MAIL & REMOTE ACCESS PROJECT PROPOSAL

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OVERVIEW

The need to evaluate and change the way that business communication is handled via the PC system has become apparent. The current mail system is at a saturation point and no new users can be added without severely jeopardising the performance and stability of the mail system; additionally, the mail system is not scalable in any way, that is interfaces to external mail systems cannot be added and also increasing resource to 'beef up' the mail server is not an option.

Additional communication channels such as FAX and the Internet for mail can now be accessed from the PC system and the new mail system proposed will enable these channels to be harnessed from the PC.

Portable computers have been utilised for some time now largely by engineers on-site and managers working away from Stafford. The portables have largely been treated as 'standalone' PCs when away from Stafford, the solutions in this proposal enable portable PC users to connect to and use the services offered by the LAN just as if they were directly connected to it here in Stafford.

Appendix 1 contains a summary of the total project costs.

1.0   REQUIREMENTS

1.1 *   Improve the facilities and operation of internal mail systems.

The internal mail system (workgroup post office) installed at Large Generators is not designed to be employed in a full client server multi-user environment. It is intended to be used on very small peer-to-peer networks with limited numbers of users. The number of users currently installed on the workgroup post office is way in excess of the recommended maximum number. The workgroup post office is installed on the same servers that perform all of the LAN services and is difficult to administer and troubleshoot. The overloading of

mail is causing two problems:

- mail is slow and unstable;

- detrimental effect on data, applications and printing services.

1.2   Exchange messages, data and fax between Large Generators and: i) Belfort, ii) GEC ALSTHOM, iii) other companies, e.g. customers and suppliers.

The GEC ALSTHOM Corporate IST group has specified that an international electronic mail service, accessible from everywhere in the world, be installed for the whole GEC ALSTHOM group. Pierre Bilger has notified all units that the X.400 mail protocol be implemented and it would also be sensible to provide SMTP (Internet mail) at the same time to complement the X.400 protocol. See Appendix 9 for an explanation of X.400 and SMTP.

1.3   Provide remote access service for portable PC users.

To enable users who are not situated on the LG network, for example service engineers who are on-site or managers who are away from Stafford, to continue to communicate effectively with their colleagues back at Stafford it will be necessary to implement a service that will allow users with portable computers to connect to the LG network via a telephone access point anywhere in the world. This cannot be satisfactorily achieved with the software and hardware currently in use.

2.0   SOLUTIONS

2.1   Introduction

The requirements can be met by a solution comprising five main components:

- RAS PCMCIA modems for portable PCs requiring remote access;

- A 'server class' PC to mount the mail server software;

- Microsoft Exchange server and Microsoft Exchange client software;

- FAX server software to enable faxing sending / receiving from the PC;

- Message exchange services from a communications solutions provider to give X.400 and SMTP capability from the PC.

Each of the components are explained in detail below.

2.2   Remote Access (RAS)

RAS will enable users to connect their portable PCs to the LG LAN remotely and hence access all of the services offered by the LAN. Users will simply plug a lead from the PCMCIA modem of their portable computer into a telephone access point and run a short program that performs the LAN

connection automatically. The new components required are a PCMCIA modem which takes the place of the PCMCIA network adaptor card that is used when the portable computer is connected directly to the LAN, a set of telephone adaptors and an upgrade of the operating system used on the portable to Windows 95. The server based RAS software is included with the existing Windows NT Server operating system and the client based RAS software is included with the Windows 95 operating system.

2.3 'Server Class' PC

The existing PC servers installed at Large Generators are doing far more work than was originally anticipated when installing the LAN; there are almost double the number of users and a wider spread of applications served from the machines. Mail serving is very demanding of computing resource and it is for this reason that the installation of the new mail system will require mounting upon a separate machine. This will simplify the installation and configuration of the mail system and will also free up resource on the existing servers that is currently tied up providing the current mail service. The new server class PC will be of a similar specification to the existing servers and will have a fast Pentium processor, power supply protection and high resilience disk storage technology employed.

2.4 Mail Server and Client Software

2.4.1 Introduction

The present mail system has now reached saturation point and is not in any way scalable and hence needs to be fully replaced. A number of potential mail software platforms were considered. Upon investigation it was clear that Microsoft Exchange would be the most suitable solution for LG. Microsoft Exchange is a sophisticated messaging platform that provides electronic mail, group scheduling and groupware applications on a single platform that is fully integrated with the operating systems currently employed on the PC LAN. It will provide centralised management / tuning of system components and a range of expansion / connectivity options that are essential in a messaging system due to the unclear developments in the Internet world and in particular with respect to the services offered by ALCATEL which GEC ALSTHOM may in the near future be instructed to use.

