Asia/Pacific Coordinating Committee for Intercontinental Research Networking

Preliminary Meeting

[DRAFT] MINUTES

An exploratory meeting was scheduled at the University of Hawaii on Thursday 8 and Friday 9 August 1991 to discuss the potential for the setting up of an organisational structure for the coordination of research networking within the Asia Pacific Region.

The meeting was initiated through an invitation from Bill Bostwick, Co-Chair of the Coordinating Committee for Intercontinental Research Networking (CCIRN), to various networking agencies in the Asia Pacific region. The attendees had been nominated by these national agencies.

A draft agenda had been circulated earlier by Bill Bostwick. The major headings of the agenda were:

1 Introduction of Attendees
2 Background Briefing to Attendees
3 The Various National Networks in the Asia Pacific Region
4 Discussion - The Benefits of Coordination of Effort
5 Discussion on Potential Organisational Structures for Coordination of Effort
6 Discussion on Formation of the Asia Pacific
7 Issues for Future Asia Pacific Meetings
8 Conclusions and Future Meeting Schedule

The meeting opened at 9.30 am on Thursday 8 August.

1 Attendance

Those present at the meeting (with e-mail address, country and network affiliation) were:

Robin Erskine	Australia, AARNet	Robin.Erskine@anu.edu.au
Geoff Huston	Australia, AARNet	G.Huston@aarnet.edu.au
Peter Elford	Australia, AARNet	P.Elford@aarnet.edu.au
Neil James	New Zealand, Tuia	Neil@otago.ac.nz
Nevil Brownlee	New Zealand, Tuia	n.brownlee@aukuni.ac.nz
Mark Topping	New Zealand, Tuia	M.Topping@waikato.ac.nz
John Houlker	New Zealand, Tuia	J.houlker@waikato.ac.nz
John Hine	New Zealand, UNESCO	John.Hine@comp.vuw.ac.nz
Andy Linton	New Zealand, UNESCO	Andy.Linton@comp.vuw.ac.nz
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Jun Murai	Japan, WIDE	jun@wide.ad.jp
Hiroyuki Kusumoto	Japan, WIDE	kusumoto@wide.ad.jp
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John Clayton	Fiji, USP	J.Clayton@usp.ac.nz
Yanghee Choi	Korea, Bitnet	yhchoi@krsnucc1.bitnet
Hyun Je Park	Korea, KREOnet	hjpark@dino.media.co.kr
Byung Chun Kim	Korea, Kaist	bckim@daiduk.kaist.ac.kr
Bill Bostwick	USA, FNC	bostwick@darpa.mil
Dale Lumb	USA, NASA	lumb@orion.arc.nasa.gov
Milo Medin	USA, NASA	medin@nsipo.nasa.gov
Jim Hart	USA, NASA	hart@nsipo.nasa.gov
Torben Nielsen	USA, Paccom	Torben@hawaii.edu

2 Background Briefing to Attendees

2.1 CCIRN Briefing

Bill Bostwick provided an overview of the Background and History of the Coordinating Committee for Intercontinental Research Networking (CCIRN). The main topics covered were:

i) the terms of reference of the CCIRN (this document was previously circulated with the agenda papers),
ii) the CCIRN guidelines on intercontinental lease lines (previously circulated), along with the issues associated with conformance to these guidelines,
iii) the CCIRN statement of Acceptable Use,
iv) the CCIRN statement on Network Ethics, and
v) the formulation of the Intercontinental Engineering Planning Group (IEPG).

Bill Bostwick indicated that the general focus of the CCIRN had to date been on North American and European issues, and indicated that, in line with the continued expansion of the global research networks, that it was appropriate that the Asia Pacific area be included in the CCIRN activities.

2.2 IEPG Briefing

Geoff Huston (Chair of the IEPG and Technical Manager of the Australian Academic and Research Network (AARNet)), provided an overview of the work of the IEPG. The main topics covered were:

i) the role of the IEPG as an engineering agenda-setting group,
ii) the activites of the IEPG in addressing the aspects of supporting the global network,
iii) coordination and planning of networking links and intercontinental network interconnects, and
iv) the interaction between the IEPG and other engineering groups.

