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GOVERNMENT ELECTRONIC MESSAGING AND DOCUMENT EXCHANGE SERVICE

ANNEX A

SERVICE REQUIREMENTS SPECIFICATION

GOVERNMENT TELECOMMUNICATIONS AGENCY
DEPARTMENT OF COMMUNICATIONS

SEPTEMBER 15, 1987

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ANNEX A

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1. INTRODUCTION

1.1. Background

The Government Telecommunications Agency (GTA) is a common service agency with a mandate to provide telecommunications services to Government of Canada users in an efficient and cost-effective manner.

To meet the diverse and changing needs of its client departments, a program has been established within GTA to plan and develop common enhanced telecommunications services to facilitate electronic transfer of messages, documents and other administrative information between diverse office systems, equipment and services in a multi-vendor environment.

Within the framework of this program, GTA plans to establish a government-wide common service to provide an electronic messaging and document exchange capability for the government user community as a cost-effective alternative to other means of electronic messaging currently used in the government. The service will offer a range of features including the transfer of binary files, gateways to other public and departmental messaging services and networks and, optionally, conversion of text documents in revisable form between popular word processors and word processing programs.

It is GTA's intention to develop the service within the overall context of the Open Systems Interconnection (OSI) environment. The service is expected to provide practical conformance with the existing and future International Standards in general, and the CCITT X.400 Message Handling Systems (MHS) in particular.

This service offering will be targeted at users of existing government electronic messaging services as well as potential new users whose needs can not be presently met by the existing services.

It is expected that the service will form a framework for the deployment of future enhancements offering a wide range of Electronic Document Interchange (EDI) applications and interconnection possibilities between information systems and services.

1.2 Purpose of Specification

The purpose of this specification is to describe the technical, operational, administrative and management requirements for the provision of the Government Electronic Messaging and Document Exchange Service. GTA intends to establish this service through a competitive process by means of a Request for Proposals of which this specification is an integral part.

1.3 Organization of the Specification

This specification is organized in twelve sections and five appendices.

Section 1 provides an introduction outlining the background, purpose, scope and the requirement of this specification.

Section 2 provides technical specifications for the electronic messaging component.

Section 3 provides technical specifications for the optional document conversion component.

Section 4 provides requirements for the provision of service maintenance.

Section 5 provides requirements for service management.

Section 6 provides requirements for accommodation facilities.

Section 7 provides requirements for any software development required.

Section 8 provides requirements for documentation associated with service operation and administration to be provided by vendors.

Section 9 provides requirements for training of personnel.

Section 10 provides requirements for quality assurance.

Section 11 provides requirements for service installation, testing and start-up.

Section 12 provides requirements for service promotional support.

Appendix A defines user's profile and traffic volumes.

Appendix B describes ISO and CCITT document architectures and standards.

Appendix C describes document architecture parameters and controls.

Appendix D summarizes the Canadian French character set.

Appendix E describes the Government Packet Network (GPN).

1.4 Scope

1.4.1 Full Service

This specification is for the provisioning of a full service. The prime contractor will have overall responsibility for the provisioning of the service which will include, but not be limited to, the following:

1. overall design and engineering;
2. supply and integration of all required hardware, software and communication components;
3. installation, testing and cut-over;
4. provision of accommodation for equipment and personnel;
5. management, operation and administration;
6. ongoing system maintenance and support;
7. training, documentation and users' support;
8. system enhancements, expansion and upgrades;
9. promotional and marketing support;
10. invoicing and traffic/service reporting.

1.4.2 Mandatory and Optional Components

The specification includes two major service components:

1. the mandatory component which includes the provisioning of electronic messaging, document exchange and gateways to external services as described in section 2;

2. the optional, additional component to the above which includes text document conversion in revisable and final form as described in section 3.

Preference will be given to proposals that include the provisioning of a full service with both service components.

1.4.3 Sizing of Service

The service must be capable of accommodating efficiently the initial volume of traffic and the projected growth as described in Appendix A of this specification and should also be sufficiently flexible to accommodate growth beyond the projected estimates without major redesign.

The baseline message traffic estimates are derived from the current volumes handled by the Government Electronic Messaging Services.

The document exchange and conversion estimates reflect the growing need to accommodate document exchange between Personal Computers and Communicating Word Processors in the government.

1.4.4 Access Networks

GTA prefers to utilize its X.25 based Government Packet Network (GPN) and/or the Government Telephone Network to provide primary access to the service, although other types of access will also be allowed. The proposals, therefore, do not have to include the provision of network access. If, however, vendors choose to include communication network access and facilities as part of their proposals, they may either be presented and costed separately from, or bundled with, all other service components.

1.5 Requirement

The Government Electronic Messaging and Document Exchange Service will be a computer-based service which will provide "user friendly" electronic messaging and document exchange capabilities for government users in both official languages.

The service will support government-wide access from a variety of terminals and office equipment including Communicating Word Processors (CWPs), Personal Computers (PCs), Computer-based Office Systems as well as asynchronous terminals. Access to the service should be primarily via the GTA-provided Government Packet Network (GPN) and/or the Government Telephone Network. Access will also be possible via public packet switched networks, the public telephone network and other types of networks.

A variety of communication protocols will be supported to allow end-users to utilize their existing equipment and software. Sessions could be either of an interactive or batch nature and the service will accommodate popular communication protocols to enable file transfer to/from the supported equipment. The value-added capability of sending and receiving "binary" files will permit the exchange of text documents, files, spreadsheets, etc., in revisable form, as well as the exchange of program code or any other binary data.

The service will support 8 bit code standards, such as CSA Z.243.4 Latin Alphabet No. 1. This will allow sending and receiving messages containing a full set of accented French characters on terminals equipped with this capability.

The optional text document conversion capability will be available to those users who wish to exchange text documents between certain popular word processing systems. These systems include CWPs (which commonly utilize binary synchronous protocols for document communication), PC-based word processing programs (which commonly communicate asynchronously) and various computer-based integrated office systems. Document conversion will be primarily of revisable form text, although final form conversion will also be provided.

Document conversion will be available for those users who request it, and those users will be allowed certain conversions depending on their own and their intended recipients' system profiles.

The service will also provide gateway functionality to allow the interchange of messages and documents, in suitable form, with electronic messaging services on other public or departmental networks. The primary gateway specification will be in conformance with International Standards and Recommendations such as the CCITT X.400 Message Handling Systems. Other types of gateways to predominant public or departmental electronic messaging systems will also be required.

The service is not intended to carry classified messages or other classified information. However, it shall provide a controlled environment that will prevent unauthorized access by service subscribers or by users accessing it via gateways. The service must also ensure information integrity and provide sufficient redundancy for uninterrupted operation. In addition, the service should not impede the exchange of information encrypted by end-users at their equipment, if they choose to do so.

The service will include the following major mandatory components:

.1 electronic messaging component utilizing a mail box approach that supports the exchange of text messages, documents in final and revisable form, and binary files. Store and forward capability will be provided through an automatic delivery option for hardcopy workstations or PCs;

.2 communication component to enable access from a variety of terminals and networks;

.3 gateway component to access various other electronic messaging systems and services:

.4 directory component including both user and system information; and

.5 administrative component to allow effective service control, management and administration.

Conversion of text documents in revisable form between dissimilar computer-based word processing systems will be an optional, desirable component.

Preferably, the proposals should be based on off-the-shelf, commercially available products (hardware, software, communications) requiring as little additional development effort as possible for their deployment into the service. If, however, additional development is required to meet specific needs of this specification, the proposals must clearly indicate the cost and timeframes for the completion of such development.

The initial system configuration must support the functionality as described in the mandatory requirements for the user's profile and message traffic volumes described in Appendix A.

The service must also have sufficient flexibility for expansion to support increases in user base, message traffic volume and functionality without major system reconfiguration.

2. ELECTRONIC MESSAGING REQUIREMENT

2.1 General

This section describes in a point-by-point format the mandatory requirements and desirable features for the Electronic Messaging component.

The requirements are grouped into several categories according to their common functionality. Within each group there is a brief description followed by a list of mandatory and desirable requirements.

The responses must follow this format and be as complete as possible with clear indication of compliance or non-compliance for each requirement. Any reference to additional supporting information must index the exact location of such reference, indicating the source, section, page number, etc.

2.2 Definitions and Clarifications

The service shall provide for easy and effective electronic exchange of messages, text documents and other types of binary files.

There is no clear cut distinction between messages, documents and binary files, however, within the context of this specification the following shall apply:

a) Messages are considered to be short units of text in "final form". The "final form" represents a screen or print image of the content stripped of control and formatting codes. Messages, therefore, are not intended to be revised by the recipient. Messages are also encoded in one of the supported character sets, such as ASCII, Latin alphabet #1, EBCDIC, etc.

b) Documents, in the office sense, are reports, memorandums, forms or letters which could contain extensive control information allowing their revision by the recipient. Documents are exchanged in either "final" or "revisable" form between word processors, word processing programs on personal computers or computer-based integrated office systems, utilizing the communicated document format of these equipments.

Documents exchanged in "final form" shall be treated as messages. When exchanged in revisable form, the service shall allow transparent transfer of the 8-bit binary content of the document into the recipient's mailbox.

c) Binary files are considered to have an 8-bit data format with octet values in the range of 00 to FF hexadecimal.

Revisable text documents are considered binary files. Other typical examples of binary files are spreadsheet files or executable program code.

2.3 Messaging Requirements

The service shall provide comprehensive electronic messaging functionality based on the mailbox principle for the exchange of messages, documents in final and revisable form, and other binary files. Store and forward capability shall be provided through an auto-delivery option for hardcopy workstations or PCs.

2.3.1 Mandatory Requirements

The service shall:

.1 Provide a log-on mechanism incorporating user identifications and password(s).

.2 Validate and permit or deny a log-on request.

.3 Automatically advise a user, upon log-on, of the date and time of last access to his/her mailbox and of any administrative messages sent by the service administrator(s).

.4 Provide automatic notification of all unread received messages upon log-on to the service.

.5 Provide a user with the ability to scan the contents of his/her mailbox displaying, at minimum:

a) identification of originator;
b) title (subject);
c) length of message/document;
d) date/time stamp;
e) status (read, unread, forwarded, etc.);
f) message number in mailbox.

.6 Provide the ability to selectively scan and/or retrieve received messages/documents from the mailbox.

Selection criteria shall allow as a minimum: message number, date(s), name, subject, read or unread message(s), or all messages.

.7 Display, at minimum, the following information upon reading a received message/document:

a) identification of originator, recipient and any other carbon-copied recipient(s);
b) message title (subject);
c) date/time stamp;
d) unique message identification number;
e) content of message/document.

.8 Display, in addition to the above (.7), type and format of a document if it contains binary information in revisable form.

.9 Permit a recipient to select one or more of the following actions upon receipt of a message/document:

a) save it in temporary or long term storage;
b) answer it, without a need to re-key sender's address;
c) forward it with or without appended comment;
d) purge it.

.10 Provide an automatic delivery capability for hard-copy workstations or PCs logged-on to the service. Automatic delivery capability must be an available attribute in a user's profile which can be set or reset by system administrator(s).

.11 Provide the capability to establish closed user groups for sending, receiving or both.

.12 Provide the capability for end-users and system administrator(s) to create distribution lists.

.13 Permit messages/documents to be sent to an individual recipient.

.14 Permit messages/documents to be sent to multiple recipients through specifying one or a combination of the following:

a) individually listed recipients' identifications;
b) defined mailing list(s);
c) organizational group(s);
d) whole community (broadcast).

.15 Validate recipient identification and notify originator if invalid.

.16 Confirm to the originator the successful posting of messages in recipients' mailboxes, including a unique message identification number assigned by the service.

.17 Provide to the originator notification of non-delivery including explanation of cause, if a message cannot be delivered after a specified period of time. The originator shall be then able to re-send the message to an alternate recipient or dispose of it entirely.

.18 Provide the ability to classify messages as one, or any combination of, "urgent", "certified", or "protected" where:

a) urgent is sent with higher than normal priority and flagged urgent in the recipient's mailbox;
b) certified requires the system to confirm to the originator the date and time of message reading by the recipient;
c) protected mail cannot be opened by the recipient without the knowledge of the "protected" password in addition to the regular password required to access the mailbox.

.19 Provide the ability to defer delivery of messages and allow originators to cancel messages set for deferred delivery before that time.

.20 Provide a comprehensive user-friendly text editor for the creation and editing of messages interactively, with the following capabilities as a minimum:

a) text insertion;
b) text deletion; and
c) line editing.

The proposal must describe all the attributes and features of such a text editor.

.21 Support interactive text editing (described above) from asynchronous terminals and from personal computers with terminal emulation programs.

.22 Provide the ability to send single or batched messages/documents which were prepared and stored off-line on terminals such as personal computers and communicating word processors.

.23 Permit log-on and control commands (such as SCAN, RECEIVE, SEND, etc,) to be batched into a single request when sent from personal computers, communicating word processors or other computer-based office systems.

.24 Provide interactive prompt commands to assist users in the preparation of message envelope fields (such as TO:, SUBJECT, COPIES, etc).

.25 Provide the ability to send "carbon copies" and "blind copies" (cc and bc) to multiple recipients.

.26 Permit messages, documents and forms prepared on - or off-line to be:

a) sent;
b) stored in a temporary or long-term storage;
c) retrieved from storage for editing or sending; or
d) purged.

.27 Provide a bulletin board feature for the posting of messages for viewing by all users with a capability of informing users upon log-on that there is a new message(s) on the bulletin board.

.28 Provide other bulletin boards to closed user groups for their exclusive use.

.29 Provide the ability to restrict posting of messages on bulletin boards to authorized personnel, such as service administrator(s) or their designates.

