Windows NT

Mapper

Administration

1. Role of the MAPPER Administrator

The MAPPER administrator sets up and maintains MAPPER software, controls the design and organization of the MAPPER database, oversees the activities of MAPPER users, and ensures the security of the MAPPER system. The administrator performs some or all of the following tasks:

- Sets up the initial system by registering new users, setting up system security, and configuring auxiliary and system printers
- Maintains the integrity of the database by setting up logging and auditing (if used), and backing up and restoring the database
- Maintains the MAPPER system by analyzing runs and monitoring system activity, maintaining the logical database, expanding the physical database, and managing system queues
- Supports the development of MAPPER applications by registering runs, setting up and maintaining cabinets and drawers, calculating the physical database, and planning the logical database
- Installs any hardware or software interfaces
- Performs advanced administration tasks such as setting up network connections and managing memory usage

1.1 Administrator's Department

Department 2 is called the administrator's department because it contains the reports needed to administer the system. This includes the following reports:

- 2E2, the Run Registration report, contains the runs needed to administer MAPPER. To execute these runs, you must be signed on to department 2.
- 2F2, the User Registration report, contains users who have the privileges to administer MAPPER. Any user who will have the privileges to administer MAPPER must be registered in this report.

In report 2F2, do not alter the MAPNET, MAPQUE, or PACK user-ids. These user-ids are needed to execute special MAPPER functions.

1.2 Restricting Access to Department 2

Since several administrator functions and runs are available to users with sign-ons in department 2, restrict unauthorized users from accessing this department. To restrict remote users from accessing user-ids and runs in department 2, restrict access to the INTER-RUN run.

1.3 MAPPER Servers and Sites

The MAPPER server is the machine executing the MAPPER System for Windows NT. It can be either a local Windows NT system or a remote system on your network.

A site is a MAPPER server that has its own MAPPER database, list of users, and general operations. Each site is represented by a letter of the alphabet called the site letter. During installation, the MAPPER System for Windows NT installs a default site with a site letter of A.

If the server has enough disk space and memory, you can set up more than one MAPPER site on a server. Each site has its own database, list of users, and general operations. For example, one user may use site A, and another user in a different group may use site B. On any given server, the site letters must be unique. Multiple sites on one server are sometimes called local sites:

There are several reasons for using multiple sites:

- You have two or more unrelated databases that you wish to isolate for easier maintenance and management.
- You want separate sites for development, test, and production.

Administering sites means choosing a site to manage, adding and removing sites, specifying the site name and logo, and setting up site security.

1.4 Tasks Completed by MAPPER Administration Program

The following tasks are performed through the MAPPER Administration program:

- Adding and removing sites
- Starting and stopping MAPPER for a site
- Managing system access and security

- Configuring site capacity
- Managing database files
- Backing up the database
- Initializing or reloading your full database, including recovery of data from an audit trail or the backup of an audit trail
- Managing database audit trails
  - Creating database audit trails
  - Enabling auditing
  - Specifying the cabinets and drawers to audit
  - Switching the active audit trails
  - Backing up the inactive audit trail
- Registering language translation cabinets
- Logging database activity

1.5 Tasks Completed by MAPPER Runs or Functions

The following administration tasks are performed through MAPPER runs or by editing MAPPER reports:

- Defining and configuring auxiliary and system printers, including registering stations
- Managing user access and security
  - Sending messages to active users
  - Creating message translation cabinets to support new languages
  - Registering start interfaces to call external applications
- Registering and configuring runs
  - Defining environmental and global variables

- Checking and stopping runs
- Monitoring system activity
- Designating a run to execute at start-up

- Managing drawers and cabinets
- Analyzing the database activity log
- Managing communications queues
- Configuring interaction between MAPPER sites
- Using database audit trails
  - Backing up the inactive audit trail
  - Partial database recovery from an audit trail or audit backup

1.6 Tasks Completed by MAPUTIL Commands

The following administration tasks are performed at the MS-DOS prompt using MAPUTIL commands:

- Backing up the database (MAPUTIL PURGE command)
- Backing up the inactive audit trail (MAPUTIL PURGE command)
- Verifying the contents of the backup medium (MAPUTIL PURGE_TI command)
- Loading applications and data from the backup medium (MAPUTIL APPLOAD command)

To execute MAPUTIL commands, you must log on at the Windows NT server whose MAPPER system you want to administer. There is no remote access to the Windows NT command line.

1.7 Local versus Remote Administration

The MAPPER Administration program enables you to administer MAPPER servers and sites from the server itself or from a remote workstation.

To administer a MAPPER system from a remote workstation, the workstation must be

- Connecting to the server by TCP/IP
- Running the MAPPER Administration program and MAPPER Presentation Client

You can define connections to any MAPPER server that you can connect to through TCP/IP. When you define connections to MAPPER servers, the server tree expands to show the server and its sites. Using the MAPPER Administration program, you can then administer any site on any server.

The MAPUTIL commands cannot be executed from a remote workstation. To execute MAPUTIL commands, you must log on at the Windows NT server whose MAPPER system you want to administer.

1.8 Quick Tour of the MAPPER Administration Program

This quick tour is designed to walk you through the basic steps involved in using the MAPPER Administration program. Its primary purpose is to show you how to

- Build the server tree in the left pane of the main window
- Use the context menus associated with each node in the server tree

The quick tour does not show the dialog boxes that appear when you execute the commands on the context menus, nor does it describe the fields where you must enter values. This information, along with the complete procedures for each of the administration tasks, is included in the appropriate section of this document.

The quick tour illustrates the following procedures:

- Starting the MAPPER Administration Program
- Defining Connections to Windows NT Servers
- Connecting to an Existing Site on a Server
- Administering a Site
- Administering a Server

1.9 Starting the MAPPER Administration Program

Start the MAPPER Administration program by double-clicking the MAPPER Administration icon. When you double-click the MAPPER Administration icon, the main window of the MAPPER Administration program appears.

- Starting the MAPPER Administration program does not actually log you on to any servers. To log on to a server, define a connection to the server and then connect to a site on that server. This process is described in the following topics.

- The MAPPER Administration icon is in the MAPPER System for Windows NT program group unless another group was specified during installation.

1.10 Defining Connections to Windows NT Servers

Define connections to those servers that are executing the MAPPER System for Windows NT and that contain sites you want to administer. The Define Connection command on the "Servers" context menu is used to define the connection. To display the context menu, select the "Servers" icon in the server tree and click the right mouse button or press Shift-F10.

After you define a connection to a Windows NT server, the MAPPER Administration program adds the server to the server tree.

- Define connections to as many Windows NT servers as you want. The MAPPER Administration program saves the connection information and rebuilds the server tree the next time you start the administration program.

- You can also use the Define Connection command on the Site menu to define the connection to a site on a server.

1.11 Connecting to an Existing Site on a Server

Once you have defined connections to the sites on a server, you can connect to one of the sites and begin to administer it. Use the Connect command on the site's context menu to connect to the site. To display the context menu, select the site icon and click the right mouse button or press Shift-F10.

When you connect to an existing site, the MAPPER Administration program expands the server tree to show the database or audit files that have been defined for that site.

- You can administer only one site at a time. To switch sites, disconnect from the current site and connect to the new site.

- See Administering Sites for all the administration tasks you can use to manage a site with the MAPPER Administration program.

- To navigate the nodes in the server tree, use either the mouse or the arrow keys. As you navigate the server tree, the icon of the selected node becomes brighter.

- Each node in the server tree has an associated context menu. The context menu lists the commands that are available for that node.

1.12 Administering a Site

Connecting to a site enables you to use the MAPPER Administration program to complete many of the site administration tasks. For example, from the context menu for the site, you can

- Start and stop MAPPER

- Back up the database

- Pack the audit trails

- Check the status of the site

- View or modify the site properties

- Remove a site

- Delete the connection to a site

The context menus for the database files and audit trails also specify the commands that you use to administer these items. For example, from the Database Files icon, you can add a database file. The context menu for the Audit trail icon contains a similar command.

Each database or audit trail file also has its own context menu. For example, from the context menu for the database files, you can

- Delete a database file

- Display the status of a file

- Modify or view the properties of the file

Audit trail files have similar commands on their context menus.

Not all commands on a context menu are available at the same time. For example, some commands require that you be connected to a site before they are available.

1.13 Initial Setup

Initial setup builds the server tree in the main window of the MAPPER Administration program and sets up the MAPPER sites that you want to administer. Initial setup involves completing the following tasks:

- Defining a connection to the Windows NT servers
- Connecting to a site on the server
- Adding files for the database
- Adding audit files
- Initializing the database
- Starting MAPPER

These tasks are completed using the MAPPER Administration program.

1.14 System Configuration

System configuration tasks set up and maintain users, runs, drawers, cabinets, security, and printers. System configuration involves completing the following tasks:

- Managing users
- Managing runs
- Managing drawers and cabinets
- Providing system security
- Defining auxiliary and system printers

These tasks are completed using MAPPER runs and reports.

1.15 Database Administration

Database administration tasks maintain the MAPPER database. Administering the database involves the following tasks:

- Working with MAPPER files
- Analyzing system activity
- Auditing and recovering the database
- Backing up the database and audit trails
- Loading applications and data

Many of these tasks are completed using the MAPPER Administration program. MAPUTIL commands back up the database and load the applications and data.

1.16 Advanced Administration

Advanced administration includes tasks that you may or may not need to complete depending on how you implement the MAPPER System for Windows NT.

- Managing memory usage
- Managing communications queues
- Setting up the MAPPER Relational Interface
- Communicating with other MAPPER sites

1.17 Defining Site Security

For each MAPPER site you administer, you need to define site security. Defining site security means setting up time limits that affect the sign-on and sign-off processes. It also means enforcing passwords and controlling how they are used.

The basic tasks involved in defining site security are

- Determining the sign-on and sign-off time limits
- Setting the number of sign-on attempts allowed

- Setting the password change time limit
- Restricting the use of consecutive characters from the previous password
- Echoing sign-on errors at the system console

To define site security

1. In the server tree, highlight the site for which you want to define security.
2. Click the right mouse button or press Shift-F10. A context menu appears.
3. Select Site Properties on the context menu and click the left mouse button. The Site Properties dialog appears.
4. Click the Access tab. The Access property page appears.
5. Enter values for the following fields:

   Sign-on time limit

   Is the amount of time (in seconds) that the user has to sign on. Entering a value greater than zero enables site security. When you enable site security, sign-on passwords are required for all users. If the sign-on is not completed within the specified time, the user's user-id is disabled.

   Max sign-on attempts allowed

   Is the maximum number of attemps a user has to sign on. If the user exceeds this number, the user's user-id is disabled.

   Password change time limit

   Is the number of days that must elapse before a user is required to change his or her password. Sign-on passwords expire after the password change time has passed.

   Sign-off time limit

   Is the number of minutes the workstation can be idle before it is automatically disconnected. The default value of 0 indicates an indefinite idle time.

   Exit after sign-off time expires

If this field is checked, MAPPER exits when the workstation exceeds the sign-off time limit. If it is not checked, the workstation displays the sign-on screen and waits for another user to sign on.

Restrict consecutive matching characters in password change

If this field is checked, MAPPER restricts the number of consecutive characters that can be the same between an old password and a new password.

Echo sign-on errors

If checked, MAPPER echoes sign-on errors to the administrator's workstation.

6. Click OK.

- The Access property page sets several parameters that control user sign-ons to this site. Site security and user permissions are determined by the User Registration report.

- If you require passwords, MAPPER writes the date when passwords are changed in the Psw Chg Dat field in the User Registration report. If a user does not enter the correct password within the restrictions placed on sign-on time and the number of attempts allowed, the USERR run disables the user's user-id.

1.18 Starting MAPPER

You can start MAPPER on any site to which you are connected.

To start MAPPER

1. In the server tree, highlight the site on which you want to start MAPPER.

2. Click the right mouse button or press Shift-F10. A context menu appears.

3. Select Start and click the left mouse button. The administration program starts MAPPER.

4. As the administration program starts MAPPER, it logs its interaction with the server in the response area (right pane). This interaction may include questions that you need to answer. To answer a question, click the mouse to the right of the prompt, type your response, and press Enter.

- MAPPER places start-up system messages, along with their descriptions, in report 1D2.

- If language errors occur, MAPPER uses an internal default language and default values for the user-defined functions of the affected language.

1.19 Stopping MAPPER

You must stop and restart MAPPER when you change the following MAPPER parameters:

- Logging database activity
- Adding or removing a database file
- Removing an audit file
- Designating a master or result file
- Defining a reserved file

1.19.1 To stop MAPPER

1. In the server tree, highlight the site that is running the MAPPER software you want to stop.
2. Click the right mouse button or press Shift-F10. A context menu appears.
3. Select Stop and click the left mouse button. A confirmation dialog box appears.
4. Click OK to stop MAPPER and all current users.

Before taking MAPPER down, send a message to all users letting them know when MAPPER will be down. Sign on to MAPPER and use the Send Alert Message (ALERT) function to send the message.

1.20 Initializing the Database

Initializing the database recreates the database from the contents of the backup medium. The backup medium can be a tape device or a disk file other than the existing database files. The following situations require you to initialize the MAPPER database:

- Removing a database file

- Designating a master or result file
- Designating a reserved file
- Replacing a corrupted database
- Recovering the database from system failure

Caution

Initializing the database overwrites any data currently in the database. Make sure you have a verified backup and audit trail before you initialize the database. Do not use a partial backup to initialize the database.

1.20.1 To initialize the database

1. In the server tree, highlight the site whose database you want to initialize.
2. Click the right mouse button or press Shift-F10. A context menu appears.
3. Select Properties and click the left mouse button. The Site Properties dialog box appears.
4. Select the Initialize tab.
5. Check the Initialize database on next start box and specify the tape device or backup file. If you want to apply audit information after the database is initialized, check With recovery.
6. Click OK. The next time you start the site, the administration program starts the process that initializes the database. The process displays questions in the response area of the main window.

A message is displayed when the MAPPER database has been initialized.

Notes

- MAPPER places start-up system messages, along with their descriptions, in report 1D2.
- If language errors occur, MAPPER uses an internal default language and default values for the user-defined functions of the affected language.
- The minimum space required to initialize the database is 40 megabytes.

- See Recovering the Database for information about initializing and recovering the database.

1.21 Specifying the MAPPER Guest User Name and Password

During the installation of the MAPPER software, a user name and password for the MAPPER guest were defined. This user name and password must match a valid user name and password on the Windows NT server. If it does not, you can use the MAPPER Administration program to specify the MAPPER guest user name and password.

The MAPPER Administration program does not create or change the user name configured on the Windows NT server. The Windows NT administration uses the User Manager applet to configure the user name. Specifying the user name and password in the administration program tells MAPPER what the correct user name and password are.

1.21.1 To specify the MAPPER guest user name and password

1. In the server tree, highlight the server.

2. Click the right mouse button or press Shift-F10. A context menu appears.

3. Select Server Properties in the context menu and click the left mouse button. The Server Properties dialog appears.

4. Specify the user name and password in the designated fields.

5. Click OK.

1.22 Automatically Starting a Site

If desired, you can configure the MAPPER Administration program to automatically start a MAPPER site when you boot the MAPPER server.

To automatically start a site at system boot

1. Highlight the site in the server tree that you want to start at system boot.

2. Click the right mouse button or press Shift-F10. A context menu appears.

3. Select Properties.

4. Select the Start-up property page.

5. Check the Automatically start at system boot checkbox.

6. Click OK.

Note

Any change in this setting does not take effect until you restart the site.

1.23 Enabling Write-through to Disk

To improve performance, the Windows NT operating system temporarily writes database and audit trail updates to memory buffers. These updates are written to disk eventually but at the discretion of the operating system.

