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Attached are the FINAL DRAFT Minutes of the CCIRN meeting in Paris.
I have included all comments received so far (Steve Goldstein,
Brian Carpenter and Barry Leiner). All of them being small clarifications.
In addition I corrected a major typo: COSINE is not due to disappear as
of jan 1992, but as of jan 1993.

The formal approval of these minutes will take place at the Sante-Fe
meeting next november. In the mean time distribution of this draft to a
wider audience is permitted, provided the draft status is clearly indicated.

Kind regards
Kees

FINAL DRAFT MINUTES
CCIRN MEETING
HOTEL PULLMAN SAINT-JACQUES
PARIS, MAY 21-22, 1991

A. LIST OF ATTENDEES

Attendance to CCIRN Meeting, Day 1, May 21

Shoichiro Asano	NACISIS	JAP	asano@nacsis.ac.jp
Rob Blokzijl	RIPE/HEPnet	EUR	k13@nikhef.nl
Bill Bostwick	FNC	USA	bostwick@darpa.mil
Brian Carpenter	CERN	EUR	brian@prian.cern.ch
Bernard Delcourt	RARE	EUR	raresec@nikhef.nl
Robin Erskine	AARnet	AUS	robin.erskine@anu.edu.au
Steve Goldstein	NSF	USA	goldstein@nsf.gov

Christopher Harvey (*)	ESA	EUR	harvey@frmeu51.bitnet
Peter Kirstein	ICB	EUR	kirstein@cs.ucl.ac.uk
James Leighton	DoE/ESNET	USA	jfl@nevsc.gou
Barry Leiner	IAB	USA	bleiner@ads.com
Fernando Liello	RARE	EUR	liello@elettra-ts.infn.it
David Lord (*)	CERN	EUR	pfkdn@crnvma.cern.ch
Dan Masys	NIH	USA	masys@lhcnlm.nih.gov
Paul Mockapetris	DARPA	USA	pvm@darpa.mil
Kees Neggers	RARE	EUR	neggers@surfnet.nl
Torben Nielsen	PACCOM	PAC	torben@hawaii.edu
Jaime Perez Vidal	CEC	EUR	jper@dgl3.cec.be
Glenn Ricart	FARNET	USA	glenn_ricart@umail.umd.edu
Sven Tafvelin	NORDUNET	EUR	tafvelin@ce.chalmers.se
Vincent Taylor	DRE	CDN	vktaylor@ncs.dnd.ca

(*) present in afternoon session only.

Attendance to CCIRN-IEPG Meeting, Day 2, May 22

All attendees of CCIRN meeting Day 1 except MM Harvey and Lord

All attendees of IEPG meeting Day 1 (refer to IEPG Meeting Minutes)

B. MEETING AGENDA

1. Welcome and Agenda
2. Minutes CCIRN Santa Fe, Oct '90
3. Minutes Video-CCIRN, Jan '91
4. Regional Update Reports
5. Global Networking Coordination Structure
 - o Identification of existing bodies/activities
 - o Review of current situation
 - * Chair/organization of IEPG
 - * Continental links : backup, upgrading
6. Changing Global Realities
 - o Report on ongoing activities
 - o Review of current situation
 - o Connectivity and planning
 - * Responsibility for filtering
7. Global Internet
 - o Report on ongoing activities
 - o Internationalization of IAB & IETF
 - o Management of network # assignments
8. CERT
 - o Report on ongoing activities

- o Access control and network integrity
- * Encryption issues

9. OSI

- * Development of global standards
- o Update on policies and ongoing activities
- o Interworking and transition strategies
- o Identification of joint work items

MEETING AGENDA (Cont'd)

10. CCIRN Workplan

Status of ongoing & planned activities, a.o. :

- o Directory services
- o File services
- o National character sets

11. IEPG

- o Terms of reference
- o Organization
- o Status of Santa Fe work items
- o Workplan update

12. Intercontinental Links

- o Update on existing & planned links
- o Identification of problem areas
- o Link policy and planning ; link backup

13. Next Meeting(s)

14. Any Other Business

15. Closure

C. PROCEEDINGS DAY 1

1. WELCOME and AGENDA

The meeting is chaired by Kees Neggers.
The minutes will be produced by Bernard Delcourt.

