



International Civil Aviation Organization

**MID OPMET Bulletin Management Group
First Meeting (MID OPMET BMG/1)**

(Cairo, Egypt 18 December 2011)

Agenda Item 3: Status of regional and inter-regional OPMET exchange

(Interregional OPMET Gateway Vienna)

SUMMARY

This paper presents a review of the changes within the EUR OPMET Data Exchange Schema from MOTNE (Meteorological OPMET Telecommunication Network Europe) to RODEX (Regional OPMET Data Exchange). Furthermore it describes the next steps in that regard.

1. INTRODUCTION

1.1 An information paper has already been presented at the MET SG/2 meeting in December 2009. This paper can be found as **Appendix A** to this working paper. The complete transition from MOTNE to EUR-RODEX was finished end of 2009.

2. DISCUSSION

2.1 It is not intended to review again the transition and the reasons behind. This information paper is meant to inform about the planned backup-possibilities of the new EUR-RODEX-system as well as about the RODC (Regional OPMET Data Catalogue) which could be interesting also for the centres in the MID-Region.

Planned backup procedure in the EUR-RODEX-system

2.2 In the past the MOTNE-system consisted of 11 MONTE-centres. With 11 centres it would not have been possible to implement any kind of backup procedure. But now, with only 3 ROC (Regional OPMET centres) left, it is possible.

2.3 Presently the backup procedure is only in a draft-status. But it is planned to finalise it until METG (European Meteorology Group) is taking place in September 2012 in Paris.

2.4 The procedure will be part of the ICAO Doc.018 (EUR OPMET Data Management Handbook) as Appendix H. The actual version can be found as **Appendix B** to this working paper.

RODC (Regional OPMET Data Catalogue)

2.5 The RODC is foreseen to fulfill several tasks within the RODEX-system. In future it will be possible that each centre in the EUR-Region will be able to change or update the OPMET-data requirements online by using the RODC. A so called "Shopping Cart" will be available where centres can define the required data by check marking the needed data type for each location indicator. It will not be necessary anymore that a NOC (National OPMET Centre) has to contact the associated ROC for any OPMET data request.

2.6 As soon as a change is done by a NOC in the RODC the responsible ROC will be informed in order to perform the necessary updates or set steps to fulfill the stated request. NOCs will be informed automatically as soon as the changes have been done.

2.7 Another advantage will be that the RODC will also be updated in case of changes for bulletins (new, deleted or updated). If such a change will also impact the requirements of a NOC, an automated message will be generated and send.

2.8 Additionally the RODC will be updated by using the results of the half-yearly OPMET-data monitoring exercises performed by the DMG. With that procedure it can be guaranteed that for each location indicator the bulletins are known where it can be found in.

2.9 Users can also check online which data is presently available within the EUR-Region. This list is based on the FASID table MET 2A as it holds the official requirements defined by IATA.

2.10 The RODC is also in important part of the backup procedure. If e.g. Vienna is updating the routing table due to new requirements of a NOC in the area of responsibility, ROC London will get an automated message to update their backup-routing table accordingly.

2.11 The RODC is presently planned to be used within the EUR-Region only. But there is also the possibility that centres outside of the EUR-Region are using this tool to define their requirements in regard to EUR-OPMET data.

2.12 Presently the DMG is working on the use cases. The database itself is already in place. The RODC will probably be available end of 2012/beginning of 2013.

3. ACTION BY THE MEETING

3.1 The meeting is invited to note the content of this paper.

APPENDIX A

MET SG/2-IP/06

26/11/2009



International Civil Aviation Organization

**MIDANPIRG Meteorology Sub-Group
Second Meeting (MET SG/2)**

(Cairo, 15 to 17 December 2009)

Agenda Item 4: Status of implementation of the meteorological services in the MID Region

4.3: Review of requirements for OPMET data and status of OPMET data exchange

TRANSITION FROM MOTNE TO RODEX IN THE EUR REGION

(Presented by the Secretariat on behalf of Austria)

SUMMARY
The system for OPMET data dissemination within the EUR Region (MOTNE) was out-of-date and therefore needed to be replaced by a more efficient system. This paper informs the MID Region on the recent transition from MOTNE to RODEX in the EUR Region.
References
<ul style="list-style-type: none"> • <i>EANPG METG/16 report</i>
This Information Paper is related to Strategic Objectives: A and D

1. INTRODUCTION

1.1 The Meteorological Telecommunication Network Europe (MOTNE) was used for more than 10 years. Within that time a lot of improvements, especially in the area of communication techniques, took place. Asynchronous connections with 50 Bauds have widely been replaced by networks using TCP/IP. Therefore, in September 2006, the sixteenth meeting of the Meteorology Group of the European Air Navigation Planning Group (METG/16) tasked the European Bulletin Management Group (EUR BMG) to review the entire system of OPMET data exchange in the EUR Region.

2. DISCUSSION

2.1 The work on the special program started at the beginning of 2007. The outcome of the discussions was to reduce the number of eleven MOTNE Centres down to three Regional OPMET Centres (ROCs). With this reduction, it would be possible to implement a backup system, which was impossible with eleven MOTNE Centres. Another advantage that comes with the reduction to three ROCs is that new procedures could be more easily defined and implemented, and co-ordination between centres would improve due to the reduction in complexity.

2.2 The name of the system also had to be changed. Instead of MOTNE, the new system would be called European Regional OPMET Data Exchange (EUR-RODEX).

2.3 The transition from MOTNE to EUR-RODEX started at the beginning of 2008, and was completed in October 2009. Paragraph A1 of **Appendix A** to this information paper shows the situation *before* the transition.

2.4 With EUR-RODEX now implemented, the situation after the transition is shown at paragraph A2 to **Appendix A**.

2.5 Now that the transition has been completed, the focus is on the definition and preparation of a backup procedure. The main goal of the backup procedure is that centres in the area of responsibility of, for example, Vienna, will continue to receive data even in case of an outage of the ROC. The dissemination should then be taken over by one of the other two ROCs. The responsibilities have already been defined as follows:

- Outage of ROC London → ROC Toulouse takes over
- Outage of ROC Vienna → ROC London takes over
- Outage of ROC Toulouse → ROC Vienna takes over

2.6 The complete backup procedure will be based on the usage of AFTN-lines. Scenarios will be discussed and procedures defined for different cases – for example, outage of AFS-node or outage of MET-switch. It is intended to have the planned procedures ready for presentation at EANPG METG/20 meeting in September 2010.

2.7 It is also planned to improve the possibilities for the centres in the Area of Responsibility to choose the data they need to receive for flight planning purposes. A special tool will be available in future where all centres can do this by check marking all those reports on a website. An automated message will be created for the responsible ROC which can then implement the necessary changes in the routing table. This tool could also be used to give inter-regional centres in the other ICAO Regions the chance to define their needs in regard to EUR OPMET data.

2.8 **Appendix B** to this information paper indicates how this ‘shopping cart’ web-tool might appear.