If desired, you can specify that MAPPER does not return control to a user until Windows NT actually writes database and audit file updates to disk. Enabling write-through to disk degrades system performance slightly but ensures database integrity.

If you do not enable write-through to disk, any file updates stored in the memory buffers are lost if the operating system fails.

1.23.1 To enable write-through to disk

1. Highlight the site in the server tree where you want to enable write-through to disk.

2. Click the right mouse button or press Shift-F10. A context menu appears.

3. Select Properties.

4. Select the Start-up property page.

5. Check the Write-through to disk on file updates checkbox.

6. Click OK.

Note

Any change in this setting does not take effect until you restart the site.

2. Defining Auxiliary and System Printers

This section describes how to use MAPPER runs and reports to define auxiliary and system printers. MAPPER needs the information in these reports to know how to format output and where to send it. This section discusses the following topics:

- Defining Auxiliary Printers
- Registering Stations
- Obtaining a Positive Station Number
- Registering System Printers

You use MAPPER runs and reports to define auxiliary and system printers.

2.1 Registering Stations

Registering a station completes the following actions:

- Associates a workstation attached to the server with a Device Configuration report defining the characteristics of that workstation. This report tells MAPPER how to formulate output for the device.
- Specifies a Device Configuration report for an auxiliary printer, which determines how output is formatted when you print using the Auxiliary (AUX) function.
- Assigns a station number to the device so certain MAPPER functions, such as the Send Report (SEND) function, can send information to the device.

Use the AGENDA run to register a station (see Using the AGENDA Run to Register Stations in this section). The AGENDA run updates the Station Registration report (2C2). If needed, you can modify this report (see Modifying the Station Registration Report in this section).

2.2 Using the AGENDA Run to Register Stations

To register stations using the AGENDA run

1. Sign on as the administrator in department 2.

2. On the control line, enter agenda,station. The Station Registration screen is displayed.

```
                    Station Registration

.DEVICE     STA        DEVICE          AUX DEVICE
.NAME       NO          TYPE              MODEL            COMMENTS
.========== ===== ================== ================== ==================


*************************************************************************
     Tab to a field, enter or change data, and press NumEnter here ->
 1      2     3      4Return 5      6      7      8Help   9      10Quit
```

3. Supply values for each field. (Press Help to get help for each field.)

You can register up to nine devices per screen. To register more than nine devices, tab to the bottom of the screen and press Transmit until you see a screen with blank lines.

4. When you finish entering all stations, tab to the end of the screen and press Transmit to save your changes.

5. To exit, press Quit.

Once you register a station, the next time the user logs on to MAPPER they can access the station. For additional information, see Obtaining a Positive Station Number.

2.3 Modifying the Station Registration Report

To add, modify, or delete data in the Station Registration report (2C2), edit the report as you would any other MAPPER report. The Station Registration report contains the following fields:

- Device Name Field
- Sta Numbr Field
- Device Type Field
- Aux Device Field

- Comments Field

2.4 Example of Station Registration Reports

The following example shows a portion of a Station Registration report that registers a system console.

```
*                 . STA .                    .
* DEVICE NAME    .NUMBR.   DEVICE TYPE     . AUX DEVICE MODEL .COMMENTS
*================.======.====================.====================.================
|console         |     1|WS                 |                    |
```

2.5 PowerClient

Using PowerClient to access the Windows NT server requires that you define the positive station number on the Windows NT server. When using PowerClient to access the Windows NT server, the user is assigned the station number you defined in report 2C2, the Station Registration report.

To create a positive station number for PowerClient users

1. On the Windows NT server, update report 2C2, the Station Registration report, so that an auxiliary printer is defined (fill in the Device Name, Sta Numbr, and Aux Device Model fields).

2. In the PowerClient script for the Windows NT server, enter the device name in the Workstation Name field.

2.6 MAPPER Presentation Client Workstations

Using MAPPER Presentation Client to access the Windows NT server requires that you define the positive station number on the Windows NT server. When using MAPPER Presentation Client to access the Windows NT server, the user is assigned the station number you defined in report 2C2, the Station Registration report.

To create a positive station number for MAPPER Presentation Client users

1. On the Windows NT server, update report 2C2, the Station Registration report, so that an auxiliary printer is defined (fill in the Device Name, Sta Numbr, and Aux Device Model fields).

2. In the MAPPER Presentation Client script for the Windows NT server, enter the device name in the Workstation Name field.

2.7 Registering System Printers

Register system printers to specify how print files should be built when output is sent to a particular printer.

Use the AGENDA run to register system printers (see Using the AGENDA Run to Register System Printers for more information). The AGENDA run creates a Printer Configuration report (3C2). If needed, you can modify the Printer Configuration report (see Modifying the Printer Configuration Report in this section for more information).

A system printer can be used immediately after it is registered.

2.8 Using the AGENDA Run to Register System Printers

To register system printers

1. Sign on as the administrator in department 2.

2. On the control line, enter agenda,printer. The Printer Registration screen is displayed:

```
                                  Printer Registration
                            MAPPER ADDED     LINES MAPPER
DESTINATION      LINE       L   C   F         PER  BANNER    PAGE     GRAPHICS
  PRINTER       LENGTH      F   R   F         PAGE  PAGE   NUMBERS      CODE
_______________  ___        _   _   _         ___   _        _          _


*************************************************************************
      Tab to a field, enter or change data, and press NumEnter here >

1       2       3       4Return 5       6       7       8Help   9       10Quit
```

3. Supply values for each field. (Press Help to get help for each field.) You can register up to nine system printers.

4. Tab to the end of the screen and press Transmit to save your changes and exit.

5. To exit, press Quit.

2.9 Modifying the Printer Configuration Report

To add, modify, or delete data in the printer configuration (3C2) report, edit the report as you would any other MAPPER report. The Printer Configuration report contains the following fields:

- Destination Printer Field
- LEN Field
- MLF Field
- MCR Field
- MFF Field
- LPP Field
- BNR Field
- PG# Field
- GPH Field

Destination Printer Field

Specifies a name that matches the name of a printer defined within the operating system. The maximum number of characters is 16. To specify the system default printer, leave this field blank.

2.10 Example of a Printer Configuration Report

This example registers two printers. The first printer listed (with a blank in the Destination Printer field) registers the default system printer.

```
*                 .    .M.M.M.    .B.P.G.
* DESTINATION     .    .L.C.F.    .N.G.P.
*   PRINTER       .LEN.F.R.F.LPP.R.#.H. RESERVED FOR FUTURE USE
*================.===.=.=.=.===.=.=.=.=========================
|                |132|N|N|Y|60 |N|Y|
|laser           |80 |Y|N|Y|55 |Y|Y|
```

3. Managing Users

This section describes the administrative tasks related to managing users. It discusses the following topics:

- Registering Users
- Setting Up New Users
- Sending a Message to All Active Users
- Adding a New Language
- Disabling User-Ids
- Deleting User-Ids

Except for adding a new language, you use MAPPER runs and reports to manage users. Adding a new language uses the MAPPER Administration program to register the cabinet of the new language.

Note

When adding users, see the MAPPER System for Windows NT Installation Help for information on the user accounts and privileges needed to access the Windows NT server.

3.1 Registering Users

Registering a user specifies the following information about the user:

- Privileges, such as their access to cabinets, functions, and runs
- Screen colors
- Runs or functions that automatically execute when the user signs on

Use the AGENDA run to register users. It saves time, prevents errors, and, if you specify a new department when registering a user, it automatically creates a new User Registration report for that department. For more details on departments, see Departments and User Registration Reports in this section. If needed, you can also modify the User Registration report (see Modifying User Registration Reports later in this section).

Notes

- Any user registration changes you make go into effect the next time the user signs on to MAPPER.

- When adding users, see the MAPPER System for Windows NT Installation Help for information on the user accounts and privileges needed to access the Windows NT server.

3.2 Departments and User Registration Reports

User Registration reports are located in drawer F, cabinet 2. The report number corresponds to the number of the department that the user belongs to. For example, if a user belongs to department 5, the user is registered in report 5F2. Each department has one User Registration report.

Use departments to group users. Generally, assign users to departments according to the information they need to work with. For example, assign all users needing access to a common set of payroll reports to one department.

You can also assign permission to execute specified runs by department, as well as by individual user.

3.3 Using the AGENDA Run to Register Users

To register users

1. Sign on as the administrator in department 2.

2. On the control line, enter agenda,user. The User Registration screen is displayed:

```
                          User Registration

                   Sign-on user-id  >
                  Sign-on password  >
        Sign-on department number >
                   Sign-on cabinet >
                     User language >
                        User name  >
     User phone number/location >
                  Security report >
                   Security group >
*************************************************************************

              Press Transmit here >

 1      2      3      4Return 5      6      7      8Help   9     10Quit
```

3. Supply values for each field. (Press Help to get help for each field.)

4. Tab to the bottom of the screen and press Transmit to save your changes. If you are modifying information for a user who is already registered, MAPPER asks if you want to replace the user-id. Enter y or n.

5. To exit, press Quit.

3.4 Modifying User Registration Reports

You add, modify, or delete data in User Registration reports just as you do in other MAPPER reports.

Notes

- If you use the Add Line function to add a line, you get the predefined line set up in report 0F2. This predefined line supplies default values for some fields. You can either accept or modify the default values.

- See Example of a Completed User Registration Report in this section for a sample User Registration report.

Fields

User Registration reports contain the following fields:

- User-Id Field
- Password Field
- User Cab Field
- Function Field
- User's Name Field
- Loc/Ext Field
- Screen Color Field
- LIN Field
- ARE Field
- LAN Field
- SEC RPT Field
- SEC GRP Field
- ALT Field
- PWD CHG DAT Field

SEC RPT Field

Specifies the number of the Security Registration report. This field works with the SEC GRP field to specify the security group the user is associated with. The security group determines which drawers the user can access directly.

For example, if you specify 11 in the SEC RPT field and 50 in the SEC GRP field, the user can access all drawers assigned to security group 50 in report 11G2. If you specify 12 in the SEC RPT field and 50 in the SEC GRP field, the user is associated with a different security group that accesses the drawers assigned to group 50 in report 12G2.

If you have only one Security Registration report, specify 11 here.

SEC GRP Field

Specifies the number of the security group with which you want to associate the user. The security group is defined in the Security Registration report and specifies a set of drawer access privileges. For example, security group 10 could be defined as read access to drawer E in cabinet 19 and write access to drawer F in cabinet 22.

Make sure the security group you specify is actually defined in the Security Registration report, or the user will not have direct-access privileges to any drawers (except those in the sign-on cabinet).

All cabinets (including cabinet 0 and the current sign-on cabinet) are controlled at the drawer level.

PWD CHG DAT Field

Is an information-only field. If you require passwords on the system, this field shows the date the user's password was last changed (in Julian form). An asterisk (*) in the first column of this field exempts this user from sign-on password requirements.

Example of a Completed User Registration Report

The following example shows a User Registration report (split in two for example purposes) with three users.

```
*            .       .     .RADRDDAAFSSSMMUDELCTAICDCCPELASSDPCLRSSOMBDRD
*            . PASS .USER.UDPELRDDNRUOCUPEXOHORNAAAASXZUXQPRNNFETOSFSCW
* USER-ID    . WORD . CAB.NRRPRWDTDHDRHDDLTCGTTDBTLUWIRXXQWTTGMNSKGNGRN
*============.======.====.==================================================
```

```
|LCD        |ago   |16  | X      XX  XX  XX   XXX        X   XXXXX   X
|KMH        |sts   |16  |                      X         X           X
.T          |      |    |

|TCR        |bill  |16  |                      X         X           X

*VSBRFSREDLLKAMIRBCCSCPS.              .          .DELCRRAL.    .   .APWD
*EYGEITPNEOOLLODSLLMRUSN.              .          .SRITPSRA.SEC.SEC.LCHG
*RSRTLRWCCLSLTDULTTPRTTU. USER'S NAME . EXT / LOC.CRNLTLEN.RPT.GRP.
*=======================.==============.==========.========.===.===.====
|X  XXXXXXXXXXX         |L. Dodge      |2785      | Y      | 11|  8|/
|X  XXXXXXXXXXX         |K. Martin     |4523      |      3 | 11|  8|

|                       |              |          |        |   |   |
|X  XXXX  XX XX      XX |T. Reynolds   |3215      |      2| 11|  8|
                      ..... END REPORT .....
```

All three users access cabinet 16 when they sign on, all three can use a variety of functions, and all have the drawer access privileges assigned to security group 8 in report 11G2.

The first user's system messages are displayed in red text on a yellow background, as indicated by the letter Y in the ERR field. When this user signs on, the administrator is notified (as indicated by the slash in the ALT field).

The second user has the Drawer Table of Contents (T) function execute at sign-on, as indicated by the .T on the following line and the value 3 in the ARE field.

The third user sees MAPPER system messages displayed in a different language than the other two, as indicated by the value 2 in the LAN field.

3.5 Sending a Message to All Active Users

Use the Send Alert Message (ALERT) function to broadcast a message to all active MAPPER users at your site. The ALERT function displays a message box on active stations with the following message:

This is a system alert. Display the access screen for a message.

If users have a report on display, they do not see the preceding message until they transmit.

MAPPER displays the message sent with the ALERT function on the lower portion of the sign-on and active screens.

To send a message to all users

Enter alert msg

where msg is the message to broadcast to users. The maximum number of characters is 30. All characters are acceptable except the caret (^).

The following example notifies users of a planned shutdown of the MAPPER system:

alert Down at 9:30 for 30 minutes

To remove an ALERT message

Enter alert cancel.

3.6 Disabling User-Ids

Disable a user's user-id to temporarily remove his or her access to MAPPER. Also disable the mapcoord user-id after you have entered your own unique user-id.

To disable a user-id

1. Display the User Registration report containing the user-id you want to disable.

2. Place an asterisk (*) in column 1 in front of the user-id.

The user cannot sign on until you remove the asterisk (*) from column 1.

4. Managing Runs

This section describes how to manage runs. It discusses the following topics:

- Registering Runs
- Deleting Runs
- Defining Environmental and Global Variables
- Registering Runs Using the CONFIGRUN Run
- Analyzing Runs
- Checking Run Status
- Stopping a Run or Active MAPPER Process
- Executing Runs Automatically at Sign-on
- Displaying MAPPER System Activity Information
- Displaying Current System Statistics
- Setting Up Runtime Applications

You use MAPPER runs and reports to manage runs.

4.1 Registering Runs

Register runs to specify which runs can be used on the MAPPER system, who can execute them, and which cabinets the runs can access. Registering runs provides system security.

Use the AGENDA run to register runs (see Using the AGENDA Run to Register Runs in this section). The AGENDA run saves time, prevents errors, and automatically sorts the Run Registration report after you add a run. This enables MAPPER to quickly find a run when a user calls it.

If needed, you can also modify Run Registration reports (see Creating or Modifying Run Registration Reports in this section). You must manually modify Run Registration reports to

- Restrict which stations can access the run

- Restrict when the run can execute
- Specify if the run is format-sensitive (For more details on the F field, see Run Registration Report Fields in this section.)

Any changes you make to a Run Registration report go into effect the next time the run is executed.

4.2 Runs and Run Registration Reports

Run Registration reports are located in drawer E, cabinet 2. There is one Run Registration report for each department, and the report number corresponds to the number of the department. For example, the Run Registration report for department 5 would be report 5E2.

Departments are groups of users who have similar information and processing needs. When you register users in a particular department, they can use all the runs listed in the corresponding Run Registration report except the runs marked as being for specific users only. For example, a user in department 5 (registered in the User Registration report 5F2) can use all runs listed in the Run Registration report 5E2 except those marked for a particular user or users.

