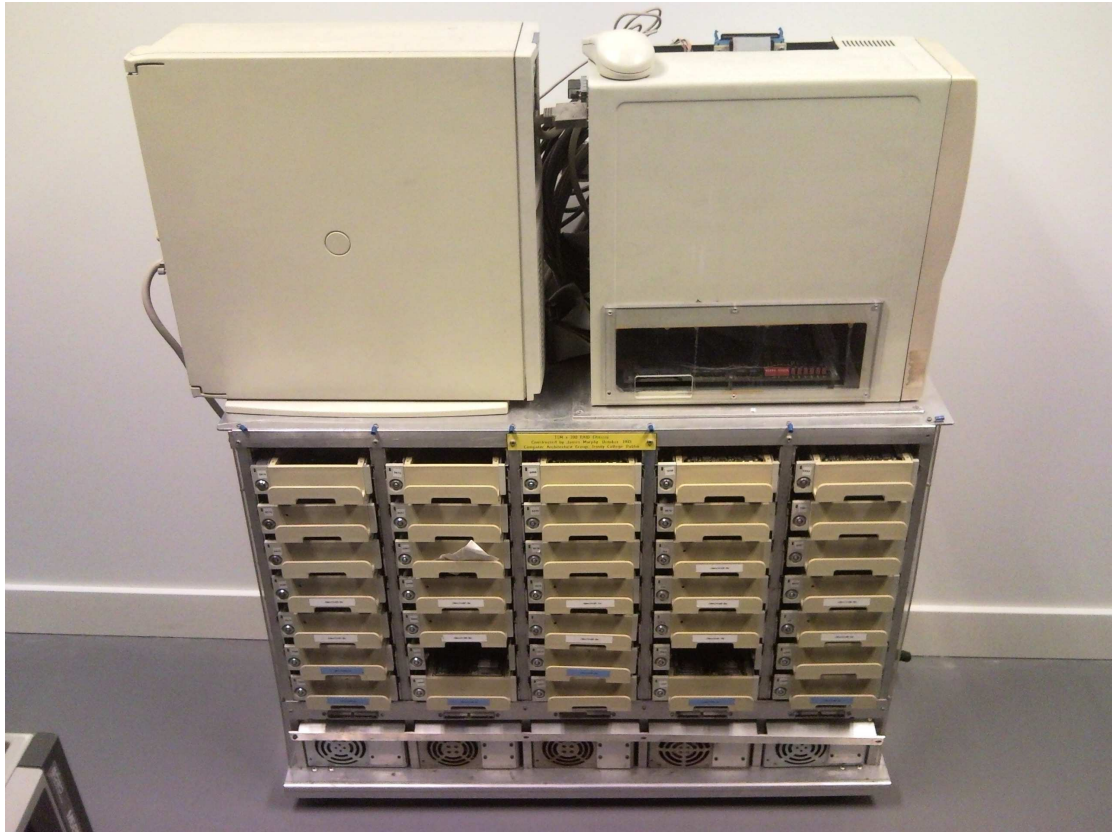


Figure 3: RAID-3 Subsystem front view

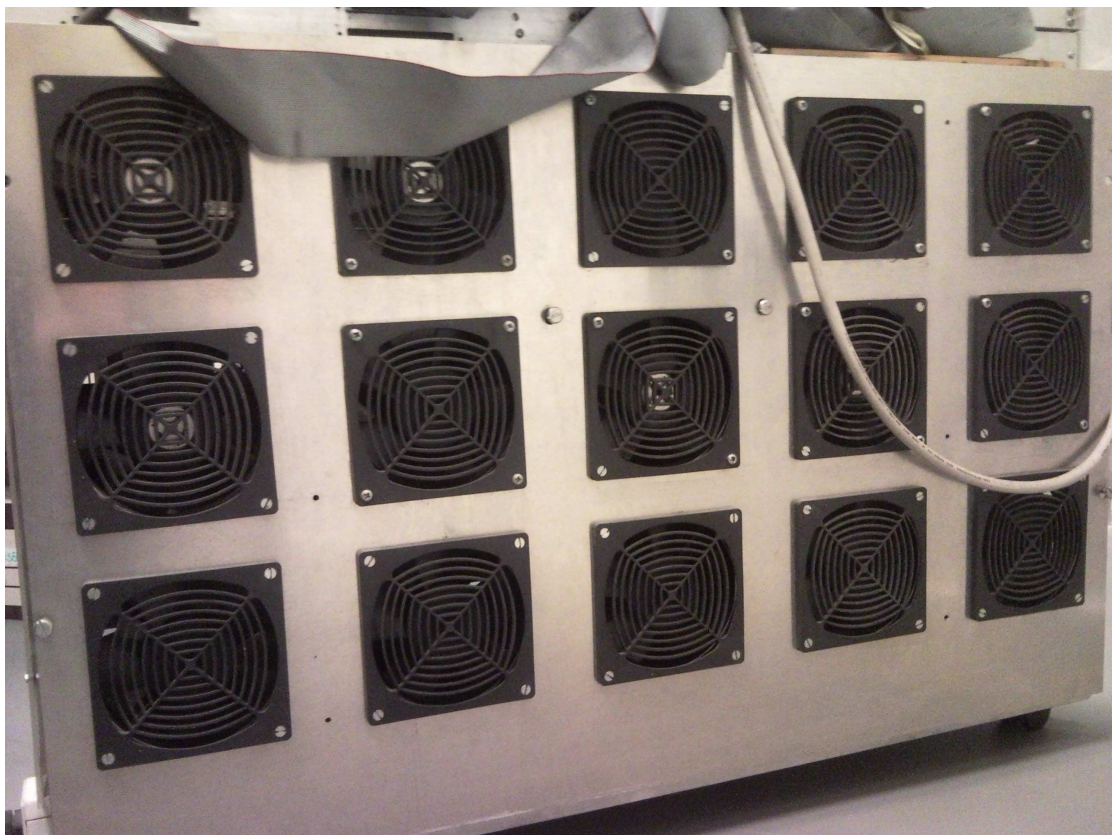