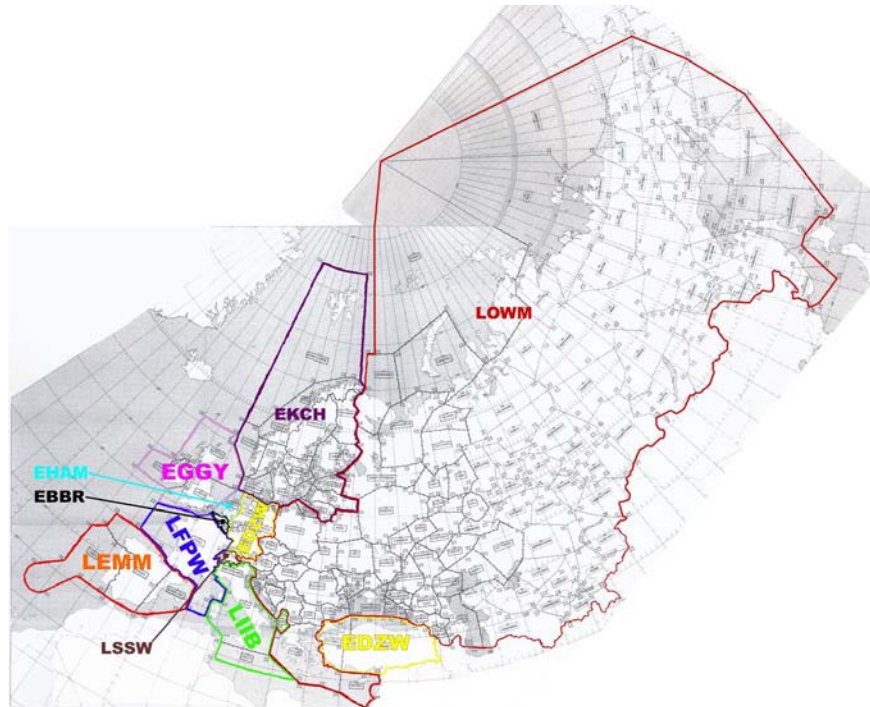
3. ACTION BY THE MEETING

3.1 The meeting is invited to note the contents of this paper.

APPENDIX A

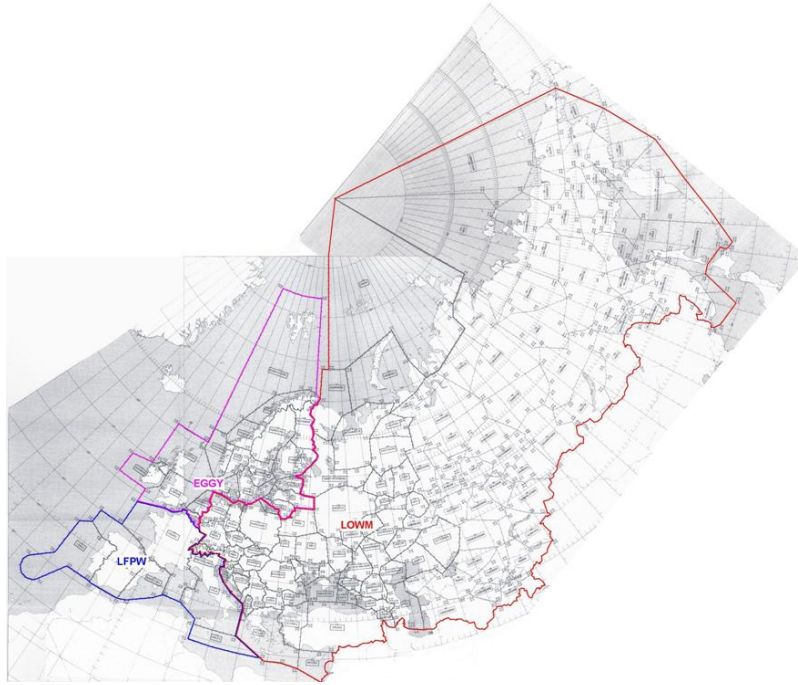
A1. MOTNE overview

	Area of Responsibility
DAAA (Alger)	This is a special case as the centre is situated in the AFI-region. It will be transferred into an I/R-Gateway between AFI and EUR.
EBBR (Brussels)	Belgium
EDZW (Offenbach)	Germany, Turkey
EGGY (London)	UK, Ireland, Gibraltar
EHAM (Amsterdam)	The Netherlands
EKCH (Copenhagen)	Denmark, Estonia, Lithuania, Latvia, Norway, Sweden, Finland, FäröerIslands
LEMD (Madrid)	Spain, Portugal, Azores, <i>Morocco (although it is in the AFI-Region)</i>
LFPW (Toulouse)	France
LIIB (Rome)	Italy, Albania, Malta, <i>Tunisia (although it is in the AFI-Region)</i>
LOWM (Vienna)	Austria, Azerbaijan, Armenia, Bulgaria, Belarus, Cyprus, Czech Republic, Egypt <i>(although it is in the MID-Region)</i> , Georgia, Greece, Hungary, Kyrgyz Republic, Kazakhstan, Slovenia, Macedonia, Poland, Bosnia & Herzegovina, Russia, Croatia, Rumania, Slovakia, Turkmenistan, Tajikistan, Ukraine, Uzbekistan, Serbia & Montenegro, Moldavia
LSSW (Zurich)	Switzerland



A2. EUR-RODEX overview

ROC	Former Area of Responsibility	Additional Area of Responsibility
London (EGGY)	<ul style="list-style-type: none"> • Ireland • United Kingdom 	<ul style="list-style-type: none"> • Belgium • Denmark • Estonia • Finland • Latvia • Lithuania • Netherlands • Norway • Sweden
Toulouse (LFPW)	<ul style="list-style-type: none"> • France 	<ul style="list-style-type: none"> • Gibraltar • Italy • Malta • Portugal • Spain
Vienna (LOWM)	<ul style="list-style-type: none"> • Austria • Armenia • Azerbaijan • Belarus • Bosnia& Herzegovina • Bulgaria • Croatia • Cyprus • CzechRepublic • Georgia • Greece • Hungary • Kazakhstan • Kyrgyzstan • Macedonia • Poland • Romania • Russia • Serbia&Montenegro • Slovenia • Slovakia • Tajikistan • Turkmenistan • Ukraine • Uzbekistan • Moldavia 	<ul style="list-style-type: none"> • Albania • Germany • Switzerland • Turkey



APPENDIX B

EUR-RODEX ROUTING TABLE WEB-TOOL

Note: This web-tool is under development and not currently operational.

METG / BMG

Bulletin Management Group

Shopping list

Region: EUR

ICAO country: ALBANIA

SA/SP	FC	FT	Station	Aerodrome
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LATI	TIRANA

ICAO country: ARMENIA

SA/SP	FC	FT	Station	Aerodrome
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	UDSG	GYUMRI
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	UDYZ	YEREVAN

ICAO country: AUSTRIA

SA/SP	FC	FT	Station	Aerodrome
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOAN	WR. NEUSTADT/OST
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOAV	VOSLAU
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOIH	HOHENEMS-DORNBIERN
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOWG	GRAZ
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOWI	INNSBRUCK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOWK	KLAGENFURT
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOWL	LINZ
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOWS	SALZBURG
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOWW	WIEN-SCHWECHAT
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOWZ	ZELL AM SEE
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOXZ	ZELTWEIG MIL

ICAO country: AZERBAIJAN

SA/SP	FC	FT	Station	Aerodrome
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	UBBB	HEYDAR ALIYEV INTERNATIONAL AIRPORT
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	UBBG	GANJA
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	UBBN	NAKHCHIVAN

ICAO EUR METG Bulletin Management Group - shopping list - development version

Tick box legend:

Green - Available at the latest monitoring

Red - Not monitored at the previous monitoring

Grey - Not monitored at the previous 2 monitorings

APPENDIX B

INTERNATIONAL CIVIL AVIATION ORGANIZATION



EUR OPMET DATA MANAGEMENT HANDBOOK

APPENDIX - H
RODEX Backup Procedure

DRAFT

2011

Prepared by the EUR DMG

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RODEX BACKUP PROCEDURE

1. INTRODUCTION

1.1 Purpose

With the replacement of the MOTNE- by the RODEX-system (Regional OPMET Data Exchange) in 2009 the possibility has been created to implement a backup functionality between the three remaining ROCs (Regional OPMET Centre). This document provides a description of

- the scenarios in which backup will be necessary
- how the backup is working
- the procedures to be followed in a backup situation

In principle this procedure shall guarantee the availability of alphanumeric OPMET-data for all NOCs (National OPMET Centre) even in case of an outage of a ROC. Binary OPMET data will be taken into consideration as soon as ICAO has invented plans for replacing the alphanumeric codes.

A backup situation will only occur in such cases where a ROC is totally lost due to fire, flood or a technical problem (caused by a massive soft- or hardware failure) leading to an **outages of several hours**.

No backup procedure is defined for an OPMET-DB outage. If one of the three EUR-OPMET-DBs is not available the user can query one of the two databases remaining. All three databases hold almost the same content. Further details can be found in *Doc.018, Appendix A (Interface Control Document)*.

