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- Purpose** The *Remote Batch Service* booklet describes all that you need to know to set up and maintain your Remote Batch Service. This booklet explains all the service commands and shows how these commands are used to perform service-related tasks. In addition, this booklet lists all the messages that can be generated while running this service and tells you what to do when a message is displayed.
- Intended audience** This publication is intended for System Administrators who are responsible for starting up and keeping the Remote Batch Service running efficiently.
- Before you read this booklet** There is some general information about services that you will need to be familiar with before you can understand this booklet. Read the "Services Executive" section in the *Server Operation and Maintenance* booklet, and the *Introduction to Network Administration* booklet. All of these publications can be found in the *Network Basic Services* volume.
- Before you can use this service** As part of the preparation for setting up the Remote Batch Service, you need to perform the procedures described in the *Server Software Installation* booklet. This booklet is also part of the *Network Basic Services* volume.

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Table of contents

1. Introduction	1
2. Commands	5
3. Setting up your Remote Batch Service	7
Initializing the Remote Batch Service	8
Adding the Remote Batch Service to an access list, and creating file drawers for the Remote Batch Service	9
Configuring a local 8000 port for the Remote Batch Service	11
Adding a partner for the Remote Batch Service	13
Stopping and restarting the Remote Batch Service	16
4. Maintaining your Remote Batch Service	17
Selecting one of several communication partners	18
Deleting a communication partner or port	19
Changing a communication partner or port	21
Showing a communication partner or port	24
Defining and displaying the interpretation of data received	26
Describing the contents of the file drawers in use by the Remote Batch Service	28
Showing Remote Batch Service statistics	29
Testing an RS-232C port	32
Renaming the Remote Batch Service	35
Stopping a communication session	36
5. Messages	37
Glossary	49
Appendixes	
A. Forms	A-1
B. 860 to EBCDIC conversion tables	B-1
Index	INDEX-1

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The Remote Batch Service (RBS) allows users to interchange documents and transfer files with many devices that implement the widely used IBM Binary Synchronous (BSC) data transmission protocol. This protocol is used by the IBM 2770, IBM 2780, and IBM 3780 Remote Batch Terminals and is emulated by other major data processing (DP) and word processing (WP) vendors.

Devices with which the Remote Batch Service can communicate (called "partners") include DP systems, WP devices, and other communicating peripherals. WP devices include word processors, personal computers, and other intelligent communicating workstations.

The document interchange process includes translation between document formats. The Remote Batch Service can speak and understand the Xerox 860 document format and code set, the IBM 2770/3780 EBCDIC DP code set, the IBM 2770/3780 EBCDIC WP code set, and the IBM 2780 EBCDIC code set. The Remote Batch Service can also send and receive documents in binary formats, acting only as a third-party transfer agent.

The file transfer process allows Xerox Network System files and folders of files to be sent to a mainframe and later retrieved, taking advantage of the ability of large mainframe computers to provide cost-effective file storage and archival facilities. The transfer process occurs through a transparent mode of communication, which allows interchange without the loss of the structure and attributes of the folder and files. Normal documents that are interchanged by means of remote batch terminals do not contain attribute information.

Before sending, archiving, or retrieving files to or from a non-Xerox host computer, you must create a task folder. A task folder is a folder prepared on a 6085/8010 workstation that contains the actual data to be transferred (documents, folders, files), and a special document titled "Instructions." The instructions document specifies the order of transmission for each file in the task folder, and any special conversions that may be necessary for that file. The instructions document must also be converted to 860 format.

If the destination computer is a data processing (DP) host, an additional document containing Job Control Language (JCL) statements must also be converted to 860 format.

Once a task folder is created, it is placed in the *input file drawer* that you create when you set up your RBS. The Remote Batch Service then processes the tasks by periodically copying task folders from the input file drawer, interpreting the instructions document in each task folder, and performing any conversions necessary before sending it to the host computer or non-host recipient. If an error occurs during task

submission, the task folder is copied to an error folder in the input file drawer. An error summary note is also mailed to the submitter. Tasks that are successfully submitted are deleted from the input file drawer.

Any file that is received from a host computer or non-host recipient is placed in the *output file drawer* that you create when you set up your RBS. Files retrieved from the Remote Batch Service that were not originally sent in 6085/8010 format are converted to 860 format when they are retrieved from the non-Xerox format.

The Remote Batch Service is dependent upon the Clearinghouse to store its name and network address for network management purposes, and to locate File Services. The RBS is also dependent upon the File Service as a source for task descriptions and task components, and as the recipient of data received.

Note: The Remote Batch Service cannot run on a server with a multiport configuration.

How the Remote Batch Service works

Tasks are prepared and submitted at the workstation. First, the task folder is created, and then it is placed in an input file drawer. Each partner (communication device) is assigned its own file drawer, which is periodically polled by the RBS for tasks. Refer to the "Remote Batch Service" section of the *VP Series Reference Library, Version 1.0* for information on creating task folders.

The task remains in the input file drawer until the RBS copies it from the file drawer, interprets the instruction file, converts the format, and transmits the data to the partner via telephone lines using 2770, 2780, or 3780 BSC protocols. If the partner is a mainframe computer, the output (if any) is sent back to the RBS. The Remote Batch Service then converts it, if necessary, and places the data in an output file drawer, from which it can be retrieved.

Three types of tasks can be submitted to the RBS: document interchange, document transfer, and document archiving. All tasks require a task folder (in 6085/8010 format) which contains an instructions document (in 860 format) and the data.

Document interchange

During document interchange, the Remote Batch Service converts a document from 860 format to the appropriate format for the data processing or word processing device, and then transmits the data to the partner. If the partner has data to be transmitted, RBS converts it into 860 format so that an 820-II, an IBM computer, an 860 word processor, or a 6085/8010 workstation can retrieve it.

Document transfer

Sometimes it is necessary to transfer documents whose format and structure are unknown to any intermediary. In a document transfer task, the document is transferred to and from a partner without format conversion. The Remote Batch Service acts only as a transfer agent.

Document archiving

When the user submits a document archiving task, RBS sends files or folders to a mainframe for storage and archiving. Document archiving provides a cost-effective means of storage. RBS provides a transparent mode of communication by which Xerox Network System files and folders can be sent to a mainframe and later retrieved. This transparent interchange occurs without losing the structure (such as font, tabs, and paragraph spacing), and attributes (such as the name of the file or folder, its type, and size) of the files or folders.

User interaction

Users can create tasks on any workstation that can access the File Service. These workstations include the 6085/8010, the 860, the 820-II, and the IBM Personal Computer. For more information on workstation interface with the Remote Batch Service, refer to the "Remote Batch" section in the *VP Series Reference Library, Version 1.0*.

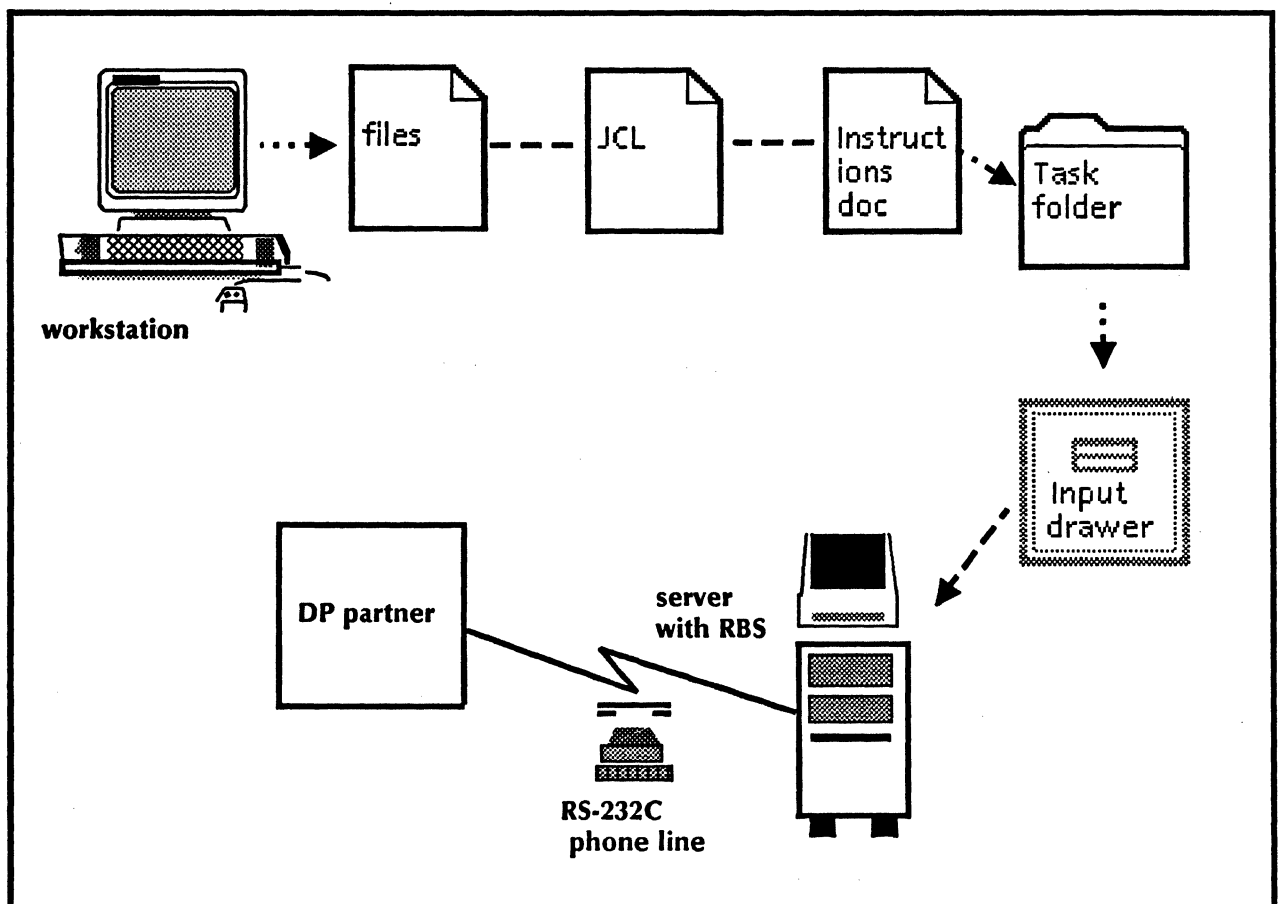


Figure 1: Transmitting data to a data processing partner

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This chapter lists all the Remote Batch Service commands. The commands below are listed in alphabetical order, followed by a brief explanation. To address the Remote Batch Service commands, you must be in the Remote Batch Service context. (To enable in the Remote Batch Service context, perform steps 1 through 3 in the "Configuring a local 8000 port for the Remote Batch Service" procedure.)

- Add Partner** Available to the enabled user when the Remote Batch Service is started. Allows you to define a communication partner for the Remote Batch Service. (More than one partner may be defined.) This command works with the entries from the server profile file. The Remote Batch Service will not act on any additions to these entries until it has been stopped and restarted.
- Add Port** Available to the enabled user when the Remote Batch Service is started and no port entry exists. Allows you to define an RS-232C port for the Remote Batch Service. Only one port entry may be defined. This command works with the entries from the server profile file. The Remote Batch Service will not act on any additions to these entries until it has been stopped and restarted.
- Change Partner** Available to the enabled user when the Remote Batch Service is started and at least one partner entry exists. Allows you to modify existing communication partner information. This command works with the entries from the server profile file. The Remote Batch Service will not act on any changes to these entries until it has been stopped and restarted.
- Change Port** Available to the enabled user when the Remote Batch Service is started and the port entry exists. Allows you to modify existing RS-232C port information. This command works with the entries from the server profile file. The Remote Batch Service will not act on any changes to these entries until it has been stopped and restarted.
- Delete Partner** Available to the enabled user when the Remote Batch Service is started and at least one partner entry exists. Allows you to remove a communication partner definition. This command works with the entries from the server profile file. The Remote Batch Service will not act on any deletions to these entries until it has been stopped and restarted.

