DANTE MailFLOW Service
Third Quarterly Report 1994

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1 Activity Report

1.1 Help Desk

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

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Country          Number of Queries
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	Q1	Q2	Q3
Austria	3	1	0
Belgium	10	2	2
Canada	0	0	0
China	8	6	0
Croatia	0	0	0
Denmark	11	1	0
Finland	1	1	2
France	7	5	6
Germany	21	3	9
Greece	0	0	0
Korea	0	0	1
Hungary	0	4	0
India	4	1	0
Ireland	3	2	2
Italy	2	4	2
Lithuania	0	0	0
Luxembourg	0	3	0
Norway	6	2	2
Poland	0	2	5
Portugal	0	0	0
Slovenia	0	0	1
South Africa	0	0	1
Spain	6	3	3
Sweden	0	2	0
Switzerland	8	3	2
The Netherlands	0	0	0
Tunisia	1	0	1
United Kingdom	15	7	6
United States	9	0	1
Total	114	52	46

During the third quarter of 1994 the Project Team handled **46 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.

13 queries were related to routing document updates. **7 queries** were related to the automatic PP configuration tool. The rest of the queries were related to downtimes of Well known Entry Points, connection problems and various questions about documents.

The connection to **Korea** has been started. Although tests were successful, the connection is not stable enough for an operational service and has therefore not been announced officially yet.

1.2 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 **920 files** with about **30 Mbytes** of data of which about 1 MByte is operational data needed for the configuration of the WEPs and gateways. **33'179 files** have been retrieved from the file server with a total amount of **231 MBytes**. On average each file has been retrieved **36 times**.

56 files have been updated **manually** during the third quarter of 1994.

1.3 Routing Co-ordination

The Project Team maintains a collection of **150 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 according RFC1465. No major problems were detected with the tool during the reported period.

Inter-ney	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	x		
Denmark	dknet	1	x	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		1	x			
India	ernet	1	x				
Ireland	incip	1	x	x	x		
Italy	garr	2		x	x		
Lithuania	litnet	0					
Luxembourg	restena	1		x	x		
Norway	uninett	1	x	x	x		
Poland	NASK	1	x				
Portugal	inesc	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	1	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 withTP0/X.25 to the public X.25 service

Europanet X.25
: connection with TP0/X.25 to Europanet

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

1.4 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** and **15 invalid updates** 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 a month according to an agreed schedule. All four tables together contain **4'001 mapping rules**.

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. A reorganisation of the mapping tables for international organisations has been discussed with the Y-Net managers to ease their operation. Only one trouble ticket concerning the tables has been registered and handled by the help desk. Since the address of the Project Team is included in the two Internet RFCs defining gateway behaviour and operation, one organisation approached the Project Team to understand the mapping registry procedures and to get the tables.

1.5 Meetings

Urs Eppenberger attended the 30th IETF meeting in Toronto where he participated in working groups related to e-mail.

The IETF **MHS-DS** working group specifies the usage of the X.500 Directory by X.400. Draft documents are ready and two implementations are available, one by CDC and another by the ISODE Consortium. The final goal of this effort is to move from centrally co-ordinated routing and mapping provided by the DANTE MailFLOW service to distributed directory based co-ordination. The technical details are very complex and only few experts understand enough to contribute to the standardisation work. The working group started therefore a LONGBUD pilot where an experimental service based on MHS-DS documents is started to gain experience and to share know-how amongst the engineers and MHS managers.

During the Seattle IETF the LONGBUD pilot project has improved their document. While CDC is offering corporate mail solutions using the directory, there is no notable traffic on a global scope using the MHS-DS based specification.

MHS-DS is the only working group with a directory based and therefore distributed and scalable e-mail routing mechanism. The mapping has a competing proposal by Claudio Allocchio which uses the DNS instead of the X.500 directory. Only the winner will be standardised in IETF.

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.

With the finalised proposal distributed the group will now work on receipt notifications. A delivery report notifies the sender about a successful transmission of the message to the end system or about any problem on the way. A receipt notification informs the sender if the recipient has finally got (or even read) the message. This functionality has some use but touches privacy issues and is therefore highly debatable. 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 tune 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 also started 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.

The work of the group is highly relevant for the e-mail community. X.400 service providers 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.

