

DANTE MailFLOW Service

First Quarterly Report 1995

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1 The Project Teams Activities

1.1 Help Desk Activities

The French participants in the MailFLOW project have announced last year that they will stop their

X.400 connections and shut down all the French RELAY-MTAs. Several aspects of this shutdown have been discussed among the French managers and the Project Team. The French RED400 service has then closed down all their Relay-MTAs by the end of March and terminated the participation in the MHS co-ordination service. The current national mapping authority at the University of Rennes will continue the job for a few month, until a new authority will be assigned to.

SUNET has set up a new RELAY-MTA in Sweden. The old one is still operational and serves now as a backup machine. The connection tests and the following integration into the existing "MailFLOW network" didn't raise any problems and most connections seem to work correctly.

Another new backup Relay-MTA has been set up by HUNGARNET. After a few successful tests it went into operation on February 27.

The connection to the new Swedish Relay-MTA works well. Most of the managers have configured this backup route on their MTAs. The connection to six sites is not yet working. It's not a new problem that the MTAs at these six sites are not well supported and that changes always take much longer there.

A problem has been detected to connect to the Chinese MTAs from several other MTAs. Digging into this problem, it was detected that it cannot be solved by the MailFLOW Team because it is related to the X.25 connection which is not available from several European countries to China.

The Canadian research network CDNNET has also announced to stop the participation in the MailFLOW project. They move all their X.400 connections to SMTP. All the routing documents and also the Canadian mapping tables have been removed on March 20. There was not much traffic on the links to Canada anyhow.

The two Danish Relay MTAs dk2 and dk3 are no longer connected to EuropaNET since March 27 when NORDUnet dropped their connection. Both MTAs are still reachable with both of the mandatory stacks Public-X.25 and RFC1006 (see the table in Annex 1, chapter 1.3).

1.2 Meeting Participation

Marcel Parodi and Urs Eppenberger attended the 32nd **IETF** meeting at Danvers where they participated in working groups related to e-mail. See Annex 2 for more details on the working groups and the results after the IETF meeting.

Marcel Parodi and Urs Eppenberger participated at the **RARE WG-MSG** meeting, held March 6-9 at Amsterdam during the First European MIME Week, hosted by EEMA and TERENA. 28 Participants from 21 countries discussed organisational issues (relations to IETF, EEMA) and technical issues (base64/uuencode/bp14 encodings in a global X.400 and SMTP service). The number of present experts demonstrates the high interest in the WG-MSG work, since during that meeting there were parallel streams of EEMA WGs. Urs Eppenberger chaired this meeting since the WG chairman Harald Alvestrand was not able to attend.

1.3 The First MailFLOW Managers Meeting 1995

The MHS Managers Meeting was held during the First European MIME Week at Amsterdam, March 8. 21 MailFLOW managers (and 3 guests) participated at the meeting. The main focus of the MailFLOW managers meeting was on the migration towards DNS based mapping table registry and distribution. A second important topic was the slow progress of the move from X.400(84) to X.400(88).

A common session was arranged for the MailFLOW Managers and the EEMA User committee (UC), Internet committee (ICE) and Commercial service provider committee (CSPC). The goal of EEMA was to demonstrate co-operation between the ISO and the Internet world. Several MailFLOW took the opportunity of being at the same meeting as the commercial service providers to discuss connectivity and gateway issues.

2 Planned Meetings for 1995

The Project Team will be represented by Urs Eppenberger and Felix Kugler at the 33rd IETF, July 17-21, Stockholm.

The second MHS Managers meeting will probably be held at Zurich in the last week of September (week 39).

The Project Team will be represented by Urs Eppenberger at the 34th IETF, December 4-8, Dallas, USA.

3 The Mapping Table Co-ordination Service

The focus of the analysis of this quarterly report is on the mapping table co-ordination service. This chapter contains the opinions and views of Urs Eppenberger, which do not necessarily reflect those of SWITCH nor claim to be correct. This collection is basically meant as an input to discussions on the future of MailFLOW.

The co-ordination Service for the mapping rules provided by MailFLOW has a high visibility. The mapping rules are not only used by the participants of the MailFLOW service but also by other networks and even software implementors. Currently the service is well established and is operated at a high quality level. One basic problem with the service is that only a few networks cover the cost for this service. Another problem is inherent to the mapping rules themselves since they link two different and formerly independent naming authorities together.