.30 Provide the ability to create, fill-in, send, edit, and process forms electronically from interactive or batch type (PC's, CWP's) terminals.

The proposal must provide a full description of this capability.

.31 Provide the ability to restrict forms creation to authorized personnel only, such as service administrator(s).

.32 Provide an on-line, context sensitive "help" feature to assist users unfamiliar with the operative procedures of the service.

.33 Provide the ability for users to choose to interact with the service in either French or English.

.34 Provide the ability to stamp time and date on sent and received messages.

.35 Provide the ability to exchange binary files (such as spreadsheets, text documents in revisable form, and program code) between users either by:

a) appending a binary file to a message in final form or;
b) sending a binary file into a separate type of mailbox and providing recipients with message notification of a binary file pending; or
c) exchanging binary files in a manner identical to that of final form messages, ie. sending them directly into the recepients' mailboxes.

.36 Permit a recipient to easily extract the binary file from the message envelope (if not done automatically) and use as intended on the recipient's office equipment.

.37 Provide the ability to send messages with line lengths of up to 132 characters (or more) without automatically inserting the CR and/or LF control codes.

2.3.2 Desirable Features

The service should provide the following desirable features:

.1 The ability to automatically forward all received messages to a specified alternate recipient.

.2 The ability to send automatically a pre-arranged message in reply to all received messages.

.3 The ability of an originator to retract a previously sent message if the recipient has not yet read the message and/or the message was sent to a "wrong" address.

.4 The availability of a full screen text editor and forms handler to users with interactive terminals which can support this feature.

The proposal should list and describe all supported terminals.

.5 The ability to reorganize the order of messages or documents in the mailbox, either temporarily or permanently, by changing the order of information displayed by means of sorting on any information item (eg. sort on date, subject, date received, date sent, etc.).

.6 The ability to establish a personal list of easy to remember user identifications (aliases) to substitute for the user identification known by the system, for other users who are frequently addressed, for the purpose of simplifying the addressing of messages.

.7 The ability to display the full set of accented French characters (as defined in Appendix D) in prompts and messages generated by the service for users interacting with the service in French.

.8 The ability to support a data conferencing feature allowing several users to review and update a common document, subject to access control and authorization measures.

.9 Functional conformance with the CCITT X.400 (1984) series recommendations. The extent of existing and planned future conformance with the 1988 recommendations must be specified, including tentative timeframes.

.10 The ability of a user to select a level of "help" commands and prompts.

.11 The ability to send "urgent" messages with a control code which would invoke an audible warning on terminals equipped with such capability to inform the recipient of an "urgent" message.

.12 Any other related feature(s) available on vendor's system/ service.

2.4 Information Handling Requirements

The service shall support access from a variety of office terminals so that government end-users can utilize, to the extent possible, their existing equipment and communication products. This requires that the service support a variety of information formats and data structures.

For interactive communications with popular display and entry terminals (such as ASCII-type, DEC VT100/VT220, etc.) or terminal emulation programs on PCs, the service must support coded 7-bit or 8-bit data structures. Of specific importance is the ability to handle 8-bit codes which include the full set of accented French characters.

For transfer of documents in revisable form, the service must support the transparent handling of 8-bit binary information structures.

2.4.1 Mandatory Requirements

.1 For interaction with asynchronous terminals and terminal emulation software on personal computers, the service shall support all of the following 7-bit and 8-bit character codes for information processing and interchange:

a) a 7-bit ASCII Code Table
(CSA Z234.4; ISO 646; ANSI X3.4)

*b) an 8-bit Code Table with Latin Alphabet No. 1
(CSA Z243.4)

c) extended 7-bit Code
(CSA Z243.4)

*NOTE: Alternative 8-bit code tables will be considered if they can be mapped internally into the CSA Z243.4 and if they support the full set of accented French characters, as defined in Appendix D.

.2 The service shall support 8-bit EBCDIC character code when communicating in a binary synchronous mode (IBM 3780/2780/2770 emulation) with communicating word processors and/or computer-based systems.

.3 Character code conversion for supported codes (described in 2.4.1.1 and 2.4.1.2) shall be provided for message content according to the originator's and recipient's equipment specified in their application profiles.

Vendor's proposals shall include character set conversion tables.

.4 When character code conversion is invoked the service shall have the ability to:

a) inform the originator that messages to be sent to a recipient will undergo character code conversion with possible loss of information;

b) indicate to the recipient that messages received in the mailbox have been converted from another character set or format and to flag any character conversion discrepancies.

.5 Where conversion from an 8-bit to 7-bit character code set involves accented French characters, the service shall map the accented French characters into their coded equivalent without an accent.

.6 The service shall support the transparent exchange of binary files such as spreadsheets, word processing documents or program code. This includes the capability to receive, process, sort and transmit binary files in 8-bit format with values of octets ranging from 00 to FF hexadecimal.

.7 The service shall have a capability of identifying to the recipients the type and format of documents sent to them before retrieval.

.8 All administrative messages and prompts generated and sent by the service to the user must be in a format and code compatible with the user's equipment and document architecture. Final form is acceptable.

.9 The proposal shall list and describe all supported terminals and terminal emulation programs on PCs.

.10 The response shall indicate, for each type of supported equipment, what type of end-user communications hardware and/or software is required to allow binary file transfer to/from the service. Full details and description of the products must be provided. This requirement applies specifically to personal computers and CWPs.

.11 If access to the service requires customized hardware and/or software components proposed by the responding vendor, full details must be provided, including functional description, end-user system environment, implementation details, communication protocol description, operating instructions, English/French user interaction, etc.

2.4.2 Desirable Features

.1 The ability to support extended control features on advanced asynchronous terminals (such as DEC VT100/VT220, etc.).

.2 The ability to support ANSI X3.64 standard on terminals conforming to this standard.

.3 For interaction with Videotex/Teletext compatible terminals and emulation software on personal computers, the service should support the 7-bit and 8-bit coded character sets in accordance with the ANSI X3.110-1983 and CSA T500-1983 Videotex/Teletext Presentation Level Protocol Syntax (NAPLPS) standards.

NOTE: The above standards conform with the ISO 2022-1982 7-bit and 8-bit coded character sets - code extension techniques; (corresponding standards: ANSI X3.41-1974 and CSA Z243.35-1976).

.4 Any other information handling feature available on the proposed service.

2.5 Communications and Access Requirements

It is preferred that users access the service primarily through GTA's Government Packet Network (GPN) and the Government Telephone Network. Access via other types of networks will also be available where economically and technically viable. The service shall provide a sufficient number of access ports to support concurrent, non-blocking access by all users. It shall have sufficient flexibility to accommodate additional ports, as required, without major redesign or reconfiguration.

Users with asynchronous display and entry terminals will normally access the service asynchronously utilizing teletype protocols via the GPN and its appropriate Packet Assembly/Disassembly (PAD) nodes. Direct access via the government telephone network will also be possible.

Users with personal computers will normally access the service in asynchronous mode as above, utilizing to the extent possible, existing off-the-shelf communications software packages. These packages normally emulate popular terminals for interactive communications with the service. When binary file transfer is required, the service must support asynchronous file transfer protocols (such as XMODEM, YMODEM, KERMIT, etc.) to allow transfer of any type of binary file to and from the service.

Users of CWPs will normally access the service synchronously using IBM 2770/2780/3780 Binary Synchronous Communication protocols for document exchange in either revisable (transparent) or final (EBCDIC) form.

2.5.1 Mandatory Requirements

.1 The service shall provide access from the following networks:

a) GTA X.25-based Government Packet Network (GPN), see appendix E for GPN specifications;
b) Telecom Canada's Packet Switched Network (DATAPAC 3000, 3101, 3305);
c) CNCP Telecommunication's Packet Switched Network (INFOSWITCH);
d) Government Intercity Telephone Network (IX);
e) Public Telephone Network (Direct Distance Dial).

.2 Respondents to this RFP shall describe how they propose to connect their system to the required networks and what protocols will be supported through such connections.

.3 Access ports shall provide EIA RS232-C interfaces for:

a) asynchronous communications at 300, 1200, 2400, 4800 and 9600 b/s; and
b) synchronous communications at 2400, 4800, 9600 and 19200 b/s.

.4 The service shall provide the following dial-up modem access from the telephone networks:

a) 212A-type compatible (1200 b/s, Asynch);
b) 201C-type compatible (2400 b/s, Synch);
c) CCITT V.22bis compatible (1200/2400 b/s, Asynch/Synch).

.5 The following network access communications protocols shall be supported:

a) CCITT X.25, LAPB;
b) Asynchronous TTY;
c) IBM Binary Synchronous 2770/2780/3780 Emulation;
d) "XMODEM" and/or "YMODEM" and/or "KERMIT" (for asynchronous file transfer).

.6 The proposal shall describe a minimum configuration for communications access capable of supporting message traffic volumes described in Appendix A while meeting service performance requirements.

.7 The number and types of access ports for each of the protocols described in 2.5.1.5 must ensure that port availability requirements are met. However, a minimum of 2 ports for each type of protocol must be provided even if the availability requirement calls for 1 port only.

2.5.2 Desirable Features

The proposal should indicate which of the following is currently available and which are planned for future introduction, giving estimated date of availability.

.1 The ability to access service via:

a) IBM SNA networks;
b) Local Area Networks (specify which);
c) ISDN;
d) other types of networks.

.2 The ability to access service synchronously and/or asynchronously at 56 Kb/s.

.3 The ability to access service via the following modems:

a) 103-type (300 b/s);
b) CCITT V.29 bis (9.6, 14.4, 19.2 Kb/s).

.4 The ability to support the following protocols:

a) "BLAST";
b) X.PC;
c) MNP;
d) IBM 3270/BSC and 3270/SDLC;
e) other protocols (specify).

2.6 Gateways and Interworking Requirements

The service shall provide bi-directional gateway capabilities to allow the interchange of messages and documents, in suitable form, with electronic messaging services on other public and/or departmental networks.

The primary gateway interworking shall be in conformance with the CCITT X.400 recommendations. Other types of gateways to predominant public and/or departmental electronic messaging and office systems will also be required. The gateways shall perform an envelope and message content conversion and appear as transparent as possible to the end users.

2.6.1 Mandatory Requirements

.1 The service shall provide a gateway in conformance with the CCITT X.400 (1984) series recommendations (Message Handling Systems). Vendor shall itemize and describe in their responses all protocol service elements supported in their gateway implementation.

.2 The service shall provide gateways to/from the following:

a) Telecom Canada: ENVOY 100;
b) CNCP Telecommunications: DIALCOM (EOS);
c) Telex (in Canada and International)

.3 Full technical and operational description shall be provided for each of the supported gateways.

.4 The gateways shall provide user identification translation so that users on one service can specify user identifications on a remote service in a format as compatible with their own service as possible.

.5 The gateways shall provide message envelope translation so that message originators can create and address messages destined for remote services in a manner and format similar to their own service.

.6 The gateways shall translate message envelope information on messages received from remote services into a form similar to the recipients' own service.

.7 Where a destination service does not support certain features of the originating service, then messages containing such features, including security features, shall be either:

a) rejected by the gateway, or
b) converted into the closest functional equivalent.

In all cases the gateway shall notify the originator of the conversion process discrepancies.

.8 The service shall provide help messages to advise users of gateway features and limitations in accessing remote services.

.9 The service shall contain provisions for the delivery of messages in final form to hard-copy office equipment in external agencies such as Canada Post Corporation, for mailing and distribution by means of conventional mail or courier service. Such arrangements would be subject to contractual agreements between GTA and the parties involved.

2.6.2 Desirable Features

The proposal should indicate which of the following gateways are available now and which are being planned for future introduction, giving tentative dates of availability.

Full technical and operational descriptions of the supported gateways should accompany the proposal.

.1 TELECOM CANADA: iNet 2000, TWX;
.2 CNCP: INFOTEX (WP Mail, TELETEX, TELENET);
.3 BELL CANADA: Professional Support system (PSS);
.4 TELEGLOBE;
.5 IBM: DISOSS;
.6 IBM: PROFS;
.7 DATA GENERAL: CEO;
.8 DEC: ALL-IN-ONE; and
.9 Other electronic mail or integrated office systems (specify).

2.7 Users' and System Directory Requirements

The service shall provide a comprehensive directory functionality which includes a system directory and a users' directory. The system directory is used by internal service components to lookup and validate originators and recipients and to store subscription and feature information on users and gateways. It is accessible only by the service administrator(s). The user directory is a subset of the system directory and is available as a public directory for all service users. Management of both the system directory and user directory shall be the responsibility of the service administrator(s).

2.7.1 Mandatory Requirements

.1 The system directory shall contain an entry for each user with the following information as a minimum:

a. User ID;
b. Group ID;
c. Mailing List Affiliations;
d. Password;
e. Default Application Profile;
f. Communications Profile;
g. Language of Interaction (English or French);
h. User Name;
i. User Address;
j. Billing Code.

.2 The Default Application Profile shall define the user's terminal equipment type attributes and service options subscribed to, including auto delivery option. For vendors responding to the requirements of Section 3, it shall also include the type of supported equipment and document architectures, as described in 3.3.1.

.3 The Communications Profile shall define the communications characteristics of the user equipment, including the file transfer protocol. Usually, the communications characteristics of the user equipment will be specified indirectly through the port selected.

.4 It shall be possible to modify the Application and Communication Profiles at log-on time for the duration of the session to override the default values and allow users to access the service from a different terminal.

.5 The Group ID shall define the organization, such as Government of Canada, and allow several levels of sub-grouping, such as department name or acronym, branch, division, etc.

.6 Service administrator(s) shall be allowed to display all system directory parameters except password(s), and shall be allowed to modify all parameters, including passwords.