- Delete Port** Available to the enabled user when the Remote Batch Service is started and the port entry exists. Allows you to remove the RS-232C port definition. This command works with the entries from the server profile file. The Remote Batch Service will not act on any deletions to these entries until it has been stopped and restarted.
- List Contents** Available to any user when the Remote Batch Service is started and at least one partner entry exists. Describes the contents of the file drawers in use by the Remote Batch Service, as well as the error folder.
- Register Service** Automatically invoked when the Remote Batch Service is starting and no service entry exists. You are prompted to enter the service name and description in order to register the Remote Batch Service.
- Rename Service** Available to the enabled user when the Remote Batch Service is started and the service name exists. Allows you to change the name of the existing Remote Batch Service.
- Set Interpretation** Available to the enabled user when the Remote Batch Service is started and at least one partner entry exists. Defines the interpretation of received data to overwrite the definition on the partner. There is an interpretation for each of the four cases of data that can be received: DP, WP, XNS, and uninterpreted. This change takes effect immediately and lasts until the Remote Batch Service is stopped; the change is not recorded in the server profile file.
- Show Interpretation** Available to any user when the Remote Batch Service is started and at least one partner entry exists. Displays information about the interpretation of received data.
- Show Partner** Available to any user when the Remote Batch Service is started and at least one partner entry exists. Displays information about a communication partner definition.
- Show Port** Available to any user when the Remote Batch Service is started and a port entry exists. Displays information about the RS-232C port definition.
- Show Statistics** Available to any user when the Remote Batch Service is started. Displays statistics collected by the Remote Batch Service. This is not a restricted command. It is used for both information and diagnostics.

3. **Setting up your Remote Batch Service**

The Remote Batch Service supports dedicated and switched communication lines, utilizing the RS-232C port on the 8000 processor running the service. The Remote Batch Service can communicate with a remote data processing system or word processing device at speeds of up to 9600 bits per second, in either half- or full-duplex, subject to limitations imposed by the host or device with which you are communicating.

Note: For best performance, do not put a Remote Batch Service on the same server with highly-active services, such as the Clearinghouse Service Print Service, and the Mail Service. The Remote Batch Service may drop a connection if the server is overloaded with services because of each service's competition for central processing unit cycles.

Note: The Remote Batch Service cannot run on a server with a multiport configuration.

This chapter consists of these sections:

- Initializing the Remote Batch Service
- Adding the Remote Batch Service to an access list, and creating file drawers for the Remote Batch Service
- Configuring a local 8000 port for the Remote Batch Service
- Adding a partner for the Remote Batch Service
- Stopping and restarting the Remote Batch Service

Initializing the Remote Batch Service

These procedures are based on the assumption that the Remote Batch Service has been activated by the **Run Service** or **Proceed** commands. The installation procedures are explained in the *Server Software Installation* booklet.

Except in unusual situations (for example, if the Clearinghouse Service cannot be located), the Remote Batch Service will register itself when it first attempts to start. It will then determine that it has insufficient configuration information and enter its inactive state while it awaits the additional configuration information that you provide in the following procedures.

Use Form FS 1, *Directory of Services on a Specific Server*, to respond to the prompts. Form FS 1 is found in the *File Service* booklet.

Note: For best performance, do not put a Remote Batch Service on the same server with highly-active services, such as the Clearinghouse Service and the Mail Service. The Remote Batch Service may drop a connection if the server is overloaded with services because of each service's competition for central processing unit cycles.

Note: The Remote Batch Service cannot run on a server with a multiport configuration.

Procedure

1. Type the name for the Remote Batch Service (from FS Form 1) and press <RETURN>.
2. Type the description for the Remote Batch Service (from FS Form 1) and press <RETURN>. At this point, the software registers the service in the appropriate Clearinghouse domain.

```

Initializing Remote Batch Service...
Service name and description unknown.
Enter service name: OurRBSRETURN
Enter service description: Remote Batch Service for IBM 2770RETURN
Confirm (Y/N): YRETURN
Validating Clearinghouse entry for: OurRBS:OurDomain:OurOrg
A new Clearinghouse entry was created.
Done.
RBS: 47000 disk pages of scratch file space was available.
RBS: Failed - no RS232C port entry in profile file.
RBS: Failed - no communication partner entry in profile file.
RBS: Remote Batch Service needs profile information.
RBS: Remote Batch Service is idle.
    
```

Adding the Remote Batch Service to an access list, and creating file drawers for the Remote Batch Service

You must create two file drawers for each host computer or communicating word processor with which Remote Batch Service communications are to be established. One file drawer is used to hold the jobs (documents) to be transmitted. The other file drawer is used to hold the output received from a host computer or communicating word processor. Both file drawers must be on the same File Service. The File Service must be on the same internetwork as the Remote Batch Service, but it does not need to be on the same network.

One or more access lists associated with each file drawer determine which users may store and retrieve files. The Remote Batch Service itself is considered a user needing access to the file drawers, so you must add its name to both access lists. Adding the Clearinghouse Service group containing the Remote Batch Service to the file drawer access list is the best way to accomplish this. Use standard File Service commands to accomplish these tasks. The commands are discussed further in the *File Service* booklet.

To add the Remote Batch Service to a Clearinghouse Service group, use Procedure A. Use Procedure B to create file drawers for the Remote Batch Service.

Procedure A. Adding the Remote Batch Service to a Clearinghouse Service group

To perform this procedure, go to the server that supports the Clearinghouse Service. Use CHS Form 2, Group/Distribution List, in the *Clearinghouse Service* booklet.

1. Log on and enable in the Clearinghouse Service context.
2. Type **Add Group** and press <RETURN>.
3. Type the name for the group. (Use CHS Form 2, Group/Distribution List.) Press <RETURN> after each response.
4. ype **Add Member** and press <RETURN>. Respond to the prompts. The group name is the one you just entered.
5. ype in the fully-qualified name of the Remote Batch Service (from the procedure "Initializing the Remote Batch Service") and press <RETURN>.
6. og off from the Clearinghouse Service context.

Procedure B. Creating file drawers for the Remote Batch Service

To perform this procedure, go to the server that supports the File Service. Use FS Form 2, File Drawer/Access Rights, in the *File Service* booklet.

1. Log on and enable in the File Service context.
2. Type **Add File Drawer** and press <RETURN>. You want to add a submission file drawer ("Input Bin" is the name given to the drawer in the following examples). Respond to the prompts.
3. Type **Add File Drawer** and press <RETURN>. You want to add a retrieval file drawer ("Output Bin" is the name given to the drawer in the following examples). Respond to the prompts.
4. Type **Change File Drawer** and press <RETURN>. You want to give your newly created group (with Remote Batch Service as a member) add, read, write, and remove access rights to the Input Bin file drawer.
5. Type **Change File Drawer** and press <RETURN>. You want to give your newly created group (with Remote Batch Service as a member) add, read, write, and remove access rights to the Output Bin file drawer.
6. Log off from the File Service context.

Note: Any user allowed to submit jobs will need a mailbox to receive error summary notes from the Remote Batch Service. If your Remote Batch Service users have not received mailboxes, refer to the "Creating mailboxes for users" procedure in the *Mail Service* booklet. The Remote Batch Service itself does not require a mailbox.

Configuring a local 8000 port for the Remote Batch Service

Now that the Remote Batch Service has been initialized, you need to designate an RS-232C port on the 8000 processor that is running the Remote Batch Service.

The Remote Batch Service and the communication software driving the other end of the phone line must have the same duplexity (full- or half-duplex transmission of data) and line speed.

To configure a local 8000 port for the Remote Batch Service, complete RBS Form 1, Registering an RBS/8000 Port, and use it to help answer the prompts.

Procedure

1. Type **Logon** and press RETURN>.
2. Type **Enable** and press <RETURN>.
3. Enable yourself in the Remote Batch Service context by typing **Remote Batch Service** next to the prompt and pressing <RETURN>.

```
>LogonRETURN
  User's Name: MWBRETURN
  Password: ****RETURN
>EnableRETURN
!Remote Batch ServiceRETURN
RBS!
```

4. Type **Add Port** and press <RETURN>.
5. Respond to the prompts, pressing <RETURN> after each answer, according to the information you have on your completed RBS Form 1. An example is shown on the following page.

RBSAdd PortRETURN

Enter RS-232-C port name: **RBSportRETURN**

Description: **2770/2780/3780 document interchangeRETURN**

The equipment connected to this port is

- 1 full duplex
- 2 half duplexRETURN

Enter choice number: **2RETURN**

Does this equipment have autodialer hardware? (Y/N): **YRETURN**

Select line speed

- 1 1200 bps
- 2 2400 bps
- 3 3600 bps
- 4 4800 bps
- 5 7200 bps
- 6 9600 bpsRETURN

Enter choice number: **4RETURN**

Should this line be autostarted? (Y/N): **YRETURN**

RBS:... Done

Adding a partner for the Remote Batch Service

You must define each host computer or word processor with which the Remote Batch Service communicates as a partner of the Remote Batch Service.

Multiple partners may be supported by a single Remote Batch Service (although not simultaneously), if the communication line is not dedicated.

To add a partner for the Remote Batch Service, complete RBS Form 2, Registering an RBS Partner, and use it to answer the prompts.

Procedure

1. You should already be logged on and enabled in the Remote Batch Service context. (To enable, perform steps 2 and 3 in the "Configuring a local 8000 port for the Remote Batch Service" procedure.)
2. Type **Add Partner** and press <RETURN>.
3. Respond to the prompts, pressing <RETURN> after each answer, according to the information you have on your completed RBS Form 2.

```

RBS>Add PartnerRETURN
Use existing partners to supply default values? (Y/N): NRETURN
Enter name of communication partner: MelroseRETURN
Enter descriptive comment: 2770/2780/3780 document interchangeRETURN
Enter name of file service: FS:California:USARETURN
Enter name of file drawer for job submission: Input BinRETURN
Enter number of minutes between checks of job submission file drawer (1-59): 1
RETURN
Enter name of file drawer for output retrieval: Output BinRETURN
Select line usage
1 dedicated
2 automatic dialing
3 manual dialing
4 answer only
Enter choice number: 2RETURN
Restrict hours of operation? (Y/N): YRETURN
Enter time of day when service begins operation (hh:mm): 18:00RETURN
Enter time of day when service ends operation (hh:mm): 07:15RETURN
Re-create connection when how many jobs are waiting (1-32767): 5RETURN
Re-create connection after how many minutes (1-59): 15RETURN
Terminate connection if inactive for specified period? (Y/N): YRETURN
Enter number of seconds of inactivity (15-32767): 60RETURN
Enter phone number to dial: 7929234RETURN

```

Continued on next page

Specify terminal and user security identification? (Y/N): YRETURN
 Enter terminal identification: TIDRETURN
 Enter user security identification: USIDRETURN
 Select station type
 1 primary
 2 secondary
 Enter choice number: 2RETURN
 Select device being emulated
 1 2770
 2 2780
 3 3780
 Enter choice number: 3RETURN
 Select device with which we are communicating
 1 mainframe
 2 word processor
 Enter choice number: 1RETURN
 Select mainframe spooling program
 1 JES (MVS)
 2 POWER (DOS/VSE)
 3 RSCS (VM/370)
 4 Other
 Enter choice number: 1RETURN
 Send SIGNON and SIGNOFF? (Y/N): YRETURN
 Enter SIGNON statement: /*SIGNON REMOTE 23RETURN
 Enter SIGNOFF statement: /*SIGNOFFRETURN
 Select initial bid response
 1 WACK/ACK
 2 NACK/ACK
 Enter choice number: 2RETURN
 Select default interpretation of data received
 1 interpret as DP
 2 interpret as WP
 3 interpret as XNS
 4 uninterpreted (unknown format)
 Enter choice number: 4RETURN
 Select file Type for file received
 1 Text (tText)
 2 Unspecified (tUnspecified)
 3 User defined (numeric value)
 Enter choice number: RETURN

Continued on next page

Expect component selection code (DCn) to precede data received? (Y/N): Y RETURN

Select interpretation of print (DC1) data

- 1 interpret as DP
- 2 interpret as WP
- 3 interpret as XNS
- 4 uninterpreted (unknown format)

Enter choice number: 2 RETURN

Select interpretation of punch (DC2) data

- 1 interpret as DP
- 2 interpret as WP
- 3 interpret as XNS
- 4 uninterpreted (unknown format)

Enter choice number: 3 RETURN

Allow to insert ETX at end of each sending file? (Y/N): N RETURN

Default partner option? (Y/N): N RETURN

Stopping and restarting the Remote Batch Service

Now that you have defined a port and a partner, you must stop and restart the Remote Batch Service. The Remote Batch Service will not act on the information you have provided until it has been stopped and restarted.

When you use the **Stop Service** command, you are asked if you want to stop the service immediately (termed a *hard stop*) or after sending and receiving operations are completed (termed a *soft stop*). These types of stopping operations are discussed in the procedure titled "Stopping a communication session" in the following chapter.

