

PROGRAM PRODUCTS

5727-CB1 - SYSTEM/36 COBOL COMPILER and LIB.

PURPOSE

The System/36 1974-level COBOL Compiler and Library operate under control of the System/36 System Support Program (5727-SS1).

HIGHLIGHTS

Enhancements

- Language extensions to support workstations and interactive communications using SSP-ICF.
- The COBOL SORT/MERGE verbs are supported for up to eight input files. Multiple sorts are allowed in the same program.
- Nested IF statements are supported.
- ADD, SUBTRACT, and MOVE CORRESPONDING are now supported. This will reduce the number of instructions required to edit group items for printing or to do data conversion of group items.
- Support for abbreviated combined relations will allow users to code implied subjects and operands such that the following statement will be valid:
If A = B, OR C...
- Substring capability will allow the user to use the verbs STRING and UNSTRING to combine or take apart fields respectively. These powerful instructions are useful in text processing.
- Table processing will support the ASCENDING/DESCENDING options and the functions:
 - SEARCH
 - SEARCH ALL
- Variable-length tables are also supported by the OCCURS DEPENDING ON option to allow the user to restrict table searches to valid data only and thus save processing time.
- The INSPECT verb replaces the 1968-level EXAMINE. The function has been enhanced to allow use of multiple characters.
- File processing support:
 - Alternate index paths.
 - The record DELETE option is supported.
 - Add to sequential files is supported via the OPEN WITH EXTEND option.
 - The START verb will support NOT LESS THAN as well as EQUAL keys which will allow the user to do generic searches on indexed files.
 - Optional files are supported to allow the user to continue to run even if some of the files do not exist.
 - The DYNAMIC ACCESS option is supported so that a user can now process the same file both sequentially and randomly without having to doubly define the file.
 - The user can specify top and bottom margins for a printer file.
 - The FILE STATUS function is supported so that the user can interrogate the result of a file operation.
 - USE after STANDARD ERROR/EXCEPTION is supported to allow the user to combine error/exception logic in one section of the program.
- The value clause for level 88 supports multiple values. The THROUGH option also allows users to easily do range checking.
- Multiple result fields in arithmetic statements are supported.
- The REMAINDER option of the DIVIDE is supported.
- The RENAMES capability has been extended with:
 - Level 66 items
 - THROUGH option is supported
- The edit character of '/' for data edits is allowed.
- The COPY function supports the REPLACING option. This allows users to replace copied character strings, either entirely or partially, to fit the requirements of the source program.
- The 1974 DEBUG module is supported. This gives the user a special group item called DEBUG-ITEM which can be processed at desired debug points in the program. This support also includes both compile and execution time switches for suppression of the debug function.
- Additional debug support of EXHIBIT and TRACE.
- Additional compiler options include:
 - A cross-reference listing of data names and labels.
 - Flagging of all statements exceeding a specified FIPS (Federal Information Processing Standard) level.
 - Syntax-only compiles to allow users to check syntax prior to generating object code.

- Semi-interactive syntax checking is provided to allow users to compile and correct source programs without requiring a source listing printout.
- Enhanced support for multiple spooled printer files in one program.
- Subroutine support for the 1255 MICR reader/sorter.

DESCRIPTION

The System/36 COBOL Compiler and Library is a licensed program that operates under control of the System/36 System Support Program (5727-SS1). The compiler and library are disk resident. The compiler requires as input a COBOL source language program, and produces as output, by means of the system's Overlay Linage Editor, a System/36 machine language runnable program cataloged in a user library. A source program listing, diagnostic messages, and main storage map can also be requested.

This compiler is designed according to the 1974 standard.

Industry Standards: IBM System/36 COBOL is designed according to the following industry standards as understood and interpreted by IBM:

- American National Standards (ANS) COBOL, X3.23-1974 ANS COBOL is identical to ISO 1989-COBOL, approved in February, 1978 by the International Organization for Standardization. The following ANS processing modules are included:

2 NUC	1, 2
2 TBL	1, 2
2 SEQ	1, 2
2 REL	0, 2
1 INX	0, 2
2 SRT	0, 2
1 SEG	0, 2
2 LIB	0, 2
1 DEB	0, 2
1 IPC	0, 2

The first digit above represents the level of the modules included in the compiler. The second digit represents the lowest level specified for American National Standard COBOL (0 implies that the module may be completely missing from a standard compiler). The third digit represents the highest level specified in the standard.

- December 1975 Federal Information Processing Standard, (FIPS PUB 21-1), Low-Intermediate level. However, additional support is provided for many features of higher FIPS level.

The following exceptions apply to the above standards:

- The DELETE function is implemented by marking deleted records with a hexadecimal FF in position 1 of the record. When operating with DELETE mode files, the user is excluded from placing a hexadecimal FF in this position.
- The ALTERNATE RECORD KEY clause is not supported. Comparable function may be utilized by defining additional indexed file access paths outside the COBOL program.
- RERUN is supported for syntax checking only.

Additions: In addition to the standard language, the following additional features are provided:

- Extensions to the modules of American National Standard COBOL listed above include certain language elements which are defined in higher levels of the American National Standard COBOL than those listed. The following extensions are supported:
 - Use of apostrophe instead of quotes.
 - Extended data types of computational-3 (packed) and computational-4 (binary).
 - Additional debugging support with EXHIBIT and TRACE.
 - ACCEPT from console.
 - DISPLAY upon console.
 - File definition using the FILE CONTROL entries of SELECT and ASSIGN.
 - Standard error handling using FILE STATUS and the USE procedure in the DECLARATIVES SECTION.
 - Extensions to standard file processing verbs for:
 - OPEN/CLOSE
 - READ/WRITE
 - Support for display format indicators as boolean data types (0,1) and turning them on and off via the SET statement.
 - Acquire and release workstations and SSP-ICF sessions supported through ACQUIRE and DROP.
 - Support for UPSI switches.
 - ACCEPT/DISPLAY statements support reading and writing of the workstation local data area (WSDA).

Additional Compiler Features:

System/36 COBOL offers additional compiler features which can be chosen by the programmer:

- Alternative index paths are supported for indexed files. The paths are dynamically maintained. Program coding for an alternate index

System/36 COBOL Compiler and Library (cont'd)

path is the same as for the indexed file. Alternate index paths must be created by BLDINDEX.

- FIPS Flagger issues messages identifying statements and clauses in a COBOL source program that exceed a user-specified FIPS level.
- Symbol Cross-Reference produces two alphabetic listings of user-specified names. One of the names is defined in the Data Division and one of the names is defined in the Procedure Division.
- Online programming is supported by the diagnosed source member output option of the compiler. Diagnostic messages and summary information are inserted into appropriate places of the source member. The member may then be viewed/changed by SEU (Source Entry Utility).
- Online programming also provides an automatic cycle that enables you to enter a program, compile it, review/correct compile errors (via SEU), and recompile the program without leaving the display or using a printer. The inserted diagnostics are dropped on the next compile or may be optionally dropped by SEU.
- Many compile options such as print/noprint, source/nosource, xref/noxref, and debug/nodebug can be overridden from the online prompts.
- When the performance of accessing a large indexed file can be improved, a storage index will automatically be allocated. Coding of the index size in the program is eliminated.
- Up to 255 display formats may be accessed from a workstation file defined in a program.
- Multiple Requesting Terminal (MRT) programs can continue processing when a permanent I/O error is caused by turning the power off at a display station or by the failure of a communications line to a remote display station.
- Program versions can be tracked with the modification reference number and date/time stamp in the source member directory entry, the compile listing, and the subroutine/load member directory entry.
- Syntax Checking Compilation scans a source program for syntax errors. If errors are found, error messages are generated. No object code is produced.
- Parameter Prompting allows the user to request prompt screens for the specification of parameters needed for entering, updating, compiling, or executing COBOL programs.
- Multiple Printer Files allows the specification of up to 25 different printer files in the same program.
- Standard Program Linkage allows programs written in System/36 COBOL to call or be called by other programs written in System/36 COBOL, System/36 FORTRAN, or System/36 Assembler language.

Disk File Support: The access methods supported by System/36 COBOL, based on physical data organization, are as follows:

- Sequential Organization
 - Consecutive processing, including update in place and consecutive add (extend).
 - Random processing, by relative record number, including updating. This requires that the file be described as RELATIVE in the COBOL program.
- Indexed Organization
 - Random processing, by key or relative record number.
 - Sequential processing, by key including file loading.
 - Dynamic processing, combined random and sequential processing.
- Direct Organization
 - Random processing, by relative record number, including updating and file loading.
 - Consecutive processing.
 - Dynamic processing, combined random and sequential processing.

Standard System/36 disk labels are mandatory for all disk files. Nonstandard labels cannot be used except as data records within a file.

Record size can range from 1 byte to 4,096 bytes, and records may be processed as blocked or unblocked. The block size for a given file may be varied between programs up to a maximum block size of 9,999 bytes. Logical records may span physical disk sectors, blocks, tracks, or cylinders.

Workstation Support: Low-volume, unformatted, line-at-a-time workstation support is provided with the ACCEPT and DISPLAY verbs. File processing has been extended to support a TRANSACTION organization type. Using this organization type, the user can define one file that supports single or multiple workstations, and single or multiple

SSP-ICF sessions in any combination. Since the support is provided in a COBOL standard file, the user codes standard COBOL verbs, with extensions where necessary, to accomplish the job.

CUSTOMER RESPONSIBILITIES (not applicable)

SPECIFIED OPERATING ENVIRONMENT

Support will be provided for this licensed program when it is operated in the following specified operating environment:

HARDWARE REQUIREMENTS

The IBM System/36 COBOL Compiler and Library licensed program runs on all models of IBM System/36.

SOFTWARE REQUIREMENTS

The current version of the IBM System/36 COBOL Compiler and Library licensed program operates under control of the current version of the IBM System/36 System Support Program (5727-SS1).

CONVERSION/COMPATIBILITY

No conversion of source programs from System/34 COBOL '74 compiler is required. There is a high degree of compatibility between the System/36 COBOL compiler and System/38 COBOL, the System/3 subset '68 COBOL, System/32 PRPQ COBOL, and System/34 PRPQ COBOL compilers. Differences do exist and some conversion effort will be required.

