CN/DPG/92/MIN/7

THE CN DIVISIONAL PLANNING GROUP

Minutes of the Meeting held on 14th. September 1992

PRESENT: R.Brun, J.J.Bunn(Secretary), B.Carpenter, F.Fluckiger, F.Gagliardi, D.Jacobs, S.Jarp, C.M.S.Jones, A.Osborne, H.R.Renshall, L.Robertson, A.G.Silverman, D.J.Underhill, D.O.Williams(Chairman).

- *MINUTES OF LAST MEETING (CN/DPG/92/MIN/6), AND MATTERS ARISING*

The Minutes were accepted.

- *CHAIRMAN'S REPORT*

DOW presented several items:

1. In some circumstances, the CERN–Israel agreement leads to direct financial benefits for CERN when orders are placed in Israel. Groups buying products that can be supplied by Israeli industry are encouraged to explore the possibilities.
2. The Advisory Board on Computing (ABC) had met; A.Osborne would make a regular report from it at future DPGs.
3. He said that the next DPG Agenda should include a report on CHEOPS. The meeting after that should include a presentation of PARC.
4. He had not yet received the signed Cray extension document.
5. The MPP Steering Group and CCC had met the previous week. A couple of action items had arisen: the Steering Group should make a draft joint project proposal document for distribution to the industry, and they should also propose areas of work with experiments at CERN.

- *CLIO*

C.M.S.Jones presented the current status of investigations into CLIO, standing for "CLustered IO"; a software suite of interface subroutines and servers from IBM in Stavanger, Norway, intended to provide networked access to storage devices on an IBM, via a dedicated RS6000 workstation. The connection possibilities between the RS6000 and the mainframe included the parallel Block Multiplexor channel and the fibre ESCON channel. CLIO had been written for the MVS operating system, and would thus require to be ported to VM/CMS before it could be used at CERN. A visit to Stavanger to discuss and test CLIO had shown that the basic components of the VM port had been completed, and that data rates up to 4.1 MBytes/sec on the 4.5 MBytes/sec channel could be achieved on memory to memory transfers between our ES9000 and the RS6000. On the ES9000, the CPU cost for 200 MBytes file transfers amounted to around 0.6 seconds. CMSJ pointed out that applications like ZFTP could be built on top of the CLIO software. But CERN would need to develop a VM application interface itself, as IBM Stavanger were not doing this. To procede further with CLIO would require that CERN bought a starter kit of an RS6000 and PCA.

B.Segal made an architectural observation, that since the end user of CLIO would not normally be on FDDI, then the RS6000 was effectively an IP Gateway, and as such behaving as an IP datagram forwarder. This functionality could be provided alternatively if an AIX IP driver was available for the ESCON channel.

CMSJ agreed in principle, but said that in practice it was not possible to programme to the channel, only to issue channel command words. Only IBM themselves could micro–code the channel itself, and this was on a different time–scale.

(J.Bunn asked incongruously about the requirement for FDDI on the VAX 9000. He wondered whether, if the VXCERN users were to be using CLIO to stage tapes on the IBM, that the data rates might be prohibitive on Ethernet. B.Carpenter replied that a solution depended on the success of GIGAswitch.)

R.Brun commented that it would be wrong to place too much emphasis on the importance of ZFTP. Large files transfer was becoming decreasingly necessary with the NFS/AFS direct access possibilities. In any case, ntuples files were now being made machine independent, so that stan–dard ftp binary mode transfers could as well be used as ZFTP.

L.M.Robertson remarked that he liked the idea of mapping the IBM tape drives to the workstation user via CLIO, but was less enthusiastic about disk mapping. This tended to be volatile, and hard to guarantee. It also made the implementation a lot harder.

There followed a discussion on the functionality of Ultranet, and on the maximum possible data rates achievable when dedicating a whole ES9000 CPU to CLIO transfers.

In conclusion, it was said that the hardware performance offered by CLIO was clearly outstanding, but that we would have procede carefully before investing manpower in CLIO software develop–ment.

- *KERBEROS PILOT PROJECT (KPP)*

Ben Segal presented the current status and plans of the Kerberos Pilot Project (KPP). This had begun in June 1992 with the clear mandates of a) finding a means to avoid passwords crossing the network in clear, and b) offering a single login ticket per day to users of the central services.

The Kerberos authentication scheme had been identified as the most promising. However, after some investigation it had been found that few sites were actively using Kerberos! One site that had, was Imperial College, London, who had been using it for over eighteen months, and they had offered their advice. Kerberos had subsequently been installed on Ultrix and HP–UX worksta–tions; AIX would follow shortly. There were problems with obtaining the DES algorithms for encryption, although those for authentication were available. This installation of Kerberos, whilst certainly not being a "production" set–up, was gaining the KPP project valuable experience.