The Chairman welcomes all attendees, especially the newcomers and the representatives from Australia and Japan.

The draft agenda is scanned and approved as shown above, with some additional items as flagged.

2. MINUTES CCIRN SANTA FE, OCT '90

The draft minutes are approved subject to one modification in Section 4 (below work items list), where "COSINE" has to be replaced by "RARE/COSINE".

It is agreed that the approval of provisional minutes will continue to be done during meetings (and not during video-conferences as suggested).

The Chairman thanks Guy Almes for having produced the Santa Fe minutes.

3. MINUTES VIDEO-CCIRN, JAN '91

The draft minutes are approved subject to a clarification relative to the conference time in Section 1 : substitute "9:00 am Eastern Standard Time" to "9:00 am" and add "14:00 pm, UK time" to the text.

The Chairman thanks Lynn Behnke for having written the Video-CCIRN minutes.

It is observed that productive interaction during video conferences is difficult when too many attendees are present at any one end. It is felt that the optimal number of attendees for efficient interaction is of about 6 (active) participants at each side.

4. REGIONAL UPDATE REPORTS

4.a. European Update

Kees Neggers highlights the following European developments :

- o EEPG Report and RARE's Task Force on Operational Unit : The EEPG has issued its final report (dated May 2, 1991) on the pan-European backbone. The report has been accepted by RARE's CoA at their last meeting in Blois (May 16-17, 1991), and EEPG has been discharged of its assignment. The principle of establishing an 'operational unit' capable of providing backbone facilities and other pan-European services is now accepted. RARE's CoA has set up a Task Force with the mandate of investigating how to set up and run one such operational unit capable of providing all required network services ; the Task Force will look into all aspects (financial, operational, organizational) of the operational unit.
- o The COA accepted a proposal from RIPE to set up a RIPE Networking Coordination Centre (RIPE NCC). The current view is that RIPE 'NOC' services will be provided in the shortterm by a stand-alone 'RIPE NCC' unit, under responsibility of RARE and that integration of the services into the proposed operational unit might take place at a later stage.

AP-1 Kees Neggers to ensure that an ASCII/POSTSCRIPT version of the EEPG report is made available for access by E-mail.

- o ATM Pilot Project : The EEPG has recommended in its report that an ATM Pilot Project be launched. RARE's CoA has supported this recommendation and RARE will initiate preparatory activities in this area.
- o ECFRN Meeting, Paris : An 'ECFRN' (European Consultative Forum on Research Networking) meeting was held in Paris (Mar 8) on the

initiative of Peter Tindemans (Dutch Ministry of Education & Science). The forum, attended by some 75 experts, concluded on the need for long-term organizational and funding structures for European research networking. The CEC accepted to coordinate ECFRN follow-up actions. One of the key objectives is to establish a pan-European policy body which in the long-term, and in some sense yet to be determined, may replace the present COSINE Policy Group (due to disappear as of Jan 1993). Jaime Perez Vidal confirms that the CEC intends to proceed with the follow-up actions.

- o CLNS Profile : RARE WG4 has produced a protocol profile for ISO connectionless (CLNS) network service, now input to CoA members for review and comments. Once finalized and approved, this profile will be forwarded to COSINE for addition to the COSINE specifications 'blue book'.
- o IEPG : RARE's CoA supports the view that Europe/RARE should go on supporting and participating in IEPG activities. It is understood that ex-EEPG members and additional experts (so as to widen the European delegation) will be involved in IEPG work. Europe has still to identify its chairman and appoint its representatives.

Jaime Perez-Vidal reports on the following :

- o COSINE : Tenderers for the IXI Production Phase are now short-listed ; the next stage of contractual negotiations is being initiated. An extension of the Pilot service contract is being finalized to ensure continuity of the service till the Production service takes over. Other COSINE call for tenders have now been issued for VT (P9.2), FTAM interworking (P6.1) and International User Group support (P3).
- o Y-NET : TELEO, from Italy, will manage the Project.

Brian Carpenter reports on the following :

- o EASInet : technical stability is now established despite minor topology issues. Funding of some links by IBM will come to an end soon, as planned ; EASInet was not intended as a permanent, long-term network but rather as an interim structure that should dissolve in a pan-European infrastructure once it is available.