Figure 4: RAID-3 Subsystem cooling

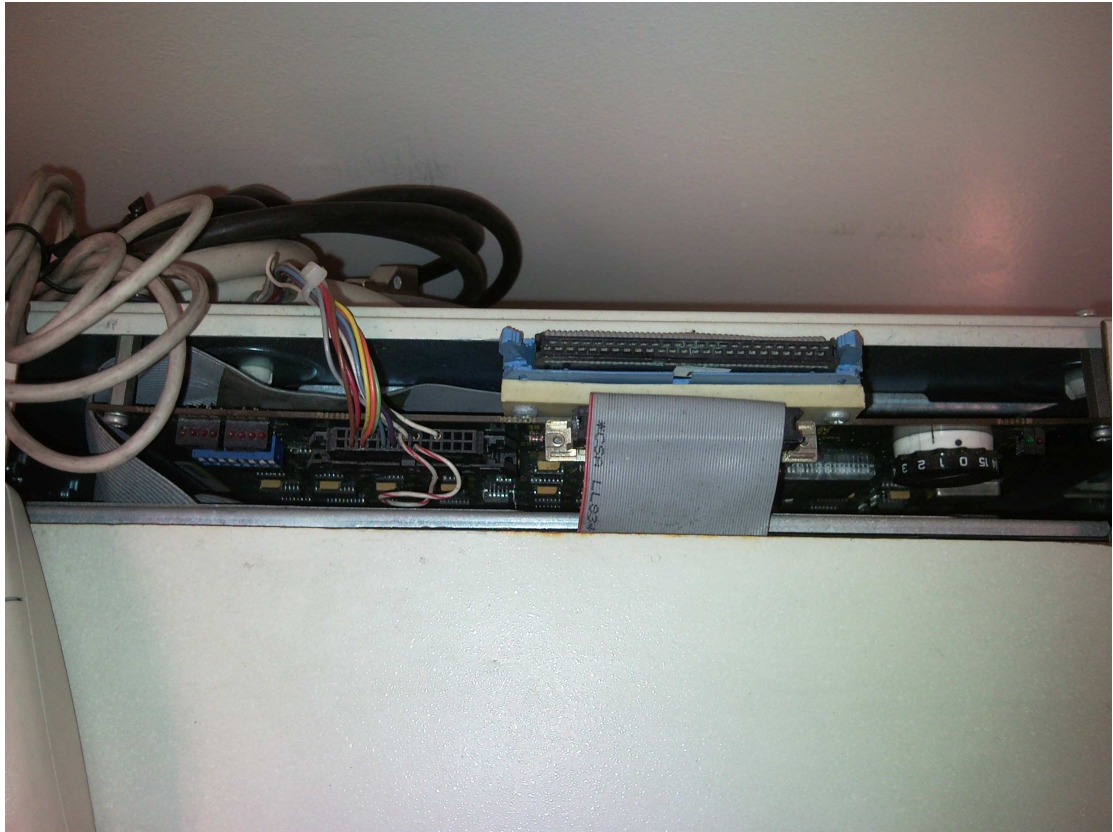


Figure 5: RAID-3 Subsystem host connector