Run registration may optionally be controlled down to the drawer level using Security Registration reports (U, SRPT, and SGR fields).

When registering a run, include it in one or more Run Registration reports, depending on which departments need to use the run. If all departments use the run, register it in the master Run Registration report (104E2).

4.3 Master Run Registration Report

The master Run Registration report lists the runs that are accessible to all MAPPER users. This prevents having to list common runs in each Run Registration report.

Caution

If you decide to register a run in the master Run Registration report, first work with the run designer to make sure that the run avoids any possible security violations.

4.4 Creating or Modifying Run Registration Reports

You need to create a new Run Registration report whenever you add a new User Registration report. To create a new Run Registration report, add a report to drawer E, cabinet 2 using the same report number as the User Registration report.

You add, modify, or delete data in Run Registration reports just as you do in other MAPPER reports.

Notes

- If you use the Add Line function to add a line, you get the predefined line set up in report 0E2. This predefined line supplies default values for some fields. You can accept or modify these values.

- After you add a run to a Run Registration report, manually sort the report. This enables MAPPER to find the runs more quickly and improves the response time when a user calls a run.

4.5 Run Registration Report Fields

The Run Registration report contains the following fields:

- Run Name Field
- User Field
- Unit Field
- Drawer Field
- Rpt Field
- F Field
- B.Time Field
- E.Time Field
- I/O Field
- Lines Field
- Cabinets Field
- Responsible Field
- Var Field
- Lab Field
- Vchar Field
- I Field
- M Field
- D Field
- N Field
- F Field

- U Field
- SRPT Field
- SGR Field

Cabinets Field

Specifies the cabinets this run can access. You have the following choices:

- Specify cabinet numbers this run can access, separated by commas. All runs have access to cabinet 0/1 as well as the user's current active cabinet. Cabinets not specified in this field cannot be accessed. By not registering a run for a required cabinet, you force the user to be in the cabinet where the reports used by the run are located. You must always include the cabinet that contains the run itself.

- Specify cabinet numbers or drawer and cabinet numbers this run can access, separated by commas. Cabinet 0 is not available by default (when used with the U, SRPT, and SGR fields).

- Specify a (or leave the field blank) to enable the run to access all cabinets. For security reasons, it is best to avoid this option whenever you can. This option cannot be used with the U, SRPT, and SGR fields.

- Specify cabinet numbers or drawer and cabinet numbers, separated by commas, in conjunction with a Security Registration report.

When specifying drawer and cabinet numbers, you can use this field with the U, SRPT, and SGR fields.

Conflicting access privileges (read/write) always yield to the higher privilege. For example, if you enter 16 in the cabinets field, the run is allowed write access to all the data in cabinet 16. If, however, you also specify a security report and group (SRPT and SGR fields) that has read access to cabinet 16, write access takes precedence.

If the cabinet numbers do not all fit within the Cabinets field, add a line immediately following the run being registered, type an m in column 1 of the line to change the line type designator, and make all the fields on this line blank except for the Cabinets field, where you list the additional cabinets.

Note

All columns preceding the additional listed cabinets must be blank or contain tab codes (except for the M in column 1). Also, cabinets listed must be continuous, separated only by commas or dashes (no spaces or tab codes).

1 Field

Specifies how MAPPER should handle certain run conditions. Type y to handle certain run conditions as the MAPPER System for 2200 does. You may need to do this if the run was originally written for the MAPPER System for 2200. The default is N. For more details, see Registering Runs Using the CONFIGRUN Run in this section.

N Field

Specifies whether the run is accessible from the Runs function key or the Runs menu bar item:

y The run is accessible from the Runs function key. Type y only if the run does not need input on a run call or a report on display when executed.

W The run is accessible from the Runs menu on the menu bar.

N (Default) The run is not accessible from either the Runs function key or menu bar item.

F Field Specifies a report containing Screen Control commands. Type y if this report contains only Screen Control commands and you want to register it as you would register a run. (You do this so you can display the form from the control line.) The default is N.

U Field Specifies whether this run should have access to the drawers registered for the user's security group. Type y to add the drawers registered for the user's security group (User Registration report default =11G2) to the list of data this run is allowed to access. This field may be used in conjunction with the Cabinets (except when specifying a or blank), SRPT, and SGR fields.

For example, if you enter

- 16 in the Cabinets field, the run is allowed access to all the data in cabinet 16. If, however, you also type a y in the U field and the user is a member of a security group that has read privileges to cabinet 18, drawer B, the run being registered has write access to cabinet 16 (all data), and read access to cabinet 18, drawer B.

- a (or blank) in the Cabinets field, the run being registered would have read access only to cabinet 18, drawer B.

SRPT Field

Specifies the number of the run Security Registration report. This field works in conjunction with the SGR field to specify the security group the user is associated with, which in turn determines the drawers the user can access directly.

This field may be used with the Cabinets field (except when specifying a or blank) and the U field.

Example 1

If you specify 11 in the SRPT field and 50 in the SGR field, the user can access all drawers assigned to security group 50 in report 11G2. If you specify 12 in the SRPT field and 50 in the SGR field, the user is associated with a different security group that accesses the drawers assigned to group 50 in report 12G2.

Example 2

If you specify 16 in the Cabinets field, type y in the U field (security report 11G2, security group 5), and specify 11 in the SRPT field and 50 in the SGR field, the following privileges apply:

- Write access to all the data in cabinet 16 (Cabinets field)
- Access to all drawers assigned to security group 5 in report 11G2 (U field)
- Access to all drawers assigned to security group 50 in report 11G2 (SRPT and SGR fields)

If you have only one Security Registration report, you specify 11 here.

Example 3

If you specify b16, c18, h12 in the Cabinets field, type a y in the U field (security report 11G2, security group 5), and specify 11 in the SRPT field and 50 in the SGR field, the following privileges apply:

- Write access to the data in cabinet 16, drawer b (Cabinets field)
- Write access to the data in cabinet 18, drawer c (Cabinets field)
- Write access to the data in cabinet 12, drawer h (Cabinets field)
- Access to all drawers assigned to security group 5 in report 11G2 (U field)

- Access to all drawers assigned to security group 50 in report 11G2 (SRPT and SGR fields)

If you have only one Security Registration report, specify 11 here.

SGR Field

Specifies the number of the security group with which you want to associate the user. The security group is defined in the Security Registration report (SRPT field) and specifies a set of drawer access privileges. This field works in conjunction with the SRPT field.

For example, security group 10 could be defined as read access to drawer E in cabinet 19 and write access to drawer F in cabinet 22.

Make sure the security group you specify is actually defined in the Security Registration report, or the user will not have direct-access privileges to any drawers.

Run Registration Report Example

The following example shows Run Registration report 5E2 with three runs. (The report is split in two to show all 132 characters.)

```
*  RUN NAME  .     USER     .UNIT.DRAWER. RPT.F. B.TIME . E.TIME . I/O .LINES.
*============.==============.====.======.====.=.========.========.=====.======.
 SAMPLERUN                            A0    8                       1000  2000
 CORREL                              I16   50                        500   500
 WEEKRP                              I18    6   20:00:00 23:00:00   5000 30000

.CABINETS                . RESPONSIBLE .VAR.LAB.VCHAR.1MDNF.U.SRPT.SGR.

.====================.==============.===.===.=====.=====.=.====.===.
 A                    LMD                                Y
 c16,h12              DRD                                Y       11  50
 18                   RRF              50  50 10000     Y  Y    12  12

                 ....END REPORT....
```

USER

The blank User field indicates that all users in department 5 can execute the runs.

UNIT

The blank Unit field indicates that users can execute these runs from any station.

B.TIME and E.TIME

The B.Time and E.Time fields indicate that the WEEKRP run can execute only from 8 p.m. to 11 p.m. and the other runs can execute any time.

I/O

The I/O field shows that the three runs have different maximums for the number of input/output requests.

LINES

The Lines field shows that the three runs have different maximums for the number of logic lines processed.

CABINETS

The Cabinets field shows the following:

- SAMPLERUN run can access all cabinets.
- CORREL run has access to cabinet 16, drawer C, and cabinet 12, drawer H.
- WEEKRP run has access to all the data in cabinet 18.

Because the CORREL and WEEKRP runs specify drawers in the cabinets field, they can use the U, SRPT, and SGR fields with these runs. By specifying an A in the cabinets field (like SAMPLERUN in this example) or by leaving this field blank, you enable access to all data and you cannot use the U, SRPT, and SGR fields.

VAR, LAB, and VCHAR

These fields show that the SAMPLERUN and CORREL runs accept the default values, while the WEEKRP run specifies that 50 is the maximum number of variables, 50 is the maximum number of labels, and 10,000 is the maximum number of variable characters.

I

The blank field indicates that the runs do not handle certain conditions as the MAPPER System for 2200 does.

D

The blank field indicates that the runs do not reflect the 3R1 control line.

F

The blank field indicates that the runs do not contain only Screen Control commands.

N

The Y in this field indicates that all of the runs are accessible from the Runs function key.

U, SRPT, and SGR

The U, SRPT, and SGR fields show that the CORREL run, in addition to having access to cabinet 16 drawer C and cabinet 12 drawer H, has access to the drawers associated with security group 50 in Security Registration report 11G2. For the WEEKRP run, in addition to having access to all of the data in cabinet 18, this run also has access to the drawers associated with the security group assigned to the user in the User Registration report, and the drawers associated with security group 12 in Security Registration report 12G2.

4.6 Environmental Session Variable

An environmental session variable is a variable that is accessible to all runs. Environmental session variables remain available until the user terminates the MAPPER session or explicitly clears the variable (using the Clear Variable command—CLV,E).

To set up an environmental variable

Enter a dollar sign ($) before the name. For example:

<$myenvirvar>i6

Notes

- Once you create an environmental session variable, you cannot redefine its size.
- For more information on using environmental session variables, refer to the Classic MAPPER User's Guide.

4.7 Global Run Variable

A global run variable is a variable that is accessible to other runs. Global run variables remain available to other runs until the application that originally created the global run variable is released, or the variable is explicitly cleared using the Clear Variable command (CLV,G).

To set up a global run variable

Enter an asterisk (*) before the name. For example:

<*myglobalvar>i6

Notes

- Global run variables cannot be passed to a LNK run.
- Global run variables are restored after a GO END statement.
- Once you create a global run variable, you cannot redefine its size.
- For more information on using global variables, refer to the Classic MAPPER User's Guide.

Clearing Environmental Session and Global Run Variables

Environmental session and global run variables can be explicitly cleared using the Clear Variable command (CLV,E and CLV,G, respectively). For more information, refer to the Command Reference.

4.8 Size and Number of Environmental Session and Global Run Variables

The MAPPER System for Windows NT sets aside 600 bytes for 30 session variables and 2,000 bytes for 70 variables.

4.9 Registering Runs Using the CONFIGRUN Run

Use the CONFIGRUN run to enhance a run's registration information so the run will execute the same way that it would on a MAPPER System for 2200. With the CONFIGRUN run, you can control how the run performs on your system by adding, modifying, or deleting specific configuration settings. These settings include

- Special characters
- Reserved words
- Variable justification
- Labels

Use the CONFIGRUN instead of placing a Y in the 1 column in the 1MDNF field. This run ensures more complete compatibility for runs intended for use on a 2200 MAPPER

system than is provided by the 1 column. Two settings are not for compatibility with the MAPPER System for 2200, but are for compatibility with lower levels of the MAPPER System for UNIX. See Flag Selection Menu Fields for more information.

4.10 Registering Runs for MAPPER System for 2200 Compatibility

To register runs for MAPPER System for 2200 compatibility

1. Sign on as the administrator in department 2.

2. Enter configrun at the control line. The Configrun menu is displayed.

```
                              Configrun
Fill in the appropriate information then transmit to
see the run flag options.

Run Name
User-Id for run name
Department numbers >          <>    <>    <>    <>    <>    <
      Set all 2200 flags n
```

3. Fill in the appropriate fields on the Configrun menu and press Transmit. For information on the fields on the Configrun menu, see Fields on Configrun Menu in this section.

4. Enter n in the Set all 2200 flags field and press Transmit.

5. A message is displayed enabling you to preview a result listing all runs to be configured for MAPPER System for 2200 compatibility. Press Transmit to display the runs. If the specified runs are correct, go to step 6; otherwise, press Return and repeat step 3.

6. Press Resume to display the Flag Selection Menu screen.

7. Supply values for each field and press Proces to process the configuration flag settings and update the Run Registration report.

8. Press Return to exit the CONFIGRUN run.

4.11 Flag Selection Menu

The Flag Selection Menu enables you to configure individual compatibility settings.

```
n<-   2200 Compatibility Flag (column 127)   When all
n<-   Delete Minus Zero Reference            selections are
n<-   Run Statement Length                   done Press F9
n<-   Count Title Line
n<-   No Value Supplied to Variable
n<-   FLAG NOT USED AT THIS TIME
n<-   Access to Renamed Reports
n<-   Reserved Word Justification
n<-   Line Type Case Sensitivity
n<-   Cursor Position Resume
n<-   FLAG NOT USED AT THIS TIME
n<-   If Test of Zeros
n<-   Totalize (old look) S Option
```

4.11.1 Flag Selection Menu Fields

Use the following Flag Selection Menu fields to resolve certain system incompatibilities for those runs you want to act as they would on MAPPER System for 2200:

<u>2200 Compatibility Flag</u>

Type y to set the 2200 compatibility flag. (This is the same as specifying y in column 127 of the Run Registration report.) The 2200 compatibility flag sets the following features:

- Special characters are not valid in field names within reports.
- Reserved words in the output area are treated as text.
- Valid reserved words are STAT1, STAT2, STAT3.
- Variable definition is only by the LDV command; @v1i6=1 is not valid.
- Special characters cannot be used when naming variables.
- CHG will left justify numeric values in A type variables.
- LDV will left justify values in I type variables.
- The W option is required with the LDV command when loading a reserved word into a variable.
- With an RDL command, if you do not specify a label and the line or report does not exist, the run continues on the next line.

Delete Minus Zero Reference

Type y to be able to delete the current minus zero report, which was previously renamed, and still have access to the previously renamed report.

Run Statement Length

Type y to set to 640 (from 1280) the maximum number of characters in a continued run statement and the XQT command.

Count Title Line

Leave n to prevent CNT from creating a title line (when missing) and using a scaling factor for key precision.

No Value Supplied to Variable

Type y to have LDV blank-fill undefined numeric variables.

FLAG NOT USED AT THIS TIME

Reserved for future use.

Access to Renamed Reports

Type y to have the system return an error when an attempt is made to rename result -0 to -1 when a run is not registered for access to the drawer or cabinet of the report on display (-0).

Reserved Word Justification

This is not a MAPPER System for 2200 compatibility setting. Leave n to have the system right justify numeric, reserved-word values. Change to y to left justify the reserve word value for compatibility with MAPPER System for UNIX level 4R2B.

Line Type Case Sensitivity

Type y to have the LOC and LCH commands with the M option not be case-sensitive to line types.

Cursor Position Resume

This is not a MAPPER System for 2200 compatibility setting. When capturing reserved words CURV$ and CURH$ with the F1 key or the RSM function after a DSP statement, the CONFIGRUN run sets the values according to the run configuration setting.

If you enter y, CURV$ and CURH$ are set to the current cursor position if the user is in the new look. If the user is in the old look, CURV$ and CURH$ return the values 0 and 0 (compatible with 2200 and releases before UNIX 4R1).

If you enter n, CURV$ and CURH$ return the values 0 and 1, regardless of whether the user is in the old or new look (compatible with releases before UNIX 4R1).

The Old Display flag in the run registration report can also effect these values. If it is set to a Y, then the values returned are 0 and 0 regardless of what value Cursor Position Resume has or whether you are in new or old look. This new setting effects the resume and transmit keys.

