SPERRY UNIVAC

SYSTEM 80 MODEL 8

HARDWARE/SOFTWARE OVERVIEW

SYSTEM 80 MODEL 8

HARDWARE/SOFTWARE OVERVIEW

INDEX

SYSTEM 80 MODEL 8
HARDWARE/SOFTWARE OVERVIEW

1.0 INTRODUCTION

— The System 80 Model 8 Announcement will be welcomed by our 4000 OS/3 customers and our many System 80 new account prospects.

Sperry Univac has made a major investment to continue the enhancement of the OS/3-based Systems which were first announced in 1974. Starting with the 90/30 and followed by the 90/25 and the 90/40, these systems have resulted in an explosive growth in our customer base. Many of our Series 90 customers have been installed over five years and now require new functionality and faster hardware to meet their processing requirements for the 1980's. The System 80 Model 8 hardware/software system has been carefully designed to offer the mature Series 90 base a very attractive solution for their future processing needs.

Also, System 80 Model 4 and 6 sales benefit from the Model 8 announcement. The Model 4 and 6 prospect can now be further assured of the Sperry Univac commitment to OS/3. The Model 6 prospect can now look to the Model 8 if his processing requirements outgrow the Model 6.

The Model 8 is the largest, most powerful OS/3 system. New account prospects previously not satisfied with the Model 6 can now consider a system with at least twice the performance potential.

Your review of the following information will provide a basic understanding of how the Model 8 system can meet your prospects' requirements and help you sell more systems. Additional sales information is contained in the System 80 Market Announcement.

2.0 SERIES 90 OS/3 PRODUCT STRATEGY

— The first and primary opportunity for Model 8 sales is our mature OS/3 Series 90 base of over 2500 systems. These systems have been installed as early as 1975. Many have matured their initial applications and are considering their next system change so they can address their increased workloads and backlog of applications waiting for implementation. OS/3 and the Model 8 offer unique product solutions for the Series 90 base which cannot be offered by our competition.

These unique solutions are:

- o OS/3 Functionality and Stability
- o Model 8 Hardware
- o System Performance Potential
- o Migration
- o Recent OS/3 Enhancements

3.0 OS/3 FUNCTIONALITY

-- OS/3 is vastly different from what the customer had to consider when he acquired his Series 90 System. Since OS/3 was initially delivered in 1975, millions of dollars were invested to assure that OS/3 remained competitive and responsive to customer requirements. These enhancements followed two directions. One direction was to continue to expand key facilities such as ICAM, IMS, and EDITOR. The other direction was the addition of new functions such as ESCORT, Interactive Services and Distributed Data Processing.

Most OS/3 Series 90 customers have at least updated their operating environment to OS/3 R6.0. The April, 1980 introduction of System 80 and OS/3 R7.0 introduced major OS/3 enhancements which better positioned OS/3 customers to more effectively implement interactive applications. This was a major software change which took some time to stabilize and perform as expected. This is now behind OS/3. Recent worldwide system stability has exceeded 100 hours MTBS.

System 80 Model 8 will be defined with the functionality available with OS/3 R8.0 plus new hardware support. Since many customers may not be familiar with OS/3 R8.0, Section 7 details major R8.0 enhancements. Much of this information was previously detailed in System 80 Marketing Announcment Number 20 dated January, 1982. The OS/3 customer will be pleased that the software functions which have served his application requirements so well are not only available with the Model 8, but have been enhanced in response to customer requests and our acknowledgement of new application trends such as end-user application control and ease of application implementation/maintenance.

4.0 MODEL 8 HARDWARE

-- The Model 8 hardware can be examined in five general categories:

- o Central Processor Complex
- o System 80 Peripheral Subsystems
- o Series 90 Peripheral Subsystems
- o Minimum Configuration
- o Expansion Options

4.1 CENTRAL PROCESSOR COMPLEX

-- The Central Processor Complex contains all processors, I/O channels and integrated peripheral subsystem controls. The following Central Processor components are standard in all configurations:

- o The System Control Processor is an independent unit which controls the console complex, control panels, system initialization, maintenance/diagnostic functions, system recovery and remote maintenance interface.

4.1 CENTRAL PROCESSOR COMPLEX (CONT'D)

- o One Main Storage Unit (MSU) with ECCL and 1 MB main storage is standard. The MSU is expandable to 4 MB. A second MSU can be optionally installed expanding System Main Storage to 8 MB.

- o The basic CPU is microprogrammed by a 32K control store using an 80-bit long microprogrammed word. The CPU executes and controls instructions. I/O interrupt, interval timer activities and general interrupts are also processed.

- o The first Channel Control Unit provides control common to all I/O operations such as buffering. The minimum channels configured are a 70 KB Byte Mux for console interface and one 1.5 MB selector channel.

- o The Input-Output Microprocessor (IOMP) attaches a System 80 diskette control and a workstation control in the minimum system. Additional controls and communication capability may be attached to satisfy customer requirements.

4.2 SYSTEM 80 PERIPHERALS SUBSYSTEMS

— All current System 80 peripheral subsystems and communication facilities may be attached. In addition to what is available on the Model 4 and 6, the Model 8 also offers the UNISERVO 22/24 magnetic tape drives. Specifications are:

UNISERVO	SPECIFICATIONS
UNISERVO 22	75 IPS/1600 BPI PE/800 BPI NRZI
UNISERVO 24	125 IPS/1600 BPI PE/800 BPI NRZI

UNISERVO 2X drives are interfaced through a selector channel using a 5058 control unit/cabinet. Up to eight drives in any intermix are supported on each controller. The UNISERVO 22 can also be configured on the integrated tape controller which supports streaming tape.