Procedure

1. You should already be logged on and enabled in the Remote Batch Service context. (To enable, perform steps 2 and 3 in the "Configuring a local 8000 port for the Remote Batch Service" procedure.)
2. Type **Stop Service** and press <RETURN>.
3. Respond to the prompts, pressing <RETURN> after each answer.
4. Type **Start Service** and press <RETURN>.
5. Respond to the prompts, pressing <RETURN> after each answer.

```

RBS! Stop ServiceRETURN
Select choices
 1 External Communication Service
 2 Interactive Terminal Service
 3 File Service
 4 Remote Batch Service
Enter one or more choices: 4RETURN
RBS: Stop immediately? (Y/N): YRETURN
Stopping Remote Batch Service.
RBS!
RBS: Ending communication session (service stop)
RBS: Ending communication in progress...
RBS: Communication session ended
RBS: Remote Batch Service is stopped.
! Start ServiceRETURN
Select choices
 1 Internetwork Routing Service
 2 Remote Batch Service
Enter one or more choices: 2RETURN
Starting Remote Batch Service.
    
```

4. Maintaining your Remote Batch Service

Use the procedures in this section to perform specific tasks that are needed to keep your Remote Batch Service running. The tasks should be done on an as-needed basis.

This chapter consists of these sections:

- Selecting one of several communication partners
- Deleting a communication partner or port
- Changing a communication partner or port
- Showing a communication partner or port
- Defining and displaying the interpretation of data received
- Describing the contents of the file drawers in use by the Remote Batch Service
- Showing Remote Batch Service statistics
- Testing an RS-232C port
- Renaming the Remote Batch Service
- Stopping a communication session

Selecting one of several communication partners

The **Delete Partner**, **Change Partner**, and **Show Partner** commands must deal with a single partner. If more than one communication partner has been defined, you must select one.

Procedure

1. Log on and enable in the Remote Batch Service context. (Enable yourself if you will be using the **Delete Partner** or **Change Partner** commands.)
2. Type the desired command and press <RETURN>.
3. Type the number corresponding to the communication partner you wish to work with and press <RETURN>.

More than one communication partner exists. Select one of them.

1 OBS 3780

2 Melrose

Enter choice number: 2RETURN

4. Proceed to the task pertaining to the command you used. Refer to the procedure titled "Deleting a communication partner or port," if you used the **Delete Partner** command. Refer to the procedure titled "Changing a communication partner or port," if you used the **Change Partner** command.

Deleting a communication partner or port

If you no longer need a Remote Batch Service partner or port, you can use the **Delete Partner** command or the **Delete Port** command. These commands are available only if the Remote Batch Service is started and at least one partner entry exists, or the port entry exists.

To delete a communication partner, use Procedure A. Use Procedure B to delete an RS-232C port.

Procedure A. Deleting a communication partner

To delete a currently active partner, you may use the **Delete Partner** command, but the Remote Batch Service will not act on the new information until it has been stopped and restarted. To delete a partner that is not currently active, it is not necessary to stop and restart the Remote Batch Service.

To delete a currently active partner:

1. Log on and enable in the Remote Batch Service context.
2. Type **Delete Partner** and press <RETURN>.

```
RBS! Delete PartnerRETURN
More than one communication partner exists. Select one of them.
1  OBS 3780
2  Melrose
Enter choice number: 2RETURN
RBS: ....Done
```

1. Type **Stop Service** and press <RETURN>.
2. Respond to the prompts, pressing <RETURN> after each answer.
3. Type **Start Service** and press <RETURN>.
4. Respond to the prompts, pressing <RETURN> after each answer.
5. Log off from the Remote Batch Service context, if you do not plan to continue using the Remote Batch Service.

To delete a partner that is not the current communication partner:

1. Type **Delete Partner** and press <RETURN>.
2. Log off from the Remote Batch Service context, if you do not plan to continue using the Remote Batch Service.

Procedure B. Deleting an RS-232C port

1. Log on and enable in the Remote Batch Service context.
2. Type **Delete Port** and press <RETURN>.
3. Type the port name and press <RETURN>.

```
RBS! Delete PortRETURN
Enter RS-232-C port name: RBSportRETURN
RBS: ...Done
```

4. Type **Stop Service** and press <RETURN>.
5. Respond to the prompts, pressing <RETURN> after each answer.
6. Type **Start Service** and press <RETURN>.
7. Respond to the prompts, pressing <RETURN> after each answer.
8. Log off from the Remote Batch Service context, if you do not plan to continue using the Remote Batch Service.

Changing a communication partner or port

If you want to change existing information about a Remote Batch Service communication partner or the RS-232C port, you use the **Change Partner** command or the **Change Port** command. These commands are available only if the Remote Batch Service is started and either one partner entry or the port entry exists.

To change a communication partner, use Procedure A. Use Procedure B to change information about the RS-232C port.

Procedure A. Changing information about the communication partner

To change a currently active partner, you may use the **Change Partner** command, but the Remote Batch Service will not act on the new information until it has been stopped and restarted. To change a partner that is not currently active, it is not necessary to stop and restart the Remote Batch Service.

To change an active communication partner:

1. Log on and enable in the Remote Batch Service context.
2. Type **Change Partner** and press <RETURN>.
3. Respond to the prompts by selecting the desired partner (if more than one exists) and pressing <RETURN>, or by pressing <RETURN> to retain the current answers.

```
RBS!Change PartnerRETURN
More than one communication partner exists. Select one of
them.
1 Hawthorne
2 Melrose
3 California
Enter choice number: 2RETURN
Enter name of communication partner: MelroseRETURN
Enter descriptive comment: 2770/2780/3780 document
interchangeRETURN
Enter name of file service: FS:California:USARETURN
Enter name of file drawer for job submission: Input BinRETURN
Enter number of minutes between checks of job submission file
drawer (1-59): 1RETURN
Enter name of file drawer for output retrieval: Output BinRETURN

(Prompts continue - same as Add Partner prompts)

RBS.... Done
```

4. Type **Stop Service** and press <RETURN>.
5. Respond to the prompts, pressing <RETURN> after each answer.
6. Type **Start Service** and press <RETURN>.
7. Respond to the prompts, pressing <RETURN> after each answer.
8. Log off from the Remote Batch Service context.

To change a partner that is not the current communication partner:

1. Type **Change Partner** and press <RETURN>.
2. Log off from the Remote Batch Service context.

Procedure B. Changing information about the RS-232C port

1. Log on and enable in the Remote Batch Service context.
2. Type **Change Port** and press <RETURN>.
3. Respond to the prompts by typing the new or changed answers and pressing <RETURN>, or by pressing <RETURN> to retain the current answers.

```

RBS!Change Port^RETURN
Enter RS-232-C port name: RBSport^RETURN
Description: 2770/2780/3780 document interchange ^RETURN
The equipment connected to this port is
1 full duplex
2 half duplex
Enter choice number: 1^RETURN
Does this equipment have autodialer hardware? (Y/N): Y^RETURN
Select line speed
1 1200 bps
2 2400 bps
3 3600 bps
4 4800 bps
5 7200 bps
6 9600 bps
Enter choice number: 4^RETURN
Should this line be autostarted? (Y/N): N^RETURN
RBS: ...Done
    
```


4. Type **Stop Service** and press <RETURN>.
5. Respond to the prompts, pressing <RETURN> after each answer.
6. Type **Start Service** and press <RETURN>.
7. Respond to the prompts, pressing <RETURN> after each answer.
8. Log off from the Remote Batch Service context.

Note: Be sure to modify your form(s) to reflect the new changes.

Showing a communication partner or port

To display information about a communication partner or RS-232C port, use the **Show Partner** or **Show Port** command. The **Show Partner** command is available only if the Remote Batch Service is running. The **Show Port** command is available only if the port entry exists.

To show a communication partner, use Procedure A. Use Procedure B to display information about a port.

Procedure A. Displaying information about a communication partner

1. Log on and enable in the Remote Batch Service context.
2. Type **Show Partner** and press <RETURN>.
3. At the "Current Partner? (Y/N)" prompt, type **Y** and press <RETURN> to display partner information. (If you type **N**, you will get a list of all the partners.)

```

RBS! Show Partner RETURN
Current partner? (Y/N): Y RETURN
Communication Partner: Melrose
Created/Modified: 26-Mar-86 12:58:04
Description: 2770/2780/3780 document interchange
File service: FS:California:USA
File drawer for job submission: Input Bin
Check for new job submissions every 1 minutes.
File drawer for output retrieval: Output Bin
Service operates only during certain hours.
Start time: 18:00 End time: 7:15.
Communicating with mainframe in 3780 mode.
Station type: primary. Initial bid response: NAK/ACK.
Line usage: automatic dialing Phone number: 7929234.
Communication connection will be...
created if at least 5 jobs are waiting to be transmitted
created every 15 minutes to receive data
terminated by service if it is inactive for 60 seconds.
    
```

Continued on next page

```
Terminal identification: TID Security identification: USID.  
Language of communication partner: English (US).  
Mainframe spooling program: JES (MVS).  
Send SIGNON and SIGNOFF.  
SIGNON statement: /*SIGNON REMOTE 23  
SIGNOFF statement: /*SIGNOFF  
Default interpretation of data received: uninterpreted(unknown format)  
File Type for files received: Text (tText)  
Interpretation of print (DC1) data: interpret as WP  
Interpretation of punch (DC2) data: interpret as XNS  
Allow to insert ETX at end of each sending file: NO  
Default partner option: NO
```

```
RBS:....Done
```

Procedure B. Displaying information about an RS-232C port

1. Direct your commands to the Remote Batch Service context.
2. Type **Show Port** and press <RETURN> to display port information.

```
RBS> Show PortRETURN  
Name: RBSportRETURN  
Description: 2770/2780/3780 document interchange  
Port Use: RBS, Autostarted: No.  
Port duplex: half duplex, Line speed: 4800 bps.  
Autodialer: RS366.  
RBS:....Done
```

Defining and displaying the interpretation of data received

Use the **Set Interpretation** command to define the interpretation of data received and to overwrite the definition on the communication partner. There is an interpretation for each of the four cases of data that can be received: DP, WP, XNS, and uninterpreted.

This command is available only if the Remote Batch Service is started and at least one partner entry exists. The change takes effect immediately and lasts until the Remote Batch Service is stopped. It must be reset when the Remote Batch Service is restarted.

The **Show Interpretation** command is used to either verify the information you have entered, or to determine the settings currently in effect on the Remote Batch Service.

To define the interpretation of data received, use Procedure A. Use Procedure B to show the data interpretation currently set.

Procedure A. Defining the interpretation of data that is received by the Remote Batch Service

1. Log on and enable in the Remote Batch Service context.
2. Type **Set Interpretation** and press <RETURN>.
3. Respond to the prompts for default interpretation of data received, component selection code, print data, and punch data, pressing <RETURN> after each response.
4. Set your filing protocol by responding to the prompt for file separators (ETX) between the files. The following page contains an example.
5. Log off from the Remote Batch Service context.

```

RBS!Set InterpretationRETURN
Select default interpretation of data received
1 interpret as DP
2 interpret as WP
3 interpret as XNS
4 uninterpreted (unknown format)
Enter choice number: 2RETURN
Expect component selection code (DCn) to precede data received? (Y/N): YRETURN
Select interpretation of print (DC1) data
1 interpret as DP
2 interpret as WP
3 interpret as XNS
4 uninterpreted (unknown format)
Enter choice number: 2RETURN
Select interpretation of punch (DC2) data
1 interpret as DP
2 interpret as WP
3 interpret as XNS
4 uninterpreted (unknown format)
Enter choice number: 3RETURN
Allow to insert ETX at end of each sending file? (Y/N): NRETURN
RBS:....Done

```

Procedure B. Displaying the interpretation of data that is received by the Remote Batch Service

1. Log on and enable in the Remote Batch Service context.
2. Type **Show Interpretation** and press <RETURN> to display the interpretation.

```

RBS!Show InterpretationRETURN
Default interpretation of data received: interpret as WP
Interpretation of print (DC1) data: interpret as WP
Interpretation of punch (DC2) data: interpret as XNS
Allow to insert ETX at end of each sending file: NO
RBS:....Done

```

3. Log off from the Remote Batch Service context.

Describing the contents of the file drawers in use by the Remote Batch Service

The **List Contents** command describes the contents of the file drawers in use by the Remote Batch Service. This command is available only if the Remote Batch Service is started and at least one partner entry exists.