FLAG NOT USED AT THIS TIME

Reserved for future use.

If Test of Zeros

Type y to have the IF command consider as equal a compare of negative zero and zero.

Totalize (old look) S Option

This is not a MAPPER System for 2200 compatibility setting. Leave n for MAPPER System for 2200 compatibility. Change to y to cause the TOT command to put subtotal key values into the subtotal asterisk line, instead of the string "SUBTOTAL". This is for compatibility with the MAPPER System for UNIX levels 4R2E and 4R3E.

C-Type Line

When you finish defining the configuration settings for a run, CONFIGRUN automatically adds or updates a C-type line to the specified Run Registration report located in drawer E, cabinet 2. Following is an example of a C-type line:

```
run name        user-id
CNNNNNNNNNNNNN
```

where

run name

Is the name of the registered run.

user-id

Is the user-id authorized to execute this run.

CNNNNNNNNNNNN

N corresponds to the individual configuration flag settings as defined by entries in the Flag Selection Menu, in the order displayed in the menu.

4.12 Stopping a Run or Active MAPPER Process

Use the Kill function to stop runs (for example, background runs or active runs) or an active process (for example, a nonsuspended run or a function such as searching across a drawer). The Kill function stops the run or process and the affected user receives a message indicating that the run has been stopped.

Use one of the following methods to terminate runs and processes:

- Station number—Enter just the station number to stop an active process on a specific station.
- User-Id and department number—Enter the user-id and the department number to stop all active processes for a user-id.
- All fields—Enter the run name, station number (optional), user-id, and department number to stop an active run.

To stop a run or active process

1. Sign on as the administrator in department 2. Users outside of department 2 can stop background runs started with their user-id only if the administrator makes the Kill function available to them.
2. Enter KILL. MAPPER displays an input screen.
3. Enter the following information on the input screen:

Run name is the name of the run to stop.

Station is the station number where the run or function is executing.

User-id is the user-id of the person who issued the run or function.

Dept is the department number of the user.

Note

Use the System function or the RS (Run Status) run to locate the run name, station number, user-id, and department number of the run or function to stop.

4.13 Executing Runs Automatically at Sign-on

You can set up a user (or yourself) so that a manual function or run executes automatically whenever that user signs on. You can specify any manual function or run.

To automatically execute runs at sign-on
Use one of the following methods:

- Type the appropriate code in the ARE field of the registration report for the user, then specify the run or function to execute automatically on the following line.

- Type the name of the run in the MAPPER Run field of a MAPPER Presentation Client (MPC) or PowerClient script.

4.14 Displaying MAPPER System Activity Information

To display a result listing current system activity

1. Enter system. MAPPER displays a result listing the current system activity.

2. Press Resume to display a new result reflecting the most current activity.

Example

The following example shows the information the System function provides.

```
.CURRENT SYSTEM STATISTICS
                    USER    .DEPT.   MAPPER   . STA . START   .RUN       . WAIT .
*     TYPE      .    ID     . NO .  FUNCTION . NUM . TIME    .NAME      .STATUS.
*==============.============.====.============.=====.========.==========.======.
.Active User  * MAPCOORD        2 SYS-STATUS     -15 14:51:37
.Backgrnd User  MAPQUE          2 wat        *   -16 14:51:33 MAPQUE
```

Here are the fields displayed in the result:

TYPE

Is the type of system activity. If Active is displayed, the user is currently signed on. If Bckgrd is displayed, a background run is executing. The asterisk (*) in the last column indicates that the system activity is currently being processed.

USER ID

Is the user-id of the user signed on to the system.

DEPT NO

Is the department number of the user signed on to the system.

MAPPER FUNCTION

Is the last function executed. The asterisk (*) in the last column indicates that the function was executed in a run.

STA NUM

Is the station number at which the user is signed on.

START TIME

Is the time the last run or function started.

RUN NAME

Is the run (if any) being executed at each station.

WAIT STATUS

Is the numeric code indicating why the function is in a wait status. This field is meaningful only as a system diagnostic tool to support personnel.

4.15 Displaying Current System Statistics

Use either the Status command in the MAPPER Administration program or the CSS run to display a result listing current system statistics, such as configured database files, system devices, and database usage.

If your site has a cache file configured for results, it is also listed with the database files.

To display current system statistics using Status command

1. In the server tree, highlight the site for which you want current system statistics.

2. Click the right mouse button or press Shift-F10. A context menu appears.

3. Select Status on the context menu. The MAPPER Administration program displays the current system statistics for this site in the response area.

To display current system statistics using CSS run

Enter CSS from either the MAPPER Presentation Client (MPC) or pass-through from another MAPPER system.

Example

See the following sections for an example of the output of the Status command and CSS run and for an explanation of the fields in the output:

- Information Produced by Status Command and CSS Run
- Fields in System Section
- Fields in Database Statistics Section

4.16 Information Produced by Status Command and CSS Run

The following example shows the information produced by the Status command and the CSS run. In this example, auditing is enabled.

```
.DATE              10:15:41  RID         04 FEB 95  DPG
############### S Y S T E M  -  K ####################
users active=4
Last Restart(423) Local Time=Tue Feb  3 10:15:40 1995
#######################################################
*****************************************************************
* MFS REVISION LEVEL=5                          dblksz= 4096 *
* RECOVERY MODE=NONE                            cblksz= 4096 *
*C-CORE                                             size= 9000 *

*Q-CACHE                                            size= 1000 *
*M-\mraw\c0d1s5                                     size=50000 *
*A1-\mraw\c0d1s8                                    size=20000 *
*A2-\mraw\c0d2s6                                    size=20000 *
* DRWR TABLE   size=29       dev=2      dad=52            *
* DFU  TABLE   size=50       dev=2      dad=2             *
* Messages sent to \dev\console                                  *
* Purg/Init Device \dev\rmt\c0d1                                 *

* Largest Segment=2 blocks         Largest valid RPT=5000    *
* Global Report Table Size=500                                *
*****************************************************************
*****************************************************************************
*                 D A T A B A S E     S T A T I S T I C S                   *
*****************************************************************************
* MAX CAB =801              MAX DRWR=014420                4 % utilized *

* C-CORE                                  (  4% cur,   4% max,   0% min) *
* Q-CACHE                                 (  0% cur,   0% max,   0% min) *
* M-\mraw\c0d1s5                          ( 90% cur,  91% max,  90% min) *
* Audit trail 1-Inactive                  (  0% cur,   1% max,   0% min) *
* Audit trail 2-Active                    (  1% cur,   1% max,   0% min) *
* Audit enabled.                                                         *
*****************************************************************************
```

See the following sections for a description of the fields:

- Fields in System Section
- Fields in Database Statistics Section

5. Controlling Drawer Access with Security Registration Reports

The Security Registration reports define security groups that can directly access specified drawers without switching to that cabinet or supplying a drawer or cabinet password. Security groups are sets of drawer access privileges. For example, you can define security group 5 to allow read access to drawer B in cabinet 3 and write access to drawer E in cabinet 20.

Once you define a security group, you associate users and runs with that security group in the user registration and Run Registration reports. When you do this, you are assigning the users and runs a set of drawer access privileges.

Security groups save you the trouble of listing every direct-access drawer.

5.1 Security Groups and Departments

Security groups are independent of departments. You can associate any user or run with any security group, regardless of the user's department. A user's department number and security group number do not have to be the same.

You can create up to 200 security groups per Security Registration report. The release database contains one Security Registration report (11G2), but reserves reports 12G2 through 20G2 for additional reports if you need additional security groups. This means that you can define up to 2,000 security groups by creating new Security Registration reports.

5.2 Users and Security Groups

When you associate a user with a security group, that user can

- Directly access drawers assigned to the security group
- View all the drawers that they have direct access to on the Drawer Select menu

You associate each user with a particular security group in the User Registration reports. You do this by specifying the number of the security group and the Security Registration report that contains the group. For example, you can specify security group 50 in report 11G2 for one user and security group 50 in report 12G2 (which is another security group with different drawer access privileges) for another user.

5.3 Updating the Drawer List

Each Security Registration report lists all the drawers in the local database and any remote drawers that you or another administrator have added. Whenever you use the following runs to add, change, or delete cabinets or drawers, the list of local drawers in each Security Registration report is automatically updated:

- GENZERO (Generate Drawer)
- REGEN (Drawer Regeneration)
- DELCAB (Delete Cabinet)
- DELDRW (Delete Drawer)

The list of drawers in each Security Registration report is not automatically updated in the following situations:

- When you used the APPLOAD (Application Load) run to load an entire drawer. In this situation, use the REGDRW (Register Drawer) run to ensure that the list of drawers in all Security Registration reports is current. To use the new application, the user must sign on again to update the internal list of authorized drawers.
- When you have any remote drawers listed in the Security Registration reports. See Adding or Updating Remote Drawers in this section for information on how to update remote drawers.

Note

Whenever you add drawers, update the security group permissions. For more details, see Updating or Creating Security Groups in this section.

5.4 Adding or Updating Remote Drawers

If you want security groups to directly access drawers in remote databases, you need to manually add and update these drawers in your Security Registration reports. You must have update access to cabinet 2 to do this.

To add or update a remote drawer

1. Display the appropriate Security Registration report (located in drawer G, cabinet 2).
2. If you are adding a drawer, add a new line for the drawer.

3. In the Drawer Name field, specify the name of the drawer. (This name is listed in report 0 for each drawer.)

4. In the Drawer and Cabinet field, specify the drawer letter, followed by the cabinet number.

5. In the Network Name field, specify the network name found in the Network Name field of the Network Registration report (1C2).

6. In the security group fields, type w under each security group you want to have write access to the drawer. Type r under each security group you want to have read-only access.

Example of a Security Registration Report

The example lists a number of drawers. Three of these drawers are on the remote site NEWYORK, the other two are local. Security group 2 has write access to all drawers listed. Security group 5 has write access to drawers C and E in cabinet 102 and drawer E in cabinet 118 and has read access to drawer E in cabinet 28.

```
.Security Registration Report                    Cabinet/Drawer Permissions
                              . DRAWER  .                  .00000000000000000000
*                             .  AND    .                  .00000000011111111112
*FULL DRAWER NAME             . CABINET .  NETWORK NAME    .12345678901234567890
*=============================.==========.==================.====================
 Marketing Payroll Data       C102       NEWYORK             W  W
 Marketing Personnel List     E102       NEWYORK             W  W

 Paycheck Application         E28                            W  R
 Marketing Addresses          E118       NEWYORK             W  W
 Mailing Application          C14                            W
```

5.5 Displaying Report Passwords

As an administrator, you can view the read and write passwords assigned to each report by using the Line Zero (LZ) function. When you issue the LZ function, all the information found on line 0 of the report you specified is displayed. The passwords for the report are listed in the Write PSWD field and either the Read PSWD, Private User, or Priv Dept field (depending on the type of read password).

To view the password for a report

1. Sign on in department 2.

2. Issue the LZ function and specify the report.

6. Managing Drawers and Cabinets

This section explains how to set up and maintain drawers and cabinets. It discusses the following topics:

- Understanding Drawer Design
- Generating Drawers
- Customizing Report 0 Information
- Maintaining Drawers and Cabinets
- Moving Reports
- Displaying a Cabinet Table of Contents
- Run Statements for Managing Drawers and Cabinets

You use MAPPER runs and reports to maintain drawers and cabinets.

6.1 Generating Drawers

Use the GENZERO (Generate Drawer) run to create report 0 for a new drawer. You can generate a new drawer by

- Using an experimental report designed by either you or the user (see Generating a Drawer Using an Experimental Report in this section).
- Creating a blank report 0 without an experimental report (see Generating a Drawer without Using an Experimental Report in this section). This creates a blank report 0.

6.2 Generating a Drawer without Using an Experimental Report

To generate a drawer without using an experimental report

1. Type genzero and press Transmit. The Drawer Generation input screen is displayed.
2. Fill in the fields, leaving the first three input fields blank (location of the experimental report).

3. Update the necessary Security Registration reports to allow users and runs direct access to the drawer. Security privileges go into effect the next time you sign on to the MAPPER system.

Notes

- The genzero run creates the drawer, with a blank report 0 containing only a date line. To edit the report, follow the procedures outlined in "Customizing Report 0 Information" in this section.

- Since report 0 serves as a template for the entire drawer, place a write password on it to protect it from updates.

6.3 Regenerating an Existing Drawer

Use the REGEN (Drawer Regeneration) run to modify report 0 in an existing drawer. Using the REGEN run, you can change the following:

- Report and line limits of the drawer

- Description of the drawer

- Name of the person responsible for the drawer

- Field names and field widths of the drawer

- Language of the drawer

To regenerate an existing drawer

1. Switch to the cabinet containing the drawer you want to modify. You must have direct access (Security Registration report) to the drawer.

2. Enter REGEN. The Drawer Regeneration input screen is displayed.

3. Fill in the desired information and press Transmit. The new report 0 is displayed. You can now modify report 0 if you wish; any existing report 0 write password is preserved.

The run statement changes the report and line limits or the language of the drawer. It does not create a result.

Notes

- You can use an experimental report containing the necessary changes for field names and widths.

- You cannot change the width of a drawer by using the REGEN run. For more details, see Changing Drawer Width in this section.

6.4 Changing Drawer Width

After users work with a drawer, they may find that the width of the drawer needs to be modified to accommodate changing field sizes, number of fields, and so on.

To change the width of an existing drawer

1. Create an experimental report that meets the new requirements of the drawer. Rather than retyping the current drawer headings, transfer them using the Yank Line and Put Line functions or the Cut and Paste commands.

2. Temporarily move the existing reports to another drawer, using one of the methods described below. The method you choose is based on the number of reports to move.

- Three or fewer reports—Use the Create File (FILE) function to convert the reports into operating system files.

- More than three reports—Use the Replace Report (REP) run statement or the MOVE (Move Reports) run to move reports to another drawer.

3. Type DEL in the first three character positions of line 2 to mark the current report 0 for deletion. (The characters DEL must be in uppercase.)

4. Use the Generate Drawer (GENZERO) run to generate the new drawer at the new width.

5. Copy the reports from their holding area drawers back into their original drawers, then remove them from their temporary holding area.

- If you transferred the reports to the operating system with the FILE function, use the Retrieve File (RET) function to bring them back into MAPPER and then the Replace Report (REP) function to return them to their appropriate places.

- If you moved the reports to another drawer, use that same method to move them back to their original drawer.

6. Once the reports are back in their original drawers, the reports may need some modification depending on the change made to the corresponding report 0. For example, if a field size is changed, the data in each report has to be rewritten to accommodate the new field size. Use the Read Continuous (RDC) run statement to easily perform this task. See the Command Reference for more information.

For more details on modifying other areas of a drawer, see Customizing Report 0 Information in this section.

6.5 Analyzing and Listing Data to Eliminate

To analyze the age and size of reports, use the DBA (Database Analysis) run. To produce a list of current information about each report, use the Verify (VER) function (with the N option). For more details, see Using the DBA Run to Analyze Drawers and Cabinets and Verifying Data Integrity in this section.

6.5.1 Who Should Eliminate Inactive Data

It is your responsibility to decide who eliminates the inactive data. Following are possibilities:

- Have users delete their own unneeded reports regularly.
- Give users a list of the reports you plan to delete. Then, if you do not hear otherwise, delete those reports.

For more details on eliminating inactive data, see Deleting a Sequence of Reports in this section. For additional information refer to the online help system (HELP,KILL).

6.6 Deleting Drawers

Use the DELDRW (Delete Drawer) run to delete a drawer from the database.

