

# **Report on the 14<sup>th</sup> meeting of the RMDCN Operations Committee**

**Vienna, 3 - 4 June 2008**

## **1. Opening**

The 14<sup>th</sup> meeting of the RMDCN Operations Committee was hosted by ZAMG and took place in Vienna, Austria, on 3 - 4 June 2008. It started at 14.00 hrs. Isabella Weger welcomed all the participants on behalf of ECMWF and opened the meeting.

## **2. Adoption of the agenda**

The agenda was adopted without changes. As usual, slides from all the presentations at the meeting are available on the RMDCN web site.

## **3. Status of the RMDCN**

### **3.1. RMDCN configuration**

Tony Bakker (ECMWF) presented the current configuration of the RMDCN and gave an overview over the performance of the RMDCN since the MPLS network became operational on 18 June 2008. He also highlighted some service issues, which have triggered audits within OBS on the diversity of routes and on the diversity of ISDN NAS access points.

Chris Little asked, how many countries are affected by the issues with the provision 24x7 support. . Tony Bakker replied that Lebanon, Serbia and Saudi Arabia do not have 24\*7 local PTT support.

The participants discussed changes to the configuration and increases in traffic anticipated over the next 12 months.

The UK anticipates some increases in traffic, but considers the current bandwidth to be sufficient. Radar data from the OPERA Project is currently sent over the internet, but will be moved to the RMDCN once the radar system has become operational. Remy Giraud mentioned that this would require a change in the CoS settings on the routers of all OPERA partners.

Russia reported that since the migration to MPLS there have not been any serious problems on the network. Leased lines with Russian partner sites are planned to be migrated to RMDCN (OBS has been asked to provide prices) and this may require an increase in the IP Bandwidth for Moscow.

France may upgrade the IP bandwidth, possibly to 6 MB, depending on the costs.

Following the move to their new building Germany will have to request to move the RMDCN connection as well. They were reminded to do this as soon as possible as the implementation of the change might take some time.

China is planning to receive Satellite data with EUMETSAT (around 16 GB/day). It is yet to be decided to either use the RMDCN or Internet.

Austria considers an upgrade of the IP bandwidth.

The Czech Republic is planning an increase in IP bandwidth from 2 to 4 Mbps and they may change to a mission critical configuration.

India asked about the status for Thailand as they had requested Thailand to be connected to the RMDCN. ECMWF reported that The Thailand Meteorological Service informed ECMWF that they cannot sign a contract with OBS UK Ltd.. ECMWF explained that the telecom market in Thailand is quite closed and that CAT (the local PTT in Thailand) has a monopoly there. There is no technical problem in this case, as a PoP exists.

### **3.2. Network reliability and performance and Service level agreement**

Ahmed Benallegue (ECMWF) explained the metrics of the SLA for the new RMDCN network and how the monthly service availability and any service rebates are calculated. He presented in detail the monthly service availabilities from June 2008 (since the operational start of the MPLS service) to April 2009, highlighting the breaches of the SLA which resulted in service rebates.

The UK noted that most of the problems relate to the network infrastructure, in particular access lines. Tony Bakker added that the ISDN backup covers outages quite well (much better than in the old Frame Relay network), but also noted that ISDN speeds are often much slower. The speed can theoretically go up to 2 Mbps, but in most countries it is limited to 384 or 512 kbps. ECMWF explained that this depends on the local infrastructure and how many ISDN channels can be bundled by the local PTT. It was also noted that the presentation on the IPSecVPN project would discuss another method for the backup.

The UK asked to add monthly and yearly statistics for each site on the RMDCN Web pages.

## **4. Status of the WMO Information System (WIS)**

José Arimatea De Sousa Brito (WMO) gave a presentation of the current status of the WMO Information System (WIS).

A technology day at Météo-France in Toulouse for the WIS was attended by 19 companies and 20 more had shown an interest. The general impression was that a third of the companies would be capable of providing the WIS (i.e. bidding for the ITT).

Russia reported on the status of their DCPC project which is done in three phases: 1) composition of requirements, 2) development of a prototype solution and 3) test of the Russian GISC DCPC performance. The outcome of this project would provide a recommendation for an industrial GISC version and a pilot implementation. The planned time scale of the project is around 12 months with a scheduled start in 2Q2008, but although government change and status change of the NMC has caused some delay, the project is expected to be ready by 2010.

Remy Giraud (ECMWF) mentioned that the RMDCN is almost WIS ready. In Europe the network infrastructure is well under control.

Possible networking requirements of the WIS were discussed. All GISCs will have to synchronize the complete set of metadata, but the main data flows may be produced by DHCPs rather than GISCs. Whereas the future structure of the WIS is well defined, the requirements in terms of traffic flows and data volumes are not yet known.

## **5. Reports on tests**

### **5.1. IPSEC VPN**

Ahmed Benallegue (ECMWF) reported on the status of the IPsec VPN project which investigates the provision of a backup of the RMDCN using the Internet.

The UK asked if OBS can provide this kind of service. Such a service can be provided by OBS; however, a team of network experts who have investigated the use of Internet to complement the RMDCN as part of the work of the ECMWF TAC Subgroup on the RMDCN has expressed a preference to use 'inhouse' skills rather than rely on the service of a provider. As the technical environment surrounding Internet connections, the configuration of firewalls, the security

environment, etc are changing frequently changes at most sites, liaising with the network provider to keep the configurations consistent was considered to be difficult, involving an unacceptable administrative overhead. Keeping the two environments (the main MPLS connection and the Internet backup) as separate as possible was deemed to improve the reliability of the overall networking service.