Procedure

1. Direct your commands to the Remote Batch Service context.
2. Type **List Contents** and press <RETURN>.
3. Type the number corresponding to the "Select file drawer or folder to be listed" option and press <RETURN>.

```
RBS> List ContentsRETURN
Select file drawer or folder to be listed
1 job submission file drawer
2 output retrieval file drawer
3 job submission error folder
Enter choice number: 3RETURN
job submission folder is empty.
RBS.....Done
```

4. Log off from the Remote Batch Service context.

Showing Remote Batch Service statistics

To display the statistics collected by the Remote Batch Service, use the **Show Statistics** command. There are three time interval options for statistics gathering and reporting:

- *Statistics since service started* - Displays activity since the service was started.
- *Incremental statistics since reset* - Causes current activity to be obtained. The difference between the current level of activity and the stored "snapshot" of activity is calculated and displayed. The base time for the monitored period is the time when *incremental statistics since reset and reset* was last invoked.
- *Incremental statistics since reset and reset* - Behaves the same as *incremental statistics since reset*. In addition, the command resets the internal "snapshot" and base time for the monitored period.

Procedure

1. Direct your commands to the Remote Batch Service context.
2. Type **Show Statistics** and press <RETURN>.
3. Type the number corresponding to the type of statistics you want to see and press <RETURN>.

```
RBS> Show StatisticsRETURN
Select type of statistics
1  Statistics since service started
2  Incremental statistics since reset
3  Incremental statistics since reset and reset
Enter choice number: 1RETURN
```


The following is an example of what displays.

REMOTE BATCH SERVICE STATISTICS

The service was started 26-Mar-86 10:34:46
The service has been running 1 hours, 15 minutes
Data collection started 26-Mar-86 10:34:46
Data collection ended 26-Mar-86 11:50:29
Data were collected over an interval of 1 hours, 15 minutes

JOB PROCESSING

1 total jobs were sent
0 WP documents were sent
2 DP documents were sent
1 XNS documents were sent
0 Uninterpreted documents were sent
15742 bytes was the size of the largest document sent
4 total jobs were received
0 WP documents were received
3 DP documents were received
1 XNS documents were received
0 Uninterpreted documents were received
15742 bytes was the size of the largest document
0 total jobs were aborted
0 jobs were aborted while receiving
0 jobs were aborted while sending
0 jobs were aborted while filing
0 jobs were aborted due to user error

COMMUNICATIONS

8978 seconds total connection time has been logged
4489 seconds have elapsed since the current connection was made
1 connections were established out of 1 attempts
16431 bytes were sent at a rate of 265 bytes/sec
35924 bytes were received at a rate of 570 bytes/sec
2 % connection utilization was achieved
0 communication errors occurred
0 connections were closed due to line inactivity

1 total send blocks NAK'd by remote
0 TTDs sent
0 ENQs sent
40 total blocks sent
3 WAKs sent
0 ENQs received
52 good data blocks received
0 received checksum errors
0 garbled data errors

Continued on next page

REMOTE FILING AND CODE CONVERSION

6428 bytes were converted & filed remotely at a rate of 0 bytes/sec
0 times the remote file service was unavailable
0 remote filing errors occurred

RESOURCE USAGE

0 was the average number of jobs in the input bin
1 jobs was the maximum contents of the input bin
Input bin contents first reached maximum 26-Mar-86 10:35:45
0 seconds was the average send queue wait time
3 seconds was the average receive queue wait time
18110 disk pages of scratch file space was available
150 disk pages of scratch file space was the maximum demand
0 times there was not enough scratch file space

SERVICE PROFILE

498 seconds were spent fetching and converting input
104 seconds were spent sending input
172 seconds were spent receiving output
8580 seconds were spent converting and storing output

RBS:...Done

Testing an RS-232C port

If the Remote Batch Service is inoperative, you can test the RS-232C port.

Procedure

1. Log on and enable in the Remote Batch Service context.
2. Type **Stop Service** and press <RETURN>.
3. Type **Test** and press <RETURN> to begin the test.
4. Enter the number corresponding to "RS232C" and press <RETURN>.
5. Select the port to be tested.
6. Select the default mode to be tested.
7. Select "Incrementing" as the default data pattern.
8. Select the default minimum packet size of 2 and the maximum packet size of 600.
9. Set the modem to loopback mode, or have a technician install a loopback plug.
10. Press any key to begin the test. After approximately 30 to 45 seconds, the terminal will post intermediate results, showing the total number of bytes sent and received successfully. Allow the test to run long enough to post at least three sets of intermediate results.
11. Press <BREAK> to stop the testing. The server will post final results, showing the total number of bytes sent and received successfully, as well as the percentage of data transmitted and received correctly. An example is shown on the following page.

```

Test! Remote Batch ServiceRETURN
RBS! StopRETURN
RBS!
RBS: Stopping service

RBS: Waiting for communication session to end
RBS: Communication session ended
RBS: Remote Batch Service is stopped.
TestRETURN
The Diagnostics commands are now available.
Test! RS232CRETURN
  Choose RS232C port to be tested:
  1 (Full Duplex Clusternet Port - CIU)
  2 300 - ITS Filing
  3 Racal 1200 In/Out
  4 ITS Filing - 1200
  5 300 In/Out
  6 RBS Port
  Enter choice number: 6RETURN
Properties of the selected port:
RBS Port
Port usage: RBS
Line speed: 2400
Port hardware: local port
Port usage mode is Byte-Synchronous
  Choose mode:
  1 Asynchronous
  2 Bit-Synchronous
  3 Byte-Synchronous
  Enter choice number: 3RETURN
  Data pattern:
  1 Incrementing
  2 All 0's
  3 All 1's
  4 Constant
  Enter choice number: 1RETURN
  Minimum packet size in bytes (2...600): 2RETURN
  Maximum packet size in bytes (2...600): 600RETURN
October 25, 85 12:03:26 RS232C Test Parameters

Mode: Byte-Synchronous
Data pattern: Incrementing
Minimum packet size in bytes: 2
Maximum packet size in bytes: 600
Please set modem to loopback mode or install loopback plug.
Press any key when this is done.
Remember that the clock signal must be supplied by the
loopback source.

Continued on next page

```

Test: DSR signal is now off
Test: CTS signal is now off
RS232C test is started. Press Break key to stop.
Test: Carrier Detect signal is now off
Test: signal is now off
RS232C test is started. Press BREAK key to stop.
Test: Carrier Detect signal is now off
Test: Ring indicator signal is now off
Test: Ring heard signal is now off
Test: DSR signal is now off
Test: CTS signal is now on
Test: Carrier Detect signal is now on
Test: Ring indicator signal is now off
Test: Ring heard signal is now off
Intermediate results
19 Total number of packets sent okay
11438 Total number of bytes sent okay
19 Total number of good packets received
11438 Total number of bytes received okay
Intermediate results
42 Total number of packets sent okay
24801 Total number of bytes sent okay
42 Total number of good packets received
24801 Total number of bytes received okay
Intermediate results
64 Total number of packets sent okay
37088 Total number of bytes sent okay
64 Total number of good packets received
37088 Total number of bytes received okay
Intermediate results
90 Total number of packets sent okay
50985 Total number of bytes sent okay
90 Total number of good packets received
50985 Total number of bytes received okay
Final results
110 Total number of packets sent okay
61215 Total number of bytes sent okay
110 Total number of good packets received
61215 Total number of bytes received okay
100 Percent data transmitted that were received correctly
Done.

Renaming the Remote Batch Service

If necessary, you can use the **Rename Service** command to give the Remote Batch Service a different name. You must be an enabled user to perform this task.

Procedure

1. Log on and enable in the Remote Batch Service context.
2. Type **Rename Service** and press <RETURN>.
3. Type the new Remote Batch Service name and description, and press <RETURN>.

```
RBS!Rename ServiceRETURN
Deleting Clearinghouse entry for: Pasadena:California:USA
Done
Service name and description unknown.
Enter service name: NewRBSRETURN
Enter service description: RBS that used to be called OurRBSRETURN
Confirm? (Y/N): Y RETURN
Validating Clearinghouse entry for: New RBS
A new Clearinghouse entry was created.
Done
```

4. Log off from the Remote Batch Service context.

Note: The **Rename Service** command is available only if the service is started and a service name already exists. If the service is started and no service name exists, use the **Register Service** command.

Stopping a communication session

Stopping a communication session is different from stopping the service. If you stop the communication session in response to an event other than a **Stop Service** command, the service remains active and will continue to do such things as polling the input bin for newly submitted jobs.

If the communication connection is sending or receiving data when you execute the **Stop Service** command, the following message is displayed:

"Connection is active (<sending/receiving>). Wait until idle? (Y/N):"

- Use the *hard stop* to terminate communications and spooling activities as quickly as possible. Communications and spooling are interrupted immediately, and any files in the receive queue may be lost. Perform a hard stop by responding **N** to the prompt.
- Use the *soft stop* in response to a **Stop Service** command when communications are idle. The Remote Batch Service executes a soft stop when there is a fatal communication or filing error, an active window to the host closes while the line is up, or an inactive line timeout occurs. A soft stop allows sending or receiving to become idle first. It waits for all files in the receive queue to be processed. Perform a soft stop by responding **Y** to the prompt.

Procedure

1. Log on and enable in the Remote Batch Service context.
2. Type **Stop Service** and press <RETURN>.
3. Respond to the prompts to do either a hard stop or a soft stop.

The following is a summary of the process for stopping the service, along with the session with a partner:

- Stop input spooling, interrupting it if it is active
- Stop communicating
 - Stop sending
 - Hard:* Interrupt immediately
 - Soft:* Wait until current task is complete
 - Log off, if possible
 - Stop receiving
 - Hard:* Interrupt
 - Soft:* Wait for RBS to send
 - Bring down the line
- Stop output spooling
 - Hard:* Interrupt
 - Soft:* Process all of receive queue
- Flush send and receive queues

4. Log off from the Remote Batch Service context.

This section contains error or informative messages that you might come across during the operation of your service. They are listed in alphabetical order. If the probable cause is not obvious, it is given below the message under the heading: *Probable cause*. If the message is such that action can be taken to resolve the situation, the action is listed under the heading: *Action*. A number of messages are for your information and require no action on your part; they are noted as such.

The contents of the error summary document are also contained in this section.

Beginning hours of operation (will end operation at <hh:mm:ss>).

Informative message defining a connection window which allows the Remote Batch Service to establish a connection with a host or word processor at a preselected time and to terminate the connection at a later time, all without manual intervention. These messages trace those changes in the state of the Remote Batch Service session.

Checking if partner wants to send.

Informative message. When the period of operation with the partner is active and the phone line is disconnected after some period of inactivity, the following occurs:

- The output check frequency determines how often the connection will be re-established to check for new output files to be retrieved.
- The input threshold determines how many jobs must be waiting in the submission file drawer before the connection will be re-established.

Checking job submission file drawer.

Informative message.

Clearinghouse Service is busy.

Probable cause: This message indicates a temporary Clearinghouse Service overload. The Remote Batch Service automatically enters its idle state.

Action: Wait a period of time and then stop and restart the Remote Batch Service. If the problem does not correct itself, call the Network Support Center.

Clearinghouse Service not responding.

Probable cause: This message indicates either a temporary Clearinghouse Service overload or a communication problem. The Remote Batch Service automatically enters its idle state.

Action: Wait a short period of time and then stop and restart the Remote Batch Service. If the problem does not correct itself, call the Network Support Center.

Clearinghouse Service reports problem: <problem>.

Probable cause: Problems are encountered when the Remote Batch Service tries to access the Clearinghouse Service. The Remote Batch Service automatically enters its idle state.

Action: Try to resolve the problem and then stop and restart the Remote Batch Service. If this does not work, call the Network Support Center.

Note: The mapping of error code to error message is performed by server executive utilities. All of the error messages are described in the *Server Operation and Maintenance* booklet.

Communication connection established.

Informative message that traces the establishment of a communication connection by the Remote Batch Service.

Communication partner: <name>.

Communicating with <mainframe|word processor> in 2770|2780|3780> mode.

File service: <file service name:domain:organization>.

File drawer for job submission: <file drawer name>.

File drawer for output retrieval: <file drawer name>.

Informative messages which identify some of the significant parameter settings for the partner being used.

Communication partner entry not found in profile file.

Informative message.

Communication session ended.

Informative message that traces the termination of a communication connection by the Remote Batch Service.

Connection is active (<sending|receiving>). Wait until idle? (Y/N): <Y or N>.

Probable cause: If the communication connection is sending or receiving data when the **Stop Service** command is executed, this message is displayed.

Action: If your response to the question is **Y**, the Remote Batch Service will wait until the connection is no longer active before continuing with the stopping process.

If your response is **N**, the connection will be terminated as quickly as possible and the stopping process will then continue.

Copying file (converting format from DP to 860) (<hh:mm:ss>)

RBS:... file conversion completed (<hh:mm:ss>).

Informative message used to record the progress of a document or file as it is stored into the output bin.

Copying file (converting format from 860 to DP) (<hh:mm:ss>)

RBS:... file conversion completed (<hh:mm:ss>).