The following pictures gives a rough overview on how the ROCs are connected and how data exchange regularly is performed.

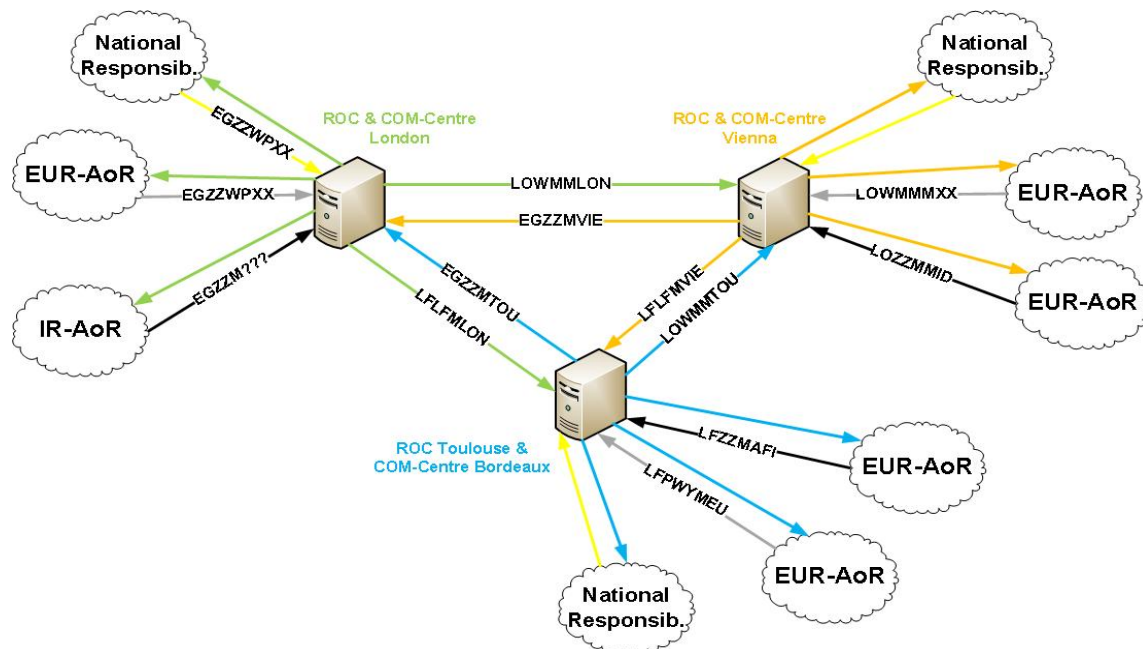


Figure 1: General Exchange Scheme between ROCs

You might have identified that special AFTN-addresses are used for data exchange between the three ROCs. Before this Backup-Procedure was set up the three ROCs used the same AFTN-addresses as the NOCs in the respective AoR e.g. Vienna sent all OPMET data to EGZZWPXX.

In case of an outage of ROC-London the COM-Centre London will send all data addressed to EGZZWPXX and EGZZM*** directly to the two remaining ROCs. This would mean that also the data sent by Vienna to EGZZWPXX would be sent back to Vienna.

Using the same address as the NOCs could lead to looping. Therefore it was decided to use those special AFTN-addresses in-between the three ROCs.

2. GENERAL RULES TO BE FOLLOWED

The most important thing to notice is the following:

The whole Backup Procedure is based on the usage of the ICAO AFS only.

2.1 Start-Up of the procedure

If an outage occurs that lasts more than half-an-hour and it is obvious that the system will not be up again within the next half-hour the respective ROC shall contact the two other ROCs to inform them about the actual situation.

If it is foreseeable that the outage is going to last more than one hour the management shall be contacted to decide, based on the actual situation, whether the backup procedure should be initiated.

2.2 Which centre is the Backup?

The following table shows which centre is backing up a certain ROC :

ROC	Backup
London	Toulouse
Toulouse	Vienna
Vienna	London

Under paragraph 3 the principals of the backup procedures are described. Those principals are adopted by each ROC. Besides these each ROC is facing additional technical and/or procedural differences which are described in paragraphs 4-6.

The detailed procedure to be followed in any case by a ROC is described under paragraph 7. This paragraph also includes procedures to be followed by the NoCs in the AoR of a certain ROC.

3. OUTAGE OF A ROC

3.1 Technical Setup

The technical setup is comparable for all three ROCs. Separate systems exist for providing the COM-Centre capabilities as well as the MET-Switch (ROC) capabilities. Therefore an outage of the ROC will have comparable consequences. Of course there are local and regional specialities. Those will be explained in detail in chapter 5.

The outage of a ROC will be explained by assuming ROC London is out of service. As explained above the principles will stay the same for ROC Toulouse and ROC Vienna.

3.2 Normal Operation

The following figure shows the operations in normal conditions.

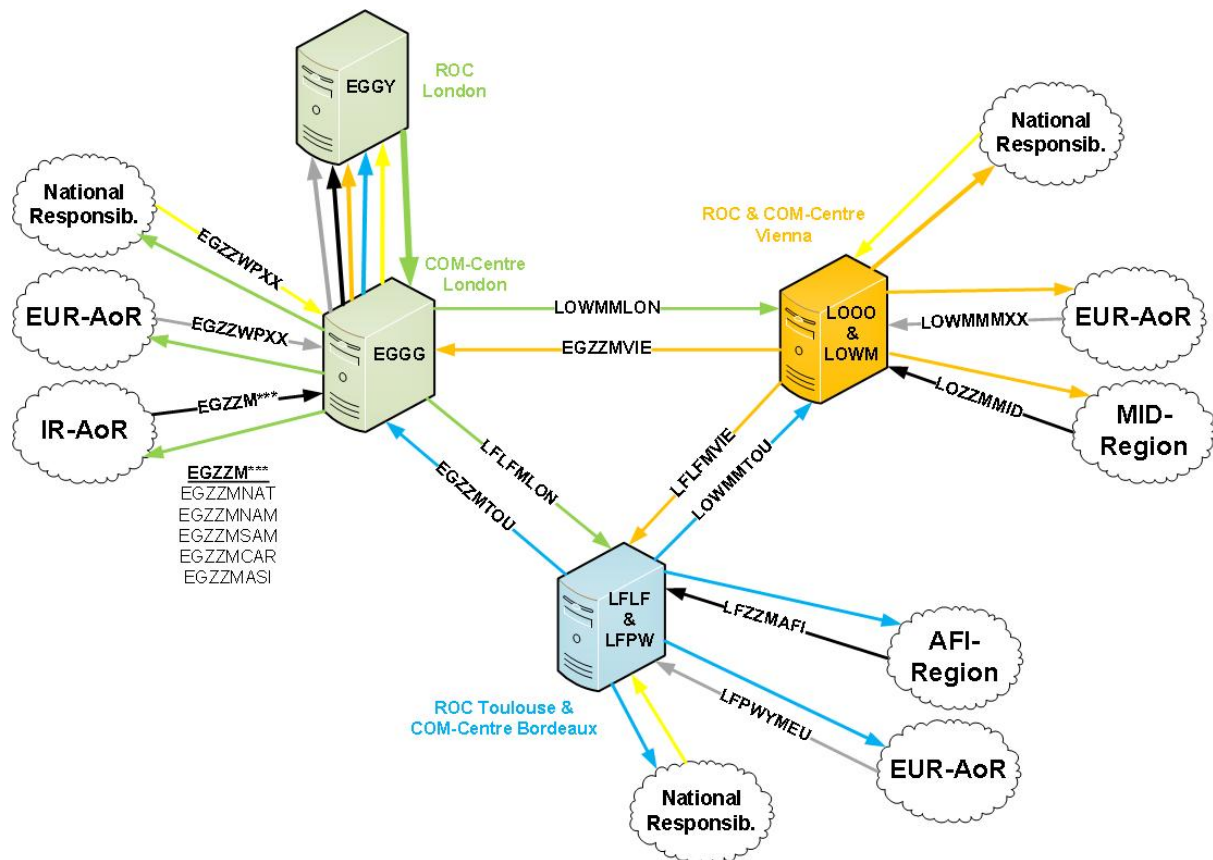


Figure 2: Normal Operations

As can be seen from above data is received via AFTN by COM-Centre London (EGGG) from national sources, the area of responsibility within the ICAO EUR-region as well as from other ICAO regions for which ROC London (EGGY) is the responsible IROG (Interregional OPMET Gateway). This data is sent without any delay to EGGY where it is, according to the “Message Validation Procedure” described in chapter 12 of the EUR OPMET Data Management Handbook.