4.3 SERIES 90 PERIPHERAL SUBSYSTEMS

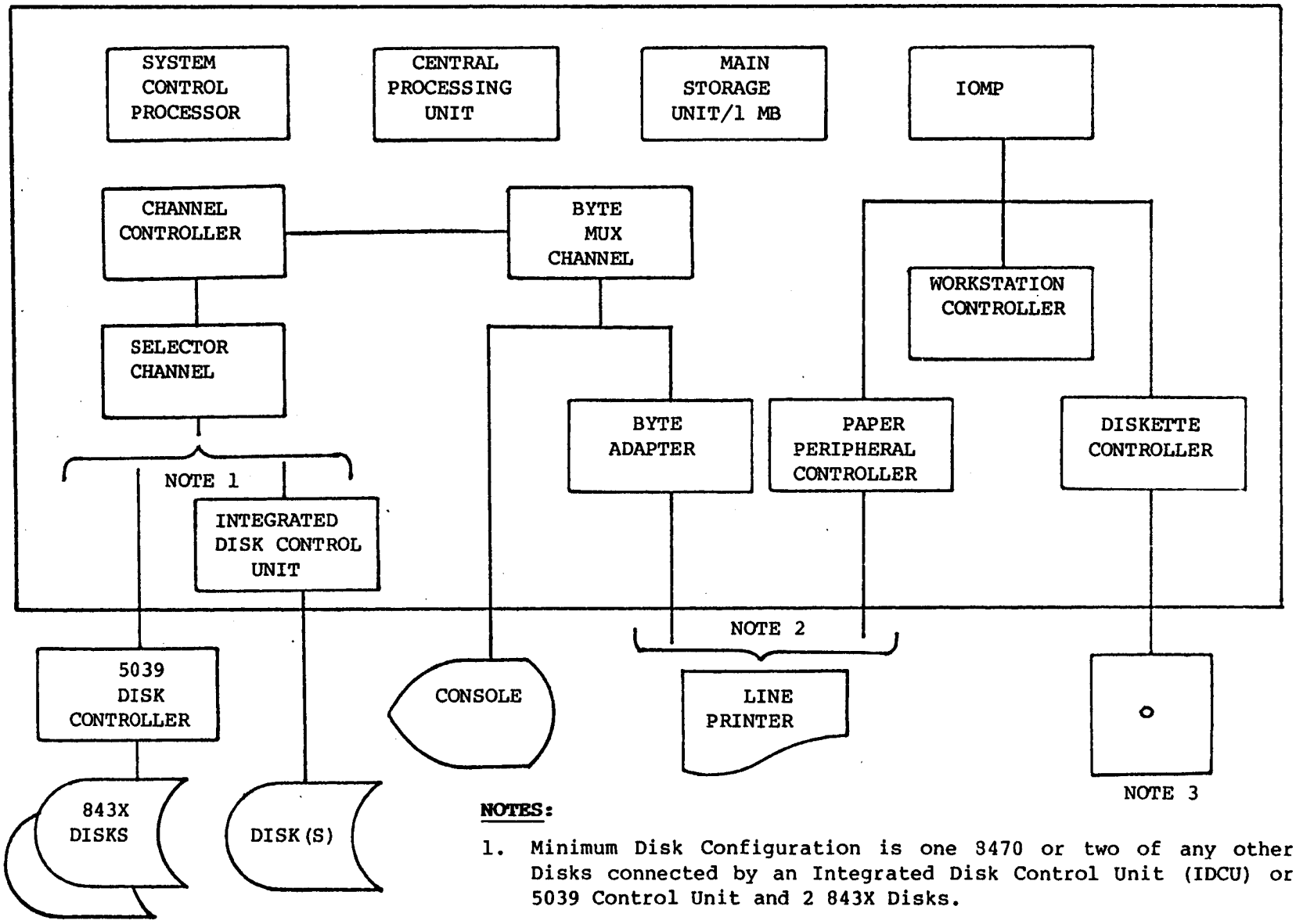
— Unlike the Model 4 and 6, the Model 8 allows the attachment of key Series 90 peripheral subsystems. The selector channel may interface the popular 8418 disk, the 8416 and the 5039/8430/8433 disk subsystem. Selector channel support is also provided for UNISERVO 12/16/20 tape drives via the 5034 control or UNISERVO 12/16 tape drives via the 5017 control. Also, UNISERVO 10/14 drives may be attached through the 5045 control unit.

Selected Series 90 paper peripherals may be attached to the Model 8. These paper peripherals are the 0716 Card Reader, the 0770 800/1400/2000 lpm line printers and the 0776 760/900/1200 lpm line printers.

SYSTEM 80 MODEL 8

MINIMUM SYSTEM CONFIGURATOR

CENTRAL PROCESSOR CABINET



NOTES:

1. Minimum Disk Configuration is one 8470 or two of any other Disks connected by an Integrated Disk Control Unit (IDCU) or 5039 Control Unit and 2 843X Disks.
2. Line Printer may be any System 80 0776/0789 Line Printer connected through a Paper Peripheral Control or Series 90 0770/0776 Line Printer and Byte Mux Adapter (Max. 1200 lpm).
3. One Diskette, either autoload (8420) or manual (8422) is required.

4.4 MINIMUM CONFIGURATION

— The minimum configuration is illustrated in Figure A. Note that alternatives exist for satisfying minimum printer and disk requirements. If the customer wishes to use Series 90 line printers or disks, these can be configured on the Model 8 to satisfy minimum system requirements.

4.5 EXPANSION OPTIONS

— The Model 8 offers considerable expansion options. Although not all peripheral control expansions can be configured at the same time due to cabinet space limitations, each system expansion parameter will satisfy growth requirements for even the most demanding customer workloads.

4.5.1 PROCESSOR

— Main storage can expand from the minimum 1 MB to 8 MB.

4.5.2 I/O CHANNELS

— Selector channels can expand from the minimum one to five.

4.5.3 DISK

— Disk drives can expand from a minimum one 8470 to twenty-four 8470 disk drives. Each drive provides 491 MB of storage. As an option, up to eight of the twenty-four could be Series 90 8416/8418 disk drives. Up to eight 8417/8419 disks can be configured as 8470 alternatives.

— Additional disk storage beyond the twenty-four integrated control drives can be configured using 5039 controls and 8430/8433 disks. Up to sixteen 8430 (100 MB)/8433 (200 MB) drives may be attached to each control.

4.5.4 IOMP CONFIGURATION

— The IOMP supports up to eight low-speed peripheral controls. The first IOMP will have a workstation control, diskette control and usually a paper peripheral control to satisfy system printer requirements. Up to five additional controls may be configured using any intermix of workstation controls, paper peripheral controls, remote printer attachments, and one integrated tape control. Also, the IOMP will interface a UNISERVO 10 (0871) tape subsystem and one ICCU.

The IOMP controls are identical to what is offered on the System 80 Model 4 and 6. All IOMP controls compete for the eight connections, so all control maximums cannot be installed together.

4.5.4.1 WORKSTATION CONTROL

— Supports up to 8 Model 1 (UTS 20D) or Model 2 (UTS 40D) workstations in any intermix. Up to 120 workstations may be configured.

4.5.4.2 PAPER PERIPHERAL CONTROL

— Each control supports one or two printers and two card processors. The combined print rate cannot exceed 1500 lpm. Printer selections may be made from the 180/300/640 lpm 0789 printer and the 0798 200 cps character printer. The table top card reader is rated at 300 cpm and the card punch at 75 - 160 cpm. The system will support up to twelve paper peripheral controls.

4.5.4.3 INTEGRATED TAPE CONTROL

— One control is allowed per system. The control supports up to four streaming tapes at up to 160 KB primarily for disk dump/restore operations. In addition, up to 8 120 KB UNISERVO 22 Tape Drives may be configured. Intermix is permitted. Up to 8 drives may be configured.

4.5.4.4 REMOTE PRINTER ATTACHMENT

— Up to twelve Remote Printer attachments per system may be configured. Each controls one 180/300/640 lpm line printer or one 200 cps character printer up to 5000 ft. from the Central Processor.

4.5.4.5 IOMP COMMUNICATIONS

— The IOMP supports up to fourteen Single-Line Communication Adapters (SLCA). These are identical to current System 80 SLCA's and offer a wide variety of protocols and line speeds up to 56 K BPS. If the second IOMP is configured, the system will support up to twenty-eight communication lines.

4.5.4.6 INTER COMPUTER CONTROL UNIT (ICCU)

— The ICCU provides an channel between Series 90 OS/3 and System 80 systems. The distance between systems may be up to 3300 ft. (1 kilometer) with speeds from 25 to 145 KB/sec. The speed is dependent upon distance and configuration. The ICCU provides a non-communications channel for DDP functions. Initial DDP functionality support is for DDP Transfer and File Access program products. The ICCU interfaces to the IOMP on the Model 8.