To delete drawers

1. Enter DELDRW. The Delete Drawer input screen is displayed.
2. Enter the cabinet and drawer to delete.

If report 0 does not contain DEL in the leftmost columns of line 2, a message displays indicating the drawer that will be deleted. If you enter y to continue the run, the drawer will be deleted even though it did not contain DEL in line 2.

3. Enter y to verify that this is the correct drawer to delete. The system immediately deletes report 0 and all reports in the drawer. It also deletes the drawer entry in the Security Registration report (11G2) and replaces the corresponding drawer title in the Cabinet/Drawer Table report (3G6) with the word OPEN.

Enter n to terminate the run without deleting the drawer.

6.7 Deleting Cabinets

Use the DELCAB (Delete Cabinet) run to delete all generated drawers in a cabinet from the database. (The cabinet itself is not deleted, only its contents.)

To delete cabinets

1. Enter delcab. The Delete Cabinet input screen is displayed.

2. Enter the cabinet number from which to delete the contents. A list of all drawers residing in that cabinet is displayed.

3. Enter y to verify that this is the correct cabinet from which to delete the contents. The system immediately deletes report 0 and all reports in each drawer. It also deletes the drawer entries in the Security Registration report (11G2) and replaces the corresponding drawer titles in the Cabinet/Drawer Table report (3G6) with the word OPEN.

Enter n to terminate the run without deleting the contents of the cabinet.

6.8 Deleting a Sequence of Reports

The KILRID (Kill Report) run deletes the report on display and displays the next consecutively numbered report. With the KILRID run, you do not have to be the last person to update the reports in order to delete them.

To delete a sequence of reports

1. Sign on as the administrator in department 2.

2. Display the report you want to delete.

3. Enter KILRID. The run deletes the report on display and displays the next consecutively numbered report in the drawer (if one exists).

4. Enter KILRID to delete the next report on display.

Example

With report 10 on display, enter kilrid. Report 10 is deleted and report 11 is displayed. If you enter kilrid again, report 11 is deleted and report 12 is displayed.

6.9 Verifying Data Integrity

Use the Verify (VER) function to check specific reports, drawers, cabinets, or the entire database for data inconsistency or damage concerning the following:

- System information about the report (line 0)
- Line numbers and line terminators
- End report line
- Number of lines as compared with those recorded in line 0

Issue the VER function on the total database before performing a complete database backup. If a part of the database shows inconsistencies, issue the VER function on the cabinet, drawer, or report in question.

Note

To analyze the database for the size and update ages of reports only, use the DBA (Database Analysis) run (see Using the DBA Run to Analyze Drawers and Cabinets in this section).

To use the VER function

1. Enter VER[,o rdc-rdc]

where

o specifies one of the following options:

- Blank—includes information on all reports containing inconsistencies

- A—includes verification information for all reports specified, whether they are consistent or inconsistent

- N—excludes report verification and creates an index with report information without verifying the data

- U—produces a summary showing the number of reports updated or created since the last backup

rdc is the report, drawer, or cabinet to verify. When you specify a range (rdc-rdc), the function verifies all reports from the first report, drawer, or cabinet specified through the last report, drawer, or cabinet specified.

The VER function displays a result containing information about the database. It can also create an index of information about each report without verifying the data.

2. Look over any result the VER function indicates as possibly invalid. If no discrepancies are apparent, try one of the following:

- Add a line, then delete the line.

- Create a result of the report and replace the result into the original report. Issue the VER function again against the replaced report.

These suggestions completely rewrite the report and often clear up trivial discrepancies. For more details on the result the VER function creates, see VER Function Sample Result and Field Descriptions in this section.

Examples

This example verifies cabinets 0 through 12 and includes information about all verified reports (A option):

```
ver,a 0-12
```

This example creates an index of all reports in drawers B and C in cabinet 0 without verifying the data in the reports (N option):

```
ver,n 1b0-5000c0
```

This example verifies and includes information about all reports updated since the last complete backup (U and A options):

```
ver,ua
```

6.9.1 VER Function Sample Result and Field Descriptions

```
* CAB.D. RPT.LINES .CHR. UPDATED . CREATED .    USER     . SAVE . VALID.ERR.
*====.=.====.======.===.=========.=========.============.======.======.===.
    0 B    0      40 80  25 SEP 88 10 JAN 86 MICRO                YES
    0 B    1      30 80  13 MAY 90 01 AUG 88 MICRO         991231 YES +
    0 B    2      48 80  13 MAY 90 01 AUG 88 MICRO         991231 YES ++
```

Here are the fields in the VER function result.

CAB

Is cabinets verified.

D

Is drawers verified.

RPT

Is reports verified.

LINES

Is the number of lines in the report.

CHR

Is the width of the report.

UPDATED

Is the date of the last update.

CREATED

Is the date the report was created.

USER

Is the user-id of the last update.

SAVE

Is the save date of the report. (0 indicates a report with an invalid save date.)

VALID

Indicates whether a report is valid. This field can contain the following values:

YES Indicates the report is valid.
NO Indicates the report is not valid. Asterisks (*) are displayed wherever a figure for line quantity or character width may be invalid due to discrepancies.
? Indicates that a report residing on duplex files is not identical on both legs of the file.
+ Indicates that a report was updated since the last complete database backup.
++ Indicates that a report was rewritten to disk and then updated since the last complete database backup.

ERR

Is the error code number of the invalid report (a report may contain more than one discrepancy, but the result shows only the first error encountered):

01 Line 0 of the report defines the report line size (characters per line) as less than or equal to zero.
02 Line size of this report is not equal to line size defined for the drawer.
03 Drawer designation in line 0 is invalid.
04 Report number in line 0 is invalid.
05 Number of lines defined in line 0 is invalid.
06 Number of heading lines defined in line 0 is invalid.
07 Language number in line 0 does not match the language number for the drawer.
08 Invalid or missing control characters in line 0.
20 End report line is missing.
21 End report line does not match the end report line defined for the language.
30 Invalid report number is displayed in the data line control characters.
31 Invalid line number is displayed in the data line control characters.
32 Line termination character is missing.
40 Cabinet, drawer, or report specified is invalid or does not exist.
41 Total number of lines in line 0 does not match the total number of lines.
42 Internal error encountered when opening the report or reading a line from the report.

6.10 Displaying a Cabinet Table of Contents

Use the CTOC (Cabinet Table of Contents) run to display information about the contents of a cabinet.

To display the cabinet table of contents

1. Sign on as administrator in department 2.

2. Sign on in the cabinet that you want to display information about.

3. Enter CTOC. The CTOC run displays the following information about each drawer in the cabinet:

- Number of lines in report 0
- Character width of each drawer
- Number of heading lines in each drawer
- Password for each drawer
- Total number of reports in each drawer
- Total number of data lines in each drawer
- Highest report number allowed in each drawer

6.11 Run Statements for Managing Drawers and Cabinets

The following run statements are available for managing drawers and cabinets:

- Generate Drawer (GEN) Run Statement
- Drawer Regeneration (RGN) Run Statement
- Write Report Zero (WRZ) Run Statement
- Verify (VER) Run Statement

7. Backing Up and Loading Applications and Data

This section explains how to back up the database and load applications and data. It discusses the following topics:

- Backing Up the Database
- Completing a Standard or Incremental Backup
- Completing a Partial Backup
- Verifying the Backup Media
- Loading Applications and Data
- Loading Applications and Data with the MAPUTIL APPLOAD Command
- Loading Applications and Data with the APPLOAD Run
- Initializing the Database

You use the MAPPER Administration program or the MAPUTIL PURGE command to complete standard and incremental backups of the MAPPER database.

You use the PURGE run to complete a partial backup of the database.

Use either the MAPUTIL APPLOAD command or the APPLOAD run to load applications and data. You must use the MAPUTIL APPLOAD command if the applications and data you want to load are contained on more than one tape or file.

7.1 Backing Up the Database

To back up the database is to copy specific cabinets, drawers, and reports to the backup media. Backing up the database provides the following:

- A copy of your data to use in the event of system failure
- The media for transferring data to other MAPPER systems

Notes

- The backup media is the device MAPPER writes data to during the backup process. For more details on media names, see Media Names.

- For a database backup to take place, MAPPER software must be active.

- To recover updates which occur after a backup of the database, you must enable the audit process.

7.2 Database Activity during the Backup Process

During the backup process, users can update the database. If a deferred update is active during the backup, and the commit takes place after some (but not all) of the reports involved are already copied to the backup media, the backup process takes the updated versions of the already copied reports and writes them at the end of the backup media.

7.3 Backup Types

The following backup types are available:

- Standard—backs up every designated cabinet and drawer in the database. See Completing a Standard or Incremental Backup in this section for more information.

- Incremental—copies to the backup media only those reports that were added or updated since the last standard backup. See Completing a Standard or Incremental Backup in this section for more information.

- Partial—copies only the reports you specify. See Completing a Partial Backup in this section for more information.

7.4 Completing a Standard or Incremental Backup

You can use either the MAPPER Administration program or the MAPUTIL PURGE command to complete a standard or incremental backup. See the following topics for more information.

7.5 Using the MAPPER Administration Program

To back up the database using the MAPPER Administration program

1. Highlight the site in the server tree whose database you want to back up.

2. Click the right mouse button or press Shift-F10. A context menu appears.

3. Highlight Back up Database on the context menu.

4. Click the right mouse button. The Back up the Database dialog appears.

5. Specify the tape device or backup file. Enter the name of the backup media to which you want the backup written—either the name of a tape device or a file.

6. Specify the type of backup, either standard or incremental (see Backup Types in this section for a definition of standard and incremental backups).

7. Specify the drawers to back up:

All

The entire database is backed up. This includes all reports in every cabinet and drawer.

Include

The only reports backed up are those in the cabinets and drawers you specify on the backup list. You specify the cabinets and drawers to include by using the Drawers button.

Exclude

The entire database is backed up with the exception of those reports in the cabinets and drawers on the backup list. You specify the cabinets and drawers to exclude by using the Drawers button.

If you specify All, click OK. If you specify Include or Exclude, click the Drawers button. A Backup Drawers dialog box appears.

a. In the Drawer, Cabinet, or Range field on the Backup Drawers dialog box, enter the cabinets, drawers, or range you want to audit. Enter either a

- Cabinet, for example, 100
- Cabinet range, for example, 100-120
- Cabinet and drawer, for example, B62
- Cabinet and drawer range, for example, B50-D50 or A0-30

Specifying a cabinet (or range of cabinets) means that all drawers for the specified cabinets will be backed up. Enter even cabinet numbers.

b. Click Add. The entry is added to the backup list.

c. To define another entry for the backup list, repeat the preceding steps. To remove an entry from the backup list, highlight the entry and click Remove.

d. When you are finished adding entries to the backup list, click OK to return to the Back up the Database dialog box.

8. Click OK. The administration program backs up the database.

Notes

- Only one backup can be queued at a time. Scheduling a backup cancels any previously scheduled backup.
- Do not use a new or unused tape for the backup.
- Drawer A is always specified as A0.
- Even though drawer A is visible from all cabinets, you must specify drawer A as a member of cabinet 0 (A0). If you specify just cabinet 0, you are specifying only drawers B through I.

7.6 Using the MAPUTIL PURGE Command

Use the MAPPER Utility (MAPUTIL) with the PURGE command to back up the database or inactive audit trail. The MAPUTIL PURGE command is executed from the MS-DOS command prompt. The MAPPER software must already be installed before you can use this command.

To back up the database

1. Log on at the Windows NT server whose MAPPER system you want to back up. (There is no remote access to the Windows NT command line.)

2. From the drive and directory where MAPPER is installed, type

   maputil purge parameters

where parameters are

-ssite-letter

Specifies the site letter.

-ddevice-name

Specifies the backup device to use. The -d parameter is used for any type of backup. Specify a valid path and file name.

-i

Specifies an incremental backup of the entire database. Only the reports that were updated since the last full backup are copied to the backup media.

To complete a standard backup, do not specify the -i parameter.

Note

Do not use a new or unused tape for the backup.

Example

The following example specifies an incremental backup:

```
maputil purge -sa -dd:\purge\backup.001 -i
```

In this example

-s

Specifies site A.

-d

Specifies that the database is copied to a file named d:\purge\backup.001.

-i

Specifies that this is an incremental backup of the complete database. Only reports that were updated since the last full backup are copied.

7.7 Completing a Partial Backup

Use the PURGE run to back up specific cabinets, drawers, and reports to the backup media.

To complete a partial backup

1. Make sure the backup medium is loaded and ready to accept data.

2. Enter PURGE. The run displays an input screen.

3. Fill in the input screen with the cabinets, drawers, and reports that you want to back up. You can also specify ranges. For more details on how to specify ranges, see Copying a Range of Reports in this section.

4. Press Transmit. The PURGE run starts the backup process.

When the PURGE run completes the backup process, all specified reports have been written to the backup medium.

5. Use the VPM (Verify Purge Media) run to verify the backup medium.

Notes

- You cannot keep a list of the reports to back up.

- You cannot start the backup process at a specified time and differentiate between an incremental or standard backup. When using the PURGE run, the backup process begins immediately and copies all reports specified.

- You cannot alter the purge block size.

- You can only use one tape or file with the PURGE run.

- The PURGE run menu contains a field for creating purge media that can be read by lower levels of MAPPER software.

- Do not use a new or unused tape for the backup.

7.8 Verifying the Backup Media

You can verify the contents of the backup media by using the MAPUTIL PURGE_TI command or the Verify Purge Media (VPM) run. The verification process reads every report on the MAPPER database media and displays data about each report. It also displays the names of the native files that exist on the purge media.

Always verify the contents of the backup media after backing up your MAPPER system.

To verify the backup media using the purge_ti command

1. Make sure the backup media is loaded and ready to be verified.

2. Log on at the Windows NT server whose MAPPER system you are backing up. (There is no remote access to the Windows NT command line.)

3. From the drive and directory where MAPPER is installed, type

```
maputil purge_ti -ssite-letterl -ddevice-name
```

where

-ssite-letter

Specifies the site letter.

-ddevice-name

Selects the backup device to use. The -d parameter is used for any type of backup. Specify a full valid file name.

To verify the backup media using the VPM run

1. Make sure the backup media is loaded and ready to be verified.

2. Enter VPM. The run displays an input screen.

3. Fill in the required fields on the input screen.

4. Press Transmit.

Note

If you verified the contents of an incremental purge media, the system displays one of the following values next to each report:

U Report updated since last standard backup.
D Report deleted since last standard backup.

7.9 Loading Applications and Data

Loading applications and data involves copying MAPPER data in specific cabinets, drawers, and reports from the backup medium to the MAPPER database. When loading an application, you can place it in a MAPPER database location different from its original.

See the following topics for guidelines on loading applications and data:

- Ensuring Equal Line Length
- Loading Ranges
- Renaming Ranges
- Specifying Cabinets Only
- Specifying Cabinets and Drawers Only
- Loading Existing Cabinets and Drawers
- Loading Report 0
- When No Drawer Name Is Specified
- Executing the REGDRW Run

7.9.1 Ensuring Equal Line Length

Reports loaded from the backup media must have the same line length as the drawer they are added to in the MAPPER database, unless you include report 0 at backup time. Loading reports from the backup media into an existing cabinet of a different line length destroys the existing cabinet.

7.9.2 Loading Ranges

Each cabinet, drawer, and report field contains two subfields. If you are loading a range of cabinets, drawers, or reports, enter the first number or letter of the range in the first cabinet, drawer, or report subfield. Enter the last number or letter of the range in the second cabinet, drawer, or report subfield.

7.10 Loading Applications and Data with the APPLOAD Run

Use the APPLOAD (Application Load) run to copy MAPPER data from specific cabinets, drawers, and reports on the backup media to the MAPPER database.

You must use the MAPUTIL APPLOAD command if the backup media is more than one tape.