Informative message used to record the progress of the components of a task as they are copied to the local file system in preparation for transmission.

Copying file (converting format from 860 to WP) (<hh:mm:ss>)

RBS:... file conversion completed (<hh:mm:ss>).

Informative message used to record the progress of the components of a task as they are copied to the local file system in preparation for transmission.

Copying file (converting format from WP to 860) (<hh:mm:ss>)

RBS:... file conversion completed (<hh:mm:ss>).

Informative message used to record the progress of a document or file as it is stored into the output bin.

Copying file (format not changed) (<hh:mm:ss>)

RBS:... file copy completed (<hh:mm:ss>).

Input operations

Informative message used to record the progress of the components of a task as they are copied to the local file system in preparation for transmission.

Output operations

Informative message used to record the progress of a document or file as it is stored into the output bin.

**Copying file (generating archive format from normal format) (<hh:mm:ss>)
RBS:... file converted to archive format (<hh:mm:ss>).**

Informative message used to record the progress of the components of a task as they are copied to the local file system in preparation for transmission.

**Copying file (generating normal format from archive format) (<hh:mm:ss>)
RBS:... file restored from archive format (<hh:mm:ss>).**

Informative messages used to record the progress of a document or file as it is stored into the output bin.

Creating Error Folder.

Informative message.

Default partner option (answer within 30 sec.)? (Y/N): <Y or N>.

Probable cause: When the Remote Batch Service starts, the default partner will be used if more than one communication partner has been defined. If there is no default partner, or you choose to explicitly select a partner, this prompt is displayed.

Action: Respond to the prompt by typing Y or N.

**Deleting temporary files from local file system.
<file name> deleted.**

Informative messages.

(Discarded data not in XNS format).

Informative message which indicates that the XNS interpretation has been specified but the file that is being received is not in XNS format.

**Ending communication session (<reason>).
<reason> may be one of the following:
communication window closed
service stop
communication inactive too long, too many errors
partner not responding**

Probable cause: These messages trace the termination of a communication connection by the Remote Batch Service.

Action: Action may be required if there are too many errors or the partner is not responding. There could be bad partner information in the profile. Check the communication hardware, including modems, cables, and the like.

Ending hours of operation (will resume operation at <hh:mm:ss>).

Informative message defining a connection window which allows the Remote Batch Service to establish a connection with a host or word processor at a preselected time and to terminate the connection at a later time, all without manual intervention. These messages trace those changes in the state of the Remote Batch Service session.

Error <problem> attempting to establish connection.

Probable cause: These messages trace different problems when trying to establish the communication connection by the Remote Batch Service.

Action: Perform the indicated corrective action and stop and restart the service.

Note: The mapping of error code to error message is performed by server executive utilities. All of the error messages are described in the *Server Operation and Maintenance* booklet.

Establishing communication connection.

Informative message which traces the establishment of a communication connection by the Remote Batch Service.

Failed: another service is auto-starting local RS-232C port. New entry not added to profile file.

Informative message. Another service may have defined an entry in the profile file for the local port. Only one such entry may be added. If another service has already defined the port, the **Add Port** command will fail with this error message.

Failed: another service is auto-starting local RS-232C port. New entry not added to profile file (but old entry was deleted).

Informative message. More than one service may have defined an entry in the profile file for the local port. Only one such entry may be modified. If another service has already defined the port to be auto-started, the **Change Port** command will fail with this error message.

Failed: insufficient space in profile file to add new communication partner entry.

Informative message. There may be insufficient space to add an entry in the profile file for the communication partner. In this situation, the **Add Partner** command will fail with this error message.

Failed: insufficient space in profile file to add new RS-232C port entry.

Informative message. There may be insufficient space to add an entry in the profile file for the local port. In this situation, the **Add Port** command will fail with this error message.

Failed: no communication partner entry in profile file.

Probable cause: The profile file is incomplete; the Remote Batch Service automatically enters its idle state.

Action: Add or modify the appropriate profile entry and then stop and restart the Remote Batch Service. If this does not work, call the Network Support Center.

Failed: no RS-232C port entry in profile file.

Probable cause: The profile file is incomplete; the Remote Batch Service automatically enters its idle state.

Action: Add or modify the appropriate profile entry and then stop and restart the Remote Batch Service. If this does not work, call the Network Support Center.

Failed: old communication partner entry deleted from profile file but insufficient space to add new entry.

Informative message. There may be insufficient space to add an expanded entry in the profile file for the communication partner. In this situation, the **Change Partner** command will fail with this error message.

Failed: old RS-232C port entry deleted from profile file but insufficient space to add new entry.

Informative message. There may be insufficient space to add an expanded entry in the profile file for the local port. In this situation, the **Change Port** command will fail with this error message.

File Drawer does not exist.

Probable cause: The file drawer does not exist; the Remote Batch Service automatically enters its idle state.

Action: Try to resolve the problem by adding or correcting the File Service file drawer entries for the input and/or output bins, and then stop and restart the Remote Batch Service. If this does not work, call the Network Support Center.

File Drawer has incorrect access control.

Probable cause: In the case of this error, the Remote Batch Service automatically enters its idle state.

Action: Try to resolve the problem by correcting the File Service file drawer entries for the input bin and/or output bin access control lists. Then stop and restart the Remote Batch Service. If this does not work, call the Network Support Center.

File Service is busy.

Probable cause: This message indicates a temporary File Service overload or a communication problem.

Action: Check the File Service status. If the problem does not correct itself, call the Network Support Center.

File Service is not registered in the Clearinghouse.

Probable cause: In the case of this error, the Remote Batch Service automatically enters its idle state.

Action: Try to resolve the problem by correcting the Clearinghouse File Service entry and then stop and restart the Remote Batch Service. If this does not work, call the Network Support Center.

File Service not responding.

Probable cause: This message indicates either a temporary File Service overload, or a communication problem.

Action: If the problem does not correct itself, call the Network Support Center.

File Service reports no more space.

Probable cause: This message indicates that File Service space is full.

Action: Try to add more pages to the file drawer. If the problem does not correct itself, call the Network Support Center.

File Service reports problem: <problem>.

Informative message. For some of these errors, the Remote Batch Service will try the operation at a later time. For other errors, the session will be terminated.

Note: The mapping of error code to error message is performed by server executive utilities. All of the error messages are described in the *Server Operation and Maintenance* booklet.

<folder name> has been acquired for processing.

Informative message that tracks the progress of a task from initial acquisition to completion of transmission.

<folder name> has been prepared for transmission.

Informative message that tracks the progress of a task from initial acquisition to completion of transmission.

<folder name> was in error and has been moved to the Error Folder.

Probable cause: The folder noted contains errors.

Action: The folder should be viewed for errors and the errors corrected prior to resubmission.

Note: In the event the Remote Batch Service is unable to post the error message mail item, the error message is displayed at the server terminal and no further attempt will be made to notify the submitter of the job in error.

**Insufficient local file space.
File drawer for received data is unavailable.**

Probable cause: These messages trace significant changes in the state of the Remote Batch Service session. The Remote Batch Service detects that the local file space is full; thus, it is not able to move received data into the retrieval file drawer.

Action: Try to reboot the server to release the local file space. If the problem still exists, the file being sent might be too big. Suggest to the sender to divide the file into separate files.

(Invalid XNS format treated as unknown format).

Informative message which indicates that XNS interpretation has been specified but the file that is being received is not in XNS format.

Job submission file drawer is not empty.

Informative message that traces the changes in the state of the Remote Batch Service session. When the period of operation with the partner is active and the phone line is disconnected after some period of inactivity, the following occurs:

- The output check frequency determines how often the connection will be re-established to check for new output files to be retrieved.
- The input threshold determines how many jobs must be waiting in the submission file drawer before the connection will be re-established.

**List of job submission error folder is complete
job submission error folder is empty.**

Informative message.

**List of job submission file drawer is complete
job submission file drawer is empty.**

Informative message.

**List of output retrieval file drawer is complete
output retrieval file drawer is empty.**

Informative message.

Mail Service reports problem: <problem>.

Informative message. The Mail Service may be unable to post the error summary message.

Note: The mapping of error code to error message is performed by server executive utilities. All of the error messages are described in the *Server Operation and Maintenance* booklet.

More than one communication partner exists. Select one of them.

Probable cause: More than one partner may be defined, but the Remote Batch Service can communicate with only one partner at a time. If more than one partner has been defined, this message is displayed, followed by a list of the possible choices for a partner.

Action: One communication partner must be selected before the Remote Batch Service can continue.

Receiving data for default device (<hh:mm:ss>).

RBS: Data for default device has been received (<hh:mm:ss>).

Informative messages used to record the progress of a document or file as it is received from the output device.

Receiving data for print device (<hh:mm:ss>).

RBS: Data for print device has been received (<hh:mm:ss>).

Informative messages used to record the progress of a document or file as it is received from the output device.

Receiving data for punch device (<hh:mm:ss>).

RBS: Data for punch device has been received (<hh:mm:ss>).

Informative messages used to record the progress of a document or file as it is received from the output device.

Remote Batch Service has been permanently removed from server.

Informative message.

Remote Batch Service is started.

Informative message.

Remote Batch Service is stopped.

Informative message.

Remote Batch Service needs profile information.

RBS: Remote Batch Service is idle.

Probable cause: Either no port and partner information or incorrect information was provided in the profile. The Remote Batch Service needs profile information; it automatically enters its idle state.

Action: Add or modify the appropriate profile entry, and then stop and restart the Remote Batch Service. If this does not work, call the Network Support Center.

RS-232C port entry not found in profile file.

Probable cause: No RS-232C port exists.

Action: Add the RS-232C port.

Starting transmission of task (<hh:mm:ss>).

Informative message that designates initial acquisition of a task.

Stopping service.

Informative message.

Task has been transmitted (<hh:mm:ss>).

Informative message that designates transmission of a task.

Unable to mail error message to: <name of submitting user>

concerning: <folder name>.

Contents of mail note follows:

Informative messages. You may wish to create a mailbox for the user so that future access will allow error message mail items to be delivered. If a mailbox already exists for the user, check to see if problems exist on the internetwork (for example, the Internetwork Routing Service may be down, the Mail Service may be stopped, etc.).

Unable to register Remote Batch Service.**RBS: Remote Batch Service not started.**

Probable cause: If the Remote Batch Service, through the auspices of server self-registration, is unable to verify its identity, either because the Clearinghouse Service is unavailable or the Authentication Service is unavailable, it will not start.

Action: Determine why the required service(s) is unavailable, correct the problem, and then start the Remote Batch Service. If this does not work, call the Network Support Center.

Note: The mapping of error code to error message is performed by server executive utilities. All of the error messages are described in the *Server Operation and Maintenance* booklet.

Validating Clearinghouse entry for <service name:domain:organization>.**Done.**

Informative messages issued by server self-registration.

Waiting for communication session to end (<reason>).

Probable cause: These messages trace the termination of a communication connection by the Remote Batch Service:

- Progress of stopping the Remote Batch Service
- Time for the connection window expires
- The Remote Batch Service detects a communication error

Action: Action may be required if there are too many errors, or if the partner is not responding. There could be bad partner information in the profile, or there could be a communication hardware problem.

Error summary document

The error summary document contains the transaction log of the processing of the task. This log is composed of the following components:

- A reporting of errors detected prior to processing of the task folder:

Error in job composition: each job must be submitted in a folder.

Error in job composition: can only read instructions from 860 document.

- An enumeration of the contents of the task folder:

<filing object name> (type: <filing object type>).

<filing object type> may be

**8010 document
8010 folder
8010 mail note
8010 record file
non-8010 file (text)
860 document
860 record file
non-8010 file (unknown)**

- An enumeration of the instructions from the instructions document:

Instruction: (<interpretation>: <filing object name>).

- A reporting of errors detected in one or more of the instructions from the instructions document:

Error in instructions: no instructions.

Error in instructions: unknown conversion requested.

Error in instructions: conversion not supported for file type.

Error in instructions: invalid or missing document/folder name.

- An enumeration of the filing objects named in the instructions document but not contained within the task folder under the heading:

Error in instructions: not all documents/folders were found.

- An enumeration of the filing objects contained within the task folder but not named in the instructions document under the heading:

Error in instructions: not all documents/folders were included.