4.6 COMPARATIVE HARDWARE SUMMARY

4.6.1

COMPONENT	MODEL 8	90/30
Processor Complex		
— Relative CPU Processing Power	3.6	1.0
— Max. Main Storage	8.0 MB	1.0 MB
— Main Storage Access	480ns/8 bytes	600ns/2 bytes
— Processor Cycle Time	120ns	600ns

4.6 COMPARATIVE HARDWARE SUMMARY (CONT'D)

4.6.1

COMPONENT	MODEL 8	90/30
I/O Processing		
-- Fastest Disk Channel	1.5 MB/sec	806KB
-- Max. "Fast" Channels	5	1
-- Fastest Disk Transfer	1.5 MB	806 KB
-- Maximum number 8416/8418 Disks	8	8
-- Maximum number 8417/8419 Disks	8	N/A
-- Maximum Integrated Control Disk Storage (90/30: 8-8418's. (Model 8: 24-8470's.	11,784 MB	463 MB
-- Additional On-Line Storage Using 8430/8433 Disks, 5039 Controls	Yes	Yes
-- Max. System I/O Data Rate	8 MB/sec	2.0 MB/sec
Communications/Interactive Processing		
-- Locally-attached Workstations	120	12
-- Max. Communication Lines	28	24
-- Max. Line Speed	56 K BPS	56 K BPS

4.6.2 SERIES 90/SYSTEM 80 COMMON HARDWARE

-- The Model 8 was designed with a high consideration for the Series 90 OS/3 base. Selected peripheral subsystems can be brought forward. This offers potential financial advantages for the customer since he can continue to utilize subsystems which may be purchased or available under other attractive financial arrangements. The following Series 90 subsystems are supported:

-- 5039/8430/8433 Disk Subsystem
-- 8416/8418 Disks
-- 0770/0776 Line Printer
-- UTS 400 and UTS 4000 Terminals
-- 2521 Channel Transfer Switch
-- UNISERVO 10/14 Tape Subsystem
-- UNISERVO 12/16/20 Tape Subsystem
-- 0798/0797 Terminal Printers
-- Model 1 Workstations
-- 0716 Card Reader

5.0 MODEL 8 SYSTEM PERFORMANCE POTENTIAL

-- System performance is an elusive generality. The performance is configuration and workload dependent. Relative performance varies by what system the Model 8 is being compared with.

The following growth options all contribute to the system performance potential of the Model 8.

5.1 PROCESSOR

-- The Central Processor is 3.6 x the 90/30 and 2X the System 80 Model 6. Those customers who have a critical performance path in processor performance will immediately benefit from the Model 8. As with all performance profiles, the critical path will shift to other system thruput constraints as improvements in the current critical path are made.

5.2 MAIN STORAGE

-- Most 90/30 customers are configured at a 524 K Bytes. Some 90/30 and 90/40 customers have expanded to 1024 K Bytes. The Model 8 offers 8 MB main storage. This larger main storage can be used in several ways to increase performance.

- o Increased buffers to reduce I/O accesses
- o Increased multi-programming
- o More resident SCS components
- o Ability to use new OS/3 interactive CDM facilities which were difficult to implement on 524 K systems.

5.3 DISK PROCESSING

-- The new Model 8 Disk Channels and 8470 and 8417 Disks offer significant performance potential to the Series 90 OS/3 customer who is disk performance critical. Consider the following:

- o 8470 Disk transfer speed is 2.4 x the speed of the 8416/8418 disks and 1.9 x 8430/8433 speed.

- o Most 90/30 systems have one string of 8416/8418 disks. The Model 8 offers up to five separate I/O channels. 8470 disks may be configured as dual access configurations.

Note that careful system considerations must be made if the customer is moving from a low ratio head-to-storage disk such as an 8418 to a high ratio head-to-storage device such as the 8470. The key to a maximized system performance using 8470 disks is a reblocking of customer files and possibly some minor program modifications. This is particularly important if a reduced disk spindle count is a result of the customer migration. A carry forward string of the removable media 8416/8418 disks and new 8470 disks can be an excellent operational configuration.

5.4 TAPE PROCESSING

-- The Model 8 configures most tapes available on Series 90 OS/3 systems. In addition the Model 8 supports the UNISERVO 22/24 tape units. UNISERVO 2X tapes may also be configured in dual access configurations.

5.5 MODEL 8 APPLICATION PERFORMANCE

5.5.1 INTERACTIVE APPLICATIONS

-- Most Series 90 OS/3 customers are configured with UNISCOPE, UTS 400 terminals. Although these devices can be configured on the Model 8, the System 80 direct-connect Model 1 (UTS 20D) and Model 2 (UTS 40D) workstations offer faster response times. Also, new generation interactive application program products such as UNIS 80, SUFICS 80, WPS 80, etc. offer the opportunity to convert from batch-oriented predecessors. Comparative hardware features such as CPU speed, main storage options and faster I/O all contribute to improved interactive performance.

5.5.2 BATCH APPLICATIONS

-- Most OS/3 customers operate a combination of batch and interactive applications. Batch operations which benefit from the faster I/O devices and overall faster Model 8 hardware, have a greater opportunity for running concurrent with interactive while maintaining acceptable performance for both.

5.5.3 APPLICATION DEVELOPMENT

-- Application development and maintenance competes with production work for system attention. This competition indirectly affects system production performance. Since OS/3 R6.0, OS/3 has provided extensive new facilities to reduce application development and maintenance time. These new aids, such as ESCORT, EDITOR, Menu Generator, Screen Format Services can reduce the on-line development time, thereby allowing more system resources to be allocated to production.

6.0 MIGRATION

6.1 OS/3 Series 90 base migration to the Model 8 can be accomplished faster and with less risk than any other alternative.

Consider the following:

-- New OS/3 software is generally functionally compatible, if not identifical, to what most OS/3 customers are using. IMS/COBOL/RPG/ICAM, etc. are fully supported on the Model 8. Minor program changes and a recompilation are generally all that is required for a customer to move his application to the Model 8. Even IMB ST programs will operate under IMS MT on the Model 8 as an aid to migration.

-- All System 80 systems use the new Centralized Data Management (CDM) System. CDM was made available to Series 90 OS/3 customers for two purposes. First, new OS/3 functionality beginning with R7.0 requires CDM. Second, CDM availability allows the Series 90 OS/3 customer to converge to the new data management structure on his existing equipment. Customers who have sufficient main storage can therefore better positon themselves for migration while also obtaining use of new software facilities which require CDM. Those customers converged to CDM on their current systems need at the most only dump and reload their files using standard OS/3 utilities.

6.0 MIGRATION (CONT'D)

6.1 -- (Cont'd)

Customers who have not preconverged must convert to CDM to take full advantage of Model 8 facilities. However, this conversion can be accomplished after workloads are transferred to the Model 8 by using the Model 8 DTF Mode of operation. DTF Mode of Operation is the Series 90 migration aid which allows an OS/3 customer to migrate his existing hardware and software to the Model 8 without immediate conversion to CDM facilities. A COBOL migration package includes COBOL 68 which operates in DTF Mode. Also included in the migration package is COBOL 74 and the COBOL 68 to COBOL 74 conversion aid.