After this process the data is disseminated according to the definitions in the local routing table to national users, the two other ROCs, NOCs in the EUR-AoR as well as to I/R-Gateways in the other ICAO-regions.

3.3 Necessary Prerequisites

There are several parts necessary to be in place before the backup procedure could be implemented in the normal operations.

3.3.1 Local Procedures at ROCs

This document describes only the general rules to be followed. Not only these rules and procedures described have to be adapted by each ROC but also extended in order to cover also special national and international requirements which will be explained in detail later in this document for each ROC.

The local procedures have been defined and adopted by the three ROCs. They have been put into operation on the *(! date to be added !)*

3.3.2 Local Procedures at NOCs

In the event of an outage of a COM-centre assigned to a ROC not only the ROCs have to follow special procedures but also the NOCs in the AoR of the failing centre. Those are described within this document but have to be adapted by the NOCs in order to fit national requirements.

The table in **Attachment D** shows which centres have notified ICAO that backup procedures are in place.

3.3.3 Testing of the Procedure

Before using the backup procedure in normal operations the operators should be trained accordingly. It is assumed that this has been done once a backup procedure is officially in place.

Furthermore the procedure itself shall be tested at least amongst the three ROCs by using local test-systems. Only after those tests have been successful it is feasible to put the procedure into operation.

These test have been performed, the final tests have taken place on the *(! date to be added !)*

3.3.4 Backup Routing Table implemented at ROCs

One of the major requirements is that each ROC has a backup routing in place which can easily be activated in case of an outage. The information needed by each ROC to prepare this backup routing will be provided via the RODC (Regional OPMET Data Catalogue). The RODC is holding all the routing information within the EUR-region in regard to the OPMET data requirements defined in the FASID MET 2A.

Each ROC is provided by the RODC with a list (in a predefined format) of bulletins plus the

These principles stay the same for all three ROCs. But due to either special technical setup or local procedures, the details of the dedicated backup procedures are slightly different. Those details can be found in separate chapters:

- Chapter 4: Details for ROC London
- Chapter 5: Details for ROC Toulouse
- Chapter 6: Details for ROC Vienna

3.5 Outage of a COM-Centre

To be able to provide OPMET data backup in case of a failure of a COM-centre it is only necessary that the NOCs and IROGs in the AoR of the failing ROC follow certain procedures. Otherwise it would not be possible to provide a certain level of backup.

In order to provide backup the following provisions have to be fulfilled:

- Toulouse has to activate the backup routing in co-ordination with London
- The NOCs in the AoR of London have to send their OPMET-data directly to Toulouse and Vienna instead of London
- The IROGs in the AoR of London have to send their OPMET-data directly to Toulouse and Vienna instead of London

This will lead to the following figure:

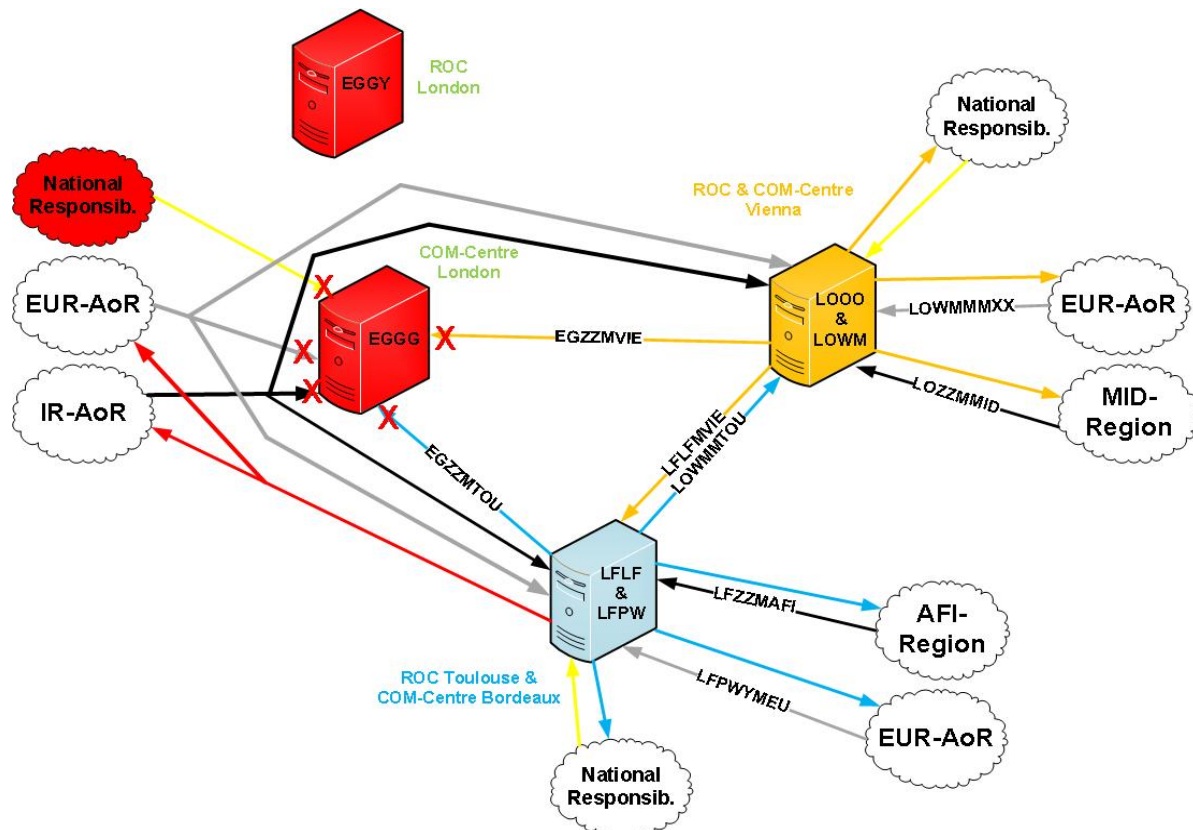


Figure 4: Data Dissemination in Case of COM-Centre-Backup

As can be seen the OPMET data out of the London AoR is now sent also directly to the two remaining ROCs. This will guarantee that all international OPMET data can be provided throughout the EUR-region. The only exception is that the national UK data can not be sent to Toulouse via AFTN.

As explained already before under paragraph 3.4 special details for each centre can be found in the following chapters:

Chapter 4: Details for ROC London

Chapter 5: Details for ROC Toulouse

Chapter 6: Details for ROC Vienna

4. OUTAGE ROC Vienna

The main problem to be faced at ROC Vienna is that a lot of OPMET data is received via GTS. In a lot of cases this is the only possibility to receive OPMET data as AFTN is not used due to different reasons.

As under paragraph 2 stated that the whole procedure is based on the usage of the ICAO AFS this leads to some problems which will be pointed out in the following paragraphs.

Due to the above fact that for some centres only GTS can be used there is no direct connection with some centres in the AoR like Warsaw or Moscow.