- Access list** A list of users and/or groups of users who are granted access to specific services.
- Active** An operational state of the Remote Batch Service which is entered when the service determines that all configuration information is available and validated.
- Archive** A mode of file transfer used by the Remote Batch Service. Archive format data will most likely be sent to and received from a mainframe rather than a word processor.
- Binary Synchronous Communication** (**BSC**) A data link control procedure developed by IBM. A variation of synchronous data transmission that includes specific control characters and procedures for controlling the establishment of a valid connection. Also referred to as bisync or bisynchronous.
- Clearinghouse Service** A lookup directory service that maintains a database of all users, services, and servers in a network. The Clearinghouse Service cooperates to provide a single unified database system among other Clearinghouse Services.
- Connection window** The parameters which control the hours of operation of the Remote Batch Service with respect to a particular communication partner.
- Dedicated line** A type of communication circuit, such as a leased line, that remains connected to a single remote device and does not have to be dialed. Often used for internetwork links and mainframe connections for 3270 emulation.
- Distribution list** A list of recipients for electronic mail, represented by a user group registered in the Clearinghouse.
- Domain** A logical grouping (usually geographical) of registered objects in the Clearinghouse database. Domains serve as units of name, scope, administrative responsibility, and replicated database configuration. The data maintained for a particular domain includes the list of administrators of that domain, plus the names and relevant information about all objects that are registered in the domain.
- Ethernet** A high-speed local area network developed by Xerox that carries information to workstations and servers attached to the network.

- File Service** (FS) A service installed on the server that allows the sharing of files produced at any networked or non-networked workstation. The information is stored in a hierarchy of file drawers and folders. There is a limit to the size of the file drawer as established by the System Administrator, but there are no limits to the number of file folders within the size of the file drawer. The File Service is also used to backup the Clearinghouse, Server Monitor, and Mail services.
- Full-duplex** A circuit or protocol that permits transmission of a signal in two directions simultaneously.
- Half-duplex** A circuit or a protocol that permits transmission of a signal in two directions, but not at the same time.
- Host** Any mainframe computer that is accessed by users. The host can be either an IBM 3270 BSC or 3270 SNA for use on the network.
- Idle** An operational state of the Remote Batch Service, entered when the service attempts to start, but not all configuration information is available or validated.
- Initializing** A process completed after a service has been installed on a server for the first time. The initialization procedure includes determining the name of a service, and configuration information specific to that service.
- Internetwork** A composite of interconnected networks in which network resources are shared. Any network can have multiple connections to other networks. (See **Internetwork Routing Service** for more information.)
- Interpreted** A mode of file transfer used by the Remote Batch Service for interchanging documents. The Remote Batch Service translates documents from a format that it understands (Xerox 860) to a format more commonly understood by non-Xerox systems (EBCDIC DP or EBCDIC WP) before sending a document. It applies the reverse translation upon receiving a document.
- Logoff** The process of stopping a session on a computer system.
- Logon** The process of starting a session on a computer system.
- Mailbox** The repository in which mail resides while awaiting delivery to a client.
- Mail Service** (MS) The Mail Service is directly accessible to all networked workstations, and to any non-networked device that can dial-up the appropriate compatibility service. There are two compatibility services: 850/860 Gateway and the Interactive Terminal Service. The Clearinghouse provides address information and distribution lists for mail delivery. The Internetwork Routing Service (IRS) routes messages to other networks.
- Main memory** Usually the fastest storage device of a computer and the one from which instructions are executed.

Network	The physical and logical connection of system elements. A network allows information exchange between workstations and servers.
Network architecture	The philosophy and organizational concept for enabling devices at multiple locations to communicate over common carrier transmission facilities. The network architecture specifies the processors, workstations, and terminals, and defines the protocols and software which must be used to accomplish accurate data communications.
Non-transparent	A mode of transmission in BSC protocol. The data is not permitted to have certain values, so that these values may be used to control the data transmission. Used to transmit textual information.
Organization	A high-level logical grouping of domains in the Clearinghouse database (usually corresponding to an entire company or equivalent). Most internetworks contain only a single organization. For each organization which it serves, a Clearinghouse Service maintains the following data: the list of administrators for the that organization, the list of all domains contained by the organization, and names of all Clearinghouse Services that serve each of these domains.
Partner	A particular device (mainframe/word processor) with which the Remote Batch Service communicates.
Password	A required code in addition to a user's name or number that allows logon.
Profile file	The mechanism used to record configuration information. It is in fact the server profile file, but information specific to the Remote Batch Service may only be manipulated by Remote Batch Service commands.
Queuing	The process of accepting and storing documents by the Print Service. Also referred to as Spooling .
Reboot	Restarts the software loaded on the system element by pressing the "boot button" (B RESET on the processor maintenance panel).
Remote Batch Service	(RBS) Provides document interchange with devices and systems which implement IBM Binary Synchronous (BSC) data transmission protocols (2770, 2780, and 3780).
RS-232C Port	The physical interface between some network citizens and the data communication equipment (usually a modem).
Server	A processor on which one or more services can run.
Server profile	The data file used to retain information such as names and assignments after the initialization and configuration of servers and services is complete. This way, the user doesn't have to specify the information each time the server is booted.
Service	Software running on a server that performs a specific function such as printing or filing.

- Spooling** See *Queuing*.
- Started** An operational state of the Remote Batch Service in which some resources are in use. The availability of commands depends on what configuration information has been specified and on whether there is a logged-on user with System Administrator privileges. This state is further qualified as either active or idle.
- Stopped** An operational state of the Remote Batch Service in which no resources are in use and only the **Start Service** command is available.
- Switched line** The phone line connection in which points of termination can be changed through dialing. It allows the sharing of resources and switching from one resource to another.
- System Administrator** A user with specific network privileges, responsible for setting up and maintaining the network services.
- System Network Architecture** (*SNA*) The logical structure, formats, and protocols of operation sequences for transmitting information units through the communication system. Developed by IBM for distributed processing networks. Used by *SDLC*.
- 2770, 2780, 3780 terminals** The family of IBM Remote Batch Terminals with which the Remote Batch Service communicates.
- Task** A unit of work to be performed by the Remote Batch Service.
- Transmission** The sending of data to one or more locations or recipients.
- Transparent transmission** A mode of transmission in *BSC* protocol where the data is permitted to have any value. Used to transmit non-textual information.
- Uninterpreted** A mode of file transfer used by the Remote Batch Service for interchanging documents. Uninterpreted data will most likely be processed by a consumer other than the *RBS* and thus should not be altered by the *RBS*. It is the consumer rather than the Remote Batch Service who is expected to understand the format of the data. Uninterpreted data will most likely be processed by a consumer which is a word processor rather than a mainframe.

This section contains forms for setting up and maintaining your Remote Batch Service. You may want to make copies of these forms and fill them out by hand. It is important to update the forms with service or network configuration changes as they occur.

The following forms are contained in this appendix:

- RBS Form 1. Registering an RBS/8000 Port
- RBS Form 2. Registering an RBS Partner

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860-to-EBCDIC conversion tables

B.

This document presents tables that specify how the Remote Batch Service (RBS) translates from Xerox 860 character codes to the following IBM character codes:

- 2770/3780 EBCDIC WP
- 2770/3780 EBCDIC DP
- 2780 EBCDIC DP/WP

Table B-1 maps between 860 and EBCDIC characters. In this table, under the "Symbol" heading of the EBCDIC character codes, there are a number of entries within square brackets. In these entries, [Discard] means that no reasonable equivalent exists and the character or code is discarded. [unknown] means that no reasonable equivalent exists and RBS inserts a question mark in the text. Anything else within square brackets is the name of a software procedure invoked when the code is encountered. Table B-2 lists these procedures and tells what they do. The procedures are named after the 860 characters that they convert.

Preceding Table B-2 are lists of characters in the EBCDIC character sets that have no mapping from the 860 character set. The model used by RBS for converting from 860 to EBCDIC is the 860 2770 emulation software described in Xerox publication S804-300.15, "IPS Communications Performance Specification," Revision 2. This model specifies that translations to and from remote systems should preserve codes that are the same in both systems. In cases where codes and structures are not the same, translations should be to an equivalent code or structure if it exists. Otherwise, the code should be discarded.

Other informational references are "860 Document File Format," Version 1.4, dated March 6, 1981, which describes the 860 code set and 860 document structure, and "Xerox 5700 System Requirements: Communicating Word Processors," which describes the EBCDIC word processing code set.



Table B-1. 860-to-EBCDIC Character Code Conversion

<u>860</u>			<u>2770/3780 EBCDIC WP</u>		<u>2770/3780 EBCDIC DP</u>		<u>2780 EBCDIC DP/WP</u>	
Symbol	Name	Hex	Symbol	Hex	Symbol	Hex	Symbol	Hex
	EOS	00	[Discard]		[Discard]		[Discard]	
	NUL	01						
	space	20	space	40	space	40	space	40
!	exclamation	21	. (period)	4B	!	5A	!	5A
"	quotes	22	"	7F	"	7F	"	7F
#	pound	23	#	7B	#	7B	#	7B
\$	dollar	24	\$	5B	\$	5B	\$	5B
%	percent	25	%	6C	%	6C	%	6C
&	ampersand	26	&	50	&	50	&	50
'	apostrophe	27	'	7D	'	7D	'	7D
(	left paren	28	(	4D	(	4D	(	4D
)	right paren	29	)	5D	)	5D	)	5D
*	asterisk	2A	*	5C	*	5C	*	5C
+	plus	2B	+	4E	+	4E	+	4E
,	comma	2C	,	6B	,	6B	,	6B
-	hyphen	2D	- (required hyphen)	60	- (required hyphen)	60	- (required hyphen)	60
.	period	2E	.	4B	.	4B	.	4B
/	slash	2F	/	61	/	61	/	61
0	zero (digit)	30	0	F0	0	F0	0	F0
1	one (digit)	31	d1	F1	d1	F1	d1	F1
2	two (digit)	32	d2	F2	d2	F2	d2	F2
3	three (digit)	33	d3	F3	d3	F3	d3	F3
4	four (digit)	34	d4	F4	d4	F4	d4	F4
5	five (digit)	35	d5	F5	d5	F5	d5	F5
6	six (digit)	36	d6	F6	d6	F6	d6	F6
7	seven (digit)	37	d7	F7	d7	F7	d7	F7
8	eight (digit)	38	d8	F8	d8	F8	d8	F8
9	nine (digit)	39	d9	F9	d9	F9	d9	F9
:	colon	3A	:	7A	:	7A	:	7A
;	semicolon	3B	;	5E	;	5E	;	5E
<	less than	3C	((leftParen)	4D	<	4C	<	4C
=	equals	3D	=	7E	=	7E	=	7E
>	greaterThan	3E	) (rightParen)	5D	>	6E	>	6E
?	question mark	3F	?	6F	?	6F	?	6F
@	at	40	@	7C	@	7C	@	7C



860-to-EBCDIC Character Code Conversion Table

<u>860</u>			<u>2770/3780 EBCDIC WP</u>		<u>2770/3780 EBCDIC DP</u>		<u>2780 EBCDIC DP/WP</u>	
Symbol	Name	Hex	Symbol	Hex	Symbol	Hex	Symbol	Hex
A	(upper-case letter)	41	A	C1	A	C1	A	C1
B	(upper-case letter)	42	B	C2	B	C2	B	C2
C	(upper-case letter)	43	C	C3	C	C3	C	C3
D	(upper-case letter)	44	D	C4	D	C4	D	C4
E	(upper-case letter)	45	E	C5	E	C5	E	C5
F	(upper-case letter)	46	F	C6	F	C6	F	C6
G	(upper-case letter)	47	G	C7	G	C7	G	C7
H	(upper-case letter)	48	H	C8	H	C8	H	C8
I	(upper-case letter)	49	I	C9	I	C9	I	C9
J	(upper-case letter)	4A	J	D1	J	D1	J	D1
K	(upper-case letter)	4B	K	D2	K	D2	K	D2
L	(upper-case letter)	4C	L	D3	L	D3	L	D3
M	(upper-case letter)	4D	M	D4	M	D4	M	D4
N	(upper-case letter)	4E	N	D5	N	D5	N	D5
O	(upper-case letter)	4F	O	D6	O	D6	O	D6
P	(upper-case letter)	50	P	D7	P	D7	P	D7
Q	(upper-case letter)	51	Q	D8	Q	D8	Q	D8
R	(upper-case letter)	52	R	D9	R	D9	R	D9
S	(upper-case letter)	53	S	E2	S	E2	S	E2
T	(upper-case letter)	54	T	E3	T	E3	T	E3
U	(upper-case letter)	55	U	E4	U	E4	U	E4
V	(upper-case letter)	56	V	E5	V	E5	V	E5
W	(upper-case letter)	57	W	E6	W	E6	W	E6
X	(upper-case letter)	58	X	E7	X	E7	X	E7
Y	(upper-case letter)	59	Y	E8	Y	E8	Y	E8
Z	(upper-case letter)	5A	Z	E9	Z	E9	Z	E9
[	left bracket	5B	[	4A	{ (left brace)	C0	((left paren)	4D
\	backslash	5C	/ (slash)	61	\	E0	/ (slash)	61
]	right bracket	5D	[	5A	} (right brace)	D0	) (right paren)	5D
↑	up arrow	5E	| (vertical bar)	4F	| (vertical bar)	4F	| (vertical bar)	4F
—	underscore	5F	—	6D	—	6D	—	6D
¢	cent	60	¢	5F	¢	4A	¢	4A