2.3 Asia & Pacific Links

Peter Elford (AARNet) drew a layout of the known Asia Pacific Intercontinental links. A table of these links is attached as an appendix to these minutes.

3 The Various National Networks in the Asia Pacific Region

A spokesperson spoke on behalf of each network, providing an overview of the network within their country and their international link(s) from their country. Some copies of the following documents were distributed:

i) NACSIS - National Centre for Science Information Systems - Japan,
ii) Overview of Networks - Korea, with an attachment showing an international link from China to Germany,
iii) JARING Project: An Introduction - Malaysia, and
iv) New Zealand's Academic and Research Networks - New Zealand

Australia The Australian network, AARNet, is owned and operated by the Universities. There is no government funding from outwith the education portfolio. The network connects all Universities and divisions of the Commonwealth Scientific and Research Organisation. There are a number of network connections to government departments and industrial and commercial enterprises, which subscribe as affiliate members of the network.

The 256K link to the USA is half circuit funded by AARNet and PACCOM. AARNet provides full funding for dialup connections to AARNet from Thailand and Papua New Guinea. The Antarctic Division funds a link into AARNet in Tasmania.

The funding from each University is by a subscription based on the operating budget of that University. With industrial and government users, the subscription is based on the service required (email or full IP connectivity) and the bandwidth of the connection.

Japan There are several networks in Japan with overseas connections

ICOT, a project initiated by MITI to investigate Fifth Generation Computer Systems, operates an IP network isolated to Japan only. The network has been running for 5 years and has only 2 more years to run. Although the half circuits are ICOT funded, US procurement is through PACCOM.

ISR, an Institute for Supercomputing Research owned by the Recruit company, operates an IP network. Although the international half circuits are ISR funded, US procurement is through PACCOM.

WIDE, a research consortium, with funds from industry and Universities operates and researches into widely interconnected distributed environments. The international circuit to the US is funded on a half circuit basis by WIDE and PACCOM.

TISN, a group of University and Research Institutes, charge their members a variable fee to operate their network. The international circuit to the US is funded on a half circuit basis by TISN and PACCOM.

NIFS is a mission specific link with no other routes. The international circuit to the US is funded on a half circuit basis by NIFS and PACCOM.

There is a dedicated BITNET link from BITNET-J to CUNY.

ISAS is a mission dedicated network funded by NASA using DECNET.

KEK is a Japanese HEPnet node. It operates an international link supporting IP and DECNET and is funded 50% by the DoE and by KeK, a Japanese National Laboratory.

NACSIS is fully supported by the Ministry of Education, Science and Culture, and operates a 56K link from NACSIS TO NSF. 19.2K capacity of the link is used as an X.25 link to interconnect terminals located at NSF and LC(Library of Congress), for the purpose of providing database access service from NACSIS. Another 9.6K of the link establishes BITNET connection through GWEU at Washington D.C..Within Japan, there are local networks - NACSIS-NET has 30 switching nodes, SINET is an IP backbone and NACSIS-MAIL is X400 based. There are plans to have their own connection to the USA, funded by the Ministry of Education, in January 1993 at 512K. The NACSIS policy is:

i) International Cooperation,
ii) Domestic Coordination, and
iii) Open to Research Institutes outside of the Ministry of Education

JUNET is an open uucp-based network, which supports a 9.6K link to uunet.

Malaysia There is an X.25 link to uunet. Use is restricted by the cost. There is a new X.25 project, JARING, within Malaysia to link certain government agencies, educational libraries, universities and R&D laboratories. Some IP and X.25 exchanges are being installed within countries.

Fiji There is a dialup line to Waikato in New Zealand, paid fully by Fiji, with an aspiration to have a leased line in the future. There is great interest in a regional network within the South Pacific Island community.

New Zealand Within New Zealand, the Universities operate the Kawaihiko network (based on ciscos), linking the 7 Universities, and the DSIR operates a network based on locally developed packet switching equipment. With the policies of the NZ government changing there are major changes within the government agencies directed towards financial self sufficiency within many public programs. There is a proposal for an integrated network within the broad academic, research and information resource sector. The current circuit to the US is half-circuit funded by PACCOM and Tuia.