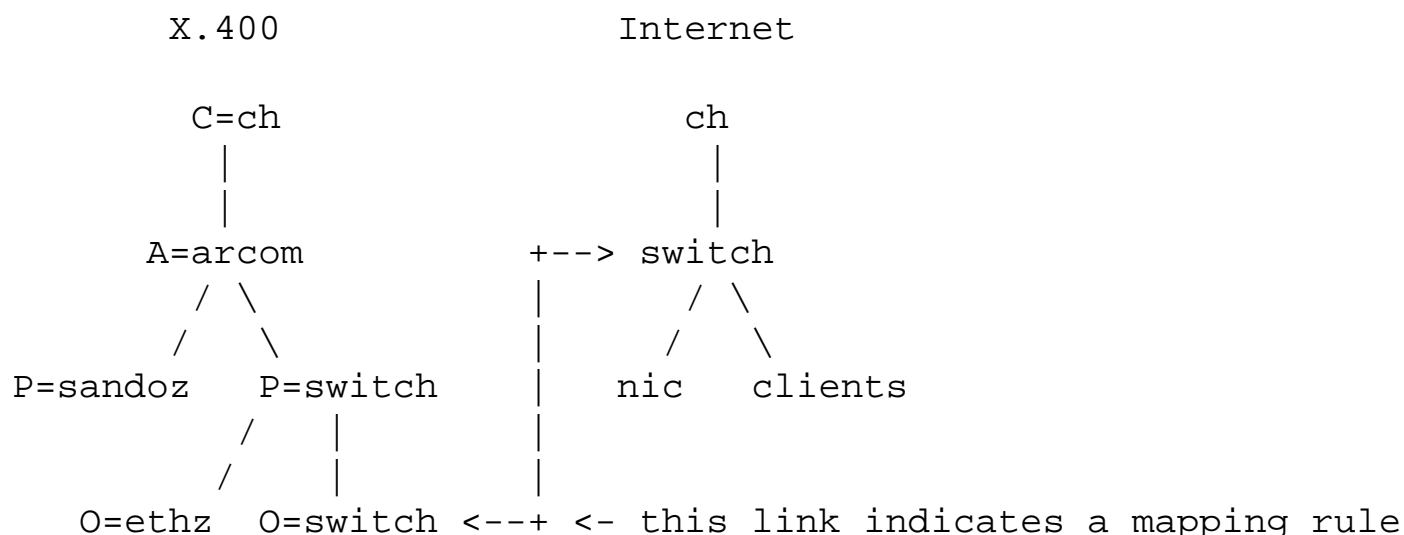
The analysis tries to make an inventory of the current solutions, the known problems and the next steps.

3.1 The Mapping Rules

A mapping rule allows to map an X.400 OR address into an Internet SMTP address:

```
S=eppenberger;O=switch;P=switch;A=arcom;C=ch <-> eppenberger@switch.ch
```

This works by linking two points of the address trees together with a mapping rule:



The effective mapping rule written in 'human readable' form looks like this:

```
O$SWITCH.PRMD$SWITCH.AMDM$ARCOM.C$CH#switch.ch#
```

The current services uses 4'681 mapping rules. Most of these rules are manually generated by experts with a solid X.400 and SMTP know how.

3.2 The Registration

Naming authorities are established in most countries of the world for X.400 addresses and Internet domains. Generally the X.400 naming authority for a country is a government based organisation which then delegates lower parts of the address tree to the ADMD service providers and the PRMD managers. The first organisation in a country which registers the top level domain for that country with IANA gets the naming authority for the Internet domain. It then delegates the authority for the sub domains to the respective sub domain. The two naming authorities do not necessarily have any interaction. The registration of the mapping rules has been organised independently in many countries by organisations which operate gateway services themselves and have the appropriate know how to validate mapping rules. Such organisations exist in 26 countries. They are called national mapping table registries. A registry does not necessarily have any naming authority in one or both of the addressing trees. But they are responsible for the correctness and the validity of a mapping rule they accept.

The MailFLOW Project Team has a list of the national mapping table authorities and the originator of a national mapping table is checked against that list. The Project Team then verifies the tables again and concatenates them to the globally co-ordinated mapping tables. At the moment only informal procedures exist to be recognised by the Project Team as a national mapping table authority.

3.3 The Distribution

The mapping tables are daily updated and archived on an anonymous FTP server at SWITCH. The tables are freely available for everybody. Each month a version of the tables is also sent with e-mail to organisations without anonymous FTP access.

The tables are fetched by the national mapping table authorities and updated with local mappings. Often they provide specially reformatted tables which can be used by different gateway software directly.

If an organisation does want to use mapping tables, they need to check for the national mapping table authority first and get the tables from them. If there are no national additions, then they can use the tables from MailFLOW directly.