SECURITY/INTEGRITY (not applicable)

PERFORMANCE CONSIDERATIONS

The System/36 COBOL Compiler and Library licensed program runs on all models of IBM System/36. The minimum region size is 24K bytes. Additional main storage may allow faster compilation of a large source program. The Overlay Linkage Editor constructs overlays (if necessary and possible) to fit the object program into the available main storage. The region size required for an object program is a function of source program complexity and its ability to be overlaid.

The System/36 COBOL Compiler accepts source statements from the source member on disk, from a procedure member on disk, or from a display station keyboard. Compiler output can consist of a source listing and diagnostic messages on the printer, messages on the display screen, an object module on disk, and a diagnosed source member.

During execution of the COBOL object program, input is accepted from the keyboard, from a library procedure member (if that procedure is defined as the system input device), or from data files on disk. Output from the executing COBOL program is to the printer, display screen, or to data files on disk.

DOCUMENTATION

(available from Mechanicsburg)

Programming With COBOL (SC21-9007) ... IBM System/36 COBOL Compiler and Library Licensed Program Specifications (GC21-9009) ... COBOL Summary (SC21-9013) ... COBOL Messages (SC21-7941).

RPQs ACCEPTED: Yes

PROGRAM PRODUCTS

5727-OS1 - SYSTEM/36 OFFICE MANAGEMENT SYSTEM**PURPOSE**

The System/36 Office Management System (OMS/36) is a set of related office functions which can be used by principals and secretaries to improve their productivity. OMS/36 complements the text handling functions provided by the System/36 Text Management System.

HIGHLIGHTS

- File and find documents (Text Management System licensed program required).
- Process documents (Text Management System licensed program required).
- Local document distribution.
- Open mail.
- Check outgoing mail.
- Maintain name, address and telephone directory.
- A calendar function to create, maintain and print calendars.
- File offline correspondence.
- Maintain user profiles.
- Menu linkage to Text Management System and Advanced Printer Function.
- Label printing.

DESCRIPTION

OMS/36 functions are easy to use and are menu driven. They contain extensive help text for users and are designed to be used without the need for special training or hard-copy reference manuals. It runs under the System Support Program (SSP) of the System/36, and requires the Text Management System to be installed. Both system and text printers will be supported for output.

OMS/36 provides menu access to the Text Management System and other related functions such as Advanced Printer Function and problem solving in BASIC.

The major functions provided are:

- File and find documents.
- Local document distribution.
Document Distribution provides local document distribution services to users of the System/36. A user at any workstation can prepare documents using the Text Management System and distribute them to other office users on the same system. The distribution facilities provide mail services with a private online in-basket and out-basket for each user. Documents may be sent to another user even if the recipient is not currently using the system.
- Related services provided by Document Distribution include:
 - Stored distribution lists (multiple recipients of a document).
 - Message handling (for short, immediate communications).
 - Hard-copy printout of documents sent to nonusers of office services (electronic mail basket does not exist).
 - Tracking of outgoing mail until delivery.
- Open mail.
All incoming documents are placed in the user's online in-basket file. The Open Mail function allows a user to review the contents of his in-basket. An item may be viewed, filed, printed, kept or deleted.
- Check outgoing mail.
Office Services maintains a record of documents sent to other users that have not been acknowledged. This function provides the user with a list of documents mailed to OMS/36 users on a single scrollable screen.
- Maintain directory.
The directory function allows a user to develop a name, address, and telephone directory that may be used for inquiry, document distribution, labels and telephone directories.
- Calendar Function.
The Office Management System (OMS/36) calendar function allows the user to create, maintain, view and print calendars. Various levels of access can be selected.

The user can:

- Schedule appointments on calendars. Add, update, delete, copy, add notes to and reschedule appointments.

- View your calendar and other calendars by day or by week. The user can also view the free time (unscheduled time) on a calendar for a specified date.
- Print calendars for specified days or weeks.
- Select access levels for each calendar. Assign access (no access, read access, or update access) for all users (public access), or for a specific user.
- Select how times will be entered, shown, and printed in either AM/PM or in 24-hour (international) time.
- Select whether a message is given when someone tries to schedule an appointment in a time slot that is already occupied or that is outside the normal scheduling period.

- Filing of offline correspondence.

Document information can be entered and used later to locate a filed document.

- Maintain user profiles.

The user profile allows the user to customize or tailor his operating environment. Entries may be changed at any time. Default values are taken from the user's profile by both the Text Management System and Office Management System functions.

- Menu linkage is also provided to System/36 BASIC. If System/36 BASIC is installed, the user will have a BASIC session started in which BASIC programming can be done.
- Menu linkage to Advanced Printer Function. This provides menu access to APF/36 from the OMS/36 menus.

CUSTOMER RESPONSIBILITIES (not applicable)**SPECIFIED OPERATING ENVIRONMENT**

Support will be provided for this licensed program when it is operated in the following specified operating environment:

HARDWARE REQUIREMENTS

The minimum hardware requirements are:

- IBM System/36, any model.
- One IBM Printer (3262, 5219 mdl D01 or D02, 5224, 5225 or 5256). If an IBM 3262 Printer is used, a print belt with upper and lower characters should be considered.
- One IBM 5251 mdl 11, 5291 or 5292 Display Station.
- The IBM System/36 Office Management System requires a minimum of 2,500 blocks of disk space.

SOFTWARE REQUIREMENTS

IBM System/36 System Support Program (5727-SS1), Release 1 or later, and the Text Management System licensed program. The licensed program requires 64K bytes of user memory to execute.

SECURITY/INTEGRITY

Same as the System/36 System Support Program (5727-SS1).

DOCUMENTATION

(available from Mechanicsburg)

IBM System/36 Office Management System Licensed Program Specifications (GC21-7980) ... IBM System/36 Office Management System User's Guide (SC21-7983).

SYSTEM INTEGRITY

Same as the IBM System/36 System Support Program (5727-SS1).

RPOs ACCEPTED: Yes

5727-RG1 - SYSTEM/36 RPG II

PURPOSE

The System/36 RPG II Compiler operates under control of the System/36 System Support Program (5727-SS1). It provides the following capabilities: RPG II Language Compiler ... Auto-Report ... Support for System/36 devices including WORKSTN (workstation) device and Interactive Communications feature SSP-ICF ... RPG II support for Binary Synchronous Communications (BSC).

HIGHLIGHTS

- Full procedural files that combine sequential and random disk access methods into one file definition statement. This can simplify programs by eliminating the need to have two file statements that access the same physical file in order to process randomly, sequentially, and add records.
- Exception output by name enables output statements to be given a name instead of an indicator, and allows that name to appear in Factor 2 of an EXCPT operation. This simplifies programming and debugging by eliminating the use of a unique set of indicators with EXCPT to control the output statements.
- When the performance of accessing and large index file can be improved, a storage index will automatically be allocated. Coding of the index in the program is eliminated.
- Up to 255 display formats can be accessed from a program.
- Alternative index paths are supported for indexed files. The paths are dynamically maintained. Program coding for an alternate index path is the same as for the indexed file. Alternate index paths must be created by BLDINDEX.
- Multiple Requesting Terminal (MRT) programs can continue processing when a permanent I/O error is caused by turning the power off at a display station or by the failure of a communications line to a remote display station.
- Program versions can be tracked with the modification reference number and date/time stamp in the source member directory entry, the compile listings and the subroutine/load member directory entry.
- Online programming is supported by the diagnosed source member output option of the compiler. Diagnostic messages and summary information are inserted into appropriate places of the source member. The member can then be viewed/changed by SEU (Source Entry Utility).
- Online programming also provides an automatic cycle that enables you to enter a program, compile it, review/correct errors (using SEU) and recompile the program without leaving the display or using a printer. The inserted diagnostics are ignored during the next compile or can be removed by SEU.
- Many compile options such as print/noprint source, program size, debug/nodebug can be overridden from the online prompts.
- The RPG II device names are DISK, PRINTER, CRT, CONSOLE, SPECIAL, KEYBOARD, BSCA and WORKSTN.
- Support is provided for SSP-ICF using the WORKSTN file support.
- The external indicators (U1-U8) may be tested and turned on and off in the RPG II program. The status of these indicators may then be tested by OCL. The indicators can also be set on or off using OCL.
- The user program may access a Local Data Area of up to 512 bytes which provides program-to-program or program-to-OCL data interchange.
- Data structures can be defined for the Local Data Area or used to redefine other fields without allocating additional storage.
- A program using a WORKSTN file can support multiple workstations or communication sessions with specified unique data fields and indicators saved and restored automatically for the currently active workstation or communication sessions.
- The TIME operation can be used to obtain time-of-day and date from the system.
- Field end position may be omitted and the compiler will calculate the end position within an output record.
- The user can control spacing and skipping of the compiler listing.
- A subroutine to retrieve message text from a message member is provided.
- RPG uses the System Overlay Linkage Editor (OLE). The flexibility of user-determined overlays may improve performance.
- The compiler defaults to the current user library to improve programmer productivity.
- Subroutine support for the 1255 MICR reader/sorter.

DESCRIPTION

The System/36 RPG II Compiler is a licensed program that operates under control of the System/36 System Support Program (5727-SS1). It provides the following capabilities:

- RPG II language compiler.
- Auto-report.
- Support for System/36 devices including WORKSTN (workstation) device and Interactive Communications feature SSP-ICF.
- RPG II support for Binary Synchronous Communications (BSC).

SYSTEM/36 DEVICE SUPPORT

System/36 RPG II supports all the devices available on the System/36 except the diskette drive and 8809 tape (8809 Tape hardware will not be available until May 1984. Disk files can be shared by more than one program. The following expanded device support is provided:

- WORKSTN File Support - System/36 RPG II supports one or more display stations or SSP-ICF communication sessions as a primary or demand file. The WORKSTN device support allows the programmer to treat the display station or communication session as a sequential combined file using the normal RPG II logic. Multiple display stations and/or multiple communications sessions may be attached to the WORKSTN file. The programmer need only be concerned with the single user (display station or communications session) logic. Data fields and indicators that are unique to each user are so indicated by the programmer and RPG II saves and restores those fields and indicators automatically.