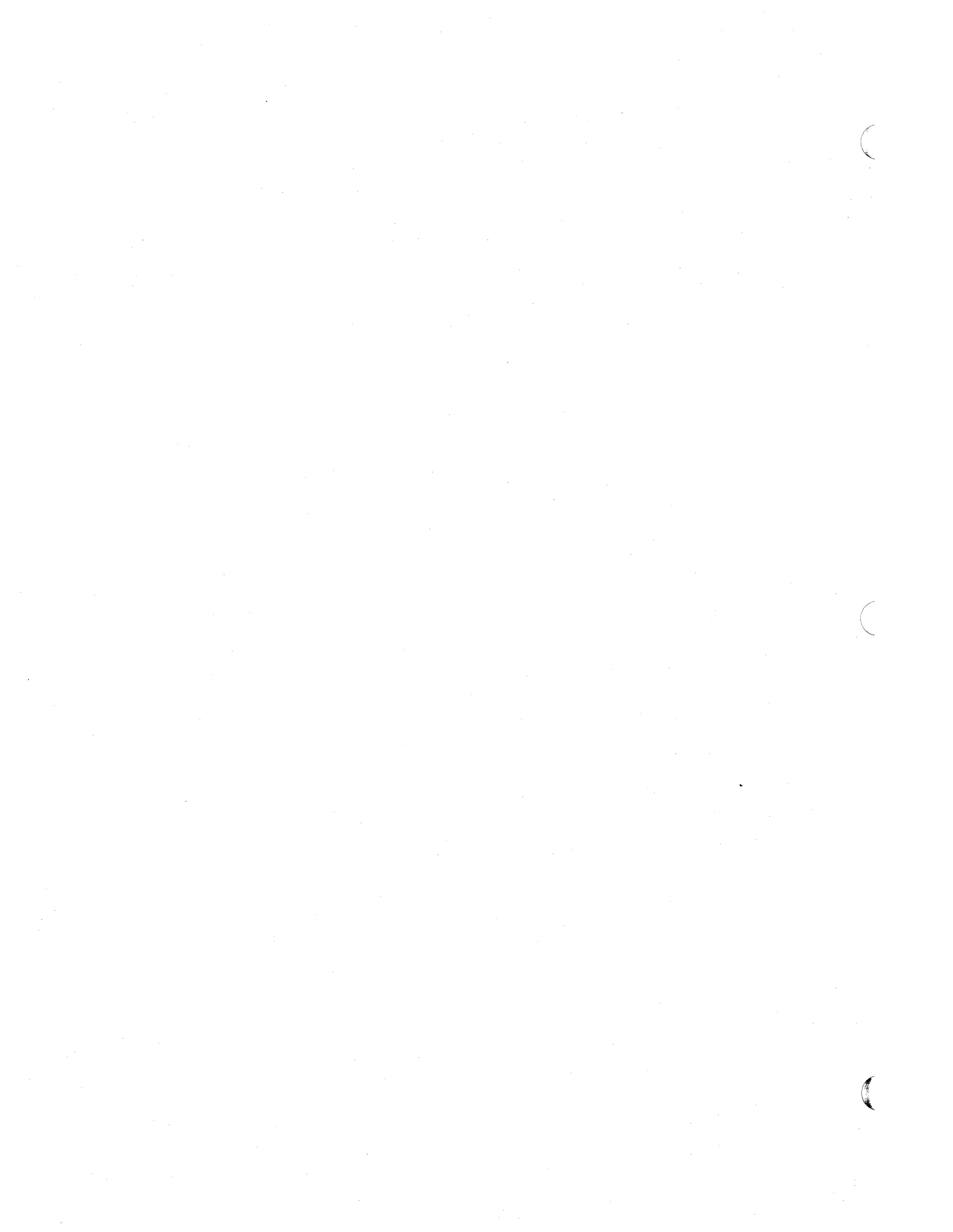
860-to-EBCDIC Character Code Conversion Table

<u>860</u>			<u>2770/3780 EBCDIC WP</u>		<u>2770/3780 EBCDIC DP</u>		<u>2780 EBCDIC DP/WP</u>	
Symbol	Name	Hex	Symbol	Hex	Symbol	Hex	Symbol	Hex
a	(lower-case letter)	61	a	81	a	81	a	81
b	(lower-case letter)	62	b	82	b	82	b	82
c	(lower-case letter)	63	c	83	c	83	c	83
d	(lower-case letter)	64	d	84	d	84	d	84
e	(lower-case letter)	65	e	85	e	85	e	85
f	(lower-case letter)	66	f	86	f	86	f	86
g	(lower-case letter)	67	g	87	g	87	g	87
h	(lower-case letter)	68	h	88	h	88	h	88
i	(lower-case letter)	69	i	89	i	89	i	89
j	(lower-case letter)	6A	j	91	j	91	j	91
k	(lower-case letter)	6B	k	92	k	92	k	92
l	(lower-case letter)	6C	l	93	l	93	l	93
m	(lower-case letter)	6D	m	94	m	94	m	94
n	(lower-case letter)	6E	n	95	n	95	n	95
o	(lower-case letter)	6F	o	96	o	96	o	96
p	(lower-case letter)	70	p	97	p	97	p	97
q	(lower-case letter)	71	q	98	q	98	q	98
r	(lower-case letter)	72	r	99	r	99	r	99
s	(lower-case letter)	73	s	A2	s	A2	s	A2
t	(lower-case letter)	74	t	A3	t	A3	t	A3
u	(lower-case letter)	75	u	A4	u	A4	u	A4
v	(lower-case letter)	76	v	A5	v	A5	v	A5
w	(lower-case letter)	77	w	A6	w	A6	w	A6
x	(lower-case letter)	78	x	A7	x	A7	x	A7
y	(lower-case letter)	79	y	A8	y	A8	y	A8
z	(lower-case letter)	7A	z	A9	z	A9	z	A9
{	left brace	7B	[(left bracket)	4A	{	C0	((left paren)	4D
|	vertical bar	7C	|	4F	|	4F	|	4F
}	right brace	7D	] (right bracket)	5A	}	D0	) (right paren)	5D
~	tilde	7E	- (required hyphen)	60	~	A1	- (required hyphen)	60
	DEL	7F	DEL	07	DEL	07	[Discard]	
	BSO	80	[Discard]		[Discard]		[Discard]	
	ESO	81	[Discard]		[Discard]		[Discard]	



860-to-EBCDIC Character Code Conversion Table

<u>860</u>			<u>2770/3780 EBCDIC WP</u>		<u>2770/3780 EBCDIC DP</u>		<u>2780 EBCDIC DP/WP</u>	
Symbol	Name	Hex	Symbol	Hex	Symbol	Hex	Symbol	Hex
	BBD	82	[Discard]		[Discard]		[Discard]	
	EBD	83	[Discard]		[Discard]		[Discard]	
	BUS	84	[Discard]		[Discard]		[Discard]	
	EUS	85	[Discard]		[Discard]		[Discard]	
	PGNO	88	# (pound)	7B	# (pound)	7B	# (pound)	7B
	CDU	89	[Discard]		[Discard]		[Discard]	
	RVN	8A	[Discard]		[Discard]		[Discard]	
	HLT	8B	BEL	2F	[Discard]		[Discard]	
	ESI	8D	[ESlxwp]		[ESlxdp]		[ESlx80]	
	AREF	8E	[AREFxwp]		[AREFxdp]		[AREF80]	
	REF	8F	[REFxwp]		[REFxdp]		[REF80]	
	FMT	90	[FMTxwp]		[FMTxdp]		[FMT80]	
	CMD	91	[CMDxwp]		[CMDxdp]		[CMD80]	
	NCOL	92	[Discard]		[Discard]		[Discard]	
	RNCOL	93	[Discard]		[Discard]		[Discard]	
	PGE	94	FF	0C	FF	0C	FF	0C
	RPGE	95	EOP	3A	FF	0C	FF	0C
	CRN	96	[CRNxwp]		IRS	1E	[CRNx80]	
	PCR	97	[PCRxwp]		IRS	1E	[PCR80]	
	RET	98	IRS	1E	IRS	1E	[CRNx80]	
	TAB	99	IT	39	HT	05	[TAB80]	
	PTB	9A	HT	5	HT	05	[PTB80]	
	LFEEED	9B	LF	25	LF	25	LF	25
	INX	9C	[INXxwp]		[INXxdp]		[INX80]	
	RIX	9D	[RIXxwp]		[Discard]		[Discard]	
	UBS	9E	UBS	1A	[Discard]		[Discard]	
	PBS	9F	NBS	36	BS	16	BS	16
	PSP	A0	RSP	41	RSP	41	SP	40
	THYP	A1	[THYPxwp]		[THYPxdp]		[THYP80]	
2	(superscript)	A2	2	C0	2 (digit)	F2	2 (digit)	F2
3	(superscript)	A3	3	D0	3 (digit)	F3	3 (digit)	F3



860-to-EBCDIC Character Code Conversion Table

860			2770/3780 EBCDIC WP		2770/3780 EBCDIC DP		2780 EBCDIC DP/WP	
Symbol	Name	Hex	Symbol	Hex	Symbol	Hex	Symbol	Hex
°	degree	A4	°	A1	* (asterisk)	5C	* (asterisk)	5C
μ	micro	A5	u (lower-case letter)	A4	u (lower-case letter)	A4	u (lower-case letter)	A4
¶	paragraph	A6	¶	6E	P (upper-case letter)	D7	P (upper-case letter)	D7
§	section	A7	§	4C	S (upper-case letter)	E2	S (upper-case letter)	E2
(	(expanded)	A8	((left paren)	4D	((left paren)	4D	((left paren)	4D
)	(expanded)	A9	) (right paren)	5D	) (right paren)	5D	) (right paren)	5D
±	ESPA	AA	NSP	E1	(space)	40	(space)	40
±	plus or minus	AB	±	79	+ (plus)	4E	+ (plus)	4E
,	(expanded)	AC	, (comma)	6B	, (comma)	6B	, (comma)	6B
-	(expanded)	AD	- (RHY)	60	- (RHY)	60	- (RHY)	60
.	(expanded)	AE	. (period)	4B	. (period)	4B	. (period)	4B
.	abbreviation	AF	. (period)	4B	. (period)	4B	. (period)	4B
÷	divide	B0	/ (slash)	61	/ (slash)	61	/ (slash)	61
®	registered	B1	r (lower-case letter)	99	r (lower-case letter)	99	r (lower-case letter)	99
•	dot	B2	. (period)	4B	. (period)	4B	. (period)	4B
™	trademark	B3	T (upper-case letter)	E3	T (upper-case letter)	E3	T (upper-case letter)	E3
©	copyright	B4	c (lower-case letter)	83	c (lower-case letter)	83	c (lower-case letter)	83
↓	down arrow	B5	v (lower-case letter)	A5	v (lower-case letter)	A5	v (lower-case letter)	A5
≠	not equal	B6	# (pound)	7B	# (pound)	7B	# (pound)	7B
◊	diamond	B7	° (degree)	A1	? [unknown]	6F	* (asterisk)	5C
◀	DELL	B8	? [unknown]	6F	? [unknown]	6F	? [unknown]	6F
	grave accent	B9	' (apostrophe)	7D	' (apostrophe)	7D	' (apostrophe)	7D
	circumflex	BA	? [unknown]	6F	? [unknown]	6F	? [unknown]	6F
	quarter	BB	$\frac{1}{4}$	E0	[QUARxdp]		[QUARx80]	
	third	BC	[THRDxwp]		[THRDxdp]		[THRDx80]	
	half	BD	$\frac{1}{2}$	6A	[HALFxdp]		[HALFx80]	
	two-third	BE	[THRDxwp]		[THRDxdp]		[THRDx80]	
	three-quarter	BF	[THREEQUARxwp]		[THREEQUARxdp]		[THREEQUARx80]	
+	graphic intersect	C0	+ (plus)	4E	+ (plus)	4E	+ (plus)	4E
-	graphic horiz line	C1	notInXtoWPTTable		notInXtoDPTTable		notInXtoE80Table	
|	graphic vert line	C2	- (RHY)	60	- (RHY)	60	- (RHY)	60
+	bold graphic	C3	+ (plus)	4E	+ (plus)	4E	+ (plus)	4E
-	bold graphic	C4	- (RHY)	60	- (RHY)	60	- (RHY)	60