AP-2 Brian Carpenter to ensure that EASInet meeting minutes are made available to CCIRN via the CCIRN E-mailer.

4.b. USA Update

Bill Bostwick reports on the following activities on the US scene :

- o HPCC Program : US federal HPCC (High Performance Computer Communications) initiative budget is going through senate authorization hearings for approval. Responses have been favourable so far, but process is not yet complete. Next phase should consist of appropriations.
- o NREN Management Structure : The establishment of a new management structure for coordination of research and education networks at federal level is progressing. The FNC (Federal Networking Council)

is now setup (representatives from federal agencies), and discussions proceed through the FNC Advisory Committee on the establishment of the NNC, which will comprise representatives of a wider community (a.o. users and vendors).

Steve Goldstein reports on the following items :

- o NSF Intercontinental Links : NSF has re-engineered the NSFNET-NORDUnet link and the NSFNET-INRIA link. Both are now homed to the NSFNET NSS (node) at Cornell. Both are now operating at 128 kbps. The NORDUnet link was, not unexpectedly, saturated from the very first day it was turned on, and an upgrade in link capacity to 256 kbps is being planned.
- o Fat Pipes : There are a number of problems on the UK-US fat pipe, which demand attention and are being fixed. As these problems are of general interest (e.g. routers), solutions will be published.

Note : it is observed that several types of problems keep occurring on digital lines which involve not only technical but organizational aspects. Organizationally, there are complications linked to the fact that several organizations may share carrier responsibility on a single link (who takes the responsibility ? which is the recommended escalation procedure ?). Technically, there are difficulties in identifying the layer where the problem occurs. No satisfactory solution has been found to date to tackle these two types of issues.

- o Intercontinental Traffic Statistics : MERIT will publish a report showing US-overseas traffic statistics for the NSFNET backbone, based on datacollection at NSFNET switches. Data show high-volume traffic with Canada, and more surprisingly with Australia, Germany, Sweden and the UK. Initial data indicate that the greatest traffic exchanges are with CA, AU, DE, SE, NL, IL, FI, UK, MX, CH, JP, FR and IT, in that order. However, the collection mechanisms are subject to undercounting at congested switches, and will be refined before the monthly counts will be reported publicly.

4.c. Japan Update

Shoichiro Asano reports as follows : The Japanese Ministry of Education operates a nation-wide packet switched data network. An Internet backbone of 512 Kbps capacity, linking all reserach institutions in Japan is being planned. Several organizations are negotiating to achieve backbone integration. A coordination committee (JCRN), consisting of representatives from these organizations, is being set up which will act as a forum to discuss national R&D networking policy.

4.d. Canada Update

Vince Taylor reports that an initiative has been launched to replace the T1 national backbone by a T3 backbone. CA*net should integrate smoothly into IStCnet if current negotiations end up in an agreement, which is probable.

4.e. Australia Update

Robin Erskine reports that the Australian research network AARNET linking universities and research institutions, in particular CSIRO establishments, generally operates at 48 Kbps ; there are however 2 Mbps links between Sydney, Melbourne and Canberra, and plans to extend those to Brisbane/Queensland and Adelaide/South Australia. Affiliate organizations (e.g. Defence establishments e.g. DSTO) are being brought online progressively. Intercontinental link to US is via Melbourne. Low capacity links are being upgraded. There is no stated policy on the carrying of encrypted data on the network.

4.f. Internet Activity Board Update

Barry Leiner reports and comments on the following :

- o As witnessed by the Blois conference, CCIRN is being successful in promoting the acceptance of a global, multi-protocol Internet in which IAB is to play a global coordination role. CCIRN's position as the body which globally coordinates intercontinental networking is now strong.
- o Commercial Internet Exchange : IAB noted the emergence of 'CIX' on the initiative of three Internet service providers. The CIX move is seen as positive in that it should lead, in the short term, to the availability of commercially competitive Internet services ('Internet plugs') ; however, questions will need to be addressed regarding, amongst others, the use of public-funded research networks for the transmission of commercial traffic which brings revenue to commercial organizations.
- o Global Standards : The IAB is concerned on the development process of global standards, and specifically on the implementation of such standards restricted by local regulations (e.g. implementation of Internet protocol security option constrained by DoD). IAB tends to favour global standards and to consider local implementation as 'tailoring'.
- o IP#s Assignment Control : IAB may have to act as the (interim) 'root authority' to manage IP address space and coordinate how IP numbers are allocated to decentralized registration authorities.
- o The IAB is pursuing its analysis on how to proceed with its internationalization and that of IETF.
- o Technology export issues are also being debated within the IAB.

