Server Enhancement Module Guide

N O V E L L ®

NLM

USING ENVOY

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SoftSolutions ®

DOCUMENT MANAGEMENT SOFTWARE **V 4.1**

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Introduction

Welcome to the SoftSolutions® Server Enhancement Module NLM from Novell, Inc.

- The *Introduction* to this manual describes a Server Enhancement Module (SEM) and its benefits.
- *Installation* details how to install and test a SEM for the first time.
- *NetWare Transaction Tracking System (TTS)* describes the *NetWare* TTS, which should be reviewed before installing a SEM if transactional tracking of SoftSolutions data is desired.
- The *Operations* section describes SEM operations in detail.
- *Updates* details how to update the SEM.
- SEM commands, diskette files, log files, and statistics are noted in the appendices.
- An index is provided.

What is a Server Enhancement Module?

Server Enhancement Module (SEM) is a SoftSolutions term referring to a SoftSolutions server process written to run on a specific network server. *NetWare Loadable Module* (NLM) is a *Novell* term referring to any kind of server process written to run on a *NetWare* server. A SEM is the "server" portion of a client/server application, and is installed on a network server to allow SoftSolutions to run as a client/server application.

SEMs are available for a variety of operating systems and networking protocols. This reference is based on the capabilities of the SEM NLM for *Novell NetWare 386*, versions 3.x or 4.x only. There are, of course, other SoftSolutions SEM's for other networks. SEMs on other platforms vary somewhat in their capabilities, so they are discussed separately. This SEM can be used with SoftSolutions for DOS, SoftSolutions for Windows, or with both versions concurrently.

Without a SEM, each workstation that is running SoftSolutions must open and access that dataset directly, which means a lot of network traffic, since a single request often requires multiple accesses to the dataset. With a SEM, each workstation sends requests to the SEM, instead of sending requests directly to the dataset. This helps to minimize network traffic.

With a SEM, SoftSolutions is following the client/server model because it is split into two programs: the *client* (the program running on your workstation), and the *server* (the SEM running on your network server). These two programs share the workload.

- The client program displays all of the menus, screens, and data, and handles user input. It passes search requests and data changes to the SEM, and performs Boolean logic on the search results when a complex search is performed.

- The SEM makes all of the actual changes to the database files. It also handles all of the search requests from client programs.

Benefits of a Server Enhancement Module

The system benefits from a SEM in three ways: performance, security and connections.

Performance

The primary benefit of the SEM (the client/server method) is that less information is passed over the network. Minimizing network traffic is very important on a wide area network (WAN) because long distance communication lines tend to pass data much more slowly than short distance lines, like those used on a local area network (LAN).

- On a WAN, searches will normally be much faster.
- On a LAN, searches will be faster if the network is heavily used, but may not be noticeably faster on smaller networks where traffic is low.

Security

A secondary benefit of the SEM is that the user need not have direct access to the directory or disk containing the SoftSolutions data and index files. All reads and writes to these files are performed by the SEM (which always has access to the data because it is running on the server itself). This provides a measure of security—users can access data files only through normal SoftSolutions procedures, and cannot delete the data files accidentally or maliciously.

Connections

Another benefit of the SEM is that it allows users who are not attached to a file server to search that file server's datasets. This is important in large installations with hundreds of users on multiple file servers.

Most *NetWare* servers have a limit of 250 concurrent users. If SoftSolutions were to require users to be attached to all servers they were searching, *Novell's* limit would prevent more than 250 users from doing so simultaneously. But, because attachments are not required for searching, users need only to attach to their home server, and they are still able to search all SEM-controlled datasets on the WAN.

For example, if a company has a WAN with four servers and 500 users, they could distribute 125 users on each server. Then, it would be possible for *all* of the users on the system to perform global searches on all datasets at the same time.

Installation

Before installing a SEM for the *first* time:

- Install SoftSolutions 4.1 for Windows or DOS on the server using the SoftSolutions INSTALL program. *(See the SoftSolutions Installation Guide for information on installing the SoftSolutions programs and data.)*

- Enable *NetWare* TTS *(optional)*.

- Ensure that 400KB of file server memory is available for the SEM.

- Ensure that you have the correct version of the SEM. Versions 3.0, 3.1 and 4.0 are *in*compatible with each other. Therefore, client and SEM software from different versions cannot be used together.

- CLIB.NLM dated March 1993 or later (*e.g.,* CLIB 3.11d, CLIB 3.12f) is required.

Listed below is the recommended procedure to install a SEM for the *first* time. *(See "Updates" on page 27 for how to update a SEM.)*

1. Copy all the files from the SEM diskette to server that will contain the SoftSolutions dataset.

    - These files may be placed in the SoftSolutions programs directory, the *NetWare* \SYSTEM directory, or any other directory the system administrator chooses.