DTF Mode offers an alternative to preconvergence or immediate conversion when the Model 8 is installed. DTF is designed as a temporary facility which enables a relatively early release of the S90 System. Also, the Model 8 central processor power can be immediately beneficial to workload processing where the S90 processor has become insufficient to keep up with increased workloads. DTF programs require carry-forward disk subsystems.

6.2 System 80 Model 8 will Support Key Series 90 OS/3 peripherals as detailed in 4.6.2. The following Series 90 peripherals and software will NOT be supported:

-- **Peripheral Sub-Systems not supported:**

F1001	Channel Adapter	T2702	Optical Document Reader
T0604	Card Punch	T8413	Diskette
T0605	Card Punch	T5024	Disk Control
T0717	Printer	T8414	Disk
T0768	Printer	T8415	Disk
T0773	Printer	T8424	Disk
T0920	Paper Tape	T8425	Disk
T0778	Printer	Uniservo VIC	

-- **Communication Terminals not supported:**

TTY models 28 and 32
DCT 475/500/54/1000/2000
UTS 700 via DCT 1000/2000 emulation

-- The following S/90 OS/3 software will not be supported:

*BEM/BEM EDT/BEM BASIC/BEM RSP
*ANS 68 COBOL BASIC
*FORTRAN BASIC and Extended
*UTS 400 PLM and MAC80
360/20 Conversion Aids/Emulation
9200/9300 Emulation Conversion Aids

*Functionality provided by equivalent CDM software

7.0 RECENT OS/3 ENHANCEMENTS

The following reviews key R8.0 enhancements. This information will assure your customer that Sperry Univac has continued to invest in the future of OS/3. Additional enhancements will be announced as the Model 8 plan unfolds.

7.1 LANGUAGES

7.1.1 RPG II ENHANCEMENTS

-- Multikey Support - Provides MIRAM multikey support for RPG II.

-- Interactive Data Entry - Data fields on the RPG II Input Format Specifications are prompted for on the workstation screen.

-- Error Log Access - The RPG II compiler is enhanced to write error diagnostics to a file which can be accessed by the customer.

-- SHUTDOWN Operation Code - This code is used to check whether a system shutdown has been requested. If it has, an RPG II indicator is set on.

-- NEXT Operation Code - This code is used to force input from a particular workstation of a multiple workstation file.

-- EJECT, SPACE, TITLE Directives - These items provide user control over the ormat of computer listings.

-- Support of Indicators for SFS - This enhancement enables Screen Format Services to test RPG II indicators and act on them as defined in the screen formats.

-- Workstation Function Key Support - Indicators have been added to RPG II compiler that will be set on when a workstation function key is depressed.

-- Data Structures - Are supported to provide multiple definitions of internal data, subdivision of data fields, and grouping of fields.

-- IBM System/34 Workstation File Description Specification Continuation - Handles multiple workstations and workstation error processing.

7.1.2 RPG II EDITOR

RPG II Editor enhancements provide the following source statement support:

-- Auto Report statements

-- Multikey File Description Specification statement

-- Workstation File Description Specification statement

-- Workstation File Description Specification continuation statements

7.1.2 RPG II EDITOR (CONT'D)

-- Currency sign-on Control Specification statement

-- Data structure statements

-- EJECT, SPACE and TITLE statements

-- SHUTDOWN and NEXT operation codes

7.1.3 ERROR FILE PROCESSOR

-- The Error File Processor is a new feature of the Editor which enables a customer to interactively view the error files which are optionally output by the language processors (COBOL, RPG II, and FORTRAN). Source programs can then be corrected without having to refer to, or use the compiler output listing.

7.1.4 ANS '74 COBOL ENHANCEMENTS

-- Multi-workstation files are supported by ANS '74 COBOL through the ACCEPT and DISPLAY statements. A COBOL program may accept input from any workstation (or a specific one), and displays output to the most recently addressed workstation (or to any specific workstation).

-- Workstation function keys, indicator bytes, and error status checking are supported.

-- The "CALL ... USING" statement is generated at compilation. Previously, it was generated dynamically by object program code.

-- The Compilation Diagnostic Summary Listing provides VOL, LBL, LFD information. Previously, only LFD information was displayed.

-- COBOL '74 optionally writes compiler diagnostics to a source library file. This file can then be referenced by the Editor's Error File Processor.

7.1.5 COBOL EDITOR

-- The COBOL Editor program product includes the following capabilities:

-- COBOL source statements are prompted for at the workstations.

-- COBOL source statements are made available to the General Editor for addition to the source file in EDITOR workspace.

-- Procedure verb syntax is displayed at the workstation.

-- The COBOL Editor provides full access to the General Editor and its commands.

-- Erroneous data entered is blinked on the screen with accompanying diagnostic messages.

7.2 IMS ENHANCEMENTS

-- The following are significant enhancements that improve the functionality and performance of IMS. These enhancements are as follows:

-- Multi-thread CDM Support - IMS Multi-thread improves performance for IMS applications by allowing multiple transactions to be initiated and processed concurrently.

-- IMS Multi-thread - DMS Interface (CDM) - IMS multi-thread has been enhanced to allow IMS action programs to access records in a DMS data base. Both UNIQUE and customer action programs can access defined files that have been created from DMS data base records.

-- MIRAM Multikey/Duplicate Key Support - IMS supports multikey, duplicate key, and key change features of the MIRAM access method when operating in both the DTF mode and CDM environment.

This enhancement enables the user to retrieve records from an indexed MIRAM file using any key of reference, while permitting adds or updates using the primary key of references.

-- IMS Initiation of Background Batch Jobs - IMS can now initiate background batch jobs from an IMS terminal. The command which initiates this capability is the same as the console command (RV), and includes all of the options available with that command. After the command is entered, the user is able to continue with other processing.

-- IMS Statistical Reporting - New IMS statistical functions are provided. They include:

- o Number of input and output messages per transaction
- o Total numer of file accesses on a transaction basis
- o Terminal statistics for an IMS session
- o Total number of input and output characters per terminal
- o The largest number of input and output characters on an IMS session and the terminal on which it occurred.
- o Enhancements also enable these statistics to be output to a data file and display them on the primary device; or they may be output to the data file only. A utility program enables the accumulated statistics to be printed.

-- Dynamic Memory Allocation for Action Programs - This enhancement allows customers to modify the size of the initial action program of an action without having to reconfigure the application.

-- Physically Delete NAMREC Records - Permits customer to physically delete passwords and data definitions for applications which defined their NAMREC file using MIRAM. It allows better user control over the growth of the NAMREC file.

7.2 IMS ENHANCEMENTS (CONT'D)

-- SFS/IMS Performance Improvements -

- o Permits the customer to define the maximum number of screen formats which can remain resident in memory.
- o Enables the reinitialization of input fields on the terminal screen without rebuilding the entire screen.
- o Provides the ability to CONNECT (instead of OPEN) each terminals class.

-- Undefined Transaction Scheduling - This enhancement enables the IMS customer to optionally configure the name of an action program which should get control in the event an undefined transaction is entered at a terminal.

-- Display Status Message on Configurable Line Number - Permits the customer to specify placementof the IMS output messages. Options are:

- o Display the IMS message on any line of the screen
- o When displaying, clear the screen of unprotected data only; clear the entire screen; or leave the screen as is.