4.g. Pacific Update

Torben Nielsen reports that Korea is building one national backbone. Honk Kong is negotiating the establishment of a connection to mainland China. A satellite-based packet radio network is being planned which will cover a significant part of Asia and the Pacific rim.

4.h. ICB Update

Nothing specific to report (Peter Kirstein).

4.i. South American Update

The Chairman reports that a formal R&D networking organization 'SIRIAC' has been founded comprising representatives from 10 south-american countries.

Editor's note : SIRIAC ('Sistema Integrado de Recursos Informaticos Academicos y Cientificos") is an open association formally founded in March '91 by national R&D networking organizations, presently comprising representatives from Argentina, Brasil, Chile, Columbia, Costa Rica, Mexico, Puerto Rico, Peru, Uruguay and Venezuela.

5. GLOBAL NETWORKING COORDINATION STRUCTURE

AP-3 Bill Bostwick to create a CCIRN/request mailer (CCIRN-request@lbl.gov) and to issue an index of key documents (e.g. ethics statement, terms of reference, etc...).

5.a. Identification of Existing Bodies/Activities

Bill Bostwick leads a general discussion on the bodies and organizations on the global R&D networking scene. The central roles of CCIRN and IEPG for global issues, respectively at policy and technical coordination levels, and that of IAB for coordinating Internet developments are clearly recognized.

5.b. Review of Current Situation

Emerging commercial organizations (e.g. CIX) need to be considered in the overall networking picture. It is pointed out that internationalization of IAB should avoid the pitfalls of 'regionalization' (as found in the standardization domain).

It is agreed that there are clear benefits in inviting experts from commercial organizations to participate in IEPG work ; however, the presence of such commercial bodies in CCIRN is considered not to be desirable at this point in time.

5.c. IEPG Chairman

It is decided that CCIRN will agree on/select 'off-line' IEPG's Chairman from name(s) proposed by IEPG members.

The Chairman wraps up the discussion recalling two major points : first, that CCIRN fully endorses IEPG and will take action in order to strengthen it ; second, that CCIRN perceives the internationalization of IAB as a positive factor towards global networking coordination, and that CCIRN consequently supports this initiative.

5.d. Continental Links Backup & Upgrading

The Chairman introduces the topic by suggesting that CCIRN request carrier organizations to publicize their policies regarding link backups and upgrades, so as to allow planning engineers to take

appropriate design measures. It is agreed that CCIRN's guidelines on intercontinental links should be modified in order to reflect link backup and upgrade requirements.

AP-4 Brian Carpenter to modify CCIRN Guidelines on Intercontinental Leased Lines to include a recommendation on backup/upgrade requirements.

6. CHANGING GLOBAL REALITIES

6.a. Review of Ongoing Activities

Fernando Liello reports on the 'pentagonal agreement' (IT,AT,YU,CS,HU) resulting from an Italian initiative aimed at providing balanced financial support to help Yugoslavia, Tchechoslovaquia and Hungary develop their internal network infrastructure. Following project approval in May '91, implementation will take 6-12 months. The idea may be extended to Poland, Rumania and Bulgaria at some later stage.

It is commented that France and Germany may soon launch similar programmes ; so may (or has) IBM in an EASInet-like initiative.

6.b. Review of Current Situation : Encryption

Bill Bostwick reports little progress regarding export regulations on encryption software (authentication) and on use of privacy-enhanced E-mail. Activities are ongoing in this area.

6.c. Connectivity and planning : Links to Eastern Europe

Bill Bostwick reports that the US would like to establish connectivity to Hungary, Poland, Yugoslavia and Tchechoslovaquia and would appreciate assistance from Europe in the realization. The situation with respect to connectivity from the USSR, Bulgaria and Rumania is not fully clarified to date (meaning no clearance for the moment). The ensuing discussion on COCOM's rules showed ambiguities in interpretation and lack of agreement on the bearing of these regulations.