The participants agreed in principle with the following recommendations:

- Any backup solution must maintain the any-to-any connectivity.
- Dedicated IPSec equipment is needed for the RMDCN backup.
- The same type of equipment will be used by all sites.
- The networking equipment will be managed locally by the sites.
- Portfolio of backup solutions will be:
  - RMDCN mission critical sites
  - ISDN NAS backup within the managed network (to be phased out in the future)
  - Backup over the Internet
- ECMWF will continue to provide a gateway function, so that connectivity between sites using different backup solutions will be maintained.

Further tests for the Internet backup were agreed for the next phase of the project:

- The preferred solution should be based on Cisco DMVPN, but a summary of pros and cons of various technical solutions should be provided.
- A test environment for DMVPN including 6 or 7 routers will be set up at ECMWF.
- If tests are successful, 3 or 4 routers will be sent to volunteers sites in Q4-2008 to try DMVPN over the Internet; DMVPN would then be used to create the IPSEC VPN solution to backup the RMDCN.
- During Q1-2009 the results of these tests would be made available to the ROC.
- If overall tests are successful, a recommendation of Cisco Routers using DMVPN for the backup of the RMDCN should be considered. Otherwise, a market survey would be conducted to find another solution.
- During the next ROC-15 meeting in spring 2009 an agreement on the future solution and on the equipment should be reached.

Germany supported the proposal. Experiences with their national network, using a single vendor, are very positive. Centralised management is not considered to be a viable option; management of the boxes by the sites themselves is preferred, but will be further discussed with the local networking specialists.

A discussion followed on the number of connections that require such a backup. The current network is an any-to-any network so it is not easy to predict. However looking at the old Frame Relay network there were about 91 connections (PVC's in Frame Relay terms). This is quite a large number and therefore a scalable solution is required.

Each site may have to re-consider their backup solution. Both costs and technical feasibility are issues that need to be considered. In some cases it may be more cost effective to go for a mission critical setup.

The Czech Republic mentioned that due to the fact that their Internet connection is not direct but uses their government network they would not be able to use the suggested Internet backup method. Therefore they are more interested in a mission critical connection.

Several countries, i.e. Germany, China, Sweden, Lithuania, Italy, Bulgaria and India, would in principle be prepared to participate in the next phase of IPsec VPN tests, but need to check this with their local network staff; the UK would probably not participate, but will check as well. ECMWF reminded everybody that the tests would be done in a completely dynamic environment, and therefore sites should already use some kind of dynamic routing on their LAN.

### **5.2. Routing issues**

Germany presented a problem as a result of how the IP routing is currently setup with the RMDCN. At the moment the full class B IP network address of Germany is advertised on the RMDCN and this causes a problem with trying to exchange traffic with Switzerland over the Internet. They propose to limit the exposure of the IP network addresses advertised over the Internet by using only the required subnets of the site's IP network address. ECMWF will check the current IP Network Address advertisement for each site and contact each site if any changes are to be made.

### **5.3. IPv6**

ECMWF presented the status of the IPv6 tests conducted during the last 12 months. Initial results show that basic connectivity is ok, firewall support for IPv6 is good, and that some basic applications work fine with IPv6. The plug-and-play functionality seems to work very well for end hosts but support personnel need to be knowledgeable about the new protocols in order to provide good support when problems occur. Some preliminary performance results show that IPv6 performance is similar to IPv4 in Europe. Performance with Asia (Japan and China) appears to be better with IPv6, possibly due to the fact that the routes taken for IPv6 traffic are still not fully utilized. ECMWF will continue with these tests and will make ECPDS (dissemination system) and ECACCESS IPv6 ready. However it will not replace IPv4 with IPv6 inside its LAN, but will rather try to work on implementing IPv6 in order to complement IPv4 services with IPv6 services.

## **6. Price Review 2008**

ECMWF presented an overview of some financial issues with the current OBS contract that came up during the last 18 months. The contract specifies liquidated damages for the late delivery of the MPLS network which will be based on the charges for the first 12 months of service. OBS agreed to this in principle; the implementation is likely to happen in the form of credit notes which should be issued during the second half of 2008.

The figures of the 2008 Price Review are not yet finalized, but initial results show a price reduction of the total RMDCN charges of 28%. All service elements, excluding the access lines charges, received a price reduction according to the market situation in each country. The reductions per site vary from 0% to up to 58%. The price review reductions are in line with the market and the current contract was therefore considered to provide good value for money.

## **7. Actions arising from the meeting**

The actions arising from this meeting are summarised below.

1. ECMWF to consider changes to the presentation of availability statistics for the RMDCN service on the RMDCN website. (*post meeting note: This has been done; daily, weekly, monthly and yearly statistics are available on the RMDCN web site*)
2. ECMWF to continue IPSec VPN tests concentrating on the DMVPN solution from CISCO.
3. ECMWF to contact sites for confirming participation in IPSec VPN tests.
4. ECMWF to check and contact all sites regarding the advertisement of each site's IP Network addresses in order to minimize the exposure of routing problems.

## **8. Next meeting**

The next meeting of the ROC will be held in spring 2009, the location and the exact date to be confirmed closer to the time (*post meeting note: France has proposed to host the next meeting in Toulouse*).