-- IMS - System Console/Master Terminal Support - This enhancement enables IMS customers to schedule action programs at the system console, and to switch messages between the console and other terminals.

7.3 WORD PROCESSING SYSTEM - WPS 80

-- WPS 80 is an information procesing system designed to provide editing, formatting, and computer processing of form letters and other documents without repetitive typing. It operates on a System 80 host processor and allows the manipulation and printing of text previously stored in the system. The addition of the 0791 Correspondence Quality Printer to a Model 2 Workstation will enable quality typewritten texts to be prepared and printed. Names, addresses, and other variables can be handled directly at the keyboard. The system operates under password control and offers "help" screens.

7.4 ICAM TERMINAL SUPPORT FACILITY

7.4.1 SLCA SUPPORT

-- ICAM provides support for a variety of protocols via a new SLCA hardware:

- o X.25 Packet Switching up to 9.6 KB
- o NTR at line speeds up to 56 KB
- o UDLC (bit-oriented) X.21 at line speeds up to 9.6 KB
- o BSC

7.4.2 IBM 3270 EMULATION

-- This program product enables the System 80 to communicate interactively with IBM hosts (and other systems that support 3270 terminals). Through this facility, System 80 workstation customers can access IBM host program products and applications as if they were directly connected to the IBM system. For further information on IBM 3270 Emulation, see System 80 Marketing Announcement No. 19 (December 1981).

7.4.3 REMOTE WORKSTATION SUPPORT

-- This enhancement enables SLCA-connected UTS 20 and UTS 40 terminals to operate as a System 80 workstation when in system mode, providing all of the capabilities of the local workstation.

-- The remote terminal can be used as a workstation when connected to interactive services and as a terminal when connected to an ICAM customer program.

7.4.4 TRACE FACILITY

-- ICAM includes a new module which provides customer control over ICAM's event recording mechanisms. This module:

- o Reduces the amount of main memory now dedicated to tracing
- o Increases the number of events being traced
- o Provides a single trace recording element for current and future applications.

7.4.5 INTERACTIVE DOWN-LINE LOADING TO TERMINALS

-- This enhancement enables those customers at UTS 400 and UTS 40 terminals (and Model 2 locally-connected workstations) to request that the central system send the UTS COBOL compiled programs to their terminal for storage and execution.

7.4.6 INTERACTIVE UP-LINE DUMP REQUESTS

-- Interactive Services provides a command that enables a memory dump of the contents of his down-line loadable UTS 400 terminal memory (not available on UTS 40). The user specifies a file name in the command that the contents of the terminal memory is written to. The file is written on the host system disk and is printed there via a system utility program.

7.5 NEW WORKSTATION FUNCTIONS

7.5.1 WSAM (WORKSTATION ACCESS METHOD)

-- WSAM is the Control System Component that enables locally connected workstations to interface to user programs. The WSAM software is being enhanced to remove the current restriction that limits to eight the number of locally connected workstations accessing a single file. WSAM now supports the maximum number of workstations that can be locally connected to a System 80.

7.5.2 WORKSTATION ACTIVITY LOG RECALL

-- A new workstation operator command permits the active workstation log to be recalled and reviewed at the screen. Parameters can be entered which indicate at which point in time (wall clock) the recall is to begin.

7.5.3 SYSTEM USE OF FUNCTION KEYS

-- A command is available that enables a workstation user to designate any available function key to issue any system command. When the assigned function key is depressed, the command will be issued as it would have been if the customer had entered it in System Mode.

7.5.4 INTERACTIVE SERVICES SUPPORT OF ACCOUNTING STATISTICS

-- Interactive customers are provided system resource statistics for each interactive user. This function is initialized at LOGON and is updated through the session. At LOGOFF, the accounting information is written to the user's workstation log which can then be written to a file and processed. Statistics developed include:

- o Session duration
- o CPU time used during the session
- o Number of interactive services commands issued
- o Number of files accessed
- o I/O counts for each device accessed

7.6 PROGRAM DEVELOPMENT/MAINTENANCE AIDS

7.6.1 MENU GENERATOR

-- The Menu Generator provides customer "Menu" processing capabilities via a new OS/3 program product. The Menu Generator enables the customer to create a menu module which is then processed by the Menu Processor. The menu's screen is then displayed on a workstation or terminal screen until a user response is issued.

7.6.2 EDITOR SCREEN FORMATS FOR SOURCE ENTRY

-- EDT has been enhanced to provide the following capabilities:

- o Support is provided for syntax checking of RPG and COBOL programs through the RPGEDT and COBEDT products which use the EDT screen format capability.
- o Source program entry without syntax checking is available directly through the EDT screen format capability.

7.6.3 SCREEN FORMAT SERVICES

-- SFS enables the customer to create or modify a screen from an existing format without having to revert to the TEMPLATE MODE (first pass).

-- A new module has been incorporated in SFS that permits the customer to specify that range checking be performed by the Screen Format Coordinator. Fields which fail the range check are blinked on the screen.

-- The Screen Format Generator provides support for the following functions:

- o **Display Intensity Control:**
  - -- Normal
  - -- Alternate (low intensity/reverse video)
  - -- Blink
  - -- Non-display
- o **Protected Field:**
  - -- A field which was indicated as "modifiable" may be displayed as "protected" by setting an indicator, thus preventing workstation operator modification.
- o **Input Constant:**
  - -- The user may define one input constant per format which is capable of being returned to a program even if it's not displayed on the screen.

7.6.4 SCREEN FORMAT GENERATOR - BATCH INPUT SUPPORT

-- Screen Format Generator now accepts IBM System/34 S and D screen descriptors as input for non-interactive screen generation. System/34 screens entered in this manner can be called by OS/3 programs via JCL stream.

7.6.5 ERROR FILE PROCESSOR

-- The Error File Processor is a new feature of the Editor which enables a customer to interactively view the error files which are optionally output by the language processors (COBOL, RPG II, and FORTRAN). Source programs can then be corrected without having to refer to, or use the compiler output listing.

7.8 DISTRIBUTED DATA PROCESSING

7.8.1 DCA TERMINATION SYSTEM

-- This program product allows customers to establish sessions and transfer data to other users on a different OS/3 or OS1100 Systems. The types of sessions supported are:

- o Local CUP to remote CUP
- o Local terminal to remote CPU (pass-through processing)

7.8.1 DCA TERMINATION SYSTEM (CONT'D)

- o Local terminal to remote terminal
- o Local CUP to remote terminal (pass-through processing)

-- For additional information on DCA termination system and pass-through processing, see System 80 Marketing Announcement No. 13 (July 1981).

7.8.2 DDP FILE ACCESS

-- This program product will provide remote disk file support. A remote disk file is one which is physically attached to a processor which is different from the one on which the job is running.

-- Remote disk file support is provided for OS/3 and OS1100 systems. See System 80 Marketing Announcement No. 13 (July 1981) for further information on DDP File Access.

7.8.3 DDP TRANSFER FACILITY

-- The following are enhancements to the DDP Transfer Facility program product:

- o Enhanced "STATUS" Support provides for "STATUS" on non-library file types.
- o System Generated Job Names allows the customer to employ special characters in the job name in order to allow the system to generate unique job names.

More information on the DDP Transfer Facility can be found in System 80 Marketing Announcement No. 13 (July 1981). This facility has been enhanced to support OS1100 Systems.