860-to-EBCDIC Character Code Conversion Table

<u>860</u>			<u>2770/3780 EBCDIC WP</u>		<u>2770/3780 EBCDIC DP</u>		<u>2780 EBCDIC DP/WP</u>	
Symbol	Name	Hex	Symbol	Hex	Symbol	Hex	Symbol	Hex
|	bold graphic shade	C5 C6	| (vertical bar)	4F	| (vertical bar)	4F	| (vertical bar)	4F
Æ	(upper-case)	D0	? [unknown]	6F	? [unknown]	6F	? [unknown]	6F
æ	(lower-case)	D1	A (upper-case letter)	C1	A (upper-case letter)	C1	A (upper-case letter)	C1
Ø	slashed O (upper-case)	D2	a (lower-case letter)	81	a (lower-case letter)	81	a (lower-case letter)	81
ø	slashed o (lower-case)	D3	O (upper-case letter)	D6	O (upper-case letter)	D6	O (upper-case letter)	D6
l	lind	D4	o (lower-case letter)	96	o (lower-case letter)	96	o (lower-case letter)	96
œ	Œ	D5	? [unknown]	6F	? [unknown]	6F	? [unknown]	6F
ij	IJ	D6	o (lower-case letter)	96	o (lower-case letter)	96	o (lower-case letter)	96
'n	apostrophe-n	D7	i (lower-case letter)	89	i (lower-case letter)	89	i (lower-case letter)	89
€	cruz (money)	D8	n (lower-case letter)	95	n (lower-case letter)	95	n (lower-case letter)	95
₪	pesetas (money)	D9	C (upper-case letter)	C3	C (upper-case letter)	C3	C (upper-case letter)	C3
f	florin (money)	DA	P (upper-case letter)	D7	P (upper-case letter)	D7	P (upper-case letter)	D7
£	pounds (money)	DB	f (lower-case letter)	86	f (lower-case letter)	86	f (lower-case letter)	86
¥	yen (money)	DC	L (upper-case letter)	D3	L (upper-case letter)	D3	L (upper-case letter)	D3
\$		DD	Y (upper-case letter)	E8	Y (upper-case letter)	E8	Y (upper-case letter)	E8
i	inverted excl	DE	? [unknown]	6F	? [unknown]	6F	? [unknown]	6F
?	inverted question	DF	i (lower-case letter)	89	i (lower-case letter)	89	i (lower-case letter)	89
ß	German ss	E0	? (question)	6F	? (question)	6F	? (question)	6F
ℓ	litre	E1	B (upper-case letter)	C2	B (upper-case letter)	C2	B (upper-case letter)	C2
o	underlined o	E2	l (lower-case letter)	93	l (lower-case letter)	93	l (lower-case letter)	93
a	underlined a	E3	o (lower-case letter)	96	o (lower-case letter)	96	o (lower-case letter)	96
Å	A with circle	E4	a (lower-case letter)	81	a (lower-case letter)	81	a (lower-case letter)	81
ä	a with circle	E5	A (upper-case letter)	C1	A (upper-case letter)	C1	A (upper-case letter)	C1
'	upper-case grave	E7	a (lower-case letter)	81	a (lower-case letter)	81	a (lower-case letter)	81
˘	upper-case circumflex	E8	' (apostrophe)	7D	' (grave)	79	' (apostrophe)	7D
¨	umlaut	E9	? [unknown]	6F	? [unknown]	6F	[Discard]	
˜	tilda	EA	[Discard]		NUL	00	[Discard]	
ˆ	accent	EB	[Discard]		NUL	00	[Discard]	
˘	lower-case grave	EC	' (apostrophe)	7D	' (apostrophe)	7D	' (apostrophe)	7D
˘	lower-case circumflex	ED	apostrophe	7D	grave	79	apostrophe	7D
CDL		EE	[Discard]		NUL	00	[Discard]	
ULN		EF	[Discard]		NUL	00	[Discard]	
USEP		FB	[Discard]		NUL	00	[Discard]	
GSEP		FC	? [unknown]	6F	? [unknown]	6F	? [unknown]	6F
FSEP		FD	? [unknown]	6F	? [unknown]	6F	? [unknown]	6F
RSEP		FE	? [unknown]	6F	? [unknown]	6F	? [unknown]	6F
SOS		FF	? [unknown]	6F	? [unknown]	6F	? [unknown]	6F
			[Discard]		[Discard]		[Discard]	



Notes

1. FMT is the 860 format group character. FMT is followed by a set of parameters that define such properties as margins, tabs, line spacing, and justification. Values for these properties remain in effect until another FMT is encountered. FMT parameters are arranged in fields, separated by FSEP characters. Only one field, format type, is required; there are six remaining optional fields.

The FMT conversion procedures translate FMT parameters to their nearest equivalents among EBCDIC page formatting codes. See the "860 Document File Format," Version 1.4, for a description of FMT parameters.

2. CMD is the 860 command group character. A leading CMD is followed by one of six command classifiers that dictates the action to be performed on text that lies between CMDs. Actions include recording a null, centering within columns or margins, and making text flush right.

The CMD conversion procedures look for a command specifier immediately following the CMD. If a command classifier is present it looks for an optional argument to that classifier and translates the command to its nearest EBCDIC equivalent. See the "860 Document File Format," Version 1.4, for a description of CMD command classifiers and arguments.

The following EBCDIC 2770 WP characters have no mapping from Xerox 860 characters (all numerical equivalents are in hexadecimal):

NUL 00	BS 16	CU2 2B
RCR 06	IGS 1D	IRT 33
SPS 09	WUS 23	SBS 38
RPT 0A	ESC 27	SHY CA
NL 15	SW 2A	

The following EBCDIC 2770 DP characters have no mapping from Xerox 860 characters (all numerical equivalents are in hexadecimal):

RCR 06	ESC 27	IT 39
SPS 09	SW 2A	EOP
RPT 0A	CU2 2B	negation
NL 15	BEL 2F	5F
UBS 1A	IRT 33	or 6A
IGS 1D	NBS 36	SHY CA
WUS 23	SBS 38	NSP E1

The following EBCDIC 2780 DP/WP characters have no mapping from Xerox 860 characters (all numerical equivalents are in hexadecimal):

HT 05	ESC 27
EM 19	BEL 2F
IUS 1F	



Table B-2. Conversion Procedures

Procedure Name	860 Character Description	Function
AREF _{xwp} , AREF _{xdp} , AREF _{x80}	Alternate reference group	Discard AREF and all characters up to and including next AREF.
CMD _{xwp} , CMD _{xdp} , CMD _{x80}	Command group	See note 2.
CRN _{xwp} , CRN _{x80}	Carriage return	If CRN, PCR, or PTB is encountered, output an RCR (06h, an EBCDIC WP carriage return), then an IRS (1Eh).
ESI _{xwp} , ESI _{xdp} , ESI _{x80}	Used in conversions. 860 ignores intervening characters.	Once ESI is encountered, discard all characters until HLT is encountered.
FMT _{xwp} , FMT _{xdp} , FMT _{x80}	Format group	See note 1.
HALF _{xdp} , HALF _{x80}	$\frac{1}{2}$	Output a one, a slash, and a two.
INX _{xwp}	Index. Move vertical position down 1/24 inch.	Outputs SBS (38h).
INX _{xdp} , INX _{x80}	Index. Move vertical position down 1/24 inch.	Discard INX character.
PCR _{xwp} , PCR _{x80}	Precedented (required) carriage return.	Same as procedures for CRN.
QUAR _{xdp} , QUAR _{x80}	$\frac{1}{4}$	Output a one, a slash, and a four.
REF _{xwp} , REF _{xdp} , REF _{x80}	Reference group.	Same as procedures for AREF.
RIX _{xwp}	Reverse Index. Move vertical position up 1/24 inch.	Output SPS (9h).
THRD _{xwp} , THRD _{xdp} , THRD _{x80} (in response to $\frac{1}{3}$)	$\frac{1}{3}$	Output a one, a slash, and a three.
THRD _{xwp} , THRD _{xdp} , THRD _{x80} (in response to $\frac{2}{3}$)	$\frac{2}{3}$	Output a two, a slash, and a three.
THREEQUAR _{xwp} , THREEQUAR _{xdp} , THREEQUAR _{x80}	$\frac{3}{4}$	Output a three, a slash, and a four.



Table B-2. Conversion Procedures

Procedure Name	860 Character Description	Function
THYPxwp	Temporary hyphen	Look for a following CRN or PCR character. If a CRN is found, procedures output SHY (CAh), then IRS (1Eh). If a PCR is found, procedures output SHY, then RCR (06h). If neither a CRN or PCR is present, the THYP is discarded.
THYPxdp, THYPx80	Temporary hyphen	Look for a following CRN or PCR character. If a CRN is found, procedures output RHY (60h), then IRS (1Eh). If a PCR is found, procedures output SHY, then RCR. If neither a CRN or PCR is present, the THYP is discarded.



A

access list 9
Add File Drawer command 10
Add Group command 9
Add Member command 9
Add Partner command 5, 13
Add Port command 5, 11
 Adding a partner for the Remote Batch Service 13–15
 Adding the Remote Batch Service to an access list 9–10

B

binary format 1

C

Change File Drawer command 10
Change Partner command 5, 18, 21–23
Change Port command 5, 21–23
 Changing a communication partner or port 21–23
 Clearinghouse Service 8–9

COMMANDS

Add File Drawer 10
Add Group 9
Add Member 9
Add Partner 5, 13
Add Port 5, 11
Change File Drawer 10
Change Partner 5, 18, 21–23
Change Port 5, 21–23
Delete Partner 5, 19–20
Delete Port 6, 18–20
List Contents 6, 28
Proceed 8
Register Service 6, 35
Rename Service 6, 35
Run Service 8
Set Interpretation 6, 26
Show Interpretation 6, 27
Show Partner 6, 18, 24–26
Show Port 6, 24–25
Show Statistics 6, 29
Start Service 16, 20, 22–23
Stop Service 16, 20, 22–23, 32, 36
 communication connection 7, 36
 Configuring a local 8000 port for the Remote Batch Service 11–12

D

data interpretation 26–27

Defining and displaying the interpretation of data received 26–27

Delete Partner command 5, 18–20

Delete Port command 6, 19–20

Deleting a communication partner or port 19–20

Describing the contents of the file drawers in use 28

distribution list 9

domain 6

F

file

drawers 9–10, 17, 28

separators 26

server profile 5–6

transfer 1

full-duplex data transmission 11

H

half-duplex data transmission 11

host computer 7, 12, 36

I

Initializing the Remote Batch Service 8

internetwork 9

L

List Contents command 6, 28

M

mailbox 7, 10

Mail Service 8

N

network 9

add 13–15

change 21–23

commands 5

delete 18–20

list 24

show 26–27

P

partner, communication 17

PROCEDURES

Adding a partner for the Remote Batch Service 13–15

Adding the Remote Batch Service to an access list 9–10

Changing a communication partner or port 21–23
 Configuring a local 8000 port for the Remote Batch Service 11–12
 Defining and displaying the interpretation of data received 26–27
 Deleting a communication partner or port 19–20
 Describing the contents of the file drawers in use 28
 Initializing the Remote Batch Service 8
 Renaming the Remote Batch Service 35
 Selecting one of several communication partners 18
 Showing a communication partner or port 24–25
 Showing Remote Batch Service statistics 29–31
 Stopping a communication session 36
 Stopping and restarting the Remote Batch Service 16
 Testing an RS-232C port 32–34
Proceed command 8

uninterpreted data 24

X
 Xerox Network System 1

R

Register Service command 6, 35
Rename Service command 6, 35
 Renaming the Remote Batch Service 35
 RS-232C port 11, 17–19
 changing 21–23
 deleting 19–20
 showing 24–25
 testing 32–34
Run Service command 8

S

Selecting one of several communication partners 16
 server 32
 configuration 1
 co-residency 7–8
 profile file 5–6
Set Interpretation command 6, 26
 Showing a communication partner or port 24–25
 Showing Remote Batch Service statistics 29–31
Show Interpretation command 6, 27
Show Partner command 6, 24–25
Show Port command 6, 18, 24–26
Show Statistics command 6, 29
 spooling 36
Start Service command 16, 20, 22–23
Stop Service command 16, 20, 22–23, 32, 36
 Stopping a communication session 36
 Stopping and restarting the Remote Batch Service 16

T

Testing an RS-232C port 32–34
 data 11
 transmission protocol 1

U