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INTERMAIL AND COMMERCIAL MAIL RELAY SERVICES

STATUS OF THIS MEMO

This RFC discusses the history and evolution of the Intermail and Commercial mail systems. The problems encountered in operating a store–and–forward mail relay between commercial systems such as Telemail, MCI Mail and Dialcom are also discussed. This RFC provides information for the Internet community, and does not specify any standard. Distribution of this memo is unlimited.

INTRODUCTION

The evolution of large electronic mail systems testifies to the increasing importance of electronic mail as a means of communication and coordination throughout the scientific research community.

This paper is a summary of the development of, and a status report on, an experiment in protocol interoperation between mail systems of different design. USC/Information Sciences Institute (ISI) began work on this experiment in 1981 and over the years has provided an evolving demonstration service for users to exchange mail between the Internet and a few commercial mail systems.

Recently other organizations have begun to provide similar services, demonstrating the ongoing need for interoperation of the Internet and the commercial mail systems. We believe that ISI's pioneering work in this area has promoted this expansion of service.

These systems include the Internet mail system, the US Sprint Telemail system, the MCI Mail system, and the Dialcom systems. All of the systems were designed to operate autonomously, with no convenient mechanism to allow users of one system to send electronic mail to users on another system.

The Intermail and Commercial Mail Relay (CMR) services described in this paper were developed to provide a means for sending mail between the Internet and these commercial mail systems.

The Internet is an interconnected system of networks using the SMTP mail protocol, which includes the ARPANET, MILNET, NSFNET, and about 700 other networks; mail relays allow the exchange of mail with BITNET, CSNET, and the UUCP networks as well. To the users, this Internet looks like one large mail system with at least 100,000 computers and at least 400,000 users. Figure 1 illustrates the path of a message sent by a user on one Internet host to a user on another Internet host. For more details on the Internet and connected networks (see Appendix A).

As commercial mail systems came into popular use, it became clear that a mail link between the Internet and the commercial mail systems was necessary (see Appendix B). More and more commercial and research entities needed to communicate with the Internet research community, and many of these organizations (for one reason or another) were inappropriate candidates for Internet sites. The Intermail and CMR services allow these groups to communicate with Internet users by purchasing electronic mail services from commercial companies.

INTERMAIL

Intermail is an experimental mail forwarding system that allows users to send electronic mail across mail system boundaries. The use of Intermail is nearly transparent, in that users on each system are able to use their usual mail programs to prepare, send, and receive messages. No modifications to any of the mail programs on any of the systems are required. However, users must put some extra addressing information at the beginning of the body of their messages.

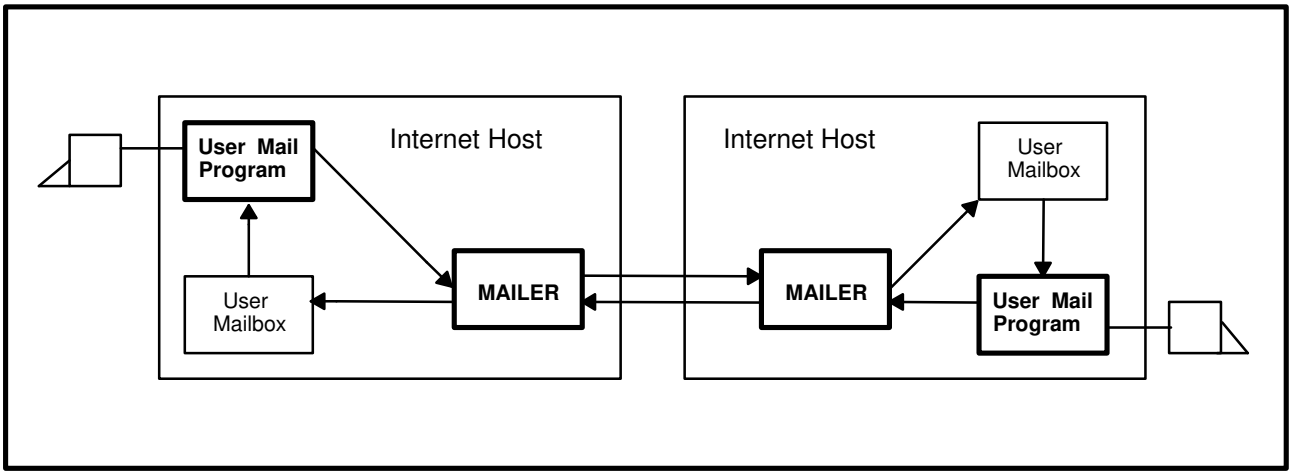

Figure 1 – Internet to Internet Mail

The earliest version of Intermail was developed in 1981, by Jon Postel, Danny Cohen, Lee Richardson, and Joel Goldberg [1]. It ran on the TOPS–20 operating system and was used to forward VLSI chip specifications for the MOSIS project between the ARPANET and the

Telemail system. The original addressing model used in this system was called “Source Route Forwarding”. It was developed to handle situations in which a message might travel multiple hops before reaching its destination.

Later, in 1983, Annette DeSchon converted Intermail into a more general–purpose mail–forwarding system, supporting forwarding between the Internet mail system and three commercial mail systems: Telemail, MCI Mail, and Dialcom [3,4].

As it became apparent that the level of generality of Source Route Forwarding was not needed, and as Intermail gained acceptance among users, an easier approach to addressing was developed. The new addressing model is called “Simple Forwarding”. This form of addressing, like Source Route Forwarding, appears at the beginning of the text of each message. It can be used to include various Internet mail header fields in addition to the standard “To” and “Cc” address fields. This format also allows the use of special address formats, such as U.S. postal addresses and TELEX addresses, which are supported by the MCI Mail system. The Intermail system performed partially automated error handling. Error messages were created by the Intermail program and were then either approved or corrected by a human postmaster.

Figure 2 illustrates the pathways between the user mailboxes in the commercial mail systems and the user mailboxes in the Internet via the Intermail accounts and program modules. Figure 3 shows the Intermail processing in more detail.

COMMERCIAL MAIL RELAY

In 1988, the Commercial Mail Relay (CMR) was developed to run on a dedicated UNIX system, replacing the TOPS–20–based Intermail system. The CMR is a store–and–forward mail link between the Internet and two commercial systems, Telemail and Dialcom. The only remaining forwarding performed by the TOPS–20 Intermail system is in support of the MCI Mail system. (This is planned for conversion to the CMR.) The CMR supports relay–style addressing in the “Internet to commercial system” direction, as well as Simple Forwarding in both directions. One advantage of relay–style addressing is that users from different commercial systems can appear on Internet mailing lists. Another advantage is that the reply features of most Internet user applications can be used by Internet users to respond to mail that originated on a commercial system. Unfortunately, since we do not have access to the address–parsing software on the commercial systems, it is not possible for users of the commercial systems to enter addresses directly into the message header, and they must continue to use Simple Forwarding.

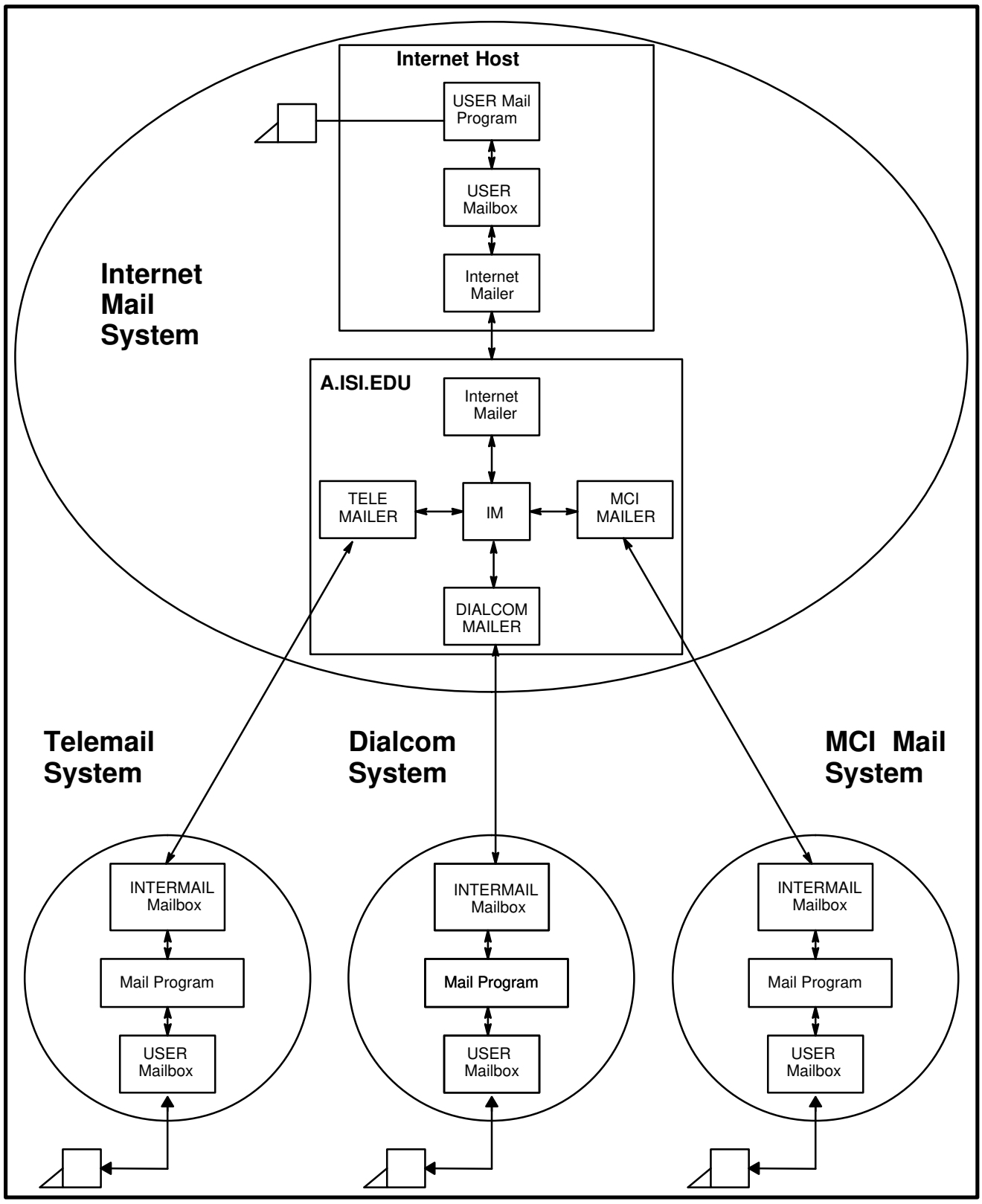

Figure 2 – Commercial Mail to Intermail

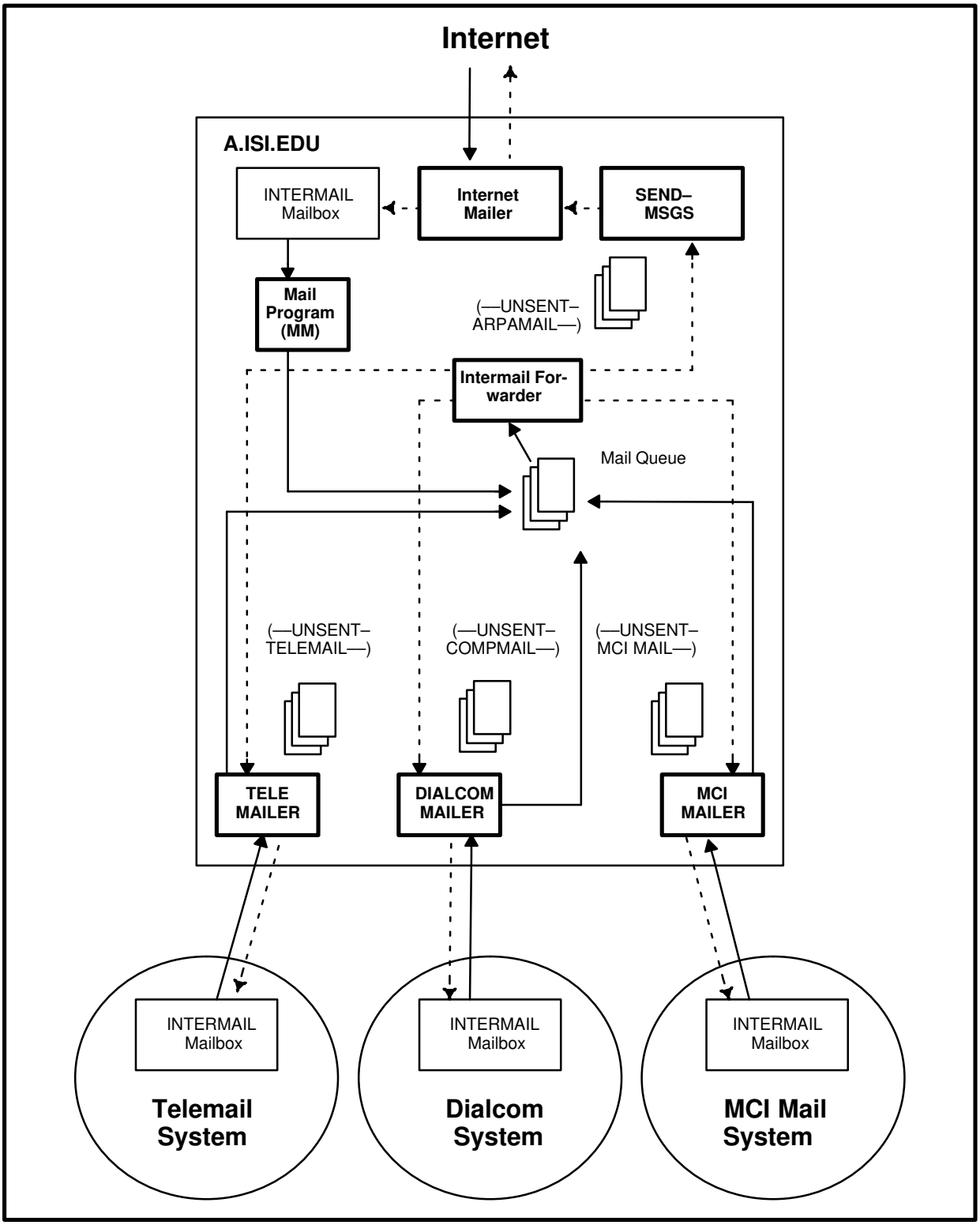

Figure 3 – Intermail Processing

The CMR supports automated error handling, which enables the system to provide faster turnaround on messages containing addressing errors, and requires much less intervention from a human postmaster.

DESCRIPTION OF THE CMR SYSTEM

The Multi–channel Memo Distribution Facility (MMDF) is used as the system mail software because of its notion of separating the mail queue into separate channels [5]. This makes it easy to dedicate a channel/queue combination to each commercial system. Internet mail comes in over the standard SMTP port, and the system parses the destination address, queuing the message in the proper outgoing queue. A tag can be added to outgoing traffic so that replies can be made without any special processing at the destination site.

The CMR uses a relay mailbox on each commercial system. Commercial users send mail to this mailbox with a Simple Forwarding Header (SFH) at the head of their message text. Each channel, in addition to sending outgoing mail into the commercial system, reads all messages in the relay mailbox and places them in a spool file in the CMR host computer.

The processing of the spool file is performed by a single daemon. It parses each commercial system message header to find the sender and subject, then it searches for and processes the SFH. The SFH contains the destination Internet addresses. Figure 4a illustrates the path of mail from the Internet to the commercial sytems. Figure 4b illustrates the path from the commercial systrems to the Internet. Note: MCI Mail is not yet implemented.

The CMR employs a simple accounting mechanism: a shell script counts the number of times a string marker occurs in the MMDF logs. At the end of the month, another script uses an “awk” program to total the number of messages sent and received with each commercial system. The Commercial Mail Relay is being developed by Craig E. Ward. Ann Westine served as the Postmaster for both Intermail and the CMR until March 1989. Currently, our Action Office serves as Postmaster. Questions may be sent to “Intermail–Request@ISI.EDU”.

COMMERCIAL SYSTEMS SERVED

The CMR provides mail relay service between the Internet and two commercial electronic mail systems: the US Sprint Telemail system and the Dialcom system. A CMR connection to MCI Mail is under development. MCI Mail is currently served by the TOPS–20 Intermail system. See Appendix C for recent traffic data.

The Internet to Commercial Systems:

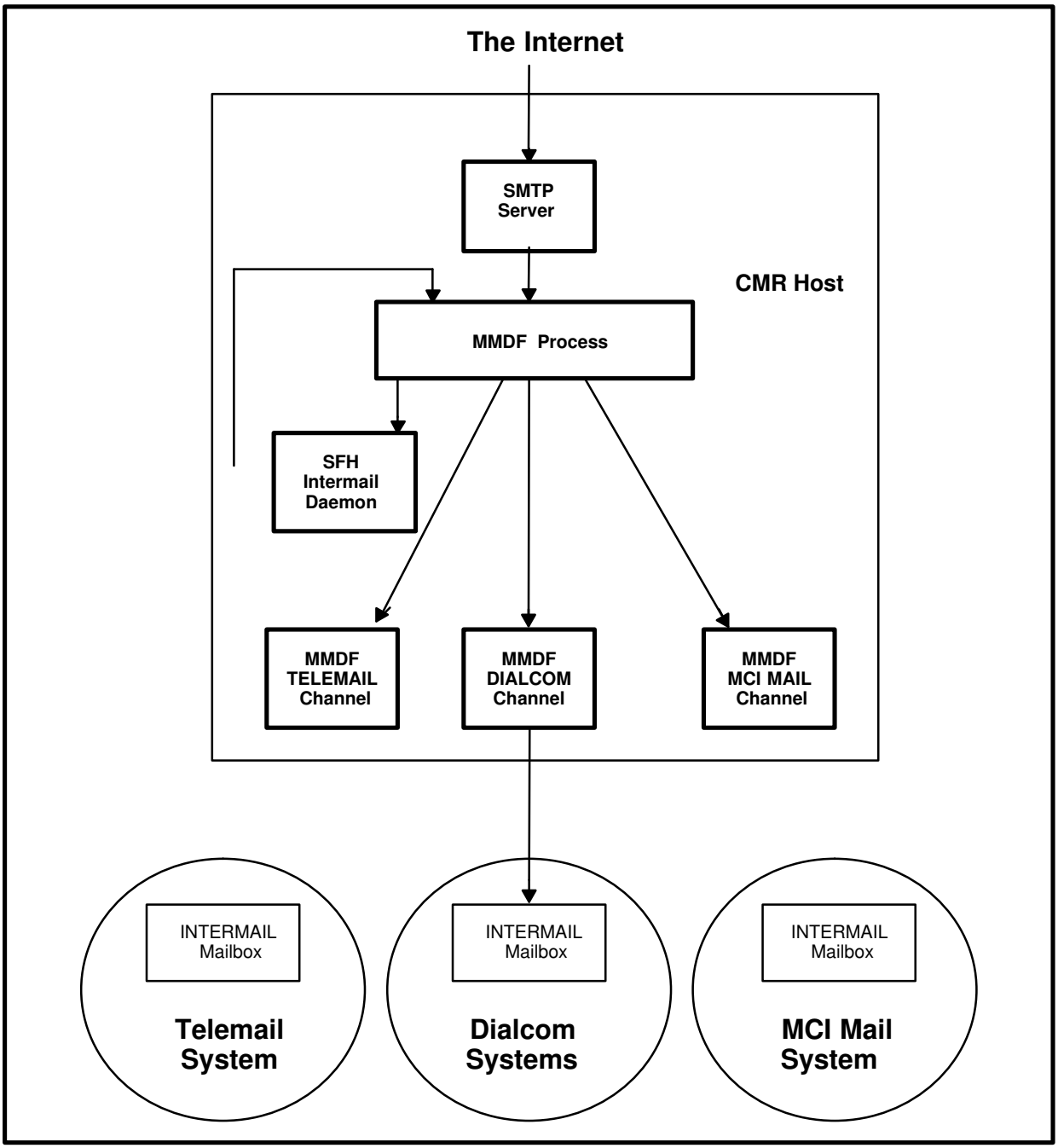

Figure 4a