SunSystems 4

SQL Client/Server Platforms

SunSystems
Powering Business Decisions

SunSystems SQL Client/Server Platforms Manual
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OVERVIEW

This section outlines the manuals you can use to find out more about SunSystems. It also covers the other ways in which you can investigate SunSystems and its functionality.

THE SUNSYSTEMS PLATFORM MANUALS

The *SunSystems Platform Manuals* have been written to help you install and run SunSystems in a variety of environments. They contain technical information and advice and are critical to a successful implementation. The platform manuals detail SunSystems upgrade procedures for new sites.

The *SunSystems Platform Manual* is divided into four sections:

Preparation, Installation, Administration, and the Appendices.

THE WORKBOOK

The *Workbook* teaches you the rudiments of SunAccount or SunBusiness. It takes you through logging in to SunSystems, navigating the screens, entering transactions, creating records, and other simple procedures.

The *Workbook* examples use the demonstration database DEM, which is provided with your system. Your own system setup may differ from the demonstration database, the basic principles are the same.

Throughout the *Workbook* there are practise sessions which will test your understanding.

THE REFERENCE MANUAL

Each SunSystems and SunAccount or SunBusiness function is presented in alphabetical order. This includes Ledger Accounting, the Fixed Asset Register, Corporate Allocations, Sales Order Processing, Inventory Control, and Purchase Order Processing. Each section provides an overview of a function, followed by descriptions of the boxes on the screen.

Where you see the text **Conversion Module**, this indicates that the option described is only operational if you have a license for multi-currency processing.

Where you see the text **Multi-Lingual Module**, this indicates that the option described is only operational if you have a licence for the multi-lingual facility.

The *Reference Manual* also covers the SunSystems tools and shortcuts, such as FREEFORMAT and CALCULATOR.

THE APPRECIATION GUIDE

The *Appreciation Guide* describes the scope of SunAccount or SunBusiness. It is aimed at the manager responsible for implementing SunSystems, and for controlling business procedures.

There is a section describing the user definable reports and documents available within SunSystems.

THE REFERENCE CARD

A *Reference Card* is provided. This is convenient when you start to use SunAccount or SunBusiness, as it provides useful information on a single, easy to use, card.

THE DEMONSTRATION DATABASE

Three demonstration databases are provided with each system: DEM, DM1, and DM2. Each is a fully operational database, which includes examples of all aspects of SunSystems, SunAccount, and SunBusiness. You can use them to familiarise yourself with the system, before using your live database(s).

THE TECHNICAL REFERENCE MANUAL

The *Technical Reference Manual* is geared to the more technical user of SunSystems. It includes information about the programming language, the structure of the programs, naming conventions, user hooks, and translating SunSystems into other languages. The appendices outline the layouts of all SunSystems files.

ONLINE HELP

Within SunSystems you can access full information about SunSystems by selecting <u>H</u>elp, <u>C</u>ontents and Index from the menu. This enables you to use the online manual's text searching facilities.

Each box in SunSystems is online help enabled. If you need to find out what a box does whilst you are using SunSystems, place your cursor in the box and press F1. See the section *SunSystems Tools, Buttons, and Keystrokes* in the *Reference Manuals* for further information.

ELECTRONIC MANUALS

All of the SunSystems manuals are available on the CD in PDF format. These can be viewed and printed using Adobe Acrobat Reader 4.0, which is also supplied with the issue media. If you decide to install the electronic manuals permanently they are then easily accessible from the SunSystems Program Menu.

The most up-to-date manuals for the latest version of SunSystems can also be found on the Systems Union web site at:

www.systemsunion.com

Introduction

This *SunSystems SQL Client/Server Platforms Manual* has been written to assist the system administrator in deploying and running SunSystems in a variety of configurations.

This manual covers Microsoft SQL Server 7.0, 2000, Small Business Edition and MSDE database systems with the following operating systems:

- Windows NT Server 4.0
- Windows NT Server 4.0, Terminal Server Edition
- Windows NT Workstation 4.0
- Windows 95
- Windows 98
- Windows 2000 Advanced Server/Server/Professional
- Windows Me

The appendices contain additional useful information such as table and filenames, the transfer file layouts and error messages.

☞ *Note: Information in this document was correct at the time of publishing, but changes in technology may render some parts inaccurate over time. To ensure that you have the latest information, always contact your supplier.*

THE ISSUE MEDIA

SunSystems for MS SQL Server is supplied on CD only.

The demonstration databases DEM, DM1, and DM2 are supplied with the SunSystems issue media. These databases are used in conjunction with the *Workbooks* and *Appreciation Guides*; you are strongly recommended to load them.

Backups

The issue media are your master copies of the SunSystems programs and the demonstration databases. You may like to make a backup copy. However, you must not make copies if your issue media has been copy protected. Copy protected versions of SunSystems are accompanied by an instruction note.

Manuals

See the previous section for a full description of information provided in each manual. Where necessary, *Addenda, Errata* and *User Notes* are included with the manuals. These must be read carefully.

IMPORTANT NOTE

When you are installing SunSystems you are strongly advised to use all recommended settings. If you wish to use a configuration that does not include the settings recommended this manual, you should contact your supplier to ensure that the configuration you wish to use is supported.

Deploying SunSystems

SunSystems can be deployed in a number of ways. The installation configuration chosen can affect the performance levels achieved when running SunSystems.

STANDALONE INSTALLATIONS

SunSystems 4.2.6 can be supported on a standalone client PC running SQL Server Desktop Edition. For more information see the subsections *Multiple Processors* and *Desktop Edition* in the section *Hardware and Software Requirements*.

The SunSystems program files are installed on the standalone machine along with the Desktop Edition of SQL Server. SunSystems 4.2.6 does not support client connections to desktop installations of SQL Server.

TWO-TIER INSTALLATIONS

There are two installation options available when installing SunSystems in a two-tier configuration.

Thick Installations

The full suite of SunSystems program files are installed on the client machine. In this scenario the client machine is running both the SunSystems business logic and the presentation layer. SQL Server is installed on a separate server which handles requests from SunSystems clients.

The SQL Server client utilities must be installed on the client machine. This will allow communications between SunSystems running on the client and the SQL Server database to take place.

Thin Installations

SunSystems is supplied with a 32-bit Graphical Client comprising a subset of SunSystems program files. Graphical Client files are installed on the client PC. The location of the SunSystems program files on the server, is specified on the client machine. See the section *Three-Tier Installations*.

Thin client installations reduce the amount of network traffic as it is mainly screen updates that are sent from the application/database server to the client; i.e. only the presentation layer is installed on the client PC, the business logic layer is installed on the SunSystems application/database server.

THREE-TIER INSTALLATIONS

In this scenario there are three levels of deployment. These three levels comprise a dedicated database server running SQL Server, an application server hosting the SunSystems program files and a thin client running the SunSystems Graphical Client.

This installation combines both thick and thin configurations.

MAPPED DRIVES

Whilst it is possible to configure and run SunSystems via mapped drives in both two-tier and three-tier configurations, this option is likely to increase network traffic as the SunSystems program files are loaded across the network. Moreover, the local CPU and memory resources are used to execute the application instead of the server. Therefore to reduce network traffic it is recommended that the SunSystems Graphical Client is used.

ODBC SETTINGS

Communications between SunSystems and the SQL Server database are managed using ODBC (Open Database Connectivity) settings. The SQL Server client utilities must be installed wherever the main SunSystems program files, i.e. SUN32.EXE, reside. For more information see the subsection *SQL Server Client Utilities* in the section *Hardware and Software Requirements*.

Hardware and Software Requirements

This section describes the computer configuration required to run SunSystems on MS SQL Server 7.0 and 2000.

☞ *Note: The requirements for running SunSystems itself are generally lower than those for running MS SQL Server. You should refer to your Microsoft documentation for a comprehensive listing of MS SQL Server requirements. Only the SunSystems requirements higher than those for MS SQL Server, or directly relating to SunSystems running on MS SQL Server, are detailed in this section.*

HARDWARE

Server

☞ *Note: The term 'server' in the following section refers to the machine upon which SQL Server and/or SunSystems has been installed. Previously, the server was distinguishable due to the nature of the operating system installed. However, Microsoft's SQL Server now scales down to the desktop, see the subsection Software. Therefore, the term 'server' is being used in a generic way to refer to a machine which provides database or application services.*

The hardware requirements for SunSystems vary depending on the number of users and the type of SunSystems configuration that is being implemented. At the time of writing this manual the PIII 600Mhz entry level server and workstations are more than sufficient to run SunSystems.

Database tuning and performance monitoring must be carried out before additional resources are added to the server to identify where the performance bottleneck resides. Adding resources to the server in the form of processors and physical memory may be unnecessary when the network is the performance bottleneck.

Microsoft recommend installing SQL Server on a dedicated server that is part of a domain (member server). Performance may be impacted if SQL Server or SunSystems is installed on a PDC (Primary Domain Controller) or a BDC (Backup

Domain Controller). Installing SQL Server on a member server allows Windows NT Authentication Mode, or integrated security, to be used directly with SQL Server.

Whilst Microsoft support installing SQL Server (with Service Pack 2 only) on Windows NT Server, Terminal Server Edition, this is not an ideal scenario. Unlike a Windows NT Server, Terminal Server is not tuned to run as an application or a file and print server. Terminal Server gives priority to interactive sessions, producing higher user response rates. However, as the number of active sessions on the Terminal Server increase, the resources available to background processes such as SQL Server decrease.

Processors

SunSystems 4.2.6 for MS SQL Server can be installed on machines using the Intel x86 only. SunSystems is not supported on Alpha chip based processor technology.

Multiple Processors

SMP (Symmetric Multiple Processor) servers can greatly improve the performance of SunSystems. If very large SunSystems databases are going to be created (5-10Gb), in order to cater for a large number of users, then multiple processors are recommended. For smaller data volumes and fewer users, a single processor may be adequate.

Another area where SunSystems benefits from advancements in SQL Server is in the use of parallel execution of queries across multiple processors. When multiple processors are available SQL Server can split a query into smaller sections and execute these sections in parallel. Thus giving increased performance when a query has to examine large numbers of rows. This functionality is enabled by default.

☞ *Note: SQL Server Desktop Edition does not perform parallel queries, however the desktop edition does scale effectively over two processors. Windows 9x, only support single processors. This should be considered when deciding whether or not to install SQL Server Desktop Edition on a Windows 9x environment.*

SQL Server 7.0 Standard Edition supports up to four processors. To take advantage of up to 32 processors you need to have SQL Server 7.0 Enterprise Edition installed on Windows NT 4.0 Server, Enterprise Edition. SQL Server SBS edition also supports up to four processors.

Memory

Large databases or systems with many users benefit from additional memory. The more physical memory available for the SQL Server and the SunSystems server (application server where applicable) the better. In addition with more memory available to SQL Server there is a greater chance that the data requested by a client, i.e. SunSystems, is in the data cache and does not have to be retrieved from disk.

SQL Server 7.0 can support up to 2Gb of RAM. In order to utilise physical memory in excess of 2Gb, the SQL Server Enterprise Edition must be installed. Microsoft SQL Server 2000 Enterprise Edition can use the MS Windows 2000 Advanced Windows Extension (AWE) API to support up to 64Mb of physical memory on a computer. For more information about this check your Microsoft documentation for using AWE memory on Windows 2000.

See the subsection *Improving Performance* in the section *Administration and Maintenance Tasks* for more information on memory sizing.

Server Network Adapter

In most cases a single network card is installed on the server. Where possible and depending on network topology a 10/100 or a 100/1000 network card should be purchased, to allow for the greatest client server bandwidth throughput.

Disk Space

Disk space is required for the SunSystems program files, SQL Server and the SQL Server database files.

The SunSystems programs require a maximum of 42Mb of disk space, depending on the modules installed. For information on disk space requirements for SQL Server refer to your SQL Server documentation.

The SunSystems database tables expand with the addition of transaction and reference data. See the subsection *MS SQL Server and SunSystems Data* for more information. There is no limit to the size of the database tables.

The section *Files and Directories* helps you to decide on the optimum location of program, work, print, backup and data files.

MS SQL Server and SunSystems Data

When calculating disk space requirements for your SunSystems data, you must allow for the maximum number of transactions which can be in the system at any given time. You can allow database files to change dynamically by using MS SQL

Server to set a maximum file size and incremental growth rates according to your physical disk space.

Use the following as a guide when allocating space for SunSystems data files in SQL Server:

125,000 SunSystems records = 100Mb Disk Space

It is advisable to allocate the space needed for the SunSystems data files when the SunSystems SQL Server database is created. Although the database (data and log files) can be configured to expand as space is required, the space available when the database is initialised may not then be available in the future, if it is used by another application.

Client

As with the server side installation, the more resources that are available to the client machine, the greater the levels of performance attained.

Processor

Tests have shown that the power of the client PC processor can have a very big impact on the performance of SunSystems. The greater the load on the client machines the greater the need for more powerful processors. As SunSystems Graphical Client requires fewer physical resources it is recommended for older, less powerful machines for example, the Pentium I 100Mhz.

Memory

To run SunSystems for MS SQL Server 7.0, you should have a minimum of 32Mb of physical memory on the client machine. Microsoft recommends a minimum of 64Mb for SQL Server 2000 Standard and Personal Editions. The more physical memory available to the SunSystems client the greater the levels of performance. Whilst SunSystems will run on machines with less than the recommended amount of physical memory, the performance may suffer.

The requirements when running SunSystems thick, i.e. SunSystems program files on the client machine are considerably greater than those for the SunSystems Graphical Client.

When running SunSystems standalone additional memory may be required in order to attain suitable levels of performance.

Disk Space

The SunSystems program files require a maximum of 42Mb of disk space, depending on the modules installed. The SunSystems Graphical Client however takes up only 6Mb of disk space.

VDU

SunSystems runs on any standard monitor either in mono, grey scale or colour.

SunSystems can use VGA and Super VGA drivers, although only four bit colour is used. The section *Using SUN.INI* includes further information about the screen display for SunSystems when running under Windows.

SOFTWARE

Microsoft SQL Server Version 7.0

Server Standard and Enterprise Edition

The Standard Edition and the Enterprise Edition of SQL Server differ only in scalability and not in functionality.

A few elements concerning scalability have already been touched upon in the previous sections. However, for more information on the various editions of SQL Server refer to your Microsoft documentation or the section *Hardware*.

Desktop Edition

SunSystems 4.2.6 for SQL Server is supported on Microsoft's SQL Server Desktop Edition as a standalone installation only. At the time of going to press the Desktop Edition could be installed on Windows 95, Windows 98, Windows NT 4.0 Workstations, Windows 2000 Professional and Windows Me.

Running both SunSystems and SQL Server will increase the need for greater processing power and larger amounts of memory in order to achieve satisfactory performance levels.

Performance is improved when running SQL Server Desktop Edition on NT machines for several reasons. On Windows 9x SQL Server runs as an application, as opposed to a service on NT. Service threads are given priority over application threads on Windows NT, therefore desktop performance on NT is improved. In addition, SQL Server on Windows 9x is optimised for minimal memory usage.

> ☞ *Note: In order to install SQL Server 7.0 Desktop Edition, SQL Server Standard Edition must be licensed as per user seat and not per server. For further information refer to your Microsoft SQL Server documentation.*

Connections

The Microsoft SQL Server product is supplied in various licensing packages, the key choice being whether to license per user seat or per database connection. It is important to determine which is the best option for your organisation in terms of the number of users and connections.

SunSystems 4.2.6 requires only one connection per user and therefore uses one SQL Server license per SunSystems instance. This is different from versions of SunSystems prior to 4.2.x, which required multiple connections per user.

The number of connections/licenses should therefore reflect the number of concurrent users you are catering for plus, say, five for database administration connections. If you think your configuration setting has insufficient connections, contact your supplier.

Operating Environment

The following list indicates the recommended and supported environments for the server:

Operating System	SQL Server 7.0/SBS Installation Type	Network Libraries
Windows NT Server 4.0, Enterprise Edition, Windows 2000 Advanced Server	Enterprise Edition SBS	Microsoft TCP/IP-32 (32-bit)
Windows NT Server 4.0, Windows 2000 Server	Standard Edition SBS	Microsoft TCP/IP-32 (32-bit)
Windows NT Workstation 4.0	Desktop Edition	Local named pipes are used
Windows 2000 Professional	Desktop Edition	Shared memory network libraries are used
Windows 95	Desktop Edition	Shared memory network libraries are used
Windows 98	Desktop Edition	Shared memory network libraries are used

Operating System	SQL Server 7.0/SBS Installation Type	Network Libraries
Windows Me	Desktop Edition	Shared memory network libraries are used

Microsoft SQL Server 2000

SQL Server Edition or Component	Operating System Requirement
Enterprise Edition	Microsoft Windows NT Server 4.0, Windows NT Server Enterprise Edition 4.0, Windows 2000 Server, Windows 2000 Advanced Server, and Windows 2000 Data Center Server. *Note: Microsoft Windows 2000 Server (any version) is required for some SQL Server 2000 features.*
Standard Edition	Microsoft Windows NT Server 4.0, Windows 2000 Server, Windows NT Server Enterprise Edition, Windows 2000 Advanced Server and Windows 2000 Data Center Server.
Personal Edition	Microsoft Windows Me, Windows 98, Windows NT Workstation 4.0, Windows 2000 Professional, Windows NT Server 4.0, Windows 2000 Server, and other advanced Windows operating systems.
Client Tools Only	Microsoft Windows NT 4.0, Windows 2000 (all versions), Windows Me, and Windows 98.
Connectivity Only	Microsoft Windows NT 4.0, Windows 2000 (all versions), Windows Me, Windows 98, and Windows 95.

☞ *Note: Microsoft Windows NT Server 4.0, Service Pack 5 or later must be installed as a minimum requirement for all SQL Server 2000 editions.*

☞ *Note: SQL Server 2000 is not currently supported on Windows NT 4.0 Terminal Server. However, it is supported on Windows 2000 Terminal Server. For more information please see your Microsoft documentation.*

Client Operating Environment

The client PC running SunSystems may use any of the following operating systems:

- Windows 95

- Windows 98

- Windows Me

- Windows NT 4.0 and above

RDP (Terminal Server client) and ICA (Citrix MetaFrame client) connections are supported from the above clients as well as from clients running Windows 3.11. Support for further RDP and ICA clients is provided directly by Microsoft and Citrix. As SunSystems is running on the Terminal Server, third party client support must be sought from the appropriate vendor. SunSystems support extends solely to the running of SunSystems on the Terminal Server machine.

☞ *Note: Contact your supplier for more information regarding the latest client platforms supported.*

SQL Server Client Utilities

In order to communicate successfully with SQL Server the client utilities need to be installed on the client machine. Wherever the main SunSystems program files reside, i.e. SUN32.EXE. The utilities must therefore be installed on the client PC in a SunSystems two-tier thick installation.

In the case of a thin two-tier installation of SunSystems the client utilities will already be installed on the server as they are installed as part of the SQL Server installation process. In the three-tier scenario the client utilities should be installed on the SunSystems application server. For more information on installing the SQL Server client utilities refer to your SQL Server documentation.

For information on configuring the SunSystems SQL Server client settings see the section *ODBC Configuration.*

Additional Software

Network Software

Microsoft SQL Server runs on the Windows NT platform using the built-in networking software. Full support for the Novell IPX/SPX protocol is provided via the NWLink utility. For more information on NWLink see the section *Preparing the Environment.*

Preparing the Environment

Preparing the environment is essential to both the installation and the day-to-day running of SunSystems. It is important that you read this section carefully.

All the drive and path names in this section are provided as examples. If you are using different drives or directories you should substitute the letters and path names.

See the section *Files and Directories* for further information on the files that comprise SunSystems, where they are installed, and how you can relocate them.

SERVER ENVIRONMENT

Before installing SunSystems, the server environment must be configured. The amount of preparation varies between implementations so some of the following points may not apply.

If your system has not had Microsoft SQL Server installed before, then follow the instructions supplied with the software on how to install it on your server.