    - If the files on the SEM diskette are to be copied to the SoftSolutions programs directory, please make backups of the SOFTSOL strings files (*i.e.,* SOFTSOL.CTX, SOFTSOL.TXT and SOFTSOL.TLN). These files contain customized field names and help screens—different default copies of them are contained on the SEM diskette. A "copy" command would cause the customized versions in the programs directory to be overwritten with the default copies on the SEM diskette.

        Appendix B, "Diskette Contents," describes the contents of the diskette in detail.

2. Create a configuration file.

- This is an ASCII file that contains the socket number and path to the dataset.

- An example configuration file named EXAMPLE.CFG is included on the SEM diskette. Use this configuration file as a "template" to create the actual configuration file (named SSSERVER.CFG).

- Create the configuration file by first opening EXAMPLE.CFG with a DOS text editor, a word processor *set to save in ASCII format*, or a Windows text editor. Next, enter the desired values for the socket number and dataset path in the appropriate areas. Finally, save the file to the SoftSolutions programs directory with the *new* name SSSERVER.CFG.

  *Comments do **not** need to be deleted.*

- The socket number and path are described in the next step (3).

*The remaining steps must be repeated for **each** dataset on the file server, since each dataset requires its **own** SEM.*

3. Load the SEM by typing the following at the server console:

```
LOAD [Full Path]SSSERVER /c=[Full Path]SSSERVER.CFG [Path to
    Data] [Socket Number]
```

*Use a **single** space between each of the entries above.*

- *[Full Path]* represents the server volume and subdirectory of the directory containing SSSERVER.NLM and SSSERVER.CFG.

- *[Path to Data]*. This parameter should be in the format *[Volume]:/[Path]*. For example, *[Path to Data]* may be SYS:/SOFTSOL/DATA. Specifying this value will override the datapath entry set in the SSSERVER.CFG configuration file.

- Specifying a *[Socket Number]* is optional *unless* more than one SEM is installed on the same file server. In such instances, specifying a socket number is *not* required for *one* of the SEM's, but is required for all other SEM's. Specifying this value will override the socket number entry set in the SSSERVER.CFG configuration file.

- If the SEM does not load properly, the file server may not have enough memory, the socket number may be in use, or the path to the dataset may be incorrect.

- After successfully loading a SEM, the SOFTSOLUTIONS 4.1 SEM screen is displayed on the system console. This screen allows the system administrator to enter a few basic commands to control the SEM and to see statistics describing its performance and workload. An example of this screen follows:

```
                     SoftSolutions 4.1 SEM  (Feb 14 1995)

Dataset: 32G     Socket: 34464
Full Path to Data: SSQA/DATA:/SS32/G

Server Status : Ready


Current Connections      : 1            Maximum Blocks Allowed : 5
Packets Received         : 11144        Blocks Allocated       : 3
Packets Sent             : 12503        Blocks In Use          : 0
Requests Handled         : 10614        Peak Blocks In Use     : 2
Peak Concurrent Requests : 1
Current Requests         : 0




Last message written to server log file:
Tuesday February 14, 1995  12:00:17 PM
SoftSolutions SEM is up



SoftSolutions 4.1 SEM:
```

- The Dataset ID displayed at the top of the screen is the value contained in the **Dataset ID** field of the CONTROL FILE screen.

- The SOFTSOLUTIONS 4.1 SEM screen displays statistics regarding usage of a specific dataset and the date the SEM was created. This screen also allows the system administrator to pause, unpause, and unload that *individual* SEM and its dataset. If other SEM's are running, they will not be affected by these commands. All SEM's, however, will be unloaded by entering "UNLOAD SSSERVER" at the file server prompt.

- The date that is displayed on this screen is the release date for the SEM. This date can be helpful when calling SoftSolutions for support concerning the SEM.

4. Return to the system console.

> **NOTE**
> At the server console, use 〔Ctrl〕〔Esc〕 for accessing a menu of the available screens. 〔Alt〕〔Esc〕 is a toggle for moving among all of the available screens.

5. Now, this dataset can be accessed from a client PC using the SOFTSOL command with the /DATA= switch, followed by the location of the SoftSolutions data, in the format *[File Server Name]*:*[Socket Number]*:*[Dataset ID]*:NWB.

- The NWB is mandatory. Unless NWB is specified, File Services (FIL) is assumed.

- Say, for example, that the name of the file server is "FS1," the socket number is 32765, and the *[Dataset ID]* is "SS"; the dataset could be accessed as follows:

        SOFTSOL /DATA=FS1:32765:SS:NWB

- Specifying a *[Socket Number]* is optional if the default socket number is used, *unless* more than one SEM is running on the same file server. In such instances, specifying a socket number is *not* required for the *first* of the SEM's, but *is* required for *all other* SEM's. (A SEM is automatically assigned a socket number at the time it is loaded.)