Display formats for use with the WORKSTN file must be created using the Screen Design Aid (SDA) which is part of the Utilities licensed program. The system facility for compiling existing source code for screen formats, SSP Screen Format Generator Routine (SFGSR), can also be used.

- CONSOLE File Support - Through the use of normally coded file description and input specifications, the CONSOLE file is supported in a buffered interactive mode. The operator is prompted record-by-record with display formats generated by the compiler. Keying of one record is buffered and overlapped with processing of the previous record. The program is coded to process records as from any other sequential input device.
- KEYBOARD and CRT File Support - The display formats used for these files will use 6 lines of 40 characters each or 24 lines of 79 characters each depending on the maximum record length specified in the program for the file. The KEYBOARD support includes support of 24 command function keys.
- PRINTER File Support - Multiple printer files may be specified in a single program. The System/36 OCL is used to assign an RPG II printer file to the natively attached printer or a workstation printer at run time.

AUTO-REPORT

Auto-Report is included with the System/36 RPG II compiler and includes the following features:

Copy - Specifications may be cataloged in a library and included in any RPG II program via the COPY statement. A copy statement is especially useful for cataloging the file description and input specifications for which overrides may be coded to specify such things as control levels. By using the COPY statement, only one description of the file need be cataloged and maintained for all programs using the file.

Page Headings - Page headings can easily be specified on output specifications without the need for output indicators or end positions. The heading is centered over the report complete with page numbers and date.

Simplified Report Specifications - A report can be produced by listing on output specifications the fields in the order desired. On one output specification, the field, column heading, and an indication for column totals can be entered. The column headings, fields, and column totals are automatically generated.

BINARY SYNCHRONOUS COMMUNICATIONS (BSC)

The telecommunications specification is supported in System/36 RPG II. Support of binary synchronous communications will be provided by System/36 to communicate with:

- Another System/36 with RPG II, Assembler or SSP-ICF BSCSEL subsystem
- System/34 with RPG II, Assembler or SSP-ICF BSCSEL subsystem
- System/32 with RPG II or Assembler
- System/3 with (MLMP) CCP, or RPG II
- System/7 with MSP/7
- System/38 (CPF)
- System/360 with BTAM*

PROGRAM PRODUCTS

System/36 RPG II (cont'd)

- System/370 with any of the following:
 - BTAM*
 - VTAM/NCP
 - CICS/VS*
 - IMS/VS*
 - 3741 mdl 2 or 4
 - 3747
 - 5231 mdl 2 (supported as 3741 mdl 2 or 4 in transmit mode only)
 - 5280 distributed data system
 - Series/1 (supported as a System/3)
 - 5110 or 5120 (as a 3741)
 - 6640 Document Writer
 - Office Systems/6 Information Processor
 - 6240 Magnetic Card Typewriter - Communicating
 - 6670 Information Distributor
 - 6580 Displaywriter System
 - POWER/VS (as a 2780 or 3780)
- * Note: The 3704/3705 Emulation Program (EP) or the Partitioned Emulation Program (PEP) extension to 3704/3705 NCP can be used to emulate the 2701.

The BSC host support for System/36 is generated on the host system as System/3 BSC.

System/34 RPG II Considerations: If any System/34 assembler subroutines are called via EXIT or SPECIAL files, those assembler subroutines must be reviewed and modified as required to execute correctly on System/36.

CUSTOMER RESPONSIBILITIES (not applicable)

SPECIFIED OPERATING ENVIRONMENT

Support will be provided for this licensed program when it is operated in the following specified operating environment:

HARDWARE REQUIREMENTS

The IBM System/36 RPG II licensed program runs on all models of IBM System/36 and supports the communications adapters (#2500 and #4500) in BSC mode.

SOFTWARE REQUIREMENTS

The current release of the IBM System/36 RPG II licensed program operates under control of the current release of the IBM System/36 System Support licensed program (5727-SS1).

COMPATIBILITY

The System/36 RPG II source programs are source compatible with System/34 RPG II. System/34 RPG II programs and screen formats must be recompiled to execute on the System/36.

CONVERSION

No conversion of source programs from System/34 is required.

SECURITY/INTEGRITY (not applicable)

PERFORMANCE (not applicable)

DOCUMENTATION

(available from Mechanicsburg)

Programming With RPG II (SC21-9006) ... IBM System/36 RPG II Licensed Program Specifications (GC21-9008) ... RPG II Messages (SC21-7940).

RPGs ACCEPTED: Yes

PROGRAM PRODUCTS

**5727-SS1 - SYSTEM/36 R2 SSP
SYSTEM/36 SYSTEM SUPPORT PROGRAM**

PURPOSE

The System/36 System Support Program provides control programming functions for the System/36. These functions support user application programs and IBM programs and provide a number of independent general system integrity and ease-of-use facilities. System/36 SSP is layered to enhance productivity for all of its users. HELP menus and text, prompted procedures, and Operations Control Language are all available. Procedure Control Expressions allow building additional user procedures with full job stream control using substitution, branching, and some arithmetic functions.

HIGHLIGHTS

The System/36 SSP and SSP features provide the following control program capabilities:

- System Guided Operation.
- Over 2,000 Screens of Online HELP Text.
- User Application Help Support.
- Simple Configuration.
- Alternate Index Support on Disk.
- System/34 Source Code Compatibility.
- Multiple Program Mode.
- Input Job Queue
- Main Storage Management
- Operation Control Language (OCL) and Procedure Control Expressions.
- Sort/Merge Facility.
- System Utilities.
- Data Management for Disk and Diskette, plus Local and Remote Displays and Printers.
- Inquiry (Interrupt) Function.
- User/Resource Security.
- System History Facility.
- Spooling.
- Overlay Linkage Editor.
- Online Programming Support.
- Elastic Workload Management.
- Auto Response for System and User Messages.
- System Measurement Facility.
- Support for Diagnostic Operations.
- Support for Batch BSC.
- Remote Workstation Protocol.

Special Features (optional):

- Support for Communications Products.
 - Autocall, X.21 and X.25 (#6001)
 - Interactive Communications Feature SSP-ICF (#6002)
 - Multiple Session Remote Job Entry (MSRJE) (#6004)
 - 3270 Device Emulation (#6003)
 - Data Encryption Standard (DES) Subroutine for Banking (#6005)
 - Distributed Disk File Facility (#6006)
 - Communications and System Management feature (#6029)
- Extended SSP Feature (#6000).
 - Diskette I-Format Support
 - Multinational Character Set.
 - Tape Save/Restore and Data Interchange Support (available 2Q84)
 - 1255 Magnetic Character Reader Support (available 2Q84).

DESCRIPTION

System Guided Operation: The System/36 SSP is built to generally work without the need of publications. After signing on to the system, the operator can see the MAIN HELP menu. Options are chosen based on what the user wants to do. Each menu screen leads to another screen with additional options or to the execution of some command or procedure. There are about 140 Help menus supplied, but the path taken for any specific task uses only a few. Each operator can use a

command key to set any one of these as a sign-on help menu depending on individual experience level.

In addition, the Help menus can be bypassed by displaying a user-defined menu for specific applications. Also, each operator can use a command key to set the default sign-on application menu. The user need only define the menu and the job associated with each menu option. When the operator selects an option from the menu, the system displays it and runs the procedure or command associated with the selected option.

Over 2,000 Screens of Help Text: Help text is available to make the execution of system commands and procedures easy for the users, whether they are programmers or operators. This additional support can be removed from disk if/when it is not needed. When available, it gives an explanation of all the Help available on the system, describes the function of each selected procedure, and tells what command keys are active. Thus, the system can be operated without keying any commands.

User Application Help Support: Help text support similar to that used by system functions is available for programming use. Each menu and its option can be easily described using the Screen Design Aid (SDA) utility. No other programming is required.

Application help text, describing areas on the screen, can also be defined on screen formats using SDA. Different help text screens can be displayed based on cursor location at the time the help key is pressed. Using this facility, operator instructions can easily be added to existing applications by simply changing screen formats used by the application.

Simple Configuration: Configuration of the system involves an interactive process of responding to displayed prompts to tailor hardware and software definitions. Configuration is typically performed immediately following initial installation of the SSP on the system, but may be repeated later to change specified options or values. The system is tailored to the user's definitions by updating the master configuration record and doing an Initial Program Load (IPL) of the system. Careful and complete planning will ease system configuration.

Meaningful configuration defaults are provided for several system variables and system files based on the size of the system (main storage and disk capacity). Local workstations can be automatically configured. Workstation IDs and default values for display station and printer characteristics are assigned for the user.

Each menu and prompt is supported by an extensive set of defaults and automatic functions as well as Help text.

Alternate Index Support on Disk: This facility makes it possible to save disk storage and improve performance with applications that require multiple access paths to the same data. Alternate index files can be built for indexed files as necessary. Each alternate index file contains keys and pointers. An alternate index file can also contain duplicate keys. These files are used like any other indexed file and are maintained automatically by the SSP disk data management for all applications.

System/34 Source Code Compatibility: Any assembler or high-level language source program or procedure can be saved on diskette at a System/34 and restored to the System/36. RPG, COBOL or FORTRAN programs are simply recompiled to take advantage of System/36 object generation improvements in storage use or run-time performance. Some changes necessary in Assembler macros and procedure statements to take advantage of the System/36 architecture are documented in a Conversion manual, *Converting from IBM System/34 to IBM System/36*.

Multiple Program Mode: The SSP is designed to allow the System/36 to operate in the multiple program (multiprogramming) mode. Operators at multiple command-capable display stations may concurrently start control commands, OCL, and procedures. Multiple jobs and programs can execute concurrently.

Input Job Queue: The SSP also provides a job queue facility. This queue contains a list of jobs that are to be processed in sequence concurrently with other batch or operator-interactive jobs. The jobs in the queue can be placed there by an operator at any command-capable display station or by a procedure. The display station that places the job on the queue is released from that job and, therefore, becomes available for other work. Job queue priorities can be specified to control a job's position in the job queue.

Main Storage Management: The System/36 manages main storage as a pool of separate (noncontiguous) 2,048-byte segments and 'swaps' programs to and from disk as required to fit an active program into main storage (a program that is inactive might, for example, be waiting for data input or a message response from a display station).

System/36 main storage management allows the total main storage required by all active tasks to exceed actual user main storage, allowing the system to support a very elastic workload. Performance considerations will dictate to what extent user main storage may be overcommitted.