2.4.2 Alternatives to Microsoft Exchange

Other potential mail server solutions considered were Lotus Notes and Novell Groupwise, these are believed to be the only widely supported, widely available mail solutions that are available that meet the requirements of the project.

- Although Lotus Notes does provide good mail services, it is largely focussed on the development

of groupware applications (the enabling of business processes via application development such as workflow) and tight integration with Intranet servers (Intranets are systems developed for sharing information that utilise similar technology to the Internet but are secured from general public access). These two areas are not requirements for Large Generators at the present time.

- Novell Groupwise is at the end of its current product lifespan and is awaiting a major upgrade to Groupwise XTD which has a preliminary release schedule for August 1996. It is particularly attractive to sites which operate a wide variety of operating systems from which clients have requisites to use e-mail, this is not the case at Large Generators. Additionally, Groupwise cannot provide the tight integration with the Windows NT operating system that enables a single log in process for users and simplification of administration for user support.

2.5 Fax Server Software

The fax server software will comprise of two main components, a fax server and a fax client. Anyone who wishes to send a fax out will simply use their existing word processor to generate the document and instead of outputting the file to a printer, the user will select output to a fax server upon which the user will be prompted for a fax number or will use address books that are already set-up. Incoming faxes will be directed to Microsoft Exchange and routed to nominated fax coordinators who will view the cover page and forward the fax on to the appropriate user. Two of the present fax machines which are on annual rental contracts can then be removed.

Note: To fax out information that is contained on a hard copy paper format it will still be necessary to use a manual fax machine, as the facility to scan hard copy documents in to the PC system will be encompassed in a future project.

2.6 Message Service Provider

2.6.1 Introduction

A message service provider will be required to perform the task of routing the externally addressed mail (be it X.400 or SMTP) to the appropriate carrier's networks and on to the target destination, and also to provide the routing for incoming mail.

Three potential suppliers of message exchange services have been identified, each of them offering different types of service and they are detailed below.

2.6.2 Recommended Message Service Provider

It is recommended that the solution using Trinité Limited be implemented at LG. It is the easiest to implement and manage since all of the gateways to the X.400 cloud and the Internet being performed by Trinité, it is already proven with several large GEC ALSTHOM sites successfully using it and it has the lowest startup costs and running costs. The solution does not offer an option for

Internet WEB browsing, however, this is not strictly a requirement of this project. The contractual terms offered by Trinité Limited is based on a monthly subscription and hence if it was necessary to terminate the contract with Trinité Limited, this could be facilitated fairly rapidly. In summary it is the lowest cost and meets all of the requirements.

The ALCANET UK solution has the advantage of connection to the ALCANET, however the benefit of this connection to LG is rather dubious. A secure Internet WEB browsing option is available and if this were to become a requirement then the ALCANET UK solution would become more attractive. The major problem of this solution is the high cost of connection to the ALCANET, which would appear to make the solution unjustifiable.

The UNIPALM PIPEX solution is more suited towards providing Internet capability and the X.400 message resolution service is potentially a flaw in the system. An additional leased line would need to be installed and managed which is an added complexity.

2.6.3 Trinité Limited

The messaging exchange service proposed by Trinité Limited is one that has been successfully implemented at other GEC ALSTHOM companies, notably GEC ALSTHOM Protection & Control in Stafford and GEC ALSTHOM Vacuum Equipment in Rugby. Trinité offer a post office message exchange service which is based on Trinité maintaining a replicated copy of the LG mail server post office. Sending messages to users in the X.400 'cloud' and Internet appears to users just like sending a message to another local post office. All routing of messages to the X.400 cloud and Internet 'world' over SMTP is handled by Trinité, with Large Generators being billed for a monthly service provision, a per message charge dependant upon target message location and a charge dependant upon message size. The service requires no gateways be installed on the mail server installed on the LG LAN, with the setting up and administration of X.400 and SMTP mailboxes done by Trinité. Fully itemized bills are provided by Trinité to effectively monitor usage. Appendix 3 provides an in illustration of Trinité charges and Appendix 7 provides a diagram of the Trinité mail service provision architecture.

