To: David Williams, Tony Osborne

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Subject: Cost Neutral Upgrade for VXCERN ?

An attempt has been made to be as accurate as possible. However, obtaining correct prices from DEC is hard and time-consuming. In addition, we have had to make several assumptions about prices in 1994 and beyond:

- There is no maintenance charge for the first year after purchase.
- Maintenance of the FDDI interfaces is included in the maintenance cost of the servers.
- No maintenance is paid on the SCSI disks; they are reliable, and several spares would be kept. In any case, SCSI disks bought ex. DEC are covered by a 5 year guarantee.
- We assume that each server would need Fortran, C and one other language license, as well as an unlimited VMS user license.
- We assume that each server would require licenses for system software such as DECscheduler, DFS, Multinet etc..
- Cost of SCSI disk will be around 2000 SFR per GByte in 1994.
- Maintenance costs for the VAX 9000 and peripherals will be the same in 1994 as this year, but after that will increase by 20%. By 1996 this is probably a very conservative estimate, as by then the hardware will be very old, and probably unique in Europe!
- We do not include maintenance on TA90 drives, since we expect that network tape access will remove the need for local drives by 1994, and that the TA90s can then be taken off maintenance.

Table 1: Costs per year to Upgrade, spread from 1994 until 1996

Item	1994	1995	1996	Total for Period
Cost of 6 workstation servers	174000	0	0	174000
Maintenance on 6 workstation servers	0	21000	21000	42000
Cost of 70 GBytes SCSI disk	140000	0	0	140000
Maintenance on SCSI disks	0	0	0	0
Cost of FDDI boards for 6 stations	29000	0	0	29000
Cost of DECconcentrator 500, 6 ports	22000	0	0	22000
Maintenance of DECconcentrator 500	0	2000	2000	4000
Unlimited VMS licenses for 6 servers	116000	0	0	116000
Language licenses for 6 servers	18000	0	0	18000
System software licenses (DFS etc.)	50000	0	0	50000
Software maintenance on the above	0	6000	6000	12000
Totals	549000	29000	29000	607000

(It is arguable whether maintenance is necessary on reliable items like workstation servers. However, we would feel much more comfortable having it.)

Table 2: Costs per year to retain VAX 9000 and peripherals

Item	1994	1995	1996	Total for Period
VAX 9000 maintenance	120000	144000	144000	408000
HSC Disk controller maintenance	82500	99000	99000	280500
RA Series disks maintenance	41000	49200	49200	139400
Totals	243500	292200	292200	827900

Q.E.D. ? (Quite Enough Done?)