System/36 SSP (cont'd)

The System/36 SSP occupies a minimum of 36K bytes of main storage. This value may be automatically increased in 2K-byte increments to include printer spool support, increase number of active tasks, or optimize system performance. This resident nucleus area contains SSP functions such as data management for disk, printer and display stations; buffers for workstation I/O and printer spooling; and an SSP work area used for task control. When remote workstations are active, an additional area of main storage is dynamically reserved for line buffers and SDLC data management.

Operation Control Language (OCL) and Procedure Control Expressions: OCL is the user interface to run jobs and programs. It allows specification of job control information which is easy to use and keyword driven.

Procedures consist of one or more OCL statements. They allow up to 255 levels of nesting, up to 64 variable-length parameters, and control of the inquiry options allowed if the procedure is interrupted with the ATTN key.

Normally, OCL statements are written in procedure form, stored in a user library, and provided to the application operator as options to be selected from a user menu.

Procedures can be very flexible using Procedure Control Expressions which are provided. Functions include conditional processing of statements, simple arithmetic, character string comparisons, parameter substitutions, branching, message display, and disk/diskette file existence tests. Special OCL statements provide debugging assistance to programmers.

Sort/Merge Facility: This facility includes the same sort/merge functions available with the System/34 Utilities program product, only it is part of the System/36 base SSP. Support includes multiple record type sort with record selection dependent on field contents. Records may be sorted in any sequence. Addrout, tag along, and summary tag along sort are allowed. All data fields, except binary, are supported. Work file space is automatically allocated and multiple input files are allowed. Up to eight files can be merged together, and both equal control field and alternating sequence by field are allowed.

Systems Utilities: System/36 SSP also provides enhanced function to create, copy, save, restore, and rename files; build display formats, build menus and other common functions.

Enhancements to the library support include new directory fields to contain date/time of creation and subtype, easier to use library listings along with new information (such as number of diskettes needed to make a copy), and library extension when required to complete a job.

The SSP provides data management support for the disk, diskette, display stations and printers. The display and printer workstation data management supports multiple direct and remote units of the workstation devices which can be attached. The display station data management manages all input and output to the display stations including the retrieval of display formats from a disk library, and merging program data prior to displaying the format on the display, and displaying associated application help text based on cursor position.

Disk data files on System/36 may be accessed concurrently by multiple programs for input, update, or add operations. Protection of data against concurrent update by two programs is provided by locking disk records until released by the accessing program. An OCL parameter is provided to allow various levels of file sharing for any file. Also, files are optionally allocated by the system to the disk drive currently being used least. Input can be from Data Entry or Typewriter-style keyboards.

Disk files can be designated as extendable at file creation. In addition, immediate access is provided for all records that are added by a user program, regardless of file organization.

The System/36 SSP includes utility programs to support the diskette unit and the diskette magazine drive as a save/restore and data interchange device. The diskette 1 in 128- or 512-byte sector formats are supported. In addition, the diskette 2D (2-sided double-density) is supported in 256- or 1,024-byte sector formats.

The diskette magazine support allows input/output operations to begin on any one of 23 specified diskettes and overflow automatically to the next diskette in the magazine, to the next magazine, or from individual slot to the next.

Inquiry (Interrupt) Function: The operator may interrupt a processing program, start another job, such as inquiry into a file, and return to the processing program. Processing of the interrupted program will resume when the operator indicates the completion of interrupting activity. An OCL option will suppress this capability to prevent operators from accidentally changing their job environment.

User/Resource Security: Each operator who signs on at a System/36 display station is prompted for a user identification and, optionally, a password. This data is then checked by the SSP before allowing the operator any further access to the system. For each user, there is a profile that can contain a default sign-on HELP menu and a default user menu. This user profile contains additional information, like a password, when security is active.

Also files and program libraries can be restricted to authorized users. These users can be further restricted by type of use. An SSP option allows the creation of audit entries in the system history file for each use of a secured file or library.

Security permits the additional check of operator badge identification at sign-on if the display station has an attached 5250 Magnetic Stripe Reader.

System History Facility: System/36 provides a history area on disk which optionally contains all recently executed OCL statements and all messages issued to the logging device. The messages and data may be retrieved and redisplayed on the display station, printed, or copied to a disk file. The system history facility gives an operator flexibility in selecting the segment of the history area to display, print or copy. For example, an individual display operator is able to select entries created at a single workstation. If the history area is displayed, the operator also has the capability of scrolling backward and forward through the history entries.

Entries are time stamped and include the job identification generated by the SSP to assist in determining the sequence of activity on the system. A configuration option allows the user to automatically save the system history area in a disk file when the system history area becomes full. This option can be overridden at IPL time.

Print Spooling: Print spooling is supported by the SSP for all printers, whether local or remote. When spooling is active, printer output requests are intercepted and stored on disk. Spool writers are used to retrieve the print records from disk for printing. A print queue is maintained of job names whose printer data is yet to be printed, or specified as 'retained after printing'. System console commands are provided to start/stop, restart (at a page number), cancel, hold/release, change priority of and display jobs in the print queue. Print spooling is supported for any and all printers attached to the system simultaneously. In addition, multiple logical print files from a single program may be directed to one printer or separate printers.

A specified display station can be configured to be the controlling display station for a spooled workstation printer. The spool control commands and spool-issued messages are available to the display station operator to control the output directed to the printers associated with that display station.

The size of the primary spool disk file is specified when the SSP is configured. Defaults vary depending on the disk storage ordered. The spool intercept routine will allocate up to five additional extents if necessary. These specific extents will be the same size as the primary spool file and will be freed up by the spool writer as they become empty.

Spooled data may also be copied to a data file, viewed or printed or transferred to another System/36.

Overlay Linkage Editor: The Overlay Linkage Editor facility combines object modules, produced by RPG II, COBOL or FORTRAN and the Assembler program, to create an executable load module. Overlay structures may be created automatically or as designated by the user.

Online Programming Support: System/36 provides a procedure which allows automatic chaining from the Source Entry Utility to a compiler and optionally back to the Source Entry Utility for corrections, if necessary. This programming aid allows routing the compiler output to a display.

Elastic Workload Management: On System/36, assign/free space can access 2K of storage anywhere in main storage. The allocation algorithm looks for space on a quick-fit basis. The allocation of this space has been designed to provide the most efficient usage.

A user's Local Data Area (LDA) is placed in the system assign/free space during initiation of a job step. Each LDA includes 512 bytes for passing information from one job step to another. The system will never change any of the user's LDA during a job.

Auto Response for System and User Messages: The System/36 Auto Response Facility allows users to specify response options to be taken automatically when system messages are displayed. Normally, processing stops until the operator responds to a message with an option value. Auto response allows a user to select a message to which the system will respond with a user-defined option value and then continue processing.

Auto response values are supplied for selected messages and these values may be changed by the user. In addition, responses to other messages can be added to the auto response list.

The use of this facility is particularly valuable when a system must run without an operator in attendance.

A NOHALT facility allows the user to easily manage what severity levels to activate for auto response depending on the types of jobs running.

System Measurement Facility: System/36 includes System Measurement Facility (SMF) routines which, in conjunction with control storage routines, maybe started to monitor system activity, system device, and SSP work area utilization, and record this data in a disk file. A report

PROGRAM PRODUCTS

System/36 SSP (cont'd)

program is provided so that the file may be listed to provide information useful in analysis of system performance with the current application workload or in anticipation of added application workload.

Remote Operations and Support Facility: It is possible to designate a local or remote display station as a system service device. When this is done via a command from an authorized operator, the designated display station can be signed-on and used to run most of the console diagnostic-type programs.

Support for Batch BSC: The SSP provides Binary Synchronous Communications (BSC) data management for System/36 RPG II and Assembler and Macro Processor programs. A system utility is also provided to select certain communications characteristics as program processing time such as: Line type, terminal address, line speed, and error retry count. The Assembler licensed program includes BSC macro support.

Remote Workstations: The System/36 may be configured to support displays and workstation printers attached to a 5251-012 or a 5294-001 Workstation Controller. Application programs and IBM program products which support directly-attached displays and workstation printers will also support remotely-attached devices. However, the system console function may not be assigned to a remote display station.

Special Features (Optional): See individual pages for:

- Extended SSP feature (#6000)
- SSP Communications feature (#6001)
- Interactive Communications feature (#6002)
- 3270 Device Emulation feature (#6003)
- Multiple Session Remote Job Entry feature (#6004)
- Data Encryption Standard Subroutine for Banking feature (#6005)
- Distributed File Facility feature (#6006)
- Communications and System Management feature (#6029)

CUSTOMER RESPONSIBILITIES (not applicable)

SPECIFIED OPERATING ENVIRONMENT

HARDWARE REQUIREMENTS

The IBM System/36 System Support Program runs on all models of System/36 and supports all features.

SOFTWARE REQUIREMENTS

All IBM licensed programs for System/36 are designed to operate in an environment that includes the System/36 System Support licensed program (5727-SS1) or its equivalent. The SSP order should be entered via AAS at the same time as the system order. IBM's ability to provide concurrent hardware maintenance is dependent upon functions provided by the SSP or its equivalent.

COMPATIBILITY

Due to the broad base acceptance of the System/34, a high degree of compatibility has been maintained. The high-level languages need only be recompiled to run on System/36. Also, most procedures written for the System/34 will run unchanged on System/36. Differences in the SSP are documented in *Converting from System/34 to System/36* (SC21-9053). Also see compatibility statements within the individual System/36 System Support Program "Feature" pages.

CONVERSION

Conversion from System/34 is addressed in a conversion manual (SC21-9053) and via a System/34 to System/36 Migration Aid licensed program (5727-MA1). Also see compatibility statements within the individual System/36 System Support Program "Feature" pages.

SECURITY

User and resource security are provided as part of the base SSP. Usage is optional. The customer can limit user access with passwords plus menu and badge reader restrictions. He can also limit read/write access for files and libraries. In addition, the keylock on the service panel can be used to restrict its use. The tools are provided but the selection and application of security controls is the customer's responsibility.

PERFORMANCE CONSIDERATIONS

Performance depends on many features. A major consideration is the number of users. The System/36 was designed to provide satisfactory response time as the number of display stations increases. Priority is given to interactive jobs by default.