☞ *Note: It is recommended that a qualified person undertake this task, experienced in the use of MS SQL Server to at least database administration level.*

When installing on instance of SQL Server 7.0, you must specify a default code page and sort order at the server level. All databases are then locked into that particular code page and sort order.

You must select a custom installation to allow the configuration of various parameters required by SunSystems when installing SQL Server 7.0. The following options have been singled out for special attention, with recommendations for their settings:

Option	Recommended
Sort Order	Binary
Character Set	1252 (ISO Multilingual)
Network Support	Add NWLink if Novell IPX/SPX or TCP/IP protocol desired

Binary sort order provides the fastest performance. Other sort orders can be used, but these affect the type of codes that you can use such as account and analysis codes. For example, if you select a case insensitive sort order you should ensure that all the codes you enter are upper case to avoid confusion. For more information on sort orders see your Microsoft SQL Server documentation.

☞ *Note: In all cases when setting up the codes used within SunSystems avoid using non-alphanumeric characters such as the apostrophe, single quote or percentage sign as these may cause some queries to the database to fail. From version 4.2.3 onwards the single quote character is allowed.*

If SQL Server is already installed the character set needs to be verified. From SQL Server Enterprise Manager select the server name, then Tools and then SQL Server Configuration Properties. On the General Tab check that the Code Page is set to CP1252. If this is not the case then the master tables in the database will need to be rebuilt in order to run SunSystems. To do this refer to your Microsoft SQL Server documentation regarding rebuilding the master database tables.

SQL Server 2000 introduces the concept of collations. A collation is defined as a collection of three properties: the sort order for Unicode data types, the sort order for non-Unicode character data types, and the code page that is used to store non-Unicode character data types.

As an important enhancement, compared to SQL 7.0, you can now specify collations at the database level or column level, in addition to the default collation specified during installation. This implies that you might have a different collation at server level than at database level.

For SunSystems, the recommended collation is 'Latin1_General_BIN', which can be set when creating the database. To check if a database has the appropriate collation check the properties in Enterprise Manager or type `sp_helpdb` in Query Analyser and check the Status Column.

☞ *Note: For other non-western European languages please contact your regional support office.*

☞ *Note: When you perform an action that depends on collations, the SQL Server collation used by the referenced object must use a code page supported by the operating system running on the computer. For more information, check your Microsoft documentation.*

Installing SunSystems

If you are already running a version of SunSystems, please go straight to the section *Upgrading.*

The installation procedure is fully automated and guides you step-by-step through the SunSystems configuration options. During installation you are prompted for an installation directory.

CLIENT SERVER INSTALLATIONS

The installation process is identical for installing the software on client PCs and network servers. However, if you are a Windows NT, 2000 or network user you should log in to the network with administrator supervisor privileges before starting the installation procedure.

TERMINAL SERVER INSTALLATION

When installing SunSystems on Windows NT 4.0 Server, Terminal Server Edition, ensure that you are running in install mode. Launching the Add/Remove Programs icon from Control Panel automatically switches you into install mode.

From the Add/Remove Programs window select Install, Next and then browse to the SETUP.EXE file located on the SunSystems CD-ROM root directory. The software should be installed so that 'All users begin with common application settings'.

Once the SunSystems installation has completed ensure that the 'After Installation' procedures are followed. When the installation has finished you are automatically switched back into execute mode.

Once the SunSystems issue media has been inserted in the CD-ROM drive the SunSystems installation screen appears. If the menu does not appear, execute the following command from either a command prompt, or use <u>R</u>un from the Windows Start menu:

        D:\setup.exe

        (where D:\ indicates your CD-ROM drive)

The installation screen presents you with the following three options:

- SunSystems Installation

- Business Intelligence

- Electronic Manuals

Select SunSystems Installation.

For further information on installing Business Intelligence options see the online documentation provided with SunSystems.

Select the desired language and then select Install SunSystems.

Select Microsoft SQL Server - file type "C".

☞ *Note: The installation routine can only create one level of the directory structure, if you specify C:\SUN426, then directory C:\SUN426 is created. If you specify C:\APPS\ACCOUNTS\SUN then the C:\APPS\ACCOUNTS directory must already exist.*

Installation Options

After selecting Microsoft SQL Server - file type "C" you are given three options:

- Microsoft SQL Server (client & server)

- Microsoft SQL Server Thick (client or server)

- Graphical Client

The following table describes the installation types and how they relate to the deployment of SunSystems:

Installation Option	SunSystems Files Installed	Suggested Deployment Configuration	Location
MS SQL Server (Client & Server)	SunSystems business logic layer (main program files) installed in the SERVER\ directory	Thin Two-Tier installation	Application/ database server
	SunSystems 32-bit Graphical Client files installed in the THINCLI\ directory	Three-Tier installation	Application server
MS SQL Server Thick (Client or Server)	SunSystems business logic layer (main program files)		Application/ database server Thick client
Graphical Client	SunSystems 32-bit Graphical Client files	Thin Two-Tier installation Three-Tier installation	Thin client

Select the appropriate option and follow the on screen instructions, selecting those SunSystems options you require and have a serialisation for.

If problems are encountered during the installation process refer to the section *Trouble Shooting Guide* for suggestions and further information.

MS SQL SERVER (CLIENT AND SERVER)

During the installation process you are asked if you are performing a remote installation. If you are not, i.e. the installation is being performed locally, two additional installation options are available.

☞ *Note: A remote installation describes the situation where the installation process is running on one machine but the destination directory for the SunSystems program files resides on a different machine.*

CCITCP2 and SSMASTER

The first additional option available allows you to install the CCITPC2 and SSMASTER as services. These services are required if you wish to connect to SunSystems using the 32-bit graphical client. SelectingYes when prompted installs and starts the services on the local machine.

CCITPC2 and SSMASTER can also be installed as services manually. For more details on creating the CCITCP2 and SSMASTER services see the subsection *CCITCP2 and SSMASTER* in the section *SunSystems Graphical Client*.

Database Creation

The second option allows you to create a SQL Server database for SunSystems. These options are only presented if the installation took place on a machine which already has SQL Server installed. The SunSystems database cannot be created during a remote installation and therefore should be created once the installation is complete. See *Creating the SunSystems Database* subsection.

If you do not wish to create the SunSystems database at this point click Cancel at any time. Refer to the subsection *Creating the SunSystems Database* for details on creating the database at a later stage. However, if you do wish to automatically configure and create a SunSystems SQL Server database now, a prompt appears asking for the following information:

- The password for the SQL Server SA user; default is blank

- The name you want for your SunSystems database; default is SUNDB

- The destination directory for your SQL Server database files; default is the SQLData directory which is created beneath the main SunSystems program directory

- The size and file growth in Mb of the data file (primary data file)

- The size and file growth in Mb of the log file

Once this information has been provided the database is created and configured on the SQL Server.

This process does not edit the SUN.INI file or create ODBC data sources; therefore you should refer to the relevant sections within this documentation.

☞ *Note: This process does not give you the opportunity to change the SUN login password. To keep this password secure edit the DEFINEDB.SQL script in the _SQL\INSTALL directory and change the SUNSYS password in the following line:*

```
sp_addlogin SUN,SUNSYS,SUNDB
```

In addition, remember to set the collation to 'Latin1_General_BIN' if creating a SunSystems database in SQL Server 2000, this collation is not the server default. This is a requirement for SunSystems with western-European languages.

DEFAULT DIRECTORY STRUCTURE

The installation creates subdirectories of the SunSystems program directory as follows:

Subdirectories	Description
_Back	SunSystems generated backup files
_Data	SunSystems data files
_DEMDATA	Demonstration databases backup files
_Print	Stored report files in text format
_Work	Temporary work files
Docs	SunSystems online documentation
_SQL\PROCS	SQL script files for stored procedures
_SQL\QUERIES	Useful SQL administration scripts
_SQL\INSTALL	SQL Scripts for creating the SunSystems databases
Utils	SunSystems utilities
Thincli	Graphical Client programs directory

In a client and server installation all directories except the `Thincli` directory would appear below a `SERVER` directory. The `Thincli` directory is only present in a client and server installation type.

These directories are also the settings for the default DB=Database Definitions record. If you want to locate your files in other directories, proceed with the installation and then create your own directories. Log into SunSystems and modify the DB=Database Definitions and OD=Operator Definitions as necessary. For storing SQL scripts in a different location, amend the file `SUN.INI` in the programs directory to point `SQLPATH=_SQL` to the desired location. See the section *Using SUN.INI* and also the *Files and Directories* section for information about relocating these files.

Serialisation

The final step in the installation process is the SunSystems serialisation. The details of your serialisation are provided separately on paper. The serialisation entries are case sensitive, therefore it is vital that your entries match the details provided exactly.

Demonstration Databases

During the installation process you are asked if you would like to install the Demonstration Databases; if you say yes, the files are copied into a separate subdirectory called _DEMDATA.

It is strongly recommended that you install the demonstration databases DEM, DM1, and DM2. These allow you to use the *SunAccount* or *SunBusiness Workbooks* and *Appreciation Guides*, and to train new users of the system. The demonstration databases also allow you to test and experiment before going live. They have been created for version 4.2.6 of SunSystems.

The demonstration databases are supplied in backup format as .BAK files. The exceptions are: the report format file, the data dictionary file and the install file. These three files contain important information such as the DB=Database Definitions, NL=Analysis Category Lengths and examples of reports and documents.

Online Manuals

The SunSystems issue media comes complete with a copy of Adobe Acrobat 4.0. This allows you to view all SunSystems manuals which are supplied on the CD-ROM in PDF format. To install the English version of Adobe Acrobat run the following executable located on the SunSystems CD:

```
adobe\ar40eng\setup.exe
```

Once SunSystems has been installed it is possible to access the documentation from the SunSystems Program Menu.

CREATING THE SUNSYSTEMS DATABASE

These instructions detail how to create the SunSystems database on SQL Server; the process also creates the SQL Server logins SUN and SSA, required by SunSystems.

Once you have installed the software, you must create and configure an SQL Server database to be used by SunSystems. The installation script file DEFINEDB.SQL located in the _SQL\INSTALL directory beneath the SunSystems programs directory, facilitates this process.

☞ *Note: The script must be edited by the database administrator before it is run.*

The script is executed using SQL Server Query Analyzer, which is supplied with MS SQL Server.

A description of the DEFINEDB.SQL script file follows, with instructions on how to edit it in order to set up the SunSystems database appropriately for your installation. See *Appendix F: DEFINEDB.SQL Sample Listing* for an example of the script.

Editing DEFINEDB.SQL

The DEFINEDB.SQL script file contains an outline for creating the required SQL Server users and default database. It is the responsibility of the database/system administrator to amend this file to enable successful connection to the database.

SunSystems Database Name

Contained within the DEFINEDB.SQL script is the default SunSystems database name SUNDB. Change the name of the default database to the name you require for your SunSystems database. The name needs to be replaced throughout the script.

Data and Log Files

The script specifies default locations for the SQL Server data files and log files. The names of these files can be changed along with their location. This should be done by the SQL Server administrator.

The size of the data file should also be modified at this point. For information on sizing the data file refer to the subsection *MS SQL Server 7.0 and SunSystems Data* in the section *Hardware and Software Requirements*.

SUN User Password

The SUN SQL Server login is also created by the DEFINEDB.SQL script. You may decide to change the default password from SUNSYS. To do this change the entry SUNSYS in the following DEFINEDB.SQL script entry:

```
sp_addlogin SUN,SUNSYS,SUNDB
```

Remember, that once you have run DEFINEDB.SQL you should amend it to ensure that the SuperUser SUN password remains secure.

Running DEFINEDB.SQL

Assuming you have modified the file DEFINEDB.SQL to reflect your system, you are now ready to create the SunSystems database.

Load Query Analyzer and log in as the system administrator user SA. Open the DEFINEDB.SQL you have edited and run the script. You have now created your SunSystems database.

Upgrading

This section covers the installation procedure when a previous version of SunSystems is currently loaded. There are many circumstances in which an upgrade is necessary:

- Loading a new version

- Loading a new release of the same version

- Extending your licence to use SunSystems

Installing a new version of SunSystems allows you to access numerous new features and changes to the functionality of the software. This is indicated by the first and/ or second digit(s) of the release number increasing, for example, moving from version 4.1.7 to 4.2.6.

Installing a later release of the same version of SunSystems may involve relatively minor amendments to the software. In this case, only the third digit release number of SunSystems is changed, for example, moving from 4.2.5 to 4.2.6.

Please see the SunSystems *User Note* for details relating to new features and functionality.

Extending your licence could be changing the number of users, or changing the number of modules that you can access. For example, adding four more users, or the conversion module, or an extra language.

There are alternative procedures for upgrading in these different circumstances.

☞ *Note: The SunSystems version number is printed on the issue media. It is also displayed on the main SunSystems screen.*

LOADING A NEW RELEASE OF THE SAME VERSION

Once you have installed the new software you should edit the lines `server=` and `database=` in the file `SUN.INI` to define the server and database you log into. This file is located in the program directory. These values should be taken from your old version of `SUN.INI`. (See the section *Using SUN.INI* for more information).

If you wish to retain existing formats and/or FREEFORMAT macros, see the subsection *Loading a New Version*.

If you are extending your licence, then once you have installed the new software you must edit the lines `server=` and `database=` in the file `SUN.INI` to define the server and database you log into. This file is located in the program directory. These values should be taken from your old version of `SUN.INI`. You then need to create the tables for any new modules. This is done using the function FC=File Creation, which creates the appropriate tables along with associated stored procedures.

Loading a New Version

If you are loading a new version (i.e. the first or second digit of the version number has changed, such as 4.1.7 to 4.2.6), then follow the instructions in the remainder of this section.

Before You Upgrade

In preparation for your upgrade, you should carry out the following procedures:

1   Post or Hold any current journals in **Ledger Accounting**.

2   Import and post all outstanding SunBusiness transactions using the SunAccount function JI=Journal Import.

3   If possible, try to co-ordinate the upgrade with a PC=Period Cleardown, so that your data table sizes are minimised.

4   If you want to retain the demonstration databases supplied with version 4.2 or previous versions of SunSystems, you must rename DEM, DM1, and DM2. Full instructions are provided below.

5   Take a full security copy of your current SunSystems program files with a full operating system backup.

6   Take a full security copy of your database with a full database backup.

7   Use the SunSystems FB=File Backup/Restore option to make a separate backup of all your current SunSystems database tables.

8   You may wish to save a copy of the `DEFINEDB.SQL` script file which creates the database. This will have been edited to suit your operational requirements and will be overwritten with a new, default version.

☞ **Note:** *Make sure that the network user who performs the SunSystems backup in FB=File Backup/Restore has sufficient privilege to write to the backup files. Log in as the same user, or amend the permissions on the backup directory.*

Demonstration Databases

Version 4.2.6 of SunSystems is supplied with a set of demonstration databases called DEM, DM1, and DM2. The demonstration databases have been designed specifically for this version and are linked with the *SunAccount* and *SunBusiness Workbooks* and referred to in the *SunAccount* and *SunBusiness Appreciation Guides.*

Because of changes to the document and report definition functions, you are strongly advised to install the 4.2.6 demonstration databases in place of the old demonstration databases. However, you may choose to retain your old DEM, DM1, or DM2 databases, in which case they must be renamed to avoid contention with the new data.

In your previous version of SunSystems, use FB=File Backup/Restore to create .BAK files for the demonstration databases you want to retain. Using DB=Database Definitions create a new record for each demonstration database. Examine the DEM database definition, then use Create and enter the new code, for example OLD, and a revised description, for example Old Demonstration Database. In the Reference File Drive box use the DUPTOEND tool to copy all the previous settings. You can then delete the database definition for DEM.

You must now rename all the backup files from DEM to OLD. This can be done using MS Windows Explorer or the following DOS command:

```
RENAME  ????-DEM.BAK  ????-OLD.BAK.
```

You can now restore the OLD database to check that your renaming has been successful.

Using FB=File Backup/Restore

The SunSystems backup converts the database tables to text files, which can then be upgraded upon restore. You must include each database code, and all budget tables, archive tables, your install table, your report format file and your document format file.

You must also take copies of any .MDF files containing FREEFORMAT macros, and .TLF files for transfer layouts used in LX=Ledger Export. However, the upgrade may require some alterations to your macros before they perform correctly.

☞ **Note:** *It is not possible to restore from backups made using the BM=Multi-volume Backup function in older versions of the software. You must make a single volume backup of each file. Please refer to your supplier.*

Installing the New Version of SunSystems

You are now ready to load the new SunSystems 4.2.6 program files. It is advisable to install version 4.2.6 into a new directory and to delete all the old program files from the previous SunSystems program directory.

If you specify the same program directory as your previous version the installation procedure overwrites all the files of the same name.

The installation process is fully automated, as detailed in the section *Installing SunSystems*. You are strongly recommended to load the demonstration databases when prompted, as these have been rewritten for version 4.2.6 and are designed to help you familiarise yourself with the new functionality.

As tables may have changed between versions, all objects in the existing SunSystems database must be deleted. The simplest way to do this is to drop the database, then recreate it using the instructions in the section *Installing SunSystems* under the subsection *Creating the SunSystems Database*.

☞ **Note:** *If you want to convert ledger export, bank reconciliation or verification rules data to the process manager formats, you must use BC=Business Conversion. For more details see SunSystems User Note Version 4.2.6.*

Warning: Decimal and Thousand Separators in JP=Journal Presets

If the following conditions apply, you should read the instructions in this subsection carefully:

- You are upgrading from version 4.1.2b or 4.1.4

- You are using '.' full stop/period as a thousand separator and ',' comma as a decimal separator in JP=Journal Presets.

Having followed the upgrade procedure, you must perform the following steps before you restore your data files:

1 Using FB=File Backup/Restore, select <u>R</u>estore and leave the Database Code box blank. Enter Y-Yes to restore the installation file, report format file and data dictionary file. You must now exit and restart SunSystems.

2 If you have the **Multi-Lingual** module, choose LD=Language Definitions and <u>E</u>xamine the Language Code associated with this operator. You can check OD=Operator Definitions if you are uncertain which language to view. Make a note of the entries in the Decimal and Thousand Separator boxes, and <u>A</u>mend both boxes to blank.

3   In DB=Database Definitions, <u>E</u>xamine each Database Code. Make a note of the entries in the Decimal and Thousand Separator boxes, then <u>A</u>mend the Decimal Separator to '.' full stop/period, and the Thousand Separator to ',' comma.

4   You can now return to FB=File Backup/Restore and continue restoring your data files. When they are all restored, use DB=Database Definitions and LD=Language Definitions and return the Decimal and Thousand Separator boxes to their original settings.

Restoring Your SunSystems Data Tables

Once version 4.2.6 is loaded, you can begin to recreate and restore your data tables. Because of the changes in version 4.2.6, there are several considerations concerning the demonstration database and your report and document formats. The following steps summarise the process; full details are provided below:

1   Log in as SuperUser SUN. You receive a warning message at this point. Refer to the instructions in the section *Running SunSystems* to create a default installation table.

2   In DB=Database Definitions, <u>A</u>mend the default database definition record (this has a blank database code) so that it points to your backup directory.

3   Go to FB=File Backup/Restore. Leave the database code blank and <u>R</u>estore your install table.

4   If you are serialised for SunBusiness, then go to FC=File Creation and create Reference tables for each of your SunSystems databases (ledger codes). This is necessary to create the SunBusiness and Purchase Commitment transfer tables.

5   E<u>x</u>it SunSystems and log in again as your usual operator Id.

6   Go to FB=File Backup/Restore. Leave the database code blank and <u>R</u>estore your report format file.

7   Go to FB=File Backup/Restore. Enter your first database code and <u>R</u>estore your reference table.

8   Go to FB=File Backup/Restore. Enter your first database code and <u>R</u>estore the remaining files.

Repeat steps 7 and 8 until all your databases are restored.

During the installation process some demonstration files are loaded automatically, i.e. the report format file and data dictionary file.