UNESCO UNESCO has a goal to assist information networking developments into the UNESCO member countries in the Asia Pacific region, both developed and developing. Currently the project is at the planning phase, to be followed by recommendations on potential courses of further action. Currently there are some budget monies for training and education.

Korea There are several networks within Korea.

SDN/HANA has existed since 1982. It operates with TCP/IP. There is a membership fee to join the network.There is a Hana Committee of 16 members to coordinate international links.

The KREN network was established in 1987 and comprised of Government and IBM (for 3 years). It is now fully Korean funded, operating RSCS and TCP/IP. The Ministry of Education operates a BITNET link to Japan.

KREOnet was founded in 1987, is fully funded by Korea serving the Government, and uses TCP/IP.

China China has a an X25 link to Germany (Siemens at Karlsruhe)

Hong Kong There are 6 Universities but no high speed network internally in Hong Kong. The Chinese University of Hong Kong has a 64K link to the West Coast using the TCP/IP protocol suite. HARNET operate a low speed RSCS BITNET link to Yale.

4 Discussion - The Benefits of Coordination of Effort

Bill Bostwick gave a resume of the of the state of intercontinental networking four years ago, the progress made by the CCIRN and the benefits gained.

Four years ago the European networking community did not effectively share resources. The Federal US had mail gateways for interchange between networks. There was no sharing of links between the US and Europe.The networking forums talked a great deal about and to the PTTs which did not allow cross border networks unless they were within a given discipline, eg HEP from CERN. By communicating together, network users, disciplines and government broke down barriers and changed policies within PTTs and now there are shared links.

The main advantage of a coordinating body is a forum at which issues can be raised, problems solved, and from which ideas can be taken back to the home countries to show the benefits of cooperation.

As an example of how such an organisation could assist the Asia/Pacific regions it was pointed out that the intercontinental links were costing between $2-3 million per year, taking an average cost of $100,000 per link. With better coordination much better bandwidth and facilities could be delivered into the region. This is particularly important since for many areas within the region the international links are intercontinental links. Asia Pacific is not like Europe and does not get the benefit of the closeness of land adjacent communities.

In a discussion on the role of Hawaii in the Asia Pacific region if all intercontinental lines entering the US were terminated at the FIX-WEST, it was suggested that Hawaii should be considered as part of the Asia Pacific region rather than part of the mainland US.

5 Discussion on Potential Organisational Structures for Coordination of Effort

Assuming that an APCCIRN type of structure was set up, there was a discussion on its organisational structure. This discussion led to a general expression of views on the structure and numbers attending an APCCIRN and/or APEPG, the corresponding engineering group.

It was accepted that the APCCIRN and APEPG structures were not an outgrowth of the PACCOM organisation, which was now seen as an operational unit for the current line structures. In particular it was envisaged that the national funding bodies should be represented on the APCCIRN, and not necessarily within PACCOM.

The question was discussed as to how many funding bodies would be allowed to attend from a single nation, and how representatives could put forward the views of an internal national coordinating group to the regional group.

For information, Bill Bostwick summarised the makeup of the NACCIRN and the EUROCCIRN

NACCIRN - 6 or 7 Federal agencies, 2 to 4 representatives from Canada, some commercial observers and representation from Mexico

EUROCCIRN - A representative from each country (or network, where there is more than one recognised network per country).

CCIRN - 3 Agency representatives, 1 or 2 Canadians, some others representing the NACCIRN, 6 or 7 representatives from the EUROCCIRN, a representative from Australia and one from Japan.

In discussion several points were raised on the constituencies within the proposed APCCIRN, particularly with respect to whether representation be by country or by network. For developing countries there comes a time when they will want input into general policy and engineering. The policy and engineering groups need to know when new entrants are likely to join from those countries which are just entering networking. The point was made that the APCCIRN representatives should not be purely administrative persons, they should be "network aware" and come to the discussion with some knowledge of networks and the policy issues to be tackled.