AP-5 US representatives to initiate a clarification action on US connectivity rules and COCOM regulations.

Rob Blokzijl states RIPE's position on this matter as follows : RIPE shall, as a policy, accept full connectivity to all East European Countries (Europe will act as a backbone to help out its Eastern European partners) and give advance warning to the US on planned connections to these countries so as to allow protective measures; if justified on technical grounds, filtering out of Eastern traffic outgoing onto transatlantic links will be possible.

6.d. Responsibility for Filtering

Kees Neggers clarifies the position on filtering. Europe is willing

to assist the US in establishing connectivity to anywhere in Eastern Europe, however it will not take responsibility for filtering, as network protection rests with the receiving end sites. Cooperation on filtering on technical grounds remains possible, for instance to help avoid overloading of the transatlantic links.

From a technical point of view, it is pointed out that address filtering may have adverse effects on routing.

AP-6 IEPG to address the problem of 'adverse filtering' and act as a focal point to coordinate work in this area.

7. GLOBAL INTERNET

7.a. Ongoing activities

See Section 4.f. on 'IAB Update'.

7.b. Internationalization of IAB/IETF

Refer to Section 5 on 'Global Networking Organization Structure'.

7.c. Management of Network # Assignments

IAB considers that RIPE will be the coordinating body for Europe in this area. The Chairman recalls that RARE's CoA, in their Berlin meeting, had already supported this view. IAB will be identifying the naming authorities (local registers) at the global level.

There is no established organization managing multi-protocol address spaces on a global level. It is agreed that CCIRN, as a coordinating body, cannot play an operational role in this area, so that alternative solutions will need to be considered.

8. CERT

8.a. Report on ongoing activities

Chris Harvey summarizes his Blois conference paper on CERT, which prompts a discussion on the topic. The following points are noted.

DARPA and DoE support ongoing CERT activities ; Carnegie Mellon operates a major CERT on behalf of DARPA net. It was estimated that in excess of 10 full-time-equivalent staff are involved in CERT activities in the USA.

Euro-CCIRN and RARE's CoA have recognized the importance of this work item ; RARE WG8 (Network Management) will develop a proposal for a European emergency response team.

SONET has set up contact lists to tackle network emergencies.

CCIRN believes that all regions of the world must organise properly coordinated multi-protocol CERTS. Information exchange between community-specific CERTs should also be enhanced. Chris Harvey accepts to act as a contact point for CERT-related questions.

8.b. Access Control and Network Integrity

It is agreed that newly connected networks should endorse the "ethics statement", or at least that connected networking organizations should be made aware that connectivity is extended to parties unwilling to sign such a statement.

8.c. Encryption Issues

As regards encryption, it is recognized that legal regulations are complex, vary from country to country and may even not exist at all or present gaps. No specific action is identified to progress the issue.

Editor's note : Agenda items not covered by CCIRN in Day 1 were addressed during the plenary CCIRN-IEPG meeting held on Day 2 and involving both CCIRN and IEPG attendees.

D. PROCEEDINGS DAY 2

Editor's note : Kees Neggers chaired the CCIRN-IEPG plenary meeting, which started by Phil Gross reporting on IEPG's activities (item not in Agenda). The agenda items were not necessary covered in the order shown.

REPORT OF THE IEPG CHAIRMAN

Phil Gross reports on the IEPG meeting held on Day 1. Major topics on their agenda included the IEPG terms of reference, workplan and coordination. Phil also reports on the progress made by IEPG on the Sante Fe work items.

-- IP Address Space Management

The current mechanism of allocating address blocks to decentralized sub-registers, although it does provide for timely allocation of IPN #'s, does not preserve address space and does not ensure accuracy and consistency of address information ; the situation needs to be improved, and several scenarios are possible, implying organizational issues (root register and sub-registers) and various degrees of constraints. A technical discussion develops on the IPN# allocation issue, centered on the interpretation and extensions to RFC 1174. It is agreed that registration guidelines are required to progress the issue. CCIRN recognizes IAB as the global authority in this matter.

AP-7 Phil Gross to draft a policy statement on the name and address

registration issue. Draft statement is to be reviewed by CCIRN and finalized by Barry Leiner.