.7 Users shall be able to view user directory entries of all users displaying as a minimum: User ID, Group ID, User name and Address.

.8 A user shall be able to display his personal directory entry including all system directory parameters except password(s).

.9 A user shall be allowed, as a minimum, to modify his password and Language of Interaction. Delegation of capability to change other parameters shall be at the discretion of system administrator(s). All such changes must be reflected in the system directory.

.10 A user shall be able to request directory searches, using as a minimum search criteria: User ID, Group ID (including sub-groups) and User Name. The service must convert the response to a format compatible with the requestor's equipment and document architecture.

.11 The service shall have the ability to sort and present the directory, or a portion of it, by Group ID or Sub-groups.

.12 A detailed description of the directory structure shall be provided.

.13 The service shall have the ability to detect and notify the user and/or service administrator(s) of any directory information ambiguity.

2.7.2 Desirable Features

.1 The ability to conduct directory searches in alphabetical order in either English or French.

.2 The ability to re-arrange the order of presentation of information in the directory before displaying or printing the directory, or a portion of it.

.3 The ability to include a user's telephone number in addition to other directory information.

.4 The ability to incorporate enhancements to the directory function in accordance with X.400 directory services recommendations expected in 1988.

.5 Conformance with the Originator/Recipient naming convention based on the CCITT X.400 recommendations.

.6 The ability to display user directories of other electronic messaging services accessible via gateways.

.7 Any related features provided by the proposed system in addition to the above.

2.8 Security Requirements

The service is not intended to carry classified information. However, it shall provide a controlled environment that can prevent unauthorized access to information and ensure integrity of information. Physical facility and access security are described in 6.3.1.7.

General compliance with the Government EDP Standards and Practices Document will be required prior to system/service implementation. For the purpose of this specification the following is a short list of mandatory requirements and desirable features.

2.8.1 Mandatory Requirements

.1 Access to the service must require that a user inputs a valid user name and password. The password must be a string of at least six (6) alphanumeric and/or special characters. The password cannot be all spaces or an empty field.

.2 Access to the "protected" class of messages or documents shall require an additional level of password(s).

.3 The service shall maintain a log of failed LOG-ON attempts that is accessible by the service administrator. The log information shall include, as a minimum, the user ID and the time/date of the occurance.

.4 The service shall have a capability to automatically disable an account and alert service administrator(s) after a specified number of unsuccessful LOG-ON attempts.

.5 The service shall force password changes such that users would have to change their passwords at regular intervals.

.6 The service shall have a capability to suppress the display of a password when entered by users of video display terminals equipped with this feature. For users of teleprinter-type terminals the service shall over-print the password to render it unreadable.

.7 Only designated service administrator(s) shall have access to management and control functions for adding/deleting users, altering profiles in the user directory (except for the specific fields, which can also be modified by end-users), billing, etc.

.8 Passwords shall be stored internally in the system memory or other storage in a "scrambled" or "encrypted" form.

2.8.2 Desirable Features

The service should have the capability to:

.1 Provide a user with the ability to encrypt messages/documents as a selectable option, in accordance with the Government approved DES standard.

.2 Allow the connection by end-users of Government approved encryption products at the user equipment and permit handling of the encrypted information by the service.

.3 Disallow usage of user ID's as passwords.

.4 Have call-back capabilities for dial access.

.5 Any other security features in addition to the above.

2.9 System Performance Requirements

The proposed response times and other service performance parameters will be taken into consideration as part of the product evaluation.

2.9.1 Definitions

Log-on delay	Time between the completion of sending of the last character of the user's password and the reception of the first character of the prompt confirming the log-on to the service.
Scan delay	Time between the completion of sending of the last character of the request to check the contents of the user's mailbox, and the reception of the first character of the list of the contents of the mailbox.
Message Posted delay	Time between the completion of sending of the last character of a message, and the reception of the confirmation that the message has been 'posted'.

Message Delivery delay	Time between the completion of the posting of a message to the service, and the earliest time it is available to the recipient in the destination mailbox.
Read delay	Time between the completion of issuance of the command to read a message, and the beginning of reception of the message.
Directory delay	Time between the completion of issuance of the command to search a directory for one or more entries in a specified population of users, and the beginning of reception of the directory information.
Throughput	The total number of text characters that can be sent to the service, or be received from the service per unit time (kilo-characters/hour).
Short message	A 400 character text message.
Long message	A 1600 character text message.

2.9.2 Mandatory Requirements

1. The proposal shall specify the mean and the maximum (95th percentile) response times for each of the functions listed in Table 2-1, based on the users' profile and message traffic volume as specified in Appendix A and calculated for 95% confidence during the peak hour.

The proposed response times shall not exceed the values specified in Table 2-1.

Function	Value: Mean	Maximum (95 percentile)
Log-on Delay	3.0 seconds	5.0 seconds
Scan Delay	3.0 seconds	5.0 seconds
Message Posting Delay		
Short Message	3.5 seconds	5.5 seconds
Long Message	4.0 seconds	6.0 seconds
Message Read Delay	3.0 seconds	5.0 seconds
Directory Delay*	4.0 seconds	6.0 seconds
Message/Document Delivery Delay	-	30 minutes

TABLE 2-1: RESPONSE TIMES

* for a search of 1 user name from a population of 3000

NOTE: a) the above response times include assumed network delays of 1 second mean and 2 second maximum (95%)

b) Initial call set-up times are not included

.2 The proposal shall also specify the response time range for directory search commands of multiple users or using criteria other than that of 2.9.2.1 - Directory Delay.

.3 The proposal shall also specify the response time ranges for all other types of commands available to a user during an interactive session, ie: scanning bulletin boards, altering password, etc.

.4 The proposal shall specify the maximum system throughputs, expressed in messages posted and kilo-characters sent and received per hour, which could be obtained with the proposed system configurations within the range of the specified response times, and in accordance with users' profile of Appendix A.

.5 For vendors responding to the requirements of section 3, any additional Document Delivery Delays due to conversion shall be stated along with the conversion type if the Document Delivery Delay (2.9.2.1) cannot be met.

NOTE: document is defined in Appendix A, section 3.

.6 Where commands such as directory searches require extensive processing time, the service shall inform the user that the command is being processed.

.7 All assumptions and methods of calculation shall be stated and described.

3. DOCUMENT CONVERSION REQUIREMENT

3.1 General

Revisable and Final Form Document Conversion will be a value-added capability to the Government Electronic Messaging and Document Exchange Service. It is an optional requirement and, therefore, does not have to be addressed in response to the RFP. Preference will be given to proposals that address both the electronic messaging and document conversion requirements of the RFP.

This section describes in point-by-point format the mandatory requirements and desirable features to guide respondents in preparing responses to the document conversion component of this specification.

The responses must follow closely this format. Answers shall be as complete as possible with clear indication of compliance or non-compliance for each requirement. Any reference to additional supporting information must index the exact location of such reference, indicating the source, section, page number, etc.

The service's Functional Requirements for Document Conversion Requirements are described in general terms in 3.2.

A sample of control and document architecture features which contribute to document revisability is attached in Appendix C.

3.2 Document Conversion Functionality

Document conversion capability will be available when an originator wishes to exchange a document created using a supported word processing application with a recipient who intends to work with the document under a different application. The service must

convert the document into a revisable or final form compatible with the recipient's equipment and the document architecture of his application. The type of conversion to be performed is determined by the recipient's application profile or, optionally, by the originator.

Revisable form conversion allows for the revision of the contents of a document and/or the layout of that content under the application converted to, as if the document had originally been created under that application.

Final form conversion provides a document identical in appearance to the original, although most of the features allowing revisability are lost.

3.2.1 Mandatory Requirements

.1 The revisable form conversion process must retain as many of the common document features as possible allowing complete revisability of the document at the destination equipment. The proposal must describe on a pair-by-pair basis each supported document feature using Appendix C as a guide.

.2 The conversion process shall convert the uncommon features of different document architectures into their closest functional equivalent. The proposal must specify all such features for each supported equipment and document architecture.

.3 The conversion process must be capable of supporting text in both English and French with the complete set of upper- and lower-case accented French characters common to both architectures. Where the receiving equipment does not have an equivalent accented character, it should be converted to a similar character without an accent and the occurrence flagged as an exception.

The complete description of accented French characters is summarized in Appendix D.

.4 The system shall be capable of flagging all discrepancies of the conversion process using one of the methods below:

a) replacement by a "?" or other rarely used graphic symbol;
b) appending an error file to the received document indicating the nature of the exceptions and their location in the document;
c) sending a copy of the converted document image back to the sender.

.5 If an intermediary form (file) is used in the conversion process, the proposal must include complete documentation describing the architecture, functions and codes of the intermediary form. If this documentation is of a proprietary nature, it must be labelled as such to be treated accordingly. The proposal must also specify to what extent this architecture is in accordance with the international standards (ISO: ODA/ODIF, CCITT: T400 described in Appendix B) or other standards (such as IBM DCA/DIA, etc.).

.6 The service shall provide, on request, conversion into final form so that it can only be printed and/or displayed, rather than revised on the recipient's equipment, including TTY terminals, or sent through a gateway to another electronic mail service. The proposal must provide architectural details of the final form documents.

.7 Final form conversion to 7 bit ASCII/IA5 code from each supported equipment shall be provided.

.8 The service shall support multiple conversions of documents for multiple recipients with different types of supported equipment.

.9 The document conversion component shall be integrated with the electronic messaging component in a manner that allows document exchange involving conversion to be consistent with the document exchange requirements of 2.3.1.

3.2.2 Desirable Features

.1 The revisable and final form conversion should support side-by-side format for the revision and printing of French/English bilingual documents wherever possible.

.2 Final form conversion from each supported equipment to any other supported character sets (see 2.4.1).

.3 Any other related feature(s) in addition to the above. Vendors should specify and provide descriptions of such feature(s).

3.3 Supported Equipment/Software Document Architectures

The service shall support the conversion of documents created in accordance with proprietory (or standard) document architectures on a variety of text processing equipment and software. Such support includes the ability to receive a document in revisable form from such equipment, the ability to convert it (directly or by means of an intermediary file) into the revisable formats of all other supported equipment and subsequently transmit it in revisable format to such equipment. Similar document flow in the opposite direction must also be supported.

The equipment and document architectures listed in paragraph 3.3.1 (Mandatory Requirements) represent, in GTA's view, higher government usage base and priority than the equipment and architectures listed in paragraphs 3.3.2 (Desirable Features).

Fully supported means that all possible features, capabilities and controls of the original document are preserved and full revisability exists with no loss of information. Partially supported means that sufficient information is preserved to allow either a meaningful interchange of revisable text with some information loss or a final form conversion.

The proposal shall also indicate which of the document architectures and equipment are being planned for future introduction, giving tentative date of availability.

3.3.1 Mandatory Requirements

For each type of equipment, the proposal must indicate on a pair-by-pair basis: fully supported, partially supported or not supported. All exceptions and limitations for each type and combination must be fully described.

Communicating Word Processors:

.1 AES: Superplus, Multiplus, 7200/7300;

.2 Philips/Micom: 2000 and 3000 series;

.3 WANG: OIS;

.4 XEROX: 860;

.5 IBM: Displaywriter.

PC-Based Word Processing programs (current release levels):

.6 Wordstar (Micropro International);

.7 Multimate (Multimate International);

.8 Word Perfect (Satellite Software International);

.9 IBM Displaywrite 2/3;

.10 IBM DCA Architecture.

3.3.2 Desirable Features

.1 Office Document Architecture (ODA) ISO DIS 8613 (Appendix B);

.2 Wordwand (Tanda Software);

.3 Word (Microsoft);

.4 Decmate (Digital Equipment Corporation) format;

.5 DEC/DX (Digital Equipment Corporation) format;

.6 CEO (Data General);

.7 WANG VS (Wang Corporation);

.8 DIF (U.S. Navy) format;

.9 CCITT T.400 format;

.10 Any other CWP, PC-based WP program or integrated office system format supported by the proposed system not listed above (provide details).

4. SERVICE RELIABILITY, AVAILABILITY AND MAINTENANCE

4.1 Introduction

This section describes requirements for service reliability, availability and for the provision of maintenance to the service. The Government Telecommunications Agency recognizes the importance of preventive maintenance and efficient service restoration in minimizing the "down time" of a service. Achieving this objective requires the use of reliable hardware and software components in the service as well as dependable and rapid techniques and procedures for recovery from, and prevention of, element failure.

4.2 Reliability

Reliability is defined as the probability that an item will perform its intended function for a specified interval of time under stated conditions.

All service components must have a high degree of reliability as the service is intended to be operational 24 hours a day, 7 days a week with minimum downtime for maintenance.

4.2.1 Mandatory Requirements

.1 The proposal shall provide Mean Time Between Failure (MTBF) figures for the service as a whole, derived from MTBFs for each major individual system elements and end-user elements, if any. These include MTBF figures for software, hardware and any network facilities comprising the proposed service.

.2 MTBF figures shall be determined using MIL-HDBK-217D reliability prediction procedure and/or, where service components have been operational for at least 5 years in an established environment, actual field failure rates may be used.

.3 All calculations, procedures and assumptions in deriving MTBF figures must be clearly stated and described.

4.3 Availability

4.3.1 Definitions and Explanations

.1 Availability is defined as follows:

$$A = \frac{MTBF}{MTBF + MSRT} \quad \text{where}$$

A - is the service availability

MTBF - is the mean time between failures (described in 4.2.1)

MSRT - is the mean service restoration time for a major outage (described in 4.7.1 and specified in 4.7.2)

.2 The service is considered to be unavailable if it fails to perform its specified functions due to a major outage as defined in 4.7.1.1

.3 In calculations of service availability, vendors shall use MTBF figures derived in accordance with procedures described in 4.2

.4 Where communications network access and facilities are included in the proposals, the MTBF figures and service availability shall include these components as well.