Disk data management considerations are very important and include file organization, the use of in-storage indexes, multiple indexes, and file placement. System/36 keeps usage counters to automatically build files on the least-used disk spindle. The System Measurement Facility is designed to help a customer identify potential areas for improving job throughput and response time. There are also many other factors

discussed in the *System/36 Concepts and Programmer's Guide* if performance is a critical factor and tailoring for performance is necessary.

DOCUMENTATION
(available from Mechanicsburg)

What to Do Before Your Computer Arrives (SBOF-4773) includes:

One 2-inch Horizontal Binder (SC21-7988) ... *Binder Insert* (SX21-9447) ... *Contents Insert* (SX21-9448) ... *Your Guide to Planning* (SA21-9438) ... *Planning to Set Up Your Computer* (SA21-9439) ... *Planning for System Configuration* (SA21-9440) ... *Planning for Data Communications* (SA21-9441) ... *Preparing to Receive Your Computer* (SA21-9442) ... *General Planning Activities* (SA21-9443) ... *Preparing a Place for Your Computer* (SA21-9444) ... *Planning for System Security* (SA21-9445) ... *Forms for Planning* (SA21-9446).

Guide to Publications (GC21-9015) ... *Presenting System/36* (GC21-9016) ... *System Support Licensed Program Specifications* (GC21-9021) ... *SORT Guide* (SC21-7903) ... *System Messages* (SC21-7938) ... *Learning about Your Computer* (SC21-9018) ... *Using the 1255 on System/36* (SC09-1046) ... *Concepts and Programmer's Guide* (SC21-9019) ... *System Reference* (SC21-9020) ... *Performing the First System Configuration for Your System* (SC21-9022) ... *Procedures and Commands Summary* (SC21-9024) ... *System Measurement Facility Guide* (SC21-9025) ... *Operating Your Computer* (SC21-9026) ... *Overlay Linkage Editor Guide* (SC21-9041) ... *System Security Guide* (SC21-9042) ... *Changing Your System Configuration* (SC21-9052) ... *Converting from System/34 to System/36* (SC21-9053) ... *System Problem Determination* (SC21-7919) ... *Creating Displays: Screen Design Aid and System Support Program* (SC21-7902).

SYSTEM INTEGRITY

IBM will accept APARs describing any situation where the installation of the System/36 System Support program product (5727-SS1) causes an exposure to the system integrity of the SSP. System integrity, in this context, is defined to mean control of user authorization to the system or its files and libraries.

RPQs ACCEPTED: Yes

PROGRAM PRODUCTS

**5727-SS1 - SYSTEM/36 SSP R2 FEATURE #6000
 SYSTEM/36 EXTENDED SYSTEM SUPPORT PROGRAM
 FEATURE #6000**
PURPOSE

The System/36 Extended System Support feature provides support for: Diskette I Format ... Multinational Character Set ... Tape Save/Restore and Data Interchange ... 1255 Magnetic Character Reader Attachment.

DESCRIPTION

This feature supports I-Format diskette recording and multinational character sets. Use of the I-Format feature allows reading and writing of information on a System/36 diskette in a blocked and spanned format for better utilization of diskette space. This format allows a common exchange format for the System/34, System/38 and 5280 systems.

The second function of Extended SSP is Multinational Character Set support. This means the ability to display the 188 characters not supported in the specified base SSP 96-character code set. The keyboards do not include the additional characters, but they may be entered with single or multiple key sequences.

Another function of the Extended SSP is subroutines (SUBR08 and SUBR25) to interface to the 1255 Attachment feature. These subroutines allow RPG II, COBOL or the Assembler to read data from documents (checks). They can also return to the program the stacker selection that was made and indicators that tell field validity and document type (available 2Q84).

Also the 8809 Magnetic Tape Attachment hardware feature will be supported by an Extended SSP feature enhancement (available 2Q84).

System/36 will support 1/2-inch magnetic tape in addition to diskette as a save/restore or data interchange device. Tape provides a larger capacity media for backing up applications and data files, in addition to providing a high capacity data interchange media. Programming support is at the system utility level and has the following characteristics:

- Save/Restore
 - Files
 - Libraries (except #LIBRARY)
- Data Interchange Utility Support
 - EBCDIC data format
 - Label support
 - 1) IBM standard labeled tapes
 - 2) Nonstandard labeled tapes
 - 3) Nonlabeled tapes
 - Logical record lengths of 18 to 4,096 bytes
 - Read/write fixed-length blocked records with block length of 18 to 32,767 bytes
 - Read only of variable-length unblocked records
 - Multivolume files
 - Multifile volumes
- Additional Utility Support
 - Catalog files/libraries of a selected tape
 - Initialize tape labels and/or CLEAR a selected tape
 - List contents of a selected tape file

Save/Restore operations may be done in 'streaming' mode at normal 100-inches per second. In this mode, the user is capable of backing up files of up to 43 megabytes of data on a standard 2400-foot reel of tape (equivalent to 36 2D diskettes). The actual performance depends on factors such as system activity, task priority and media condition.

Data Interchange support provides the user with support to interchange data between systems on 1/2-inch magnetic tape with either IBM standard labels or as unlabeled tapes (nonstandard labels are bypassed). Nonstandard label support allows only the reading of a tape's first file. Interchange processing is done in a 'start/stop' mode at normal 12.5 inches per second.

CUSTOMER RESPONSIBILITIES (not applicable)

SPECIFIED OPERATING ENVIRONMENT
HARDWARE REQUIREMENTS

The IBM System/36 Extended System Support Program runs on all models of IBM System/36 and supports all features.

SOFTWARE REQUIREMENTS

All IBM licensed programs for System/36 are designed to operate in an environment that includes the IBM System/36 System Support licensed program (5727-SS1) or its equivalent. The SSP order should be entered via AAS at the same time as the system order. IBM's ability to provide concurrent hardware maintenance is dependent upon functions provided by the SSP or its equivalent.

Prerequisite for the IBM System/36 Extended SSP is IBM System/36 System Support Program (5727-SS1).

COMPATIBILITY (not applicable)

CONVERSION (not applicable)

SECURITY

User and resource security are provided as part of the base SSP. Usage is optional. The customer can limit user access with passwords plus menu and badge reader restrictions. He can also limit read/write access for files and libraries. The tools are provided but the selection and application of security controls is the customer's responsibility.

PERFORMANCE CONSIDERATIONS

Performance depends on many features. A major consideration is the number of users. The System/36 was designed to provide satisfactory response time as the number of display stations increases. Priority is given to interactive tasks by default.

Disk data management considerations are very important and include file organization, the use of in-storage indexes, multiple indexes, and file placement. System/36 keeps usage counters to automatically build files on the disk spindle being used the least. The System Measurement Facility is designed to help the customer identify potential areas for improving job throughput and response time. There are many other factors discussed in the *System/36 Concepts and Programmer's Guide* if performance is a critical factor and tailoring for performance is necessary.

DOCUMENTATION

(available from Mechanicsburg)

See pages for System Support Program (5727-SS1).!

SYSTEM INTEGRITY

IBM will accept APARs describing any situation where the installation of the System/36 System Support Program (5727-SS1) causes an exposure to the system integrity of the SSP. System integrity, in this context, is defined to mean control of user authorization to the system or its files and libraries.

RPQs ACCEPTED: Yes

**5727-SS1 - SYSTEM/36 SSP R2 FEATURE #6001
SYSTEM/36 SYSTEM SUPPORT PROGRAM
COMMUNICATIONS FEATURE #6001**

PURPOSE

The Communications feature supports the autocal adapter and the X.21 line adapter in the MLCA. The logic base for Multiple Session Remote Job Entry (MSRJE), 3270 Device Emulation (3270 DE) and Interactive Communications feature (SSP-ICF) is contained in the Communications feature; this includes CNFIGICF, ENABLE/DISABLE and data management.

HIGHLIGHTS

- Autocall Support.
- X.21 Support.
- X.25 Support.
- Base support for MSRJE, 3270 DE, SSP-ICF and C&SM features.

DESCRIPTION

Autocall

The support for the System/36 autocall feature of the Multiple Line Communications Adapter (MLCA) allows the user to have the system automatically attempt phone calls on a switched line to another device or system. This support is provided external to the user programs such that no change to user source code is necessary. Phone numbers are referenced through OCL parameters and configuration records.

The following functions are available:

- Ability to call multiple locations from a single batch BSC program by looping through the OCL without operator intervention
- Ability to define lists of phone numbers.
- Ability to specify a wait time between calls and a retry count for incomplete calls.
- Up to 22 characters per phone number (international calls), including separator (SEP) characters for dialing delays and an end of number (EON) character.
- Autocall is supported in MSRJE, batch BSC, 3270 DE (SNA) and SSP-ICF (BSCCL, CICS, CCP, SNUF, SNA Peer).

X.21

This feature provides an interface for attachment to either an X.21 switched or X.21 nonswitched network. Both BSC and SDLC communications are supported. Refer to Facilities L3 to L6 (switched) or N3 to N6 (nonswitched) in the M2700 pages for the networks and data circuit-terminating equipment (DCE) that are supported. The network establishes the data rate and supplies the clock. The System/36 can communicate via the X.21 Adapter with devices that do not have native X.21 Adapters. These devices must be attached to the network via an X.21bis DCE. This method of attachment uses the CCITT V.24/28 interface. Refer to facilities K3 to K5 (switched) and M3 to M5 (nonswitched) in the M2700 pages for the list of devices that can be attached via an X.21bis DCE.

Switched Networks: Communications at 2400, 4800, 9600 and 48,000 bps are supported. Autocall function is provided for switched lines.

Note: X.21 switched requires the MLCA Expansion feature (#4501).