To load applications and data using the APPLOAD run

1. Make sure the purge media is loaded and ready to copy data.

2. Enter APPLOAD. The run displays an input screen.

3. Fill in the fields on the input screen. See "APPLOAD Run Example" in this subsection for an explanation of the fields.

4. Press Transmit.

When the APPLOAD process finishes, all specified reports have been written to the MAPPER database.

APPLOAD Run Example

This example loads all drawers from cabinet 16 on the backup media to cabinet 16 in the MAPPER database, and drawers B through D in cabinet 20 of the backup media to drawers B through D in cabinet 24 in the MAPPER database:

```
            Purge Media                          MAPPER Database
Cabinets  Drawers    Reports        Cabinets  Drawers    Reports
===   =====  ====   ====   ===    === ==  ====   ====
 16                                 16
 20        B   D                    24         B   D
Overwrite reports? N  Load duplicate reports? N Merge reports? N
```

Overwrite reports?

Type y or n. Type y if you want reports overwritten without being prompted with the overwrite message. Default=N.

Load duplicate reports?

Type y or n. Type y if you want to load all copies of the report, type n if you only want to load the first occurrence of the report. Default=N.

Merge reports?

Type y or n. Type y to ignore report zero on the tape, if the drawers already exist in the database. Default=N.

8. Managing Memory Usage

This section contains the following information on managing memory usage:

- Shared Memory
- Setting the System Shared Memory
- Setting the Maximum Number of Active Users
- Adjusting Shared Memory Size
- Adjusting Report Table Size
- Setting the Maximum Number of Background Runs
- Adding Shared Memory for Caching Results
- Setting the Maximum Number of Reports
- Tuning System Performance

You use the MAPPER Administration program to manage memory usage.

8.1 Shared Memory

Shared memory allows MAPPER processes to share common data. Shared memory consists of common buffers, control and allocation tables, operational tables (including translation, drawer, and report tables), and disk addresses.

Shared memory assigns each active user a unique MAPPER process. Since MAPPER data can be updated by only one MAPPER process at a time, simultaneous updates are avoided.

8.1.1 Setting Parameters

The more active users you want a site to support at a time, the more shared memory the site uses. As you configure the maximum number of active users, the MAPPER Administration program calculates the amount of shared memory needed (see the Capacity property page accessed from the Properties selection on the site context menu).

You can also specify additional blocks of shared memory, the number of blocks for caching results, and the number of additional report table entries without changing the number of active users. These parameters are interdependent and are set through the MAPPER Administration program.

A new value of a shared memory parameter takes effect after you stop and restart MAPPER.

8.2 Shared Memory Considerations

Keep in mind the following considerations when implementing shared memory:

- The paging file must be large enough to handle the combined shared memory plus cache memory of all active MAPPER sites on the server, plus the normal paging requirement of the operating system.

- The total of all site-level shared and cache memory must be less than the MAPPER system shared memory, which must be less than the available memory.

- The fixed base address for MAPPER and MAPPER Relational Interface (MRI) shared memory could conflict with fixed address ranges required for system software components (such as databases) referenced by MAPPER and MRI. If this situation occurs, an entry in the Event Log indicates that MAPPER could not attach to shared memory. To fix the address conflict, adjust the configured addresses as appropriate.

Use the MAPPER Administration program to set the

- System shared memory (see Setting the System Shared Memory)

- Site-level shared memory (see Adjusting Shared Memory Size)

8.3 Diagnostic Messages

Diagnostic messages related to shared memory are written to the applications log. Use the Windows NT Event Viewer to view the applications log and locate shared memory diagnostic messages. The text of shared memory diagnostic messages includes either shared memory or IPC.

8.4 Setting the System Shared Memory

The system shared memory is the number of megabytes of total MAPPER shared memory that MAPPER acquires to run on a server. The amount of system shared memory must be larger than the sum of all site-level shared memory plus the site-level cache memory for all active sites.

To set the total system shared memory

1. Highlight the server in the server tree (left pane).

2. Click the right mouse button or press Shift-F10. A context menu appears.

3. Select Properties and click the left mouse button. The Server Properties dialog box appears.

4. Enter the total number of megabytes of shared memory. This number must be larger than the sum of all site-level shared memory plus the site-level memory cache.

5. Click OK.

6. Stop and restart the MPR Controller service from the Services applet in the Windows NT Control Panel. Make sure you alert any users before you stop MAPPER.

8.5 Setting the Maximum Number of Active Users

The maximum number of active users is the number of processes executing MAPPER. MAPPER uses this number to allocate memory for its operations. The MAPPER System for Windows NT supports 16 active users or processes.

To set the maximum number of active users

1. Highlight the site in the server tree (left side) of the main window.

2. Click the right mouse button or press Shift-F10. A context menu appears.

3. Select Properties. The Site Properties dialog box appears.

4. Choose the Capacity tab. The Capacity property page is displayed.

5. Enter the number of active users in the appropriate box. Note that as you change the number of active users, additional blocks of shared memory, and the number of additional report table entries, the total blocks of shared memory needed also changes.

6. Click OK.

Notes

- Do not confuse the maximum number of active users with the total number of users or workstations configured for MAPPER system use.

- The MAPQUE run uses one of the 16 available processes executing MAPPER. This means that you can have 15 other processes or active users executing MAPPER at one time.

8.6 Adjusting Shared Memory Size

MAPPER uses shared memory for processing information that is to be shared among users in a real-time environment. Shared memory is allocated in 4 kilobyte blocks. MAPPER determines the default value for shared memory based on the maximum number of active users, the number of report table entries, and the additional blocks of shared memory.

8.6.1 To adjust shared memory

1. Highlight the site in the server tree (left side) of the main window.

2. Click the right mouse button or press Shift-F10. A context menu appears.

3. Select Properties. The Site Properties dialog box appears.

4. Choose the Capacity tab. The Capacity property page is displayed.

5. In the Additional blocks of shared memory field, enter the amount of additional shared memory you want allocated to the site, in 4 kilobyte blocks. You must use a value greater than or equal to zero.

6. Click OK.

Notes

- The maximum size for site-level shared memory is limited by the amount of shared memory available on the server and the amount of shared memory configured for MAPPER on the server. See Setting the System Shared Memory for information on configuring system shared memory.

- The minimum shared memory size depends on the value selected for the maximum number of active users. For more details, see Setting the Maximum Number of Active Users in this section.

- Additional blocks of shared memory is the additional amount of shared memory that you want to configure to assist processing. When you configure the maximum number of active users, MAPPER adds a default amount of shared memory for each user up to 1,000 MAPPER blocks. Some types of processing may require additional shared memory. To determine your need for additional shared memory, check for the following:

  - A core CSS percentage that is routinely in the 70 to 99 percent range

  - A "memory-wait" in the status field of the output of the SYSTEM function

- Very large reports require additional shared memory. Use the following table to determine how much additional shared memory is required:

Columns	10,000 Lines	100,000 Lines	1,000,000 Lines	10,000,000 Lines	20,000,000 Lines
80	2	4	22	420	772
132	2	8	68	668	1336
256	2	14	126	1260	2518

For example, the additional shared memory required to access three 100,000 line, 80-column reports; ten 10,000,000 line, 80-column reports; and one 20,000,000 line, 80-column report is calculated as follows:

(3 * 4) + (10 * 22) + (1 * 772)=1004 blocks

These numbers are only estimates. You may have to adjust the number depending on your environment.

8.7 Adjusting Report Table Size

The report table size is measured by the number of entries that appear in the report table. The number of entries in the report table corresponds to the number of reports that can be concurrently accessed on the MAPPER site. The default is (maximum active users x 6) + 25.

The maximum value for the report table size is 500. The minimum value for the report table size depends on the value selected for the maximum number of active users. For more details, see Setting the Maximum Number of Active Users and Tuning System Performance in this section.

Adding additional report table entries requires more shared memory. The administration program prevents you from setting the value too high or too low.

To adjust report table size

1. Highlight the site in the server tree (left side) of the main window.

2. Click the right mouse button or press Shift-F10. A context menu appears.

3. Select Properties. The Site Properties dialog box appears.

4. Choose the Capacity tab. The Capacity property page is displayed.

5. In the Number of additional report table entries field, enter the number of additional report table entries to allocate to the site.

6. Click OK.

8.8 Setting the Maximum Number of Background Runs

The maximum number of background runs is the number of background run processes that can execute within MAPPER simultaneously. MAPPER uses this number to allocate memory for its operations.

When determining an appropriate number, consider how many simultaneous background runs you expect MAPPER to accommodate at peak hours. Consult the Getting Started for disk and memory requirements, as well as for recommendations on the maximum number of background runs. You may also want to consult with your operating system administrator.

To set the maximum number of background runs

1. Highlight the site in the server tree (left side) of the main window.

2. Click the right mouse button or press Shift-F10. A context menu appears.

3. Select Properties. The Site Properties dialog box appears.

4. Choose the Capacity tab. The Capacity property page is displayed.

5. In the Maximum number of background runs field, enter the number of background runs.

6. Click OK.

8.9 Adding Shared Memory for Caching Results

By using shared memory for caching results, MAPPER stores results in memory instead of storing results in the result file on disk. Allocate shared memory for caching results when users write applications that make heavy use of the MAPPER result feature. The shared memory you allocate for caching results is accessed separately from the shared memory that is used by all other MAPPER functions.

When MAPPER runs out of shared memory, it stores results in the result file. When the result file becomes full, MAPPER looks for space in other shared files.

The maximum amount of shared memory depends on the amount of memory available. The minimum shared memory is 250 MAPPER blocks if this feature is used. The default is 0.

To allocate shared memory for caching results

1. Highlight the site in the server tree (left side) of the main window.

2. Click the right mouse button or press Shift-F10. A context menu appears.

3. Select Properties. The Site Properties dialog box appears.

4. Choose the Capacity tab. The Capacity property page is displayed.

5. In the Number of blocks for caching results field, enter the amount of shared memory for caching results that you want allocated to the site, in 4 kilobyte blocks.

6. Click OK.

8.10 Setting the Maximum Number of Reports

The maximum number of reports refers to the maximum number of reports allowed for each drawer. Both the maximum and the default are 5000. The minimum number of reports required to load the default database from tape is 1100.

If you change this value, it must be large enough to accommodate the largest report number used in the MAPPER database.

To set the maximum number of reports

1. Highlight the site in the server tree (left side) of the main window.

2. Click the right mouse button or press Shift-F10. A context menu appears.

3. Select Properties. The Site Properties dialog box appears.

4. Choose the Capacity tab. The Capacity property page is displayed.

5. In the Maximum number of reports field, enter the maximum number of reports allowed per drawer.

6. Click OK.

8.11 Tuning System Performance

If enough physical memory is available, you can improve system performance by increasing the size of the system and site shared memory until you no longer observe improved performance (speed). However, if you increase shared memory by too much, you can degrade performance.

9. Working with MAPPER Files

This section describes the MAPPER database files. It discusses the following topics:

- File Types
- Managing the Database Files
- Expanding the MAPPER Database

You use the MAPPER Administration program to work with MAPPER database files.

9.1 File Types

MAPPER System for Windows NT files are simplex. Simplex files are single database files; they do not have any backup legs. If an error occurs while reading from or writing to a simplex file, you may have to initialize the database from the backup media.

You can define a MAPPER file as one of four types:

- Master
- Result
- Shared
- Reserved

9.1.1 Master

The master file contains the master block, which contains pointers to the location of data in the database. If you do not define a file as a master file, the default is the largest shared file. For each site, there is only one master file.

When designating the master file, location is important. For example, if one of your disk drives is significantly faster, you may want to place the master file there.

9.1.2 Result

A result file holds temporary results created from functions and runs executed by MAPPER software users. A result file cannot be defined as a reserved file. However, it is

treated as a reserved file in that it can contain only results. If you do not designate a result file, or the result file uses the same file as the master file, the system writes results to available space on all shared files. For each site, there is only one result file.

If you create a separate result file and there is not enough space in the result file, MAPPER places results in any available shared file.

For best system performance, use a result file (even though it is optional).

9.1.3 Shared

All files are initially created as shared files; they can contain data and tables for all cabinets and drawers except reserved cabinets and drawers.

9.1.4 Reserved

Reserved files contain data for a defined set of cabinets and drawers. The system writes data in reserved cabinets and drawers only to reserved database files. (Ordinarily, the system writes data to any available database file.)

Defining a reserved file means making a shared file a reserved file. The file can then accept data for only the designated cabinets and drawers. You cannot define the result file to be a reserved file.

Clearing a reserved file means making it a shared file again.

9.2 Managing the Database Files

Managing file types and correctly allocating disk space on your system helps ensure the integrity and space requirements for each of the reports stored in your database. Managing file types involves adding files, removing files, and designating and changing file types and definitions. It also involves determining database size and file size requirements.

To efficiently manage database files, you must know the following information about your system:

- Amount of disk space you have to work with
- How you want data distributed on your system
- File naming conventions for your system

- Minimum space required to initialize the database

9.3 MAPPER Database File Specifications

The size of a MAPPER file is denoted in blocks. Each block contains 4,096 bytes. One megabyte is 256 blocks or 1,048,576 bytes. If you have specified files sizes in bytes, divide the byte figures by 4,096 and round upward to obtain the equivalent number of blocks.

MAPPER supports a maximum of 20 database files. Each simplex file is counted as one file. MAPPER can be set up to use one or more files; however, the total size of all files must be large enough to contain the entire MAPPER database.

MAPPER must be taken down to change the number or type of disk files. Initializing from backup media may also be required. Make sure that you have a current backup before changing the number or type of any file.

9.4 Adding a Database File

By adding a database file, you create space for more data. The minimum size file you can add is 250 blocks. The maximum is 524,287 blocks. Once you create a database file you cannot change its size. To increase the capacity of your database, add more files. The initial database installed with MAPPER needs about 40 megabytes of data files.

9.4.1 To add a database file

1. Stop MAPPER.
2. Back up the database and verify the contents of the backup media.
3. Start the MAPPER Administration program.
4. Connect to the server and site to which you want to add database files.
5. Highlight Database Files in the server tree.
6. Click the right mouse button or press Shift-F10. A context menu appears.
7. Highlight Add Database Files and click the left mouse button. The Add Database File dialog box appears.

8. Enter the filename and size of the database file. The Calculate Drawer Sizes button displays the Drawer Size Calculator. Use this calculator to help determine the size of the new database file.

9. Click OK. The database file is added to the server tree.

10. Reinitialize the database.

9.5 Deleting a Database File

Delete any database files you no longer need. You must stop MAPPER before you can remove a database file (alert users that you will be stopping MAPPER).

To delete a database file

1. Stop MAPPER.

2. Back up the database and verify the contents of the backup media.

3. Start the MAPPER Administration program.

4. Connect to the server and site to which you want to delete database files.

5. In the server tree, highlight the database file that you want to delete.

6. Click the right mouse button or press Shift-F10. A context menu appears.

7. Select Delete File on the context menu and click the left mouse button. A dialog box appears.

8. Click OK to delete the file.

9. Reinitialize the database into the remaining files. This ensures that data previously stored in the file is written to existing database files.

9.6 Designating the File Type

The MAPPER System for Windows NT supports master, result, shared, and reserved file types. For more details, see File Types in this section.

To designate the file type

1. Stop MAPPER.

2. Back up the database and verify the contents of the backup media.

3. Start the MAPPER Administration program.

4. Connect to the server and site to which you want to delete database files.

5. In the server tree, highlight the database file whose usage you want to change.

6. Click the right mouse button or press Shift-F10. A context menu appears.

7. Select Properties on the context menu and click the left mouse button. The Database File Properties dialog box appears.