2.6.4 ALCANET UK

ALCANET UK are the 'recommended' communications service providers to GEC ALSTHOM companies. ALCANET UK provide both X.400 and SMTP mail services, but do not offer the same type of post office replication service for the Microsoft Exchange server as Trinité. The solution proposed by ALCANET UK is to implement a data network connection to the ALCANET using a leased line (LG already have a leased line connection to GEC Computer Services in Stafford who maintain an ALCANET access point and hence this line could be utilised) and to install X.400 and SMTP gateways on the LG LAN to provide access to both the X.400 and Internet cloud routing through the ALCANET connection. The management of the X.400 and SMTP registrations would

be done by LG. This solution embraces connection to the ALCANET which enables rapid data transfer to other units also connected to the ALCANET, however, Belfort Turbo Alternators are not currently connected to the ALCANET so the benefits of this connection may be negligible.

Internet WEB browsing capability is available through ALCANET UK at an additional charge with the benefits of a secure firewall being provided by ALCANET UK. Appendix 4 provides an in illustration of ALCANET UK charges and Appendix 8 provides a diagram of the ALCANET UK mail service provision architecture.

2.6.5 UNIPALM PIPEX

UNIPALM PIPEX is the biggest UK provider of Internet access for businesses. The solution identified here from UNIPALM PIPEX provides X.400 and SMTP mail capability and Internet WEB browsing. A leased line to the nearest UNIPALM PIPEX access point would need to be installed and an SMTP gateway on the LG LAN. All messages, be they X.400 or SMTP would go through the SMTP gateway and the X.400 messages would be resolved by UNIPALM PIPEX and sent on to the X.400 cloud if appropriate. Internet WEB browsing is provided with the service, however, suitable firewalls would need to be investigated and possibly installed prior to making use of this service. Appendix 5 provides an in illustration of UNIPALM PIPEX charges and Appendix 9 provides a diagram of the UNIPALM PIPEX mail service provision architecture.

3.0   BENEFITS / JUSTIFICATIONS

3.1   Introduction

The tangible cost savings from installing the new mail system are fairly limited, with some reduction in fax message costs, elimination of some of the fax machines currently on annual rental, a reduction in cost of mailing disks containing data to on-site engineers, etc.

There are seven fax machines currently in use in LG / Foundry / DSD. Dependant upon whether they are purchased or rented, the annual maintenance / rental charges for the machines varies between £180 and £360. A minimum of four of the seven fax machines should be removed further to the provision of fax services from the PC system.

The intangible benefits and justification for putting in the system are identified in the sections below.

3.2   Remote Access Service (RAS)

- Engineers on-site and managers going to conferences, etc. virtually anywhere in the world can connect to the LAN to use mail and to pick up documents;

- The requirement for transferring software to floppy disks for distribution should be eliminated.

3.3   New Server Class PC and Mail Server / Client Software & FAX Software

- The current mail system is very difficult to support, the new mail system will be far easier to

support, new mail users cannot be added without jeopardising the level of service provided;

- Taking the mail system off the present servers will free up computing resource which has been 'soaked up' by adding far more users to the LAN than was originally anticipated;

- Rules based mail can be introduced so that in the event of a user going on holiday or becoming sick, etc. all incoming messages can be routed on to another nominated user;

- The richer mail client software will provide users with useful contact management software and basic project / work to list management tools.

3.4   Faxing from the Desktop

- Faxes can be sent directly from a PC application such as WordPerfect to a number of named addresses, eliminating the need to print out a document and feed it through a fax machine;

- Incoming faxes will be routed to users by a fax coordinator and will appear as new messages in their mail inbox.

3.5   External Mail Services

- Assurances of fast transmission using X.400;

- Messages can be sent and stored regardless of whether the recipient is absent or not available (time difference, travels, etc.);

- Mail can be sent to a large number of recipients using a single operation;

- Distribution of documents can be easily achieved by means of using attachments to the mail;

- Confidentiality is ensured as the document / message is delivered directly to the recipient;

- Reduce dependancy upon faxing in and out;

- Electronic mail is considered by GEC ALSTHOM to be necessary to increase the efficiency of the organisation.

APPENDICES

SCHEDULE OF APPENDICES

APPENDIX 1   TOTAL FIRST YEAR PROJECT COSTS OF PREFERRED SOLUTION

1.0	SERVER CLASS PC	£7,840
2.0	MICROSOFT EXCHANGE MAIL SOFTWARE	£9,265
3.0	FAX SOFTWARE	£3,000
4.0	MOBILE USER'S FAX MODEMS	£4,200
5.0	TELEPHONE COMMUNICATIONS COSTS	£1,500
6.0	OTHER STARTUP COSTS	£5,650
7.0	TRINITE ANNUAL RENTAL COSTS	£2,125*
	TOTAL COSTS	£33,580

This figure does not include message delivery charges.