- If a socket number is not specified, the command may look like this:

        SOFTSOL /DATA=FS1:SS:NWB

  *If more than one dataset is on the same file server, the system administrator may have to change one or more of the **Dataset ID**s to ensure that the **Dataset ID** for each dataset is **unique**. The SEM must be unloaded and reloaded before it will register the change.*

6. To change the **Dataset ID**, do the following at a client workstation:

    a. In SoftSolutions (for DOS) select the "Setup" option, followed by the CONTROL and CONTROL FILE options, *or* (for Windows) choose **C**ontrol from the Se**t**up menu, then choose the **C**ontrol File option.

    b. In the CONTROL FILE screen, change the **Dataset ID** field from its current value to a unique value.

    c. Exit SoftSolutions.

    d. At the file server's system console, unload the SEM for this dataset.

        i. Use 〔Ctrl〕〔Esc〕 to access the SOFTSOLUTIONS 4.1 SEM screen.

        ii. At the prompt, type "UNLOAD."

    e. Reload the SEM. *(See Step 3 above for instructions on loading the SEM.)*
        • This dataset can now be accessed using the new Dataset ID. For example, if the system administrator changed the Dataset ID from "SS" to "LA," users can access this dataset with the command:

                SOFTSOL /DATA=FS1:LA:NWB

    *A SEM must be **unloaded and reloaded** before a change to the Dataset ID is recognized. Even though the Dataset ID is changed in the CONTROL FILE screen, if the SEM is **not** unloaded and reloaded, the data may be accessed using the Dataset ID that was in the Control File at the time the SEM was loaded.*

7. To unload the SEM for *all* datasets on the server, type "UNLOAD SSSERVER" at the system console prompt.

> **NOTE**
> You must unload the SEM before making changes to Custom Prompt Labels or Easy Launch labels, or before changing or recompiling SSSERVER.CTX or SOFTSOL.CTX. *(See "Strings Compiler Utility" in the SoftSolutions Administrator's Guide.)*

NetWare® TTS
(Transaction Tracking System)

This SEM allows the system administrator to use *NetWare's* Transaction Tracking System (TTS), which will help preserve the integrity of the SoftSolutions data in the event of a file server crash. Please read this information and the *Novell* documentation about the TTS before trying to use the TTS with SoftSolutions.

> **NOTE**
> The SEM will use TTS on *NetWare 3.11* (and above) and *4.x* servers, but *not* on *NetWare 3.10* servers.

Flagging SoftSolutions Files for TTS

The system administrator must flag as "Transactional" (with the *Novell* FLAG utility) all files which are to be tracked by the TTS. For SoftSolutions, *all* data files located in the data directory should be flagged as Transactional. These files match the templates: *.DAT, *.X01, *.X02, *.X03, and *.KDT. These files can be flagged only while they are closed. This means that a SoftSolutions SEM cannot be running, and that no users may be in SoftSolutions. Once the files have been flagged as Transactional, the SEM may be loaded and users may access SoftSolutions.

Cautions About Using TTS

Be aware of the following when using TTS: performance, protection, and utilities.

Performance

Using *Novell's* TTS system means that all file server functions will be somewhat slower, because the file server works harder to track the information associated with flagged (Transactional) files. It is advisable to try TTS in a pilot environment to gauge whether system performance will be acceptable in a production environment.

TTS can noticeably impact file server performance *if* "block allocation" is *not* used *(see "Blocks & Max Blocks" in the Operations section)*. Block allocation permits the SEM to reserve up front the memory it needs when it is loaded, saving the time later lost when NetWare is requested to provide memory blocks on an as needed basis.

If block allocation is *not* used, use of a dedicated, high-powered file server is advisable. Such a file server should have ample memory (8MB, 16MB, 32MB or more), a high-performance disk, and a very fast CPU. It should contain only the SoftSolutions datasets (the programs and documents should be stored on a different file server). This file server should be located in a physically secured area, should run on conditioned power, and should be sustained by a dependable uninterruptible power supply (UPS).

Protection

Protection provided by *NetWare's* TTS is effective only if *all* users are accessing the SoftSolutions dataset through the SEM. If any users are using regular file services to access this data, the protection is limited, and a file server or workstation crash may corrupt the data.

Utilities

In SoftSolutions 2.0, the "New" mode of the Load Custom Fields utility did not work with TTS because *NetWare* inhibited the deletion of the CUSTOM.* files. In SoftSolutions 3.x through 4.1, however, the "New" mode of the Load Custom Fields utility works with TTS because SoftSolutions does not attempt to delete and recreate the CUSTOM.* files.

SoftSolutions' reconstruction and compaction will work only as described below, since both utilities delete and recreate files.

1. All users must exit SoftSolutions *(already a requirement of these utilities)*.

2. The SoftSolutions SEM must be *un*loaded.

3. The Transactional flag must be removed from the data files (using the *Novell* FLAG utility).

    • The SoftSolutions Reconstruction or Compaction utility may then be run.