4.1 Technical Setup

The following figure shows a very high level picture of the technical setup at ROC Vienna

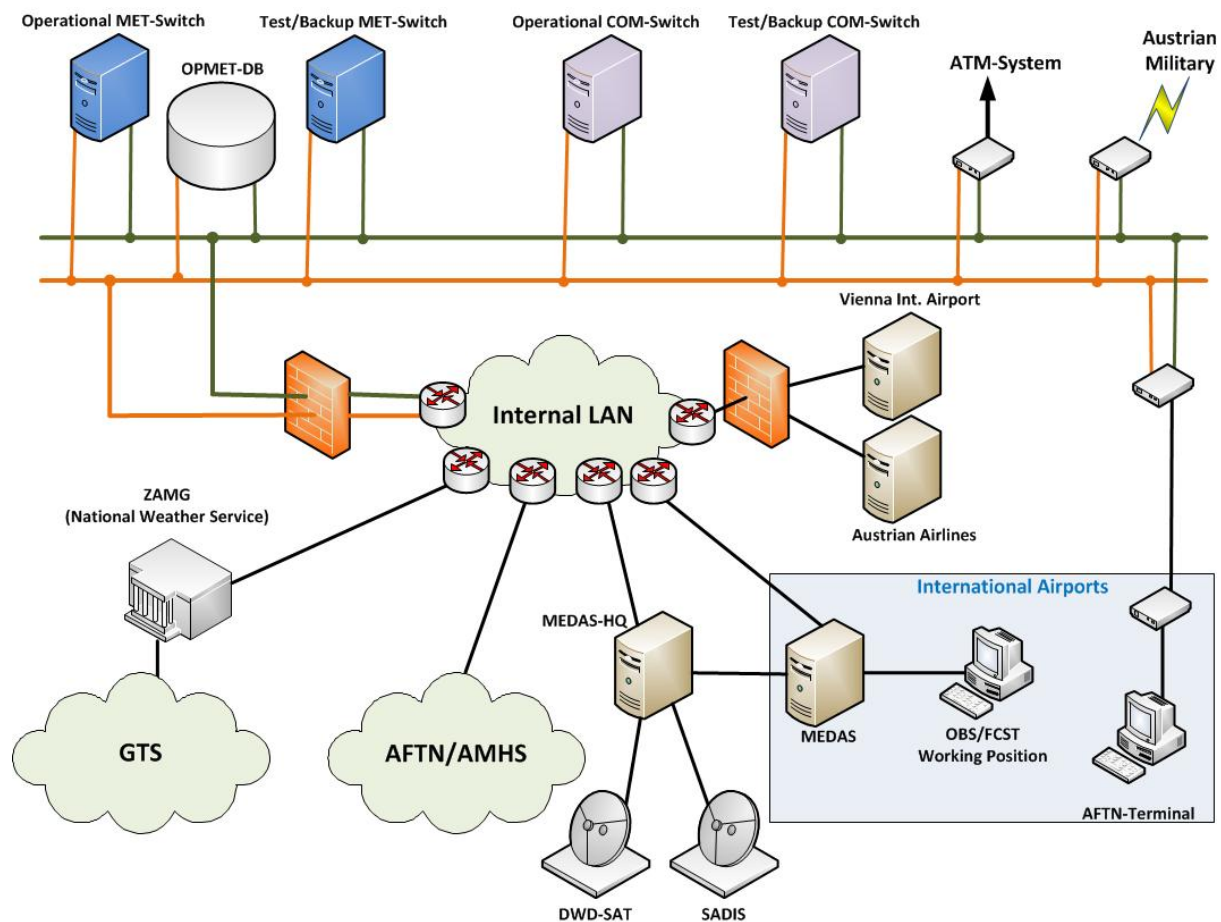


Figure 5: Setup of ROC Vienna

Most of this picture should be self-explanatory. The MET-Switch as well as the OPMET-DB and the COM-Switch are connected to the same network which is connected via a firewall to the Austro Control (ACG) internal LAN. There is no connection to the ATM-LAN. Only an asynchronous line is available to send defined OPMET-data into the ATM-system.

Another asynchronous line does exist to provide OPMET-data to the Austrian Military. This

connection is using a microwave link in order to have it as secure as possible.

Some more asynchronous lines are established with each aerodromes OBS/FCST position. This functionality can be used for backup purposes and will be described later on in this document.

From the internal LAN there is a connection to the NWS. The NWS is member of the WMO but ACG is providing the RTH-service (Regional Telecommunication Hub) within the WMO-network (GTS). Therefore the routers into the GTS are situated at the NWS.

Another connection from the LAN is to the MEDAS (Meteorological Database and Application Server). This is the internal system used by meteorologist. There is a MEDAS situated at each international aerodrome and one at the ACG HQ. The one in the HQ is connected to the SADIS as well as to the DWD-SAT.

There is no direct connection of SADIS to the MET-switch.

4.1.1 The Problem with GTS

OPMET data should be exchanged using the ICAO-AFS. Unfortunately not all states use the AFTN but the GTS. In most cases the reason is that the NWS is providing the aeronautical MET-service based on a contract with the CAA. Normally these institutions do not have an AFTN-connection but only GTS. In some situations there is at least an AFTN-system at the airport that could be used in a backup situation.

The picture in **Attachment A** shows all the states ROC Vienna is responsible for. This overview clearly shows that Vienna is receiving OPMET data not only via the AFS but also via GTS. With some countries there is no direct connection at all like Poland or the Russian Federation. The exchange of OPMET data with those countries has to be co-ordinated via the Czech Republic.

When looking at the AFS-connections it can be seen that there are a lot of countries that do send some OPMET-data direct to Vienna but are not supplied by the ROC. Most of these probably get their data via GTS from Moscow (like Azerbaijan, Belarus, Turkmenistan,..) or via SADIS.

Due to the above described situation it is, in a backup scenario, not possible for ROC London to cover the whole AoR of ROC Vienna. Further details can be found in the following chapters.

4.2 Outage of the MET-Switch

An outage of the MET-switch will have the following impacts:

- Austrian Routine-Bulletins will not be compiled and distributed (SA,FC,FT,FA,..)
- Austrian Non-Routine-Bulletins will not be distributed (WS,WV,UA,..)
- Centres in the AoR (EUR & MID) do not receive any data
- Data from the AoR (EUR & MID) can not be relayed

The following figure displays the situation once the backup has been activated the:

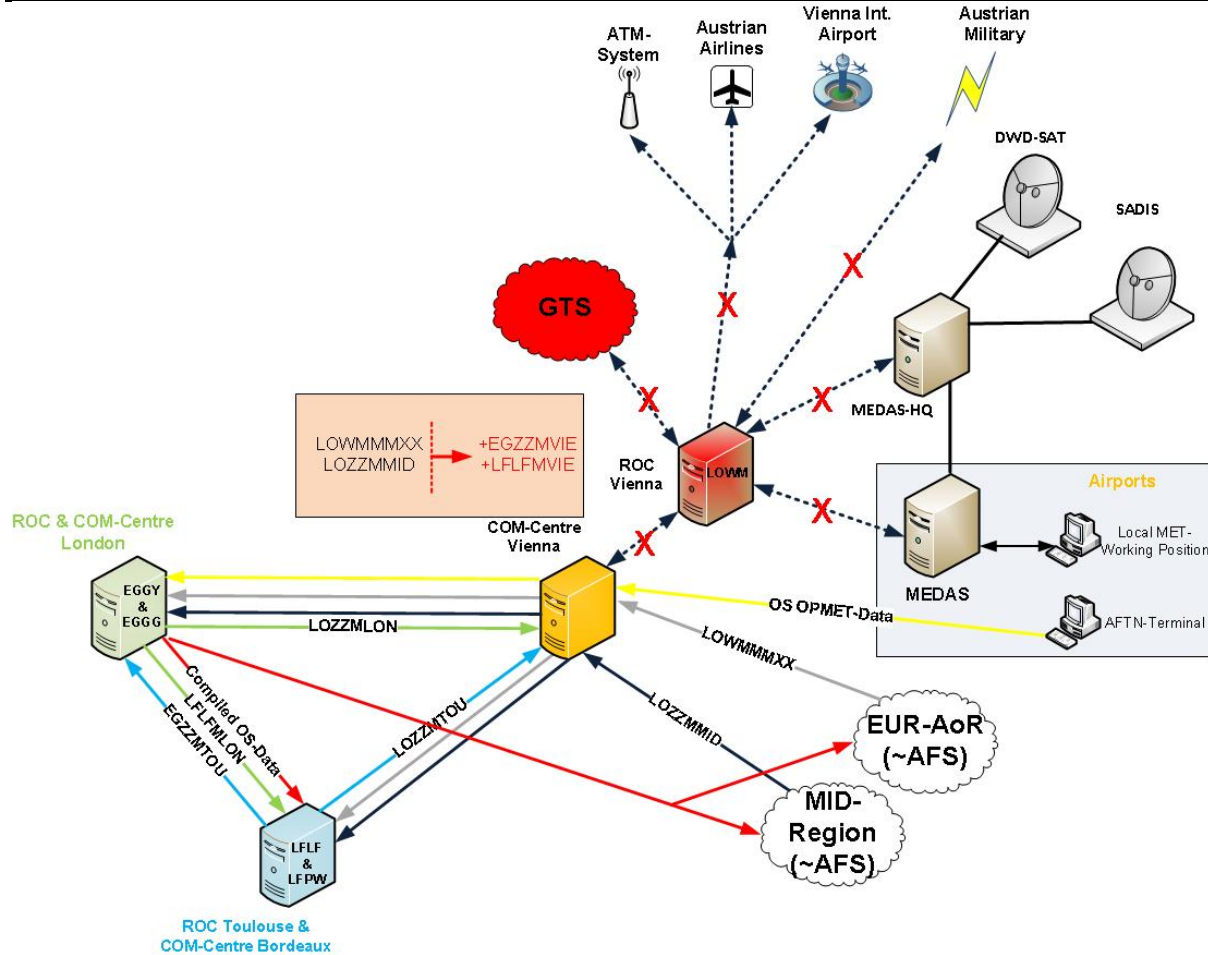


Figure 6: Backup when ROC LOWM is failing

The problem stated before under paragraph 4.1.1 can now be seen in graphical form. All centres which are unable to use AFTN will not have the possibility to be part of the backup procedure. This means that they are not able to provide their OPMET-data for international distribution. Furthermore they will not be supplied with OPMET-data by ROC-London. In regard to the last point, this might not be a problem for all centres as most of them have other means for data reception like SADIS

The Austrian ATM-System is presently not able to get weather data via AFTN. This will change during 2013 as a new ATM-system will get installed providing this capability.

Austrian Airlines is getting alphanumerical as well as binary OPMET-data via TCP/IP. A national solution has to be discussed in order to use MEDAS for providing the data.

Vienna International Airport is also getting certain data via TCP/IP. As with Austrian Airlines a national solution has to be discussed.

The data exchange with the Austrian Military has to be discussed as well e.g. weather ROC London should also compile their reports. But as they presently do not have the possibility to use AFTN this might be impossible.

The MET-operations are able to use AFTN in order to send alphanumerical OPMET-data directly

to ROC London for compilation. A list of bulletins to be compiled by ROC London is part of the procedures described in chapter 7. These are not only Austrian compilations but also compilations including some reports out of the AoR.

4.2.1 Centres in the AoR of ROC Vienna connected via GTS

Following there is a list of centres using only GTS for data exchange. For each of those the actual possibilities are described

Croatia:

Croatia (Crocontrol) is actually sending the national OPMET-data via AFTN to Vienna. OPMET-data is mainly received via SADIS. No OPMET-data is send to ATM Croatia via AFTN. A GTS connection is available between Vienna and the Croatian Meteorological and Hydrological Service to exchange MET-data.

Czech Republic:

There is no possibility to use AFTN as far as known by know as the NWS is not connected to the AFS. Only the ATS is using the AFTN, but not to exchange weather data.

Germany:

All data can be exchanged via AFTN as well as via GTS.

Hungary:

AFTN is available at Budapest airport. Whether this connection could be used in case of a backup scenario has to be investigated.

Russian Federation:

There is no possibility to use AFTN by the Russian NWS. Besides the compilations prepared by Moscow and received via GTS, Vienna does receive OPMET-data directly from some airports in the Russian Federation via AFTN. Some of those are recompiled and disseminated internationally.

Serbia & Montenegro:

The NOC is not able to use AFTN to exchange data. But all airports, as well as the MWO, do have that possibility. This fact can be taken into consideration for backup.

Slovakia:

There is no possibility to use AFTN.

Slovenia:

In normal operations Slovenia is only using GTS for OPMET-data exchange. But an AFTN connection has been implemented and tested which can be used in case of backup..

Turkey:

There is no possibility to use AFTN. Turkey is using SADIS and has additionally the possibility to use the internet to connect to a FTP-Server at DWD. But still there is the problem to disseminate the OPMET-data from Turkey in case of a backup situation.

4.3 Outage of AFS-Node Vienna

An outage of the AFS-Node will have the following impacts:

- The ROC is not reachable
- National data can't be transmitted
- Data from/to AoR (EUR & MID) can't be relayed
- **Airspace will be shut down as FDPs will get no Flight Plan data !!!**

The only possible way how centres in the AoR of Vienna would be able to send their national OPMET-data for international distribution is to reconfigure their AFS-Node. Instead of routing the data to **LOWMMMXX** or **LOZZMMID** the centres have to address the messages to **EGZZWPXX** and **LFPWYMEU**. London will take over the responsibility for the further transmission by activating the backup-routing as described in chapter 7.

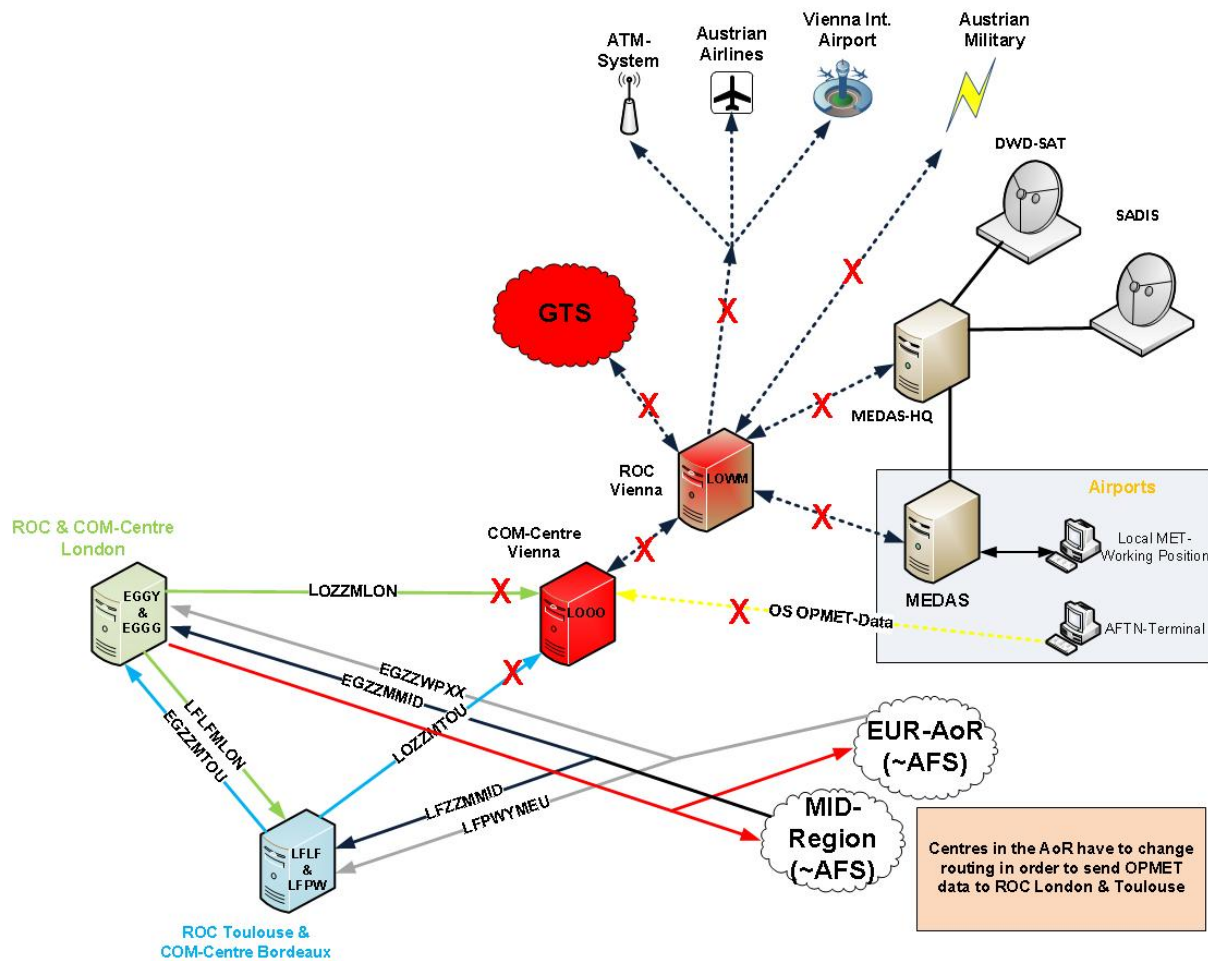


Figure 7: Complete Outage of Vienna

ROC-Vienna may still be working and also receive data via the GTS. SADIS-data is normally not routed to the MET-switch but it could easily be done. Nevertheless, as there is no connection to the AFS there will be no possibility to send data received from the GTS further on to ROC London or ROC Toulouse. The following figure illustrates this situation.