APPENDIX 2   STARTUP COSTS IRRESPECTIVE OF MAIL SERVICE PROVIDER

1.0   'SERVER CLASS' PC

Compaq Prosignia 500 5/150 Model 2100   £3,140

Features:

150 MHZ Pentium, 256kb Cache

32MB RAM, 1.05GB SCSI Disk

PCI SCSI 2 Controller

Internal CD-ROM, Keyboard, 3.5" Floppy

Additional:

32MB RAM Module

Monitor	£1100
Smart SCSI Array Controller	£200
8 Com Port Controller	£1,200
UPS	£650
DAT Drive	£300
NT Server v3.51 Software	£750
TOTAL	£500
	£7,840

2.0   MICROSOFT EXCHANGE SERVER & CLIENT SOFTWARE

2.1   EXCHANGE SERVER

Microsoft Exchange Server

(Includes 5 Client Access Licences)   £750

Microsoft Mail Server

TOTAL   £315

£1,065

2.2   EXCHANGE CLIENT

Client Access Licences (200 required)

(10 * 20 pack @ £820)   £8,200

TOTAL

£9,265

3.0   FAXINATION FAX SOFTWARE

Site Licence

£3,000

4.0   PCMCIA FAX MODEMS

Cost per Portable PC	£200
RJ-45 Adaptors	£120
Windows 95 Upgrade	£100
TOTAL (Assuming 10 Mobile Users)	**£4,200**

5.0   TELEPHONE COMMUNICATIONS COSTS

Phone line installation in computer room (5 off at £50)	£250
FAX Modems (5 off at £250)	£1,250
TOTAL	**£1,500**

6.0   OTHER COSTS

Training (3 days @£450) for 2 people	£1,350
Migration / Implementation Consultancy (4 days at £450)	£1,800
New PC for Telephone Exchange Fax Coordinator	£1,500
Cabling & Housing in Computer Room	£1,000
TOTAL	**£5,650**

TOTAL STARTUP COSTS	**£31,455**

APPENDIX 3   MAIL SERVICE PROVIDER CHARGES - TRINITE

1.0   Set Up Charges

Internet Domain Name Registration   £265

2.0   Annual Service Charges (Pro-Rated from Monthly Charges)

SMX Service Charge   £900
Itemised Billing Charge   £60
Internet Address Maintenance   £300
Internet Mail Forwarding   £600
Total Annual Message Exchange Service Charges   £1,860

3.0   Message Charges

3.1   Dial-Up

Calls to Trinité over PSTN   £0.06 per minute

3.2   SMTP Messages

Messages forwarded to Internet Addresses   No charge

3.3   X.400 Messages

3.3.1   Delivery Charges

UK	£0.10
European	£0.20
USA	£0.40
ROW	£0.60

3.3.2   Character Charges (per kb)

Up to 10kb	£0.10
10kb - 20kb	£0.08
Over 20kb	£0.06

n.b.   Character charges are not multiplied for multiple recipients.

EXAMPLES

TARGET	SIZE (kb)	DEL CHARGE	CHAR CHARGE	TOTAL
CHINA	1	£0.60	£0.10	£0.70
UK	500	£0.10	£30.00	£30.10
FRANCE	25	£0.20	£1.50	£1.70
USA	150	£0.40	£9.00	£9.40

APPENDIX 4   MAIL SERVICE PROVIDER CHARGES - ALCANET

1.0   Set Up Charges

Data Network Service Installation Charge (19.2k National / French Line)	£700
X.400 Messaging Connection Charge	£1,250
X.25 Card	£2,000
Internet Connection Charge	£500
Total Set Up Charges	**£4,450**

2.0   Annual Service Charges

Data Network Service Charge	£10,200
X.400 Directory Integration Charge	£780
Internet SMTP Mail Charge	£3,000
Total Annual Service Charges	**£13,980**