Restoring the Installation Table

The `SSINSTAL` table contains all the new SunSystems version 4.2.6 reference data such as operator records, permissions, printer setups, and database definitions. From version 4.2.6 you can use the Transfer action to copy some of the SunSystems reference records. Before you restore your own installation table, you must install all the demonstration `SSINSTAL` table, as this contains the user hooks required for Process Manager and additional functionality such as Standard Descriptions in Ledger Accounting. Then use Restore Append to restore your original `SSINSTAL` table.

The DB=Database Definitions settings are particularly important, since these records point to the directories where the backup files are stored. You must amend the default database definition record to identify where your own `SSINSTAL.BAK` is held.

When you restore your copy of `SSINSTAL`, the analysis category lengths previously located in your database definition records are written to the new data dictionary `SSDDICTY`. The data dictionary file is used by RD=Report Definition. This is only applicable when upgrading from version 4.1 to 4.2.

You should be aware that the analysis category lengths for the version 4.2.6 demonstration databases overwrite any previous records you may have for databases called DEM, DM1, and DM2. If you want to retain your previous version of the databases DEM, DM1, or DM2, see the subsection *Demonstration Databases*.

If you are upgrading from a version prior to version 4.0 then your old ID=Installation Data records are used to create the default DB=Database Definitions and OD=Operator Definitions records.

See the *SunAccount* or *SunBusiness Reference Manual* for further information about SunSystems reference functions.

Restoring the Report Format File

From version 4.2.6 the DD=Document Definition function has been absorbed into the RD=Report Definition function. To save the document formats you have previously created you should retain your backed up `SSFORMAT` and `SSREPORT` files and restore them once the new version is installed. The functionality provided by DD=Document Definition is available through RD=Report Definition.

When you restore your report format file into version 4.2.6 you have the option to include and convert your old document formats as well. The system first checks for an `SSREPORT.BAK` file in 4.1 format, and also an `SSFORMAT.BAK` file. Assuming you previously used the document formats to produce SunAccount or SunBusiness documents, you should confirm that you want to include them.

The SSREPORT file supplied with version 4.2.6 provides a range of example report and document formats. These provide more efficient formats for standard reports such as JL=Journal Listing, as well as examples of the new reports available via RD=Report Definition.

Document formats which have been programmed specially for you (bespoke formatters) are not held in the document format file and must be amended before you can upgrade. Please refer to your supplier.

Multi-Lingual users: When restoring from foreign language databases, the base language of the operator Id who runs the restore procedure must be the same as the language held in the database. In other words, if you are restoring French database files, the base language of the operator Id running the restore must be French.

Budget Tables

The budget tables are not offered for restoration until the reference table for that database has been restored. If you have upgraded from a version prior to version 2.4.4, you must create a BD=Budget Definitions record before you can restore your budget tables.

☞ *Note: If you use the Transfer action in reference functions to import or export reference records to or from other software, you should note that the record layouts have changed with version 4.2.6. Further details can be obtained from your supplier.*

Journal Hold Table

If you are upgrading from a version prior to version 3.5, you must use FC=File Creation to create a journal hold table, before you can use any of your restored data.

FreeFormat Macros

FREEFORMAT macros, held in .MDF files, are not necessarily upwardly compatible. The commands required to carry out a function automatically, may change as new options are added to SunSystems. You should check your macros when upgrading and edit them as necessary.

A copy of the file SSISSUE.MDF is supplied with SunSystems. This file contains FREEFORMAT macros designed to work with the 4.2.6 demonstration database, including the macros linked to OB=Operator Buttons. When you access FREEFORMAT, SunSystems searches for a file called STANDARD.MDF; if none is found then the contents of SSISSUE.MDF are copied into a new STANDARD.MDF.

When you are upgrading, your existing STANDARD.MDF is not overwritten. Should you wish to use the latest macros in SSISSUE.MDF, you must manually append the contents to your STANDARD.MDF.

For further information about the FREEFORMAT macro tool see the *SunAccount* or *SunBusiness Reference Manual*.

Operator Permissions

In SunSystems version 4.2.6, the function OP=Operator Permissions has changed considerably from versions prior to 4.1. Each operator Id now belongs to an operator group. SunSystems is issued with a default group defined as ' ' space. This group has no restrictions, so members of this group can access all functions and all types of data.

When you restore an SSINSTAL file from version 3.5 or earlier, the permissions are handled as follows:

Operator Ids who have no previous restrictions are automatically added to the default permissions group. Their operator group is set to ' ' space. These operators still have no restrictions.

Operator Ids who did have permissions defined are added to an operator group with the same three digit code as the operator Id. This new operator group is created automatically. The new operator group retains the same permissions and includes all the databases to which that operator previously had access.

In version 4.2.6 operator permissions, previously applied to DD=Document Definition are transferred to RD=Report Definition. If one of your operators did not have permission to use document definition, they are not permitted to access RD=Report Definition after the upgrade.

☞ *Note: New functions in version 4.2.6 have no access restrictions imposed.*

For more information about OP=Operator Permissions, please refer to the sections *Operator Permissions* and *Data Access Groups* in the *SunAccount* or *SunBusiness Reference Manual*.

Chart of Accounts and Item Records

When you upgrade from version 4.0.1 or earlier, you have the option to move the data stored as Comments to two new boxes. This affects the function CA=Chart of Accounts where data can be moved to the Tax Code box. A similar feature is available in SunBusiness. The previous entry in IR=Item Records in the Comments box can be moved to Commodity Code.

When you use FB=File Backup/Restore to restore your reference table(s), a message appears, for example:

> UPDATE CHART OF ACCOUNTS TAX CODE FROM EXISTING COMMENTS FIELD (Y/N) ?

Enter Y-Yes to move your data or N-No to leave the records as they are.

Report Definition

In SunSystems 4.2, RD=Report Definition now processes Ledger Transaction Financial and Other Amounts as signed numeric values for all Report Types and in all circumstances, therefore debits are negative. You should review any upgraded Report Formats and amend them to cater for this change, although this is only necessary where dealing with Ledger Transaction Financial and Other Amounts as subjects of comparative statements.

SUN.INI File

When you upgrade, this file is not overwritten, it is saved as `SUNINI.SAV` and you can compare this with the new `SUN.INI` file issued with version 4.2.6. You can then decide which version you want to retain, or edit one to include settings of another. See the section *Using SUN.INI* in this manual for more information about this file.

UPGRADING SUNSYSTEMS DATABASES TO SQL SERVER 2000

You can restore a SQL Server 7.0 database in SQL Server 2000 or you can attach the database from SQL 7.0 in SQL Server 2000. However, once you attach the database to SQL Server 2000 it is automatically upgraded and there is no backward compatibility with SQL Server 7.0.

Files and Directories

This subsection describes the files, which comprise SunSystems and indicates where they are installed. Once you have installed SunSystems you may choose to relocate these files; this section tells you how to define those locations.

PROGRAM FILES

During installation the SunSystems program files are automatically loaded into a single directory, referred to as the SunSystems program directory. Before starting the installation you must decide on the location of the program directory. SunSystems is run from this directory.

Appendix B: Filenames provides a full list of SunSystems files, and the naming conventions used.

SYSTEM FILES

The system files are crucial for successful installation and administration of SunSystems. These files contain vital information about your system and all the modules that you use. System files are generally data files with an associated index file, with the suffix .DAT and .IDX respectively.

The main system file SSSYSTEM.DAT has no corresponding .IDX index file and must be located in the SunSystems program directory. It contains information regarding the following:

- The SunSystems serial number assigned to your company
- The modules you are licensed to use
- The number of users who can simultaneously log in to SunSystems
- Your company name
- The operating system you are running on
- The type of file system you are using i.e. SQL
- The type of database you are using i.e. Microsoft SQL Server.

Other system files include the data dictionary file and the report format file.

One system file is held as a table within the database. This is the install table, which is called SSINSTAL. This contains your reference data for the SunSystems module, e.g. printer definitions, operator permissions, and data access groups. The SunSystems install table also contains definitions for each database and operator you create. The OD=Operator Definitions and the DB=Database Definitions functions determine the location of all other SunSystems data files, as described below.

The report format file is called SSREPORT and the data dictionary file is SSDDICTY. Both files are used by the function RD=Report Definition. The data dictionary file also contains your NL=Analysis Category Length records.

The data dictionary files and the report format files are installed in the _data\ directory by default. This path is to be specified within the SUN.INI file, and by defining logical names. See the section *Using SUN.INI* for further information.

DATA TABLES

Information entered onto a SunSystems database is stored in database tables. Since the data tables are continually being amended, they should be backed up at regular intervals. For more information on database backups see the section *Administration and Maintenance Tasks* in this manual.

Data tables fall into a number of distinct categories:

Reference Data

The reference tables contain the chart of accounts, asset details, item records, analysis codes, conversion records, and other information entered from the reference functions. A full list of reference functions is provided in the section *Actions* in the *SunSystems Reference Manuals*.

Ledger Data

The ledger table contains the active SunAccount transactions (i.e. transactions which have not been cleared down). Other SunAccount data is also stored in the journal hold table, the budget tables, and archive tables. The ledger table is used by all three SunAccount modules: **Ledger Accounting**, the **Fixed Asset Register** and **Corporate Allocations**.

Sales Order Data

The sales order and sales order history tables contain all the transactions entered in the **Sales Order Processing** module.

Purchase Order Data

The purchase order and purchase order history tables contain all the transactions entered in the **Purchase Order Processing** module.

Inventory Control Data

Inventory movements are held in the movement table.

Stock Take Data

Stock take details are held in the stock take tables.

BACKUP FILES

SunSystems has its own FB=File Backup/Restore function. This option allows you to take a backup copy of the data tables. The SunSystems FB=File Backup/ Restore facility creates an ASCII text file which can be examined with a word processor or text editor.

FB=File Backup/Restore is used in non-SQL versions of SunSystems for day-to-day backup of data files. In SQL versions it is used only for upgrading to a new version of SunSystems. It **must** be used when upgrading. See the *Upgrading* section in this manual for more details.

For a regular backup strategy, the MS SQL Server database backup utility is more appropriate and much faster than using the SunSystems FB=File Backup/Restore. See the section *Administration and Maintenance Tasks* in this manual. For more information on SQL Server database backup and restoration refer to your Microsoft documentation.

The backup files should be located in an exclusive directory, e.g. _back\, so that they may be distinguished from other files.

If the size of any of your backup files exceeds the size of one volume (for example floppy disk or tape) then you must use the Multi-Volume Backups box in DB=Database Definitions. If any backup file exceeds 2Gb, you must select 2-2Gb in this box.

STORED REPORT FILES

Whenever you choose to print a report in SunSystems, you are offered the option to Print Report or Store on Disk. When a report is stored to disk, a print file is written to the directory/drive which has been selected for print files.

The print files should be located in an exclusive directory, e.g. _print\ as it makes it easier to monitor the age, number and size of print files. The SunSystems function OD=Operator Definitions allows you to specify individual print file directories for each of your operators.

WORK FILES

Work files are, by definition, temporary files which are deleted and re-created as necessary. Certain work files are deleted when the application terminates or when a similar file is required again. If, for any reason, SunSystems shuts down abnormally you are advised to delete all the work files.

The work files should be located in an exclusive directory, e.g. _work\, because they are then easier to monitor. Before upgrading to a new version of SunSystems you must delete all remaining work files. The SunSystems function OD=Operator Definitions allows you to specify individual work file directories for each of your operators.

Other work files are created when operators log in, and are subsequently deleted when they log out. These are used by FREEFORMAT macros (SSWM files), and also the QUERY tool (SSWN files) in SunSystems. These work files are stored by default in the program directory.

If your users do not have delete permissions, you may find these work files accumulate, and have to be deleted by the system administrator. To avoid this, you can specify a separate directory for these types of work files using SUN.INI. Specifying a directory on the hard disk of each client PC is recommended for all types of work file. See the section *Using SUN.INI* for more information.

LOCATING DATA TABLES AND FILES

All SunSystems data is stored in a Microsoft SQL Server database.

OD=Operator Definitions enables you to specify the location of work and print files, by operator. See the *SunAccount* or *SunBusiness Reference Manual* for details of these functions.

In the client/server environment it is recommended to keep work and print files on the client PC's local hard disk as this reduces network traffic and thus improves performance. When using the SunSystems Graphical Client all data should be stored on the application/database server. Data related work files are located using the function OD=Operator Definitions. There are additional user-specific work files which are located using the line `syswork=` in the `SUN.INI` file in the programs directory, e.g. `syswork=C:\WORK\`. Both of these methods should be used to locate work files on the client PC.

In the OD=Operator Definitions function, you must enter the full directory path for the subdirectory you wish to identify. SunSystems limits you to a ten character specification.

There are three methods available for specifying a directory name:

1. Relative Directory Path

Using this method, the directory is defined relative to the SunSystems program directory and must be located on one physical drive. For example, if the SunSystems program directory is `C:\FINANCE\SUN`, then the work files directory may be specified as follows:

Specification	True Directory
`_WORK\`	`C:\FINANCE\SUN\_WORK`
`.\_WORK\`	`C:\FINANCE\SUN\_WORK`
`..\_WORK\`	`C:\FINANCE\_WORK`

The '\' backslash at the end of the specification is essential.

2. Full Directory Path

This defines the directory relative to the root directory. If both the SunSystems program directory and the work files directory are on the same drive, then the drive letter need not be specified. However, if the work files directory is on a different drive to the SunSystems program directory, then the drive letter must be specified.

The following examples explain this:

Specification	True Directory
`\SUN\WORK\`	`C:\SUN\WORK`
`D:\AP\S\W\`	`D:\AP\S\W`
`D:\SUNWORK\`	`D:\SUNWORK`

The '\' backslash at the end of the specification is essential. This method may be used where the directory specification is very short. In other words, it can be defined in ten characters or less. If you need to define a longer directory path, and you are using a NetWare drive, you can use the `map root` command to shorten the directory specification, for example:

```
map root t:=server\sys:apps\finance
```

See the Novell NetWare manuals for a full explanation of the `map root` command. Otherwise you can use the third method described below.

3. Define and Substitute Logical Names

All PC operating systems allow you to define environment variables. This is usually done in the `AUTOEXEC.BAT` file for Windows 9x. It may also be done from a separate command file.

The form of the command would be similar to the following:

```
SET SUNWORK=C:\TEMP\SUN\JLP
```

Variables set in this way must be created each time the machine is rebooted. It is therefore preferable to set them in the `AUTOEXEC.BAT`, which is called on system start-up.

On Windows NT platforms environment variables are set using the Environment settings under System Properties.

Once variables have been set, the machine must be re-booted, regardless of the operating system.

ODBC Configuration

As mentioned in the subsection *ODBC Settings* in the section *Deploying SunSystems,* an ODBC entry needs to be configured wherever the main SunSystems program files are installed.

The ODBC Data Source Administrator, located in Control Panel, is used to create and manage ODBC settings for SQL Server. It is recommended that System DSNs are created unless security and application access prevents otherwise. However, System DSNs are accessible to everyone logging on to the system. User DSNs are specific to individual users and are not accessible to accounts other than the account used to create the data source.

Name the data source using the format `SSSS.DDDD`, where `SSSS` is the name of the SQL Server machine and `DDDD` the name of the SunSystems database specified in the `DEFINEDB.SQL` script.

The following configuration settings are recommended when configuring ODBC data sources:

- Data sources should connect using SQL Server authentication. The Login Id `SSA` with password `SUNSSP` should be used when configuring authentication.

- TCP/IP should ideally be selected under Client Configuration

- Ensure that default database is correct

- 'Perform translation for character set' - should be unchecked

- 'Use Regional Settings……' - should be unchecked

- 'Save long running queries…..' - should be unchecked

- 'Log ODBC driver……..' - should be unchecked

It is advisable that you test the data source once the configuration options have been selected.

Using SUN.INI

The `SUN.INI` file is used to specify the server and database to which you log in. It is also another method of specifying the location of certain files. The `SUN.INI` file is installed in the SunSystems program directory. The file provided is a text file, which requires editing according to your server, database and directory structure.

EXAMPLE OF SUN.INI

```
[SunSystems initialisation]
sysdata=_data\
syswork=
cobflags=-a0+b1+b2-f0+h0+k3+n0+s1+v0+p0


server=SUN
database=SQL7


public-name=
sqlpath=_sql\
```

The descriptions in '[ ]' square brackets are for information only.

You should limit your entries to eight characters, and use the `map root` command, or logical names if your path is too long. See the section *Files and Directories* for further information.

SERVER

On the line `server=` you should enter the server name on which MS SQL Server is running. This should be the server name specified when creating the data source.

DATABASE

On the line database= you should enter the name of your SunSystems database (defined in DEFINEDB.SQL script file). Note that the database name is case sensitive.

SQLPATH

Indicates the location of the _SQL directory structure.

SYSDATA

On the line sysdata= you should enter the directory path for the report format file SSREPORT and the data dictionary file SSDDICTY. This path is relative to the SunSystems program directory.

SYSWORK

On the line syswork= you should enter the directory path for the temporary work files SSWM-xxx and SSWN-xxx (where xxx is the operator Id). These files are used by the FREEFORMAT and QUERY tools.

The directory path names can be a maximum of ten characters in length.

SCREEN-BUILD

You can add a line which reads screen-build=Y which will automatically turn on the ALT+Z hidden function. This function controls the visibility of screen building.

In a windows environment the visual construction of each screen, from the bottom up, is hidden. This improves performance considerably.

Use ALT-Z to control the screen build, switching from the bottom up or top down construction. Users of the Chinese versions of SunSystems may find the ALT-Z switch improves the appearance of their screens.

SET SUNINI

There is an environment variable to tell the Windows screen-handler where to find SUN.INI. Use the SET command, for example:

```
SET SUNINI=C:\SUN
```

This allows network users to read their own individual copies of `SUN.INI` rather than a single shared network copy. Each operator can then access different fonts or screen sizes.

WINDOWS TASKBAR

You may have noticed that the Windows taskbar forces the SunSystems status bar up one line, obscuring the bottom line of the template. There are several workarounds:

- Set your Windows taskbar to Auto-hide and Always on Top

- Rearrange the taskbar by 'drag and drop' so it is no longer displayed at the foot of the screen

- Alter the size of SunSystems screen by amending `SUN.INI`.

If you run your system at more than 640 by 480 pixels, you can specify the size of the SunSystems window with the following entry in `SUN.INI`:

```
size=m
```

where m is the resolution that SunSystems can run in. You can enter:

```
1=640*480

2=800*600

3=1024*768
```

or you can specify `640`, `800` or `1024`.

This means that the user has the choice of whether SunSystems runs full screen (maximised) all the time or in a smaller window. In other words, if you are running Windows at 800 by 600 pixels, you can tell SunSystems to run in 640 by 480 pixels, about two-thirds of the screen size. You could also tell it to run in 1024 by 768 pixels, but this does not fit on the screen unless your normal Windows resolution is higher than 1024 by 768. If this entry is omitted, the default is maximised.

FONTS

If you are running a graphical version of SunSystems and find that entries are truncated from the left in some boxes, you may need to change your default font. Add a line similar to the following in the `SUN.INI` file;

```
P=Arial, 8
```

Use P for proportional fonts, for example Arial, or M for monospaced fonts, for example Courier. It is important to enter the P or M in upper case.

DOUBLE BYTE CHARACTER SETS (DBCS)

You may wish to run SunSystems with a Double Byte Character Set (DBCS), particularly for multi-lingual installations such as Chinese and Japanese. It is now possible, on DBCS operating systems or emulators, for SunSystems to validate your data for truncated or split characters during data entry, data importing and posting.

When DBCS validation is required the following line should be added to the SUN.INI file:

```
DBCS-VAR=1
```

The variable '1' depicts the character set being used and may be set to one of the following:

    1 = Japanese (Shift-JIS)

    3 = CP949-WANSUNG

    4 = CP1361-JAHAB

    5 = TRAD-CHINESE-BIG5

    6 = SIMP-CHINESE-GB

The variable should be set to '0' if you wish to use a Single Byte Character Set (SBCS):

```
DBCS-VAR=0
```

Running SunSystems

When the installation process is complete, you can test that it has been successful by logging in and running SunSystems. The means by which you log in to SunSystems varies according to your operating system and environment.