There was some discussion about the relationship between the proposed APEPG and the current PACCOM operation - in particular as to whether PACCOM and APEPG could or should be one and the same body. This raised some questions concerning the differentiation between policy, engineering and operations.

PACCOM serves a need of a number of US Federal agencies and other nations to deliver services between these agencies and their Asia/Pacific international partners. With strong US Federal agency support, and additional support from the University of Hawaii and the State of Hawaii, the PACCOM organisation has been successful in building operational networks within appropriate timeframes.

It was pointed out within the discussion that PACCOM meant different things to different people and the meeting felt that it was important to define the roles of the APEPG, PACCOM and the APCCIRN. In the discussion it was pointed out that common international financial and planning issues should be separated, that PACCOM represents an organisation that operates a set of circuits in the Asia Pacific region. However, the final agreement is between funding agencies, Federal or national. The APCCIRN will require to take a long term view. The APEPG will require to consider operations as well as planning, but cannot enter into financial contracts. On the US scene, the FEPG and the NACCIRN recommend to agencies who then commit funds to the planning, installation and operations phases.

Torben Nielsen summarised the initial need for the PACCOM and the issues which will face the APCCIRN, APEPG and PACCOM in the region. NASA and other US Federal agencies were persuaded to assist in the setting up of links for infrastructure so that individual requirements could be met within an overall infrastructure, thereby realizing a reasonable degree of cost efficiency. PACCOM had been able, by fiscal and engineering planning, to obtain the consent of principals at both ends of circuits to agree on bandwidth and PACCOM have then sold parts of the capacity to several agencies, to the benefit of all.

While the PACCOM program includes a number of Asia/Pacific links there are an equal number of BITNET and uucp links which, due to their international research nature, the APEPG could address productively within the overall engineering and planning effort.

6 Discussion on Formation of the Asia Pacific Committees

It was agreed that the formation of an APCCIRN and APEPG would be to the benefit of networking in the Asia Pacific region.

In was generally agreed that:

i) for countries with mature network(s) in place, the expected number of APCCIRN representatives would be two, except where more than two mature networks exist, the number of representatives could rise to the same as the number of networks to be represented. Notwithstanding this rule of thumb, the group would encourage representatives from networks within one country to meet and collaborate, and perhaps consider sending a delegation to APCCIRN which could be smaller in number than the total number of networks, where if there was a representative of every internal network present at the APCCIRN, the numbers from that country may be excessive when compared to the total APCCIRN attendees.

ii) for countries entering the networking arena, one representative should attend for planning, participation and policy discussions.

iii) it was desirable that any person attending the APCCIRN was responsible for a planned or operational networking project.

iv) some members of the US Federal agencies be invited to attend as individual members rather than representatives of their country.

v) Hawaii be consider as an APCCIRN member, separate from the US mainland.

vi) an APEPG be set up with a membership structure similar to that proposed for the APCCIRN.

vii) the APEPG would not be responsible for the operations of PACCOM. However, PACCOM should be involved as part of the APEPG, particularly representing the US Federal agency requirements.

7 Issues for Future Asia Pacific Meetings

In addition to working within the guidelines and goals of the sister organisations of the CCIRN, the NACCIRN and the EUROCCIRN as they apply to the Asia Pacific Region, the APCCIRN will have to develop its own proposals for the region. This will entail a number of challenges as the region is large and culturally and technically diverse in nature. In particular, attention will have to be paid to the aspirations of the large number of developing countries within the region, as represented by the UNESCO.

It was agreed that the interim office bearers would develop some guidelines, conditions of use and strategy for education to assist developing nations before the first official meeting of the APCCIRN/APEPG.