7.8.4 PUBLIC DATA NETWORKS

-- OS/3 Public Data Network (PDN) support continues to expand to satisfy worldwide PDN requirements. Current Supports include Canadian DATAPAC, Germany's DATEX-L and DATEX-P, the France TRANSPAC, the British PSS and the NORDIC PDN.

7.9 SYSTEM OPERATION AND CONTROL

7.9.1 JOB ACCOUNTING

-- Job Accounting provides the customer with a description of the hardware and software configuration on which the job was executed.

SPOOLING ENHANCEMENTS FOR WORKSTATIONS

-- The workstation operator can direct that the printing of SPOOL files (log and print) should take place on a workstation printer. This will be handled via a JCL specification.

7.9.1 JOB ACCOUNTING (CONT'D)

SPOOLING ENHANCEMENTS FOR WORKSTATIONS (CONT'D)

-- Spooled output can be made "secure" or "unsecure." Unsecure output does not require that the initiating workstation operator be logged on to recieve output, while secure output requires the initiating workstation operator to be logged on at the initiating workstation.

-- A local workstation operator can direct that all files created by that workstation be printed on another workstation's printer.

7.9.2 JOB CONTROL ENHANCEMENTS

-- To support the DDP File Access capability, a job control statement will specify that the file is remotely located.

7.9.3 DIAGNOSTIC INFORMATION AT JOB TERMINATION

-- When a user terminates abnormally, Job Control will provide additional diagnostic information for the user in the form of the interrupt code and the lower four bytes of the Program Status Word (PSW).

7.9.4 SUPERVISOR SUPPORT OF SHUTDOWN COMMAND

-- The SHUTDOWN command provides the console operator a method to terminate system activity in an orderly fashion. Once the command has been entered, the Spooler and Job Scheduler will no longer start any new files or jobs. Interactive Services will not start new functions and will terminate upon completion of current activity.

7.9.5 DUMP/RESTORE ENHANCEMENTS

-- The Dump/Restore program provides for handling of the file expiration date. The existence of a system date will be verified, and if none is available, a date will be requested from the user.

-- Dump/Restore Restart functions are enhanced as follows:

- o The volume mode of operation is added to the file operation.
- o Dump/restore process can begin or restart with a particular file on a specific diskette.

-- Dump/Restore is enhanced to enable the user to process all files on a specific volume whose names begin with a particular set of characters.

-- Dump/Restore will lock the disk files being processed. Input files will be locked for read only processing while output files are locked for exclusive use.

7.9.5 DUMP/RESTORE ENHANCEMENTS (CONT'D)

-- Ease-of-use of the Dump/Restore facility has been enhanced to allow the customer to execute the Dump/Restore facility from a workstation. A pre-formatted set of screens will guide the operator in defining the parameters required to provide the desired output. Each screen will have a corresponding set of HELP screens which further explain the options.

7.9.6 DISK COPY - EASE-OF-USE ENHANCEMENTS

-- A new interactive interface has been developed which permits the execution of certain disk copy utility routines from a workstation. The workstation operator will receive guidance in defining the scope of the copy program he wishes to execute. Additionally, there will be a set of HELP screens to assist the operator with the program features.

7.9.7 TAPE DATA MANAGEMENT - CDM

-- CDM data management support for magnetic tape enables the record format in the customer program work area to be independent of the format of the data stored on tape. This feature enables customers to process tapes with different record types without having to modify the program's work area.

7.10 DETAIL R8.0 DOCUMENTATION

-- OS/3 R8.0 will be released to customers at the end of October, 1982. Customers should be encouraged to review in detail OS/3 enhancements as documented in the R8.0 SRD UP-9280.

8.0 COMPETITIVE CONFIGURATIONS

-- The primary threat to the Series 90 base is the IBM 4331-2. Although this generality may not be valid in all countries, it can form a general basis of comparison. Other worldwide competitors and regional systems will obviously also be Model 8 competitors.

-- The attached five configuration sets provide comparative Model 8 and IBM 4331-2 comparisons. These will assist your understanding of Model 8 and IBM configuration rules. Model 8 configurations were first configured and then the best comparable 4331-2 configuration was determined.

Pricing can easily be added to these configurations to determine your local pricing situation. Pricing should be evaluated considering hardware, software, and maintenance. The customer should also consider the relative conversion cost to IBM compared to the ease of migration to the Model 8.

-- IBM can offer several software alternatives. The best marketing bid due to price and relative ease-of-use is SSX. The next alternative would be DOS/VS. The last and most reluctant bid may be OS/VS1. If you examine the functionality available with each operating system option and consider your customer/prospect requirements, you can probably determine the initial IBM bid.

CONFIGURATION 1

-- Configuration 1 is an entry level bid which is probably in most cases only performance viable if carry-forward disks are added to the configuration. IBM would probably respond to added disk capacity by adding additional 3370 disk storage. Tapes are configured primarily as disk dump/restore media. The IBM 8809 operates 20 KB start-stop mode and 160 KB Streaming Mode for dump/restore operations. The Model 8 tape operates only in Streaming Mode at 40 KB and 160 KB. The 40 KB Streaming Mode may be used for tape batch applications, but since it is a Streaming Drive, effective performance will be 1 KB (256 byte blocks) to 16 KB (8192 byte blocks). If batch tape performance becomes an issue, the addition of a UNISERVO 22 (120 KBS) to the same controller which interfaces the Streaming Tape is a low priced solution.

		SYSTEM 80 MODEL 8				IBM 4331-2	
TYPE	QTY	DESCRIPTION	PRICING	TYPE	QTY	DESCRIPTION	PRICING
3076-XX		CPU Group W/1MB		4331-J02		CPU & 1MB	
F3734-02		IDCU-8470		3201		DASD Adapter	
F3774-00		Integrated Tape		3278-2A		Console	
		Control		4634		Keyboard	
8470-XX		Disk Drive (491 MB)		3370-A1		Disk Drive	
F2789-02		Paper Peripheral		3278-2	7	Display Stations	
		Cont.		4526	8	Keyboards	
8422-02		Man. Diskette		3262-1		Printer 650 LPM	
F2785-00		Man. Diskette		4910		Mag Tape Adapter	
F3782-00		Tape Drive 40/160KB		8809-1A		Mag Tape 20/160KB	
1974-00		Tape Cabinet		1601		Comm. Adapter	
3560-79	6	Workstations		3276-2		Control Unit Displ. Stn.	
F3620-00	6	Keyboards		3701		EIA/CCITT Interface	
0789-93		Printer 640 LPM		4695		Line Base	
F3321-XX		Band					
2413-00		Power Expansion (8470)					
F2788-99		SLCA (SYNC)					
8609-00		Terminal MUX					
F3780-00		Line Driver					
3560-18	2	UTS 20 Display					
F3575-00	2	Program Cartridge					
F3620-00	2	Expanded Keyboard					

CONFIGURATION 2

-- This configuration has 2MB main storage and, for the Model 8, 2 491 MB 8470 disks. Many of the comments from Configuration 1 apply. The 2MB main storage offers significant main storage growth for the medium/large 90/30 or 90/40 customer. The 982 MB disk capacity is in many cases four times greater than the 90/30 customer using 8418 disks. This extra storage can be used to selectively position high-activity files in optimized positions as well as to expand the on-line data base. Additional flexibility and capacity could be gained by carry-forward 8418 and 8430/8433 disks. In some cases the removable media disk is an integral system design consideration which the customer may wish to retain until he can consider the significance of non-removable media.