4. The data files may be re-flagged as Transactional.

5. The SEM may be re-loaded.

6. Users may run Softsolutions.

Operations

This section lists SEM and dataset operations alphabetically, describing them in detail.

- Operations on a SEM include loading, unloading, pausing, and unpausing the SEM.

- Operations on SEM-controlled datasets include backing up, compacting, and reconstructing the dataset.

> **NOTE**
> These three options are described in detail in the SoftSolutions *Administrator's Guide* manual (*Ongoing Procedures* section). However, when using a SEM, the instructions in this SEM *Guide* must be used ***in addition to*** the instructions in the SoftSolutions *Administrator's Guide*.

Backup

> **NOTE**
> A SEM must be unloaded or paused *before* the SoftSolutions data files can be backed up.

The SoftSolutions SEM opens all of the SoftSolutions data files and expects to retain exclusive access. Most backup processes expect the same thing. So, if a backup process attempts to back up SoftSolutions data files while the SEM is loaded, one of two things will happen:

1) At best, the backup process will fail to backup the files because it cannot gain access to them.

2) At worst, the backup process may gain access to the files and prevent the SEM from using them, which causes data corruption.

To avoid problems related to backup, the system administrator can do *one* of the following:

1. A SEM can be paused while users and Indexers are active in the system. Pausing causes the SEM to close all of the data files indefinitely and to put a hold on all requests. Users who request something of the database will receive a message indicating that the SEM has been paused. When the SEM is unpaused, users can continue as if nothing had happened.

   - Using a timed batch file and backup utility, the SEM can be paused automatically (unattended), and backed up.

2. Unloading a SEM must be done manually, and should not be done until all users have exited SoftSolutions. Also, even if the SEM shows no current connections, users can be in other applications accessed from SoftSolutions when the SEM is unloaded. If they exit the document while the SEM is unloaded, the PC will say it cannot connect to the server. If this occurs, the user should wait until the SEM is loaded before continuing; otherwise, the In Use flag stays set, an "EndAccess" entry will not be made in the Activity Log, the document will not be echoed (if echoing is "on"), and billing changes will not be recorded (if billing is "on").

Compaction

Before compacting a SEM-controlled dataset, the SEM must be unloaded; otherwise, the PC doing the compaction will not be able to access the data files exclusively because the SEM will have them open. To start the compaction, do the following:

1. Unload the SEM, and if set, remove the transactional flag (TTS) from the data files.

2. Start the compaction as follows:

   ```
   COMPACTR /DATA=[Path to Data]:[Dataset ID]
   ```

   For example:

   ```
   COMPACTR /DATA=F:\SOFTSOL\DATA:SS
   ```

   - This command uses a data switch format with a drive letter and path, instead of the usual format with server name and Dataset ID, because the SEM is not loaded.

Loading

The steps to load the SEM for a dataset that was *originally created* and used *without* a SEM are as follows:

> CAUTION
>
> **If the existing dataset was created using SoftSolutions 2.0, 3.0 or 3.1, you must run the conversion process before loading a SoftSolutions 4.1 SEM, because the 4.1 SEM will not work with the SoftSolutions 2.0, 3.0 or 3.1 datasets without first running the conversion process *(see the SoftSolutions Installation Guide)*.**

1. Run the INSTALL program, but install only the *software* (do not install the data files).

   • This step is unnecessary if you already have a complete set of SoftSolutions 4.1 programs installed.

2. Copy all the files from the SEM diskette to the SoftSolutions programs directory. The dataset and the SEM must be on the same server.

   Appendix B, "Diskette Contents," describes the contents of the diskette in detail.

3. Create a configuration file.

   • This is an ASCII file that contains the socket number and path to the dataset.

   • An example configuration file named EXAMPLE.CFG is included on the SEM diskette. Use this configuration file as a "template" to create the actual configuration file (named SSSERVER.CFG).

   • Create the configuration file by first opening EXAMPLE.CFG with a DOS text editor, a word processor *set to save in ASCII format*, or a Windows text editor. Next, enter the desired values for socket number and dataset path in the appropriate areas. Finally, save the file to the SoftSolutions programs directory with the *new* name SSSERVER.CFG.

   Comments do not need to be deleted.

   • The socket number and path are described in the next step (4).

*The remaining steps must be repeated for **each** dataset on the file server, since each dataset **requires** its own SEM.*

4. Load the SEM by typing the full network path to SSSERVER.NLM and to the configuration file. Enter the following at the system console:

    ```
    LOAD [Full Path]SSSERVER /c=[Full Path]SSSERVER.CFG [Path to
        Data] [Socket Number]
    ```

    *Use a **single** space between each of the entries above.*

    - *[FULL PATH]* represents the server volume and subdirectory of the directory containing SSSERVER.NLM and SSSERVER.CFG.