8 Conclusions and Future Meeting Schedule

The meeting agreed to:

i) request Shoichiro Asano and Robin Erskine to take the role of joint chairs of the APCCIRN until the first official meeting of the organisation. Their tasks will include representing the embryonic organisation at the CCIRN, preparing the draft statements discussed above for consideration at the first meeting, and to arrange the first meeting of the APCCIRN around March/April 1992 in Australia.

ii) request Torben Nielsen and Jun Muri to take the role of joint chairs of the APEPG until the first meeting of that group. They will work with the APCCIRN co-chairs.

iii) send as many representatives as wished to attend to the CCIRN meeting in Santa Fe in November 1991. There will be a meeting of the APCCIRN and APEPG members attending the Santa Fe meeting on the day prior to the start of the CCIRN/IEPG meetings.

iv) work with the organising committee of INET'92 (to be held in July 1992 in Japan), to promote networking in the Asia pacific region, particularly in the education of network engineers and planners from the developing countries.

v) tentatively schedule meetings of the APCCIRN and the APEPG in Japan around the time of the Inet 92 meeting

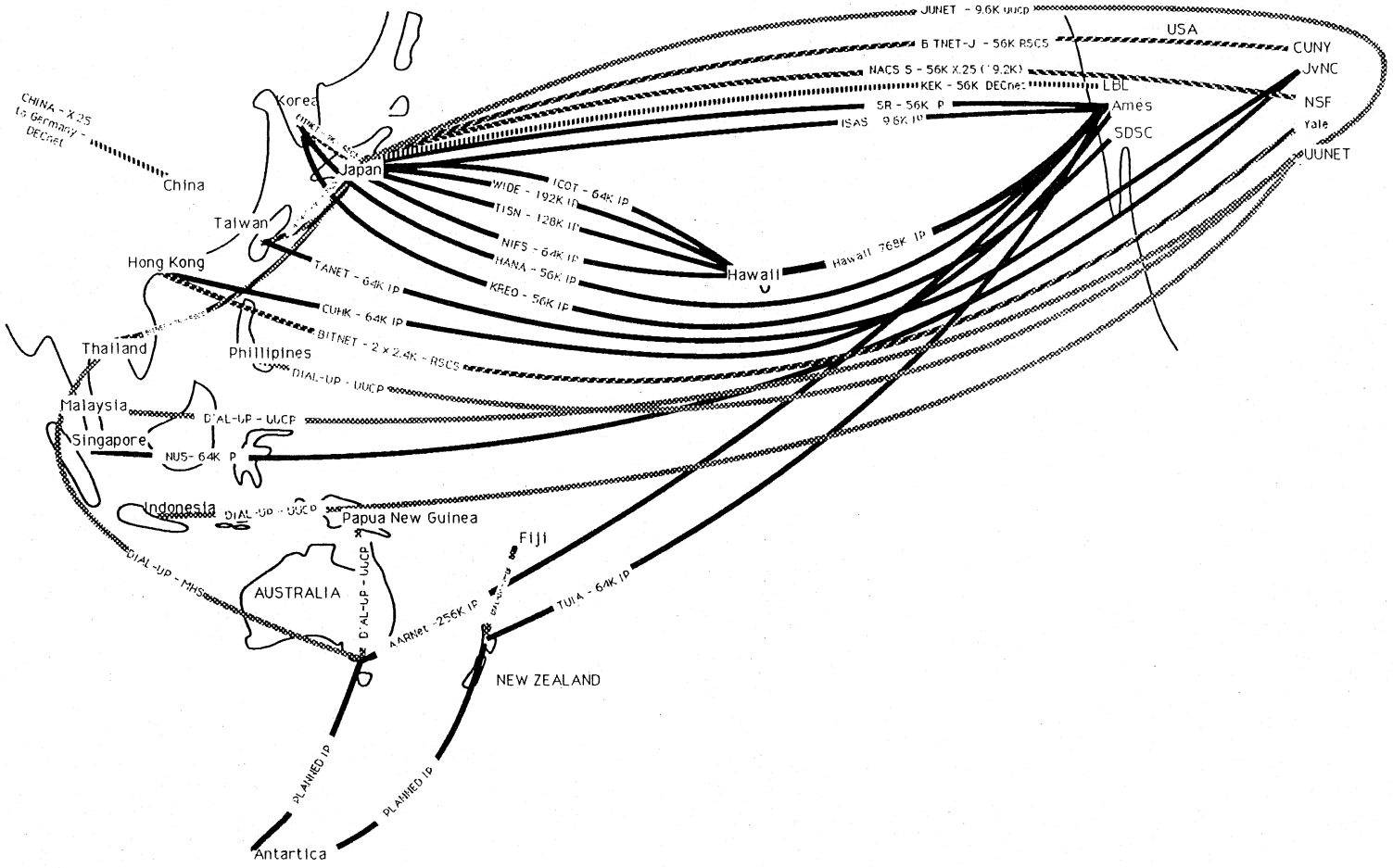
vi) the establishment of an APCCIRN and APEPG mailing list. These will be maintained by AARNet in Australia until at least the first meeting of the APCCIRN and the APEPG.