8. Select the file usage, either Master, Result, Shared, Reserved, or Unused.

If you specify, Master, Result, Shared, or Unused, click OK. If you specify Reserved, click the By Drawer button if you want to reserve a database file for a drawer or set of drawers. When you click the By Drawer button, the Reserved File Drawers dialog box appears.

a. To reserve a drawer or set of drawers, enter the cabinets, drawers, or range you want to reserve in the Drawer, Cabinet, or Range field. Enter either a

- Cabinet, for example, 100
- Cabinet range, for example, 100-120
- Cabinet and drawer, for example, B62
- Cabinet and drawer range, for example, B50-D50 or A0-30

Specifying a cabinet (or range of cabinets) means that all drawers for the specified cabinets will be reserved. Enter even cabinet numbers.

b. Click Add. The entry is added to the reserved list.

c. To add another entry to the reserved list, repeat the preceding steps. To remove an entry from the reserved list, highlight the entry and click the Remove button.

d. When you are finished adding entries, click OK to return to the Database File Properties dialog box.

9. Click OK.

10. Reinitialize the MAPPER database to ensure that MAPPER writes the master block to the master file.

Notes

- Changing the usage of a database file requires that you reinitialize the database. Save your database before making any changes, or include audit recovery in your restart.

- For each site, there is only one master and one result file.

9.7 Expanding the MAPPER Database

To create space for additional applications, expand the size of the MAPPER database by adding new files. For more details on file types and definitions that can be added, see File Types in this section.

Before increasing the size of the MAPPER database, you need to know the following information about your system:

- Amount of available disk space

- File naming conventions for your system

- Types of files you want to add

- Minimum space required to initialize the database

10. Analyzing System Activity

This section explains how to record user activity in log files, list and summarize the activity, and analyze the results. It discusses the following topics:

- Logging Database Activity
- Listing MAPPER System Transactions
- Summarizing MAPPER System Transactions

You use the MAPPER Administration program to control logging and MAPPER functions to list and summarize MAPPER system transactions.

10.1 Logging Database Activity

Logging database activity enables you to

- Record user activity in log files—The Log List (LOGL) and Log Summary (LOGS) functions enable you to read the contents of the log files. For more details, see the following topics in this section:

  - Listing MAPPER System Transactions
  - Summarizing MAPPER System Transactions

- Determine the sources of system activity and their impact on system performance

To start logging

1. Highlight the site in the serve tree where you want to start logging.
2. Click the right mouse button or press Shift-F10. A context menu appears.
3. Select Properties on the context menu and click the left mouse button. The Site Properties dialog box appears.
4. Click on the Logging tab to display the Logging property page.
5. To turn logging on, check the Perform Logging field. If you turn logging on, select a value for the remaining fields:

- Number of Log Files for Cycle—The logging operation can maintain from 1 to 99 log files. The default is 4. As log files are filled, MAPPER deletes the oldest file and opens a new file.

- Switch log files at—Specifies how log files are cycled. Select from the following cycling methods:

  - Time of day—log files cycle at the same time every day.
  - Time interval—log files cycle after a specified number of minutes have passed. The default is 60 minutes. The minimum is 60 minutes. The maximum is 2400 minutes (40 hours).
  - Log file size—log files cycle when they reach their maximum size.

6. Click OK.

7. To use the new logging settings, stop and restart MAPPER.

10.2 Listing MAPPER System Transactions

The Log List (LOGL) function and the Log List (LGL) run statement produce an itemized list of MAPPER system transactions. Based on input you supply, they create a result listing all activity chronologically. The result is placed in drawer B, cabinet 8.

See the following topics for more information:

- Using the LOGL Function

- Log List Run Statement

- Analyzing the Log List Result

See Summarizing MAPPER System Transactions in this section for information on producing a summary of MAPPER system activity by function.

11. Managing Communications Queues

This section describes how to analyze and alter various communications queues. It discusses the following topics:

- Displaying or Changing Network Queues
- Monitoring System Queues

You use MAPPER runs to manage communications queues.

11.1 Displaying or Changing Network Queues

Use the NQ (Network Queue) run to display or change reports or messages from queues waiting to be acknowledged, executed, or printed. The NQ run displays one or more queues or changes the status of one of the following queues:

- Change Station-to-Station Queue (SS/SEND)
- Change Background or Remote Run Queue (BR/RR)
- Display Auxiliary Queue (AUX)
- Display Batch Start Queue (START)
- Display Print Queue Status (PR)

To display the Network Queue menu

1. Sign on as the administrator in department 2.
2. Enter NQ.

To display all queues

1. Sign on as the administrator in department 2.
2. Enter nq,queue-name. The value for queue-name can be one of the following:

- ss (or) send—displays the Station-to-Station or Send Queue screen
- br (or) rr—displays the Background or Remote Run Queue screen

- aux—displays the Auxiliary Queue screen
- start—displays the Batch Start Queue screen
- pr—displays the Print Queue screen

11.1.1 IQ Field Status Codes

The following table lists the status codes that can be displayed in the IQ field of the queue status result:

R Running—Used only for background runs. If MAPPER is interrupted, the MAPQUE run changes each occurrence of R (running) to L (lost) because it could not determine if the interrupted jobs were completed when the system was interrupted.

D Delayed until specified start time—The MAPQUE run regularly compares the specified start time of each D status run with the current time. When the current time is later than the specified start time, the MAPQUE run changes the run status to S (okay to start).

S Okay to start run.• When a batch (Start) run is started, the MAPQUE run places a pound sign (#) in column 1 to indicate the start request has been processed. At this point, MAPPER has no information about the status of the run because the run is executing in the operating system environment.• When a background run is started, the MAPQUE run immediately changes the status to R (running). If the maximum number of runs with R status are already running, the MAPQUE run continually monitors run completion so that another run can start.

• For items running in the SS or SEND queues, the MAPQUE run sends the user's workstation a beep when it sends the report. For items running in the AUX queue, the AUX function processes the report.

N Remote job—A pound sign (#) in column 1 indicates that the request completed.

H Hold for batch transmission—The TTYTRANS run collects items into packets and sends them all in a batch job. This helps to relieve work for the MAPQUE run and the communications lines. If TTYTRANS is not operating, the H status is not displayed on a queue status result.

11.1.2 Example of Displaying All Network Queues

This example shows reports queued to the Send Report (SEND), Station-to-Station Message (SS), and Auxiliary (AUX) queues.

```
 ALL Items Queued
*=================================================================================
.Index                                                SS/Send Report Queue  B0142
*I.Qued.To    .To                    .To          .To   . Send . Send .From
*Q.Rpt#.Unit#.Site                   .User        .Dept. Date . Time .User
```

```
*=.====.=====.====================.============.====.======.======.=========
 s 2    2     T                                        910315 115223 MAPCOORD

.Index                                          Aux Report Queue      C0144
*I.Qued.To    .To                   .To        .To  . Send . Send .From
*Q.Rpt#.Unit#.Site                  .User      .Dept. Date . Time .User
*=.====.=====.====================.============.====.======.======.=========
 s 2    2     T                                        910315 114    MAPCOORD
```

The result lists

- All reports that are queued in the system
- Report destinations
- Report send dates and times
- User-id information

Notice the IQ field in column one contains the status codes. This means that the queued report is prepared to start.

Result

```
*I.Qued.To    .To                   .To        .To  . Send . Send .From
*Q.Rpt#.Unit#.Site                  .User      .Dept. Date . Time .User
*=.====.=====.====================.============.====.======.======.=========
 s 2    2     T                                        910315 115223 MAPCOORD
```

11.2 Monitoring System Queues

The MAPQUE run monitors and maintains MAPPER system queues. It starts when MAPPER starts and runs continuously in the background. It processes system queues, such as networking, printing, and run processing queues, searching for the system codes such as

- D (delay)
- H (held)
- L (lost)
- R (running)
- S (start)

When the MAPQUE run processes system queues, it checks the start time and start date of delay codes, changing them to S (start) if applicable, and then passes the job on for processing.

If MAPPER goes down or is interrupted, the MAPQUE run sends all jobs tagged R (running) back to the owner when MAPPER is restarted. A message is displayed indicating that a run was active when MAPPER went down. Check with the run designer to see if the interrupted run can be restarted without affecting its work.

11.3 Restarting the MAPQUE Run

The MAPQUE run restarts automatically when the MAPPER is restarted. It checks all queues, then processes the Auxiliary (AUX) queue first. It posts in the unit table the numbers of the print stations that have printing jobs. The MAPQUE run processes all other queues after that.

11.4 Reports Queued to MAPQUE Run

If you find a report queued to the MAPQUE run itself, the MAPQUE run probably encountered multiple errors and is sending queued jobs to itself. In this case, restart MAPPER to clear the MAPQUE run.

To clear the MAPQUE Run

Using the System function, check the MAPPER Function field to see if the MAPQUE run is still active. If the MAPQUE run is

- Not displayed—The run has terminated.

1. Remove the invalid queue reports, using the NQ (Network Queue) run.

2. Using the RSMAPQUE (Restart MAPQUE) run, restart the MAPQUE run without taking your MAPPER site down.

- Displayed

1. Press Resume a few times to see if the field changes. If the field changes, the MAPQUE run is still active.

2. Clear any other invalid reports and continue. If the MAPPER Function field does not change, the run was terminated with an error.

3. Clear the queue reports, using the NQ run.

4. Take your site down, bring it back up, and continue processing. If your site immediately encounters another error that terminates the MAPQUE run, check all queue reports for invalid data and report to customer support services.

11.4.1 Cabinet 12

The MAPQUE run uses cabinet 12 to hold the system queues. The Send, AUX, BR/RR, SS and START commands write information into this cabinet.

Do not alter any information in cabinet 12. If you want to delete items from a queue or determine whether messages have been received, use one of the following methods:

- Message Waiting (MSG) function—enables you to receive all outstanding messages queued to you

- NQ run—enables you to list all active queues and delete items from them if desired

11.5 Sending Messages and Reports to Remote Sites

When users send messages and reports over a network to a remote MAPPER site, the MAPQUE run handles the delivery. If the receiving system does not get the message or report, the MAPQUE run sends a message to the MAPCOORD user-id at the local site. The user can attempt to resend the message or report, but if there is some difficulty at the remote site, the MAPPER administrator can contact the administrator at the remote site to determine the problem. Once the problem is corrected, the user can resend the message or report.

12. Communicating with Other MAPPER Sites

This section explains the process of communicating with other MAPPER sites. It discusses the following topics:

- Communicating with Remote MAPPER Sites
- Registering Networks
- Setting Up a Network Connection
- Ensuring Remote Site Security

You use MAPPER runs to establish communications with other MAPPER sites.

12.1 Communicating with Remote MAPPER Sites

A site is a MAPPER system that has its own database, list of users, and general operations. MAPPER sites may exist on the same host system or on a wide variety of other hosts, including departmental servers or multifunction personal computers.

To communicate with sites on other systems, you need to

- Set up the connection between the systems—The MAPPER System for Windows NT enables you to communicate with remote MAPPER sites using a network protocol and MAPPER functions and run statements.
- Register that connection—Registering Networks in this section explains in general how to register your connection.

12.2 Run Statements to Use

The network protocol works with the following MAPPER run statements:

- Network Read (NRD)
- Network Return (NRT)
- Network Run (NRN)
- Network Remote (NRM)

- Network Write (NWR)
- Network Sign-On (NET)
- Network Sign-Off (NOF)

For information on the functions and run statements, see the Command Reference.

12.3 Registering Networks

Register networks so that MAPPER can communicate with other sites. When you register a network, you configure network communications and establish a connection between two sites. Register networks either by

- Using the AGENDA run (see Using the AGENDA Run in this section)
- Modifying the network configuration report (1C2) (see Modifying the Network Configuration Report in this section)

12.3.1 Using the AGENDA Run

To use the AGENDA run

1. Sign on as the administrator in department 2.
2. On the control line, enter agenda,network and press Transmit. The following screen is displayed.

```
                                Network Registration
                 S      NETWORK   S COM  ADDITIONAL          R
 NETWORK NAME    L     PATH NAME  L TYPE NETWORK INFORMATION S
 ================================ ================== =
 idp1            l idp1           l eth
 kjm5            m kjm5           m eth
 MMS595          o MMS595         o eth                      y

 ************************************************************
  Tab to a field, enter or change data, and press Enter here  ->
```

3. Supply values for each field (press Help to get help for each field).
4. Tab to the end of the screen and press Transmit.

12.3.2 Modifying the Network Configuration Report

The network configuration report is report 1C2. You add, modify, or delete data in the network configuration report just as in other MAPPER reports. You must be signed on as the administrator in department 2 to modify the report.

The network configuration report contains the following fields:

Network Name field

Specify a name for the destination site. Maximum number of characters = 18.

SL field

Specify an intermediate site letter for the destination site.

Network Path Name field

Specify the name of a path to the remote host. The value depends on the value in the Com Type field. For more details, see Setting Up a Network Connection in this section. The maximum number of characters is 18.

SL field

Specify the actual site letter for the destination site.

Com Type field

Specify the communications type (protocol). Use eth for Ethernet.

Additional Network Information field

Specify connection information. The value in this field depends on the value in the Com Type field and the kind of MAPPER system at the local site. For more information, see Setting Up a Network Connection in this section.

Reserved Station (RS) field

Specify a y in this field to indicate that when a MAPPER-to-MAPPER network session is established, your station number remains the same as those on the local site when running on a remote site.

If your station number is already in use on the remote site and an attempt is made to sign on to the remote site, access is denied. MAPPER displays the diagnostic message "Data could not be transferred to or from the remote MAPPER system."

12.4 INTER-RUN Utility

Security access between local and remote MAPPER sites is controlled by the INTER-RUN (Intersystem Access) utility, which is a transparent run that allows a user to access networking runs in order to communicate with remote sites.

To gain access to a remote MAPPER site, a user must be registered to use the INTER-RUN utility on the remote MAPPER system.

Since the INTER-RUN utility is transparent, do not attempt to modify it.

13. Auditing and Recovering the Database

This section explains the process of auditing and recovering the MAPPER system database. It discusses the following topics:

- Auditing the Database
- Information in the Audit Trail
- Packing the Audit Trail
- Configuring the Audit Process
- Monitoring the Audit Trail
- What to Do When the Audit Trail Becomes Full
- Recovering the Database
- Using the AUDIT Run

13.1 Auditing the Database

Auditing is a process by which updates to reports, in specified cabinets and drawers, are written to an audit trail on disk. Auditing enables you to recover data more recent than the data on the latest database backup media, because auditing saves information from updates made between backups. Auditing directly to tape is not supported, although you can optionally back up the inactive audit trail to audit backup media (see Backing Up an Audit Trail).

The auditing process uses two audit trails, trail 1 and trail 2. An audit trail is a record of all updates made to reports being audited.

The audit trails are composed of audit files. An audit file is reserved disk space used to record audit information. Each audit trail must contain at least one audit file but no more than 20. Audit files

- Must have a minimum size of 250 blocks.
- Should not reside on the same disk drive or controller as the system database files. This improves system performance and helps ensure that you can recover the database.

Of the two audit trails, one audit trail is active and the other is inactive. An audit trail is active when MAPPER is using one of its audit files to record updates being made to the system database. An audit trail becomes active or inactive whenever a pack occurs (see Packing the Audit Trail).

An audit list defines which cabinets and drawers are to be audited. You can choose to audit the entire database or only certain cabinets and drawers. For more information, see Creating an Audit List in this section.

Note

System configuration settings (for example, site logo and language cabinets) are not considered to be part of the MAPPER database and are not part of the auditing process.

13.2 Automatic Audit Information

For all audit updates, the following information is automatically recorded in the audit trail:

Bytes per transaction

Indicates the total number of bytes required to store the update transaction.

Cabinet

Cabinet being updated.