    - *[Path to Data]* This optional parameter should be in the format *[Volume]:/[Path]*. For example, *[Path to Data]* may be SYS:/SOFTSOL/DATA. Specifying this value will override the datapath entry set in the SSSERVER.CFG configuration file.

    - Specifying a *[Socket Number]* is optional *unless* more than one SEM is installed on the same file server. In such instances, specifying a socket number is *not* required for *one* of the SEM's, but is required for all other SEM's. Specifying this value will override the socket number entry set in the SSSERVER.CFG configuration file.

        > **NOTE**
        > SoftSolutions has registered 20 socket numbers 33912, 34464, 34465, 34465, 34467, 34568, 34569, 34570, 34571, 34572, 37017, 37018, 37019, 37020, 37021, 37022, 37023, 37024, 37025 and 37026 with *Novell*, so no other NLMs are supposed to use them. If more than one SEM is loaded on a single file server, a socket number must be specified when subsequent SEM's are loaded.
        >
        > If the socket number chosen is being used by another NLM, "Socket already in use" is displayed when loading the SEM. Load the NLM using a *different* registered socket number.

    - If the SEM does not load properly, the file server may not have enough memory, the socket number may be in use, or the path to the dataset may be incorrect.

    - After successfully loading a SEM, the SOFTSOLUTIONS 4.1 SEM screen is displayed on the system console. This screen allows the system administrator to enter a few basic commands to control the SEM and to see statistics describing its performance and workload.

5. If this dataset appears in the DATASETS screen for other SoftSolutions 4.1 datasets, those references must be changed to indicate that this dataset is now a *NetWare* dataset (NWB), rather than a File Services (FIL) dataset.

    •   The file server and socket number (if used) must be specified in place of the path that is used to point to a FIL dataset.

At this point, the SEM is loaded and functional. Users can access the dataset using the SOFTSOL command with a /DATA= switch, indicating the server, Dataset ID, and, optionally, the socket number.

SoftSolutions cannot perform dynamic file server attachments to provide access to documents on servers to which a user is not currently attached *unless* the **Location** field in the DOCUMENT PROFILE screen uses file server and volume names to point to the documents. If the **Location** field for existing Profiles has drive letters (*e.g.,* H:\DOC\%A\...), it can be changed to the new format (*e.g.,* FS1/VOL1:\DOC\%A\...) with the SoftSolutions "Fix Location & File Fields" utility, SSFixLF, found on the SoftSolutions diskettes. The Location Segments in SoftSolutions setup screens should also be changed so that new documents conform to the new format.

To better understand dynamic file server attachments and how they can benefit the system, see "Mapping Utilities" under "Organization of SoftSolutions Files" in the *Setup Issues* section of the SoftSolutions *Administrator's Guide*.

Blocks & Max Blocks

The SoftSolutions SEM NLM has been enhanced with memory block allocation capability. *Without* allocating blocks ahead of time, the SEM requests memory blocks (64KB each) from *NetWare* when the SEM needs memory for running its processes. This entails requesting a block and waiting for *NetWare* to provide the block. In a busy network, this process can cause some performance degradation.

The *new block allocation commands* permit administrators to allocate memory when the SEM is loaded, which can eliminate possible performance degradation from *NetWare* allocating them dynamically. Administrators can also use these commands while the SEM is running to fine-tune its use of server memory.

The SoftSolutions 4.1 SEM NLM uses 64KB blocks of memory from the file server's cache. If the BLOCKS value is not high enough while the SEM is running, SoftSolutions requests *NetWare* to allocate the needed blocks (this is the normal method when block allocation is *not* in effect).

It is strongly recommended that each dataset has its own SEM process running. This is done by specifying a different configuration file for *each* dataset *(see the "Configuration File" appendix)*. This allows memory block allocation to be tailored to individual dataset requirements, which can reduce performance degradation on the network.

Block Commands

The memory allocation commands are given at the "SoftSolutions 4.1 SEM:" prompt on the SEM screen. When a command is given, it applies to memory allocation only for the dataset indicated on the screen.

The following commands create the block allocation parameters:

MAX BLOCKS This command sets the maximum number of blocks that can be allocated for the SEM's use with a given dataset.

- This value *cannot* be exceeded by the BLOCKS command, but it *can* be exceeded by a SoftSolutions request for *NetWare* to allocate more memory.

- The purpose of having an upper limit is to have control of maintaining a balance between SEM degradation and file server cache usage. For example, if a file server has a *minimal* RAM configuration, allocating too many blocks for the SEM can cause noticeable degradation in the file server's performance. It might be less noticeable to users to have performance degradation on the SEM than on the file server. If a file server's memory is not large enough, a balance may need to be struck between the SEM and file server.