SYSTEM 80 MODEL 8				IBM 4331-2			
TYPE	QTY	DESCRIPTION	PRICING	TYPE	QTY	DESCRIPTION	PRICING
3076-XX		CPU Group w/1MB		4331-K2		CPU & 2MB	
				3201		DASD Adapter	
F3959-00		Main Storage		3278-2A		Console	
F3734-02		IDCU-8470		4634		Keyboard	
8470-XX	2	Disk Drive		3370-A1		Disk Drive	
				3278-2	9	Display Stations	
F2789-02		PPC		4627	12	Keyboards	
8422-02		Man. Diskette		3262-1		Printer 650 LPM	
F2785-00		Man. Diskette		4910		Mag Tape Adapter	
0789-93		Printer 640 LPM		8809-1A		Mag Tape	
F3321-XX		Print Band		3370-B1		Disk Drive	
3560-79	6	Workstations		2001		Display Adapter Exp.	
F3620-00	6	Keyboards		3401		Diskette	
F3774-00		Integrated Tape		1601		Comm. Adapter	
		Control		3276-2	3	Control Unit Disp. Stn.	
1974-00		Tape Cabinet		3701	3	EIA/CCITT Interface	
F3782-00		Tape Drive 40/160 KB		4695	3	Line Base	
2413-00		Power Expansion (8470)					
F2788-99	3	SLCA (SYNC)					
8609-00	3	Terminal MUX					
F3780-00	3	Line Driver					
3560-18	6	UTS 20 Display					
F3575-00		Program Cartridge					
F3620-00	6	Expanded Keyboards					

CONFIGURATION 3

— This configuration provides enhanced peripheral capability to Configuration 2. Main Storage has also been expanded to 4 MB. This configuration could be sold to a large 90/30 or 90/40 customer. The three 8470 disk drives provide nearly 1500 MB on line. This would be double the on line storage of OS/3 customers who are configured with four 8418 double density disks and four 8430 disks. Note that this change from Series 90 disks to 8470 disks would reduce disk units from eight to three. A careful analysis must be done to assure that the reduction in units would not become a critical performance point. The higher overall speed of the Model 8 CPU and disks and large main storage would contribute to overcoming this potential performance issue.

SYSTEM 80 MODEL 8				IBM 4331-G2			
TYPE	QTY	DESCRIPTION	PRICING	TYPE	QTY	DESCRIPTION	PRICING
3076-XX		CPU Group		4331-L2		CPU & 4MB	
F3959-01		Main Store		3201		DASD Adapter	
F3734-01		IDCU-8470		3278-2A		Console	
F3959-00		Main Store		4634		Keyboards	
F3774-00		Integrated Tape		3370-A1		Disk Drive	
		Control		3278-2	12	Display Stations	
1974-00		Tape Cabinet		4627	16	Keyboards	
F3784-XX	2	Tape Drive 40/160KB		3262-1	2	Printer 650 LPM	
2413-00		Power Expansion		4910		Mag Tape Adapter	
		(8470)		8809-1A	2	Mag Tape	
8470-00	3	Disk Drive		3370-B1	2	Disk Drive	
F2789-02		PPC		2001		Display Adapter Exp.	
0789-93	2	Printer 640 LPM		1601		Comm. Adapter	
F3321-XX	2	Band		3276-2	4	Control Unit	
8422-02		Man. Diskette				Display Station	
F2785-00		Man. Diskette		3701	4	EIA/CCITT Interfaces	
3560-79	8	Workstations		4695	4	Line Base	
F3620-00	8	Keyboards		1001		Adapter Power	
F2788-99	4	SLCA (SYNC)		3401		Diskette	
8609-00	4	Terminal MUX					
F3780-00	4	Line Driver					
3560-18	8	UTS 20 Display					
F3575-00	8	Program Cartridge					
F3620-00	8	Expanded Keyboard					

CONFIGURATION 4

— This configuration may be appropriate for a customer who is consolidating from multiple systems. On-line disk capacity of 1964 MB and 4 MB main storage present a powerful hardware system. Two 120 KB tape drives are configured in lieu of streaming tape drives used in prior configurations. This would serve customers who required stop-start tape performance which exceeds streaming tape potential. Note that the addition of streaming tape drives to the integrated tape controller would provide a low priced disk dump/reload facility. This configuration requires additional power supplies. Be sure to reference the Configuration Aid included in the Announcement Kit to assure that power supply requirements have been met.

SYSTEM 80 MODEL 8				IBM 4331-G2			
TYPE	QTY	DESCRIPTION	PRICING	TYPE	QTY	DESCRIPTION	PRICING
3076-XX		CPU Group		4331-L2		CPU & 4MB	
F3964-02		+5v Power Supply		3201		DASD Adapter	
F3959-00		Main Store		3370-B1	3	Disk Drive	
F3959-01		Main Store		3370-A1		Disk Drive	
F3962-00		Integrated Selector		1001		Comm. Adapter Power	
		Channel		3278-2A		Console	
2413-00		Power Expansion (8470)		4634		Keyboard	
F3734-02		IDCU-8470		3278-2	18	Display Stations	
F2789-02		PPC		4627	24	Keyboards	
0789-93	2	Printer 640 LPM		3276-2	6	Control Unit/Display	
F3321-XX	2	Print Band		2001		Display Adapter Exp.	
8420-02		Auto Diskette		6631	2	Single Density	
F2833-00		Man. Diskette		3803-1		Tape Control	
F2791-08		WS Controller		3420-3	2	Mag Tape	
3560-79	12	Workstations		3262-1	2	Mag Tape 120 KBS	
F3620-00	12	Keyboards		1421		Block MUX	
8470-XX	4	Disk Drive		5531		Power Interface	
F2717-02	4	HDA-8470		3401		Diskette	
5058-00		U22 Tape Cont. and		1601		Comm. Adapter	
		2 Drives 120 KB		3701	6	EIA/CCITT Interface	
F2788-99	6	SLCA (SYNC)		4695	6	Line Base	
8609-00	6	Terminal MUX					
F3780-00	6	Line Driver					
3560-18	12	UTS 20 Display					
F3575-00	12	Program Cartridge					
F3620-00	12	Expanded Keyboard					

CONFIGURATION 5

-- This last configuration is a large capacity system configured for extra system performance. Disks are configured for dual access and 6 MB of storage is present. Note that the IMB configuration is "limited" to 4MB. Two paper peripheral controls (PPC) are configured since the on-line print rate exceeds the PPC 1500 LPM limit. The UNISERVO 24 tape drive at 200KBS is the fastest new System 80 start-stop tape drive. Tape drive speeds up to 320 KBS can be configured using Series 90 UNISERVO 20 tape drives.