3.0   Message Charges

3.1   Dial-Up

Not appropriate when using a leased line to the ALCANET.   No charge

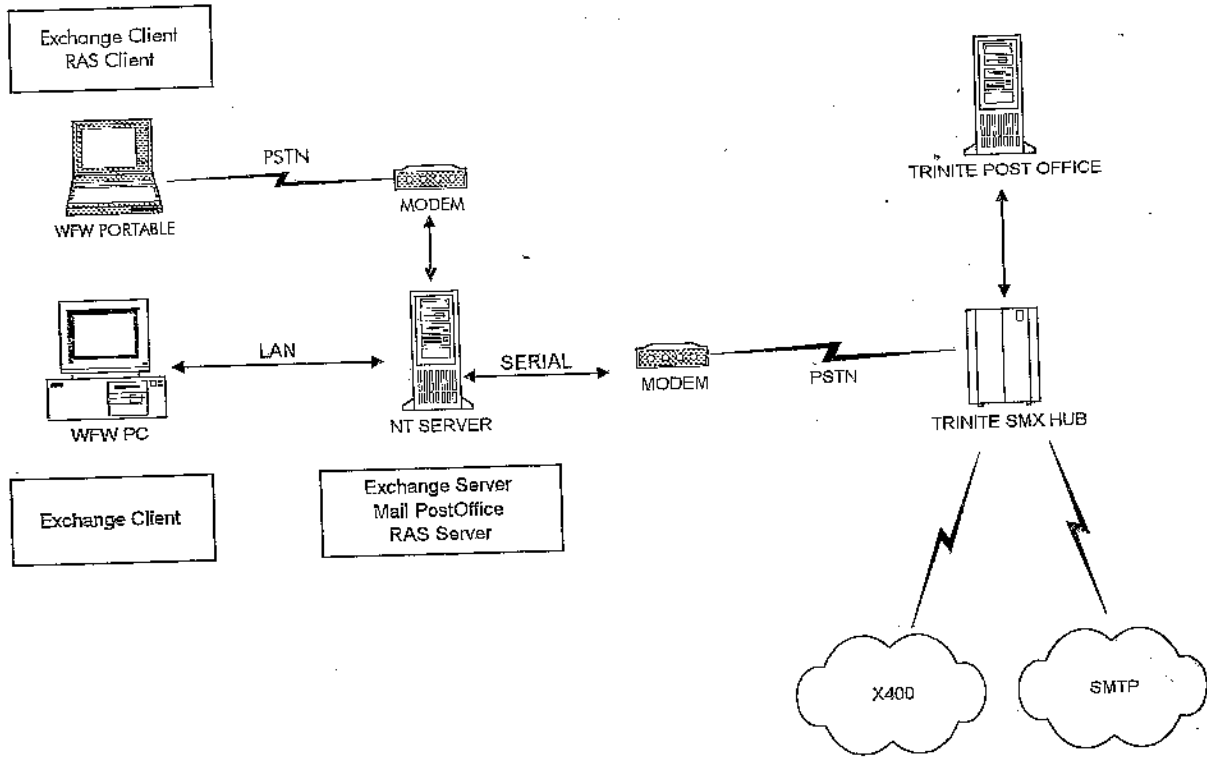### 3.2   SMTP Messages

Messages forwarded to Internet Addresses   No charge

3.3   X.400 Messages

X.400 messages routed within the GEC ALSTHOM group of companies are free, messages to all other destinations will be charged a similar rate to those detailed in section 3.3 of appendix 2.

Exchange Client
RAS Client

WFW PORTABLE

PSTN

MODEM

TRINITE POST OFFICE

WFW PC

LAN

NT SERVER

SERIAL

MODEM

PSTN

TRINITE SMX HUB

Exchange Client

Exchange Server
Mail PostOffice
RAS Server

X400

SMTP

X.400 MAIL

The goal of the X.400 is to enable electronic mail users to exchange messages no matter which computer-based messaging system they may use. X.400 is a widely recognized and accepted international standard and is used by most public e-mail carriers and by the majority of PTTs (Post, Telephone, and Telegraph authorities) throughout the world. X.400 delivers greater quality of service and OSI network security not offered by the Internet.

These advantages are important for companies that have more than one kind of e-mail system as well as those that want to communicate with business partners and associates through public carriers. X.400 is especially important where hardware, network, and communication standards have not been enforced, and the only opportunity for interoperability exists in standards such as X.400.

SMTP MAIL

SMTP mail is a messaging protocol that enables messages to be routed via the Internet infrastructure. It is a widely adopted medium for mail transport which has been developed, that requires little initial outlay and can easily be provided by most Internet access providers. Its down side is that it is not quite as secure and 'cast in stone' as the X.400 protocol but deficiencies in this area are quickly being re-addressed.

SMTP is a useful complementary service to X.400 mail as it will enable LG users to communicate with almost any person who has an e-mail account, not just e-mail users who have X.400 mailboxes.