- *After* the SEM has been loaded, using this command changes the number of memory blocks that can be used when SoftSolutions requests NetWare to allocate more. ***But***, this will not take effect immediately if the MAX BLOCKS value is set to be *less than* the current number of blocks in use. It may take several seconds for a memory block to be released back to the file server so that this command can be completed.

| **BLOCKS** | This command sets the number of blocks to be allocated for the SEM's use with a given dataset. |

- When placed in the configuration file, it sets the initial number of blocks to be allocated from the file server upon loading the SEM.

- After the SEM has been loaded, this command changes the number of blocks *currently* allocated.

- The BLOCKS command cannot be used to surpass the MAX BLOCKS value.

These commands can accept numerical values and the + and - signs. For example:

```
blocks=[+/-]n
```

where "blocks=" is the BLOCKS command, *n* is the number of blocks to be allocated, and the +/- indicates incrementing/decrementing a current block allocation amount.

- **Change** the number of blocks by typing any number (the BLOCKS value must be less than or equal to the MAX BLOCKS value).

- **Decrement** the number of blocks by typing a minus sign and a number (*e.g.,* -1). But, the requested number of blocks will not be returned to the file server until they are free *if* there are more blocks in use than the new allocation number created.

- **Increment** the number of blocks by typing a plus sign and a number (*e.g.,* +3). But, the MAX BLOCKS value cannot be exceeded.

When one of these commands is entered without any value, the SEM prompts for the value.

Determining Block Values

Since an administrator will not know how much memory a *new* SEM will require, Novell, Inc. recommends experimenting for a week or so with *each* dataset. Therefore, when initially setting up block values (such as in the configuration file), set BLOCKS = 0 and MAX BLOCKS = 20. Then, as the SEM is used, *NetWare* will increment the BLOCKS value by one each time the SEM needs an additional block of memory. But, allocation will *not* exceed the MAX BLOCKS value.

As the SEM screen for a dataset is monitored during the week, the administrator can determine if the MAX BLOCKS value needs incremented or decremented (did the "Blocks Allocated" value come close to the MAX BLOCKS value?), and can determine what value to set for the BLOCKS command in the configuration file (the value shown in the **Blocks Allocated** field at the end of the week).

Since memory block allocation takes 64KB of memory per block from the file server's cache, be frugal in allocating blocks for the dataset. Also, in setting the MAX BLOCKS value, note where performance degradation has been affecting users the most—on the SEM or on the file server. A balance may need to be determined if the file server's memory is insufficient to allow the SEM as many blocks as it requests—the MAX BLOCKS value controls that balance.

Abnormally High Block Values

If mass operations (like importing) are performed during the first few weeks—or at any later time—the SEM's memory requirements will temporarily be higher than for normal day-to-day operations. These times should be treated differently in allocating memory blocks. Ignore these block value peaks when determining the values to be standardized for normal operations.

New Block Fields

The following fields have been added to the SEM screen:

```
Maximum Blocks Allowed : 5
Blocks Allocated       : 3
Blocks In Use          : 0
Peak Blocks In Use     : 2
```

Maximum Blocks Allowed

This field indicates the maximum number of 64KB memory blocks as set by the MAX BLOCKS command. This is an upper limit that will not be exceeded by block allocation. It is used in determining a balance between the SEM and file server's sharing of memory.

Blocks Allocated

This value is set by the BLOCKS command, or is incremented when SoftSolutions must ask *NetWare* to allocate a block. It is a way to manually control the number of blocks being allocated.

Blocks In Use

This display-only field shows the number of blocks currently in use. Its value can vary from 0 to the MAX BLOCKS value.

Peak Blocks In Use

This display-only field indicates the highest number of memory blocks allocated since the SEM was *loaded*. As its value surpasses the **Blocks Allocated** value, the **Blocks Allocated** field is incremented to match (which means SoftSolutions had to request *NetWare* to allocate blocks).

This value, when compared with the **Blocks Allocated** field's value, can indicate whether the SEM is less active than it might have been at an earlier time. For example, if **Blocks Allocated** shows 11 and **Peak Blocks In Use** has been consistently showing *5* or *6* each time the SEM is run, then the BLOCKS command should be issued and the block value set to 6.

Pausing

To relinquish *exclusive access* to files in the SoftSolutions data directory, the SEM for the dataset must be paused or unloaded. This is necessary when performing a backup of the data directory or when copying a file located in this directory. Pausing the SEM is preferred to unloading, because users and Indexers do not have to exit SoftSolutions.

The command to *pause* a SEM using SSPAUSE is:

```
SSPAUSE DATA=[Server]:[Optional Socket Number]:[Dataset ID]:NWB
PAUSE
```

To pause a SEM:

1. Display the appropriate SOFTSOLUTIONS 4.1 SEM screen on the server console.

    > **NOTE**
    > At the server console, use (Ctrl)(Esc) for accessing a menu of the available screens. (Alt)(Esc) is a toggle for moving among all of the available screens.