Nonswitched Networks: Transmission may be at speeds of 2400, 4800, 9600 bps for multipoint operations. Some X.21 networks may not support multipoint operations. The installation of these features is dependent on the availability of an X.21 network that is compatible with IBM's implementation of an X.21 as described in the *IBM Implementation of X.21 Interface General Information Manual (GA27-3287)*. The no-charge codes that specify the type of network attachment must be accurately entered with the order. Limitations: Cannot be installed with an integrated modem, CCITT Interface, DDS Adapter, or Analog Wideband Adapter on the same Line Base Adapter. Note: The X.21 Adapter cannot be configured to support switched lines on a System/36 that has an Autocall Adapter installed. When an X.21 Adapter is operating at 48,000 bps, the other lines cannot exceed an aggregate rate of 9600 bps. Maximum: One per Line Base Adapter, four total for nonswitched, three total for switched. Field Installation: Yes. Prerequisites: Line Base corresponding to the line using the X.21 Adapter. See *Multiline Communications Adapter Configurator* for possible combinations of features.

Base support for MSRJE, 3270 DE, C&SM and SSP-ICF

CNFIGICF: The configuration and definition process for MSRJE, 3270 DE, C&SM and SSP-ICF is provided. This procedure allows the user to define the specific communications environment for each subsystem and line. This procedure is similar to the one on the System/34; however, it has been simplified and made easier to use by asking fewer questions about an environment and by having help text with each screen.

ENABLE/DISABLE: The ENABLE/DISABLE commands control the starting and stopping of MSRJE, 3270 DE and the subsystems of SSP-ICF.

Data Management: ICFDM, ICFCTL, and a common SNA for MSRJE (SNA), 3270 DE (SNA), C&SM and SSP-ICF (SNUF) is provided.

X.25 Support:

The X.25 feature #6580 for the System/36 will provide the capability to attach to data transmission services having interfaces complying with Recommendation X.25 (Geneva 1980) of the International Telegraph and Telephone Consultative Committee (CCITT). This interface support will be in conformance with the functional description contained in IBM's *General Information Manual (GA27-3345) The X.25 Interface for Attaching IBM SNA Nodes to Packet-Switched Data Networks*. If network suppliers require certification of this feature, it is the responsibility of the customer or the network supplier to obtain the certification.

This feature provides an interface for attachment to an X.25 Packet-Switched Network through either an X.21 (#5655) or an X.21bis (#3701) point-to-point, nonswitched facility. Transmission may be at speeds of 2400, 4800 or 9600 bps. Refer to Charts P and Q of the M2700 pages for the facilities supported. SNA communications are supported with this feature. Refer to Chart 3 of the M2700 pages for the possible intercommunications.

The following functions are available:

- Three versions of Logical Link Control:
 - Physical Services Header (PSH)
 - Qualified Logical Link Control (QLLC)
 - Enhanced Logical Link Control (ELLC)
- An improved level of error recovery for certain network conditions when communicating with another System/36 or 5294-001 through the use of the ELLC protocol.
- Both Permanent Virtual Circuit and Virtual Call support.
- Up to 16 concurrent logical channels which may be a mixture of SNA Primary and Secondary.
- Packet Sequence Numbering by modulo 8 and 128.
- Packet sizes of 64, 128, 256 and 512 bytes.
- Window sizes of from 2 to 15 packets.
- Optional user facilities are:
 - Reverse Charging.
 - Closed User Group.
 - Connection Password.
 - Unique Network Facilities (Priority Service, Throughput Class).
- Address List capability for Autocall/Autoanswer-type support.
- Virtual Circuit status and configuration maintenance capability.
- Tariff-related statistics with display capability.

Limitations: Cannot be installed with an integrated modem, Digital Data Service Adapter, V.35 Adapter, or an Autocall Adapter on the X.25 is mutually exclusive with X.21 switched. Maximum: One X.25 feature per system. Field Installation: Yes

Prerequisites: MLCA (#4500), MLCA Expansion feature (#4501), Line Base Adapter (#5301) on lines 1 and 2 or lines 3 and 4 EIA (#3701) or X.21 (#5655) on line 1 or 3 and 256K of main storage. See *Multiline Communications Adapter Configurator*. Specify: Network type (#910X), line speed, line position, and remote station type. For Public Packet-Switched Networks providing a CCITT X.21bis interface (Chart P of the M2700 pages), the #92XX specify code designates the second line used for X.25. The #5680 X.25 feature may be installed on lines 1 and 2 or on lines 3 and 4. When X.25 is installed on lines 1 and 2, line 1 must have #3701 installed, lines 1 and 2 must have #5301 installed, and line 2 must specify #92X2. When X.25 is installed on lines 3 and 4, line 3 must have #3701 installed, lines 3 and 4 must have #5301 installed, and line 4 must specify #92X4.

For Public Packet-Switched Networks providing a CCITT X.21 interface (Chart Q of the M2700 pages), the #92XX specify code designates the line on which X.25 is installed. The #5680 X.25 feature may be installed on line 2 or line 4. When X.25 is installed on line 2, line 1 must have #5655 installed. When X.25 is installed on line 4, line 3 must have #5655 installed. See *Mandatory Specify Codes for Communications*.

CUSTOMER RESPONSIBILITIES (not applicable)

SPECIFIED OPERATING ENVIRONMENT

Support will be provided for this licensed program when it is operated in the following specified operating environment.

HARDWARE REQUIREMENTS

The IBM System/36 Communications feature runs on all models of IBM System/36. Communications to another system or device

PROGRAM PRODUCTS

SSP Communications Feature #6001 (cont'd)

requires a communications adapter on the System/36, either the Single-Line Communications Adapter (#2500) or the Multiple-Line Communications Adapter (#4500).

SOFTWARE REQUIREMENTS

The IBM System/36 Communications feature will operate under control of the current release of the IBM System/36 System Support Program (5727-SS1).

COMPATIBILITY

The Communications feature provides the base support for MSRJE, 3270 DE, SSP-ICF, C&SM feature, autocal, X.21 and X.25. It can coexist with the remote workstation support and batch BSC.

CONVERSION

Autocal phone lists must be reentered into the system when converting from a System/34. X.21 lists must also be reentered. SSP-ICF configurations must be reentered and are divided into two areas: Line environment and subsystem environment.

SECURITY/INTEGRITY (not applicable)

PERFORMANCE CONSIDERATIONS (not applicable)

DOCUMENTATION

(available from Mechanicsburg)

Interactive Communications Feature: Reference (SC21-7910) ... Interactive Communications Feature: Guide and Examples (SC21-7911) ... Multiple Session Remote Job Entry Guide (SC21-7909) ... Multiple Session Remote Job Entry Messages (SC21-7944) ... 3270 Device Emulation Guide (SC21-7912) ... 3270 Device Emulation Messages (SC21-7945) ... Communications and System Management Support Guide (SC21-8010).

SYSTEM INTEGRITY (not applicable)

RPOs ACCEPTED: Yes

PROGRAM PRODUCTS

**5727-SS1 - SYSTEM/36 SSP-ICF FEATURE #6002
SYSTEM/36 SYSTEM SUPPORT PROGRAM
INTERACTIVE COMMUNICATIONS FEATURE
FEATURE #6002**

PURPOSE

System/36 SSP Interactive Communications feature provides support for: Interactive communications between application programs ... Multiple concurrent communication sessions over the same data link ... Multiple concurrent user application programs which use communications ... An application program interface which is substantially independent of the link and logical protocols (BSC and SNA/SDLC).

HIGHLIGHTS

System/36 SSP-ICF consists of:

- A common user interface for application programs.
- Several subsystems.
 - INTRA - allows application program-to-program communications within the same System/36.
- BSC Subsystems.
 - CCP - System/3 mdl 15D CCP
 - CICS - CICS/OS/VSE and CICS/DOS/VSE
 - IMS - IMS/VSE IRSS (BTAM)
 - BSCCL - System/3 Batch BSC, 3740 BSC, Office Systems BSC, System/34 and System/36 BSC.
- SNA Subsystems.
 - SNA Upline Facility (SNUF) - CICS/VSE (LU-0) and IMS/VSE (LU-P).
 - SNA Peer - System/34 and System/36 (LU-6.0).
 - SNA Finance Subsystems - 4701 and 3601, 3694 (LU-0).

Note: The SNA Upline and Finance Subsystems use different LU-0 command sets.

DESCRIPTION

Interactive communications differs conceptually from batch communications in that the sequence of messages is not necessarily predetermined or scheduled. Either party in the communications session can logically start, alter or terminate the conversation. The logical communication path connecting two programs which are exchanging messages is called a session. SSP-ICF allows for multiple concurrent sessions to be used by one or more application programs in the System/36.

The application program access to SSP-ICF is available at two levels. Both are logical extensions of the System/36 workstation interface. The first is through special predefined 'screen format' names that serve as operation codes to control evoking programs, sending data, and issuing special commands to SSP-ICF. The second is through assembler programming and supports all of the functions in the first level plus the added flexibility of supporting situations that may occur when communicating to systems which are not part of the standard SSP-ICF support.

The application program interface allows the user program to be shielded from most of the uniqueness of the communications protocols (BSC or SNA/SDLC) and the communications support for the remote systems (e.g., IMS/VSE, CICS/VSE, or CCP). With proper design, users can develop programs for their current BSC network and then easily move to an SNA network without significant change to the communications interface within existing application programs.

An SRT program started by an EVOKE operation can send or receive on the first operation. This capability applies only to SRT programs; system restrictions for MRT processing require the first operation to be input.

Included with SSP-ICF is support for languages, devices, and communications systems as listed below:

Note: System/36 data link connections are either point-to-point or multipoint tributary only (except for connection to 5250 devices, System/36, System/34 or Finance terminal products using the Finance Subsystem.

- BSC protocols:
 - IMS/VSE (Version 1.1.6) via IRSS (BTAM) (System/36 as a System/3).
 - CICS/OS/VSE (Version 1.6.0 and subsequent releases) using BTAM or CICS/DOS/VSE (Version 1.6.0 and subsequent releases) with BTAM-ES (System/36 as a System/3).
 - System/36 with SSP-ICF, RPG II, COBOL, BASIC, or Assembler*
 - System/34 with SSP-ICF, RPG II, COBOL, BASIC or Assembler*
 - System/3 mdl 15D CCP
 - System/3 mdl 15D RPG II*
 - System/38 (as a System/3)
 - System/32 (as a System/3)*

- 3741 mdl 2 or 4 (point-to-point only)*
- 3747 (point-to-point only)*
- 5110 (as a 3741)*
- 3780 (as a System/34)*
- 5120 (as a 3741)*
- 5231 mdl 2 (as a 3741)*
- 5260 (as a 3741)*
- 5280 (as a 3741)*
- System/23 Datamaster (as a 3741)*
- 6580 Displaywriter*
- 5520*
- Office Systems/6, 6640, 6670*
- Series/1 (as a System/3)*
- System/7 (as a System/3)*
- S/370 with System/36 (as a System/3)
- OS/VSE, DOS/VSE BTAM*

* These devices are only supported for a single session over a data link.

