WORLD METEOROLOGICAL ORGANIZATION

REGIONAL ASSOCIATION V

RA V WORKING GROUP ON THE PLANNING AND IMPLEMENTATION OF THE WWW

THIRD MEETING
SYDNEY, 3-7 DECEMBER 2001

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ITEM 2.2

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Follow-up to XII-RA-V

(Submitted by the coordinator of RA V WWW sub-group on the GTS)

Background

The final report of XII-RA-V, paragraph 4.3.18…."requested its Subgroup on Regional Aspects of the GTS to study the use of managed data-communication network services for implementing the RA V RMTN, including the administrative, financial and operational aspects. It endorsed the establishment of an ad hoc group consisting of Messrs M. Hassett (Australia), T. S. Wong (Singapore) and K. Alder (New Zealand) to study the matter, with due consultation with the Members of the Region. It also requested the subgroup to investigate regional operational aspects of the use of the Internet for the exchange of meteorological information."

Report and Discussion

The ad-hoc group requested XII-RA-V never convened in the form suggested. However considerable progress was made in implementing a managed network linking Melbourne-Jakarta-Singapore in a triangle during July-September 1999. A link Melbourne-Bracknell was subsequently added to this network in May 2000. The selected network provider was BT Australasia using its Concert Frame Relay network.

The organisational task involved in selecting the network provider was considerable. The three original parties jointly prepared an RFT, followed by a joint evaluation process to select the successful provider. Each party then entered into separate contracts with BT for FR access and 50% of virtual circuit charges with its neighbour. A Memorandum of Understanding (Annex 1) was created to record the agreed basis for cooperation of participating centres in the use of the network.

Having created the network arrangements by the three initial parties, extension to other centres is relatively easy. Singapore is now in negotiation with Kuala Lumpur, Bangkok and Manila to extend the network. Further extension to link Melbourne and Nadi is under consideration. Each new Centre would contract with the provider as did the initial participants.

When the time comes to re-contest the network (call tenders for a future period), it will more difficult administratively than the initial tendering, as there will be more connected Centres. It is not clear how all parties will be coordinated in this new tendering exercise. In this regard, Centres may look to WMO to provide a credible and impartial management function in tendering and selecting the provider for the next period.

Technology developments

Advance of technology is beginning to raise the question as to whether managed networks are still the best strategy for the RMTNs (and indeed the MTN) of the future. With the improvement of Internet in its capacity, robustness and reach, there is now a good case to consider reorienting plans around Internet based circuits.

In RA-V, Internet circuits are now used for four RMTN and one inter-region links. Currently, these are TCP/IP socket connections between Centres, with firewalling limited to access list controls in each Centre's routers. Some Centres may consider this does not provide adequate protection for operational systems connected to the Internet. A much greater level of security is possible by the use of Virtual Private Networks (VPN) and IP Security (IPSec). Some important technical issues need to be worked out, such as routing and encryption key management, in order to develop a robust and scalable Internet based GTS. However, Internet-based networks offer advantages such as:

- Reduced cost, compared with Frame Relay networks and fixed bandwidth international circuits; and
- Can be implemented by coordinated technical standards alone, avoiding tendering and contractual processes, which are very cumbersome where many Centres are involved; and
- Offer possibilities for additional links at little or no extra cost.

Recommendation

The session is invited to consider the following recommendations:

1. That Internet-based circuits be recognised as an acceptable option for GTS links;
2. That the CBS OPAG on Information Systems and Services, be requested to develop guidelines for the implementation of Internet based VPNs as part of the GTS.

Memorandum of Understanding
Between
National Meteorological Services of the WMO Regional Association V (RA V)
In the operation of
The RA V Regional Meteorological Telecommunications Network (RMTN)

1. Purpose

This MOU is not intended to create any legally binding obligations or relationships between the parties.

The purpose of this MOU is to record arrangements for cooperation between Participating Centres in using managed telecommunications network services supporting the RA V RMTN, purchased from a single Network Service Provider.

2. Terms and abbreviations

Centre	An operational meteorological establishment operated by a Member.
CIR	Committed Information Rate.
GTS	Global Telecommunications System (A global telecommunications network operated by members of the WMO).
Member	The National Meteorological Service of a country, which is also a member state of the WMO.
Network Service Provider	A telecommunications company providing data transmission services to the Participating Centres.
Participating Centre	A Centre operated by a Member participating in the network through this MOU.
PVC	Permanent Virtual Circuit (a logical connection through the network between two participating Centres.
Regional Association V (RA V)	S E Asia, Australasia and SW Pacific.
WMO	World Meteorological Organisation (An agency of the UN).
WWW	World Weather Watch (A program of the WMO).