☞ *Note: Whilst running the SunSystems Graphical Client it is essential to test the thick connection prior to running the thin client. This helps eliminate any problems when troubleshooting the installation.*

Essentially, you must have access to the SunSystems program directory, and use the command SUN32.EXE.

INITIALISING A NETWORK

Before you can start running SunSystems on a network you must:

1   Start the network server.

2   Start any print servers.

3   Start Microsoft SQL Server.

4   Start the client PC.

5   Connect to the network.

6   Run the login script to make any shared network directories available as drives.

In the following examples the SunSystems program directory is assumed to be C:\SUN426.

LOGGING INTO SUNSYSTEMS

When the installation process is complete, you double-click the SunSystems icon in the program folder, which has been created automatically for you. This runs SUN32.EXE which starts the 32-bit version of SunSystems.

Running Multiple Sessions

SunSystems version 4.2.6 for 32-bit operating systems can multi-task. This allows you to have several sessions of SunSystems running concurrently. Each session requires a separate login definition, so you must have sufficient user licences to run multiple sessions simultaneously. You can run as many sessions as your memory and licences allow.

THE SUNSYSTEMS LOGIN SCREEN

When you start SunSystems, the login screen is displayed. You are asked for an operator Id and password. These records are controlled by the SunSystems function OD=Operator Definitions. The first time you login, you **must** login as the SuperUser SUN with password SUNSYS (or, if you have changed the SUN SuperUser's password in the DEFINEDB.SQL script file, use the new password). If you get an error message at this point, see the section *Troubleshooting* for further advice.

The following warning message is then displayed:

> DEFAULT DATABASE DEFINITION RECORD NOT FOUND

This message appears because there is no installation table present in the database. The installation table stores vital information including the SunSystems version number and operator details. Click OK or press ENTER to accept this message and the following message is displayed:

> Press ENTER to retry or Cancel to exit system

With this message still on the screen, create the installation table by entering Z. The following prompt then appears:

> Installation file will be created?

Click Yes and the installation table is created, returning the cursor to the Today's Date box and a message should inform you that the installation table was rebuilt.

Once you are logged into SunSystems as the SuperUser SUN, there are some tasks to be performed before the system is usable. If you have upgraded from an existing version you should have performed the appropriate tasks described in the section *Upgrading*. If you are installing a new version, your first task must be to define at least one operator group in the function OP=Operator Permissions. If you are not using OP=Operator Permissions, then simply create a default operator group with ' ' spaces as the operator group code. See the subsection *SunSystems Operator Permissions and Data Access Groups* in the *System Security* section for further information.

Having created a set of permissions you must now create an operator definition for the SuperUser SUN using the function OD=Operator Definitions.

When creating the operator definition for the SuperUser SUN, the password entered must match the password used for the MS SQL Server SUN login Id. This is defined in the script file DEFINEDB.SQL. See the *System Security* section for further information.

The date is restricted if you are running a demonstration version of SunSystems. If your system is live and fully licensed, you are subject to occasional reserialisation checks. When you enter a date you are warned when this process is required; follow the instructions on screen.

SUNSYSTEMS DEMONSTRATION DATABASES

The following steps detail how to restore the demonstration databases supplied with SunSystems:

1   Log in as the user SUN (see the *Installing SunSystems* section for details regarding the default database).

2   To define the path to your backup files use the function DB=Database Definitions. From here select Amend. Press ENTER in the Database Code box and accept the Database Name as Default Database Definition. In the Backup File Drive box enter _DEMDATA\ (or the relevant setting if you have moved the demonstration database files).

3   Press ENTER to move to the next box and then F7 to accept the defaults for the remaining fields.

4   Type FB=File Backup/Restore and then Restore.

5   In the Database Code box press ENTER to restore the default database.

6   You are then prompted 'Restore will destroy any data entered since last backup?', enter Y-Yes to continue.

7   Enter Y-Yes in the Installation File box.

8   Press ENTER to accept the default settings in the remaining boxes and select Y-Yes when prompted 'Ensure backup disk loaded?'.

The default reference file is now restored.

1. Once the file has been restored select <u>R</u>estore again to restore the DEM database.

2. This time type DEM in the Database Code box, and again select Y-Yes to continue.

3. Enter Y-Yes for all boxes except those specified as history boxes (returning through these boxes sets the values to N-No, the default value). The Ledger Archive File should be set to 90 (for 1990).

4. Accept Y-Yes to continue.

5. Repeat the above procedure to restore the Budget and Commitment files for the DEM database.

6. Before exiting SunSystems use OD=Operator Definition to create a SUN user with the same password as specified in the DEFINEDB.SQL script.

Two further databases have been provided called DM1 and DM2. They can be restored in a similar way to the DEM database. However, *.BAK files are only provided for the Reference File, Ledger File and the Journal Hold File, therefore only choose to restore these three files.

☞ *Note: Restoring the Installation File for the default database sets the Backup File setting to _DEMDATA\ for DEM, DM1 and DM2. Therefore this setting must be changed where appropriate prior to restoring the databases.*

The three demonstration databases are now available to allow users to become familiar with SunSystems.

SUNSYSTEMS REFERENCE FUNCTIONS

Here is a brief list of some of the more crucial SunSystems functions for a system administrator. The sections in the *SunAccount* and *SunBusiness Reference Manuals* provide detailed descriptions of these functions.

- The lines server= and database= in the file SUN.INI allow you to specify the server and database where your tables reside.

- FC=File Creation enables you to create the necessary data tables for a new database.

- PD=Printer Definitions allows you to define the printer configurations you use. This option is associated with CS=Control Sequence Definitions. See the section *Printing from SunSystems* for further information.

- OP=Operator Permissions allows you to apply various levels of security to your databases, in conjunction with DA=Data Access Groups. See the section *System Security* for more information.

A SKELETON DATABASE

SunSystems provides the facility to create and use a skeleton database. You can set up, for example, a basic chart of accounts, and analysis structure. This can then be imposed on any new databases when you create them in FC=File Creation.

The following steps allow you to use your own skeleton database:

1   Create your skeleton database in FC=File Creation and define the common features in the relevant reference functions. This database can have any database code.

2   Use FB=File Backup/Restore to backup this database. You need only backup the reference table.

3   From the operating system, copy the backup reference file to the data directory and rename it as:

```
SSRF-SKL.BAK
```

This should be stored in the directory specified in your `SUN.INI` file. By default this is `_data\`, for example:

```
sysdata=_data\
```

Each time you use FC=File Creation, you are offered the choice of using this skeleton as a basis for the new reference file. If a database with the code SKL does not exist, this option is not presented.

System Security

This section covers all aspects of system security and includes permissions at operating system level and within SunSystems, backup procedures and recoveries.

There are two aspects of database security: the SunSystems security facilities and access to the database tables via third party tools.

SUNSYSTEMS SQL USER ACCOUNTS

When SunSystems is installed the security settings for SQL Server should be set to SQL and Windows NT authentication.

During the creation of the SunSystems database using the `DEFINEDB.SQL` script two SQL Server user logins are created, namely SUN and SSA. The users have the following properties:

User Id	SunSystems Database Group	Password
SUN	Dbo	SUNSYS
SSA	Public	****** **Do not change** – SunSystems generated

The SUN user is given ownership of the SunSystems database (dbo). The dbo has full permissions to the database (select, insert and update). Other permissions must be explicitly granted.

The SSA user is added to the Public user group. The installation process grants read permissions on the `SSINSTAL` table to the Public group. The `SSINSTAL` table holds the operator definitions and encrypted passwords.

SSA is used for user authentication purposes. Once validated the SUN account is used to log in to the database.

In this way any user logging in to SunSystems has complete access to any tables held within the MS SQL Server database, with the constraints assigned within SunSystems. However, that same operator has no access to the tables using third party tools, unless the system administrator or database owner grants the required access rights.

Whilst being transparently connected as the user SUN, the user is still governed by those permissions assigned to them in OP=Operator Permissions within SunSystems.

Changing the SUN user's password in OD=Operator Definitions automatically changes the password of the SUN login Id on MS SQL Server, which is a global login Id. Therefore, if you have more than one physical database on the server, for example, a production database and a test database, and you change the password of the SUN user in one database, you must also change it in the other version. Failure to do this prevents operators from logging in successfully.

WINDOWS NT FILE ACCESS AND SECURITY

If you are using a Windows NT or 2000 server as a file server for your SunSystems programs, you are advised to adhere to the Microsoft practice of creating a global group with all users of SunSystems programs, and then make the global group a member of a SunSystems local group. Refer to your Windows documentation for further information.

The following table provides a guide when implementing Windows NT file security on an Windows NT Server. SunSystems in this case has been installed as Server and Client:

Permissions	Subdirectories	Description
Share level	`D:\Sun426\`	SunSystems server program files
Change	`D:\Sun426\Server`	SunSystems server program files
Add and read	`D:\Sun426\Server\_Back`	SunSystems generated backup files
Change	`D:\Sun426\Server\_Data`	SunSystems data files
Change	`D:\Sun426\Server\Docs`	SunSystems online documentation
Add and read	`D:\Sun426\Server\_Print`	Stored report files in text format
Change	`D:\Sun426\Server\_Work`	Temporary work files

Permissions	Subdirectories	Description
Add and read	`D:\Sun426\Server\_DEMDATA`	Demonstration databases backup files
Add and read	`D:\Sun426\Server\_SQL\PROCS`	SQL script files for stored procedures
Add and read	`D:\Sun426\Server\_SQL\ QUERIES`	Useful SQL administration scripts
No access	`D:\Sun426\Server\_SQL\ INSTALL`	SQL Scripts for creating the SunSystems databases
No access	`D:\Sun426\Utils`	SunSystems utilities
No access	`D:\Sun426\Thincli`	Graphical Client programs directory

Testing Your Permissions

When all users have been created and assigned to a group which has the above trustee permissions, log out of the Windows NT network and log in again using one of these login Ids.

Access SunSystems and test the permissions. If errors occur, then log out of SunSystems and Windows NT, log back into Windows NT as the administrator and re-access SunSystems. Repeat the previous steps. If the error does not occur then the permissions on the group to which the user belongs are incorrect.

It is imperative that permissions are defined according to these guidelines. It is also very important to remember that as far as the network is concerned, files are owned by the network user who created them.

FreeFormat Macros

When using the LEARN command with the SunSystems FREEFORMAT macro tool, either the operator must have network supervisor permissions, or the FREEFORMAT files should be in a separate directory accessed temporarily by changing the login. This only affects the learning of new macros. Once the macros are created they can be run as usual from the program directory by extending the file permissions on `*.MDF`. See the section *FreeFormat Macros* in the *SunSystems Reference Manuals*.

SUNSYSTEMS OPERATOR PERMISSIONS AND DATA ACCESS GROUPS

Within SunSystems there are powerful security features. These are controlled by the settings in OD=Operator Definitions, OP=Operator Permissions, and DA=Data Access Groups.

All SunSystems operators can have passwords, with settings for the length, and expiry controls.

The operator permissions are structured into groups, which allows you to define access rules according to rank or job description, and avoids the repetitive creation of similar records.

With operator permissions and data access groups you can control the following areas:

- Functions to which an operator has access

- Actions an operator can perform in a particular function

- Specific data records

- Other miscellaneous tolerances.

As systems administrator you should familiarise yourself with these functions. There is an overview of the features in the *SunSystems Appreciation Guides*, and detailed descriptions in the *SunSystems Reference Manuals*.

SunSystems Graphical Client

The SunSystems Graphical Client is installed and configured when SunSystems is deployed as a Thin Two Tier or Three Tier solution.

SUN32.EXE must be able to communicate with the SQL Server database before thin connections can be made. An ODBC data source must be created on the application/database server for the Two Tier installation and the application server for the Three Tier installation.

It is important that this connection is tested prior to the configuration of the SunSystems Graphical Client. See the sections *ODBC Configuration*, *Using SUN.INI* and *Running SunSystems* for more information.

INSTALLING THE SUNSYSTEMS GRAPHICAL CLIENT

As highlighted in the subsection *Installation Options* in *Installing SunSystems*, there are two methods for installing the SunSystems Graphical Client files.

If the client and server option was selected the graphical client files are installed in the thincli SunSystems subdirectory. These files are installed on the client machine using the SETUPGC.EXE program, executed remotely across the network.

From the client machine map a drive to the server where the SunSystems files have been installed. Navigate to the thincli directory below the SunSystems program directory and execute the SETUPGC.EXE program files.

The installation procedure prompts you for an installation directory. The graphical client files are then copied from the server to the installation directory on the client machine. The username is used in configuring the CCI.INI files which are located in the local WINDOWS or WINNT directory.

For more information on the directories created during the installation see the subsection *Default Directory Structure* in the section *Installing SunSystems*.

The second option allows you to install the graphical client by creating and configuring the CCI.INI file, located in the local Windows or WINNT directory. This installation should be carried out on specific machines and not across the network. You must also specify a username to identify your client requests to the server. This username is used to identify the users' session on the server and must therefore be unique. This username is found in the CCI.INI file.

CONFIGURING SUN.INI FOR GRAPHICAL CLIENT

As well as configuring the `SUN.INI` file located beneath the main SunSystems program directory, you must configure the `SUN.INI` file on each client machine.

There are two settings which are crucial in order for the SunSystems Graphical Client to connect correctly:

```
public-name=server

SUN=C:\sun426\sun32.exe
```

The public name should reflect the public name contained within the `SSMASTER.INI` file, located in the SunSystems program directory on the server. By default the public name can be left blank. See the subsection *SSMASTER.INI* below for more details on setting the public name for `SSMASTER`.

The `SUN=` setting needs to contain the exact path to the `SUN32.EXE` file. This path must match the path as it appears on the server i.e. `C:\SUN426\SUN32.EXE`.

CCITCP2 AND SSMASTER

`CCITCP2` and `SSMASTER` handle communications between the SunSystems Graphical Client and the SunSystems Business Logic on the Windows NT Server.

During the installation process, you may have opted to install `CCITCP2` and `SSMASTER` as services. (These cannot be installed when performing a remote installation). If you did, ensure that the services are running and go to the subsection *Running the Graphical Client.* Please note that although the `CCITCP2` and `SSMASTER` services have been installed and started, a user account still needs to be specified for the Services Security Context.

If you chose not to install `CCITCP2` and `SSMASTER` as services, or you were performing a remote installation, then the following set-up procedures need to be followed in order to install `CCITPC2` and `SSMASTER` as services on the server.

Both `CCITPC2` and `SSMASTER` can be found in the main SunSystems program directory as executables (`CCITCP2.EXE` and `SSMASTER.EXE`). Both `CCITCP2` and `SSMASTER` can be installed as a service on the server using the following command lines, executed from the `Utils\` directory:

```
INSTSRV.EXE   CCITCP2    D:\SUN426\UTILS\SRVANY.EXE

INSTSRV.EXE   SSMASTER   D:\SUN426\UTILS\SRVANY.EXE
```

Once the service has been installed a prompt informs you that you must use the Service applet from the Windows Control Panel to change the Account Name and Password for the Services Security Context. Your system administrator should complete this task. This account name is essential when printing from the SunSystems Graphical Clients.

Once installed as services there are two registry settings that must be added before the services can be started.

Run either `REGEDT32` or `REGEDIT` and select the following entry:

```
HKEY_LOCAL_MACHINE\\SYSTEM\CURRENTCONTROLSET\SERVICES
```

There are two keys present as Services: `CCITCP2` and `SSMASTER`. Select the `CCITCP2` key and create a new key beneath it called Parameters, type `REG_SZ`. Add a string value to this key called Application and set the value as follows:

```
D:\SUN426\CCITCP2.EXE
```

Where `D:\SUN426\` is the full path to the `CCITCP2.EXE` file on the server including the file extension.

Add a second value to the key called `AppDirectory` and enter the full path to the `SUN32.EXE` file on the server. Include the file and extension in this string value.

Repeat the process for `SSMASTER`.

Once this is complete both services can be started on the server. This is done via the Services applet in the Control Panel.

SSMASTER.INI

By default the `SSMASTER.INI` does not require editing.

Edit `SSMASTER.INI` and add a public name for this instance of `SSMASTER`. It is advisable to make this name unique and relevant to the particular installation of SunSystems. For example:

```
PUBLIC-NAME = SERVER_NAME
```

A public name is only required if multiple instances of `SSMASTER` are running on the same machine. In this scenario the `SSMASTER` service must be stopped, and `SSMASTER` should be run as an application rather than a service. In general it is not necessary to run multiple instances of `SSMASTER`. This scenario may only be necessary when upgrading.

☞ *Note: `SSMASTER` needs to be stopped and then restarted for the `SSMASTER.INI` settings to take effect.*

CCIINST

`CCIINST.EXE` must be executed on the server and the client, again this file is located beneath the SunSystems program directory on both the server and client.

Once executed a dialog box prompts for the Host name of the server on which the `CCITCIP2` service is running. This information is written into the registry in the following location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\MICRO FOCUS-
ENVIRONMENT\CCITCP2:REG_EXPAND_SZ:SERVER_NAME
```

CCIINST also adds the following value into the `Services` file:

```
MFCOBOL                              86/UDP
```

This file is located in the `WINNT\SYSTEM32\DRIVERS\ETC` directory on Windows NT. Ensure that this value has been entered prior to running the SunSystems Graphical Client, if not, enter the value manually.

RUNNING THE GRAPHICAL CLIENT

Complete the following checklist before running the `SUNCLI32.EXE` file on the client machine:

- `CCITCP2` and `SSMASTER` are both running as services on the server and the registry entries have been made and are correct

- Ensure that `SUN32` connects to the SQL Server database

- The value in the `SSMASTER.INI` file and the `SUN.INI` file for the public name match (where necessary)

- `CCIINST` has been run on both the client and the server; and in both instances the host name was entered correctly

- The entry for `SUN=` in the `SUN.INI` on the graphical client is the relative path on the server and not the path relative to the `SUN32.EXE` file on the server from the client

- Ensure that the correct entry has been added to the services file on the NT server.

Once the above procedures have been completed successfully, execute the `SUNCLI32.EXE` file from the client machine.

For more information on the SunSystems Graphical Client refer to your *SunSystems Graphical Client for Windows NT (32-bit)* installation manual.

Printing from SunSystems

This section details the procedures you must follow in order to produce hard copies of various listing and reports, as well as documents such as invoices, cheques and statements from SunSystems.

☞ *Note: You should use a PCL printer for producing output from SunSystems. If you attempt to print to a postscript printer, the output may be truncated. See the subsection Defining Printer Settings in SunSystems for more details on PCL.*

PRINTER CONNECTIONS

For some standard SunSystems reports the printer must be capable of printing 132 characters per line. You may have to configure your printer to print in compressed mode or landscape format. This can either be done on the printer control panel or by using the SunSystems function PD=Printer Definitions in conjunction with CS=Control Sequence Definitions. There are examples of these settings later in this section.

LOCAL PRINTERS

A local printer has a cable running into the printer port of the PC. Typically a PC has one parallel printer port which is linked to the logical device name LPT1:.

CAPTURING PRINTER PORTS

In Windows 95 and Windows 98 SunSystems relies on capturing one of the available printer ports in order to print. Select the Printers icon from Control Panel and select the printer you wish to capture. Right click on the Printer and select Properties. Next select the Details tab and click the Capture Printer Port button. Select the device, for example LPT3:, and then enter the full path to the printer on the network, for example \\printserver\Printer#1. Ensure that the Reconnect at logon box is checked and then click OK.

ENVIRONMENT VARIABLES

To print under Windows NT it is necessary to create a system variable. From Control Panel select the System icon; select the Environment tab and add a Variable (max 9 characters) for example, SUNPRINT. The value for the variable should be the full path to the network printer e.g. \\printserver\Printer#1.

Set the variable and then click OK. You have to restart the machine before the variable can be referenced.

DEFINING PRINTERS IN SUNSYSTEMS

Within SunSystems you use PD=Printer Definitions to identify on which printer, and in what mode, a report or document is printed. You can set up printer definitions which point to a logical device name such as LPT3:. When SunSystems prints to the logical device LPT3:, the PC maps that to the network. The network then routes it through to the network printer or spool queue.

You can set up as many printer definition records as you require. For example, you may have three printer definitions that point to the same printer: one for compressed mode, one in landscape format, and one with a form feed to allow preprinted stationery to be fed in.

The demonstration data SSINSTAL file includes various printer definitions, including one designed to work with the SunSpool Windows printing tool. If you are upgrading and do not want to replace your existing SSINSTAL file, you can use the Transfer facility to copy individual records.

Define Print File Drives

If your search criteria include different print file directories, you need to set these up in OD=Operator Definitions. If a user produces both cheques and reports, you might set up one operator definition with _CHEQUE\ in the print file drive box, and one with _REPORT\ in the print file drive box. The user must be logged in with an appropriate operator Id for the type of document being printed; this ensures documents are sent to the correct subdirectory. Using OP=Operator Permissions, you can specify which operator Id has access to the report and document producing functions.

Creating Control Sequences

Printer Command Language (PCL), commonly known as escape sequences, is a language used to instruct the printer how you want to print (for example, orientation, fonts and character spacing). Many software applications like SunSystems allow you to specify how you want to print.

Note the following typical PCL printer command (to specify landscape orientation):

E_C & *l* # O   (Roman-8 character set)

Printer Commands always start with the escape character E_C

Printer commands are case sensitive and end with an upper case character, except when combined. A command received by the printer stays in effect until changed by a subsequent command.

You define a printer command in SunSystems using the PD=Printer Definitions and CS=Control Sequence Definitions functions. The control sequences are entered as a string of numbers. For example, each of the characters in the above example are represented by a three digit number:

027 038 108 049 079

Tables with translations of the Roman-8 character set into decimal and hex representations are available in most HP LaserJet series printer user manuals.

Combining Printer Commands

There are three steps to combine printer commands and create escape sequences:

1 The first two characters after the E_C escape character (represented in SunSystems as 027) must be the same in all the commands that need combining.

2 When combining commands, the representation of the last character in a command, usually an upper case letter, becomes a lower case letter. The very last character of a command that ends a sequence is, however, upper case so the printer recognises that the sequence has ended.

3 Printer commands take effect from left to right so sequences should be constructed in the order in which the commands are performed.

This example of a combination of printer commands is taken from the printer manual:

1	027 069	Reset
2	027 038 108 048 079 (111)	Orientation Portrait
3	027 038 108 048 076 (108)	Disable Perforation Skip
4	027 038 108 054 068 (100)	6 Lines per Inch
5	027 038 108 048 069 (101)	0 Lines Top Margin
6	027 038 108 054 054 080 (112)	66 Lines per Page
7	027 038 107 048 083 (115)	10 cpi Courier Typeface

The numbers in brackets are the lowercase decimal representations of the character preceding them. See step number 2 above. Using the same example, the escape sequence is as follows, although there are really three escape sequences here, all of which start with E_C 027:

027   *note 1* reset

069

027   *note 1* need to start a new one because the second character is not common (see step 1 above)

038   *note 4* these characters are common to all printer commands, so do not have to be repeated

108   *note 4* these characters are common to all printer commands, so do not have to be repeated

048

111   *note 5* the lower case representations are used as we are in mid-escape sequence

048

108   *note 5* the lower case representations are used as we are in mid-escape sequence

054

100   *note 5* the lower case representations are used as we are in mid-escape sequence

048

101   *note 5* the lower case representations are used as we are in mid-escape sequence

054

054

080   *note 6* the upper case representation is used as we are concluding the sequence for *note 2*

027   *note 3* need to start a new one because *note 2* was ended with an upper case character (see *note 6*)

038

107

048

083   *note 6* the upper case representation is used as we are concluding the sequence for *note 2*

EXAMPLE CONTROL SEQUENCES FOR HP LASERJET PRINTERS

The following example control sequences are supplied with the demonstration data SSINSTAL file. This section explains how they have been created.

The control sequences have not been combined; this makes it is easier to change them within the CS=Control Sequence Definitions screen. They can be combined if you need to add additional sequences.

Note that the order in which the sequences are entered on the CS=Control Sequence Definitions screen is important, as a particular escape sequence may depend on a previous one.

The Lines Per Page box in the PD=Printer Definitions screen specifies how many lines are printed before SunSystems prints its heading lines. The lines per page specified by the escape sequences in CS=Control Sequence Definitions determines how many actual physical lines are printed on a sheet of paper before a page

throw occurs. In order to have the heading lines coincide with the page throw (in other words, to avoid page slippage) the number of lines specified in PD=Printer Definitions must correspond to the number of lines specified in the associated escape sequences.

Portrait Normal

027 069	Reset
027 038 108 048 079	Orientation Portrait
027 038 108 055 046 055 055 052 053 067	Set VMI (7.7745)
027 038 108 054 054 070	Text Length (66 Lines)

Enter these numbers in the CS=Control Sequence Definitions screen exactly in the order specified. There is no need to leave a gap or input the sequences on different lines. Also make sure that the PD=Printer Definition screen that uses this CS=Control Sequence Definitions has Lines Per Page set to 66.

Portrait Compressed

027 069	Reset
027 038 108 048 079	Orientation Portrait
027 038 107 050 083	16.67 Typeface
027 038 107 055 072	7/120" HMI
027 038 108 055 046 055 055 052 053 067	Set VMI (7.7745)
027 038 108 054 054 070	Text Length (66 Lines)

Ensure the PD=Printer Definitions Lines Per Page is set to 66.

Landscape Normal

027 069	Reset
027 038 108 049 079	Orientation Landscape
027 038 108 055 046 055 055 052 053 067	Set VMI (7.7745)
027 038 108 052 050 070	Text Length (42 Lines)

Ensure PD=Printer Definitions Lines Per Page is set to 42.

Landscape Compressed

027 069	Reset
027 038 108 049 079	Orientation Landscape
027 038 107 052 083	Elite 12.0 Font
027 038 108 053 046 052 057 055 049 067	Set VMI (5.4971)
027 038 108 054 050 070	Text Length (62 Lines)

Ensure PD=Printer Definitions Lines Per Page is set to 62.

Landscape Super Compressed

027 069	Reset
027 038 108 049 079	Orientation Landscape
027 038 107 050 083	16.67 Typeface
027 038 108 053 046 052 057 055 049 067	Set VMI (5.4971)
027 038 108 054 050 070	Text Length (62 Lines)

Ensure PD=Printer Definitions Lines Per Page is set to 62.

☞ *Note: These control sequences determine the number of lines printed before a page throw. If you want to change this parameter you have to substitute the relevant Text Length escape sequence (this information is in your printer manual) and change the Lines Per Page box in the PD=Printer Definitions.*

☞ *Note: The VMI specifies the gap between the lines. If there is a conflict between the VMI and the Text Length, the Text Length is ignored. In this case, you also have to adjust the VMI. Refer to your printer manual.*

US Paper Sizes

The following control sequences have been created for US letter sized stationery:

US Portrait Normal Letter

027 038 108 048 079 027 040 115 049 048 072

Ensure PD=Printer Definitions Lines Per Page is set to 60.

US Portrait Compressed Letter

027 038 108 048 079 027 040 115 049 054 046 054 054 072

Ensure PD=Printer Definitions Lines Per Page is set to 60.

US Landscape Normal Letter

027 038 108 049 079 027 040 115 049 048 072

Ensure PD=Printer Definitions Lines Per Page is set to 48.

US Landscape Compressed Letter

027 038 108 049 079 027 040 115 049 048 072

Ensure PD=Printer Definitions Lines Per Page is set to 48.

PRINTING USING SUNSPOOL

SunSpool enables Windows printing from SunSystems. From version 4.2.6a Service Pack 7, a newly developed version of SunSpool has been issued which gives the option to enable the printer and font to be selected for each print produced in SunSystems. Changes have also been made to allow SunSpool to print double and multi-byte character sets.

Setting Up SunSpool

Run `sunspool.exe`, located in your `sunsystems` program directory to initiate the creation of the SunSpool taskbar icon.

Double click, or right click on the SunSpool icon to display the Report Spooler dialog. If you want to amend a printer group, double click on any group listed in the left hand pane. Although `sunspool.ini` is no longer used, previously defined printer groups are now written to the registry in HKEY_LOCAL_MACHINE, SunSystems, SunSpool, and appear in the Report Spooler dialog. Updates cannot be made from `sunspool.ini` if there is already a registry entry. You can specify up to 40 printer groups from the Report Spooler dialog which in turn check a specified directory for the SunSystems print files (*.SPL). The default printer, and whether printer dialog and/or font dialog is displayed can be specified for the Printer Group.

In PD=Printer Definitions enter `SPOOL` as the printer device name. Ensure that the Compressed Print, Normal Print, Start Print, and Stop Print boxes are blank, otherwise additional control characters appear at the beginning of your printout. In OD=Operator Definitions select the print file drive that is specified in your Report Spooler dialog. This can be an environment variable. To test your printer definitions changes, use the change printer command, CP=Change Printer. To update changes to operator definitions, log out and back into SunSystems.

The SunSpool Report Server

Start `sunspool.exe` to add the SunSpool Report Server to the taskbar. Right click to display the shortcut menu that allows you to Maintain and Enable the SunSpool function. The Maintain function gives the following options:

Add

You can add new printer groups up to a maximum of 40. Defined Printer Groups are enabled by using the check box.

Remove

Select the required printer group(s) in the list and click the Remove button to remove Printer Groups that are no longer needed.

Amending Printer Groups

To amend existing printer groups double click the required printer group on the list to display the SunSpool Maintenance dialog.

SunSpool Maintenance

Font Dialog

Check this check box to display the Font dialog on the desktop when printing a document from the folder specified for this printer group. You select the font and point size for each individual SunSystems print. This must not be applied if using SunSystems Graphical Client and running SunSpool on the server.

Print Dialog

Check this check box to display the Print dialog on the desktop when printing a document from the folder specified for this printer group. This enables the Windows printer to be selected for individual SunSystems prints. This must not be applied if using SunSystems Graphical Client and running SunSpool on the server.

Search Folder

Navigate to the location of the SunSystems print file. This can be set as a environment variable, mapped drive, or local drive. The drive is specified in OD=Operator Definitions.

File

Specify the print file suffix, typically *.spl.

Printer

Use the drop down list to select the default printer if you have not selected the Print Dialog box for this printer group.

Blocksize

Enter the size of the blocks sent to your nominated printer, typically 4096 bytes.

Interval

Enter the number of seconds between checking the folder for print files.

PRINTING FROM GRAPHICAL CLIENT

SunSpool can be run from the server as long as printer and font dialog boxes are not selected to be displayed in the Report Spooler dialog. SunSpool can also be run on each graphical client. Do this by creating an environment variable on the server to a folder on each graphical client workstation. In SunSystems for each operator definition specify this environment variable as the print file drive. In Report Spooler which will be running on each graphical client workstation, create a printer group that searches that local folder for the print file.

Administration and Maintenance Tasks

It is the role of the database/system administrator to ensure the smooth running and efficient performance of MS SQL Server. After a database has been created and all objects and data have been added and are in use, there are times when administration and maintenance must be performed. For example, it is important to back up the database regularly. You may also need to create some new indexes to improve performance.

In addition to the administrative duties outlined in the Microsoft documentation, there are some specific tasks relating to the running of SunSystems.

BACKUP ROUTINE

A MS SQL Server database backup should be taken, ideally, every day. MS SQL Server provides utilities for database backups, or dumps, to be performed simply, either on-line or as scheduled tasks using the SQL Server Agent. This is the method we recommend you use to backup your SunSystems data.

The SunSystems function FB=File Backup/Restore takes much longer than the database backup and is used primarily for backing up data prior to an upgrade or for transferring SunSystems data to a different database or operating system. It should not be used for every day backing up.

Database backups should be stored on a separate drive to that of the database, so in the event of a disk failure, both are not lost. Database backups should also be included in your regular operating system backup schedule.

See your SQL Server documentation for more information on database backups. It is the role of the database administrator to plan and implement a backup policy. SQL Server provides extensive tools and scheduling procedures to ensure that data is not lost in the event of a system failure.

UPDATING STATISTICS AND RECOMPILING STORED PROCEDURES

The Index Tuning Wizard allows you to select and create a set of indexes and statistics for an MS SQL Server database without requiring an expert understanding of the structure of the database, the workload, or the internals of SQL Server. However, it is advisable that the database administrator should perform any index tuning on the SQL Server database.

Stored procedures provide improved performance by being recompiled. This avoids certain overheads associated with executing SQL statements. However, the compilation of a stored procedure stores an access plan based on, among other things, the statistics. If the statistics are out of date, or have been updated, then the access plan of the stored procedure may be inefficient or even invalid. This can result in degrading performance and also the fatal error 'Open Cursor failure for section of ....'.

Stored procedures should be recompiled for each table on a regular basis, after updating the statistics. It is recommended that statistics are updated weekly for each SunSystems table and that following this, all stored procedures are recompiled. It is particularly important to perform these tasks if the database administrator adds additional indexes to any of the SunSystems tables within the SQL Server database.

An SQL script is provided for automating these tasks, it is called `SDUPSTAT.SQL` and is located in the directory `_SQL\QUERIES` under the SunSystems programs directory. Edit this script file by replacing the text `SUNDB` with your SunSystems database name, then run it from Query Analyzer or the Enterprise Manager SQL Query Tool. This updates statistics and recompiles stored procedures for every user table in the SunSystems database.

SUNSYSTEMS CONFIGURATION

Reference Data Setup

It is possible to improve performance dramatically by planning the way SunSystems is used prior to setting up your data. An advantage of relational databases, such as MS SQL Server, is the ability to execute a query that retrieves and returns only the required information. The easier the processing required to do this, the better it performs. For SunSystems this means performance can be optimised by grouping information together as much as possible using identifying codes, e.g. alphabetic account codes by account type, and journal definition codes by currency.

Many of the SunSystems functions process or report on data using selection criteria to limit the information processed or retrieved. Often the selection criteria involve ranges of data, e.g. account code range from 64001 to 64999. Other ranges may be less obvious, but implied e.g. 'process all debtor and client account types'. The database processes this retrieval much faster if the codes for these ranges are contiguous. For example, if you are going to report often on debtor and client account types together (i.e. cutting out account types such as creditor, profit & loss etc.), then group these account types together in consecutive account code ranges. For example make debtor accounts from 6001 to 6999 and client accounts from 7000 to 7999, with no other account types in between. The demonstration data supplied with SunSystems is organised in this manner.

In addition, the more selection criteria supplied by the user when running a report or a process, the faster MS SQL Server can respond. This is because it is more likely to use an index to speed data retrieval rather than read every record in the table (table scan) to determine if it is required for the query. This means that if a significant amount of the data in a table is to be retrieved, it is much faster to do it in discrete, smaller runs, using appropriate selection criteria, than to do it in one large run.

The more selection criteria supplied (by user entry or layout records) when running an inquiry, report or procedure, the faster MS SQL Server can respond. The more appropriately your data is structured, the greater this effect becomes.

Adding Extra Indexes

An index on a MS SQL Server table is simply a method of speeding data retrieval. Up to 255 indexes can be added to a table. SunSystems data tables are created with default indexes. These correspond to the way in which much of the data is accessed, to optimise performance. Specifying a range of selection criteria for the first column of the index is the main factor in the database deciding to use that index,

If you commonly access data via columns, which are not the first column in an index, e.g. ledger T-Codes, then you could consider adding an extra index on the T-Code or codes most commonly used. This should speed the data retrieval; however, any additional index decreases the performance of data updates to a certain extent, as the index also has to be updated, so a balance must be struck. Given all the other factors involved, the only realistic method for determining the benefit of adding an index is to try it and see. If performance is not significantly improved, or data entry performance is degraded to an unsatisfactory level, then the index can simply be dropped again.

> *Note: Do not drop the default SunSystems indexes, otherwise the performance of SunSystems is adversely affected.*

Each site is different in its index requirements, hence it is the responsibility of the database/system administrator to determine a strategy and implement any indexes required. Note that these should be recreated upon upgrading to a new version of SunSystems, as this process involves dropping and recreating the database.

A specific example of where an index could be added is where a Journal Listing is run with no selection criteria entered for the Journal Number, but a range of Journal Sources is entered. The SQL query that is submitted to the database has no index to use (indexes are on account code and journal number), so a poorly performing table scan results. Adding an index on the journal source column would speed up this report by a vast amount.

SQL Server automatically updates statistics when additional indexes are created on tables.

Work Files

In the client/server environment, any reduction in network traffic is usually beneficial to performance. Therefore, it is advisable to direct work files to a local disk on the client PC. The location of user work files is specified using the SunSystems function OD=Operator Definitions. The location of other work files is specified by editing the `syswork=` line in the file `SUN.INI`. For example:

```
syswork=C:\SUN\_WORK\
```

Report Format and Data Dictionary Files

In order that customised report definitions are available to all users, it is generally recommended that these files are stored on a shared network drive, usually on the NT server. However, this does result in extra network traffic as the data is read into SunSystems on the client PC. If the network has a potential bottle-neck in your system, consider storing these files on a local drive on the client PC. The location of these files is specified by editing the `sysdata=` line in the file `SUN.INI`. For example:

```
sysdata=C:\SUN\_DATA\
```

Operator Permissions

Extensive use of operator permissions within SunSystems has an impact on performance due to the additional security information which has to be looked up.

Masking

The facility in SunSystems to use masking when entering selection criteria for reports is very useful. However, in some cases it can result in a less efficient query being sent to the database, which may adversely affect performance.

Troubleshooting Guide

This section describes errors which are mainly concerned with SQL configuration. See also *Appendix C: Error Messages*, which lists COBOL errors and possible solutions.

Error

Db-library network communications layer not loaded.

or

RTS - Load failure error Filename - _SQLPRM Error number - 173

Possible Causes

You are trying to use a communications protocol which you do not have installed.

The MS SQL Server client utilities components cannot be found or are out of date. These must be installed on the client PC before using SunSystems.

Solution(s)

Check the SQL client configuration utility. Install the protocol if required.

Check whether all the client utility components are installed. If they are, check that the `BINN` directory (where the tools are located) is in the `PATH`.

Make sure that the client utilities installed are of the same version as MS SQL Server installed on the server.

Error

Unable to connect. SQL Server is unavailable or does not exist.

Possible Causes

The MS SQL Server process has not been started on the NT Server.

The server name is spelt incorrectly in the `SUN.INI` file located in the SunSystems program directory.

Solution(s):

Start MS SQL Server.

Correct the server name in `SUN.INI`.

Error

An attempt to locate entry in Sysdatabases for database 'dbname' by name failed.

Possible Causes

The database you are trying to connect to does not exist on the selected server.

The database name is spelt incorrectly in the `SUN.INI` file located in the SunSystems program directory. Database names are case sensitive.

The default database of the login Id SUN no longer exists.

Solution(s)

Create the SunSystems database if not already done.

Correct the database name in `SUN.INI`.

Change the default database of the SUN user to a database which exists, using the command `sp_defaultdb`. See MS SQL Server documentation for details of this command.

Error

Server user id ?? is not a valid user in database 'dbname'

Can also be accompanied by the message '**Sun connection cannot be established**'.

Possible Causes

The SSA user does not exist in the database.

The owner of the SunSystems database must be SUN.

Solution(s)

Check whether the SunSystems database script file `DEFINEDB.SQL` was edited and run correctly. This file creates the SSA user with a password of SUNSSP. The SSA login must exist and SSA must be a user of the SunSystems database. The SSA user's password must not be changed.

Check that the owner of the SunSystems database is the SUN user. If it is not, use the `sp_changedbowner` command to change it. See syntax in the `DEFINEDB.SQL` script file.

Error

Can't allocate space for object '??????' in database '????' because

or

Unable to allocate new page for database 'dbname'. There are no more pages

Possible Cause

The database is full.

Solution(s)

Increase the size of the database, or set 'Maximum file size' to unrestricted file growth in database properties.

Error

Can't allocate space for object syslogs in database '????' because

Possible Cause

The transaction log for the database is full.

Solution(s)

Take a database backup. Dump the transaction log, then increase the size of the transaction log and/or increase the frequency of your database backups to prevent recurrence. Refer to your SQL Server administration manual for more details, or set 'maximum file size' to unrestricted file growth in database properties.

Error

Cannot open stored procedure file ????\???\????

Possible Causes

The operation being performed requires access to the script files contained in the PROCS directory. These are usually located in _SQL directory under the program directory.

The sqlpath entry in SUN.INI is pointing to a location which does not contain the PROCS directory.

Solution(s)

Check that the script files (*.SQL) are present in the _SQL\PROCS directory.

Ensure that the sqlpath entry in SUN.INI points correctly to the location of the script files.

Error

Performance is very slow.

Possible Cause

The network in use does not lend itself to the communication protocol in use.

Solution(s)

Try using one of the other available protocols. Use the SQL Server Client Configuration Utility to change the protocol. If all protocols are slow, make sure the environment at least meets the minimum values stated in the *Hardware and Software Requirements* section.

Error

Box Entries Are Truncated

Solution(s)

If you are running a graphical version of SunSystems and find that entries are truncated from the left in some boxes, you may need to change your default font. Add a line similar to the following in your SUN.INI:

```
P=Arial,8
```

Use P for proportional fonts, such as Arial, or M for monospace fonts, for example, Courier. It is important to enter the P or M in uppercase.

Error

NULL DBPROCESS encountered

or

Failed to get dbprocess

Possible Cause

There is a low level communications problem with the server.

Solution(s)

Try setting the Network packet size in the SQL Server configuration to 4096K.

If using the IPX protocol ensure that NWLink is installed on server and that IPX/SPX compatible transport is installed on the client.

Error

When you try to log in to SunSystems, you may see one of the following messages displayed:

Loading Error

Error loading COBOL Run Time system

This indicates that the COBOL run time system, which is invoked by SunSystems, is having problems finding all the components it needs to run.

Solution(s)

Check that all the following files are in the SunSystems program directory:

```
SUN32.EXE

PAN2NT.DLL

PAN2CLIB.GNT

PANELS2.GNT

CBLPRNT.DLL
```

Check that the environment is pointing to the correct directory.

NETWORKS

Error

Cannot Print Reports from within SunSystems

This is the most common installation problem on a network. Check the following:

- That the printer is working with other applications on your workstation

- That the spool queue is active.

SunSystems prints through the logical device names LPT1: - LPT3:. Exit to the operating system and test whether you can print to the device name by printing the CONFIG.SYS, for example. If you cannot print then the logical name has not been correctly mapped to the network spool queue.

Solution(s)

Each SunSystems user can start up with a specified PD=Printer Definitions. Explicitly choose a printer definition to make sure that output is going to the logical device you expected.

Re-read the subsection in this manual about printer setup and re-read your network documentation.

Error

Difficulties Printing Long Reports

If you print lengthy reports from SunSystems you may need to look at the following. Some network print spoolers set a timeout for a process sending a job to a spool queue. If the timeout is set too short then other reports may be inserted into your report.

Solution(s)

Extend the timeout value.

Error

Disk Space Exhausted/File is a Directory/Disk Input-Output Error/No Room in Directory

If you get any of these messages after installation, then there may be a network permissions problem.

Solution(s)

Get your network administrator to check the ownership of all SunSystems files. If necessary the ownership should be changed.

Check DB=Database Definitions as the directory paths may be incorrect.

Appendix A: SunAccount Transfer File

This transfer file is used to import transactions into SunAccount, using the JI=Journal Import function. A table of this format is also generated by SunBusiness in order to transfer data from SunBusiness to the SunAccount ledgers. JI=Journal Import can accept transfer files in the formats: SAF, SBF, and PCF, from previous versions of SunSystems.

The transfer table layouts used by SunBusiness are provided in the sections *Movement Import* and *Sales Import* in the *SunBusiness Reference Manual*.

The same layout is created when you backup the ledger and budget tables in SunAccount (backup files are created by the FB=File Backup/Restore function). However, it contains a control record which is not required for JI=Journal Import files. The filenames of these backup files are given in *Appendix B: Filenames*.

The SAF format transfer file may be created by any application which is able to present it in ASCII text format.

This layout should be used for every transaction that is to be imported into **Ledger Accounting**, **Corporate Allocations** and the **Fixed Asset Register**. Remember that the debits and credits should balance to zero.

Fields which are not used should be space filled.

☞ *Note: A full list of the maximum values permitted in SunSystems is provided in Appendix D of the Technical Reference Manual.*

Control Record

This is not required for JI=Journal Import, although a warning message appears if none is found.

Item	Start Position	Length	Comments
Filler	1	32	Space
Record Type	33	1	= C
Highest Journal Number Used	34	7	
Last Cleardown Sequence Used	41	5	
Filler	46	2	Spaces
Language Id	48	2	
Filler	50	463	Spaces

Accounting Transaction

Item	Start Position	Length	Comments
Account Code	1	10	10 characters
Filler	11	5	Spaces
Accounting Period	16	7	yyyyppp (year number, period number)
Transaction Date	23	8	yyyymmdd (year, month, and day number)
Filler	31	2	Spaces
Record Type	33	1	= L (Record Types E, T, N and L can still be read in version 4.2. If your records include analysis codes T0, or T6 to T9 you must use Record Type M.)

Item	Start Position	Length	Comments
Journal Number	34	7	Journal Number (The SunBusiness transfer file divides this item into a SOURCE of 2 chars at Start Position 34, followed by the Journal Number of 5 chars at Start Position 36.)
Line	41	7	Line Number
Amount	48	18	15 integer and 3 decimal
Debit/Credit Marker	66	1	= D or C
Allocation Indicator	67	1	
Journal Type	68	5	
Journal Source	73	5	
Transaction Reference	78	15	15 characters
Description	93	25	
Entry Date	118	8	yyyymmdd (Generated by JI=Journal Import)
Entry Period	126	7	yyyyppp (Generated by JI=Journal Import)
Due Date	133	8	yyyymmdd
Filler	141	6	Spaces
Payment/Allocation Ref	147	9	9 integer
Payment/Allocation Date	156	8	yyyymmdd
Payment/Allocation Period	164	7	yyyyppp
Asset Indicator	171	1	=V, D, I, or Space
Asset Code	172	10	
Asset Sub-code	182	5	
Conversion Code	187	5	
Conversion Rate	192	18	9 integer and 9 decimal
Other Amount	210	18	15 integer and 3 decimal

Item	Start Position	Length	Comments
Other Amount Dec. Places	228	1	
Operator Id	229	3	Leave blank
Operator Id	232	3	Leave blank
Operator Id	235	3	Leave blank
Next Period Reversal	238	1	Leave blank
Text Linked	239	1	Leave blank
Rough Book Flag	240	1	Leave blank
In Use Flag	241	1	Leave blank
Analysis Code 0	242	15	
Analysis Code 1	257	15	
Analysis Code 2	272	15	
Analysis Code 3	287	15	
Analysis Code 4	302	15	
Analysis Code 5	317	15	
Analysis Code 6	332	15	
Analysis Code 7	347	15	
Analysis Code 8	362	15	
Analysis Code 9	377	15	
Posting date	392	8	For rough journals: date when un-roughed (Generated by JI=Journal Import)
Update Order Bal. Ind.	400	1	Leave blank
Filler	401	112	Leave blank

Appendix B: Filenames

This appendix gives a list of the filenames used in SunSystems. Note that `nn` represents the Language Code element of the filenames. The SunSystems application consists of a large number of small programs and files, described in the following table:

File Type	File Suffixes	Example	Usage
Compiled programs	`.INT .GNT` `.G01 .G02`	SSMM	Each menu function calls a separate program
Screen definitions	`.DAT` `.IDX`	SSnnTMPL	The screen layouts contain the prompts and field markers
Help messages	`.DAT` `.IDX`	SAnnHELP	Help text displayed when you press F1
Program messages	`.MSG`	SBnnMSSG	System messages invoked by the program
Record layouts	`.LYT`	SSnnRM	Reference maintenance
Report headings	blank	SAnnHEAD	Headings for standard reports

COMPLETE LIST OF PROGRAM FILES

Windows Environment (32-bit)

`SUN32.EXE`   Windows 32-bit executable program

`SUNWIN.ICO`   SunSystems icon

`COB32ENV.DLW`   COBOL run time environment for 32-bit Windows

`_SORT.DLW`   External sorting routine

`PAN2NT.DLW`   External GUI routine

CBLWIN.DLL			Extra routines required for 32-bit Windows
PCINST.DLL			Extra routines required for 32-bit Windows
SETPPTR.DLL			Extra routines required for 32-bit Windows
SQLSVR32.DLL			Embedded SQL run time support
SQLAKW32.DLL			Embedded SQL run time support
SQLAIW32.DLL			Embedded SQL run time support

The following application programs are loaded by the COBOL run time environment according to which module you are in and which menu option you have selected.

Programs are supplied mainly in a generated form. These programs will have the suffix GNT, or if they are large then there may be more files, .GNT and .G01 up to .G04.

A few programs are supplied in intermediate form. These programs will have the suffix .INT.

Program	Module	Mnemonic	Description
SAAA	LA	GA	Aged Analysis
SAAL	LA	AL	Account Listing
SAAR	LA	AQ	Account Inquiry
	LA	AA	Account Allocation
	AR	AQ	Asset Inquiry
SAAS	LA	PS	Print Statements
	LA	PR	Print Remittances
SAAT	LA	CT	Creditor Transfer
	LA	LA, DT	Debtor Transfer
SABR	LA	BR	Used to roll forward previous year balances in the Balance Table
SABU	LA	BU	Ledger Balance Table updates
SACA	LA		Displays Transactions Present on the Ledger Table for a given code
SACRM	LA	LA,PR	German Remittance Formatter
SADB	LA	DB	Daybook Listing
SAEA	LA	FA	Financial Analysis extract

Program	Module	Mnemonic	Description
SAES	LA	FS	Financial Statement extract
SAET	LA	FT	Financial Tables extract
SAFA	LA	FA	Financial Analysis report Update Customer and Vendor Details
SAFS	LA	FS	Financial Statement report
SAFT	LA	FT	Financial Table Report
SAGP	LA	GP	Generate Payments
SAGP	LA	GD	Generate Debits
SAJE	LA	JE	Journal Entry SAJE35-41
SAJESSRE	LA		User Hook for Journal Entry
SAJH	LA	JE	Journal Hold SAJH42
SAJL	LA	JE/GP/JI/LR CD/AA & JL	Journal Listing
SALR	LA	LR	Ledger Revaluation
SALX	LA	LX	Ledger Export
SAPA	LA	PA	Print Formatted Accounts
SAPC	LA	PC	Period Cleardown
SAPL	LA	PL	Payment Listing
SAPN	LA	PN	Tax Reporting
SAPT	LA	PT	Tax Reporting
SARP	LA	RP	Rough Book Processing
SASO	LA	FA	Financial Analysis Sort Process
SATA	LA	TA	Tax Reporting
SATB	LA	TB	Trial Balance
SATF	LA	JI	Journal Import
SATFITF	LA	JI	International Treasurer System
SATFSSRE	LA		User Hook for Process Manager (Journal Import)
SATM	LA	TM	Transaction Matching
SAVP	LA	VP	Void Payments
SBAL	IC	EI	Expired Items Report

Program	Module	Mnemonic	Description
SBAS	IC	AS	Assembly Structure Listing
SBCL	SO	CL	Customer Listing
SBIA	SO/IC	IA	Inventory Allocation
SBIE	IC	IE	Inventory Evaluation
SBIL	IC	IL	Inventory Listing
SBIM	IC	ME	Movement Entry
SBIS	IC	IT	Inventory Status
SBIU	IC	IU	Inventory Usage
SBML	IC	ML	Movement Listing
SBPA	SO	PA	Print Acknowledgements
SBPI	SO	PI	Print Invoices
SBPK	SO	PK	Print Statistical Declaration
SBPM	SO	PI/PS	Post Stock Movement
SBPP	SO	PP	Print Picking
SBPS	SO	PS	Print Despatch Notes
SBPV	IC	PV	Print Movements
SBTD	SO	SE	Sales Order Entry (Details)
SBTDEXT	SO		Sales Order Entry/Import User Hook
SBTDSSRE	PO		User Hook for Process Manager (Detail)
SBTE	SO	SE	Sales Order Entry (Header)
SBTESSRE	PO		User Hook for Process Manager (Entry)
SBTL	SO	SL	Sales Listing
SBTS	SO	OS	Order Status
SCCR	CO	CR	Maintain Calendar Definitions
SCDR	CO	DR	Allocation Definitions Report
SCGA	CO	GA	Generate Allocations
SFAG	AR	AG	Asset Register
SFAL	AR	AL	Asset Listing
SFAS	AR	AS	Asset Status
SFCD	AR	CD	Calculate Depreciation

Program	Module	Mnemonic	Description
SFDI	AR	DI	Asset Disposal
SFMD	AR	MD	Mark Assets for Disposal
SFTL	AR	TL	Depreciation Table Listing
SGBM	MM	BM	Bill of Materials
SMEA	IC	MA	Movement Analysis Extract
SMMA	IC	MA	Movement Analysis Extract Report
SMMI	IC	MI	Movement Import
SMMQ	IC	MQ	Movement Inquiry
SMNQ	IC	IQ	Inventory Inquiry
SMPC	IC	PC	Period Cleardown
SMSC	IC	SC	Stock Take Clearance
SMSI	IC	SE	Stock Take Entry
		SQ	Stock Take Inquiry
		SA	Stock Take Approval
SMSL	IC	SL	Stock Take Listing
SMSR	IC	GS	Generate Stock Take
SOBL	SO	BL	Price Book Listing
SOCQ	SO	CQ	Customer Inquiry
SOEA	SO	SA	Sales Analysis Extract
SOIQ	SO	IQ	Item Inquiry
SOPC	SO	PC	Period Cleardown
SOPM	SO	PM	Print Miscellaneous Documents
SOPQ	SO	PQ	Print Quotation
SOQC	SO	QC	Quotation Conversion
SOSA	SO	SA	Sales Analysis Report
SOSI	SO	SI	Sales Order Import
SOSISSRE	SO		User Hook for Sales Order Import
SOSQ	SO	SQ	Sales Inquiry
SOUP	SO	UP	Update BSP

Program	Module	Mnemonic	Description
SPGD	PO	GM	Goods Receipt Matching (Details)
SPGE	PO	GM	Goods Receipt Matching (Header)
SPIP	PO	VE/VA/OM/GE	Invoice Posting
SPIQ	PO	IQ	Item Inquiry
SPOA	PO	OA	Order Amendment Listing
SPPC	PO	PC	Period Cleardown
SPPD	PO	PE	Purchase Order Entry (Details)
		VE	Purchase Invoice Entry (Details)
		VM	Purchase Invoice Matching (Details)
SPPDSSRE	PO		User Hook Program for Purchase Order Detail
SPPE	PO	PE	Purchase Order Entry (Header)
	VE		Purchase Invoice Entry (Header)
	VM		Purchase Invoice Matching (Header)
SPPESSRE	PO		User Hook Program for Purchase Order Entry
SPPI	PO	PI	Purchase Import
SPPISSRE	PO		User Hook Program for Purchase Import
SPPL	PO	PL	Purchase Listing
SPPP	PO	PP	Print Purchase Orders
		PE	Preview Purchase Orders
SPPQ	PO	PQ	Purchase Inquiry
SPPT	PO	PT	Purchase Commitment
SPPU	PO	PU	Purchase Order Status Report
SPSL	PO	SL	Supplier Listing
SPSQ	PO	SQ	Supplier Inquiry
SPTT	PO	TT	Commitment Transfer
SPVA	PO	VA	Invoice Approval SPVA82
SPVG	PO	VG	Invoice Register
SSAM	SS	AM	Analysis Mapping
SSBC	SS	BC	Business Conversion (hidden function) (applicable to SUN user only)
SSBC2	SS		Budget Checking Sub Routine

Program	Module	Mnemonic	Description
SSBU	SS	BU	Business Menus (hidden function) (applicable to SUN user only)
SSBV	SS	BV	Business Views
SSBVLOAD			Program for launching Business Analyser
SSCCUR	SS		Logon Security
SSDF	All		Document Formatter
SSDH			Business Rules Data Dictionary Handler
SSDI	SS	DI	Definable Data Items
SSDT	SS	DT	Data Dictionary Transfer
SSEP	SS	EP	Event Profile
SSFB	SS	FB	File Backup/Restore Router
SSFB3	SS	FB	Restore Data Upgrader
SSFBDD	SS	FB	Backup/Restore Data Dictionary File
SSFBIN	SS	FB	Backup/Restore Installation Data Table
SSFBKF	SS	FB	Backup/Restore Stock Take Table
SSFBPF	SS	FB	Backup/Restore Purchase Order Table
SSFBPF42	SS	FB	Copies Order Date from POP Order Header to Given Report
SSFBPFLC	SS	FB	Removes 'P' Type Records from POP Table
SSFBPH	SS	FB	Backup/Restore Purchase History Table
SSFBQF	SS	FB	Backup/Restore Journal Hold Table
SSFBRE	SS	FB	Backs Up Report Format Data Files
SSFBRE	SS	FB	Backup/Restore Report File
SSFBRF	SS	FB	Backup/Restore Reference Table
SSFC	SS	FC	File Create
SSFH	SS		File-Handler Router
SSFHCR	SS		File-Handler Common Routines
SSFHIN	SS		Installation File-Handler
SSFHKF	SS		Stock Take File-Handler
SSFHLB	SS		Ledger Balance, File-Handler
SSFHLF	SS		Ledger File-Handler

Program	Module	Mnemonic	Description
SSFHLH	SS		Archive File-Handler
SSFHLP	SS		Print File-Handler
SSFHMF	SS		Movement File-Handler
SSFHDD	SS		Data Dictionary File-Handler
SSFHOF	SS		Sales Order File-Handler
SSFHPC	SS		File handler for Purchase Order Master Records (Control)
SSFHPF	SS		Purchase Order File-Handler
SSFHPJ	SS		File-handler for Purchase Order Master Records (Header)
SSFHPK	SS		File-handler for Purchase Order Master Records (Goods Receipt Header)
SSFHPL	SS		File-handler for Purchase Order Master Records (Invoice Header)
SSFHPM	SS		File-handler for Purchase Order Master Records (Detail Records)
SSFHPO	SS		File-handler for Purchase Order Master Records (Detail Records)
SSFHPP	SS		File-handler for Purchase Order Master Records (Detail Records)
SSFHPS	SS		File-handler for Purchase Order Master Records (Detail Records)
SSFHQF	SS		Journal Hold File-Handler
SSFHRA	SS		Reference Audit File-Handler
SSFHRE	SS		Report File File-Handler
SSFHRF	SS		Reference File-Handler
SSFHTR	SS		SunBusiness Transfer File-Handler
SSFHHF	SS		Sales History File-Handler
SSFHPU	SS		Purchase History File-Handler
SSLP	SS	LP	Lookup Table Profiles
SSLT	SS	LT	Lookup Tables
SSMM	SS		Main Menu
SSNL	SS	NL	Analysis Lengths

Program	Module	Mnemonic	Description
SSOP	SS	OP	Operator Permissions
SSPA	SS		Business Conversion, Bank Reconciliation (hidden functions)
SSPX	SS	PX	Parts Explosion
SSRA	All	RA	Reference Audit
SSRC	SS	RC	Reconciliation Accounts
SSRD	SS		Report Definition
SSRE	SS		Process Manager Rule Engine
SSRETM	SS		Transfer Manager Rule Engine
SSRF	All		Report Formatter
SSRF33EX	All		French User Hook for Format Amount in Words
SSRF34EX	All		Spanish User Hook for Format Amount in Words
SSRF49EX	All		German User Hook To Format Amount in Words
SSRG	SS	RG	Rule Messages
SSRI	SS		Rules Engine (copy of SSRE)
SSRH	All		Report-Handler
SSRL	SS	RL	Allows Locking of Records
SSRP	SS	RP	Reconciliation Profiles
SSRR	All		Reference Reporting
SSRS	SS	RS	Rule Sets
SSRT	All		Reference Transfer
SSRU	SS		Operator Buttons
SSRUACB			Commitment Inquiry Special Edit
SSRUBCD			Budget Check Definition
SSRUCAD			Calculation Definition Special Edit
SSRUIAD			Item Account Definition Special Edit
SSRUITD			Extended Item Description Special Edit
SSRUITM			Item Records Layout Special Edit Routine
SSRUITP			Item Records Process Special Edit Routine

Program	Module	Mnemonic	Description
SSRUOTD			Sales Order Description Special Edit
SSRUPRB			Price Book Maintenance Layout Routines
SSRUPRD			Price Book Definition Special Edit
SSRUPRH			Price Book Hierarchy Routine
SSRUQY			Reference Maintenance Query Routine
SSRUSFD			Sales Format Definition Special Edit
SSSF	Various		Special Functions
SSSH	SS		Old Screen-Handler (pre version 3.5)
SSSH35	SS		Screen-Handler Routing
SSSHAD	SS		Screen-Handler Accept/Display
SSSHFF	SS		FreeFormat Screen-Handler
SSSHFH	SS		FreeFormat File-Handler
SSHGA	SS		SunSystems File-Handler
SSSHGD	SS		SunSystems General Definition Screen-Handler
SSSHGL	SS		GUI Screen Handler (Login)
SSSHGM	SS		Hypertext Help for GUI Routines
SSSHGRD	SS		GUI Accept Module for Template Fields
SSSHMF	SS		Help and Calculator
SSSHPN	SS		Panels Screen-Handler
SSSHQY	SS		Query Windows Screen-Handler
SSSHRX			Run Executable Screen-Handler
SSTD	SS	TD	Terminal Definition
SSTI	SS		Transfer Manager Import
SSTP	SS	TP	Transfer Profiles
SSTR	SS	TR	Transfer Manager
SSTRIN	SS		Converts Response Tables
SSTRLF	SS		Translates Ledger Table Responses
SSTRQF	SS		Translations of Hold Table Responses
SSTRRF	SS		Handles Translation of Reference Table Responses
SSTU	SS		Menu Template Update Program

Program	Module	Mnemonic	Description
SSTX	SS		Transfer Manager Export
SSUC	SS	UC	Business Conversion (hidden)
SSVR	All	VR	View Report
SSXC	SS		Business Conversion, Ledger Export (hidden function)
SSXF	SS	XF	External File Types

PROGRAM SUPPORT FILES

The following tables provides a key to the lower case letters used in the filenames:

Lower Case Code	Description
b	Budget code B-K
ddd	Database code
fffff	Format or report code
iii	Operator Id
lc	Language code
lllll	Layout code
nnn	3-digit number, sequential to avoid overwriting
rr	Selection on Menu or internal function mnemonic
ss	Subsystem Id (SA=Ledger Accounting, etc.)
ttt	Reference table code
xxx	Journal number
yy	Ledger archive year

The following table provides a key to the file types:

Code	File Type
1	Database Table
2	Indexed Sequential File
3	ASCII Text File

Filename	Description
BANKREC.NDF	Transfer file for Bank Reconciliation conversion (used by TP=Transfer Profiles)
BCONNECT.EXE	Program that enables Business Analyser lookup function (RDBMS servers only)
BFILES.EXE	Program that enables Business Analyser to connect to Transfer Manager data via FTP (Thin Client only)
BRlcHEAD	Business Rules Report Headings
BRlcMSSG.MSG	Message file used by `BCONNECT.EXE` and `BFILES.EXE`
BVIEW.EXE	Program that enables Business Views function layouts.
SAlcHEAD	SunAccount Report Headings
SAlcHELP.DAT	SunAccount Help File
SAlcMSSG.MSG	SunAccount Screen Messages
SAlcRM.LYT	SunAccount Reference Record Layouts
SBlcHEAD	SunBusiness Report Headings
SBlcHELP.DAT	SunBusiness Help File
SBlcMSSG.MSG	SunBusiness Screen Messages
SBlcRM.LYT	SunBusiness Reference Record Layouts
SClcHEAD	Corporate Allocations Report Headings
SClcHELP.DAT	Corporate Allocations Help Files
SClcRM.LYT	Corporate Allocations Reference Record Layouts
SFlcHEAD	Asset Register Report Headings
SFlcHELP.DAT	Asset Register Help Files
SFlcRM.LYT	Asset Register Reference Record Layouts
SMlcHELP.DAT	Inventory Control Help File
SMlcRM.LYT	Inventory Control Reference Record Layouts
SOlcHELP.DAT	Sales Order Processing Help File
SOlcRM.LYT	Sales Order Processing Reference Record Layouts
SPlcHELP.DAT	Purchase Order Processing Help File
SPlcRM.LYT	Purchase Order Processing Reference Record Layouts

Filename	Description
SSISSUE.MDF	Default Command File
SSlcHEAD	System Report Headings
SSlcHELP.DAT	Help File
SSlcMSSG.MSG	System Screen Messages
SSlcRM.LYT	System Reference Record Layouts
SSlcTMPL.DAT	System Screens
SSSHLNK.EXE	Enables you to run executable and shortcuts
SUN.INI	SunSystems Initialisation File
SUNPANEL.SF	Windows Config File
SUNSPOOL.EXE	Passes Print Files to Windows Print Spooler
SUNWIN.ICO	SunSystems Icon

DATA FILES

These hold details of transactions and reference records.

Reference Tables

Filename	Type	File Description
SSSYSTEM.DAT	3	System Data
SSINSTAL.DAT	1	Installation Table
SSRFttt	1	Reference Table
SSRAREFddd	1	Audit Tables
SSREPORT.DAT	2	Report Format Definitions
SSDDICTY.DAT	2	Data Dictionary used by RD=Report Definition

Ledger Tables

Filename	Type	File Description
SALFLDGddd	1	Ledger Table
SAbFLDGddd	1	Budget Table
SAPYDDBddd	1	Debit Table used by GD=Generate Debits
SAPYPAYBddd	1	Payment Table used by GP=Generate Payments
SAQFHLDddd	1	Journal Hold Table
SALHARCddd	1	Ledger Archive Table
SBTRTRNddd	1	SunBusiness Transfer Table

Fixed Asset Files

Filename	Type	File Description
SOMFHDRddd	1	Sales Order Headers Table
SOMFDETddd	1	Sales Order Details Table
SOHFOHFddd	1	Sales Order History Table

Purchase Order Files

Filename	Type	File Description
SPMFORDddd	1	Purchase Order Header Orders Table
SPMFGRNddd	1	Purchase Order Header GRNs Table
SPMFINVddd	1	Purchase Order Header Invoices Table
SPMFDETddd	1	Purchase Order Header Details Table
SPMFDTOddd	1	Purchase Order Header Details (at order stage) Table
SPMFDTGddd	1	Purchase Order Header Details (at GRN stage) Table
SPMFDTIddd	1	Purchase Order Header Details (at invoice stage) Table
SPHFPHFddd	1	Purchase Order History Table
SPTRTRNddd	1	Purchase Commitment Transfer Table

Filename	Type	File Description
SMMFMOVddd	1	Inventory Control Table
SMKFHDRddd	1	Stock-Take Headers Table
SMKFDETddd	1	Stock-Take Details Table

BACKUP FILES

Filename	Type	File Description
SSINSTAL.BAK	3	Installation Backup File
SSRF-ddd.BAK	3	Reference Backup File
SALF-ddd.BAK	3	Ledger Backup File
SAbF-ddd.BAK	3	Budget Backup File
SAyy-ddd.BAK	3	Ledger Archive File
SBTR-ddd.BAK	3	Business Transfer File
SMMF-ddd.BAK	3	Inventory Control Backup File
SMMH-ddd.BAK	3	Inventory Control Archive File
SMKF-ddd.BAK	3	Stock-Take Backup File
SOMF-ddd.BAK	3	Sales Order Backup File
SOHF-ddd.BAK	3	Sales Order History Backup File
SOMH-ddd.BAK	3	Sales Order Archive File
SPMF-ddd.BAK	3	Purchase Order Backup File
SPHF-ddd.BAK	3	Purchase Order History Backup File
SPMH-ddd.BAK	3	Purchase Order Archive File
SSRF-SKL.BAK	3	Skeleton Reference Backup File

PRINT FILES

All print files may be deleted when the operators are logged out of SunSystems, assuming the reports they contain are no longer required.

Filename	Type	File Description
rrnnn.PRN	3	Report File
lllllnnn.PRN	3	Report File with a layout
JLxxxxxxx.PRN	3	Forced Journal Listing
SAfilename.TLF	3	Transfer Layout File

You can produce reports in a variety of transfer formats from the following SunAccount functions:

      FA=Financial Analysis

      FS=Financial Statements

and   FT=Financial Tables.

The table on the next page shows the formats available, and the naming conventions of these reports:

Format	Description	Filename
LOTUS	Suitable for Lotus 123	FTfffff.PRN
EXCEL	Suitable for Microsoft Excel	FTfffff.PRN
CDFQ	Comma delimited with quotes	FTfffff.CDF
2020	Suitable for 2020	FTfffff.CDF
BDF	Bar delimited	FTfffff.BDF
SYLK	Suitable for SYLK	FTfffff.SLK
CDF	Comma Delimited	FTfffff.CDF
FCS	Financial Control System	DATfffff.ES LGCfffff.ES

WORK FILES

All work files may be deleted when the operators are logged out of SunSystems. Normally work files are created and deleted automatically by SunSystems.

Filename	Type	File Description
ssrr-ddd.iii	2	Transaction Entry work files
	2	Sort work files, etc.
ssrr-iii.DAT	2	Report work files
SSWM-nnn.DAT	2	Learn/Execute macros

Appendix C: Error Messages

OPERATING SYSTEM AND COBOL ERRORS

This appendix describes errors which mainly result from the operating system being unable to perform the process requested from the COBOL run time system.

There are two different forms in which these errors can be reported:

File Status Codes

Errors resulting from the processing of disk files are reported to you on the message line near the bottom of the screen. A file status code at the end of this line identifies the specific error which has occurred. The file status code is in the form:

    9-mmm

where mmm is an error code. If an operating system error has occurred the first character of the file status is always nine.

9-255

This is a catch-all code for unexpected database errors. If you receive this error, add the line ERRORLOG=ON to your SUN.INI file and attempt to reproduce the error. This setting in SUN.INI will output specific database errors to a log file in the SunSystems programs directory in the format SQL-xxx.LOG where xxx = operator Id. This information can, if required, be given to Systems Union support in order to help identify the problem. Also check the SQL Server error log and Windows NT event log to see if the error has been recorded there.

Run Time System (RTS) Errors

This type of error should rarely occur when using the system.

The run time system is a part of the COBOL language resident in memory when programs are operating. If it finds an error in the processing requested by the system it reports it in the form:

```
aaaa
SEGMENT: 00
ERROR mmmm COBOL PC nnnn
```

where `aaaa` is the program name, `mmmm` is the error code, and `nnnn` is the address of the program instruction in error.

The following pages list some run time system error messages and give their meaning.

001   Insufficient buffer space

You have tried to OPEN a file and while you have not exceeded your system's file limit, something within your system is unable to allocate sufficient memory space for this operation to be carried out successfully.

002   File not open when access attempted

You have tried to access a file without OPENing it first.

003   Serial mode error

The program which you are trying to execute is a device not a program.

004   Illegal file specification

A name which you have supplied contains an illegal character. This could be any character which is not part of the permitted character set, or it could be the system dependent delimiter which on most systems is the space.

Attempt the file operation again, ensuring that you use the correct filename.

005   Illegal device specification

Devices to which your COBOL program can WRITE are defined by the operating system. You have attempted to access a device which is not defined by your system.

006   Attempt to output to a file opened for input

You have tried to WRITE to a file which is open for INPUT only.

007   Disk space exhausted

There is no room available on your current disk for file operations.

008   Attempt to input from a file opened for output

You have attempted to READ from a file which you opened for OUTPUT only.

009   No room in directory

There is no room available for further file operations in the directory which you have specified, or the specified directory cannot be found by your program.

011   Memory Error (Fatal)

The run-time system has insufficient memory to successfully carry out the attempted operation.

012   Attempt to open a file which is already open

You have tried to OPEN a file which is already OPEN and so cannot be OPENed again.

013   File not found

The operating system has been unable to find a file which you have attempted to access in your program.

014   Too many files open simultaneously

You have tried to exceed the maximum number of files which you can have OPEN at any one time. This may be a software or an operating system restraint, but you must not violate it.

015   Too many indexed files open

You have tried to exceed the number of device files which you can have open at any one time. This may be a software, or an operating system restraint, but you must not violate it.

016   Too many device files open

You have tried to exceed the number of device files which you can have open at any one time. This may be a software or an operating system restraint, but you must not violate it.

017   Record error: probably zero length

You have probably tried to access a record which has had no value moved into it.

018   Read part record error: end of file before end of record or file open in wrong mode

A part record has been found at the end of a file. Consequently your run time system will treat the data file as a record and, not finding a full record, will report this error.

019   Rewrite error: open mode or access mode wrong

You are attempting to do a REWRITE to a file that has not been opened with the correct access mode for this operation.

021   File is a directory

You have tried to WRITE to a directory instead of a file.

022   Illegal or impossible access mode for OPEN

The mode in which you are attempting to OPEN a file violates the general rule of COBOL programming for that type of file. For example, you may have OPENed a line-sequential file in the I-O mode.

023   Illegal or impossible access mode for CLOSE

The mode in which you are attempting to CLOSE a file is not possible for that type of file.

024   Disk input-output error

This error could be given if you do a READ after a WRITE, or if there is a verification failure, or a parity error.

025   Operating system data error

You are trying to set up terminal characteristics for a device which is not a terminal.

026   Block input-output error

An error has occurred while you are attempting to access a disk. This could be the result of a corrupt disk.

If you have a corrupt disk try to run your program again using your backup copy of that disk.

027   Device not available

You are attempting to access a device which is either not attached to your machine or, if attached, is not on line.

Attach the device to your machine and ensure that it is on line. Repeat the file operation.

028   No space on device

You have attempted to do a file operation such as WRITE for which there is not sufficient space available on your disk.

When your program has terminated you will have to delete some of the files or directories on your current logged in disk to make enough room on it for you to carry out successful file operations.

030   File system is read only

The file system which you are using is READ only, which effectively means that it is WRITE protected. You have tried to amend the information found within a file in some way. For example, you may have tried to WRITE to a file, or to DELETE information found within it. As the file system which you are using is a READ only, you can only READ the contents of its files. You cannot alter them in any way.

031   Not owner of file

You are attempting to perform an operation on a file but the file's owner has not given you the necessary permission for that operation. You could, for example, be attempting to alter the access mode for a file, which only the file's owner can do.

You will have to abandon your attempted file operation, unless the file's owner alters the file's attributes in such a way as to allow you to perform the operation you wish to carry out.

032   Too many indexed files or no such process

You have tried to OPEN an indexed file but the number that you currently have open is the system limit.

Alternatively you could be trying to use a process Id which does not exist, or your operating system no longer recognises.

033   Physical input-output error

You have a hardware error of some type, perhaps you have failed to place a disk in the relevant drive or you may have tried to WRITE to a disk but the processor detected that the hardware interface has failed.

You will have to try to correct the fault in your hardware, for example by placing a disk in the necessary drive.

034   Incorrect mode or file descriptor

You are either trying to WRITE to a file which is open for READ purposes only, or READ a file which is open for WRITE purposes only.

035   Attempt to access a file with incorrect permission

You are attempting to do a file operation which you do not have sufficient permission to achieve, for example you could be trying to WRITE data to a file which has been set up with the READ attribute only.

036   File already exists

You are attempting an inappropriate operation on an existing file.

037　File access denied

Your attempt to access a file has been denied by the operating system. You may have tried to WRITE to a WRITE protected file, or you could have attempted to READ from an OUTPUT device.

Alter the access permission on the relevant file. Access can be READ only if you just want to read the contents of the file without making any changes, or it can be READ and WRITE in which case you will be able to change its contents.

038　Disk not compatible

You have tried to load a disk that is incompatible with the current version of your operating system.

This could be because it was created under a previous version of the system or it could have been created under a completely different operating system. You would also receive this error if you tried to load a disk with a name that clashed with a disk that was already loaded.

039　File not compatible

You are trying to load a file that is not compatible with the structure of files under the current release of your software. This could be because that file was created under a different operating system or under a previous version of your current system.

041　Corrupt indexed file

Your run time system does not recognise the control information for an indexed file and as the index has been corrupted in some way, the data within the file is no longer accessible to your system.

You will have to rerun your program using the backup copy of that file. If you have added a great deal of information to the file since you last took a backup you may like to rebuild the file using the SunSystems file backup followed by a restore, using the FB=File Backup/Restore option.

042　Attempt to write on broken pipe

Your program has created a process as a result of `DD_logical` filename mapping assignment (for example, the process may be a line printer spooler). The process was not created properly, or has died prematurely. This error occurs when your program attempts to write to the process.

043　File information missing for indexed file

You normally receive this error if the system crashed on the program's previous run, while the file was OPEN. Information was probably added to the end of that file, but the directory information was not updated and so that data cannot be accessed by your system. You can also receive this error if you copied the ISAM file from one disk to another, but only copied either the `.DAT` part, or the `.IDX`.

If it is the result of a faulty copy you should be able to restore the missing part of the file from the `.DAT` or `.IDX` file. Otherwise, you will have to rerun your program using the backup copy of that file. If you have added a great deal of information to the file since you last took a backup you may like to rebuild the file using the SunSystems file backup followed by a restore, using the FB=File Backup/ Restore option.

047   Indexed structure overflow

There is some fault in the structure of your ISAM file. You have probably tried to put another entry in the index when there is no room for it. This error could also be given if you have tried to access an old ISAM file, created perhaps using CIS COBOL.

048   Attempt to divide by zero (fatal)

You are executing a program that is attempting to divide by zero. Contact your supplier.

065   File locked

You have tried to OPEN a file which has already been locked, or opened for output by another user. Alternatively you have tried to OPEN a file for output which another user already has open.

066   Attempt to add duplicate record key to indexed file

You have tried to add a duplicate key for a key which you have not defined as being able to have duplicates.

067   Indexed file not open

You are attempting to access an indexed file which you have not OPENed.

068   Record locked

You have tried to access a record which is currently locked by another user.

069   Illegal argument to ISAM module

This is the result of an internal system error.

Contact your supplier who will try to help you to discover the cause of your error and how it can be rectified.

070   Too many indexed files open

You are attempting to OPEN an indexed file, but you have already exhausted the system limit which specified how many of these files can be opened at any one time.

071   Bad indexed file format

This error could be given if you are using a file which has been corrupted, otherwise it is the result of an internal system error.

If the disk you are using is corrupt, re-run your program using your backup copy of the disk. If this is not the cause of the error then you should contact your supplier who will try to discover the cause of your error and how it can be rectified.

072   End of indexed file

This is the result of an internal system error.

Contact your supplier, who will try to help you discover the cause of your error and how it can be rectified.

074   No current record in indexed file

This is the result of an internal system error.

Contact your supplier who will try to help you discover the cause of your error and how it can be rectified.

076   Cannot create lock file in /isam directory

For some reason your system is unable to create a lock file in the ISAM directory. One reason for this could be that in its previous run your program terminated abnormally, (perhaps due to a power failure) leaving some files locked. When you try to run this program following its abnormal termination you will receive this error.

You will have to manually remove all of the files that are still locked from the ISAM directory before you can successfully re-run your program.

077   Internal ISAM module error

This is the result of an internal system error.

Contact your supplier who will try to help you discover the cause of your error and how it can be rectified.

078   Illegal key description in indexed file

This is the result of an internal system error.

Contact your supplier who will try to help you discover the cause of your error and how it can be rectified.

081   Key already exists in indexed files

This is the result of an internal system error.

Contact your supplier who will try to help you discover the cause of your error and how it can be rectified.

100 Invalid file operation

You have attempted a file operation which violates a general rule of COBOL in some way. The most likely cause of this error is that you have attempted a REWRITE on a sequential file opened I-O, or on a relative file with access mode sequential also opened I-O, without preceding it with a successful READ NEXT.

101 Illegal operation on an indexed file

This is the result of an internal system error.

Contact your supplier who will try to help you discover the cause of your error and how it can be rectified.

102 Sequential file with non-integral number of records

This error could be given if you have specified an incorrect record length for a sequential file; if the sequential file you are attempting to access is corrupt in some way; or if the file you have specified is not a sequential file.

104 Null file name used in file operation

You have specified a variable name for a filename instead of a literal, and on attempting to OPEN that file only spaces were found in the variable.

105 Memory allocation error

The run time system is unable to allocate sufficient memory space to successfully carry out the attempted operation. This error implies that there is no memory space left on your system.

106 Dictionary error

This could be the result of a READ or WRITE error to file or disk, but it is more likely to be the result of an internal system error.

Contact your supplier who will try to help you discover the cause of your error and how it may be rectified.

107 Operation not implemented on this run time system

You are attempting to perform an operation which your run time system does not support.

114 Attempt to access item beyond bounds of memory

Memory access violation has been detected by your operating system.

115 Unexpected signal

A signal the run time system was not expecting has been caught.

116   Cannot allocate memory

For some reason a part of your run time system is unable to allocate you sufficient memory to enable you to execute your code.

117   Bad collating sequence

This is an internal system error.

Please contact your supplier who will try to help you discover the cause of your error and how it may be rectified.

138   File closed with lock - cannot be opened

You are attempting to OPEN a file which you previously CLOSEd with lock, and as such an operation violates one of the general rules of COBOL programming you have been given this error.

139   Record length or key data inconsistency

There is a discrepancy between the length of a record, or the keys which you have specified, in your current program and its definition in the program in which it was first OPENed.

141   File already open - cannot be opened

You have tried to OPEN a file which is already OPEN and so cannot be OPENed again.

142   File not open - cannot be closed.

You have tried to CLOSE a file which is not OPEN.

143   Rewrite/delete in sequential mode not preceded by successful read

You have to do a successful read on a sequentially accessed file attempting a REWRITE or DELETE on some of the information contained within that file.

146   No current record defined for sequential read

The current record pointer in your file is undefined owing to a failed READ/ START or INVALID KEY condition. You have tried to read another record in the file but as the current record is undefined the system cannot find the start of the record for which you have asked.

147   Wrong open mode or access mode for read/start

You have violated one of the general rules of COBOL programming as you have tried to carry out a READ or START operation on a file which has not been OPENed INPUT or I-O, or is not OPEN at all.

148   Wrong open mode or access mode for write

You have tried to WRITE to a file in sequential access mode that you have not OPENed for OUTPUT or EXTEND, or you have tried to WRITE to a file in random or dynamic access mode that has not been OPENed INPUT or I-O.

149   Wrong open mode or access mode for rewrite/delete

You have violated one of the general rules of COBOL syntax as you are trying to do a REWRITE or DELETE on a file that you have not opened for I-O.

151   Random file on sequential file

You have violated one of the general rules of COBOL syntax as you are trying to do a random READ on a file which has sequential organisation.

152   REWRITE on file not open input-output

You have violated one of the general rules of COBOL syntax as you are only permitted to carry out a REWRITE on a file that has been OPENed for I-O operations, but you have attempted a REWRITE on a file that is not OPEN I-O.

153   Subscript out of range

A subscript which you have used in your program is out of the defined range, that is, it is either zero, or it is greater than the number of occurrences of the item.

154   PERFORM nested too deeply

This error usually results if you have used GO TO to jump out of the range of a PERFORM rather than to jump to an EXIT statement at the end of its range.

155   Illegal command line

The generic command line interpreter, which must be present if your program is to be run successfully, is not found on your system.

157   Not enough program memory: object file too large to load

Your program is too large for the available memory space.

159   Malformed line-sequential file

A line-sequential file which you are trying to access is corrupt in some way. Re-run your program using the backup copy of that file.

161   Illegal intermediate code

The piece of intermediate code which is currently being processed is not a valid operation. You are probably trying to execute a corrupted file.

162   Arithmetic overflow in numeric field

You have attempted to divide a data-item by zero.

163   Illegal character in numeric field

You have attempted an arithmetic or comparison operation on a numeric item which contains non-numeric data (for example, space).

164   Run time system subprogram not found

You have attempted to call a subroutine whose entry address has not been set up in your run time system.

165   Version number incompatibility (intermediate code and RTS incompatible)

You are using incompatible releases of the compiler and the run time system which means that the compiler that you are using will generate (or has already generated) code that your run time system will not be able to execute correctly.

166   Recursive COBOL call is illegal

You have tried to CALL a COBOL module that is already active.

167   Too many USING items

The list of items you have supplied is a CALL....USING statement is longer than the run time system can handle.

168   Stack overflow (fatal)

You have nested a PERFORM statement or a series of CALL statements too deeply.

171   Japanese operations are illegal with this RTS

You are attempting to do Japanese operations with a non-Japanese RTS, or you have used a Japanese compiler to compile your program and are now trying to run your code using a non-Japanese run time system.

173   Called program file not found in drive/directory

You have attempted to call a file which is not present on your current logged-in drive or directory, or is not pointed to by the COBDIR environment variable.

176   Illegal inter segment reference

Your code contains a segment reference for the forward reference table which is illegal, or it is corrupted. Contact your supplier who will try to help you discover the specific cause of this error.

177   Attempt to cancel active program

You have tried to remove a currently executing program or its parents or grandparents from its memory.

178   Error during save

You cannot save the information which your program has generated. This can be caused by several different reasons but one of the most common causes is that you have attempted to BUILD a module that is too large for the memory space.

179   Error during chain (program not found)

You have tried to chain to another program which your system is unable to find.

180   End-of-file marker error

A file-marker used to indicate that the end of file has been reached is missing from one of your files.

181   Invalid parameter error

A parameter which you have used is not one which is recognised by your system.

182   Console input or console output open in wrong direction

You are either trying to read input from the screen or WRITE to the keyboard.

183   Attempt to open line-sequential file for I-O

You have tried to open a line-sequential file in the input-output open mode, but this mode is not supported for files with this organisation.

184   ACCEPT/DISPLAY input-output error

You have tried either to read input from the screen or WRITE to the keyboard.

187   Run time system not on COBDIR path

The Run Time System cannot be found on the path you have set up in the COBDIR environment variable. Check the value of this variable (found in the AUTOEXEC.BAT).

188   File name too large

A file name which you have used has more characters than the maximum number allowed by your operating system (usually eight).

189   Intermediate code load error

You are unable to load a file because it has become corrupt in some way.

190   Too many arguments to CALL

A CALL within your program cannot be successfully executed because of the number of arguments which you have used with it.

193 Error in variable length count

The piece of intermediate code which is currently being processed is not a valid operation. You are probably trying to execute a corrupt file or one which has not been compiled.

194 File size too large

A file which your program is accessing is too large for successful execution to continue.

195 DELETE/REWRITE not preceded by a READ

Before a DELETE or a REWRITE statement can be successfully executed in sequential access mode the last input-output statement executed for the associated file must have been a successful READ. In your code no READ statement precedes your attempted DELETE or REWRITE.

196 Record number too large in relative or indexed file

The relative record key has exceeded the system limit, that is the file is too large for the system to handle.

Alternatively the record key which you have specified is too large for the system to deal with successfully, or the pointer to the record has been corrupted in some way so that it is either too large or it is not a multiple of the record length.

197 Screen handling initialisation error

This error is caused by one of the following:

- Your display adapter is in the wrong mode

- Your screen handling interface has not been correctly initialised because your terminal does not have the required capabilities

- Your `terminfo` file is corrupt

- Memory has been allocated incorrectly.

198 Load failure

You have not been able to load the file which you requested perhaps because it is corrupt.

If the file failed to load because it is corrupt then re-run your program loading your backup copy of the file. This error often occurs because of insufficient memory.

199   Operating system error out of defined range

A system call has returned an unexpected error number which is not documented.

Contact your supplier who will try to help you discover the specific cause of this error.

200   Run time system internal logic error

You can receive this error if the amount of memory available on your machine is so low that not even the run time system can be fully loaded properly. In this case you will have to free some memory and then you should be able to re-run your program successfully.

However the most common cause of this error is that your run time system has followed a route which it should not have followed. If this is the case you will need to contact your supplier who will try to help you discover the cause of this error.

201   Input-output error in paging system

There is no room available in your current directory or file on the floppy disk which you are using, for the paging file.

When your program has terminated delete some files which you no longer need in your directory to make room for the paging file.

203   CALL parameter not supplied

You have not supplied your currently executing file with all of the parameters mentioned in the linkage section of your main program.

206   Reading unwritten data from memory file

You are attempting to read data which has not been written from the core file.

207   Machine does not exist

You have tried to access a machine that is not connected to your network, or the machine is not switched on.

208   Error in multi-user system

This is normally caused by an unexpected error occurring within the network or file sharing facilities. A corrupted network message will also return this error.

209   Network communication error

This is normally given if an incorrect checksum has been received in a communications packet.

210   File is closed with lock

You have tried to open a file which you have previously closed with lock.

212   Malformed assembler subroutine file

You are attempting to access an assembler routine that is not in the specific format for such a file.

213   Too many locks

You have either tried to exceed the maximum number of record locks per file which can be in force at any one time or you have exhausted an operating system or network resources, for example, dynamic memory.

215   Cannot animate a program running COMMUNICATIONS

You have tried to animate a program which makes use of the communications module. This cannot be done as both animator and the communications module need full use of the CRT.

216   Cannot initialize the named communications device

A device driver is probably missing.

217   Incompatible host for compiled code file

The .GNT file is not valid for the host processor.

219   Operating system shared file limit exceeded

You have tried to exceed your operating system's limit on the number of shared files that you can have OPEN simultaneously. As this figure is operating system dependent so you will need to consult your operating guide for details of how many shared files your system permits to be OPEN at any one time.

221   SORT/MERGE error

222

You receive one of these three errors if you attempt to do a SORT/MERGE which is unsuccessful for some reason. These errors can result from a variety of causes; for example, you may have too many   files OPEN when you are attempting a SORT/MERGE or the file you are trying to access may be locked.

901   Could not open print device

Your printer may be disconnected or switched off.

902   Bad printer control code given

Check Control Sequences and/or Printer Definitions.

903   Printer device not open

904 Out of memory while printing

The print command is unable to allocate sufficient memory space to successfully carry out the attempted operation. This error implies that there is no memory space left on your system.

905 Failed to open file

Print Manager cannot open the file you are attempting to print.

906 Disk full while spooling file

There is insufficient disk space to create the required temporary spool file. Delete some files or directories on your current drive before trying again.

907 Print job aborted

908 Printer information structure badly constructed

909 No default printer found

Check Printer Manager for a default print device.

910 No commdlg.dll found

Write failure.

Appendix D: Database Overview

This appendix provides a brief overview of table layouts and SQL queries.

Table Names

SunSystems allows the user to define multiple companies/ledgers which can be consolidated in reporting. These companies/ledgers are known as databases in SunSystems. Each database has its own set of tables, each distinguished by a three letter alphanumeric code known as the Database Code. The database code is the last three characters of the table name denoted by 'ddd'.

So if SALFLDGddd stands for the ledger table, and the demonstration database or company has the three letter prefix DEM, the ledger table is called SALFLDGDEM. Likewise the ledger table for database/company 001 is called SALFLDG001.

Column Names

Wherever possible meaningful column names have been used.

Indexed Columns

All SunSystems tables have at least one index, and some have two or three. An index may be created for a single column or for multiple columns. Indexed columns are indicated at the end of each table listing.

The SQL indexes may be composed of a number of columns. Multi-column indexes are called 'segmented indexes' or 'composite keys'.

For most tables index 1 is a unique index, i.e. it allows no duplicates. In the Microsoft SQL Server database, index 1 is also usually defined as being a 'clustered index'. This means that the rows are physically stored in the order of the index, increasing performance.

Numeric Data in SQL Databases

Numeric columns are generally stored as 'int' or 'numeric'. In the following example you can see the numeric data types used by SunSystems, and their sizes:

Column Name	Sample SQL	Server Type	Bytes
Payment	1,234,567.89	numeric	variable
Turnover	123,456,789	int	4
Age	21	smallint	2

SunSystems dates are all in the format yyyymmdd.

SunSystems accounting periods are always in the format yyyyppp.

Both dates and periods are sometimes held in character columns and sometimes in numeric columns.

Join Columns

Columns used to join tables are usually given the same name. To join information from the ledger table and the accounts table would require the SQL clause:

```
where SSRFACC.ACCNT_CODE = SALFLDGDEM.ACCNT_CODE

and SSRFACC.SUN_DB = 'DEM'
```

Joins for analysis codes require the analysis category to be specified. For example, to find the analysis row corresponding to ANAL_T2 you would have to use the SQL clause:

```
where SSRFANV.CODE = SALFLDGDEM.ANAL_T2

and SSRFANV.CATEGORY = 'T2'

and SSRFANV.SUN_DB = 'DEM'
```

Other reference tables may require the combination of more columns to define a unique reference.

Appendix E: Supplied SQL Queries and Procedures

This appendix describes the queries and procedures supplied with SunSystems which aid the administration of the database, and provides some querying examples. They are located in the _SQL\QUERIES subdirectory and can be copied and altered in any way as required.

☞ *Note: Some of the queries refer to the DEM ledger code and should be altered to match the code(s) used for your data. The queries also refer to tables used in all modules; the entries for those not used should be removed prior to executing the script.*

DEM-ANAL.SQL

Creates views of analysis codes based on the analysis reference table for the DEM ledger code. These views can then be used to create simplified queries.

ERRORMSG.SQL

Provides the layout of a query to find system error message numbers containing certain text.

EXTTMP.SQL

An example script of how to extend the temporary database (tempdb).

ITMQRY.SQL

An example of how to extract and display item information held in SunBusiness.

KILL_SDB.SQL

Creates a procedure which will remove all objects (tables, indexes and stored procedures) from your database, without dropping the database itself. This is useful when upgrading SunSystems from a previous version.

REFSIZE.SQL

Query to display the space usage of the reference tables.

REMOVEDB.SQL

Script to drop all components created by the installation. Removes login Ids and databases. Use with caution: this will destroy all your data.

SDUPSTAT.SQL

Creates a procedure which can be used to update the statistics and recompile stored procedures on all tables in a given database.

SPREADAC.SQL

Shows the number of transactions on the ledger by account code.

SPREADPD.SQL

Shows the number of transactions on the ledger by period.

SPSUNWHO.SQL

Creates an online stored procedure which displays information regarding users running SunSystems.

STORED.SQL

Creates a stored procedure which will list stored procedures in the current database.

TABLES.SQL

Creates a stored procedure which will list tables in the current database. It also accepts a parameter which can specify a search variable.

TRNSIZE.SQL

A query which will display the space usage of all the transaction tables.

USERS.SQL

Displays information about existing login Ids.

USRRIGHT.SQL

Creates a procedure to create login Ids based on SunSystems database codes.

Appendix F: DEFINEDB.SQL Sample Listing

This appendix provides an example of the script file DEFINEDB.SQL used by MS SQL Server. You should edit this script to suit your needs before you run it.

```
/*
*************************************************************************
*  Creates Database, Logins and users for the SUN database             *
*                                                                       *
*  This script file is an OUTLINE ONLY.                                 *
*                                                                       *
*  The Database System Administrator should modify the entries to suit  *
*  the target installation.                                             *
*                                                                       *
************************************************************************ */
use master
go

/* *********************************************************************
Create SunSystem's database, log and backup devices.

Note that the parameters for the creation of the database
below are an outline only.
Further parameters can be indicated such as MAXSIZE, which
specifies the maximum size to which the file can grow,
UNLIMITED which specifies that the file can grow until the disk
is full, FILEGROUP a collection of one or more files that forms a
single unit of allocation and administration. etc.

************************************************************************ */
CREATE DATABASE SUNDB
        ON PRIMARY
         (NAME='SUNDB',
          FILENAME='C:\mssql7\data\Sundat.mdf',
          SIZE = 200MB,
          FILEGROWTH = 20MB)
        LOG ON
         (NAME='SUNDBlog',
          FILENAME='C:\mssql7\data\Sunlog.ldf',
          SIZE = 100MB,
          FILEGROWTH = 10MB)
GO
sp_adddumpdevice "disk",hard_dump,"c:\mssql7\data\Sundump.dmp",2
GO
/* ********************************************************************* *
   Create login Ids.

   The database owner must always be SUN but the password may be changed.
   User SSA is for accessing the install table only. It must not be
   dropped.

 * ******************************************************************** */
sp_addlogin SUN,SUNSYS,SUNDB
go
sp_addlogin SSA,SUNSSP,SUNDB
go
```

```
/* ****************************************************************************
 If you are running this script a second time to create a second SUN database
 then the addlogin will fail and the SUN user will retain the old database as
 the default login database.
 So the sp_defaultdb procedure changes the default database to be the new
 database. This only affects third party utilities which use the default
 to determine the initial database e.g. isql.
 When running the SunSystems application the database is specified in SUN.INI.
 **************************************************************************** */
sp_defaultdb SUN,SUNDB
go

use SUNDB
go
sp_changedbowner SUN
go
sp_adduser SSA
go


/* ****************************************************************************
 The following options are useful for developing and testing.
 The system administrator may apply these if required.

use master
<───────────────────────insert  G O
sp_dboption SUNDB, trunc,  true
<───────────────────────insert  G O
sp_dboption SUNDB, sele, true
<───────────────────────insert  G O
************************************************************************** */

use SUNDB
go
checkpoint
go
```

Appendix G: Enabling Business Analyser

IMPORTANT INSTALLATION NOTES

The SunSystems Business Analyser is setup in four distinct stages.

1   The SunSystems OD=Operator Definitions specify a work directory, for example, `_WORK\`, which determines where temporary work files will be located. This can be a relative or absolute setting.

2   The system administrator runs the `BFILES.EXE` program to create the `BVIEW.INI` file. This `.INI` file can be duplicated as required on each of the client machines. `BVIEW.INI` contains information that enables Business Analyser to locate the temporary work files in the directory previously defined in OD=Operator Definitions. The facility allows the location to be specified in two ways:

☞ *Note: FTP is not appropriate for Windows platforms.*

   Direct

   The SunSystems directory on the server is mapped to a local drive. This directory is specified using the absolute path, for example `Z:\SUN426\SERVER\_WORK` where `Z:\` is the drive letter mapped to the server.

   Network

   UNC notation can be used to locate the directory resource on the network, for example:

   `\\SERVER-NAME\SHARE-NAME\SUN426\_WORK`

   A valid user Id and password can be supplied as required.

3   Optionally, the client system can be configured to lookup and verify reference data values using ODBC. To achieve this, the system administrator should run the program `BCONNECT.EXE`. The program prompts for an ODBC data source name plus a valid user Id and password. This action is required on each client machine. See *Additional Client Software Requirements* for further details.

4   When creating a TP=Transfer Profile for use with Business Analyser, the file must be output to the work file location specified in the user's OD=Operator Definitions record.

Additional Client Software Requirements

☞ *Note: ODBC is not appropriate for ISAM platforms.*

To fully utilise the database lookup features of the Business Analyser tool, the SunSystems client must have an ODBC data source defined to access the SunSystems database.

In a Microsoft SQL Server environment, the ODBC software is already installed when using a thick installation. Fat and Thin client architectures require that the SQL Server ODBC drivers are also installed on the client machines. Please refer to your Microsoft SQL Server documentation for further information regarding the installation and setup of ODBC data source components.

If the SunSystems database is an Oracle environment, then each client requires the Oracle Net8 client software component and the Microsoft supplied Oracle ODBC driver. Please refer to your Oracle documentation for further information regarding the installation and setup of Net8 networking components.

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