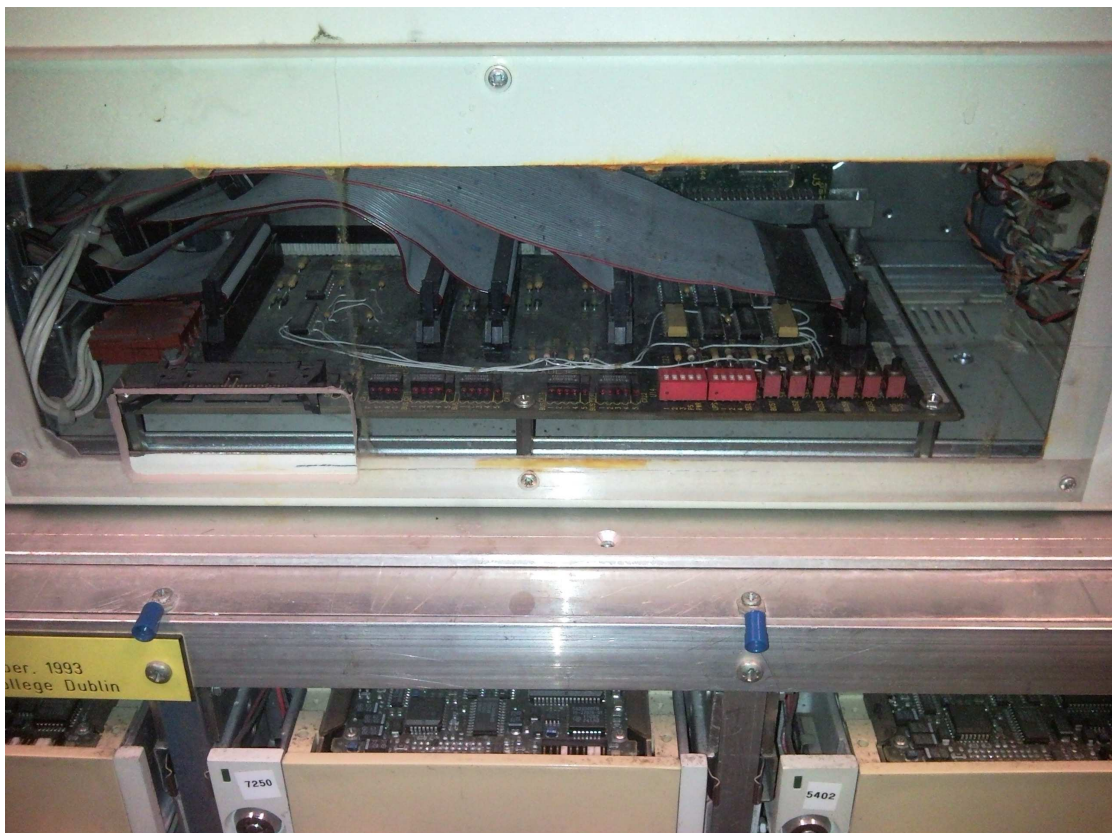


Figure 6: RAID-3 Subsystem NCR RAID controller's disk interface module