AP-8 IEPG to produce RFC 1174 Implementation Guidelines.

-- Network Mapping

A data base on link topology has been developed by Bernard Stockmann. Further developments are expected.

-- Network Management Statistics and Measurements

An IETF Work Group ('operational statistics') is addressing this issue ; it is looking at an operational (server-client) model capable of presenting network management information in some 'standardized' way. The model should be useable not only over TCP/IP but over other protocols (e.g. DECnet).

-- Global DNS

Two problems exist : first, there is no coordinated approach to global DNS ; second, the supporting software is not 'good enough'. Some progress is reported on the development of better software.

-- Global Routing

Little progress is reported on this item.

-- Other Work Items

Other items on the Santa Fe list are not discussed systematically as Phil reports that the Santa Fe list needs to be replaced by a more comprehensive list and that IEPG has been working in this direction.

As technical discussions tend to develop, the meeting Chairman recalls that CCIRN's mandate is not to solve detailed technical issues but to focus on a proposed IEPG workplan where planned and prioritized activities are clearly identified. It is agreed that such a workplan can be produced rapidly by IEPG.

AP-9 IEPG to issue a draft workplan and submit it to CCIRN for review and comments. Once finalized, the workplan will be submitted to IAB and eventually issued as an RFC.

The Chairman thanks Phil Gross for his work as IEPG Chairman ; Bill Boswick indicates that Phil will continue to be involved in IEPG work in the future.

9. OSI

9.a. Development of Global Standards

IAB is currently concerned about the problems of local implementation

('tailoring') of global standards (see Section 4.f. above). A discussion follows on about the terminology used, as confusion may arise when one loosely calls 'standard' a document which is not an ISO (or a CEN/CENELEC or ANSI) output. The term 'Internet standard' is recommended to avoid misunderstandings.

9.b. Update on Policies and Ongoing Activities

Barry Leiner summarizes IAB's current views on network integration and interworking. Several networked communities exist, using various protocols ; IAB examines the question of how to allow multi-protocol networks to co-exist in the same Internet while ensuring maximal interworking at the user applications level. This poses the problem of integrating OSI into the Internet.

9.c. Interworking and Transition Strategies

The following points are reported relative to the introduction of OSI services :

- 1) HEPnet/NASA/ESA are involved in migrating from DECnet Ph4 to DECnet Phase 5 (supporting the CLNS protocol).
- 2) The RARE CLNS project is reported to be currently under way.
- 3) The major obstacle to the introduction of CLNP into NSFnet arises from addressing and naming (NORDUNET is currently keeping its connection closed to avoid potential interferences).
- 4) Global introduction of X.400 and X.500 is progressing.

A recent report from the Cosine Paradise project on X.500 gives the current status of the global X.500 situation. More coordination is required to include for instance Japan. It is commented that huge coordination problems lie ahead in the X.500 area.

Steve Goldstein reports that the US X.400 pilot project is well under way and benefits from the competent contribution of Alf Hansen.

- 5) Phil Gross reports on IETF OSI activities, phased into profiling, deployment and operations. Working Groups are active in the following areas : X.400 operations, X.500 deployment, ODA, OSI operations, Integrated CLNP/IP routing, NSAP formats.

It is recalled that RARE WG4 has issued a document on the NSAP topic ; also, standardization work is progressed in EWOS and NIST on this issue and duplication of work should be avoided.

9.d. Identification of Joint Work Items

Agenda point not explicitly covered.

10. CCIRN WORKPLAN

10.a. Directory Services

Peter Kirstein reports that COSINE work on X.500 proceeds in Europe in

coordination with RARE WG3. All regions are represented in the project. The COSINE X.500 report will be updated on a 6-month basis.

10.b. File Services

No significant progress to report. Rob Blokzijl indicates that RARE WG2's workplan will be reviewed to put more emphasis on File Services.

AP-10 Brian Carpenter to draft activity plan in the File Services area.

10.c. National Character Sets

Kees Neggers reports that Ms Borka Jerman-Blazic of the Jozef Stefan institute in Ljubljana will work on the character set issue as RARE's Technical Development Officer. RARE will be able to coordinate work in this area starting next autumn. Borka's E-mail address is "jerman-blazic@ijs.ac.mail.yu". Borka plans to issue a starting document in July.