3.4 Known Problems

Usually the national mapping table authorities are offering the service on a voluntary basis. They have a high level of expertise in this area and ensure an almost error free mapping table. Most of them would prefer a distributed registration mechanism where they are not needed anymore. The distribution however would most probably lead to more errors in the tables.

The file based distribution mechanism for the mapping rules is archaic. It has been recognised that a directory based solution is the future. Two proposals, one DNS based and one X.500 based, are implemented and in a pilot stage. At the last MailFLOW managers meeting it has been decided to go for the DNS based solution.

In the US and in France there is no funding anymore for a national mapping table authority. There are still networks which would like to use mapping rules for their domains in these countries. Generally they lack the know how to take over the mapping rule registration task.

A number of gateway service providers do not use the globally co-ordinated mapping tables. They implicitly want the gateway to be seen in the address and all the messages routed through their gateway. Consulting helps in a few cases to overcome the fear of being dependent on a third party which registers mapping rules for their clients.

3.5 Planned evolution

In a first step the DNS based mapping table distribution will be introduced as an alternative mechanism to anonymous FTP and e-mail. The manager will have to update their tools, but they can

do it without any immediate time pressure and service interruption. The registration still works through national mapping table authorities and MailFLOW. The DNS based distribution mechanism does not allow the national mapping table registries to distribute reformatted tables for specific software and they are not able to add national mappings anymore.

Distributed registration using DNS is for further study. The implications are not clear by far. Once the registration is distributed, it is not easily possible to collect a full mapping table for file based implementations anymore and it is also very difficult to synchronise the X.500 based implementations with DNS.

Annex A Statistics

The layout of this section remains more or less the same for each quarterly report. Highlighting has been used to indicate changing figures in plain text paragraphs.

A.1 Help Desk

Queries to the MailFLOW Project Team are primarily handled by Marcel Parodi and Bernard Stern. Two other SWITCH staff members working as postmasters for SWITCHmail act as backup.

Country	Number of Queries			
	Q2/94	Q3/94	Q4/94	Q1/95
Austria	1	0	4	1
Belgium	2	2	3	1
Canada	0	0	0	1
China	6	0	0	1
Croatia	0	0	0	0
Denmark	1	0	0	2
Finland	1	2	1	0
France	5	6	6	11
Germany	3	9	4	3
Greece	0	0	0	0
Korea	0	1	1	0
Hungary	4	0	1	2
India	1	0	1	0
Ireland	2	2	0	0
Italy	4	2	5	2
Lithuania	0	0	1	0
Luxembourg	3	0	1	0
Norway	2	2	0	0
Poland	2	5	2	0

Portugal	0	0	0	0
Slovenia	0	1	0	0
South Africa	0	1	0	0
Spain	3	3	1	2
Sweden	2	0	1	3
Switzerland	3	2	1	1
The Netherlands	0	0	5	1
Tunisia	0	1	0	0
United Kingdom	7	6	9	2
United States	0	1	0	0
Total	52	46	47	33

During the first quarter of 1995 the Project Team handled **33 queries**. They were registered in a trouble ticket system. The above list indicates the originating country of the query. Please note, that a large number of queries does not mean a lot of trouble in that country. On the contrary, it often means that there are MHS managers who closely monitor the behaviour of the network. They are able to earlier report problems than the responsible managers in the remote network.

A.2 File Server

A file server is operated by SWITCH, reachable via FTP, e-mail or TELNET. The procedures for the service and all relevant information for the operation are archived.

The server contains **940 files** with about **30 Mbytes** of data of which about 1 MByte is operational data needed for the configuration of the WEPs and gateways. **20'200 files** have been retrieved from the file server with a total amount of **282 MBytes**. On average each file has been retrieved **21 times**.

57 files have been updated **manually** during the first quarter of 1995.

A.3 Routing Co-ordination

The Project Team maintains a collection of **190 routing documents**. The syntax is checked with a tool and the content is checked for correctness by testing the connections with the operational X.400 system of SWITCH. Correct documents only get archived on the server and published via a separate distribution list.

The complexity of the routing can be seen while studying the table on the next page. Each network participating in the DANTE MailFLOW Service is listed together with the number of Well known Entry Points which form the backbone of the X.400 network. There are two important points to note:

- There are networks without their own WEP.
- Some WEPs can't connect to each other since they do not share a common network, for example CRN in China to ESNET in US, or HUNGARNET in Hungary to RESTENA in

Luxembourg.

A procedure has been worked out in RARE WG-MSG and IETF X400-OPS which enables mail routing between all participants in the service. The procedure and document formats are described in RFC1465. It enables all participants to exchange mail using third party WEPs with appropriate network connectivity. Where more than one common network exists, managers can define their preferred network.