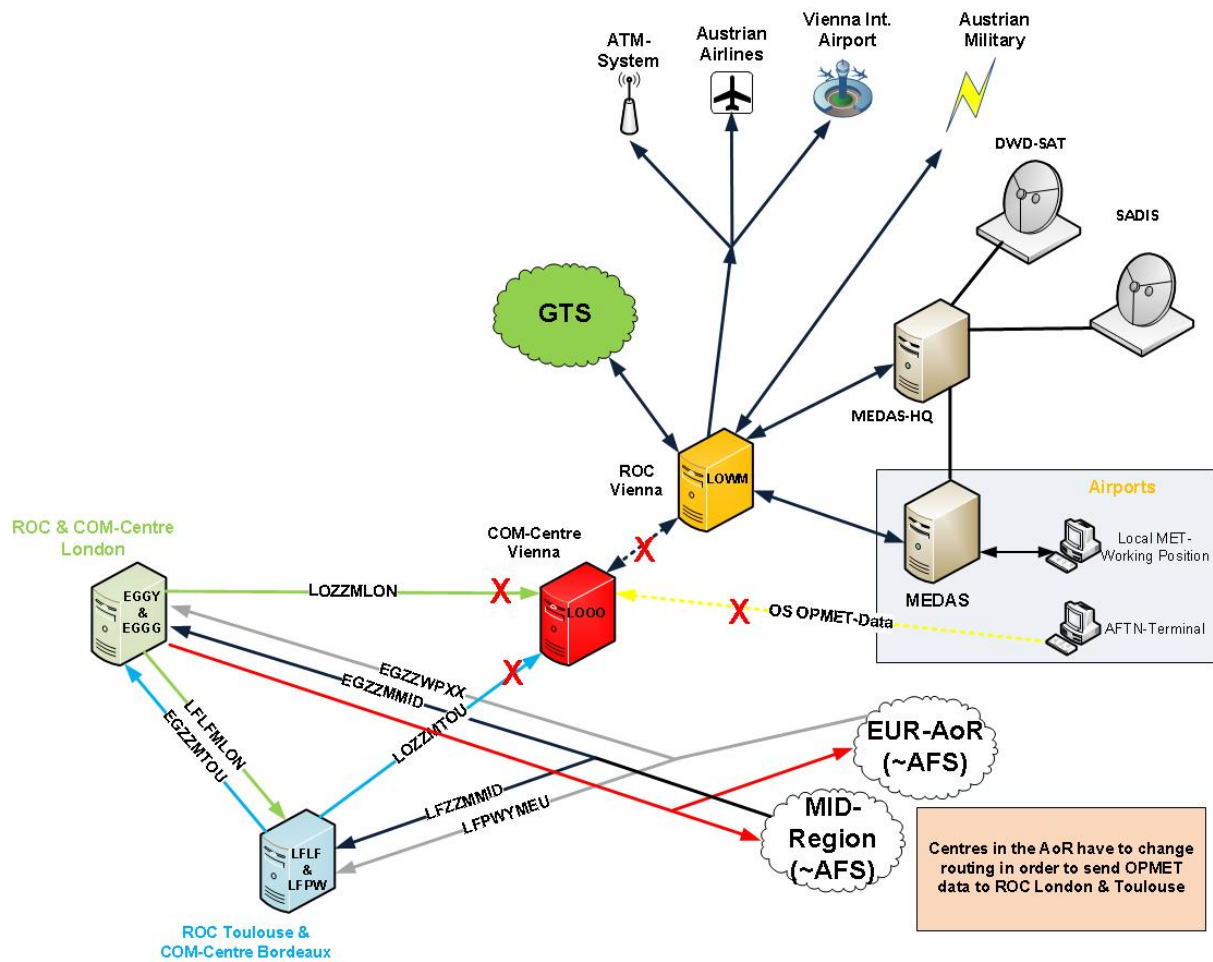


Figure 8: Outage AFS-Node LOOO with ROC still working

5. OUTAGE ROC LONDON

5.1 Technical Setup

5.2 Outage of the MET-Switch

5.2.1 Compilation of UK OPMET Data

5.2.2 Centres in the AoR of ROC London

5.2.3 I/R-Responsibilities

5.2.4 SADIS

5.3 Outage of AFS-Node London

6. OUTAGE ROC TOULOUSE

6.1 Technical Setup

6.2 Outage of the MET-Switch

6.2.1 Compilation of French OPMET Data

6.2.2 Centres in the AoR of ROC Toulouse

6.2.3 I/R-Responsibilities

6.3 Outage of AFS-Node Bordeaux

7. THE BACKUP PROCEDURE

In this chapter the procedures to be followed by

- the failing ROC
- the ROC providing backup
- the NOCs (National OPMET Centre) in the AoR (Area of Responsibility) of the failing ROC

in case of an outage of the MET-Switch or the AFS-Node are described.

7.1 Backup Procedure ROC Vienna

National procedures are already in place covering an outage of the MET-Switch. Those will not be described in detail within this document.

Procedures for *planned outages* due to hard- and/or software changes are not covered in this document and are regulated by national procedures.

7.1.1 Outage MET-Switch

7.1.1.1 Actions for ROC Vienna

a) Starting the Procedure

If an unforeseen outage of the MET-Switch lasts half an hour and if it is expected to continue, the national units have to be informed as described in the national outage procedure (**SCC-AA182, chapter 8**).

Additionally the two ROCs should be informed. The phone numbers to be used can as well be found in the above mentioned national outage procedure.

Furthermore a NOTAM has to be issued to inform all international centres according to national outage procedure.

If the outage is expected to **last more than a hour or if no estimation is possible** co-ordination with the management has to take place. If it is decided to start the backup procedure ROC London has to be contacted.

Additionally to the above mentioned and already sent NOTAM a NO-message (Notification) shall be sent via AFTN to inform all centres in the EUR-Region about the actual backup situation. This will be done by London (see chapter 7.1.1.2).

The AFS-node Vienna (LOOO) has to update the address group LOWMMMXX by adding the two ROC-addresses. This will guarantee that all OPMET-data received via AFTN from the centres in the AoR of Vienna are directly sent to the remaining ROCs:

- **EGZZMVIE**
- **LFLFMVIE**

Also the centres connected via GTS have to be informed and asked, where applicable, to send their OPMET-data only via AFTN until further notice:

State	Information
Croatia	No action required as data is by default sent via AFTN.
Czech Republic	Not connected to AFTN. Inform about outage.
Hungary	<i>Possibly sent from LHBP. Further investigations necessary</i>
Serbia	Operators shall inform airports to send data directly to LOWMMMXX.
Slovakia	Not connected to AFTN. Inform about outage.
Slovenia	Request to send OPMET-data via AFTN to LOWMMMXX.
Turkey	Not connected to AFTN. Inform about outage.

b) Stopping the Procedure

As soon as the MET-switch is up and running again Vienna shall contact ROC London to stop the backup. Also all national units have to be informed according to the national procedure. After co-ordination took place a NOTAM has to be generated to inform all international centres.