Kerberos with AFS was also being evaluated. There were some compatibility problems between the TransARC and MIT versions. BS said that compatibility was usually at the level of around 90% between vendors.

In conclusion, BS said that Kerberos was not available in production quality code, and that the project was far away from satisfying either of its two goals. He was asked whether DCE would include Kerberos and AFS: it would in fact include "authentication services", which were not quite the same thing! "Kerberized" utilities might well have to be re–hashed with the DCE toolkit, given the likelihood of different interfaces. Finally, he said that he expected widespread Kerberos at CERN if and when DCE became a major component of the computing environment.

B.Carpenter mentioned RFCs for privacy enhanced mail, which had to somehow pass through mail gateways that did not "understand" them. Without privacy enhancement, there was a possibility that anyone could read private mail. CMSJ commented that he would be glad of someone reading his mail.

- *WORKSTATION BACKUP REVISITED*

  A.Silverman re–visited this topic after having firmed up some of the conclusions. Copies of his transparencies are attached. In summary, Omniback was being used by the main Apollo and HP workstation groups, DECnsr was on test on DXCERN, and WDSF was in full production. A problem with WDSF was that it was a central solution to a distributed problem; if the load calculations were significantly inaccurate then the network might be overstretched and the system effectiveness severely compromised.

  AGS was encouraged to continue the good work by including the backup of the Novell servers, and by offering the scheme to Unix workstation users outside the division.

- *ANY OTHER BUSINESS*

  None.

- *NEXT MEETING*

  The next meeting will be on October 19th., at the usual time and place.

Table 1: Action Items

Name	Entry Date	Target Date	Task
D.Williams	April 1991	Summer 1991	Produce cover note for Costs paper
F.Fluckiger	November 1991	1992	Give Computer Colloquium on Multimedia
R.Brun	January 1992	1992	Task Force on Computing Models

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        CERN Kerberos Pilot Project (KPP)
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                Ben Segal / CN-SW


- The CERN KPP exists since June '92.

- Members are:

  Julian Bunn, Lionel Cons, Manuel Guijarro,
  David  Lord,  Alan  Lovell, Ignacio  Reguero,
  Judy Richards, Ben Segal, Alan Silverman,
  Reiner Tobbicke, Dietrich Wiegandt,

- Motivations for the study:

  1.  Stop passwords in clear crossing
      our networks (and others!).

  2.  Offer single yet secure logon
      per day to all systems/services.

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        CERN Kerberos Pilot Project (KPP)
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                Ben Segal / CN-SW



- Agreed TOP-PRIORITY aims at the start were:

  1.  Our pilot should  be  "MIT  V4"  based,
      with  probably  an  Ultrix machine as a
      server.

  2.  We should definitely obtain and install
      the  MIT  code  for  V4  and port it to
      SunOS as a basic  learning  experience.
      We  should  feel  free  to ask Imperial
      College for consulting help as this  is
      their area of expertise.

  3.  We should also do the V4 port to  HP-UX
      as a SysV-based example.

- Agreed LOWER-PRIORITY aims were:
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4. Port V4 to AIX on the RS6000 (in conjunction with an AFS study).

5. Test TGV's Multinet version of Kerberos for VMS.

6. Track V5 development, in conjunction with OSF-DCE development. (more recently we have included Transarc/AFS here).

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        CERN Kerberos Pilot Project (KPP)
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                Ben Segal / CN-SW
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- Good progress has been made with these aims. We have *some* V4 Kerberos utilities running on Ultrix, HP-UX, and SunOS systems, with RS6000 close. The TGT server currently runs on a vanilla Ultrix 4.2 system (dxsoft).

- Export restrictions on DES are currently blocking #5 (Multinet), and confusing the prospects for OSF-DCE delivery.

- AFS development is also confusing. Do we want AFS more/less than Kerberos?

- Strong pressures to use the unmodified manufacturers' code, but this is not consistent with the market offerings which are not compatible...

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        CERN Kerberos Pilot Project (KPP)
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                Ben Segal / CN-SW


                  CONCLUSIONS
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- We have been surprised by the small actual penetration of Kerberos into general use. Probably due to its "university" origin, (but this didn't stop X-windows...) A chicken-and-egg situation.

- We consider ourselves to be far away from achieving our 2 "motivations", especially the second one. The first one could be attainable for *some* important services on *some* important systems in 1-2 years. But unlikely that "standards" will give us this for free in that time frame: will need CERN local mods and effort.