- SNA/SDLC
 - System/36 using SSP-ICF
 - System/34 using SSP-ICF
 - ACF/NCP/VSE (Version 1 Release 3) and ACF/VTAM (Version 2)
 - ACF/VTAME on VSE
 - IMS/VSE (Version 1.1.6) (as a 3790) using ACF/NCP/VSE, ACF/VTAM
 - CICS/OS/VSE (Version 1 Release 6.0 and subsequent releases) (as a 3790) using ACF/NCP/VSE, ACF/VTAM
 - CICS/DOS/VSE (Version 1 Release 6.0 and subsequent releases) (as a 3790) using ACF/VTAME on VSE
 - 4701, 3601, 3694
- Internal Protocol
 - System/36 using SSP-ICF (INTRA) for application program-to-program communications within the same system.

CUSTOMER RESPONSIBILITIES (not applicable)

SPECIFIED OPERATING ENVIRONMENT

Support will be provided for this licensed program when it is operated in the following specified operating environment.

HARDWARE REQUIREMENTS

The IBM System/36 Interactive Communications feature (SSP-ICF) runs on all models of IBM System/36. SSP-ICF support for communications between programs residing in the same System/36 does not require a communications adapter. Communications to another system or device requires a communications adapter on the System/36, either the Single-Line Communications Adapter (#2500) or the Multiple-Line Communications Adapter (#4500).

SOFTWARE REQUIREMENTS

The IBM System/36 Interactive Communications feature (SSP-ICF) will operate under control of the current release of the IBM System/36 System Support Program (5727-SS1) and the Communications feature (#6001).

COMPATIBILITY

SSP-ICF communication support can coexist with other communication support (that is, programs using remote 5250s, batch BSC or 3270 Device Emulation or Multiple Session Remote Job Entry.

CONVERSION

Programs written for the System/34 using SSP-ICF need to be recompiled. Some of the error return codes have been dropped under some of the subsystems. Review *Converting from the System/34 to the System/36* for details. System/34 configuration members for the subsystems must be re-entered. On the System/34, there is one configuration member per subsystem definition. For System/36, there are two members: 1) a line member describing the link attributes; and 2) a subsystem member defining the subsystem attributes. This allows sharing of common link definitions.

SECURITY (not applicable)

PERFORMANCE CONSIDERATIONS (not applicable)

DOCUMENTATION

(available from Mechanicsburg)

Interactive Communications Feature: Reference (SC21-7910) ...
Interactive Communications Feature: Guide and Examples (SC21-7911)

SYSTEM INTEGRITY (not applicable)

RPQs ACCEPTED: Yes

PROGRAM PRODUCTS
**5727-SS1 - SYSTEM/36 SSP R2 FEATURE #6003
 SYSTEM/36 SYSTEM SUPPORT PROGRAM
 3270 DEVICE EMULATION FEATURE #6003**
PURPOSE

The 3270 Device Emulation feature is a utility program that supports both BSC and SNA/SDLC 3270 line protocols. No user code is required.

HIGHLIGHTS

- System/36 appears as a 3271 mdl 2 under BSC or as a 3274 mdl 1C under SNA.
- A locally- or remotely-attached display (5251 mdl 11, 5291, 5292) appears as a 3277 mdl 2 Display.
- Any attached printer (3262, 5219, 5224, 5225, 5256) appears as a 3288 mdl 2 Printer, including spooled remote printers.
- One BSC line and/or up to four SNA lines are supported.

DESCRIPTION

The 3270 Device Emulation feature allows the System/36 to appear to a host system as a 3271 mdl 2 (BSC) or a 3274 mdl 1C (SNA) Control Unit. It allows a display which is locally or remotely attached to a System/36, to appear to a host system as a 3277 mdl 2 Display Station. The Keyboard Numeric Lock (#4690) on 3277 Displays is optionally supported. Workstation printers attached locally or remotely to a System/36 will appear to the host system as a 3288 mdl 2 Printer. Spooled remote printers are also supported.

Only the EBCDIC typewriter keyboards and EBCDIC transmission code are supported. Certain keys are in different locations on the 3277 and System/36 Display keyboards. Function keys on the 3277 are mapped onto the System/36 Display keyboards to provide the same functions. These keys are Field Mark, Erase Input, PA and PF keys. The copy command is not supported. However, the System/36 Display Print Key can provide an equivalent function in many cases. The light-pen and magnetic stripe reader are not supported.

Emulation of the 3270 devices allows the System/36 to reside on a multipoint communications link that supports a 3270. Since this program translates the data stream, host application programs will, generally, require no changes to support the System/36 running under this device emulation. 'Screen wrap' is not supported. If the last position (24,80) on the screen is a field attribute character, it will be repeated in the first position (1,1).

A maximum of 127 input fields per screen is supported. If a 3270 screen has more than 127 input-capable fields, it will be rejected by 3270 Device Emulation. When using BSC, the 5250 character set is translated into the 3277 BSC standard character set. The 3278 SNA standard character set is used when the host link is SNA. SNA 3270 DE, SNA MSRJE, C&SM (DSNX) and SSP-ICF (SNUF) can share one communications port on the System/36.

The following host subsystems are supported: VM/370 (ACF/VTAM, BSC only), IMS/VS (ACF/VTAM), CICS/VS (OS, ACF/VTAM and VSE, ACF/VTAME), TSO (ACF/VTAM), and System/3 mdl 15D CCP. The 3270 Keyboard Numeric Lock feature is supported. This provides the capability of locking out all characters in a numeric field except 0-9, decimal sign, minus sign, plus sign, comma, space and the Dup key. The Data Entry keyboard is not supported.

BSC Considerations: For BSC, the 3270 Device Emulation feature emulates the 3271 mdl 2 Control Unit, the 1920-character 3277 mdl 2 Display Station, and the 3288 mdl 2 Printer. The System/36 acts as the 3271 mdl 2 Control Unit; any System/36 display station, local or remote, can emulate a 3277 mdl 2. Any System/36 workstation printer can emulate a 3288 mdl 2 Printer.

Automatic calling is not supported. Only one multipoint line is supported.

The maximum receive buffer size supported is 4,096 bytes. This includes all line control characters. The 3270 Device Emulation feature may generate BSC error status to the host under somewhat different conditions than the 3271. Customer host programs dependent on such specific link level 3270 BSC error status may require modification. The reference manual describes these conditions.

SNA Considerations: For SNA, the 3270 Device Emulation feature emulates the 3274 mdl 1C Control Unit, the 1,920-character 3277 mdl 2 Display Station, and the 3288 mdl 2 Printer. The System/36 acts as the 3274 control unit; the 5251 mdl 11, 5291, 5292 and 5150 PC Displays serve as the 3277; and the 5256, 3262, 5224, 5225 and 5219 Printers serve as the 3288 (or 3287 in SNA Character String (SCS) mode only). Up to 16 devices (logical units) are supported per line. Up to four lines can be used concurrently. Point-to-point, switched or nonswitched, and multipoint (nonswitched) lines are supported.

CUSTOMER RESPONSIBILITIES (not applicable)

SPECIFIED OPERATING ENVIRONMENT

Support will be provided for this program when it is operated in the following specified operating environment.

HARDWARE REQUIREMENTS

The IBM System/36 Device Emulation feature (3270 DE) runs on all models of the System/36. Communications to another system requires a communications adapter on the System/36, either the Single-Line Adapter (#2500) or the Multiple-Line Communications Adapter (#4500) and Workstation Controller Expansion (#4900).

SOFTWARE REQUIREMENTS

The IBM System/36 Device Emulation feature (3270 DE) will operate under control of the current release of the System/36 System Support Program (5727-SS1) and its Communications feature (#6001).

COMPATIBILITY

The 3270 Device Emulation can coexist in a System/36 with other communications support (that is, programs using remote 5250s, batch BSC, MSRJE or SSP-ICF).

CONVERSION

System/36 3270 Device Emulation is compatible with the System/34 3270 Device Emulation (3270 DE) program product (5726-EM1). The 3270 DE is a utility program which means that the System/36 version should be loaded onto a System/36 and not the System/34 version. System/34 configuration members for the subsystem must be reentered. For the System/34, there is one configuration member per subsystem definition. For System/36, there are two members: 1) a line member describing the link attributes, and 2) a subsystem member defining the subsystem attributes. This allows sharing of common link definitions.

SECURITY (not applicable)
PERFORMANCE CONSIDERATIONS (not applicable)
DOCUMENTATION

(available from Mechanicsburg)

3270 Device Emulation Guide (SC21-7912) ... 3270 Device Emulation Messages (SC21-7945).

RPOs ACCEPTED: Yes

PROGRAM PRODUCTS

**5727-SS1 - SSP R2 FEATURE #6004
SYSTEM/36 SYSTEM SUPPORT PROGRAM
MULTIPLE SESSION REMOTE JOB ENTRY
FEATURE #6004**

PURPOSE

System/36 Multiple Session Remote Job Entry (MSRJE) provides a common user interface for performing the RJE function to a host system running RES, JES2, JES3, RSCS and VSE/POWER. Multiple readers, writers, punches (disk files), and a console are supported. The maximum number of devices are supported.

HIGHLIGHTS

- Multiple sessions supported:
 - Up to 15 Readers*
 - Up to 15 Printers*
 - Up to 15 Punches*
- For SNA protocols, one line can be shared with SNA 3270 DE, C&SM (DSNX) and SSP-ICF (SNUF subsystem).
- Consistent and common user interface regardless of the line protocols.
 - * Note: 7 sessions when using BSC protocols, 15 for SNA.

DESCRIPTION

The MSRJE feature provides functional support as a remote job entry workstation. Both BSC (multileaving) and SNA line protocols are supported. RES, JES2, JES3, RSCS (BSC only), and VSE/POWER (SNA only) are the host subsystems supported. Multiple lines can be operated concurrently.