Also the centres connected via GTS have to be informed accordingly. This procedure is described in the national documentation.

The AFS-Node Vienna has to remove the addresses of the two ROCs from the address group LOWMMMXX.

7.1.1.2 Actions for ROC London

a) Starting the Procedure

The Backup for ROC Vienna will be initiated by a phone call as mentioned under 7.1.1.1. After such a call the operator has to activate the compilation of the following Austrian OPMET-bulletins:

Header	Content	Header Time	Compilation Time
SAOS31 EGGY	LOWW, LOWL, LOWS, LOWI, LOWG, LOWK	HH+20 HH+55	HH+25 HH+55
SAOS32 EGGY	LOXZ	HH+20 HH+50	HH+25 HH+55
SAOS33 EGGY	LOAN, LOAV, LOIH	HH+00	HH+10
FTOS31 EGGY	LOWW, LOWL, LOWG	YY0500	05:27Z
FTOS32 EGGY	LOWS, LOWI, LOWK	YY1100 YY1700 YY2300	11:27Z 17:27Z 23:27Z
FTOS33 EGGY	LOAN, LOAV, LOIH		(05/11):27
FCEE31 EGGY	UAIL, UASP, UADD, UASK, UACK, UACP, UAOO, UAKD	YY2300 YY0200	00:10Z 03:10Z ...
FCOS32 EGGY	LOXZ	YY0200 YY0500 ...	02:30Z 05:30Z ...

SAEE31 EGGY	UAII, UASP, UADD, UASK, UACK, UACP, UAOO, UAKD	HH+00 HH+30	HH+10 HH+40
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Those bulletins marked with a yellow background could only be compiled if

- A way could be found to send the military data (LOXZ) to ROC London
- Russian airports send their data to LOWMMMXX instead of LOWMYBYX

Furthermore the predefined backup-routing for the centres in the AoR of Vienna has to be activated.

Additionally to the NOTAM issued by Vienna, ROC London shall issue the following notification message to inform all users about the situation:

NOUK?? EGGY YYGGgg
ATTENTION ALL CENTRES!!!!

DUE TO A TECHNICAL PROBLEM THE REGIONAL OPMET CENTRE
LOWM AND OPMET DATABASE VIENNA IS DOWN UNTIL FURTHER NOTICE.

REGIONAL OPMET CENTRE LONDON HAS STARTED TO PROVIDE OPMET DATA
BACKUP FOR CENTRES IN THE VIENNA AREA OF RESPOSIBILITY=

This notification could in addition be sent out via E-mail using a predefined address list.

b) Stopping the Procedure

After Vienna is calling to inform that the MET-switch is up and running again the above described changes have to be reversed. Additionally another notification messages has to be sent to inform all users via AFTN and E-mail:

NOUK?? EGGY YYGGgg
ATTENTION ALL CENTRES!!!!

REGIONAL OPMET CENTRE LOWM AND OPMET DATABASE VIENNA ARE UP AND
RUNNING AGAIN.

ROC LONDON HAS STOPPED THE BACKUP.=

7.1.1.3 Actions by NOCs in the AoR Vienna

No actions are required from NOCs.

7.1.2 Outage AFS-Node

7.1.2.1 *Actions for ROC Vienna*

a) Starting the Procedure

If an unforeseen outage of the AFS-Node lasts half an hour and if it is expected to continue, the national units according to national procedures (**SCC-AA181 – chapter 8**) have to be informed. As described in this documentation COM Centre EDDD has to be contacted via phone and asked to issue an “*Outage Notification*” to all EUR COM Centres.

If the outage is expected to **last more than a hour or if no estimation is possible** co-ordination with the management has to take place. If it is decided to start the backup procedure ROC London has to be contacted.

Additionally to the notification issued by COM Centre EDDD a NO-messages (Notification) shall be sent by ROC London via AFTN to inform all centres in the EUR-Region, informing them about the actual backup situation. Details can be found in chapter 7.1.2.2).

In case the MET-switch is still working a notification shall be sent to all centres connected via the GTS:

```
NXNX91 LOWM <DDHHMM>  
COM CENTRE VIENNA (LOOO) IS OUT OF SERVICE SINCE <HH:MM>.  
OPMET DATA WILL NOT BE DISTRIBUTED INTERNATIONALLY.  
ESTIMATED DURATION: UNKNOWN
```

```
WHEREVER POSSIBLE USE AFTN TO SEND YOUR OPMET DATA  
TO EGZZWPXX AND LFLFYBYX=
```

b) Stopping the Procedure

As soon as the AFS-Node is up and running again Vienna shall contact ROC London to stop the backup and inform all national and international units as described in the national outage procedures.

Also the centres connected via GTS have to be informed accordingly:

```
NXNX91 LOWM <DDHHMM>  
COM CENTRE VIENNA (LOOO) BACK TO NORMAL OPERATION  
SINCE <HH:MM>.
```

7.1.2.2 *Actions for ROC London*

a) Starting the Procedure

The Backup for ROC Vienna will be initiated by a phone call as mentioned under 6.1.2.1. After such a call the operator has to activate the predefined backup-routing for the centres in the AoR of Vienna.

Additionally ROC London shall issue the following notification message to inform all users about the outage:

NOUK?? EGGY YYGGgg
ATTENTION ALL CENTRES!!!!

DUE TO A TECHNICAL PROBLEM THE COM CENTRE LOOO IS U/S UFN. DUE TO THAT OUTAGE ALSO THE REGIONAL OPMET CENTRE LOWM AND OPMET DATABASE VIENNA ARE NOT REACHABLE VIA AFTN UNTIL FURTHER NOTICE.

REGIONAL OPMET CENTRE LONDON HAS STARTED TO BACKUP THE CENTRES IN THE AREA OF REponsibility OF VIENNA.

ALL CENTRES IN THE AREA OF RESPONSIBILITY OF LOWM:
PLEASE ROUTE ALL OPMET DATA INTENDED FOR LOWMMMXX TO EGZZWPXX AND LFLFYBYX INSTEAD=

This notification shall also be sent out via E-mail using a predefined addresslist.

b) Stopping the Procedure

After Vienna is calling to inform that the AFS-node is up and running again the backup routing has to be stopped. Additionally another notification messages has to be sent to inform all users via AFTN and E-mail:

NOUK?? EGGY YYGGgg
ATTENTION ALL CENTRES!!!!

REGIONAL OPMET CENTRE VIENNA AND OPMET DATABASE VIENNA ARE AGAIN REACHABLE VIA AFTN.

ALL CENTRES IN THE AREA OF RESPONSIBILITY OF LOWM:
PLEASE RECONFIGURE THE ROUTING OF YOUR OPMET DATA TO BE SENT TO LOWMMMXX ONLY=

7.1.2.3 Actions for NOCs in the AoR of Vienna

a) Starting the Procedure

As soon as the “NOUK?? EGGY” or/and the notification “NXNX91 LOWM” sent by LOWM via the GTS is received:

- all NOCs, sending OPMET-data via AFTN to ROC Vienna, have to replace the address LOMWMMXX by EGZZWPXX and LFLFYBYX.
- all centres connected via the GTS, which have the possibility to use AFTN, shall inform all

necessary national units to start sending OPMET data to EGZZWPXX and LFLFYBYX.

The international routing of OPMET-data will be done by ROC London based on the routing information provided by the RODC.

b) Stopping the Procedure

As soon as the “**NOUK?? EGGY**” or the SVC from LOOO or the notification “**NXNX91 LOWM**” sent by LOWM via the GTS is received informing about going back to normal situation

- all NOCs shall reset the routing of OPMET data to be sent to LOWMMMXX only
- all GTS-centres, which had the possibility to use AFTN, can provide data via GTS again

7.2 Backup Procedure ROC London

7.2.1 Outage MET-Switch

7.2.2 Outage AFS-Node

7.3 Backup Procedure ROC Toulouse

7.3.1 Outage MET-Switch

7.3.2 Outage AFS-Node

Attachment A – Technical Setup ROC Vienna