2. Type "PAUSE."

    •   The **Server Status** is changed from "Ready" to "Paused."

While the SEM is paused, operations on the Indexer PC (or on a user's workstation) are suspended and the message "`Server paused, please wait, retrying`" is displayed on the workstation. This message persists until the SEM is unpaused. When the SEM is unpaused, suspended operations are resumed.

A SEM can be paused from RCONSOLE.

Another method for pausing and unpausing a SEM is to run the SSPAUSE.EXE utility, which allows the SEM to be paused from the DOS command line (instead of the server console). This utility is often used in conjunction with batch files to automate the backup process. For example, it is possible to create a batch file that will run each night to pause the SEM, run the backup utility, and unpause the SEM so that users can continue the next morning.

Reconstruction

Before reconstructing a SEM-controlled dataset, the SEM must be unloaded; otherwise, the PC doing the reconstruction will not be able to access the data files exclusively because the SEM will have them open. Then, reconstruction can be run.

1. Unload the SEM, and if set, remove the transactional flag (TTS) from the data files.

2. Start the reconstruction as follows:

   ```
   RECONSS  /DATA=[Path to Data]:[Dataset ID]
   ```

   For example:

   ```
   RECONSS  /DATA=F:\SOFTSOL\DATA:SS
   ```

   • This command uses a data switch format with a drive letter and path, instead of the usual format with server name and Dataset ID, because the SEM is not loaded.

NOTE
See the *Ongoing Procedures* section in the SoftSolutions *Administrator's Guide* for specific information on reconstruction.

Unloading

A specific SEM can be unloaded from the appropriate SOFTSOLUTIONS 4.1 SEM screen, or all SEM's on the file server can be unloaded at once. Reasons to unload an SEM include changing socket numbers, modifying SSSERVER.CTX and SOFTSOL.CTX files, or installing an updated SEM.

To Unload a *Specific* SEM

1. Display the appropriate SOFTSOLUTIONS 4.1 SEM screen on the server console.

> **NOTE**
> At the server console, use 〔Ctrl〕〔Esc〕for accessing a menu of the available screens. 〔Alt〕〔Esc〕is a toggle for moving among all of the available screens.

2. Type "UNLOAD."

   • The screen for the SEM will disappear leaving you at the file server colon prompt. This method will unload only the *one* SEM whose screen was displayed.

> **NOTE**
> If there are any users or Indexers connected to the system at the time the UNLOAD command is issued, the file server will beep and the SEM will refuse to unload. **Unloading with outstanding connections could corrupt the SoftSolutions indices.**

To Unload *All* SEMs

1. Go to the ":" prompt at the file server's system console.

2. Type "UNLOAD SSSERVER."

   • This method unloads *all* SEM's that are running on that server. If users are in a dataset during this process, the server will display a message and ask if the SEM should be unloaded anyway. *Extreme caution should be exercised when answering Yes to this option, since **all** SEM's on that server will be unloaded.*

Stopping _____

If the SEM needs to be unloaded, but there are *current connections* (see "Statistics — Appendix D), the STOP command can be issued, which unloads the SEM, irrespective of current connections. Corruption to the SoftSolutions indices can occur when using the STOP command.

To stop a SEM:

1. Display the appropriate SOFTSOLUTIONS 4.1 SEM screen on the server console.

    > **NOTE**
    > At the server console, use 〔Ctrl〕〔Esc〕 for accessing a menu of the available screens. 〔Alt〕〔Esc〕 is a toggle for moving among all of the available screens.

2. Type "STOP."

    *   The screen for the SEM will disappear leaving you at the file server colon prompt.

    > **NOTE**
    > This method unloads only the *one* SEM whose screen was displayed, even if there are any users or Indexers connected to the system at the time the STOP command is issued. A confirmation to stop the SEM will be prompted, warning that unloading with outstanding connections could corrupt the SoftSolutions indices.

Unpausing

The command to *unpause* a SEM using SSPAUSE is:

```
SSPAUSE DATA=[Server]:[Optional Socket Number]:[Dataset ID]:NWB
UNPAUSE
```

To unpause a SEM:

1. Display the appropriate SOFTSOLUTIONS 4.1 SEM screen on the server console.

    > **NOTE**
    > At the server console, use ⟨Ctrl⟩⟨Esc⟩ for accessing a menu of the available screens. ⟨Alt⟩⟨Esc⟩ is a toggle for moving among all of the available screens.

2. Type "UNPAUSE."

    *   The **Server Status** is changed from "Paused" to "Ready."

    A SEM can be unpaused from RCONSOLE.

Another method for unpausing a SEM is to run the SSPAUSE.EXE utility. This utility allows the SEM to be paused or unpaused from the DOS command line (instead of the server console). This utility is often used in conjunction with batch files to automate the backup process. For example, it is possible to create a batch file that will run each night to pause the SEM, run the backup utility, and unpause the SEM so that users can continue the next morning.