EWOS has produced a report on the character set topic. The report may be obtained from the EWOS Secretariat, Brussels.

11. IEPG

11.a. Terms of Reference

The terms of reference of the IEPG (January 1991 version) are now stable and accepted as such by CCIRN.

11.b. Organization

Bill Boswick reports on the discussion held on Day 1 in the CCIRN meeting (refer to Section 5 above). The organizational model that seems most suitable consist of regional EPG's (Europe, North America, Pacific) working under the umbrella of the IEPG ; a chairperson is needed in each EPG.

The questions of chairing, staffing and funding these EPGs are discussed. It is pointed out that a core of 'real' resources is needed to really progress the work ; also, staff participating in EPGs need the full and concrete support of their own management who should allow for time allocation for EPG work.

The possibilities of appointing a permanent IEPG chairperson and allocate permanent secretarial support to IEPG are considered, but eventually discarded on the grounds that E-mail interactions are currently sufficient to support IEPG activities. It is observed that traffic levels on both the IEPG and on the CCIRN mailers were low since the Santa Fe meeting.

It is pointed out that IEPG has no means of ensuring that outstanding IEPG work items taken up by non-IEPG working groups are effectively discharged ; this is the case for the items handled by RARE WG's. It is agreed that Tim Dixon will ensure the liaison between IEPG and the RARE WGs.

- AP-11 CCIRN Chairmen to address the issue of secretarial support to IEPG (identification of resources).
- AP-12 CCIRN Chairmen to finalize the organization of IEPG by June 15.
- AP-13 Tim Dixon to report to IEPG on the areas where RARE is currently actively involved (in particular on work items addressed by WGs).

12. INTERCONTINENTAL LINKS

12.a Update on Existing and Planned Links

Bernard Stockmann presents 'NAIVENet' designed by IEPG as a network topology meeting 'optimal' (connectivity, availability, QoS, costs, management) criteria. A step-transition from the current situation to some ideal topology is recommended by IEPG ; this involves issues such as policy/funding support, time scales, scenarios and initial actions.

Geoff Huston points out that in the Pacific region, north/south connectivity problems are likely to develop to the point where solutions are going to be difficult to engineer. The first priority is to solve very sensitive political issues in this region.

A discussion followed on comparing actual versus ideal USA/EUR intercontinental and EUR continental link topologies. It is pointed out that the present topology of European trans-national links result from the specificity of the European scene. The problems of the European backbone are being tackled by European bodies and clearly lie outside the scope of CCIRN. It is agreed that continental backbones should be pictured as 'clouds' when dealing with intercontinental links design ; internal backbone designs should however account for intercontinental link backup requirements. The scopes of work of regional and of intercontinental engineering planning groups are therefore clearly different.

- AP-14 IEPG to develop a draft checklist for the planning and upgrading of intercontinental links.

It is reported that a new 64 kbps link has been proposed between Santiago/Chili and SURAnet/USA. It is agreed that coordination problems should be first tackled regionally (i.e. FEFG in the US) then reported to IEPG at international level.

- AP-15 Glenn Ricart to investigate potential problems on the Santiago/SURAnet link and to report findings to IEPG.

It is also reported that a capacity upgrade has been proposed for the US/UK fat pipe. The proposal is under consideration by both countries.

13. NEXT MEETINGS

The following dates and places are chosen for the next joint CCIRN/IEPG meeting : IEPG : 13 - 15 november 1991 ; CCIRN : 14 - 15 november 1991, in Santa Fe.

The spring 1992 CCIRN and IEPG meetings will be combined with the RARE Networking Conference in Innsbruck, Austria. Tentative dates are proposed, either May 6-8 or May 18-20.

14. ANY OTHER BUSINESS

- 1) The debate on IPN# registration is reopened, leading to action point AP-7.
- 2) Information diffusion from IEPG is reported to be insufficient and may need to be improved in the future (e.g. by regular progress reports). Members of non IEPG working groups may need to be added to the IEPG mailer. No definite action identified.

15. CLOSURE

The Chairman closes the meeting and thanks all participants for their motivated attendance and active contributions.