3. Background

Traditional arrangements for providing communications circuits which make up the RA V RMTN involved dedicated point to point circuits between Centres, where each Centre arranged the circuit through its national telecommunications carrier and met the appropriate half-circuit charges.

Technological developments have now made available telecommunications services based on packet switching technology which offer technically superior and lower cost communications services. Such networks have been implemented by several telecommunications companies (Network Service Providers) on a regional or global scale. The cost advantages of such networks stem from economies of scale in providing services using infrastructure efficiently shared by many users.

The benefits to WMO Members, of adopting these newer types of services, increase as more Members participate. This brings about a need to develop a new framework for multi lateral cooperation in the purchase and operation of such modern networks. A new mechanism is

required to facilitate cooperation between several Members in working together to purchase services from a single Network Service Provider. The cooperation is based upon a shared objective of efficient and cost effective telecommunications service, while maintaining complete autonomy and financial responsibility of individual Centres. This form of MOU provides the framework for such cooperation.

4. Participating Centres

Any Member of WMO in RA V may participate in this network. Participating Centres for the time being are:

- Jakarta; Indonesian Meteorological and Geophysical Agency
- Melbourne; Australian Bureau of Meteorology
- Singapore; Meteorological Service.

5. Management

Cooperative arrangements will be implemented between Participating Centres at the level of the designated representation on the RA V WWW Working Group or the Sub-group on Regional Aspects of the GTS.

Activities will be coordinated by the designated RA V Coordinator of the Sub-group on Regional Aspects of the GTS, currently M J Hassett, Australia.

6. Period of, and withdrawal from MOU

This MOU has a duration of twelve months to 31st July 2000. It will be deemed to be automatically renewed annually thereafter, unless a Participating Centre indicates in writing to RA V Coordinator of the Sub-group on Regional Aspects of the GTS, that it wishes to withdraw its participation in the MOU.

Participating Centres will need to carefully consider the consequences of withdrawal from the network arrangements covered by this MOU as it will impact the GTS operation and other connected Centres. The possibility of such withdrawal would need to be raised at the earliest opportunity to allow for consultation with other affected Centres, to ensure that disruption to GTS operation is avoided.

7. Additional Participating Centres and other changes to MOU

New Participating Centres will be added to the network upon request, subject to agreement of Other Participating Centres with whom the new participant requires a connection through the network. All other Participating Centres will be informed of the inclusion of the new participant(s).

New Participating Centres would enter into a contract with the current Network Service Provider in accordance with clause 11.

Any other changes required to this MOU from time to time, will be made subject to the agreement of all Participating Centres.

8. Telecommunications Services

The telecommunications services comprise a Frame Relay network linking the Participating Centres as listed in Table 1 below.

Source Centre	Destination Centre Committed Information Rate (CIR) Purpose

	Access speed	Melbourne	Singapore	Jakarta
Melbourne	64 Kbps		8 Kbps GTS (TCP/IP)	4 Kbps GTS (X.25) 4 Kbps Difacs TCP/IP
Singapore	64 Kbps	8 Kbps GTS (TCP/IP)		4 Kbps GTS (X.25 or TCP/IP)
Jakarta	64 Kbps	4 Kbps GTS (X.25) 4 Kbps Difacs (TCP/IP)	4 Kbps GTS (X.25 or TCP/IP)	

Table 1.

9. Cost sharing

Each Participating Centre will meet the full cost of its network access and 50% of the cost of each PVC which connects to that Centre. Each Participating Centre will also meet the full cost of any additional equipment it may choose to obtain from the Network Service Provider, either by lease or purchase (for example, a router).

10. Selection and review of Network Service Provider

The Network Service Provider will be selected initially through a competitive open tendering process managed by the Coordinator of the Sub-group on Regional Aspects of the GTS, with representation by all Participating Centres.

Participating Centres will repeat the competitive tendering process for ongoing provision of the network at three yearly intervals in the future, unless agreed otherwise.

11. Contracts and payment

Each Participating Centre will enter into a contract for the provision of network connectivity listed in Table 1 above, for a minimum period of one year, directly with the selected Network Service Provider, under the laws of the country of the Participating Centre.

Each Participating Centre will be fully responsible to the Network Service Provider for all its payments and other contractual obligations.

The Network Service Provider will be directly responsible to the Participating Centre for discharge of its obligations under the contract.

The dates of contracts between the Network Service Provider and Participating Centres will correspond where there are PVCs between Participating Centres.

Signed on behalf of the National Meteorological Service of

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Date:

Signed by RA V Coordinator of the Sub-group on Regional Aspects of the GTS

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Date: