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Marshall D. Abrams  
National Bureau of Standards  
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## Serving Remote Users on the ARPANET

### Problem Statement

Second only to the unavailability of the serving host, the most vexing problem encountered in attempting to use the service hosts on the NET has been the inadequacy of administrative procedure and information dissemination for remote users. This paper explores the problem and proposes solutions.

When computer systems begin to service remote users, some of the operating procedures which produced a functioning environment for local users may not be satisfactory for those who are off-site. It may be that these procedures were already inadequate, but the local community developed a set of informal procedures to augment the formal ones. It may also be true that the established formal procedures were completely satisfactory for local users, but failed when an attempt was made to extend them to the remote user. In either case, this paper asserts that a problem exists and offers a set of suggestions for its amelioration.

### Existing Information

Having used (or attempted to use) the information currently available, I should first summarize the existing sources and indicate that they don't meet total needs. There is the resource notebook index. The index is an ordered list of attributes which refer one to the appropriate main entry for hosts exhibiting that attribute. When the index is completed, it will reference the main entries in the resource notebook, to which we now turn out attention. On the whole, the main entry contains a summary of the hardware and software services available. At this site, these entries serve as a "shopping list" from which we may select the service center hosts which may be suitable for the computing we wish to undertake. Some administrative information is also provided. Using the outline of a host-site subsection, this information consists of: I. Personnel; V.B. Rate structure; V.D. Long-term storage; VII. Login; VIII. Operator Communication; IX. Miscellaneous; and X. Programs. The discussion under "IX. Miscellaneous" included a statement of intention to include an elaborated documentation section in a future revision of the resource book. This is most urgently required. This paper

contains a proposal which might constitute the outline for that section.

Another source of information concerning serving hosts is the NIC. Some sites have submitted existing documentation to the NIC; some have even written special documents to assist network users. There are several problems however: It may be difficult to learn about said documents, especially for someone new to the ARPANET and/or the NIC. NIC policy is to lend the documents, which is fine for browsing but unacceptable for reference.

#### Information Required

Employing a questionnaire format, I will now present additional outline entries which might be used to supplement NIC 6801.

#### XI. Administrative Procedures relating to Financial Arrangements

Who does a prospective user contact?

Is there a way to sample using the system (gratis)?

How does one open an account for computer services?

How does one obtain the necessary blank administrative forms?

Can all expenses (e.g., manuals, postage) be charged to the computer services account?

How does one determine the status of his account?

What is the relationship of a number of users to accounts?

How can one determine the charges accruing during a session?

How often are account statements issued?

How current are account statements when issued?

#### XII. Information Dissemination

##### A. Documentation

Is there a "beginners pocket"? Does it contain examples?

Is there a list of documents available? Where?

Where are published documents sold?

How does the remote user obtain these documents?

May document purchases be charged to the account?

How are errata sheets distributed?

How often are manuals updated? How are updates announced?

What local documentation is available/necessary?

What manufacturer hardware/software documentation is available/necessary?

Is manufacturer documentation available from the same source as local documentation and with the same arrangements?

What is the mechanism for resolution of conflicts amongst manuals?

Is documentation available for each subsystem and application program?

Is there a printed newsletter or equivalent? If so, what is the procedure for becoming a subscriber? For obtaining back issues?

Is there a "message of the day" automatically presented?

How does an irregular user keep informed of past "messages of the day"?

Is there an on-line information service like a newspaper? How does one obtain "back issues" of the "newspaper"?

#### B. User Assistance

Is there a (required) single point of contact for remote users?

What is his level of technical competence?

What is his level of administrative responsibility?

When the contact person cannot answer a question will he follow it up with the appropriate in-house person? Will the remote user be referred to the in-house person?

To what extent will a remote user be permitted or denied access to technical and administrative staff?

What priority does the local user have relative to the remote user?

Is there a telephone service for answering questions?

Is INWATS or equivalent provided?

What are the service hours?

Is there an on-line assistance mechanism? How does it work?

Is there a mechanism for sending messages to an off-line user consultant?

### C. Technical Capabilities and Requirements

Is there an index of system capabilities?

#### 1. Communications

How do you log in (or whatever it is called)?

What device assumptions are made concerning lines per page, columns per line, (seperate) line feed, (seperate) carriage return, (combined) carriage return line feed, horizontal tab, vertical tab, form feed, and back space?

Have any of the non-printing ASCII characters been assigned non-standard functions?

#### 2. Command language

What is the minimum set of control statements required?

Where are the control statements documented?

What are the installation defaults on control statements?

#### 3. File System and Editor(s)

What are the attributes of the file system? Describe the naming conventions of the defaults.

How is a set, subset, and superset of "files" defined,

related and named?

What is the minimum information about the file system that is required in order to use the editor(s) and language processors?

Are names divided into adjectival qualifiers? What are these called? Are there restrictions? Defaults?

Describe the editor(s) characteristics. What documentation is available?

Are there in-line editing features (e.g., erase immediately preceding character, erase entire line)? Describe.

#### 4. Languages

What language processors are available?

How are the processors implemented (e.g., batch compiler, interpreter, incremental compiler)? What difference does it make to the user?

What is the compatibility of your language dialect(s) with the standard and with other dialects?

To what extent can program units written in different languages communicate? Discuss data types, representations, and structures as well as subroutine linkage conventions.

#### XIII. Operations

What measures are in effect to preserve the security of one's files and accounts?

Can a remote user direct printing, punched cards, plotting, etc. to an on-site device? How does he get his output mailed to him?

What off-line secondary storage is available? How is it used? What does it cost?

How does the remote user request, renew, release, mount and demount tapes and disk packs?

What arrangements are there for mailing off-line storage media?

Is the operating staff aware that there are remote users?

Are there services available to local users not available to remote users; and conversely?

Is there on-line file storage? What does it cost? What limits are imposed? How often is it backed-up?

Does the announced operating schedule consider users in different time zones?

Is the announced schedule closely followed?

How are remote users notified of changes in the schedule?

#### Implementation

Much of the information suggested herein as being beneficial for remote user would also apply to local users. Perhaps much of it already exists in local documentation. I assert that the remote user is usually unable to easily find the information, especially when he works with several remote hosts. Presenting the information in a format that followed a standard outline would certainly be a service. I also recognize that preparation of this information might involve a duplication of effort, and would possibly produce two documents which had to be updated when changes occurred. One solution is to follow the outline in producing a guide to the literature available from the host site.

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