This document has been produced from notes taken at the meeting by Robin Erskine and Geoff Huston.

Attachment A

Research Networking Links within the Pacific

Country	Country	Link Type	Protocol
Japan (JUNET)	USA (uunet)	9.6 Intelsat	uucp
Japan (BITNET-J)	USA (CUNY)	56K Intelsat	RSCS (BITNET)
Japan (NACSIS)	USA (NSF)	19.2K Intelsat	X.25
Japan (KEK)	USA (LBL)	56K Intelsat?	DECnet, IP
Japan (ISR)	USA (FIX-W)	56K TPC-3,HAW-4	IP
Japan (ISAS)	USA (FIX-W)	9.6K	DECnet
Japan (ICOT)	USA (Hawaii)	64K TPC-3	IP
Japan (WIDE)	USA (Hawaii)	192K TPC-3	IP
Japan (TISN)	USA (Hawaii)	128K TPC-3	IP
Japan (NIFS)	USA (Hawaii)	64K TPC-3	IP
Japan (BITNET-J)	Taiwan (TANET)	?	RSCS (BITNET)
Japan (BITNET-J)	Korea	?	RSCS (BITNET)
Japan (BITNET-J)	Thailand	?	RSCS (BITNET)
Korea (HANA/SDN)	USA (FIX-W)	56K	IP
Korea (KREOnet)	USA (SDSC)	56K	IP
Taiwan (TANET)	USA (JvNC)	64K	IP, BITNET II
Hong Kong (HARNET)	USA (Yale)	2.4K (x2)	RSCS (BITNET)
Hong Kong (CUHK)	USA (FIX-W)	64K Intelsat	IP
Phillipines	USA (uunet)	Dialup	uucp
Thailand	Australia (AARNet)	Dialup	MHS
Malaysia (JARING)	USA (uunet)	Dialup	uucp
Singapore (NUS)	USA (JvNC)	64K Intelsat	IP, BITNET II
Indonesia	USA (uunet)	Dialup	uucp
Papua New Guinea	Australia (AARNet)	Dialup	uucp
Australia (AARNet)	USA (FIX-W)	256K Intelsat	IP
Fiji (USP)	New Zealand (Tuia)	Dialup	uucp
New Zealand (Tuia)	USA (FIX-W)	64K Intelsat	IP
USA (Hawaii)	USA (FIX-W)	768K HAW-4	IP,DECnet, BITNET II


JUNET - 9.6K uucp
USA
B TNET-J - 56K RSCS
CUNY
NACS S - 56K X.25 (19.2K)
JvNC
KEK - 56K DECnet
LBL
SR - 56K IP
Ames
NSF
ISAS 9.6K IP
SDSC
Yale
UUNET
CHINA - X.25
to Germany -
DECnet
China
Korea
Japan
WIDE - 192K IP
ICOT - 64K IP
TISN - 128K IP
NIFS - 64K IP
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KREO - 56K IP
Hawaii
Hawaii 768K IP
Taiwan
Hong Kong
TANET - 64K IP
CUHK - 64K IP
BITNET - 2 x 2.4K - RSCS
Thailand
Phillipines
DIAL-UP - UUCP
Malaysia
DIAL-UP - UUCP
Singapore
NUS - 64K IP
Indonesia
DIAL-UP - UUCP
Papua New Guinea
Fiji
DIAL-UP - MHS
AUSTRALIA
DIAL-UP - UUCP
AARNet - 256K IP
TUIA - 64K IP
NEW ZEALAND
PLANNED IP
PLANNED IP
Antartica