Users

The screen to view all users currently connected to the SEM is accessed by typing "USERS" on the SEM command line.

```
                    List of All Currently Connected Users
 1 UserName                              2
 3                                       4
 5                                       6
 7                                       8
 9                                      10
11                                      12
13                                      14
15                                      16
17                                      18
19                                      20
21                                      22
23                                      24
25                                      26
27                                      28
29                                      30
31                                      32
33                                      34
35                                      36
37                                      38
39                                      40
41                                      42
```

- To return to the main SEM screen, press any key.

- Users appear and disappear from this screen as they connect and disconnect from the SEM.

- The number of user names displayed here are always equal to the number of "Current Connections" displayed on the main SEM screen. But, these numbers may not always appear to be exactly the same, since the *time lag in switching between screens* can cause differences as users connect to and disconnect from the SEM.

- If a user is *not* logged into the SEM's file server, the user's network address is displayed.

Updates

Updates of SoftSolutions software are made by Novell, Inc. from time to time. When an update for SoftSolutions for Windows or DOS accompanies an update for the SoftSolutions SEM, the "client" portion (SoftSolutions) should be updated *before* the "server" portion (SEM) is updated. The SEM update could be sent independently. In either case, the SEM update should be installed as follows:

1. Unload the SEM, and if set, remove the transactional flag (TTS) from the data files.

2. Copy the files from the SEM diskette to the SoftSolutions programs directory.

3. Load the SEM.

SEM Commands
Appendix A

The following commands can be issued from the SOFTSOLUTIONS 4.1 SEM screen:

BLOCKS   Specifies memory (64KB per block) to be allocated for use by the SEM.

CLS   Redraws the SEM screen, clearing any error messages that might be displayed.

HELP   Displays on-line Help which includes detailed information about all SEM console commands.

MAX BLOCKS   Specifies the maximum number of blocks that may be reserved for the SEM.

PAUSE   Pauses the SEM and closes all SoftSolutions data files. This is often used before performing a backup of the *data* directory.

STOP   Pauses a SEM *without* closing SoftSolutions data files. ***This command should be used with caution, since it can corrupt the SoftSolutions indices.***

UNLOAD   Halts the SEM completely, and closes SoftSolutions data files if no users or Indexers are in the system. If users are in the system, the SEM will beep (refuse to unload).

UNPAUSE   Activates a SEM that was paused, so users can continue to work.

USER   Displays the LIST OF ALL CURRENTLY CONNECTED USERS screen.

Diskette Contents
Appendix B

The following files are on the SEM diskette:

SSSERVER.CTX   The compiled text (strings) file for the server.

SSSERVER.NLM The NLM.

SSSERVER.TLN   A file describing the total length of each string in the server's strings file, which can be examined, but may not be changed.

SSSERVER.TXT   A DOS text file containing the server strings.

> • The SoftSolutions *Administrator's Guide* describes how to change these strings.

SSPAUSE.EXE   A utility that pauses or unpauses the SEM.

EXAMPLE.CFG   A DOS text file to be used as a "template" to create the SSSERVER.CFG configuration file. The SEM examines the configuration file to determine the dataset path and socket number.

NOTE
Only three of these files, SOFTSOL.CTX, SSSERVER.CTX, and SSSERVER.NLM are absolutely necessary to the SEM. The other files provide added functionality (SSPAUSE.EXE), the means for editing the strings files, or configuration file.

Log Files
Appendix C

When a SEM is loaded, an "SSSERVER.LOG" file is created in the STATUS directory (STATUS is subordinate to the SoftSolutions data directory). This file contains information indicating when the SEM is loaded and unloaded, and any errors which might be encountered by the server.

If a file named SSSERVER.LOG exists at the time the SEM is loaded, it is renamed to SSSERVER.BU before the new SSSERVER.LOG file is created.

The following sequence of events illustrates how an SSSERVER.LOG file evolves.

   a. SoftSolutions is installed for the *first* time.

   b. The SEM is loaded.

   c. An SSSERVER.LOG file is created in the STATUS directory, containing the date and time, and an indication that the SEM was loaded.

   d. The SEM is unloaded by an operator. A message is appended to the SSSERVER.LOG file, containing the date and time, and an indication that the SEM was unloaded.

   e. The SEM is loaded again.

   f. The SSSERVER.LOG is renamed to SSSERVER.BU and a new SSSERVER.LOG file is created, containing the date and time, and an indication that the SEM was loaded.

A sample of an SSSERVER.LOG file:

```
Tuesday March 22 1:06:17 PM 1994 -- SoftSolutions SEM is up.
Tuesday March 22 1:06:39 PM 1994 -- SoftSolutions SEM is down.
```