CXII stands for Commercial X.400 Internet Interconnection. This IETF working group has primarily been founded to act as a contact for EEMA and handle issues which need standardisation on the Internet side. The group did not meet at the 29th or the 30th IETF, it silently died away. Obviously there is not enough interest in the IETF community to work on X.400 related issues. In addition a typical IETF participant is more interested in technology than in administrative and operational issues.

1.6 Fourth Quarter 1994

The second MHS Managers meeting is scheduled for October 20-21.

The second RARE WG-MSG meeting will take place at Zurich, October 19-20.

The Project Team will be represented by Urs Eppenberger at the 31th IETF, December 5 - 9, San

Jose, California, USA.

2 Future of the MailFLOW 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 first quarterly report analysed the usage of X.400 and SMTP in the R&D and the commercial world. It proposed three areas of activity:

- Mapping table co-ordination
- EEMA participation for contacts with public X.400 service providers
- Offer commercial gateway services between X.400 and Internet SMTP

The second report focused on the implications of MIME, SMTP Service Extensions and X.400(88) on MailFLOW.

This third report analyses the routing co-ordination service of MailFLOW and its importance.

2.1 Connectivity

IRSINET in Tunisia and CRN in China are the only two networks without Internet connectivity. The X.400 connection to the MailFLOW participants is vital for their external communication. They use public X.25 which is expensive, especially also since the traffic flow into these networks is much bigger than the other direction.

The routing has handled in MailFLOW distributes the cost amongst those participants who operate a public X.25 connection. It is not 100% fairly distributed, but the load for each participant is low enough that no additional cost sharing mechanisms are needed.

All other participants in the MailFLOW service do have an Internet connection. RESTENA in Luxembourg and GARR in Italy can't use Internet TCP/IP for their X.400 traffic, but they use EUROPAnet X.25 instead which has a volume independent cost too.

2.2 Operation

The MailFLOW service is highly stable. This is due to the fact that there are no major changes. Small routing updates are handled automatically in many places with the PP configuration tool. The overhead for the operation of the international X.400 connections is reduced to a bare minimum, comparable almost to SMTP.

When analysing the number of queries sent to the Project Team it is interesting to see that queries come from networks with committed manpower resources for the X.400 service.

Most networks have had the same manager on the job for several years, so he can do the tasks in less time. The optimisation has reached a point whereby more optimisation does not pay out anymore.

2.3 Gateways

All networks except IRSINET and CRN run gateways to Internet SMTP. They could therefore reach the other MailFLOW participants without using X.400. For those who have X.400 internally, it makes sense to relay the messages they receive with X.400 using X.400. This reduces the risk of loosing information by gatewaying unnecessarily to SMTP and back.

With the MIME capable gateways, however, this loss will probably be reduced to an acceptable minimum. The main efforts for gatewaying will shift from routing/mapping issues to support of various body parts (encoding, character sets) and interworking issues with the user agents.

The usage of gateways puts more emphasis on the co-ordination of the mapping tables, the other major part of the DANTE MailFLOW Service.

2.4 UPTURN

It is unknown yet which effect UPTURN projects will have on the routing service of MailFLOW. It will be necessary to base the connections on either X.400(88) or MIME/SMTP or both, X.400(84) does not have enough functionality.

The automated tools are ready for X.400(88). But there is not much in-depth know-how in this area.

2.5 Where DANTE comes in

The routing co-ordination service of MailFLOW is not a mandatory but an important service for the DANTE customers from the point of view of the service quality. X.400 connections on an international scale are viable since they work without any problems. If there are more resources needed in the future, be it manpower, increased cost for MailFLOW or investment in software, a number of networks might consider to stop international X.400 operation. It is the tough task of service providers to support their customers with any reasonable protocol they ask for and if it is possible to reduce the effort with a well co-ordinated X.400 service, it is worthwhile to do so.

Most managers operating the Well Known Entry Points in the MailFLOW service are experts in

X.400. Whilst they have local X.400 connections with partners which do not understand anything about communication, they can share know-how easily on an international scale with MailFLOW as their umbrella. An international X.400 connection within MailFLOW is easier to manage than a local connection.

Conclusions for the routing part of the DANTE MailFLOW Service:

- It is an important service for the DANTE customers and their clients since it enhances the service quality, but it is not absolutely necessary.
- The routing service is stable and works with low management overhead for the customers. It must stay so.
- The importance of the routing service might become lower during 1996 especially due to the spread of Internet protocols not only to the R&D world but also to the commercial world.