.5 In the context of this specification "business hours" are defined as from 7 a.m. to 6 p.m. in each time zone in Canada (i.e. 5.30 am to 9 pm Easterm Time), 5 days per week, Monday to Friday, 52 weeks per year, excluding all Government Statutory holidays (a total of 11 days per year).

.6 All availability requirements stated below include scheduled downtime for routine maintenance, hardware/software upgrades and other shutdowns.

4.3.2 Mandatory Requirements

.1 The service shall be available 24 hours per day, 7 days per week, 365 (or 366) days per year.

.2 The service shall have a minimum yearly level of availability determined in accordance with section 4.3.1 of 99.85% during business hours.

.3 The service shall have a minimum monthly level of availability determined in accordance with section 4.3.1 of 95.0% outside business hours.

.4 Scheduled downtime shall not exceed 3 hours in duration within any 24 hour period, except when approved in writing in advance by GTA.

.5 Vendors shall submit their proposed schedule for maintenance and shutdowns as part of the proposal.

.6 The service shall provide a sufficient number of communications ports for each type of supported network so that not more than 5% of access attempts during the busy hour are blocked.

4.4 Scope of Service Maintenance

The scope of service maintenance includes, but is not limited to, provision of the following:

a) preventive maintenance;
b) fault recovery and service restoration;
c) user notification of outages/feedback;
d) disaster planning and recovery.

Where contractor provided end-user software and/or hardware is required to access the service, the scope of service maintenance extends to these components as well.

4.5 Service Maintenance Overview

The proposal shall describe the methodology used in responding to the service maintenance requirements. The proposal shall also detail the contractor's current practices in providing service maintenance to their existing clients.

The service shall include provisions for efficient maintenance such that the availability and performance requirements of this specification are met.

The system design shall incorporate features such as redundancy, fault tolerant and failsoft techniques, automatic failure detection, fault isolation, reconfiguration, alarm reporting and diagnostic procedures to enable fast recovery and restoration.

Where contractor provided end-user software and/or hardware is required to access the service, a procedure for supporting and maintaining these components is required. The contractor is also expected to provide assistance in identifying interface problems that may be related to the equipment of other vendors.

4.6 Preventive Maintenance

The service shall incorporate the following functions for early detection of failing elements so that corrective action can be taken before outages occur.

4.6.1 Mandatory Requirements (SMC)*

.1 The service shall have an automatic online maintenance (diagnostics) capability that provides automatic detection of malfunctioning hardware/software elements. The diagnostics must identify the failure and isolate the fault to the lowest replaceable module. If redundant elements are available, they may be configured in to restore operation. Online maintenance functions include programs to maintain and report current element status, detect error/faults, diagnose and print out failure events data.

.2 Preventive maintenance shall be performed at least once monthly to detect marginal performance of service elements due to aging or drift. The maintenance shall include full functional testing of all service elements and shall be scheduled for periods when service load is at minimum.

*NOTE: Service Management Centre (SMC) is described in 5.2.

.3 Where such maintenance requires an interruption of service, all users shall be notified not less than 24 hours in advance.

4.6.2 Mandatory Requirements (End-User)

.1 The contractor shall specify all necessary preventive maintenance on any contractor provided end-user equipment and/or software.

4.7 Failure Recovery and Service Restoration

The proposal shall include suggested fall-back and recovery mechanisms and procedures which would ensure service availability levels described in 4.3.2 and guarantee information integrity on recovery. Details on total system availability, maximum time to recovery, hot-standby arrangements, disaster recovery and long term replacement plans, etc., shall be included in the proposal.

4.7.1 Service Restoration Definitions

The following definitions shall apply to the service restoration requirements:

.1 A major outage shall be defined as any one of the following:

a) Complete loss of service and/or Service Management Centre (SMC) failure or shut down;
b) Any SMC processing element failure (when redundant element not available);
c) Commercial power failure when no back-up power is available;

d) SMC communication interface failure which denies access to the service to more than 1 user;

e) Software or database re-loads which render the service unavailable.

.2 A minor outage shall be defined as any one of the following:

a) Any SMC element failure (when redundant element is available and the system recovers through reconfiguration);

b) Standby or redundant element failure;

c) Any other failures that involve the loss of service to a single user;

d) Failure of automatic diagnostics;

e) Failure of a single communications interface port, when an alternative interface port is available.

.3 The service restoration period shall be from the time the contractor has been notified of or has detected an outage to the time that repairs have been satisfactorily completed to restore the service to the pre-event performance level.

4.7.2 Mandatory Requirements (SMC)

.1 Minor outages shall be automatically detected by system diagnostics which shall provide a time-stamped alarm to the service administrator who shall schedule repairs.

.2 Failed elements shall be put into an off-line inactive mode and be scheduled for repair.

.3 Major outages shall provide an alarm to the SMC administrator and, optionally, to the GTA H.Q. administrator (defined in 5.2.). The SMC service administrator shall, by the use of off-line test and diagnostic techniques, determine the cause of failure, isolate the failed element to the lowest replaceable module and initiate repair action.

.4 For all outages, escalation procedures as specified in 5.9.1.2 shall be followed by the service administrator.

.5 Service must be restored to the affected users by the SMC within the following service restoration periods:

Type of outage	Service Restoration period
Minor	8 hours mean, 12 hours max.
Major	2 hours mean, 4 hours max.

The contractor shall confirm and provide proof of his ability to meet the service restoration requirements on a 24-hour, 365 (or 366) days-per-year basis based on service MTBF figures and availability requirements.

.6 The contractor shall confirm and provide proof of his ability to provide a complete replacement system in the event of emergency.

.7 The contractor shall describe which of the following will be incorporated:

a) The availability of a "hot standby" arrangement;

b) Power supply rendundancy;

c) Uninterruptible Power Supply (UPS);

d) Fault-tolerant system architecture;

.8 The contractor shall describe procedures to ensure that the security features are not reduced or compromised during service maintenance, recovery and fallback.

4.7.3 Mandatory Requirements (End-User)

.1 A "Hot line" or other reporting arrangement shall be provided for end-users when experiencing service degradation, operational problems or component failure.

.2 If vendor supplied end-user equipment is at fault, the vendor shall be able to provide technical service in the event of failure such that the failed element is repaired or replaced within 1 working day.

4.7.4 Desirable Features (End-User)

.1 Ability to notify users attempting to log-on during a service outage, of the outage and the expected restoration time (dependent on nature of outage).

.2 Provision of a remote diagnostic capability for diagnosing element failures at end-user sites where contractor supplied equipment or software is being utilized.

.3 Any other related features provided by the contractor.

5. SERVICE MANAGEMENT

5.1 Introduction

This section describes the requirements and contractor's responsibilities to provide effective service management. The Government Telecommunications Agency views service management as an important and integral requirement in offering a Government Electronic Messaging and Document Exchange Service to its federal government clientele. GTA, as a common service agency, will play a significant role in the area of service management, but it is mainly the prime contractor's responsibility to provide service management as described herein.

The philosophy of service management shall be that of a centralized approach with the flexibility of distributing certain functions to GTA and to selected departments on a dynamic and/or growth basis.

5.2 Service Management Definitions

For the purpose of this specification, the following shall apply:

a) SMC Operation - shall be the functions of a centralized Service Management Centre (SMC) for which the prime contractor will provide all necessary equipment, facilities, accommodations and operational personnel.

b) GTA Headquarter's Operation - shall be the GTA Service Management Centre at which GTA will provide the accommodations and personnel at their headquarter's location in Ottawa to perform service management and administration functions.

c) Departmental Operation - shall be the Departmental Service Management Operation to which certain service management and administration functions can be (optionally) assigned to selected clients to allow them control over their departmental segment of the service. The accommodations and personnel will be provided by the assigned department(s).

5.3 Scope

The scope of service management includes, but is not limited to, the following areas:

a) System operations and control;
b) System configuration management;
c) Directory management;
d) Performance monitoring;
e) Problem management;
f) User support;
g) Administration and accounting;
h) Interaction with GTA;
i) Reporting requirements;
j) Personnel security.

5.4 Service Management Overview

5.4.1 Mandatory Requirements

.1 The contractor shall describe, in general terms, the approach and methodology used in providing service management in the format of an executive summary and overview. The proposal shall then address the mandatory requirements for the areas of service management, describing how each of these requirements will be met.

5.5 System Operations and Control

5.5.1 Mandatory Requirements

The Service Management Centre shall provide the following functions to ensure service availability and integrity:

.1 On-going system operation and control.

.2 Monitoring resource utilization (hardware, software, communications).

.3 Periodic and regular system back-ups on non-volatile storage. The proposal must specify the frequency of such back-ups and indicate what information is being backed-up.

.4 Exercising automatic service initialization and recovery.

.5 Setting and/or overriding priorities for program execution.

.6 Scheduling routine maintenance for the central system and end-user located components.

.7 Monitoring, detecting and reporting to GTA security violations.

.8 Providing additional levels of password security to the SMC, GTA HQ, and departmental administrators above that of end-user subscribers.

.9 Initiating investigative procedures following security incidents and notifying GTA and/or departmental administrator.

.10 Ability to delegate certain management, administrative, and operational control functions to the GTA H.Q. and departmental operation(s). The proposal shall describe in detail all such control functions for each level of operation(s).

5.6 System Configuration Management

5.6.1 Mandatory Requirements

The Service Management Centre shall perform the following functions:

.1 Configuring system components (hardware, software, communications) to meet service performance requirements.

.2 Defining and setting parameters for the initial system configuration.

.3 Performing changes/updates to the system configuration on a when-and-as-required basis. These activities include obtaining GTA approval for, and facilitating GTA verification of the implementation of changes in one or more system components.

.4 Creating and maintaining a manual or computerized database to keep track of the inventory of the system components and characteristics.

.5 Creating and maintaining accurate and up-to-date records of all terminations, wiring and interconnections.

5.7 Directory and Service Management

Directory and Service Management is the responsibility of the SMC operations. It shall be possible to delegate this responsibility in whole or in part to GTA H.Q. or departmental operation(s) (administrators).

5.7.1 Mandatory Requirements

Under GTA direction, perform the following:

.1 Setting up the initial system and users' directory, including all necessary profiles and attributes.

.2 Adding to, deleting from, and modifying the user and system directories to reflect dynamic changes in the subscriber base and subscriber's profiles.

.3 Setting-up and maintaining:

a) user groups;
b) mailing lists;
c) bulletin boards.

.4 Setting-up and maintaining electronic forms.

.5 Managing users' IDs and initial passwords.

.6 Implementing and monitoring security procedures.

.7 Defining and controlling user resource allocation (such as memory and non-volatile storage).

5.8 Performance Monitoring

The Service Management Centre (SMC) shall conduct on-going performance monitoring of the service to ensure that it meets the availability and performance requirements of this specification.

The performance monitoring includes, but is not limited to, the analysis of traffic data, alarms and accounting data, the setting of service priorities and the setting of parameters and thresholds for processor, line access and memory utilization.

5.8.1 Mandatory Requirements

The SMC shall perform:

.1 Dynamic on-line monitoring of resource utilization such as processor, memory, non-volatile storage, communications ports, etc.

.2 Dynamic monitoring of:

a) response times,
b) system throughput,
c) queues occupancy and delays,
d) port availability.

.3 Collection of traffic data, statistics and other performance information to be stored for further processing.

.4 Identification of the peak/average capacity of the system.

.5 Monitoring of adverse trends in the service performance and quality (i.e. congestion), and initiating remedial action.

5.9 Problem Management

Problem management includes the reporting, diagnosing, tracking and resolution of problems that affect the user's ability to utilize the service in accordance with this specification.

5.9.1 Mandatory Requirements

.1 The proposal shall describe problem management procedures resulting from: system or component failure, performance degradation and end-user trouble reports.

These procedures shall include, but are not limited to, the following:

a) problem detection, through SMC identification and/or user trouble reporting;
b) problem diagnosis (using test procedures) and fault isolation;
c) remedial actions (service calls, fall back, recovery, security violations);
d) escalation procedures;
e) problem correction and verification;
f) documentation of events and times;
g) compilation of periodic reports.

.2 Incident reporting procedures shall identify GTA as the escalation body for repeated calls on original incidents if no progress is being made, or for serious problems such as loss of messages.

.3 The SMC shall ensure that the following test/diagnostic activities can be performed:

a) communication access line diagnostic testing, including both dial and packet switched access facilities;
b) protocol testing and verification of terminal equipment and software;
c) identification of transmission error rates;
d) tracking of lost or misplaced documents.

.4 The SMC shall perform event tracking and documenting including:

a) time of trouble call/detection;
b) time of response to failure;
c) time of repair initiation;
d) time of service restoration;
e) time of GTA notification;
f) times of escalation events;
g) names of personnel involved.

.5 The SMC shall perform a system and data base recovery to ensure information integrity and protection against loss in cases of major and minor system failures.

5.10 End-User Support

The SMC Operation shall be responsible, in co-ordination with GTA Operation and Departmental Operation(s), for the provision of end-user support.

5.10.1 Mandatory Requirements

The contractor shall be responsible for the end-user support procedures which include, but are not limited to, the following:

.1 Providing hot-line access and/or other arrangements for user enquiries and trouble reports.

.2 Providing advice and guidance regarding service operation.

.3 Dispatching appropriate service/repair personnel when necessary.

.4 Notifying GTA and/or service component suppliers to follow-up specific remedial action.

.5 Maintaining documentation of user calls/enquiries and follow-up events.

.6 Informing users (with GTA and Departmental Operation approval) of pending service shut-downs and other administrative procedures affecting the users.

.7 Establishing (with GTA and Departmental Operation approval) an electronic bulletin board to inform users of service modifications and updates.

.8 Identifying training requirements for the end-user.

.9 Having user support and interaction available in both official languages (Engish and French).

5.11 Administration and Accounting

The SMC Operation shall collect all traffic and usage data which would allow GTA to perform service accounting and subscriber invoicing.

The proposal shall describe the types and formats of this information and outline procedures for data collection and processing.

5.11.1 Mandatory Requirements

.1 The service shall provide a complete Session Detail Recording (SDR) including information for each session on the following:

a) log-on/off time and date;
b) originating user ID;
c) destination user ID(s) (including gateways);
d) duration;
e) communications type (speed, protocol, etc);
f) number of characters transmitted/received;
g) number of messages/documents sent/received;

.2 The service shall provide a complete Message Detail Recording (MDR) which includes the following information for each message/document sent:

a) time posted/retrieved/purged;
b) originating user ID;
c) destination user ID(s), including gateway(s);
d) message serial number;
e) number of characters in the message/document;
f) message priority type.

.3 The service shall provide storage utilization detail recording which includes the following information for each user ID:

a) storage utilized for filing messages/documents, expressed in kilocharacter-days;

b) average message/document retention time.

.4 For vendors responding to the requirements of section 3, the SDR and MDR information shall also include the number of text document conversions invoked, the type of conversion and the size of the converted document.

.5 A software utility allowing processing of the SDR files into individual monthly invoices shall be provided.

A detailed description of functionality and reporting formats shall be provided with the proposal.

.6 A software utility allowing processing of the SDR files into statistical reports for system performance analysis shall be provided.

A detailed description shall be provided with the proposal.

.7 The SMC shall provide to GTA (on request) files containing a complete record of Session Detail Recording (SDR), Message Detail Recroding (MDR) and Storage Utilization Detail Recording as described above.

.8 The SMC shall provide to GTA summarized monthly accounting information, based on the calendar month, on each subscriber's total usage of the service giving details as per the following items:

a) total number of transmitted and received documents/messages (expressed in number of messages/documents, pages and/or kilocharacters) generated per user;

b) total number of sessions per user;

c) total connect time for each user in hours/minutes per type of equipment and features invoked;

d) total storage utilization per user in kilocharacters;

e) total number of priority documents/messages transmitted and received;

f) total number of document conversions invoked, per user, per type of conversion, expressed in number of documents and/or kilocharacters. (This requirement applies only to vendors responding to section 3).

.9 The information described in 5.11.1.7 and 5.11.1.8 shall be provided on a 9-track magnetic tape in industry standard 1600 b.p.i. phase-encoded format and labelled in the standard IBM format. This media shall conform to the ANSI standard X3.39-1973 regarding Recorded Magnetic Tape for Information Exchange.

.10 The contractor shall describe procedures, formats and associated cost for converting the information described in 5.11.1.7 and 5.11.1.8 into itemized invoices. GTA may choose to perform its own itemized invoicing.

5.11.2 Desirable Features

.1 The system should have archival capabilities to store and retrieve all relevant information at periodic intervals.

.2 The service should have a capability to provide a summarized monthly accounting described in 5.11.1.8 for each billing code. Information should be based on a calendar month.

.3 Any related additional features offered by the proposed system/service.

5.12 Interaction with GTA H.Q. Operations

5.12.1 Mandatory Requirements

The SMC shall provide the following services to GTA:

.1 Ensuring all requests for any changes to the service are authorized and approved by GTA Headquarters before implementation.

.2 Defining exact procedures for GTA H.Q. personnel to interface directly with the SMC operations in cases of incident reports escalations, GTA order processing, directory update information and other matters dealing directly with the overall operation of the service.

.3 Supplying a minimum of one display-type terminal capable of displaying the SMC functions and a minimum of one hard-copy device which will print all the SMC alarms and other control messages.

.4 Providing a capability of verifying that software changes have been made in accordance with GTA orders.

.5 Providing a capability of confirming that all components have been adequately installed and tested as a result of GTA orders.

.6 Providing measurement tools to perform on-line measurements of the service traffic and performance parameters and to perform limited diagnostics.

5.13 Reporting Requirements

5.13.1 Mandatory Requirements

The SMC shall provide the following to GTA:

.1 Monthly statistical information on traffic usage in the following detailed format:

a) connect time for users connected to the service in hours/minutes per type of equipment and features invoked;
b) number of documents/messages per hour, by type of protocol (i.e. ASYNC., IBM 3780 BI-SYNC, X.25, etc.);
c) number of documents sent/received per hour;
d) percentage of transactions of each type;
e) utilization percentage per hour of each port;
f) outgoing queue lengths, in terms of documents/messages at selected intervals during the analysis period for each port;
g) storage utilization in kcharacter-days;
h) total number and distribution of messages/documents;
i) number of document conversions of each type performed. (This requirement applies only to vendors responding to section 3).

.2 Weekly and monthly roll-ups of the above statistical information.

.3 Trend-analysis reports on the service's performance as per, but not limited to, the following items:

a) documents/messages rate distribution;
b) holding time distribution;
c) traffic growth patterns;
d) utilization versus time of day.

.4 Reports in the form of graphs/plots as per, but not limited to, the following items:

a) documents/messages versus time of day;
b) number of calls versus size of documents transmitted;

c) number of calls versus call duration;
d) number of documents versus number of bytes;
e) number of calls versus number of hours;
f) documents/day versus days/months.

.5 A complete log of incident reports on a monthly basis. These incident reports shall contain, but not be limited to, the following items:

a) nature of the fault (major, minor);
b) faulty unit/module/port;
c) effect of fault on the system;
d) repair action;
e) i) service restoration time,
   ii) time to repair,
   iii) response to failure time;
f) unique number to identify incident;
g) name and telephone number of person who handled the call.

.6 Service performance reports as per, but not limited to, the following:
a) identification of peak/average capacity of the systems;
b) measurements of average/worst case response times and throughput;
c) number and nature of communication errors in document/message transmission to/from end-users;
d) statistics on memory, processor and port utilization.

5.14 Personnel Security

5.14.1 Mandatory Requirements

.1 All personnel involved with the operation, administration, management and maintenance of the service must have an enhanced reliability check in accordance with the security regulations of the Government of Canada.

6. ACCOMMODATION FACILITIES

6.1 Introduction

This section describes the requirements for facilities to accommodate the system equipment and Service Management Centre Operations.

6.2 Scope

The requirements of this section apply to system and service management equipment at the contractor's premises. Facility requirements for GTA Headquarters or Departmental operations are the responsibility of the Crown, except for any contractor specifications as per 6.3.1.5 below

6.3 Facilities Specifications

6.3.1 Mandatory Requirements

.1 All facilities required for the accommodation of system equipment and service operation, maintenance, control and management shall be supplied by the contractor.

.2 All building construction shall comply with all applicable government standards and specifications, including the following:

a) The National Building Code of Canada;
b) The National Fire Code of Canada;
c) The Federal, Provincial and Territorial Building Codes;
d) The Municipal By-laws and other codes;
e) The Fire Protection Engineering Standards;
f) Energy Conservation Measures;
g) National Master Specification.

.3 The facility shall accommodate all the necessary system equipment, control terminals, electrical and associated equipment, storage space and cabinets.

.4 Sufficient space shall be reserved for future significant growth.

.5 Specifications must be provided for facilities and equipment requirements for GTA and Departmental Operation Facilities.

.6 Access to the contractor's Service Management Centre shall be provided to authorized GTA personnel on an as and when required basis.

.7 The system equipment shall be located in a secure physical environment providing controlled access to authorized personnel only. The proposal must describe in detail all physicial security features such as coded access entrance ways, facility surveillance, visitor escort procedures, personnel identification, I.D. badges, alarms, cabinets and containers, separation of duties and internal security implementation, etc.

6.3.2 Desirable Features

.1 Any related features provided by the contractor in addition to the above.

7. SOFTWARE DEVELOPMENT

7.1 Introduction

This section lists the requirements for the implementation and, when necessary, the development of software programs for the service. As well, it identifies mandatory requirements for the system software.

7.2 Scope

Software components include, but are not limited to, the following:

a) Operational system components;
b) Electronic messaging components;
c) Telecommunications components;
d) Statistical, administrative and management components;
e) Billing/invoicing components;
f) End-user access software components implemented on the end-user equipment;
g) Text document conversion component (this requirement applies only to vendors responding to section 3 of this specification).

7.3 Off-the-Shelf Software

Off-the-shelf software is defined as software that is currently on the market with an established customer base. Field availability and reliability data, technical documentation, source listings and manuals should be available.

7.3.1 Mandatory Requirements

.1 Off-the-shelf and proven software shall be used whenever possible. It must be already in use, in similar equipment and for similar applications, and must not require extensive redesign to meet the requirements of this specification.

The proposal must specify for each software component the following:

a) Off-the-shelf availability;
b) Period of availability as a commercial product;
c) Length of period in use;
d) Number of copies in use (sold);
e) Changes, if any, required to implement the software for the proposed service.

7.4 Software Development

This sub-section applies only to software that is not off-the-shelf and/or that needs extensive redesign. The following mandatory requirements shall apply:

7.4.1 Mandatory Requirements

.1 The proposal shall describe plans for the development of software which must include the following:

a) Tools and methods to be applied during development and testing;
b) Program design standards to be followed;
c) Software organization and interface with hardware;
d) Test procedures to be followed;
e) Software time and memory utilization;

f) Schedules of software development and implementation activities;
g) Sub-contract requirements and control;
h) Quality assurance;
i) Design reviews;
j) Progress reports and data submission;
k) Sign-off procedures;
l) Software verification methods.

.2 A structured programming approach shall be used to produce reliable software that can be easily changed and expanded to meet evolving system needs. This implies the following:

a) The programs used to implement the service shall be modular;

b) Each module shall be independent of the operation of the others and shall perform only one function;

c) Each module shall be so structured that it can be edited and compiled as a separate entity.

7.5 Diagnostics and Error Detection

The following requirements shall apply to all software components to ensure system software integrity.

7.5.1 Mandatory Requirements

.1 The software shall incorporate the capability to detect its own software-induced failures as soon as possible after they arise.

.2 The software shall protect itself against errors in operation or data which may be introduced as the result of incorrect synchronization of software.

.3 Procedures shall be established for detecting and handling software errors which are either built in at design and implementation or are acquired when service changes are made.

.4 Error detection and correction mechanisms shall be used.

7.6 Software Management

The following requirements shall apply to the management of all software components:

7.6.1 Mandatory Requirements

.1 All major software components including the operational system program and the configuration data shall reside on non-volatile media (i.e: hard disk).

.2 All software changes and upgrades must receive the prior approval of GTA.

.3 The prime contractor shall be responsible for all changes to the stored program (for maintenance, system alterations, administration, etc).

.4 The contractor shall establish procedures for producing, updating and controlling source code and object code libraries of the software.

.5 All initial program and development changes shall be maintained in both source and object format.

.6 One additional copy of all software programs shall be provided to GTA.

8. DOCUMENTATION

8.1 Introduction

This section describes the documentation requirements both as part of the response to the RFP and as part of the ongoing service operation and administration.

The requirements described in this section are in addition to other references to documentation described in other sections of this specification and the RFP document.

8.2 Types of Documentation

The types of documentation shall include at least the following:

8.2.1 Mandatory Requirements

.1 Service functional description manuals.

.2 Equipment and communications functional description manuals.

.3 Software components functional description (Software components are described in paragraph 7.2).

.4 Service administrator manuals.

.5 End-user service operation manuals.

.6 End-user manuals for each type of supported equipment when either contractor-provided end-user hardware/software or special procedures are used to access the service.

.7 When the user manual is not of a form that facilitates quick reference, a separate quick reference manual shall be provided.

.8 Installation manuals.

.9 Document conversion functional and end-user documentation (this requirement applies only to vendors responding to Section 3 of this specification).

.10 Training manuals for course types described in 9.2.

8.3 Quantities of Documentation

8.3.1 Mandatory Requirements

.1 The proposal must include two (2) copies of each available manual described in 8.2.

.2 Three additional copies of each manual described in 8.2 must be provided thirty (30) days before commencement of service implementation.

.3 The contractor shall provide, thirty days (30) before commencement of training, three (3) copies of all training manuals.

.4 Where applicable, the installation documents shall be submitted to GTA at least thirty (30) days before site installation for review and approval.

.5 One copy of each appropriate end-user manual shall be available to each service subscriber.

8.4 Format of Documentation

8.4.1 Mandatory Requirements

.1 All manuals shall be bound. Three ring binders are acceptable.

.2 The manuals shall contain an alphabetical index, a glossary of terms and a table of contents.

.3 All operations and user-related documentation shall be available in both official languages.

8.4.2 Desirable Features

.1 It is desirable that manuals are printed on 8½" X 11", 40 M offset white paper stock. Fold-out 11" X 17" tables, diagrams and plans are also acceptable.

.2 All documentation (other than that which is specifically designated as being required in both official languages) should be available in both official languages.

8.5 Reproduction Rights

8.5.1 Mandatory Requirements

.1 GTA shall be guaranteed in writing the right to reproduce, in full or in part, all manuals for government use.

8.6 Reports

8.6.1 Mandatory Requirements

.1 The proposal shall include two (2) copies of samples for each type of report described in section 5.13. This includes, but is not limited to:

a) Statistical reports;
b) Usage reports;
c) System utilization reports;
d) Maintenance and alarm reports;
e) Summary utilization reports;
f) Billing and traffic/service reports.

8.7 Updates and Revision Levels of Documentation

8.7.1 Mandatory Requirements

.1 The contractor shall be responsible for reviewing and updating all system documentation described in this section in a timely manner for the life of the contract to ensure that it accurately reflects the current system configuration.

.2 All documentation updates and revisions shall be subject to GTA approval before being incorporated into the system documentation.

.3 All documentation shall contain amendment level record sheets, and all amended or new pages shall be annotated with the amendment number and effective date.

9. TRAINING

9.1 Introduction

This section defines the requirements for the provision of training for GTA and Departmental personnel and for service users.

9.1.1 Scope

The purpose is to provide cost effective training addressing the following aspects of the service provisioning:

a) technical (hardware, software, communication);
b) operational (for the end-users and GTA);
c) management, administrative and marketing.

Training requirements fall into pre- and post-service implementation categories.

9.2 Course Types

The following are course types to be provided by the contractor to GTA and/or departmental personnel. The contractor should propose additional training course requirements, if deemed necessary.

9.2.1 System Equipment Architecture and Service Overview

These courses shall focus on service and system equipment architecture and shall be oriented to GTA administrative personnel and network management personnel. The content of these courses shall be designed in keeping with the service's general objectives.

9.2.2 Service Operation and Administration

These courses shall include an overview of the service (SMC) operation and administration covering the topics of the contractor's Service Management Centre (SMC) facility, GTA's facility and departmental facilities.

9.2.3 End-User Service Operation and Interface

These courses shall allow the end-user to understand the service concept, user's manual, techniques and procedures for using the service.

9.2.4 Service Consultant

These courses shall allow GTA consultants to advise potential users of the service. The courses shall provide information on the capabilities and advantages of the service as well as provide the student with a good knowledge of the functionality, performance and interface information. The courses should be divided/oriented for two levels of consulants (not scientific or engineering personnel):

a) Senior GTA consultant;
b) Regular GTA consultant.

9.2.5 Detailed System/Service

These courses shall provide in-depth technical description of the system/service and include the following topics:

a) Hardware system architecture;
b) Software systems and components;
c) Hardware and software operation;

d) Service operation and administration;
e) Software support and generation;
f) System diagnostics.

These courses are intended for GTA technical and administrative personnel.

9.3 Course Descriptions

9.3.1 Mandatory Requirements

.1 The proposal shall describe all the available courses for each of the types described in subsection 9.2

The description must include:

a) content overview;
b) target audience;
c) duration;
d) presentation aids and tools;
e) hand-out material;
f) instructor's skills;
g) off-the-shelf availability;
h) cost.

9.4 Training Plan

9.4.1 Mandatory Requirements

.1 The proposal shall provide a training plan explaining how training will be accomplished in terms of method of learning, location of training, number of students per course, training equipment required, test equipment required, manuals, course

syllabus, lesson plans, length of course and any other information which will allow GTA to assess the cost and effectiveness of the proposed training or development courses.

9.5 Official Languages

9.5.1 Mandatory Requirements

.1 All courses and associated training materials shall be available in both official languages.

9.6 Training Facilities

9.6.1 Mandatory Requirements

.1 Training courses shall be conducted at either the contractor's site or at a GTA site utilizing full functional capabilities of the service and equipment provided by the contractor. Course location and supporting equipment and facilities will depend on the nature of the course.

.2 The initial courses, prior to service implementation, shall be conducted on the contractor's site, preferably in the National Capital Region.

.3 End-user training (9.2.3) shall be available in several major cities, located in the western, central and eastern regions of Canada.

.4 The contractor shall provide a training manual and other hand-out material to each attendee.

10. QUALITY ASSURANCE PROGRAM

10.1 Introduction

This section describes the requirements for the Quality Assurance (QA) Program to be implemented by the contractor and all major sub-contractors in order to ensure that the service meets the requirements of this specification.

10.2 Scope

The scope of the QA shall include all major hardware, software and communication components and features, including those provided by sub-contractors and other third-party suppliers.

10.3 QA Program

The contractor shall prepare a Quality Assurance Program to address the following:

10.3.1 Mandatory Requirements

.1 The contractor shall be responsible for the quality of the supplied service and shall ensure that it meets the requirements of this specification.

.2 Quality Assurance programs shall be established, implemented and maintained by the contractor for the life of the contract.

.3 The contractor shall be responsible for the corrective process when an item fails to meet the requirements of this specification.

.4 The contractor shall describe, in detail, the Quality Assurance programs covering all major components (hardware, software, communications) of the system. The QA program shall include, but not to be limited to the following:

a) all major steps and functions in product development, testing and manufacturing;
b) history of past experience with the product in a relevant operational environment;
c) contractor's experience in QA programs involvement;
d) documentation and control procedures;
e) inspections;
f) audits;
g) statistical data;
h) QA measurement and calculation methodology.

.5 The contractor shall allow GTA, on GTA's request, to perform any inspections, tests or audits at the contractor's and major sub-contractor's facilities where such tests, audits or inspections are deemed necessary by GTA to ensure supplies and services conform to specified requirements.

Audit reports and corrective actions shall be submitted to GTA as required.

.6 The contractor shall submit all changes to his own QA program and his sub-contractors' QA programs affecting service components and/or functionality to GTA for approval.

.7 Where the service proposed is one already in existence, the contractor shall provide names of existing customers to GTA for the purpose of service quality review.

11. INSTALLATION AND ACCEPTANCE TESTING

11.1 Introduction

This section describes the requirements for service installation, facility inspection and acceptance testing.

11.2 Scope

The scope of this section includes the SMC, its facilities and personnel.

11.3 Installation

11.3.1 Mandatory Requirements

.1 The contractor shall supply to GTA a detailed installation and implementation plan which provides for the initial level of the service as specified in Appendix A.

.2 The contractor shall supply a tentative installation and implementation plan which provides for the expansion of the service in order to accommodate increased user base and message/document traffic volumes as described in Appendix A.

.3 All personnel involved with the installation and acceptance testing of the service must have an enhanced reliability check in accordance with the security regulations by the Government of Canada.

11.4 Facility Inspection

11.4.1 Mandatory Requirements

.1 GTA and the contractor shall jointly conduct inspection(s) of the Service Management Centre site in order to verify that the requirements of sections 5 and 6 of this specification are met.

.2 The contractor shall accommodate GTA request(s) for inspection(s) upon 14 days notice prior to each inspection date.

11.5 Installation Testing

11.5.1 Mandatory Requirements

.1 The contractor shall provide GTA with a detailed installation test plan and schedule for GTA review and approval at least fourteen (14) days before commencement of tests.

.2 The contractor shall allow GTA representatives to witness all tests.

.3 The contractor shall provide GTA with a copy of all test results within ten (10) days of their completion.

11.6 Acceptance Testing

11.6.1 Mandatory Requirements

.1 Acceptance testing shall be conducted by the contractor to demonstrate to GTA that the contractor has delivered, installed and implemented a system which fully meets this specification.

.2 The contractor shall submit a detailed acceptance testing plan, including test schedule, equipment configuration, test procedures and location.

.3 The contractor shall obtain approval of the acceptance test procedures and the test program from GTA before actioning the procedures. GTA shall be given 21 days to indicate to the contractor any changes required to his proposed test and acceptance procedures.

.4 The contractor shall provide the personnel and the test equipment needed and shall conduct the test and acceptance procedures with the GTA team witnessing the results. The contractor shall notify GTA at least 14 calendar days in advance of the schedule for conducting the test procedure.

.5 GTA shall have unlimited access to all test data and results at anytime during and after the tests.

.6 Until the test has been declared successful, the contractor shall correct all problems at no charge to the Crown.

.7 The test shall be declared successful when it is mutually agreed by GTA and the contractor that all requirements have been met and the system has operated for 30 consecutive days after the cutover date with no major outage as defined in section 7.

NOTE: Service cutover date is defined as the date when the service becomes available to the initial group of government users as defined in section 8 of the RFP document (Schedule of Events).

11.7 Test Areas

11.7.1 Mandatory Requirements

.1 The acceptance tests shall cover, but not be limited to, the following areas:

a) Electronic messaging functionality for all supported information formats;
b) Communications access and protocols;
c) User access and interaction from supported equipment;
d) Security measures and information protection;
e) Performance - to verify that the system can handle the throughput specified without system degradation and within response time limits;
f) Administrative and management functionality - to verify the accuracy and security of data acquisition for the later formation of customer bills by GTA;
g) Service control and operation - to verify that the service can be controlled efficiently, including the introduction of new clients, maintenance, monitoring, diagnostics and other related functions;
h) Service integrity - to verify recovery and back-up procedures;
i) Expansion - to verify that the equipment/software and the network can be easily expanded;
j) Document conversion fidelity for all supported document formats (for vendors responding to the requirements of section 3).

11.8 Performance Testing

A document detailing the specific tests to be performed will be supplied by GTA to the contractor.

11.8.1 Mandatory Requirements

.1 The performance testing shall be performed on the system jointly by GTA and the contractor for 60 consecutive days after the service cutover date.

.2 The test shall verify that the availability and performance requirements of this specification are met. The contractor shall undertake corrective action if the results of the tests do not meet the availability and performance requirements.

11.9 Maintainability Testing

11.9.1 Mandatory Requirements

.1 This test shall be conducted to verify that the specified service restoration periods (4.7.2.5) have been attained and demonstrate the adequacy of maintenance procedures, documentation, design features and training.

.2 The maintainability testing will be conducted jointly by GTA and the contractor for 60 consecutive days after the service cutover date.

.3 If the demonstrated service restoration does not meet the specifications, then the contractor shall take corrective action to rectify the problem and then the test shall be re-run to verify the service restoration period.

12. PROMOTIONAL SUPPORT

12.1 Introduction

This section describes the requirements for the contractors' provision of support to GTA to promote the service to client departments in the Federal Government.

12.2 Scope

Support activities include, but are not limited to, the following:

a) presentations to various levels of personnel in client departments;
b) literature for potential end-users,
c) provision of promotional training for GTA personnel to carry out certain service promotional activities.

12.3 Plan

Marketing support shall be provided throughout the contract period. However, it is expected that the level of support and the number of presentations will peak during the initial 6 month period.

12.3.1 Mandatory Requirements

.1 The contractor shall propose a comprehensive service promotion plan describing the level of support, schedules, number and type of presentations, locations, extent of expected GTA involvement, cost (if any) and other related items.

12.4 Presentations

Marketing presentations to personnel at various levels from client departments shall be prepared in both official languages and presented by the contractor under the direction and co-ordination of GTA. GTA reserves the right to pre-screen and approve all presentation materials as well as the right to use vendor's presentation material.

12.4.1 Mandatory Requirements

.1 The contractor shall provide marketing personnel to conduct presentations at client department sites in all major Canadian cities which have a significant Federal Government presence.

.2 The contractor shall provide slides and/or overhead transparencies to aid personnel in their presentations.

.3 The contractor shall provide brochures or other printed material as hand-outs to presentation attendees.

.4 All promotion-related material shall be available in both official languages.

.5 The contractor shall conduct "dry runs" of all presentations to GTA personnel as requested and will abide by any adjustments and alterations to the presentations requested by GTA.

.6 The proposal shall describe each type of presentation, which shall include:

a) content overview;
b) target audience;
c) duration;

d) presentation aids;
e) hand-out literature;
f) marketing representative's skills;
g) cost (if any).

.7 The contractor shall be capable of providing presentations in both official languages. This includes all presentation aids and hand-out literature.

.8 All presentations on the service shall be made on behalf of GTA.

12.5 Literature

Printed literature describing the service shall be prepared by the contractor for distribution to potential end-users in client departments by GTA personnel or by the contractor under GTA's direction and co-ordination. All such literature shall be subject to prior approval by GTA.

12.5.1 Mandatory Requirements

.1 The contractor shall provide printed literature suitable in form and content for distribution to potential service users.

.2 All such literature shall be subject to GTA approval and the contractor shall abide by any adjustments and alterations in content or appearance requested by GTA.

.3 The proposal shall describe each item of literature, which shall include:

a) content overview;
b) target audience;

c) form;

d) cost (if any).

.4 All literature shall be provided in both official languages.

.5 All literature shall provide clear indication that the service is provided by GTA.

APPENDIX A

USERS' PROFILE AND MESSAGE/DOCUMENT TRAFFIC VOLUMES

1. Scope

This appendix provides profiles of users and traffic volumes and distribution for the electronic messaging, document exchange and document conversion functionalities. They assume that all message and document traffic originates and terminates within the service, occurs during business hours and do not include gateway traffic. These profiles are provided to assist vendors in sizing and pricing the service and in meeting performance requirements.

Users' profiles and message traffic volumes are provided herein in three separate sections:

a. User and message profile and distribution for electronic messaging based on current government electronic message traffic, as described in 2. below.

b. Perceived user profile and traffic volumes and distribution for document and binary file exchange, as described in 3. below.

c. Perceived user profile and traffic volumes and distribution for text document exchanges requiring conversion, as described in 4. below.

Vendors responding to the electronic messaging requirement only, must consider the combined profiles of 2. and 3., but need not consider 4. Vendors responding to both the electronic messaging and document conversion requirements must consider the combined profiles of 2., 3. and 4.

2. Electronic Messaging Profile

The message volumes and traffic patterns specified for applications A, B, C & D in Figure A-1 must be used to determine the size, price and performance of the initial service. For each message application it can be assumed that the user base ("number of users") will increase at a uniform monthly rate of 25% per annum for 3 years. Message and session lengths can be assumed to remain constant. Other profile items such as session frequency, messages composed, etc. can be assumed to increase in proportion to the user base.

Any other assumptions made by vendors regarding the current and/or projected electronic messaging profile must be clearly stated and explained.

2.1 Legend to the Electronic Messaging Profile

The messaging profile of Fig. A-1 consists of ten parameters associated with the major existing messaging systems managed by GTA. The following are definitions of each of those parameters:

a. Message Application - the computer/communication system in which each messaging application resides. There are four applications residing on three different systems - ENVOY 100, GDNS and DIALCOM.

b. Number of users - for application B and C, the number of terminals/ printers attached to the service; for applications A and D, the number of subscribers (i.e. user mailboxes) on the respective services. For applications A and D, assume one terminal device per subscriber.

c. Message length - the average length of a given message transmitted by a user on the service. The number quoted includes any editing or overhead characters exchanged during the composition stage, if composed on-line.

d. Session length per user - the average length of time a user is connected to the service during one session; users do not have to send any messages during a session - they may, for example, only sign on to view the contents of their mailboxes.

e. Session frequency - the total average number of sessions on the service per day.

f. Existing storage demand - storage requirements of the collective users for all filed messages, including messages read but not purged by the recipients. This figure does not include temporary storage for messages awaiting first reading (or delivery to a hard copy facility) and messages purged but still retained in the system for a specific period of time.

   Temporary storage can be calculated from the information provided in Figure A-1, assuming that average retention time of a message in the system is 5 days for all message type applications (A, B, C, D).

g. Messages originated (composed) - the average number of messages composed on, or sent to, the system per day.

h. Messages received (read) - the average number of messages either sent directly to a subscriber's mailbox, or a hard copy facility associated with a subscriber's mailbox.

ELECTRONIC MESSAGING PROFILE

MESSAGE APPLICATION	NUMBER OF USERS	MESSAGE LENGTH	SESSION LENGTH	SESSION FREQUENCY	EXISTING STORAGE DEMAND	MESSAGES ORIGINATED (COMPOSED)	MESSAGES RECEIVED (READ)	TOTAL MESSAGING CHARACTERS PER MONTH	PEAK HOUR		
									MESSAGES ORIGINATED	MESSAGES RECEIVED	
										VDT	PTR
A (Envoy-100)	2,900	1,600 charac.	5 minutes	2,900 per day	40 M charac.	1,800 per day	3,000 per day	153.6 M characters	540	720	180
B (GDNS 1)	740	378 charac.	2 minutes	14,500 per day	Nil	6,000 per day	8,500 per day	109.6 M characters	1,800		2,500
C (GDNS 2)	90	285 charac.	2 minutes	1,570 per day	Nil	470 per day	1,100 per day	13.4 M characters	140		330
D (Dialcom)	280	542 charac.	9 minutes	110 per day	8 M charac.	113 per day	226 per day	3.7 M characters	34	68	

Notes: - All figures are averages (as of February 1987).
- Application C users access the system over a 24 hour day, 30 days per month. All others are 8 hours a day, 20 days a month.

Figure A-1

i. Total messaging characters per month - the total number of characters in both originated and received messages over one month, including associated traffic as defined in paragraph c.

j. Peak hour/messages originated - the average number of messages composed on or sent to the system during the peak hour of the day.

k. Peak hour/messages delivered - the average number of messages either read by subscribers within their mailboxes, or transmitted to hard copy facilities associated with users' mailboxes, during the peak hour of the day.

Note: The "spreading" effect of time zones is already accounted for in the peak hour traffic statistics. Therefore, vendors should not downward adjust these figures when determining required system resources to meet peak loads.

2.2 Message Traffic Distribution Patterns

The location of the service facilities will have a major impact on the overall cost of the service communications component.

The following tables (Figure A-2 through A-5) describe message traffic distribution patterns.

GTA will determine the cost of communication networks access and facilities based on GTA provided networks, for those vendors who are not providing communications as part of their proposals.

The message volumes stated can be assumed to increase in proportion to the user base over the projected 3 year period.

For the purpose of this specification the following 6 geographical areas, containing the respective major cities listed below, were used to represent the message distribution profile:

Area #	Area	Cities
1	National Capital Region	Ottawa, Hull
2	Atlantic	Moncton, St. John, Halifax, Dartmouth, St. John's
3	Québec	Montreal, Québec City
4	Ontario	Toronto, Windsor, London
5	Central	Edmonton, Calgary, Regina, Saskatoon Winnipeg
6	Pacific/North	Vancouver, Victoria, Whitehorse

Figure A-2

95% of the traffic can be assumed to originate from and terminate in these cities in each region.

In the tables below, "NCR" refers to area 1 above, and "REGIONS" refers equally to areas 2 through 6. The term "OTHER REGIONS" also applies to areas 2 through 6.

For each of Applications A through D in table A-1, the following message traffic distribution applies:

APPLICATION A (ENVOY)

TOTAL:	MESSAGES ORIGINATED	MESSAGES RECEIVED
	1,800 messages/day	3,000 messages/day

ORIGINATED

NCR	- 1,100 messages/day
EACH REGION	- 140 messages/day (x 5 regions)

RECEIVED

AT	FROM	VOLUMES (messages/day)
NCR	NCR	1,400
NCR	REGIONS	400
EACH REGION	SAME REGION	NEGLIGIBLE
EACH REGION	OTHER REGIONS	NEGLIGIBLE
EACH REGION	NCR	240 (x 5)

Figure A-3

APPLICATION B (GDNS 1)

TOTAL:	MESSAGES ORIGINATED	MESSAGES RECEIVED
	6,000 messages/day	8,500 messages/day

ORIGINATED

NCR	- 2,300 messages/day
EACH REGION	- 740 messages/day (x 5 regions)

RECEIVED

AT	FROM	VOLUMES (messages/day)
NCR	NCR	765
NCR	OTHER REGIONS	354
EACH REGION	SAME REGION	629
EACH REGION	OTHER REGIONS	354 (x 5)
EACH REGION	NCR	493 (x 5)

Figure A-4

APPLICATION C (GDNS 2)

TOTAL:	MESSAGES ORIGINATED	MESSAGES RECEIVED
	470 messages/day	1,100 messages/day

ORIGINATED

NCR	- 157 messages/day
EACH REGION	- 62 messages/day (x 5)

RECEIVED

AT	FROM	VOLUMES (messages/day)
NCR	NCR	NEGLIGIBLE
NCR	REGIONS	NEGLIGIBLE
EACH REGION	SAME REGION	146 (x 5)
EACH REGION	OTHER REGIONS	NEGLIGIBLE
EACH REGION	NCR	73 (x 5)

Figure A-5

APPLICATION D (DIALCOM)

TOTAL:	MESSAGES ORIGINATED	MESSAGES RECEIVED
	113 messages/day	226 messages/day

ORIGINATED

NCR	- 68 messages/day
EACH REGION	- 9 messages/day (x 5)

RECEIVED

AT	FROM	VOLUME (messages/day)
NCR	NCR	109
NCR	REGIONS	27
EACH REGION	NCR	18 (x 5)

Figure A-6

3. Document Exchange Profile

This profile must be used to determine service sizing, pricing and performance when taking into account projected text document and other binary file exchange traffic which is in addition to the messaging traffic of section 2.

.1 The initial phase of the service is targeted to support up to 1000 government users with "smart" workstations such as Communicating Processors and personal computers with word-processing and communications capabilities. User-base and traffic volume is expected to expand at an annual rate of 25% for a period of three years.

.2 During the initial service phase it is assumed that 50% of all documents will be sent from CWPs utilizing transparent IBM Bisynchronous 3780 protocol @ 2400 bps. The remaining 50% will be sent from PC's utilizing asynchronous file transfer protocols @ 1200 bps. Both 3780 and X-MODEM (or similar) protocols can be assumed to be 75% efficient.

.3 The users access the network during business hours from all time zones in Canada (7 a.m. to 6 p.m. at the originating locations). This does not preclude service availability 24 hours a day, seven days per week.

.4 Peak hourly volume is assumed to be 30% of the average daily volume.

.5 Initial level of document exchange traffic is assumed to be an average of 150 documents/day originated from 1000 users (therefore, 3000 documents/month, 30M characters/month).

.6 A document is defined as a 5-page, 2000 character per page entity.

.7 The ratio of documents received to documents originated is 1.5 on average.

.8 Average document retention in the system before delivery is 48 hours.

.9 One document is sent or received during a session. Average session connect time is assumed to be 10 minutes.

.10 The geographical distribution of originated documents is assumed to be:

FROM	TO	%
NCR	NCR	40
NCR	REGIONS	40
REGIONS	NCR	20
REGIONS	REGIONS	<1

Where NCR and REGIONS refers to the areas defined in 2.2.

4. Document Conversion Profile

This profile shall only be considered by vendors addressing the document conversion component of Section 3 in their response to the RFP.

It is assumed that the availability of a document conversion capability will result in an increased document exchange traffic; documents which in the absence of conversion capability would not be sent. These additional documents are therefore assumed to originate from the same users as in 3. and all other assumptions regarding user-base growth, peak hourly volumes, ratio of documents received/originated etc. in 3. are assumed to be the same.

.1 Initial level of document exchange involving conversion is assumed to be an additional 75 documents/day from the 1000 users (therefore, 1500 documents/month, 15M characters/month).

.2 Conversion is assumed to be required for each destination.

.3 Document traffic distribution pattern is assumed to be identical to 3.10.

APPENDIX B

ISO DIS 8613 (ODA) and CCITT T.400 (DTAM)

For successful document interchange to be possible, the participants in the interchange must have a common understanding of the semantics and of the syntactical representation of the information content of the document. ISO DIS 8613 - Office Document Architecture (ODA) and the CCITT T.400 series of recommendations on Document Transfer And Manipulation (DTAM) are two coordinated standards that each define an office document architecture and various content architectures (text, facsimile, videotex, etc.) which together provide the semantic framework for document interchange. This work also defines an interchange format which provides the corresponding syntactic basis. It does not define any protocols for document interchange, nor does it standardize any processing functions related to document creation, filing or retrieval.

DSI 8613 and the T.400 series are concerned with the definition of a document architecture which permits processibility of interchanged documents. A model of document processing is also provided as a basis for determining the scope of processibility supported by the document architecture. The processing model is not intended to represent an actual implementation, nor to restrict in any way the processing that may be applied to an interchange document.

Conceptually a document can be viewed as progressing through three separate phases of processing: editing, layout and imaging. DIS 8613/T.400 are not concerned with how these processes are actually implemented but rather ensuring that these processes can be supported after interchange.

The document editing process is concerned with creating a new document or modifying a previous one. The DIS 8613/T.400 document architecture provides mechanisms for representing the document resulting from this process and for representing control information which influences this process.

The document layout process is concerned with defining a page-oriented organization (i.e. layout) for the document. The DIS 8613/T.400 document architecture provides mechanisms for representing the document resulting from this process and for representing control information which influences this process.

The document imaging process is concerned with presenting an image of a document in a form perceptible to a human, e.g. on paper or on a screen. The DIS 8613/T.400 document architecture does not support the interchange of an imaged document. However, it does support the interchange of information which affects this process e.g. emphasis information such as underline, blinking, etc.

Documents interchanged in accordance with DIS 8613/T.400 may be interchanged in one of three forms:

- Processible Form documents that are suitable for input to either editing or layout processes

- Formatted Form documents that are suitable for input to the imaging process

- Formatted Processible Form documents which are suitable for input to the editing, layout or imaging process

The interchange formats are based on Abstract Syntax Notation One (ISO 8824,8825 ASN.1). Products using ODA will likely have their own internal representation based on ODA that is converted to ASN.1 for interchange in an OSI environment.

APPENDIX C

DOCUMENT ARCHITECTURE PARAMETERS AND CONTROLS

CLASSES OF FUNCTIONS

Break Functions

- Hard New Line
- Hard Page End
- Soft New Line
- Soft Page End

Line Format Functions

- Left Margin Set
- Right Margin Set
- Text Tab Set (Horizontal Tabulation Set Absolute)
- Decimal Tab Set
- Center
- Temporary Left/Right Margin Set
- Line Spacing

Document Format Functions

- Justify
- Left Align
- Pitch
- Line Height

Page Format Functions

- Top Margin Set
- Bottom Margin Set
- Header Margin Set

Footer Margin Set

Page Length

Page Width

Page Numbering Set

Page Orientation

Indent

Left Facing Page	Header Left Margin
	Header Right Margin
	Footer Left Margin
	Footer Right Margin
Right Facing Page	Header Left Margin
	Header Right Margin
	Footer Left Margin
	Footer Right Margin

Rendition Functions

Emphasis

Overprint/Strikeout

Underscore/Underline

Superscript

Subscript

Touching Font Graphics

Miscellaneous Functions

Page Numbering Initial Value

Header Start/End

Footer Start/End

Hard Space

Soft Space

Hard Hyphen

Soft Hyphen

Perform Decimal Tab

Perform Text Tab (Horizontal Tabulation)

Document End

Document Start

Stop Print

DOCUMENT RELATED TERMS

Document: a string of zero or more characters bounded by a Document Start function and a Document End function. (This definition applies only to Appendix C. See 2.2 for a broader definition of this term in the context of this specification).

Footer: A line or lines of text placed at the bottom of a page in a document as an aid to the reader. It usually appears on all pages of the document.

Header: A line or lines of characters placed at the top of a page of a document as an aid to the reader. It usually appears on all pages of the document.

Left Facing Page: When printing a document using both sides of the paper and binding the document on the left side (i.e., book style), the page which appears, on the back side of the paper and, thus is on the left side when the document is opened up is the left facing page.

Right Facing Page: When printing a document using both sides of the paper and binding the document on the left side (i.e., book style), the page which appears, on the front side of the paper and, thus is on the right side when the document is opened up is the right facing page.

Text Body Area: That area available for presenting text, exclusive of headers and footers. It is established by format functions between the Document Start function and the first Hard Page Start function. (Note: the left and right margin values can be changed within the document).

CLASSES OF FUNCTIONS

Break: Functions which have as a side effect the action of terminating the parameter values for given functions and invoking new parameter values for those functions; or, invoking the initial parameter values for given functions.

Document Format: Functions which pertain to the appearance/positioning of text in the entire document; they must be established prior to the first Hard Page Start function and their values cannot change throughout the document.

Line Format: Functions which apply to the appearance and/or positioning of text on a line; the parameter values can change from one line to the next.

Page Format: Functions which pertain to pages; their values must be established prior to the first Hard Page Start function and the values cannot change throughout the document.

Rendition: Functions which affect the appearance or positioning of words or characters.

CONTROL FUNCTIONS

Bottom Margin Set-BMS: BMS is a format effector that establishes the bottom most line of text body area.

Center: Center is a format effector which indicates that a line of print is to be positioned so that its mid-point is aligned with a specific point or line.

Decimal Tab Set-DTS: DTS is a format effector which causes a horizontal decimal tabulation stop to be set at each position corresponding to a parameter value.

Document Start/End-DSE: DSE is a control function which is used to delimit the start and end of a document depending on the selective parameter:

Emphasis: Emphasis is a format effector which specifies increased intensity of all printable characters between start and stop delimiters.

Footer Margin Set - FMS: FMS is a format effector that establishes the number of blank lines between the bottom-most line of text body area and the top-most line of the footer text.

Footer Start/End - FSE: FSE is a control function which is used to delimit the start and end of the footer text depending on the selective parameter:

Hard Hyphen - HH: HH is a connective graphic character that always prints as a hyphen. The system may not break the line immediately after this function. It is not subject to deletion by the system.

Hard New Line - HNL: HNL is a format effector which indicates a mandatory new line that many not be altered by the system.

Hard Space - HSP: HSP is like SPACE except that HSP cannot be used as a line break and is not subject to compression or expansion.

Header Margin Set - HMS: HMS is a format effector that establishes the number of blank lines between the bottom-most line of the header text and the top-most line of the text body area.

Header Start/End - HSE: HSE is a control function which is used to delimit the start and end of the header text depending on the selective parameter:

Justify: Justify is a format effector which indicates that the process of composing and adjusting lines of text by using word fill and/or inter-word spacing so that the lines are vertically aligned on the left and right margins is to be performed.

Left Align: Left Align is a format effector which indicates the setting of lines so that their left-most character aligns vertically on the left side.

Left Facing Page Footer Left Margin - LPFL: LPFL is a control function which establishes the left-most column of the footer on the left facing page.

Left Facing Page Footer Right Margin - LPFR: LPFR is a control function which establishes the right-most column of the footer on the left facing page.

Left Facing Page Header Left Margin - LPHL: LPHL is a control function which establishes the left-most column of the header on the left facing page.

Left Facing Page header Right Margin - LPHR: LPHR is a control function which establishes the right-most column of the header on the left facing page.

Left Margin Set - LMS: LMS is a format effector which establishes the left- most column of the text body area for the current and following lines in the document. LMS takes effect immediately following the next subsequent Break function.

Line Height (Select Vertical Spacing): Line Height is a format effector which specifies the line spacing for subsequent text (i.e., the number of lines per inch).

Line Spacing - LSP: LSP is a format effector which indicates the presentation of blank lines, if any, between lines of display text.

Overstrike: Overstrike is a format effector which specifies the superimposing of one character on top of another character in either a constructive (building a composite character) or destructive (replacement of an existing character) manner.

Page Length - PL: PL is a control function that indicates the maximum number of lines (both printed and blank) allowed per physical page, including header, footer, and text body area.

Page Number Initial Value - PNIV: PNIV is a control function that indicates the initial value at which page numbering is to begin when printed.

Page Numbering Set - PNS: PNS is a control function that indicates whether or not page numbers are to be printed on the pages of the document at printout time (either on a hardcopy or softcopy device).

Page Orientation (Page Format Selection): Page Orientation is a control function which designates the format of the page to be invoked by a subsequent Hard Page Start function.

Page Start/End - PSE: PSE is a format effector which is used to delimit the start and end of pages depending on the selective parameter:

Page Width - PW: PW is a control function that indicates the maximum number of character positions allowed per line.

Perform Decimal Tab - PDT: PDT is a format effector that advances the active position to the next decimal tab stop.

Pitch (Select Horizontal Spacing): Pitch is a format effector which specifies the character spacing for subsequent text (i.e., the number of characters of a monospaces font that will fit horizontally in one inch).

Right Facing Page Footer Left Margin - RPFL: RPFL is a control function which establishes the left-most column of the footer on the right facing page.

Right Facing Page Footer Right Margin - RPFR: RPFR is a control function which establishes the right-most column of the footer on the right facing page.

Right Facing Page Header Left Margin - RPHL: RPHL is a control function which establishes the left-most column of the header on the right facing page.

Right Facing Page Header Right Margin - RPHR: RPHR is a control function which establishes the right-most column of the header on the right facing page.

Right Margin Set - RMS: RMS is a format effector which establishes the right-most column of the text body area for the following lines in the document. RMS takes effect immediately following the next subsequent Break function.

Soft Hyphen - SH: SH is a connective graphic character that indicates the position within a word where the formatting program may hyphenate that word if it will not fit on the current line. The hyphen is not presented unless the work is actually hyphenated at that point at printout time (or display time).

Subscript (Partial Line Down): Subscript is a format effector which causes the active position to be moved down to the corresponding character position of an imaginary line with a partial vertical offset. This offset should be sufficient to image following characters as subscripts until the first following occurrence of SUPERSCRIPT in the data stream or, if the immediately preceding character is imaged as a superscript to restore subsequent imaging of characters to the active line.

Stop Print: Stop Print is an embedded control code that halts printing of a document to allow printwheel changes.

Superscript (Partial Line Up): Superscript is a format effector which causes the active position to be moved to the corresponding character position of an imaginary line with a partial vertical offset. This offset should be sufficient to image following characters as superscripts until the first following occurrence of SUBSCRIPT in the data stream or, if the immediately preceding character is imaged as a subscript to restore subsequent imaging of characters to the active line.

Text Tab Set - Horizontal Tabulation Set Absolute (HTSA): Text Tab Set is a control function which indicates the positions along a line where tab stops are desired.

Temporary Left Margin Set - TLM: TLM is a format effector that temporarily sets the left margin position to the column specified by the parameter value until the next occurrence of Hard New Line, Hard Page End, or Document End.

Top Margin Set - TMS: TMS is a format effector that establishes the top-most line of the header text, if any. If no header is specified, this is also the top-most line of the text body area.

Touching Font Graphics: Touching Font Graphics is a set of special characters that permits the construction of vertically and horizontally oriented boxes and tabular grids complete with corners and "T" junctions.

Underscore: Underscore is a format effector which specifies a continuous ruling (single) between start and stop delimiters.

APPENDIX D

THE ACCENTED FRENCH CHARACTER SET

à	-	small letter a with grave accent
â	-	small letter a with circumflex accent
ç	-	small letter c with cedilla accent
è	-	small letter e with grave accent
é	-	small letter e with acute accent
ê	-	small letter e with circumflex accent
ë	-	small letter e with diaeresis accent
ô	-	small letter o with circumflex accent
ù	-	small letter u with grave accent
û	-	small letter u with circumflex accent
ü	-	small letter u with diaeresis accent
î	-	small letter i with circumflex accent
ï	-	small letter i with diaeresis accent
À	-	Capital letter A with grave accent
Â	-	Capital letter A with circumflex accent
Ç	-	Capital letter C with cedilla accent
È	-	Capital letter E with grave accent
É	-	Capital letter E with acute accent
Ê	-	Capital letter E with circumflex accent
Ë	-	Capital letter E with diaeresis accent
Ô	-	Capital letter O with circumflex accent
Ù	-	Capital letter U with grave accent
Û	-	Capital letter U with circumflex accent
Ü	-	Capital letter U with diaeresis accent
Î	-	Capital letter I with circumflex accent
Ï	-	Capital letter I with diaeresis accent
«	-	Angle quotation mark left
»	-	Angle quotation mark right

APPENDIX E

THE GOVERNMENT PACKET NETWORK (GPN) OVERVIEW

The GPN is a national packet switched service offered by GTA, through CNCP Telecommunications, to its federal government client organizations. The primary protocol services supported are X.25 (1984), X.28 and SDLC on either a switched or permanent virtual circuit basis. Over 100 network serving areas across Canada will reside in this multi-nodel network, and terminal equipment located outside these serving areas may connect to the network through traditional analogue or digital facilities.

Attached is a list of pertinent technical network features.

GPN SERVICE AREAS (APR. 87)

CITY		PROV	CITY		PROV
1	Calgary	Alta.	52	Chatham	Ont.
2	Edmonton	Alta.	53	Clarkson	Ont.
3	Fort McMurray	Alta.	54	Cornwall	Ont.
4	Grande Prairie	Alta.	55	Galt	Ont.
5	Lethbridge	Alta.	56	Guelph	Ont.
6	Medicine Hat	Alta.	57	Hamilton	Ont.
7	Red Deer	Alta.	58	Kingston	Ont.
8	Abbotsford	B.C.	59	Kitchener	Ont.
9	Kamloops	B.C.	60	London	Ont.
10	Kelowna	B.C.	61	Niagara Falls	Ont.
11	Nanaimo	B.C.	62	North Bay	Ont.
12	Nelson	B.C.	63	Oakville	Ont.
13	Penticton	B.C.	64	Oshawa	Ont.
14	Prince George	B.C.	65	Ottawa	Ont.
15	Terrace	B.C.	66	Peterborough	Ont.
16	Trail	B.C.	67	Sarnia	Ont.
17	Vancouver	B.C.	68	Sault Ste. Marie	Ont.
18	Vernon	B.C.	69	Stratford	Ont.
19	Victoria	B.C.	70	St. Catharines	Ont.
20	Williams Lake	B.C.	71	Sudbury	Ont.
21	Brandon	Man.	72	Thunder Bay	Ont.
22	Dauphin	Man.	73	Toronto	Ont.
23	Morden	Man.	74	Trenton	Ont.
24	Portage La Prairie	Man.	75	Welland	Ont.
25	Selkirk	Man.	76	Windsor	Ont.
26	Steinbach	Man.	77	Woodstock	Ont.
27	Thompson	Man.	78	Charlottetown	P.E.I.
28	Winnipeg	Man.	79	Summerside	P.E.I.
29	Bathurst	N.B.	80	Drummondville	Que.
30	Campbellton	N.B.	81	Grandby	Que.
31	Fredericton	N.B.	82	Joliette	Que.
32	Moncton	N.B.	83	Jonquière	Que.
33	Newcastle	N.B.	84	Mirabel	Que.
34	Saint John	N.B.	85	Montréal	Que.
35	Cornerbrook	N.F.	86	Québec	Que.
36	Gander	N.F.	87	Rivière-du-Loup	Que.
37	Grand Falls	N.F.	88	Sherbrooke	Que.
38	St. John,s	N.F.	89	Sorel	Que.
39	Amherst	N.S.	90	St. Hyacinthe	Que.
40	Bridgewater	N.S.	91	St. Jean	Que.
41	Halifax	N.S.	92	St. Jérome	Que.
42	Kentville	N.S.	93	St. Thérèse	Que.
43	New Glasgow	N.S.	94	Trois-Rivières	Que.
44	Sydney	N.S.	95	Valleyfield	Que.
45	Truro	N.S.	96	Moose Jaw	Sask.
46	Barrie	Ont.	97	North Battleford	Sask.
47	Belleville	Ont.	98	Prince Albert	Sask.
48	Brampton	Ont.	99	Regina	Sask.
49	Brantford	Ont.	100	Saskatoon	Sask.
50	Brockville	Ont.	101	Swift Current	Sask.
51	Chalk River	Ont.	102	Yorkton	Sask.

GOVERNMENT PACKET NETWORK
INITIAL SERVICE FEATURES

1. Coast-to-coast packet switched network service.

2. X.25 (1984), X.28, SDLC support.

3. HDLC-LAP B link protocol on X.25.

4. Dedicated X.25, SDLC access to 9,600 bps, X.28 access to 2,400 bps.

5. Async X.28 access supports 7 bit ASCII (International Alphabet No. 5) or 8 bit transparent operation.

6. Dial-in X.28 async to 2,400 bps, with 103/212A, V.22, V.22 bis compatibility.

7. Dial-out async.

8. RS-232C (X.21 bis) electrical interface.

9. Initial serving areas in 102 Canadian cities.

10. Interconnections to many international PSDNs.

11. Major network facilities include closed user groups, network user identification, fast select, reverse charging, non-standard packet, window sizes, flow control negotiations, call establishment control.

It would be possible to have an intermediary form based on ODA without implementing ASN.1.

Note: The current ISO schedule is to advance DIS 8613 to an International Standard in the first quarter of 1988. The Technical Office Protocol (TOP) specification for the interchange of office documents will be based on an ODI/ODIF application profile. This application profile is expected to be completed in the fourth quarter of 1987 and will be demonstrated in the third quarter of 1988.

Further information on the status of TOP interchange via ODA/ODIF can be obtained from the Chairman of the TOP subcommittee on Document Architecture.

Further information on the current status of the ISO work on DIS 8613 can be obtained from the Chairman of the CAC/SCI8 Committee.

INDUSTRY CANADA/INDUSTRIE CANADA
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GOVERNMENT ELECTRONIC MESSAGING AND DOCUMENT EXCHANGE SERVICE : ANNEX A : SERVICE REQUIREMENTS SPECIFICATION

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DATE DUE

AUG AOUT 14	1991		
FEB FEV -5	1992		
MAR 23	1992		