Drawer

Drawer being updated.

Report

Report being updated.

Line

Line number of the report being updated. This number will have different interpretations based on the type of update performed.

Action

Update action performed on the report.

Time

Time of the update.

Date

Date of the update.

User

Name of user making the update.

Station

Station number of the user making the update.

Run name

Name of the run making the update.

Department

Department number of the user making the update.

Sequence number

Sequence number of the update within the audit trail. Because this number represents disk writes, large updates may require more than one sequence number. If multiple sequence numbers are used, only the last sequence number is displayed when viewing the audit trail (described later in this section).

For example, if an update requires five writes to the audit trail (sequence numbers 100-104), the only number that is displayed when viewing the audit trail is sequence number 104. For more information refer to Viewing the Audit Trail in this section.

13.3 Transaction Audit—Entire Report

The following audit updates write an entire report to the audit trail (including automatic audit information):

First update after a standard backup

Following a standard database backup, the first time a report is updated the entire report is copied to the audit trail before the update is written to the audit trail.

Update

When a report is updated using the Update (UPD, @UPD) command.

Extract

When the lines in a report are removed using the Extract (EXT, @EXT) command.

Delete

When lines in a report are removed using the Delete (DEL, @DEL) command.

Duplicate report

When a report is duplicated using the Duplicate Report (XR, @DUP) command.

Add report

When a report is added to a drawer using the Add Report (AR, @ADR) command.

Replace report

When the contents of a report are replaced using the Replace Report (REP) command or run statement.

Sort replace

When a sort is performed on a report using the Sort and Replace Report (SORTR, SRR) command or run statement.

Apload a report

When a report is loaded using the APPLOAD run or utility.

Insert a line

When a line is inserted into a report using >]xIq or the Insert Line (LNI) run statement.

Move a line

When a line in a report is moved using >]xMqor the Move Line (LNM) run statement.

Put a line

When a line is added using >]p or the Put Line (LNP) run statement.

13.4 Transaction-Only Audit—No Data

The following audit updates write only the transaction (no data) to the audit trail (including automatic audit information):

Defer updates

When an update to a report is deferred using the Defer Updates (DFU), Commit Updates (CMU), or Decommit Updates (DCU) run statements.

Delete a report

When a report is deleted using the Delete Report (DR, DLR) command or run statement.

Delete a line

When a line in a report is deleted using >]x- or the Delete Line (LN) run statement.

Duplicate a line

When a line in a report is duplicated using >]xXq or the Duplicate Line (LNX) run statement.

Delete a line into a buffer

When a line in a report is deleted and stored into a buffer using >]xD or the Delete and Yank Line (LND) run statement.

Packing the Audit Trail

A pack is a process that involves closing the active audit trail and opening (switching to) the inactive audit trail to make it the active audit trail. A pack results in the following:

- The audit trails are switched, and further auditing updates are written to the active audit trail.

- Copies of audited reports that have been updated since the last standard backup are written to the active audit trail. The report copy appears as a PACK_Copy in the audit trail. The PACK_Copy is a complete copy of the report. It ensures that

the active audit trail always contains the most recent copy of an updated, audited report.

- Any standard backup affects the pack process because it resets a flag within each backed up report to show that it is no longer considered updated (because it is part of a standard backup). Therefore, audited reports that are backed up by a standard backup do not have a PACK_Copy written to the audit trail unless the report is updated after the standard backup. An incremental backup does not reset a flag within each report so it does not affect what happens when a pack is initiated.

- When an audit trail becomes inactive, the updates written to that audit trail remain in the audit trail until the next pack is initiated. An inactive audit trail can be backed up to audit media (for information, see Backing Up an Audit Trail in this section).

- You can use an audit backup to step recover updates to a report. For more information, see Recovering a Report in this section.

Caution

When an inactive audit trail becomes active, all updates previously written to that audit trail are overwritten. You can no longer step recover the previous updates to that audit trail.

13.5 How the Pack Process Is Started

A pack is started in the following situations:

- The PACK run is executed

- After a standard backup is completed

- Enable auditing is selected from the MAPPER Administration program

- Pack audit trail is selected from the MAPPER Administration program

- MAPPER determines that a pack is necessary (for example, an audit file has been deleted)

13.6 When Not to Start a Pack

- Do not start a pack of the audit trail if you are

- Backing up the database
- Backing up the inactive audit trail
- Verifying the active or inactive audit trail

- Do not start a pack of the audit trail while another pack is running.

13.7 When a Pack Is Needed

With auditing enabled, you can start a pack by using one of the following methods:

- Executing the PACK run
- Choosing Pack Audit Trail on the site context menu in the MAPPER Administration program

By starting a pack before the active audit trail becomes full, you ensure that the user updates currently being audited can continue without interruption. For more information, see What to Do When the Audit Trail Becomes Full in this section.

If it is necessary to start a pack, consider the following when determining how often you may need to pack:

- Amount of time between standard backups—If your site completes a standard backup every day and the active audit trail is large enough to record all update activity, it may not be necessary to initiate a pack because MAPPER always packs after every standard backup.
- Amount of update activity at your site—If your site uses a standard backup only once a week and your active audit trail is not large enough to record all user updates (before switching audit trails), then you need to determine when to initiate a pack before the active audit trail becomes full.
- Amount of time required to recover an update—Larger audit trails require more time for recovery. Frequent packs may improve recovery time.

13.8 Pack Activity Log

When you initiate a pack, information about the activity of the pack for your site is logged to report 1D8. The most recent entry is always the entry that appears at the top of the report. The information recorded for each pack is as follows:

Date

Is the date the pack was started.

Start Time

Is the time the pack was started.

End Time

Is the time the pack was completed.

User

Is the user-id of the user requesting the pack. If the user-id is PACK, this indicates that the pack run was initiated by MAPPER.

Disk Used

Indicates the amount of disk space used (in thousands of bytes) to complete the pack. For example, if the number 1000 is displayed, the pack used one million bytes of disk storage to record the updated information. This number can be used as an indicator for the amount of disk space needed to complete a pack. Monitoring this number helps to ensure that enough disk space is available for the audit trail to complete a pack. This number continues to increase until the next standard backup because it is an accumulation of updates since the last standard backup.

AT

Is the number of the audit trail. This number (either 1 or 2) identifies which audit trail became active as a result of the pack. This number can also be identified by executing the CSS run or by choosing Status on the site context menu in the MAPPER Administration program.

Configuring the Audit Process

See the following topics for information on configuring the auditing process:

- Determining Audit Trail Size
- Adding Audit Files
- Deleting Audit Files
- Displaying a List of Existing Files

- Creating an Audit List
- Starting the Auditing Process

Note

The pack process requires an additional user. Therefore, when enabling auditing make sure to include one additional user to your site.

13.9 Determining Audit Trail Size

When determining the size of your audit trails, consider the following items:

- Number of drawers being audited. You can choose to audit the entire MAPPER database or only certain drawers and cabinets. To specify what cabinets and drawers to audit, see Creating an Audit List in this section.
- Amount of update activity—Audit trails should be large enough to accommodate the amount of update activity between standard backups.
- Number of updates and the type of updates being performed on the report (see Auditing the Database in this section)—A complete copy for each updated report is copied at least once to an audit trail. Therefore, the size of a complete report plus additional space for new updates would suffice for a minimum requirement.
- Time interval between standard database backups—Because the pack process writes a complete copy of each report updated since the last standard database backup, a long interval between standard backups may increase the number of reports that will be written to the active audit trail.

When MAPPER loads applications, it copies each report to the audit trail. Consider this when calculating the disk space requirements for your audit trails.

13.10 Adding Audit Files

Define at least one audit file for each audit trail before enabling auditing.

To add an audit file

1. Start the MAPPER Administration program.
2. Connect to the server and site to which you want to add audit files.

3. In the server tree, highlight the audit trail to which you want to add the audit file.

4. Click the right mouse button or press the Shift-F10 key. A context menu appears.

5. Select Add Audit File from the context menu and click the left mouse button. The Add Audit File dialog box appears.

In the Filename field, type the name of the audit file to be used for auditing. In the Size field, enter the size of the audit file. The Size field determines how much information can be stored in the file before advancing to the next audit file or trail.

6. Click OK.

Notes

- You can define up to 20 audit files in each audit trail.
- The minimum size file you can add is 250 blocks. The maximum size is 524,287 blocks.

13.11 Creating an Audit List

An audit list defines which database cabinets and drawers will be audited. The default is All, which specifies that the entire database will be audited. If you define an audit list, MAPPER must be stopped and restarted for the list to take effect.

To create an audit list

1. In the server tree, highlight the site for which you want to create an audit list.

2. Click the right mouse button or press Shift-F10. A context menu appears.

3. Select Properties from the context menu and click the left mouse button. The Site Properties dialog box appears.

4. Select the Audit property page.

5. In the Drawers to Audit group box, select one of the following:

<u>All</u>

The entire database is audited. This includes all reports in every cabinet and drawer.

Include

The only reports audited are those in the cabinets and drawers you specify on the audit list. You specify the cabinets and drawers to include by using the Drawers button.

Exclude

The entire database is audited with the exception of those reports in the cabinets and drawers on the audit list. You specify the cabinets and drawers to exclude by using the Drawers button.

If you select All, click OK. If you select Include or Exclude, click the Drawers button. A Drawers to Audit dialog box appears.

a. To specify the drawers or cabinets to audit, enter the cabinets, drawers, or range you want to audit in the Drawers, Cabinets, or Range field. Enter either a

- Cabinet, for example, 100
- Cabinet range, for example, 100-120
- Cabinet and drawer, for example, B62
- Cabinet and drawer range, for example, B50-D50 or A0-30

Specifying a cabinet (or range of cabinets) means that all drawers for the specified cabinets will be audited. Enter even cabinet numbers.

b. Click Add. The entry is added to the audit list.

c. To add another entry to the audit list, repeat the preceding steps. To remove an entry from the audit list, highlight the entry and click the Remove button.

d. When you are finished adding entries, click OK to return to the Audit property page.

6. Click OK. For the audit list to take effect, stop and restart MAPPER.

13.12 What to Do When the Audit Trail Becomes Full

If the active audit trail becomes full, all user activity for reports being audited is temporarily suspended, and the following message is written to the Event Log:

Audit trail <trail> full! Start a PACK, add a file, or disable auditing!

If the active audit trail becomes full while a pack is in process, the following message is written to the Event Log:

Audit trail <trail> full! Either add a file or disable auditing!

When the audit trail fills up, you have the following choices:

- Add Another Audit File
- Start a Pack
- Disable Auditing

13.13 Recovering the Database

Recovering the database restores the MAPPER database from the database backup media and the backups of the audit trails. To recover the database, auditing must be configured.

There are two types of database recovery:

- Recovery from the Current Audit Trail
- Recovery from a Backup Audit Trail

Notes

- Unisys recommends that you back up your inactive audit trail so you can maintain an audit history. For more information, see Backing Up an Audit Trail later in this section.
- The MAPPER Administration program is used to recover the database (see Initializing the Database with Recovery). To recover individual reports, use the AUDIT run (see Using the AUDIT Run).

13.14 Recovery from the Current Audit Trail

13.14.1 Recovery from the current (most recent) audit trail

- Initializes the database from the database backup media. This restores the database to the state that existed at the time of the backup.

- Applies updates from the current audit trail to the initialized database.

With this type of recovery, you have the following options:

- Recover all updates (full recovery)
- Recover updates to a specific sequence number (partial recovery)
- Recover updates to a specific date and time (partial recovery)

If you recover all updates, the database contains the most current information from the database backup and the current audit trail. This means the database and the current audit trail are synchronized.

If you recover updates to a specific sequence number or to a specific date and time, the database still contains the most current information from the database backup. However, since the database does not contain all of the updates from the current audit trails, the database and the current audit trails are not synchronized. In this situation, MAPPER disables auditing. See Partial Recovery of the Database for more information.

Note

A full recovery is a database recovery that recovers all updates from the current (most recent) audit trail. A partial recovery is any database recovery that does meet the definition of a full recovery.

13.14.2 Recovery from a Backup Audit Trail

You can choose to recover the database from a backup audit trail instead of the current audit trail. You may want to do this in the following situations:

- Your current (most recent) audit trail is corrupt or unusable
- You want to recover reports as they existed on a backup audit trail

Recovery from a backup audit trail is similar to recovery from the current audit trail, except the source of the recovered updates is different. With this type of recovery, you have the following options:

- Recover all updates (partial recovery)
- Recover updates to a specific sequence number (partial recovery)
- Recover updates to a specific date and time (partial recovery)

Because recovery from a backup audit trail does not recover the reports from the current audit trail, the database and the current audit trail are not synchronized. In this situation, MAPPER disables auditing. For more information, see Partial Recovery of the Database later in this section.

13.14.3 Partial Recovery of the Database

You may want to perform a partial recovery of the database to recover specific drawers and cabinets as they existed at some earlier time. A partial recovery is a database recover that recovers any of the following updates:

- A portion of the updates from the current audit trail
- A portion of the updates from a backup audit trail
- All updates from a backup audit trail

For more information on performing a database recovery, see Initializing the Database with Recovery later in this section. After a partial recovery is completed, MAPPER disables auditing. Before you perform a partial recovery, consider the following two situations to determine the appropriate steps you should take:

- Situation One—Preserve the Current Database
- Situation Two—Do Not Preserve the Current Database

13.15 Initializing the Database with Recovery

To initialize the database with recovery

1. Start the MAPPER Administration program if it is not already running and connect to the site where you want to initialize and recover the database.
2. Select the site in the server tree. Click the right mouse button or press Shift-F10. A context menu appears.
3. Select Properties on the context menu. The Site Properties dialog box appears.
4. Select the Initialize property page.
5. On the Initialize property page

- Check the Initialize database on next start checkbox and specify the source tape device or backup file.

- Check the With recovery checkbox. By default, the MAPPER Administration program selects the current audit trail for the recovery source and all updates in the audit trail (Recover through group box).

- If you want to recover from a backup audit trail—check the Audit backup checkbox and enter the device or file name of the audit backup.

- If you want to recover through a specified sequence number or date and time—check the appropriate box and enter the sequence number or date and time. See Sequence Number Field and Date and Time Field for more information.

6. Click OK.

7. If you specified a recovery that does not recover all the updates from the current audit trail, MAPPER disables auditing after the recovery is complete. See Partial Recovery of the Database for more information.

8. The next time MAPPER is started, the database is initialized and the audit updates are recovered.

Notes

- A typical name for a tape device is \\.\tape0.

- Because of byte swapping on different machine types, the backup audit trail must have been produced on the same computer, or one with a compatible file system.

13.16 Using the AUDIT Run

Use the AUDIT run to complete the following tasks:

- Viewing the Audit Trail

- Recovering a Report

- Recovering a Report Using Step Mode

- Recovering a Report Using Automatic Mode

- Backing Up an Audit Trail

- Verifying an Audit Trail

13.17 Recovering a Report

Report recovery is requested using the AUDIT run and has two modes of operation:

- Step mode
- Automatic mode

You can recover updates from either the active, inactive, or audit backup media (file or tape). For more information on step and automatic recovery, see Recovering a Report Using Step Mode and Recovering a Report Using Automatic Mode in this section.

Caution

If a drawer has changed size since the last standard backup or pack, you can perform recoveries only on updates that occurred after the drawer was regenerated.

14. When MAPPER Suspends Operation

If you encounter a situation where the MAPPER system appears to suspend operations or user activity is interrupted, check for the following conditions:

- Full Audit Trail
- Uninitialized Tape
- Pass-through to the Server Using @NET Statement
- Unstable Network
- Accessing a Report with Update Locks
- MAPPER Not Functioning Properly after It Suspends Operations
- MAPPER and MRIM Exceptions