		SYSTEM 80 MODEL 8				IBM 4331-G2	
TYPE	QTY	DESCRIPTION	PRICING	TYPE	QTY	DESCRIPTION	PRICING
3076-XX		CPU Group		4331-L2		CPU & 4MB	
F3964-02		+5V Power Supply		3201		DASD Adapter	
F3964-00		-2.8V Power Supply		3370-B1	3	Disk Drive	
F3958-00		MSU w/1MB		3370-A1	2	Disk Drive	
F3959-01	2	Main Store		1001		Comm. Adapter Power	
F3734-02	2	IDCU-8470		3278-2A		Console	
F3936-00	2	Integrated Selector		4634		Keyboard	
		Channel		3278-2	22	Display Stations	
F2718-00	5	Dual Access		4627	34	Keyboards	
2413-00		Power Expansion (8470)		3276-2	12	Control Unit/Display	
8470-00	5	Disk Drive		2001		Display Adapter Exp.	
2717-02	5	HDA-8470		8150		String Switch - 3370	
F2789-02		PPC		3202		DASD Adapter 2	
0789-93		Printer 640 LPM		3803-1		Tape Control	
F3321-XX		Band		3420-5	2	Mag Tape 200 KBS	
8420-02		Auto Diskette		3262-1	3	Printer 650 LPM	
F2833-00		Man. Diskette		1421		Block MUX	
F2791-04		WS Controller		5531		Power Interface	
3560-79	14	Workstations		6425	2	Dual Density	
F3620-00	14	Keyboards		3401		Diskette	
0776-99		Printer 1200 LPM		5248		Byte MUX Channel	
F2346-XX		Printer Cartridge		3704-A1		Comm. Controller	
5058-06		U24 Control and		1641		Scanner I	
		2 Tape Drives 200KB		4650		Clock	
F2789-XX		PPC		4701	2	Line Base	
F2788-99	10	SLCA (SYNC)		4718	10	Line Set	
8609-00	10	Terminal MUX					
F3780-00	10	Line Driver					
3560-18	20	UTS 20 Display					
F3575-00	20	Program Cartridge					
F3620-00	20	Expanded Keyboard					

9.0 PRODUCT AVAILABILITY PLAN

-- The products and capabilities listed in 9.1 thru 9.3 will be available at first customer delivery or some time after first customer delivery if noted with an "*".

9.1 HARDWARE

T/F NUMBER	DESCRIPTION
3076-XX	PROCESSOR GROUP W/1MB IOMP, SELECTOR CHANNEL, CONSOLE, WORKSTATION CONTROLLER, DISKETTE CONTROLLER AND CHANNEL CONTROLLER.
3959-XX	MAIN STORAGE EXPANSION UP TO 8 MB
8422-XX	MANUAL DISKETTE
8420-XX	AUTOLOAD DISKETTE
F3960-00	CHANNEL CONTROLLER (2nd)
3734-02	INTEGRATED CONTROL AND 8470 DISK SUBSYSTEM
*3734-01	INTEGRATED CONTROL AND 8417/8419 DISK SUBSYSTEM
2781-XX	8470 DUAL ACCESS
3734-00	INTEGRATED CONTROL AND 8416/8418 DISK SUBSYSTEM
3736-XX	BYTE ADAPTER (MAX. 4 CONTROLS)
5039-XX	8430/8433 DISK SUBSYSTEM
0871-XX	SYSTEM 80 INTEGRATED TAPE CONTROL AND U-10 TAPE SUBSYSTEM
0870-XX	SERIES 90 OS/3 U10/U14 TAPE SUBSYSTEM
5017-XX	U12/U16 TAPE SUBSYSTEMS
5034-XX	U12/U16/U20 TAPE SUBSYSTEMS
5058-XX	U22/U24 TAPE SUBSYSTEMS
0789-XX	180/300/640 LPM LINE PRINTERS
0425-XX	CHARACTER PRINTER (WORKSTATION)
0798-XX	200 CPS PRINTER (WORKSTATION AND PPC)
0791-XX	CORRESPONDENCE QUALITY PRINTER (MODEL 2 WORKSTATIONS)
0776-XX	SERIES 90 760/940/1200 LPM LINE PRINTERS
0770-XX	SERIES 90 800/1400/2000 LPM LINE PRINTERS

9.1 HARDWARE (CONT'D)

T/F NUMBER	DESCRIPTION
*2794-XX	REMOTE PRINTER ATTACHMENT
0716-XX	SERIES 90 OS/3 80/96 COL CARD READER
0719-XX	SYSTEM 80 CARD READER
0608-XX	SYSTEM 80 CARD PUNCH
3774-00	INTEGRATED TAPE CONTROL FOR STREAMING TAPE AND/OR UNI-SERVO 22
*0876-XX	UNISERVO 22 (INTEGRATED TAPE CONTROL)
3794-XX	AUTO-DIAL (3 SLCA'S)
2XXX-XX	ALL CURRENTLY DEFINED SLCA'S (REF SOFTWARE FOR PROTOCOL SUPPORT)
356X-XX	MODEL 1/2 WORKSTATIONS
280X-XX	ICCU CONNECTION BETWEEN ALL OS/3 BASED SYSTEMS

9.2 SOFTWARE

6210-XX	SCS
XXXX-XX	COMBINED CDM/DTF MODE
6211-XX	EXTENDED SYSTEM SOFTWARE
6254-XX	MENU GENERATOR
6219-XX	RPG II GROUP
6222-XX	COBOL 74
6236-XX	COBOL CONVERSION GROUP (COBOL 74/COBOL 68/COBOL CONVERSION AID)
6233-XX	ASSEMBLER
6224-XX	BASIC
6225-XX	EDITOR
6223-XX	ESCORT
6218-XX	DMS-MT
6232-XX	IMS MT
6231-XX	ICAM TSF - SUPPORTS CURRENTLY ANNOUNCED SLCA'S/PROTOCALS

9.2 SOFTWARE (CONT'D)

T/F NUMBER	DESCRIPTION
6248-XX	PDN SUPPORT (DATEX-L/DATEX-P/TRANSPAC X.25/DATAPAC X.25/ PSS X.25/NORDIC X.21)
6247-XX	3270 RTH/TH
6247-02	RTP (IBM MULTI-LEAVING WORKSTATION EMULATION)
P/A	2780 RTH/TH
6230-XX	NTR
62XX-XX	UTS COBOL/LOAD DUMP.
6201-XX	EDIT PROCESSOR (MODEL 2 WORKSTATION)
6183-XX	TEXT PROCESSING UTILITY (MODEL 2 WORKSTATION)
6181-XX	DISKETTE UTILITY (MODEL 2 WORKSTATION)
6255-00	DCA TERMINATION SYSTEMS
6229-XX	DDP FILE TRANSFER/JOB DISTRIBUTION (OS/3 TO OS/3 AND OS/3 TO OS1100)
6229-XX	DDP IMS TRANSACTION ROUTING VIA DIRECTORY, OPERATOR AND PROGRAM ROUTING
6299-02	DDP FILE ACCESS (OS/3 TO OS/3 AND OS/3 TO OS1100)
P/A	CURRENTLY DEFINED IBM S/3, S/34, OS/4, MIGRATION AIDS

9.3 APPLICATION PROGRAM PRODUCTS

6563-XX	UNIS 80/80E
6599-XX	AMS 80
6591-XX	UNIFACS 80
6602-XX	WAMS
6562-XX	UNIDIS-WHOLESALE
6701-XX	WPS 80
6558-XX	ICS-80
6617-XX	SUFICS 80

Note: Other division-unique Application Program Products will be made available.