Almost all systems in the service running PP/ISODE use a tool written by Felix Kugler, SWITCH, which generates directly usable routing tables out of the routing documents which follow RFC1465.

Country connectivity	Network	WEP	Network			
			Inter- net	Public X.25	Europa- net X.25	R&D CLNS
Austria	ACONET	1	x	x		
Belgium	BELNET	1	x	x		
Canada	CDNNET	1	x	x		
China	CRN	2		x		
Croatia	CARNET	0				
Denmark	DENET	2	x	x		
Denmark	DKNET	1	x	x		
Denmark	MINERVA	0				
Finland	FUNET	1	x	x		
France	RED	2	x	x		
Germany	DFN	1	x	x	x	
Greece	ARIADNE	1	x	x	x	
Hungary	HUNGARNET	2	x			
India	ERNET	1	x			
Ireland	INCIP	1	x	x	x	
Italy	GARR	2		x	x	x
Lithuania	LITNET	0				
Luxembourg	RESTENA	1		x		
Norway	UNINETT	1	x	x	x	
Poland	NASK	1	x			
Portugal	INESK	2	x	x	x	
Slovenia	ARNES	2	x	x	x	
Spain	IRIS	2	x	x	x	
Sweden	SUNET	1	x	x		
Switzerland	SWITCH	2	x	x	x	x
The Netherlands	SURFNET	2	x	x	x	
Tunisia	IRSINET	1		x		
United Kingdom	JANET	1	x	x	x	

United States	ESNET	2	x	x
United States	XNREN	1	x	

Legend:

WEP

Well known Entry Point

Internet

connection with TP0/RFC1006/TCP/IP to the Internet

Public X.25

connection with TP0/X.25 to the public X.25 service

Europenet X.25

connection with TP0/X.25 to Europenet

R&D CLNS

connection with TP4/CLNS to the R&D CLNS service mainly available on HEPNET lines

A.4 Mapping Tables

A tool developed during the COSINE-MHS service is used to automatically handle mapping table updates sent in by validated mapping table managers. During the reported period **50 valid updates** (4th Quarter 1994: 32) and **27 invalid updates** (4th Quarter 1994: 18) have been received. After reception of a valid update a new international mapping table is created and archived on the file server for retrieval. The tables are also actively distributed once every month according an agreed schedule. All four tables together contain **4'681 mapping rules** (4th Quarter 1994: 4'560).

Correct mapping tables and correct function of the tools is of major concern for the Project Team. Errors can lead to lots of routing and addressing problems immediately perceived by end users.

The Project Team handles problems if there are conflicting rules. This has not been necessary during the reported period. Since the address of the Project Team is included in the two Internet RFCs defining gateway behaviour and operation, two organisations approached the Project Team to understand the mapping registry procedures and to get the tables.

Annex B IETF Working Groups

The IETF **NOTARY** working group specifies SMTP protocol extensions to support delivery notification. This will eliminate one of the major drawbacks of SMTP for the reliable usage mandated by commercial user communities.

The work of the NOTARY group is very important. It adds the missing functionality for deploying

SMTP within and between commercial organisations who need a reliable and controllable mail system. The well accepted RFC1327 for gatewaying between X.400 and RFC822 will need to be changed and all gateway software needs to be replaced.

The proposals are almost finished and have already received comments from first implementors. There is some pressure from the commercial world to implement receipt notifications. A new working group will be started to work on this issue. The primary intention is to align the functionality with X.400 for easy gatewaying.

To cope with a steady flow of new proposals to improve and extend MIME and SMTP, the group **MAILEXT** has been created to review the documents. This group does not work on new issues but fine-tunes existing proposals to move them onto the standards track. The continuing changes to MIME and SMTP are a concern for software development companies, especially to those working on gateways to corporate e-mail systems.

IETF started also a working group on **EDI** over **SMTP**. The discussion list contains hundreds of recipients. Two thirds of the interested people are from US, half of the list members are from companies. The discussions cover broad areas and reflect the various backgrounds of the participants.

One specification is ready on how to use MIME for EDI traffic. A second document explaining in more details practical usage is in preparation.

The work of the group is highly relevant for the e-mail community. X.400 service provider have managed to sell X.400 as the primary highly reliable transport mechanism. It will be a very big push of Internet services in the commercial community, if the EDI work succeeds and the reliability of Internet Mail can be proven.

The working group did not meet at the 32nd IETF since there has been almost no activity. The usage document has not got any progress. This is probably not due to lack of interest but due to expert authors which can devote only limited time on this issue.