Multiple devices are supported and can run concurrently. The maximum number of devices is (Note: Some host subsystems support fewer devices than the maximum shown):

For Hosts Connected:	SNA	BSC
Readers	15	7
Printers	15	7
Punches	15	7
Console	1	1

In addition, the Reader is supported with an input queue of up to 32 requests. The first 15 (7 BSC) entries will be assigned to a Reader. The remaining entries will be queued until a Reader becomes available. A user may request a reader, submit some work to it, and then ask to be released from the Reader.

Printers and Punches are supported with an extensive and powerful Forms Control Table. All of the System/36 printer functions are supported. Disk files can be built directly from the RJE Punch data stream. All file types are supported. At the conclusion of building a file, a System/36 user procedure may be started. The NAME and DATE of a PUNCH file is passed to evoke procedure.

Both Printer and Punch data streams can be received as compressed data without further processing at time of receipt. Another utility is provided to allow processing of the compressed data streams.

Autocall is supported in both BSC and SNA. MSRJE uses the multileaving BSC protocols and can be defined as either a System/3 or a System/360. In SNA, MSRJE is defined as an 'SNA Terminal' with Multiple Logical Units (MLU).

CUSTOMER RESPONSIBILITIES (not applicable)

SPECIFIED OPERATING ENVIRONMENT

Support will be provided for this licensed program when it is operated in the following specified operating environment.

HARDWARE REQUIREMENTS

The IBM System/36 Multiple Session Remote Job Entry (MSRJE) feature runs on all models of IBM System/36. Communications to a host system requires a communications adapter on the System/36, either the Single-Line Communications Adapter (#2500) or the Multiple-Line Communications Adapter (#4500).

SOFTWARE REQUIREMENTS

The IBM System/36 Multiple Session Remote Job Entry (MSRJE) feature will operate under control of the current release of the IBM System/36 System Support Program (5727-SS1) and the Communications feature (#6001).

COMPATIBILITY

MSRJE communication support can coexist in a System/36 with other communication support (that is, programs using remote 5250s, batch BSC, or 3270 Device Emulation or SSP-ICF).

CONVERSION

MSRJE is not compatible with either MRJE or SRJE on the System/34 and must be converted by performing the following:

- Use CNFIGICF to define the operating environment.
- Reenter the forms control table (FCT). (The System/34 FCT can be used as a starting point, but not all printer functions were supported. There also was not any definition for building disk files; this is a new function).
- Convert any data files or library members which contain the RJE utility control statement.
- Educate the System/36 end users on the operation of both the System/36 MSRJE and SSP and the Host subsystem.

SECURITY/INTEGRITY (not applicable)

PERFORMANCE CONSIDERATIONS (not applicable)

DOCUMENTATION
(available from Mechanicsburg)

Multiple Session Remote Job Entry Guide (SC21-7909) ... Multiple Session Remote Job Entry Messages (SC21-7944).

SYSTEM INTEGRITY: (not applicable)

RPOs ACCEPTED: Yes

PROGRAM PRODUCTS

**5727-SS1 - SSP DES FEATURE #6005
SYSTEM/36 SYSTEM SUPPORT PROGRAM
DATA ENCRYPTION STANDARD
SUBROUTINE FOR BANKING FEATURE #6005****PURPOSE**

The DES subroutine can be used to encrypt or decrypt sensitive data or to generate personal identification numbers (PINs). Typically, DES is used to generate PINs for use with the 3624 Consumer Transaction Facility.

HIGHLIGHTS

The DES subroutine can be used in an RPG II, COBOL or Assembler application program. It cannot be used in a BASIC program.

DESCRIPTION

The encryption/decryption subroutine complies with the United States Federal Information Processing Data Encryption Standard (DES) algorithm (National Bureau of Standards FIPS 46). It also complies with the American National Standards Institute Data Encryption Algorithm (ANSI X3.92-1981).

CUSTOMER RESPONSIBILITIES

The DES algorithm is implemented in software. Security of the key that is used by the algorithm is a user responsibility. For more information about data security and cryptography, see the *IBM Data Security Through Cryptography Manual* (GC22-9062).

SPECIFIED OPERATING ENVIRONMENT

Support will be provided for this licensed program when it is operated in the following specified operating environment.

HARDWARE REQUIREMENTS

The IBM System/36 Data Encryption Standard (DES) Subroutine for Banking can be used on all models of IBM System/36.

SOFTWARE REQUIREMENTS

The IBM System/36 Data Encryption Standard (DES) Subroutine for Banking requires the current release of the IBM System/36 System Support Program (5727-SS1). Other prerequisites include the following SSP features: Communications feature (#6001) and Interactive Communications feature (#6002).

COMPATIBILITY

This feature is compatible with the DES subroutine that is included in the System/34 Finance Subsystem (5726-SS1, feature #6010/#6011).

CONVERSION (not applicable)**SECURITY/INTEGRITY**

Security of the key that is used by the algorithm is a user responsibility. For more information about key security and cryptography, see the *IBM Data Security Through Cryptography Manual* (GC22-9062).

PERFORMANCE CONSIDERATIONS (not applicable)**DOCUMENTATION**
(available from Mechanicsburg)

The Data Encryption Standard (DES) Subroutine for Banking is covered in the Finance Subsystem chapter of the *IBM Interactive Communications Feature Reference Manual* (SC21-7910).

SYSTEM INTEGRITY: (not applicable)

RPQs ACCEPTED: Yes

PROGRAM PRODUCTS

**5727-SS1 - SYSTEM/36 SSP R2 DDFF FEATURE #6006
SYSTEM/36 SYSTEM SUPPORT PROGRAM RELEASE 2
DISTRIBUTED DISK FILE FACILITY FEATURE #6006****PURPOSE**

DDFF target data manager allows System/34 application programs to access System/36 data files without changing any user code. The user programs use standard data management in RPG II, Assembler and COBOL to access a disk file. Just as the physical location on the disk is not contained in the user programs, neither is the physical system location. Programs running on a System/34 may access data files on that System/34, another System/34, a System/36 or a System/3 md1 15D.

HIGHLIGHTS

- DDFF target data manager.
- Uses SNA peer (PEER) subsystem of SSP-ICF.
- Allows a System/34 running a user program to access System/36 disk data files.

DESCRIPTION

The Distributed Disk File Facility (DDFF) target data manager allows a System/34 RPG II or COBOL program to access a disk file located on a System/36. A System/34 Assembler program can access remote files if the program conforms to standard coding techniques (that is, if no special data management techniques are used).

The DDFF program is designed to be a companion program to another DDFF program running on a System/34 (5799-BCP). The System/36 DDFF target supports all of the System/34 access methods for remote file access except:

- Consecutive Output (CO)
- Direct Output (DO)
- Indexed Sequential/Random Input (ISRI)
- Indexed Output (IO/IOU)
- Dummy Open
- Sector Mode Data Management (ZPAM)

CUSTOMER RESPONSIBILITIES (not applicable)

SPECIFIED OPERATING ENVIRONMENT

Support will be provided for this licensed program when it is operated in the following specified operating environment.

HARDWARE REQUIREMENTS

The IBM System/36 Distributed Data File Facility (DDFF) runs on all models of IBM System/36. Communications to a System/34 requires a communications adapter on the System/36, either the Single-Line Communications Adapter (#2500) or the Multiple-Line Communications Adapter (#4500).

SOFTWARE REQUIREMENTS

The IBM System/36 Distributed Disk File Facility (#6006) will operate under control of the current release of the IBM System/36 System Support licensed program (5727-SS1), the Communications feature (#6001), and the Interactive Communications feature (#6002).

COMPATIBILITY

DDFF uses the SNA Peer subsystem of SSP-ICF and does not restrict the use of any of the System/36 communications support.

CONVERSION (not applicable)

SECURITY (not applicable)

PERFORMANCE CONSIDERATIONS (not applicable)

DOCUMENTATION

(available from Mechanicsburg)

Distributed Disk File Facility Reference Manual (SC21-7869).

SYSTEM INTEGRITY (not applicable)

RPQs ACCEPTED: Yes



PROGRAM PRODUCTS

**5727-SS1 - SYSTEM/36 SYSTEM SUPPORT PROGRAM
RELEASE 2
COMMUNICATIONS and SYSTEM MANAGEMENT
FEATURE #6006**

PURPOSE

This SSP optional feature contains Change Distribution and Change Management.

HIGHLIGHTS

- Change Management and Distribution - Change Management.
- Distributed System Node Executive (DSNX).

DESCRIPTION

This SSP optional feature contains Change Distribution and Change Management. This support is compatible with program product Distributed Systems Executive (5668-986) Version 2 Release 2. DSX Host runs on the central S/370 (4321 to 3084); it distributes (and retrieves) programs, screen formats, procedures, and data files to distributed systems. The System/36 SSP DSNX supports the DSX command protocols for receiving (and sending) programs, screen formats, procedures and data files. Procedures can be sent to a System/36, executed and the results returned to the DSX Host while the SSP DSNX is in session with the DSX Host. The DSX Host treats the System/36 as if it were emulating a Series/1 with Control Program Support (CPS).

CUSTOMER RESPONSIBILITIES (not applicable)

SPECIFIED OPERATING ENVIRONMENT

HARDWARE REQUIREMENTS

The Communications and System Management feature will run on all models of the IBM System/36. Communication with the host system requires a communications adapter on the System/36, either the Single-Line Communications Adapter (#2500) or the Multiline Communications Adapter (#4500).

SOFTWARE REQUIREMENTS

The Communications and System Management feature will operate under the control of the current release of the IBM System/36 System Support licensed program (5727-SS1) and the Communications feature (5727-SS1, feature #6001). Distributed Systems Executive (DSX) program product (5668-986, Version 2 Release 2) is required on the central S/370.

COMPATIBILITY

The System/36 DSNX is compatible with the S/370 DSX host protocols for change distribution. The System/36 with SSP appears as a Series/1 with CPS.

CONVERSION (not applicable)

SECURITY

Normal System/36 Security Management (if active) applies.

PERFORMANCE CONSIDERATIONS (not applicable)

SYSTEM INTEGRITY (not applicable)

RPQs ACCEPTED

RPQs will not be accepted until 90 days after the announced first customer ship (FCS).